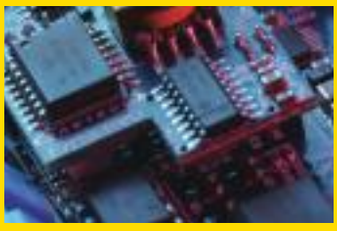
FASTECH

2021 / 2022
General Catalogue [English]







FASTECH

FASTECH Brand_ Introduction

Ezi-SERVO®

ST
MINI
Plus-R
Plus-R MINI
BT
ALL
EtherCAT
EtherCAT MINI
EtherCAT 4X
EtherCAT ALL
Plus-E
Plus-E MINI
Plus-E ALL
CC-Link
HS

- Closed Loop System
- No Gain Tuning / No Hunting
- High Resolution (Max. 32,000[ppr])
- Provide various motor sizes (20~86mm) based on NEMA standard
- Current control according to load
- Various line up of drives (Pulse Input / Controller Embedded / Mini Size / Built In / Network supported type and so on)

S-SERVO® II

ST
MINI
2X
3X

- Closed Loop System
- Closed Loop Product at Open Loop Price!!
- Free from concern of step out (Generation of alarm when step out)
- Check the completion of positioning perfectly
- Reduce the motor temperature and energy saving
- Various line up of drives such as multi-axis suitable for table top robot

Ezi-STEP®

ST
MINI
Plus-R
Plus-R MINI
BT
ALL
EtherCAT
EtherCAT MINI
Plus-E
Plus-E MINI
CC-Link

- Micro Stepping System
- High precision micro step operation (Max. 1/250 step)
- Vibration suppression and high speed operation by Software damping
- Various line up of drives (Pulse Input / Controller Embedded / MINI size / Built In / Network Embedded type and so on)

Ezi-IO®

EtherCAT
EtherCAT AD
Plus-E
Plus-R

- Digital Input / Output Module
- Control by various Network (EtherCAT, Ethernet, RS-485)
- Input / Output Photocoupler Isolation
- Independent 16CH / 32CH of Input / Output Module

BRAND NAMING METHOD

Ezi-SERVO

S-SERVO

Ezi-STEP

ST	Stand Alone	Standard type
MINI	Mini Type	Miniaturized compact size
Plus-R	Plus RS-485	Support RS-485 network (Motion controller embedded)
Plus-R MINI	Plus RS-485 Mini Type	Support RS-485 network with compact size drive (Motion controller embedded)
BT	Built In	Motor (+ Encoder) + Drive integrated
ALL	All Type	Motor (+ Encoder) + Drive + Motion controller integrated
2X	2 axis	2-axis integrated module
3X	3 axis	3-axis integrated module
EtherCAT	EtherCAT network	Support EtherCAT network
EtherCAT MINI	EtherCAT network	Support EtherCAT network with compact size drive
EtherCAT 4X	EtherCAT network	Support EtherCAT network (4-axis integrated module)
EtherCAT ALL	EtherCAT network	Support EtherCAT network (Motor (+ Encoder) + Drive + Motion controller integrated)
Plus-E	Plus Ethernet	Support Ethernet network (motion controller embedded)
Plus-E MINI	Plus Ethernet	Support Ethernet network with compact size drive(motion controller embedded)
Plus-E ALL	Plus Ethernet	Support Ethernet network (motion controller embedded)
CC-Link	CC-Link network	Support CC-Link network
HS	Hollow Shaft	Hollow Shaft Motor with High Resolution Encoder

Ezi-MotionLink®

Plus-E
Plus-R

- One axis motion controller supporting various networks (Plug-In type)
- Able to control the servo drives with Ezi-SERVO through single network
- Provide motion library (DLL) for PC interface
- Available simpler control and wiring without motion board (Cost saving)

Ezi-MotionGate®

PROFIBUS
DeviceNet
EtherNet/IP

- Gateway solution supports various networks
- Converting DeviceNet, PROFIBUS and EtherNet/IP to RS-485
- Cost saving by simpler control and wiring
- Available to operate Multi-axis (Max. 16 axis)

Ezi-Robo®

HG
HB
PMS

- Unit solution of Ezi-SERVO + various actuators
- Closed Loop System
- Various line up such as Hollow Rotary Index, Belt Type Index, Precision Stage
- Secure the higher accuracy with Ezi-SERVO
- EtherCAT, Ethernet, CC-Link Support

Ezi-SPEED®

30W
60W
120W
200W
400W

- AC input BLDC motor speed control system
- Wide speed control range (50~4000rpm)
- Stable speed control by Vector control (Speed regulation 0.2%)
- Easy speed control, Easy wiring and connecting (Front Panel and I/O)
- Product line-up : 30, 60, 120, 200, 400W

Ezi-IO		
EtherCAT	EtherCAT network	EtherCAT communication supporting
Plus-E	Plus Ethernet	Ethernet communication based FASTECH Plus-E protocol
Plus-R	Plus RS-485	RS-485 communication baesd FASTECH Plus-R protocol
Ezi-MOTIONLINK		
Plus-E	Plus Ethernet	One axis controller supports Ethernet netwotk
Plus-R	Plus RS-485	One axis controller supports RS-485 network
Ezi-MOTIONGATE		
PROFIBUS	PROFIBUS to RS-485	Gateway solution support PROFIBUS to RS-485
DeviceNet	DeviceNet to RS-485	Gateway solution support DeviceNet to RS-485
EtherNet/IP	EtherNet/IP to RS-485	Gateway solution support EtherNet/IP to RS-485
Ezi-Robo		
HG	Hollow Gear	Hollow rotary actuator
HB	Hollow Belt	Belt type hollow rotary actuator
PMS	Precision Motorized Stage	High Precision motorized automatic stage
Ezi-SPEED		
P	Parallel Gear	Parallel Gearbox
H	Hollow Flat Gear	Hollow Gearbox

Ezi-SERVO Series_ Overall Table 1 (Pulse Input Type)

	Model	Product Image	Product Specification
Pulse Input	**Ezi-SERVO** ST		· Closed Loop System · No Gain Tuning / No Hunting · Heat Reduction / Torque Improvement · High Resolution · Fast Response
	Ezi-SERVO MINI		· Miniaturized Compact Size · Closed Loop System · No Gain Tuning / No Hunting · Heat Reduction · High Resolution · Fast Response
	Ezi-SERVO II BT		· Motor + Encoder + Drive · Closed Loop System · No Gain Tuning / No Hunting · High Resolution / Fast Response · Heat Reduction

Category	Available motor sizes																		
	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	66p		66p			66p		66p				66p			66p			66p		
BRAKE								704p				705p			706p			707p		
GEARBOX								741p	744p	747p	750p	753p	756p	758p	762p	765p	768p	771p	772p	773p
Standard	91p		91p			91p		91p												
BRAKE								704p												
GEARBOX								742p	745p	748p	751p									
Standard			159p					159p				159p			159p					
BRAKE								704p				705p			706p					
GEARBOX								742p	745p	748p	751p	754p	757p	759p	763p	766p	769p			

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-SERVO Series_ Overall Table 2 (Network Support Type)

	Model	Product Image	Product Specification
Controller Embedded (RS-485)	**Ezi-SERVO** Plus-R		· Embedded Controller · Position Table · Closed Loop System · No Gain Tuning / No Hunting · High Resolution / Fast Response · Heat Reduction / Torque Improvement
	Ezi-SERVO Plus-R MINI		· Miniaturized Compact Size · Embedded Controller · Position Table · Closed Loop System · No Gain Tuning / No Hunting · High Resolution / Fast Response
	Ezi-SERVO ALL		· Motor + Encoder + Drive + Controller Integrated · RS-485 Interface · Position Table · Closed Loop System · No Gain Tuning / No Hunting · Heat Reduction / Torque Improvement · IP65 Protection (NEMA24 Size)

Category	Available motor sizes																		
	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	109p		109p			109p		109p				109p			109p			109p		
BRAKE								704p				705p			706p			707p		
GEARBOX								741p	744p	747p	750p	753p	756p	758p	762p	765p	768p	771p	772p	773p
Standard	137p		137p			137p		137p												
BRAKE								704p												
GEARBOX								742p	745p	748p	751p									
Standard			184p					184p				184p			184p					
BRAKE								704p				705p			706p					
GEARBOX								742p	745p	748p	751p	754p	757p	759p	763p	766p	769p			

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-SERVO Series_ Overall Table 2 (Network Support Type)

	Model	Product Image	Product Specification
Support Field Networks	**Ezi-SERVO** II EtherCAT		· CiA 402 Drive Profile Support · Closed Loop System · No Gain Tuning / No Hunting · Heat Reduction / Torque Improvement · High Resolution / Fast Response
	Ezi-SERVO II EtherCAT MINI		·CiA 402 Drive Profile Support ·Closed Loop System ·No Gain Tuning / No Hunting ·Miniaturized Compact Size ·High Resolution / Fast Respons
	Ezi-SERVO II EtherCAT 4X		· CiA 402 Drive Profile Support · Closed Loop System · No Gain Tuning / No Hunting · Compact 4-Axis Stepping Motor Drive · Save Space / Reduce Wiring (Reduce Cost)
	Ezi-SERVO II EtherCAT ALL		· Motor + Encoder + Drive + EtherCAT Interface · CiA 402 Drive Profile Support · Closed Loop System · No Gain Tuning · No Hunting · Heat Reduction · Torque Improvement

Category	Available motor sizes																		
	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	220p		220p			220p		220p				220p			220p			220p		
BRAKE								704p				705p			706p			707p		
GEARBOX								741p	744p	747p	750p	753p	756p	758p	762p	765p	768p	771p	772p	773p
Standard	244p		244p			244p		244p				244p			244p					
BRAKE								704p				705p			706p					
GEARBOX								742p	745p	748p	751p	754p	757p	759p	763p	766p	769p			
Standard	263p		263p			263p		263p				263p			263p					
BRAKE								704p				705p			706p					
GEARBOX								742p	745p	748p	751p	754p	757p	759p	763p	766p	769p			
Standard									286p			286p			286p				286p	
BRAKE									704p			705p			706p				707p	
Standard									745p	748p	751p	754p	757p	759	763p	766p	769p	771p	772p	773p

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-SERVO Series_ Overall Table 2 (Network Support Type)

	Model	Product Image	Product Specification
Support Field Networks	**Ezi-SERVO** Ⅱ Plus-E		· Embeded Controller · Ethernet Interface · Position Table · Closed Loop System · No Gain Tuning / No Hunting · High Resolution / Fast Response · Heat Reduction / Torque Improvement
	Ezi-SERVO Ⅱ Plus-E MINI		·Embedded Controller ·Ethernet Interface ·Position Table ·Closed Loop System ·No Gain Tuning / No Hunting ·High Resolution / Fast Response ·Miniaturized Compact Size
	Ezi-SERVO Ⅱ Plus-E ALL		· Motor + Encoder + Drive + Controller Integrated · Ethernet Interface · Closed Loop System · No Gain Tuning · No Hunting · Heat Reduction · Torque Improvement
	Ezi-SERVO Ⅱ CC-Link		· Embeded Controller · Position Table · Closed Loop System · No Gain Tuning / No Hunting · Heat Reduction / Torque Improvement

Category	Available motor sizes																		
	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	313p		313p			313p		313p				313p			313p			313p		
BRAKE								704p				705p			706p			707p		
GEARBOX								741p	744p	747p	750p	753p	756p	758p	762p	765p	768p	771p	772p	773p
Standard	339p		339p			339p		339p				339p			339p					
BRAKE								704p				705p			706p					
GEARBOX								742p	745p	748p	751p	754p	757p	759p	763p	766p	769p			
Standard	362p		362p			362p		362p				362p			362p			362p		
BRAKE									704p			705p			706p			707p		
GEARBOX									745p	748p	751p	754p	757p	759	763p	766p	769p	771p	772p	773p
Standard	389p		389p			389p		389p				389p			389p			389p		
BRAKE								704p				705p			706p			707p		
Standard								741p	744p	747p	750p	753p	756p	758p	762p	765p	768p	771p	772p	773p

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-SERVO Series_ Overall Table 3 (Hallow Shaft Motor Type)

	Model	Product Image	Product Specification
Pulse Input · Controller Embedded (RS-485) · Support Field Networks	**Ezi-SERVO** HS		· Hollow Shaft Motor with High Resolution Encoder · Closed Loop System · High Precision Position Control · High Torque, Low Temperature · EtherCAT, Ethernet, CC-Link Support

Category	Available motor sizes										
	20M	20L	28S	28M	35M	35L	42S	42L	56S	56M	86M
Standard	413p		413p		413p		413p		413p		413p
BRAKE											
GEARBOX											

※ Please refer to the page in 00p for more details about motor sizes.

S-SERVO Series_ Overall Table

	Model	Product Image	Product Specification
Pulse Input	**S-SERVO** Ⅱ ST		· Closed Loop System · Free from concern of Step-Out · Check the completion of positioning perfectly · Current control in proportion to the load for energy saving · Improvement of torque by adjusting the RUN current (Max. 150%)
	S-SERVO Ⅱ MINI		· Closed Loop System · Miniaturized compact size drive · Applicable for small precision and table top device · Current control in proportion to the load for energy saving · Improvement of torque by adjusting the RUN current (Max. 150%)
	S-SERVO Ⅱ 2X		· Integrated 2-axis on single board (Multi-axis type) · Available for customizing upon request · Multi-axis line up suitable for table top robot · Applicable for soldering, dispensing, mini stage and so on
	S-SERVO Ⅱ 3X		· Integrated 3-axis on single board (Multi-axis type) · Available for customizing upon request · Multi-axis line up suitable for table top robot · Applicable for soldering, dispensing, mini stage and so on

Stepping Motor Control System Without Step Out S-SERVO® II

Category	Available motor sizes																		
	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	446p		446p			446p		446p				446p			446p					
BRAKE								704p				705p			706p					
GEARBOX								743p	746p	749p	752p	755p	758p	761p	764p	767p	770p			
Standard	452p		452p			452p		452p												
BRAKE								704p												
GEARBOX								743p	746p	749p	752p									
Standard	458p		458p			458p		458p				458p			458p					
BRAKE								704p				705p			706p					
GEARBOX								743p	746p	749p	752p	755p	758p	761p	764p	767p	770p			
Standard	464p		464p			464p		464p				464p			464p					
BRAKE								704p				705p			706p					
GEARBOX								743p	746p	749p	752p	755p	758p	761p	764p	767p	770p			

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-STEP Series_ Overall Table 1

	Model	Product Image	Product Specification
Pulse Input	**Ezi-STEP** ST		· Micro Stepping · Software Damping · Run/Stop Signal Output
	Ezi-STEP MINI		· Micro Stepping · Software Damping · Run/Stop Signal Output
	Ezi-STEP BT		· Micro Stepping with Integrated Drive · Software Damping · Run/Stop Signal Output

	Model	Product Image	Product Specification
Controller Embedded (RS-485)	**Ezi-STEP** Plus-R		· Embedded Controller · Position Table · Micro Stepping · Software Damping · Run/Stop Signal Output
	Ezi-STEP Plus-R MINI		· Embedded Controller · Position Table · Micro Stepping · Software Damping · Run/Stop Signal Output
	Ezi-STEP ALL		· Motor + Drive + Controller + Network · Embedded Controller · Micro Stepping · Software Damping · Run/Stop Signal Output

Category	Available motor sizes																	
	20M	20L	28S	28M	28L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard						481p				481p			481p			481p		
BRAKE						704p				705p			706p			707p		
GEARBOX																		
Standard	503p			503p			503p											
BRAKE						704p												
GEARBOX																		
Standard						559p				559p						559p		
BRAKE						704p				705p						707p		
GEARBOX																		

Category	Available motor sizes																	
	20M	20L	28S	28M	28L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	520p			520p			520p				520p			520p			520p	
BRAKE						704p				705p			706p			707p		
GEARBOX																		
Standard	544p			544p			544p											
BRAKE						704p												
GEARBOX																		
Standard						576p				576p								
BRAKE						704p				705p								
GEARBOX																		

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-STEP Series_ Overall Table 2

	Model	제품 사진	제품 특징
Field Network 지원	**Ezi-STEP** Ⅱ EtherCAT		· CiA 402 Drive Profile Support · Micro Stepping · Software Damping · Torque Improvement
	Ezi-STEP Ⅱ EtherCAT MINI		· CiA 402 Drive Profile Support · Micro Stepping · Software Damping · Miniaturized Compact Size
	Ezi-STEP Ⅱ EtherCAT 4X		·CiA 402 Drive Profile Support ·Micro Stepping ·Software Damping ·Compact 4-Axis Stepping Motor Drive ·Save Space / Reduce Wiring (Reduce Cost)
	Ezi-STEP Ⅱ Plus-E		· Embeded Controller · Ethernet Interface · Position Table · Micro Stepping · Software Damping · Torque Improvement
	Ezi-STEP Ⅱ Plus-E MINI		·Embedded Controller ·Ethernet Interface ·Position Table ·Micro Stepping ·Software Damping ·Miniaturized Compact Size
	Ezi-STEP Ⅱ CC-Link		· Embeded Controller · Position Table · Micro Stepping · Software Damping · Torque Improvement

Category	Available motor sizes																	
	20M	20L	28S	28M	28L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	590p		590p			590p				590p			590p					
BRAKE						704p				705p			706p					
GEARBOX																		
Standard	610p		610p			610p				610p			610p					
BRAKE						704p				705p			706p					
GEARBOX																		
Standard	626p		626p			626p				626p			626p					
BRAKE						704p				705p			706p					
GEARBOX																		
Standard	644p		644p			644p				644p			644p				644p	
BRAKE						704p				705p			706p				707p	
GEARBOX																		
Standard	666p		666p			666p				666p			666p					
BRAKE						704p				705p			706p					
GEARBOX																		
Standard	684p		684p			684p				684p			684p					
BRAKE						704p				705p			706p					
GEARBOX																		

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-IO Series_ Overall Table

	Model	Product Image	Product Specification
DIO Module	**Ezi-IO** EtherCAT		· EtherCAT based Digital I/O Module · Simple and Easy Wiring (e-CON / Terminal Block type) · Various 16CH & 32CH I/O Module (NPN / PNP type) · Digital I/O Photocoupler Isolation
	Ezi-IO Plus-E		· Controlled by Ethernet communication · The same communication protocol as Plus-E product series · Digital I/O Photocoupler Isolation · Specialized for 16 input channels · Specialized for 16 output channels · Specialized for 8 input / 8 output channels
	Ezi-IO Plus-R		· Controlled by RS-485 communication · The same communication protocol as Plus-R product series · Digital I/O Photocoupler Isolation · Specialized for 16 input channels · Specialized for 16 output channels · Specialized for 8 input 8 output channels

	Model	Product Image	Product Specification
AD Module	**Ezi-IO** EtherCAT AD		· EtherCAT Remote Analog Input Module · Fully Support EtherCAT Synchronization Modes · CiA 401 Compatible · Simple and Easy Wiring · Configuration by Switch Setting · Moving Average Filter

	Model	Product Image	Product Specification
DA Module	**Ezi-IO** EtherCAT DA		· EtherCAT Based Analog Output Modules · Fully Support EtherCAT Synchronization Modes · CiA 401 Compatible · Simple and Easy Wiring · Configuration by Switch Setting · User Calibration For Output Deviation

Category	16CH NPN	16CH PNP	32CH NPN	32CH PNP	Page
INPUT	○	○	○	○	
OUTPUT	○	○	○	○	798p
IN/OUT	○ *1	○ *1	○ *2	○ *2	
INPUT	○	○	○	○	
OUTPUT	○	○	○	○	844p
IN/OUT	○ *1	○ *1	○ *2	○ *2	
INPUT	○	○			
OUTPUT	○				872p
IN/OUT	○ *1	△ *3			

※ Please refer to the page in 00p for more details about motor sizes.

*1: This model has 8 input channels and 8 output channels.
*2: This model has 16 input channels and 16 output channels.
*3: This model has 8 input channels of PNP type and 8 output channels of NPN type.

Category	8CH	Page
AD	○	824p

※ Please refer to the page in 00p for more details about motor sizes.

Category	4CH	Page
DA	○	834p

※ Please refer to the page in 00p for more details about motor sizes.

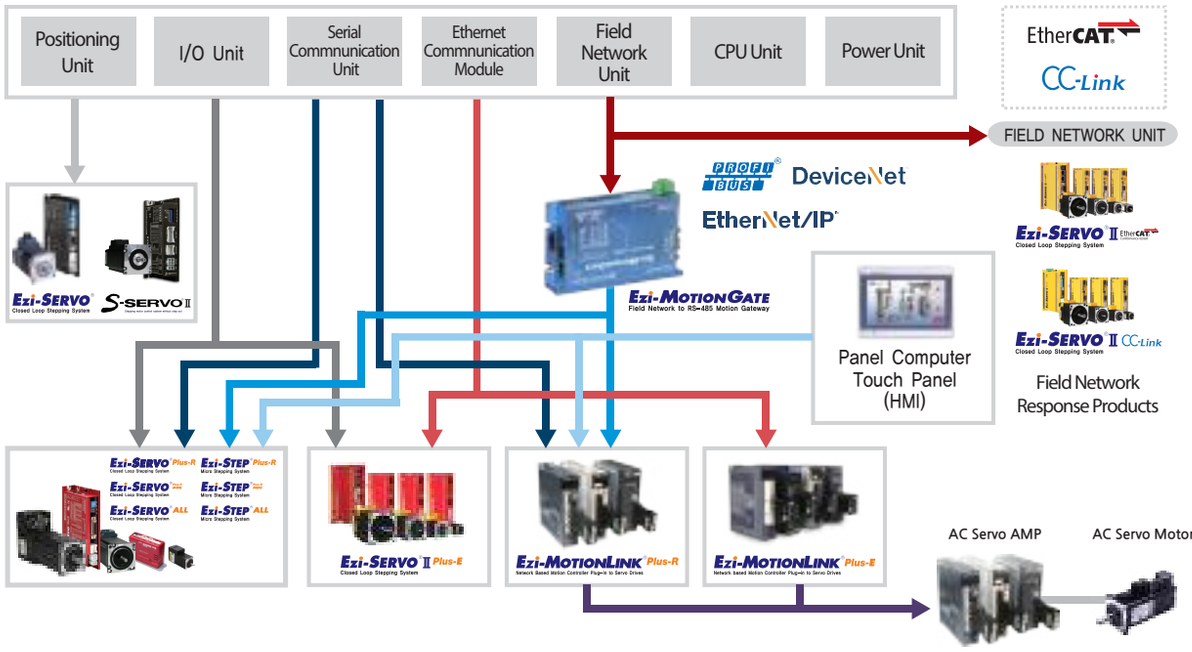
Ezi-MOTIONLINK Series_ Overall Table

	Model	Product Image	Product Specification
1 Axis Controller	**Ezi-MOTIONLINK** Plus-E		· Ethernet Based Motion Controller · Plug-in to Various Types of Servo Drive · A maximum of 254 axis can be connected · Various Motion Functions · Simplification of the Wirings
	Ezi-MOTIONLINK Plus-R		· RS-485 Network Based Motion Controller · Plug-in to Various Type of Servo Drives · A maximum of 16 axis can be connected · Various Motion Functions · Simplification of the Wirings

Ezi-MOTIONGATE Series_ Overall Table

	Model	Product Image	Product Specification
Gateway Type	**Ezi-MOTIONGATE** PROFIBUS		· Motion gateway to convert PROFIBUS to RS-485 · To be connected with PLC such as SIEMENS, Allen-Bradly, MITSUBISHI and so on · To be connected with the "Plus R" series of products (Max. 9-axis) · Available to monitor the network status by LED
	Ezi-MOTIONGATE DeviceNet		· Motion gateway to convert DeviceNet to RS-485 · To be connected with PLC such as Allen-Bradly, MITSUBISHI, LS and so on · To be connected with the "Plus R" series of products (Max. 16-axis) · Available to monitor the network status by LED
	Ezi-MOTIONGATE EtherNet/IP		· Motion gateway to convert EtherNet/IP to RS-485 · To be connected with PLC such as Allen-Bradly, MITSUBISHI, LS and so on · To be connected with the "Plus R" series of products (Max. 16-axis) · Available to monitor the network status by LED

Ezi-MotionNetwork is new proposal in response to variety Motion Networks and enables simple connection and control. Therefore it can shorten lead time for designing machine with reduction of cost and wiring.

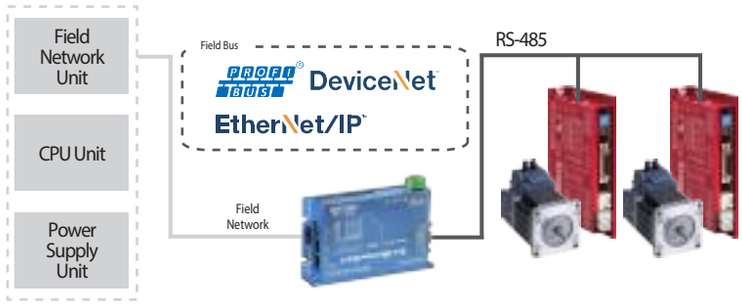








Available to support various field networks through Ezi-MOTIONGATE.



* Ezi-MOTIONGATE supports PROFINET, Mechatrolink II, Mechatrolink III, SERCOS III, will be released.



Ezi-Robo Series_ Overall Table

	Model	제품 사진	제품 특징
Pulse Input · Controller embedded type is selectable	**Ezi-Robo** HG		· Ezi-SERVO + Hollow Rotary Index Table · Hollow Diameter : Max. Ø80mm · Maximum Torque : Max. 170N·m · Permissible Axial Load : Max. 4000N · Repeatability : Min. ±10arcsec · EtherCAT, Ethernet, CC-Link Support
	Ezi-Robo HB		· Unit solution of Ezi-SERVO + Hollow rotary index table · Accurate timing belt driven(Lost motion 6min) · Realize long-life durability · Economic solution · EtherCAT, Ethernet, CC-Link Support
	Ezi-Robo PMS		· Unit solution of Ezi-SERVO + Precision Stage · Ultra-precision XYθ alignment stage capable of high precision positioning · Improved the position accuracy by using Ezi-SERVO · EtherCAT, Ethernet, CC-Link Support

Ezi-SPEED Series_ Overall Table

	Model	제품 사진	제품 특징
AC Input BLDC	**Ezi-SPEED**		· AC Input BLDC Motor Speed Control System · Wide Speed Control Range (50~4000rpm) · Stable Speed by Vector Control (Speed Regulation 0.2%) · Stable Low Speed (50rpm) by Velocity Observer · High Efficiency with Low Heat Generation · Easy Speed Control, Easy Wiring and Connecting (Front Panel and I/O) · Product Line-Up : 30, 60, 120, 200, 400W

Actuator Series Driven by Ezi-SERVO Ezi-Robo®

Category	Available motor sizes					
	28M	42M	42XL	56L	60L	86L
Standard			934p		935-937, 939p	938, 940p
BRAKE						
GEARBOX						
Standard			969p	970p	971p	
BRAKE						
GEARBOX						
Standard	994-1019p					
BRAKE						
GEARBOX						

※ Please refer to the page in 00p for more details about motor sizes

BLDC Motor Speed Control System Ezi-SPEED®

Category	Available motor sizes				
	30W	60W	120W	200W	400W
Standard	1061p	1061p	1061p	1061p	1061p
Parallel Gearbox	1065p	1065p	1066p	1066p	1067p
Hollow Flat Gearbox	1068p	1068p	1069p		

※ Please refer to the page in 00p for more details about motor sizes

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Fast, Accurate, Smooth Motion

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Fast, Accurate, Smooth Motion

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If you open **colored page** of each product, immediate search will be available.

Please refer to **page 050** for **detail contents** of product introduction section.

Before operation of FASTECH products, please check the contents as below

Specification changes

Name of product, code numbering, appearance, specification, technical data and others are subject to change without prior notice for functional and quality improvement. Please review and make sure all details before purchasing products in advance.

Precautions before opeation

Please fully acknowledge pre-cautions listed on the right side of page before operation and please follow correctly. For others not listed or any questionnaire, please contact with distributor sold FASTECH product or sales department of FASTECH

Telephone : +82-32-234-6300 / **Website** : www.fastech-motions.com / **E-mail** : sales2@fastech-motions.com

Replacement and returning product

- FASTECH will be in charge for the products replaced which has damaged during transporation or any differences between delivered products and customer's order requests.
- For any case of replacement or returning products, please contact with distributor sold FASTECH products or sales department of FASTECH.
- It is not available for FASTECH to guarantee the replacement or returning of the products already used or ordered by incorrect request from the customer. So, we would like to get your understanding.

Product Guarantee

Products provided by FASTECH shall be fee from the defects in materials and workmanship during the warranty period and, if there is any defects caused from FASTECH's fault, it shall be replaced or repaired at free of charge upon the evaluation and judge by FASTECH. Regarding the damage, defects or error of the products caused from the fault of customer, FASTECH shall be free from any responsibility and also, for the issues after passing the warranty period shall be replaced or repaired at customers cost.

Terms of warranty : 1 year from product shipment

Range of product warranty exclusion

1. If operation of product is out of conditions listed on manual or catalogue of product
2. Root cause of trouble is not caused by essential defect of product
3. If customer does not exactly follow safety pre-cautions listed separately
4. If trouble caused by natural disaster or force majeure uncontrollable by FASTECH.

General Precautions

- Product manual is subject to change without prior notice for functional improvement or customer's better understanding so please operate product in accordance with customer manual packed with product.
- When the manual is damaged or lost, please contact with distributor or FASTECH to get it again.
- FASTECH will not be responsible for any kind of modification or change of the product by others since it is out of range for product warranty.

Safety Precautions

- Before installation, maintenance and repairing, please carefully read manual and fully acknowledge contents and execute operation. Also please understand the mechanical characteristics, safety information and precautions before operation of product.
- User manual is divided safety precautions into Attention and Warning.

⚠ **Attention**	In case of serious or slight injury and dangerous case by improper operation of product and the case of property damage.
⚠ **Warning**	In case of deaths or serious injuries by dangerous situation such as electrical shock by improper handling of product

- Although precaution is only an Attention, a serious result could be caused depending on the situation so please keep following safety precautions.

• Product condition

⚠ Attention	**Check the product is damaged or parts are missing.** Abnormal product installation and operation may cause damage of machinery or injuries.

• Installation

⚠ Attention	**Carefully move the products.** Otherwise the product may get damaged or user's foot may get injured by dropping the product. **Use non-flammable materials such as metal in the place where the product is to be installed.** Otherwise, a fire may occur. **When installing several units of products in a sealed place, install a cooling fan to keep the ambient temperature as 50˚C or lower.** Otherwise a fire or other kinds of accidents may occur due to overheating.
⚠ Warning	**The process of installation, connection, operation, checking and repairing should be done with qualified person.** Otherwise, it will be a reason of fire, injury and damage of machinery.

• Check and Repair

⚠ Warning	**Stop to supply power to main circuit and wait for a while before checking or repairing products.** Electricity remaining in the condenser may cause danger such as electric shock. **Do not change cable while power is being supplied.** Otherwise, it cause electric shock, damage of product or machinery. **Do not reconstruct the product.** It cause electric shock, damage of product or machinery and not able to get a A/S for reconstructed product.

• Operation and change setting

⚠ Attention	**If a protection function occurs, firstly remove its cause and then release the protection function.** If the customer operates continuously without removal of root cause, the machine may get damaged by abnormal operation of motor and drive. **Do not make motor free and make input signal to ON during operation.** Motor will stop and stop current will be zero. The machine may get damaged or the customer may get injured. **Make all input signals to OFF before supply input voltage to drive.** Motor will run then the machine may get damaged or the customer may get injured. **All parameter values are set by default factory setting value properly. Please change this value after reading product manual throughly.** Otherwise, the machine may get damaged or products will be troubled.

• Cabling

⚠ Attention	**Keep the rated range of input voltage of the drive.** Otherwise, a fire or other kinds of trouble may occur. **Please follow the wiring diagrams for cable connection.** Otherwise, a fire or other kinds of trouble may occur.
⚠ Warning	**Before connecting cables, please check if input power is OFF.** Otherwise, a fire or electric shock may occur. **The case of product is insulated from the ground of the internal circuit by the condenser so please ground the product.** Otherwise, an electric shock or a fire may occur and will be a reason for malfunction of the product.

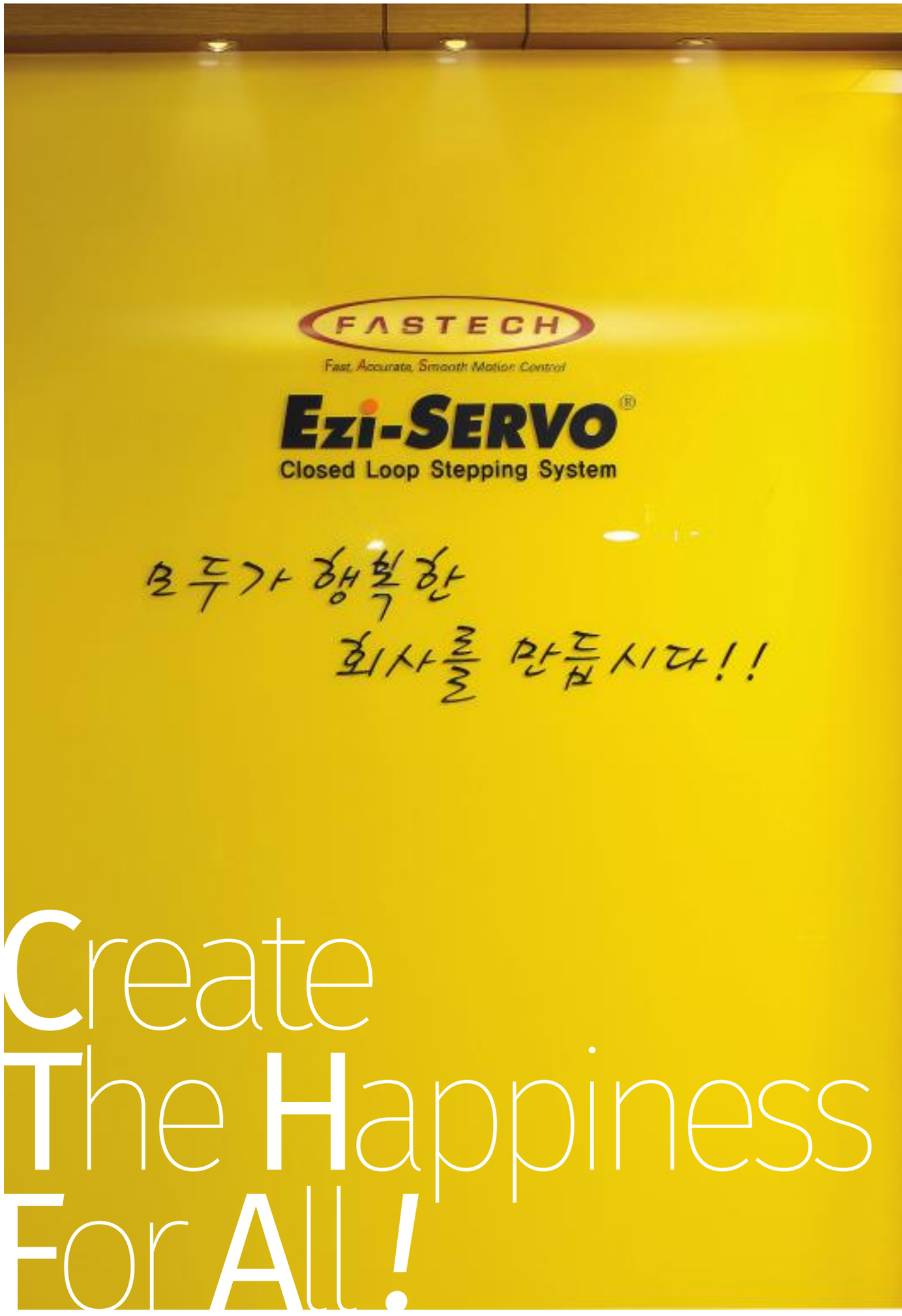
FASTECH_

Business Information

- Overview
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- Application







Create The Happiness For All!

“Create the happiness for all”

Company at a Glance



- **Company Name** : FASTECH Co., Ltd.
- **Established** : 10th Aug, 2010
- **Website** : www.fastech-motions.com
- **Headquarter** : Rm#1202, 401-dong, Bucheon Techno-Park, 655, Pyeongcheon-ro Bucheon-si Gyeonggi-do, Republic of Korea

Business Information

Professional motion control company

FASTECH has secured optimized management system by continuous challenge spirit and constant innovation based on FASTECH its own technology in a motion control business filed through long time experiences and achieved value of customer satisfaction with the best quality and competitiveness. By establishment of toehold, FASTECH will be grown up as worldwide motion control company.

Optimized total solution provider based on high level of technical skills

FASTECH provides total solutions mostly covers Closed Loop System, Open Loop Stepping System, various Field Network Solution and various Unit Product combine with Mechanisms are all required from motion control market field. In addition, through continuous technical research and product development, we build very concrete establishment to provide optimized total solution matching any requests from customers.

Leads the market with a constant innovation

FASTECH has been going ahead on the road not taken by anyone with continuous effort and innovation. Then now FASTECH has positioned as leading company in a Closed Loop Stepping market area since the establishment of the company and is ready to build maximized business growth through world-wide exports as a Global Brand. FASTECH will continue to generate infinite value with a product and quality fulfill customer's requirements based on continuous innovation, up-to-date idea and top level of technology.

Honest and trustful company

FASTECH will continue to do our best to realize stable management, strict quality control and customer first service to be a long term trustful partner shares value and target with all of customers. Also FASTECH will go forward as creditable company treasure value of craftmanship and partnership as motion control specialized company.

FASTECH is Trust



FASTECH realizes customer satisfaction

Quality Standard

Secure the quality system with global standard

FASTECH secures quality management system matching global standard for systematic quality management and implementation and set the target to provide zero defects product through strict self quality management system.



ISO 9001



ISO 14001

Service

Call Center **+82-32-234-6300**
Website www.fastech-motions.com
E-mail sales@fastech-motions.com

Various information providing and communication with customer

Website(www.fastech-motions.com)
Available to download all products catalogue, manual, video clip and drawing from FASTECH website includes product information.

Participate in domestic and global exhibitions
FASTECH does our best to maximize opportunity to meet customers through domestic and overseas exhibitions and introduce new technology and product.

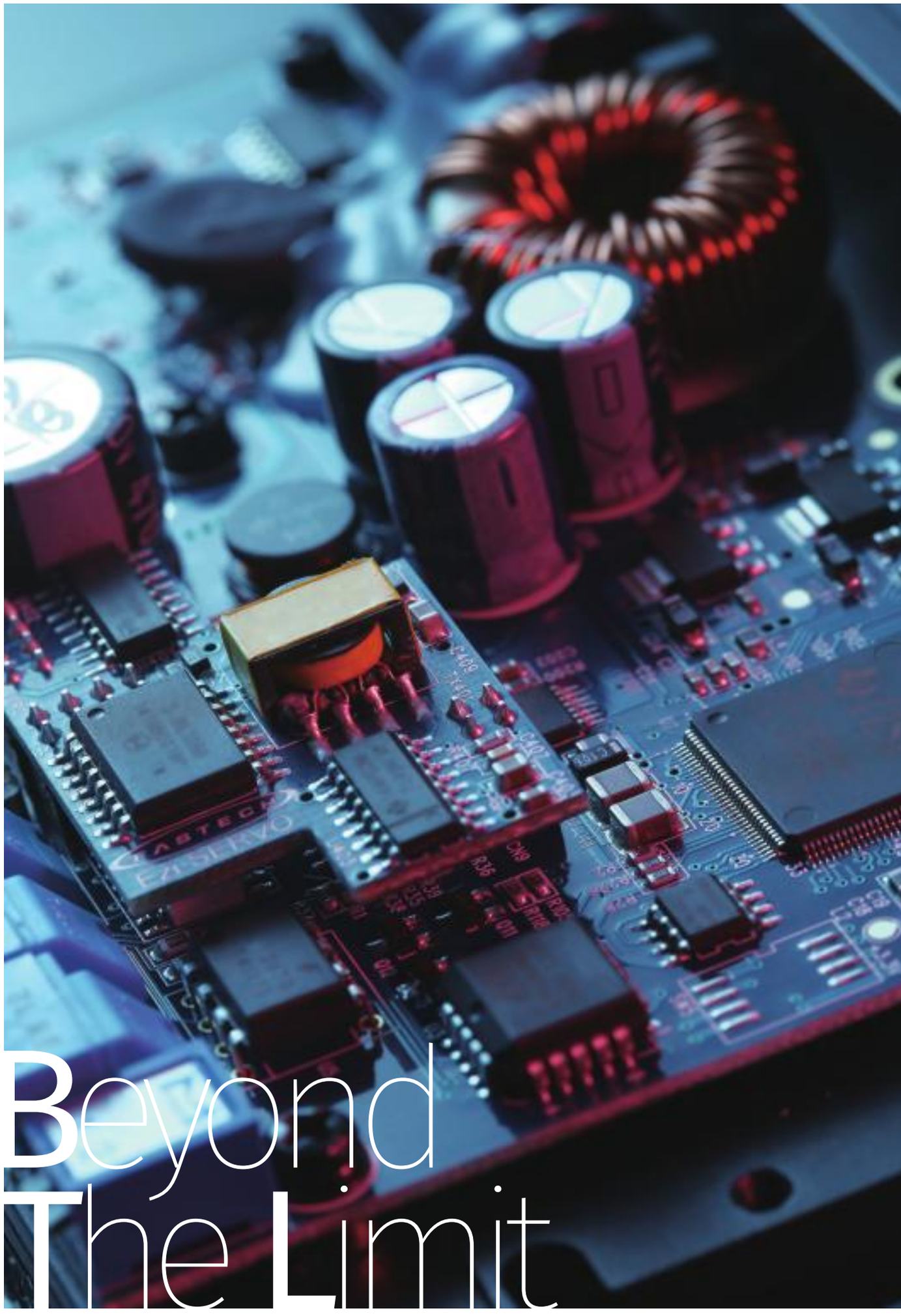
Technology consultation and supports

Technical consultation and motor selection service
Please call to main call center of FASTECH and will do our best to support on time.

Field technical support and technology seminar
Please call to main call center of FASTECH for any questionnaires or troubles about FASTECH products then we will execute field technical support and technology seminar.

Technical training
FASTECH prepares various customized training program for matching each different level of customers and implements technical training for our product. If need, please contact with our main phone number of FASTECH.





Beyond The Limit

FASTECH is beyond the confine of the limit

Applications

FASTECH supports the customers to adopt FASTECH products into various applications and expands experience of applications.

Factory Automation Field

PCB Mounting machine / Semicon processing machine / Surface mounting inspection / Printing machine / LCD, LED, OLED Manufacturing process / Die Bonder / Portable mobile device manufacturing / Scriber / Electronic component packaging / Pick & Place process / Automobile manufacturing process / Soldering Process / Dispensing / Etc

Basic Industry Field

CNC Engraving / Welding machine / Cutting machine / Drilling machine / Metal, Wood, Stone machining / Glass cutting / Bending machine / Laser marking machine / Etc

Bio Medical Field

Dental device / Dispensing equipment / Fluid control device / Laboratory device / Pump control device / Gene division machine / Power distribution device / Microscope / Etc

Mechanism / Robot Field

UVW Stage / Single, Multi-axis Stage / Table top robot / Cartesian robot / Etc

Military Industry Field

Night monitoring camera / Surveillance camera / Night vision thermo-tracking system / Etc

New Energy Industry Technology

Solar panel handling / Solar panel cutting / Solar tracking machine / Etc

Textile / Fashion Industry Field

Textile machine / Embroidery machine / Cosmetic packaging and feeding machine / Etc

Entertainment Industry Field

4D Theater dynamic seat / Kinetic Art / Water fountain nozzle control device / Professional broadcasting camera device / Etc

Agricultural Industry Field

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FASTECH_
Product Information

Ezi-SERVO®

S-SERVO® II

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®

- ST
- MINI
- Plus-R
- Plus-R MINI
- BT
- ALL
- EtherCAT
- EtherCAT MINI
- EtherCAT 4X
- EtherCAT ALL
- Plus-E
- Plus-E MINI
- Plus-E ALL
- CC-Link
- HS


Ezi-SERVO
Ezi-SERVO
EzS-PD-60L-A

Ezi-SERVO ST

Closed Loop System_ Ezi-SERVO ST

- Closed Loop System
- No Gain Tuning / No Hunting
- Heat Reduction / Torque Improvement
- High Resolution
- Fast Response



FASTECH

Fast, Accurate, Smooth Motion

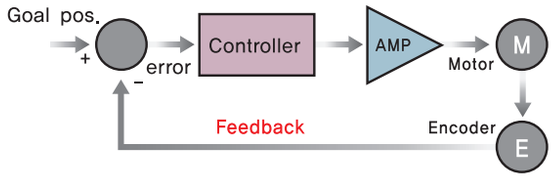
Ezi-SERVO® ST

Closed Loop Stepping System



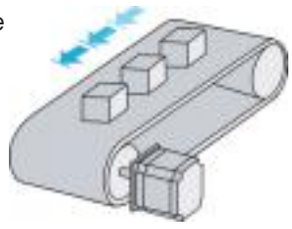
1 Closed Loop System

Ezi-SERVO is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO to update the current position every 25 μsec. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



2 No Gain Tuning

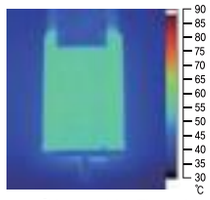
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO is optimized for the application and ready to work right out of the box. The Ezi-SERVO system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO also performs exceptionally, even under heavy loads and high speeds.



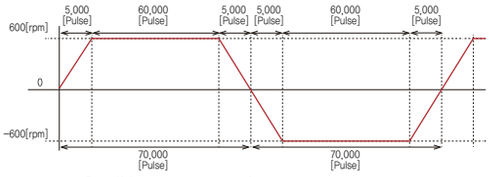
3 Heat Reduction / Energy Saving

(Motor Current Control according to load)

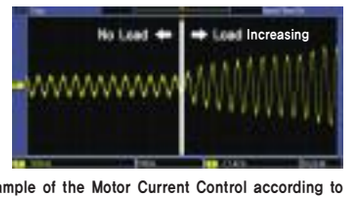
Ezi-SERVO automatically controls motor current according to load. Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

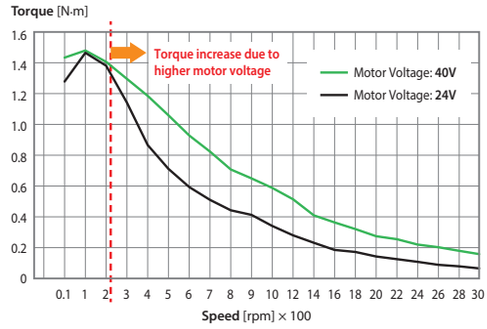


Example of the Motor Current Control according to load

4 Torque Improvement

(Motor Voltage Increasing)

Ezi-SERVO boosts the voltage supplied to the motor to increase the torque at high speed. In the case that motor speed is increased, Back-EMF will be increased accordingly and it cause the reduction of motor torque at high speed. Since Ezi-SERVO has the function to increase the voltage supplied to the motor to compensate the torque reduction, the torque of motor at high speed can be improved about 30%.

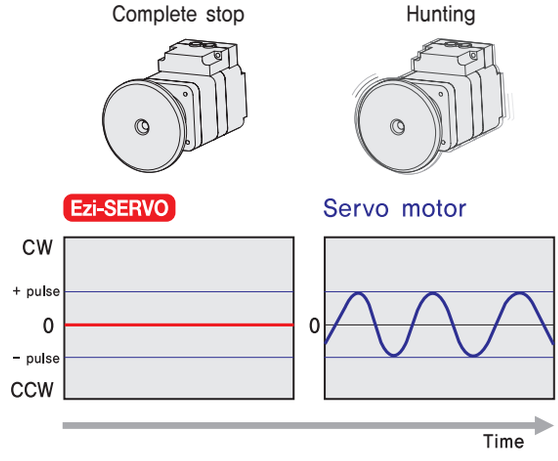


※ The torque at high speed is improved about 30%

Measured Condition : Drive = Ezi-SERVO-ST-56L
Motor Voltage = 40VDC
Input Voltage = 24VDC

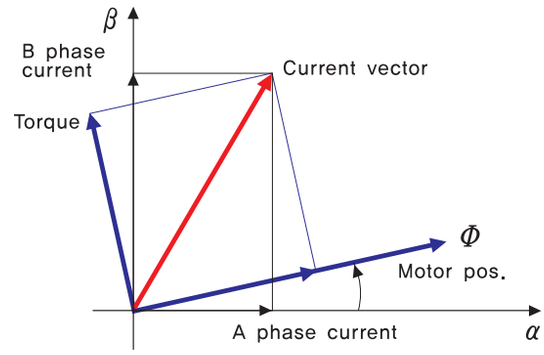
5 No Hunting

Traditional servo motor drives overshoot their position and try to correct overshooting by moving the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO Motion Control System. Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



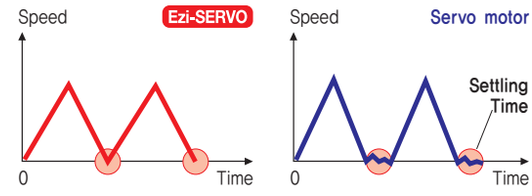
6 Smooth and Accurate

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 32,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



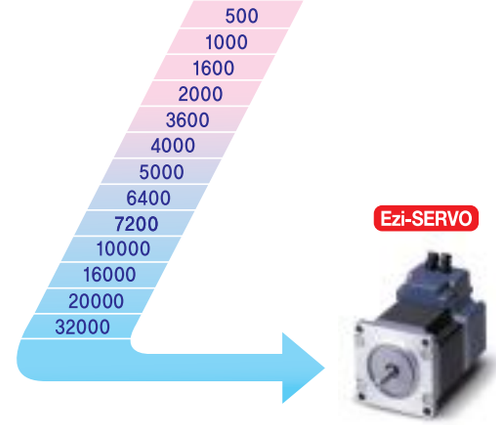
7 Fast Response

Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



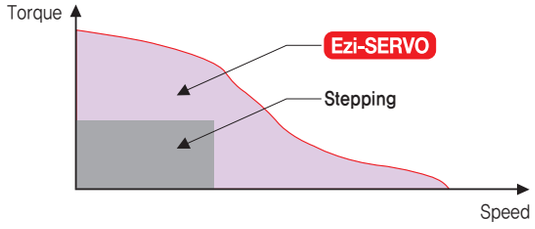
8 High Resolution

The unit of the position command can be divided precisely. (Max. 32,000 pulses/revolution)



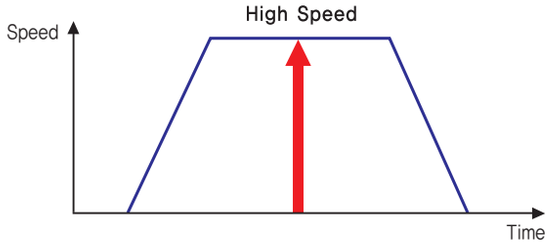
9 High Torque

Compared with common step motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



10 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Ezi-SERVO ST Part Numbering

Ezi-SERVO-ST-56L-A-BK-PN05-□

Product Name

Drive Series

ST : Stand Alone

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
B : 20,000[ppr]
C : 32,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ST-20M-F	EzM-20M-F	EzS-PD-20M-F
Ezi-SERVO-ST-20L-F	EzM-20L-F	EzS-PD-20L-F
Ezi-SERVO-ST-28S-D	EzM-28S-D	EzS-PD-28S-D
Ezi-SERVO-ST-28SM-D	EzM-28SM-D	EzS-PD-28S-D
Ezi-SERVO-ST-28M-D	EzM-28M-D	EzS-PD-28M-D
Ezi-SERVO-ST-28MM-D	EzM-28MM-D	EzS-PD-28M-D
Ezi-SERVO-ST-28L-D	EzM-28L-D	EzS-PD-28L-D
Ezi-SERVO-ST-28LM-D	EzM-28LM-D	EzS-PD-28L-D
Ezi-SERVO-ST-35M-D	EzM-35M-D	EzS-PD-35M-D
Ezi-SERVO-ST-35MM-D	EzM-35MM-D	EzS-PD-35M-D
Ezi-SERVO-ST-35L-D	EzM-35L-D	EzS-PD-35L-D
Ezi-SERVO-ST-35LM-D	EzM-35LM-D	EzS-PD-35L-D
Ezi-SERVO-ST-42S-A	EzM-42S-A	EzS-PD-42S-A
Ezi-SERVO-ST-42S-B	EzM-42S-B	EzS-PD-42S-B
Ezi-SERVO-ST-42S-C	EzM-42S-C	EzS-PD-42S-C
Ezi-SERVO-ST-42M-A	EzM-42M-A	EzS-PD-42M-A
Ezi-SERVO-ST-42M-B	EzM-42M-B	EzS-PD-42M-B
Ezi-SERVO-ST-42M-C	EzM-42M-C	EzS-PD-42M-C
Ezi-SERVO-ST-42L-A	EzM-42L-A	EzS-PD-42L-A
Ezi-SERVO-ST-42L-B	EzM-42L-B	EzS-PD-42L-B
Ezi-SERVO-ST-42L-C	EzM-42L-C	EzS-PD-42L-C
Ezi-SERVO-ST-42XL-A	EzM-42XL-A	EzS-PD-42XL-A
Ezi-SERVO-ST-42XL-B	EzM-42XL-B	EzS-PD-42XL-B
Ezi-SERVO-ST-42XL-C	EzM-42XL-C	EzS-PD-42XL-C
Ezi-SERVO-ST-56S-A	EzM-56S-A	EzS-PD-56S-A
Ezi-SERVO-ST-56S-B	EzM-56S-B	EzS-PD-56S-B
Ezi-SERVO-ST-56S-C	EzM-56S-C	EzS-PD-56S-C
Ezi-SERVO-ST-56M-A	EzM-56M-A	EzS-PD-56M-A
Ezi-SERVO-ST-56M-B	EzM-56M-B	EzS-PD-56M-B
Ezi-SERVO-ST-56M-C	EzM-56M-C	EzS-PD-56M-C
Ezi-SERVO-ST-56L-A	EzM-56L-A	EzS-PD-56L-A
Ezi-SERVO-ST-56L-B	EzM-56L-B	EzS-PD-56L-B
Ezi-SERVO-ST-56L-C	EzM-56L-C	EzS-PD-56L-C
Ezi-SERVO-ST-60S-A	EzM-60S-A	EzS-PD-60S-A
Ezi-SERVO-ST-60S-B	EzM-60S-B	EzS-PD-60S-B
Ezi-SERVO-ST-60S-C	EzM-60S-C	EzS-PD-60S-C
Ezi-SERVO-ST-60M-A	EzM-60M-A	EzS-PD-60M-A
Ezi-SERVO-ST-60M-B	EzM-60M-B	EzS-PD-60M-B
Ezi-SERVO-ST-60M-C	EzM-60M-C	EzS-PD-60M-C
Ezi-SERVO-ST-60L-A	EzM-60L-A	EzS-PD-60L-A
Ezi-SERVO-ST-60L-B	EzM-60L-B	EzS-PD-60L-B
Ezi-SERVO-ST-60L-C	EzM-60L-C	EzS-PD-60L-C
Ezi-SERVO-ST-86M-A	EzM-86M-A	EzS-PD-86M-A
Ezi-SERVO-ST-86M-B	EzM-86M-B	EzS-PD-86M-B
Ezi-SERVO-ST-86M-C	EzM-86M-C	EzS-PD-86M-C
Ezi-SERVO-ST-86L-A	EzM-86L-A	EzS-PD-86L-A
Ezi-SERVO-ST-86L-B	EzM-86L-B	EzS-PD-86L-B
Ezi-SERVO-ST-86L-C	EzM-86L-C	EzS-PD-86L-C
Ezi-SERVO-ST-86XL-A	EzM-86XL-A	EzS-PD-86XL-A
Ezi-SERVO-ST-86XL-B	EzM-86XL-B	EzS-PD-86XL-B
Ezi-SERVO-ST-86XL-C	EzM-86XL-C	EzS-PD-86XL-C

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of Unit Part Number.
(Ex : Ezi-SERVO-ST-28LM-D, Ezi-SERVO-ST-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ST-42S-A-BK	EzM-42S-A-BK	EzS-PD-42S-A
Ezi-SERVO-ST-42S-B-BK	EzM-42S-B-BK	EzS-PD-42S-B
Ezi-SERVO-ST-42M-A-BK	EzM-42M-A-BK	EzS-PD-42M-A
Ezi-SERVO-ST-42M-B-BK	EzM-42M-B-BK	EzS-PD-42M-B
Ezi-SERVO-ST-42L-A-BK	EzM-42L-A-BK	EzS-PD-42L-A
Ezi-SERVO-ST-42L-B-BK	EzM-42L-B-BK	EzS-PD-42L-B
Ezi-SERVO-ST-42XL-A-BK	EzM-42XL-A-BK	EzS-PD-42XL-A
Ezi-SERVO-ST-42XL-B-BK	EzM-42XL-B-BK	EzS-PD-42XL-B
Ezi-SERVO-ST-56S-A-BK	EzM-56S-A-BK	EzS-PD-56S-A
Ezi-SERVO-ST-56S-B-BK	EzM-56S-B-BK	EzS-PD-56S-B
Ezi-SERVO-ST-56M-A-BK	EzM-56M-A-BK	EzS-PD-56M-A
Ezi-SERVO-ST-56M-B-BK	EzM-56M-B-BK	EzS-PD-56M-B
Ezi-SERVO-ST-56L-A-BK	EzM-56L-A-BK	EzS-PD-56L-A
Ezi-SERVO-ST-56L-B-BK	EzM-56L-B-BK	EzS-PD-56L-B
Ezi-SERVO-ST-60S-A-BK	EzM-60S-A-BK	EzS-PD-60S-A
Ezi-SERVO-ST-60S-B-BK	EzM-60S-B-BK	EzS-PD-60S-B
Ezi-SERVO-ST-60M-A-BK	EzM-60M-A-BK	EzS-PD-60M-A
Ezi-SERVO-ST-60M-B-BK	EzM-60M-B-BK	EzS-PD-60M-B
Ezi-SERVO-ST-60L-A-BK	EzM-60L-A-BK	EzS-PD-60L-A
Ezi-SERVO-ST-60L-B-BK	EzM-60L-B-BK	EzS-PD-60L-B
Ezi-SERVO-ST-86M-A-BK	EzM-86M-A-BK	EzS-PD-86M-A
Ezi-SERVO-ST-86M-B-BK	EzM-86M-B-BK	EzS-PD-86M-B
Ezi-SERVO-ST-86L-A-BK	EzM-86L-A-BK	EzS-PD-86L-A
Ezi-SERVO-ST-86L-B-BK	EzM-86L-B-BK	EzS-PD-86L-B
Ezi-SERVO-ST-86XL-A-BK	EzM-86XL-A-BK	EzS-PD-86XL-A
Ezi-SERVO-ST-86XL-B-BK	EzM-86XL-B-BK	EzS-PD-86XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-ST-42S-A-PN3	EzM-42S-A-PN3	EzS-PD-42S-A	1:3
Ezi-SERVO-ST-42S-B-PN3	EzM-42S-B-PN3	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN5	EzM-42S-A-PN5	EzS-PD-42S-A	1:5
Ezi-SERVO-ST-42S-B-PN5	EzM-42S-B-PN5	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN8	EzM-42S-A-PN8	EzS-PD-42S-A	1:8
Ezi-SERVO-ST-42S-B-PN8	EzM-42S-B-PN8	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN10	EzM-42S-A-PN10	EzS-PD-42S-A	1:10
Ezi-SERVO-ST-42S-B-PN10	EzM-42S-B-PN10	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN15	EzM-42S-A-PN15	EzS-PD-42S-A	1:15
Ezi-SERVO-ST-42S-B-PN15	EzM-42S-B-PN15	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN25	EzM-42S-A-PN25	EzS-PD-42S-A	1:25
Ezi-SERVO-ST-42S-B-PN25	EzM-42S-B-PN25	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN40	EzM-42S-A-PN40	EzS-PD-42S-A	1:40
Ezi-SERVO-ST-42S-B-PN40	EzM-42S-B-PN40	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN50	EzM-42S-A-PN50	EzS-PD-42S-A	1:50
Ezi-SERVO-ST-42S-B-PN50	EzM-42S-B-PN50	EzS-PD-42S-B	
Ezi-SERVO-ST-42M-A-PN3	EzM-42M-A-PN3	EzS-PD-42M-A	1:3
Ezi-SERVO-ST-42M-B-PN3	EzM-42M-B-PN3	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN5	EzM-42M-A-PN5	EzS-PD-42M-A	1:5
Ezi-SERVO-ST-42M-B-PN5	EzM-42M-B-PN5	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN8	EzM-42M-A-PN8	EzS-PD-42M-A	1:8
Ezi-SERVO-ST-42M-B-PN8	EzM-42M-B-PN8	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN10	EzM-42M-A-PN10	EzS-PD-42M-A	1:10
Ezi-SERVO-ST-42M-B-PN10	EzM-42M-B-PN10	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN15	EzM-42M-A-PN15	EzS-PD-42M-A	1:15
Ezi-SERVO-ST-42M-B-PN15	EzM-42M-B-PN15	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN25	EzM-42M-A-PN25	EzS-PD-42M-A	1:25
Ezi-SERVO-ST-42M-B-PN25	EzM-42M-B-PN25	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN40	EzM-42M-A-PN40	EzS-PD-42M-A	1:40
Ezi-SERVO-ST-42M-B-PN40	EzM-42M-B-PN40	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN50	EzM-42M-A-PN50	EzS-PD-42M-A	1:50
Ezi-SERVO-ST-42M-B-PN50	EzM-42M-B-PN50	EzS-PD-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-ST-42L-A-PN3	EzM-42L-A-PN3	EzS-PD-42L-A	1:3
Ezi-SERVO-ST-42L-B-PN3	EzM-42L-B-PN3	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN5	EzM-42L-A-PN5	EzS-PD-42L-A	1:5
Ezi-SERVO-ST-42L-B-PN5	EzM-42L-B-PN5	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN8	EzM-42L-A-PN8	EzS-PD-42L-A	1:8
Ezi-SERVO-ST-42L-B-PN8	EzM-42L-B-PN8	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN10	EzM-42L-A-PN10	EzS-PD-42L-A	1:10
Ezi-SERVO-ST-42L-B-PN10	EzM-42L-B-PN10	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN15	EzM-42L-A-PN15	EzS-PD-42L-A	1:15
Ezi-SERVO-ST-42L-B-PN15	EzM-42L-B-PN15	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN25	EzM-42L-A-PN25	EzS-PD-42L-A	1:25
Ezi-SERVO-ST-42L-B-PN25	EzM-42L-B-PN25	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN40	EzM-42L-A-PN40	EzS-PD-42L-A	1:40
Ezi-SERVO-ST-42L-B-PN40	EzM-42L-B-PN40	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN50	EzM-42L-A-PN50	EzS-PD-42L-A	1:50
Ezi-SERVO-ST-42L-B-PN50	EzM-42L-B-PN50	EzS-PD-42L-B	
Ezi-SERVO-ST-42XL-A-PN3	EzM-42XL-A-PN3	EzS-PD-42XL-A	1:3
Ezi-SERVO-ST-42XL-B-PN3	EzM-42XL-B-PN3	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN5	EzM-42XL-A-PN5	EzS-PD-42XL-A	1:5
Ezi-SERVO-ST-42XL-B-PN5	EzM-42XL-B-PN5	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN8	EzM-42XL-A-PN8	EzS-PD-42XL-A	1:8
Ezi-SERVO-ST-42XL-B-PN8	EzM-42XL-B-PN8	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN10	EzM-42XL-A-PN10	EzS-PD-42XL-A	1:10
Ezi-SERVO-ST-42XL-B-PN10	EzM-42XL-B-PN10	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN15	EzM-42XL-A-PN15	EzS-PD-42XL-A	1:15
Ezi-SERVO-ST-42XL-B-PN15	EzM-42XL-B-PN15	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN25	EzM-42XL-A-PN25	EzS-PD-42XL-A	1:25
Ezi-SERVO-ST-42XL-B-PN25	EzM-42XL-B-PN25	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN40	EzM-42XL-A-PN40	EzS-PD-42XL-A	1:40
Ezi-SERVO-ST-42XL-B-PN40	EzM-42XL-B-PN40	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN50	EzM-42XL-A-PN50	EzS-PD-42XL-A	1:50
Ezi-SERVO-ST-42XL-B-PN50	EzM-42XL-B-PN50	EzS-PD-42XL-B	
Ezi-SERVO-ST-56S-A-PN3	EzM-56S-A-PN3	EzS-PD-56S-A	1:3
Ezi-SERVO-ST-56S-B-PN3	EzM-56S-B-PN3	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN5	EzM-56S-A-PN5	EzS-PD-56S-A	1:5
Ezi-SERVO-ST-56S-B-PN5	EzM-56S-B-PN5	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN8	EzM-56S-A-PN8	EzS-PD-56S-A	1:8
Ezi-SERVO-ST-56S-B-PN8	EzM-56S-B-PN8	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN10	EzM-56S-A-PN10	EzS-PD-56S-A	1:10
Ezi-SERVO-ST-56S-B-PN10	EzM-56S-B-PN10	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN15	EzM-56S-A-PN15	EzS-PD-56S-A	1:15
Ezi-SERVO-ST-56S-B-PN15	EzM-56S-B-PN15	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN25	EzM-56S-A-PN25	EzS-PD-56S-A	1:25
Ezi-SERVO-ST-56S-B-PN25	EzM-56S-B-PN25	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN40	EzM-56S-A-PN40	EzS-PD-56S-A	1:40
Ezi-SERVO-ST-56S-B-PN40	EzM-56S-B-PN40	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN50	EzM-56S-A-PN50	EzS-PD-56S-A	1:50
Ezi-SERVO-ST-56S-B-PN50	EzM-56S-B-PN50	EzS-PD-56S-B	
Ezi-SERVO-ST-56M-A-PN3	EzM-56M-A-PN3	EzS-PD-56M-A	1:3
Ezi-SERVO-ST-56M-B-PN3	EzM-56M-B-PN3	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN5	EzM-56M-A-PN5	EzS-PD-56M-A	1:5
Ezi-SERVO-ST-56M-B-PN5	EzM-56M-B-PN5	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN8	EzM-56M-A-PN8	EzS-PD-56M-A	1:8
Ezi-SERVO-ST-56M-B-PN8	EzM-56M-B-PN8	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN10	EzM-56M-A-PN10	EzS-PD-56M-A	1:10
Ezi-SERVO-ST-56M-B-PN10	EzM-56M-B-PN10	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN15	EzM-56M-A-PN15	EzS-PD-56M-A	1:15
Ezi-SERVO-ST-56M-B-PN15	EzM-56M-B-PN15	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN25	EzM-56M-A-PN25	EzS-PD-56M-A	1:25
Ezi-SERVO-ST-56M-B-PN25	EzM-56M-B-PN25	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN40	EzM-56M-A-PN40	EzS-PD-56M-A	1:40
Ezi-SERVO-ST-56M-B-PN40	EzM-56M-B-PN40	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN50	EzM-56M-A-PN50	EzS-PD-56M-A	1:50
Ezi-SERVO-ST-56M-B-PN50	EzM-56M-B-PN50	EzS-PD-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-ST-56L-A-PN3	EzM-56L-A-PN3	EzS-PD-56L-A	1:3
Ezi-SERVO-ST-56L-B-PN3	EzM-56L-B-PN3	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN5	EzM-56L-A-PN5	EzS-PD-56L-A	1:5
Ezi-SERVO-ST-56L-B-PN5	EzM-56L-B-PN5	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN8	EzM-56L-A-PN8	EzS-PD-56L-A	1:8
Ezi-SERVO-ST-56L-B-PN8	EzM-56L-B-PN8	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN10	EzM-56L-A-PN10	EzS-PD-56L-A	1:10
Ezi-SERVO-ST-56L-B-PN10	EzM-56L-B-PN10	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN15	EzM-56L-A-PN15	EzS-PD-56L-A	1:15
Ezi-SERVO-ST-56L-B-PN15	EzM-56L-B-PN15	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN25	EzM-56L-A-PN25	EzS-PD-56L-A	1:25
Ezi-SERVO-ST-56L-B-PN25	EzM-56L-B-PN25	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN40	EzM-56L-A-PN40	EzS-PD-56L-A	1:40
Ezi-SERVO-ST-56L-B-PN40	EzM-56L-B-PN40	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN50	EzM-56L-A-PN50	EzS-PD-56L-A	1:50
Ezi-SERVO-ST-56L-B-PN50	EzM-56L-B-PN50	EzS-PD-56L-B	
Ezi-SERVO-ST-60S-A-PN3	EzM-60S-A-PN3	EzS-PD-60S-A	1:3
Ezi-SERVO-ST-60S-B-PN3	EzM-60S-B-PN3	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN5	EzM-60S-A-PN5	EzS-PD-60S-A	1:5
Ezi-SERVO-ST-60S-B-PN5	EzM-60S-B-PN5	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN8	EzM-60S-A-PN8	EzS-PD-60S-A	1:8
Ezi-SERVO-ST-60S-B-PN8	EzM-60S-B-PN8	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN10	EzM-60S-A-PN10	EzS-PD-60S-A	1:10
Ezi-SERVO-ST-60S-B-PN10	EzM-60S-B-PN10	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN15	EzM-60S-A-PN15	EzS-PD-60S-A	1:15
Ezi-SERVO-ST-60S-B-PN15	EzM-60S-B-PN15	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN25	EzM-60S-A-PN25	EzS-PD-60S-A	1:25
Ezi-SERVO-ST-60S-B-PN25	EzM-60S-B-PN25	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN40	EzM-60S-A-PN40	EzS-PD-60S-A	1:40
Ezi-SERVO-ST-60S-B-PN40	EzM-60S-B-PN40	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN50	EzM-60S-A-PN50	EzS-PD-60S-A	1:50
Ezi-SERVO-ST-60S-B-PN50	EzM-60S-B-PN50	EzS-PD-60S-B	
Ezi-SERVO-ST-60M-A-PN3	EzM-60M-A-PN3	EzS-PD-60M-A	1:3
Ezi-SERVO-ST-60M-B-PN3	EzM-60M-B-PN3	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN5	EzM-60M-A-PN5	EzS-PD-60M-A	1:5
Ezi-SERVO-ST-60M-B-PN5	EzM-60M-B-PN5	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN8	EzM-60M-A-PN8	EzS-PD-60M-A	1:8
Ezi-SERVO-ST-60M-B-PN8	EzM-60M-B-PN8	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN10	EzM-60M-A-PN10	EzS-PD-60M-A	1:10
Ezi-SERVO-ST-60M-B-PN10	EzM-60M-B-PN10	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN15	EzM-60M-A-PN15	EzS-PD-60M-A	1:15
Ezi-SERVO-ST-60M-B-PN15	EzM-60M-B-PN15	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN25	EzM-60M-A-PN25	EzS-PD-60M-A	1:25
Ezi-SERVO-ST-60M-B-PN25	EzM-60M-B-PN25	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN40	EzM-60M-A-PN40	EzS-PD-60M-A	1:40
Ezi-SERVO-ST-60M-B-PN40	EzM-60M-B-PN40	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN50	EzM-60M-A-PN50	EzS-PD-60M-A	1:50
Ezi-SERVO-ST-60M-B-PN50	EzM-60M-B-PN50	EzS-PD-60M-B	
Ezi-SERVO-ST-60L-A-PN3	EzM-60L-A-PN3	EzS-PD-60L-A	1:3
Ezi-SERVO-ST-60L-B-PN3	EzM-60L-B-PN3	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN5	EzM-60L-A-PN5	EzS-PD-60L-A	1:5
Ezi-SERVO-ST-60L-B-PN5	EzM-60L-B-PN5	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN8	EzM-60L-A-PN8	EzS-PD-60L-A	1:8
Ezi-SERVO-ST-60L-B-PN8	EzM-60L-B-PN8	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN10	EzM-60L-A-PN10	EzS-PD-60L-A	1:10
Ezi-SERVO-ST-60L-B-PN10	EzM-60L-B-PN10	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN15	EzM-60L-A-PN15	EzS-PD-60L-A	1:15
Ezi-SERVO-ST-60L-B-PN15	EzM-60L-B-PN15	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN25	EzM-60L-A-PN25	EzS-PD-60L-A	1:25
Ezi-SERVO-ST-60L-B-PN25	EzM-60L-B-PN25	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN40	EzM-60L-A-PN40	EzS-PD-60L-A	1:40
Ezi-SERVO-ST-60L-B-PN40	EzM-60L-B-PN40	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN50	EzM-60L-A-PN50	EzS-PD-60L-A	1:50
Ezi-SERVO-ST-60L-B-PN50	EzM-60L-B-PN50	EzS-PD-60L-B	

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-ST-86M-A-PN3	EzM-86M-A-PN3	EzS-PD-86M-A	1:3
Ezi-SERVO-ST-86M-B-PN3	EzM-86M-B-PN3	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN5	EzM-86M-A-PN5	EzS-PD-86M-A	1:5
Ezi-SERVO-ST-86M-B-PN5	EzM-86M-B-PN5	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN8	EzM-86M-A-PN8	EzS-PD-86M-A	1:8
Ezi-SERVO-ST-86M-B-PN8	EzM-86M-B-PN8	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN10	EzM-86M-A-PN10	EzS-PD-86M-A	1:10
Ezi-SERVO-ST-86M-B-PN10	EzM-86M-B-PN10	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN15	EzM-86M-A-PN15	EzS-PD-86M-A	1:15
Ezi-SERVO-ST-86M-B-PN15	EzM-86M-B-PN15	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN25	EzM-86M-A-PN25	EzS-PD-86M-A	1:25
Ezi-SERVO-ST-86M-B-PN25	EzM-86M-B-PN25	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN40	EzM-86M-A-PN40	EzS-PD-86M-A	1:40
Ezi-SERVO-ST-86M-B-PN40	EzM-86M-B-PN40	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN50	EzM-86M-A-PN50	EzS-PD-86M-A	1:50
Ezi-SERVO-ST-86M-B-PN50	EzM-86M-B-PN50	EzS-PD-86M-B	
Ezi-SERVO-ST-86L-A-PN3	EzM-86L-A-PN3	EzS-PD-86L-A	1:3
Ezi-SERVO-ST-86L-B-PN3	EzM-86L-B-PN3	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN5	EzM-86L-A-PN5	EzS-PD-86L-A	1:5
Ezi-SERVO-ST-86L-B-PN5	EzM-86L-B-PN5	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN8	EzM-86L-A-PN8	EzS-PD-86L-A	1:8
Ezi-SERVO-ST-86L-B-PN8	EzM-86L-B-PN8	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN10	EzM-86L-A-PN10	EzS-PD-86L-A	1:10
Ezi-SERVO-ST-86L-B-PN10	EzM-86L-B-PN10	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN15	EzM-86L-A-PN15	EzS-PD-86L-A	1:15
Ezi-SERVO-ST-86L-B-PN15	EzM-86L-B-PN15	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN25	EzM-86L-A-PN25	EzS-PD-86L-A	1:25
Ezi-SERVO-ST-86L-B-PN25	EzM-86L-B-PN25	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN40	EzM-86L-A-PN40	EzS-PD-86L-A	1:40
Ezi-SERVO-ST-86L-B-PN40	EzM-86L-B-PN40	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN50	EzM-86L-A-PN50	EzS-PD-86L-A	1:50
Ezi-SERVO-ST-86L-B-PN50	EzM-86L-B-PN50	EzS-PD-86L-B	
Ezi-SERVO-ST-86XL-A-PN3	EzM-86XL-A-PN3	EzS-PD-86XL-A	1:3
Ezi-SERVO-ST-86XL-B-PN3	EzM-86XL-B-PN3	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN5	EzM-86XL-A-PN5	EzS-PD-86XL-A	1:5
Ezi-SERVO-ST-86XL-B-PN5	EzM-86XL-B-PN5	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN8	EzM-86XL-A-PN8	EzS-PD-86XL-A	1:8
Ezi-SERVO-ST-86XL-B-PN8	EzM-86XL-B-PN8	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN10	EzM-86XL-A-PN10	EzS-PD-86XL-A	1:10
Ezi-SERVO-ST-86XL-B-PN10	EzM-86XL-B-PN10	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN15	EzM-86XL-A-PN15	EzS-PD-86XL-A	1:15
Ezi-SERVO-ST-86XL-B-PN15	EzM-86XL-B-PN15	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN25	EzM-86XL-A-PN25	EzS-PD-86XL-A	1:25
Ezi-SERVO-ST-86XL-B-PN25	EzM-86XL-B-PN25	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN40	EzM-86XL-A-PN40	EzS-PD-86XL-A	1:40
Ezi-SERVO-ST-86XL-B-PN40	EzM-86XL-B-PN40	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN50	EzM-86XL-A-PN50	EzS-PD-86XL-A	1:50
Ezi-SERVO-ST-86XL-B-PN50	EzM-86XL-B-PN50	EzS-PD-86XL-B	

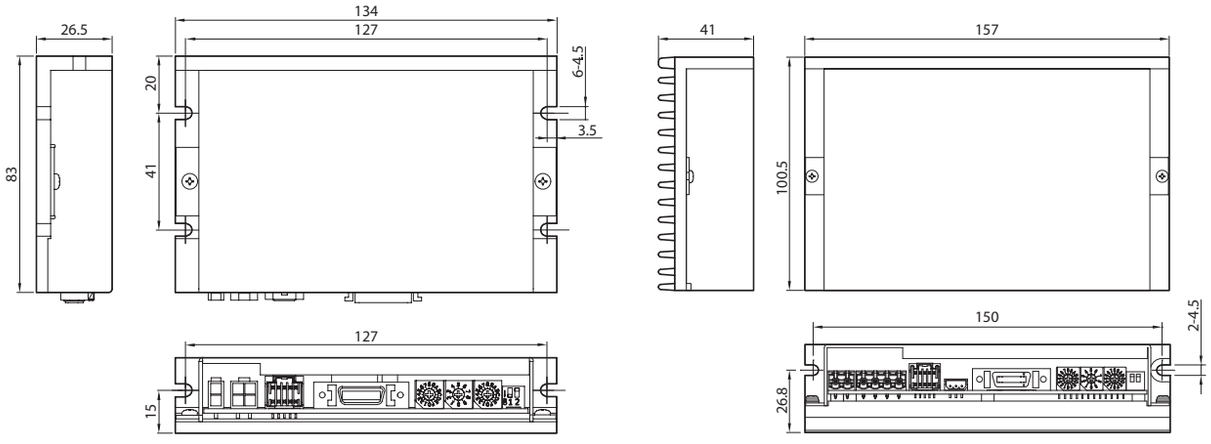
Specifications of Drive

Motor Model		EzM-20 series	EzM-28 series	EzM-35 series	EzM-42 series	EzM-56 series	EzM-60 series	EzM-86 series
Driver Model		EzS-PD-20 series	EzS-PD-28 series	EzS-PD-35 series	EzS-PD-42 series	EzS-PD-56 series	EzS-PD-60 series	EzS-PD-86 series
Input Voltage		24VDC ±10%						40~70VDC
Control Method		Closed loop control with 32bit MCU						
Current Consumption		Max 500mA (Except motor current)						
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃						
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)						
	Vib. Resist.	0.5g						
Function	Rotation Speed	0~3,000 [rpm] *1						
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 32,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 32,000 (Selectable with Rotary switch) *2						
	Max. Input Pulse Frequency	500kHz (Duty 50%)						
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, System Error, ROM Error, Position Overflow Error						
	LED Display	Power status, In-Position status, Servo On status, Alarm status						
	In-Position Selection	0~F (Selectable with Rotary switch)						
	Position Gain Selection	0~F (Selectable with Rotary switch)						
	Pulse Input Method	1-Pulse / 2-Pulse (Selectable with DIP switch)						
	Rotational Direction	CW/CCW (Selectable with DIP switch)						
	Speed/Position Control Command	Pulse Train Input						
I/O Signal	Input Signals	Position Command Pulse, Servo On/Off, Alarm Reset (Photocoupler Input)						
	Output Signals	In-Position, Alarm (Photocoupler Output) Encoder Signal (A+, A-, B+, B-, Z+, Z-, 26C31 of Equivalent) (Line Driver Output), Brake						

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]



※ 86mm motor drive (EzS-PD-86 series)

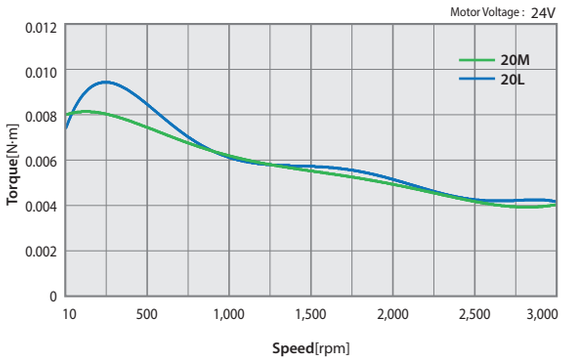
Specifications of Motor

MODEL			EzM-20 series		EzM-28 series			EzM-35 series		EzM-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	79	104	147	204	232	194	226	299	364	433	567
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

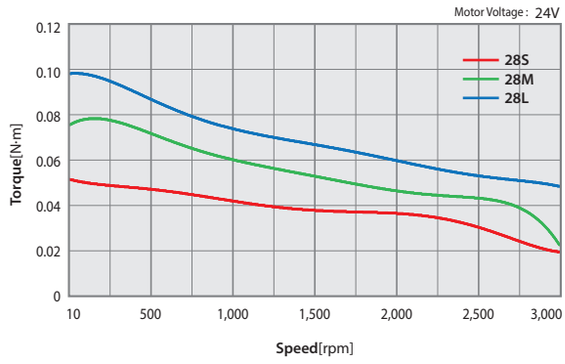
MODEL			EzM-56 series			EzM-60 series			EzM-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	613	784	1231	697	862	1422	2412	3956	5486
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70	270	270	270
	8mm		65	65	65	87	87	87	300	300	300
	13mm		85	85	85	114	114	114	350	350	350
	18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

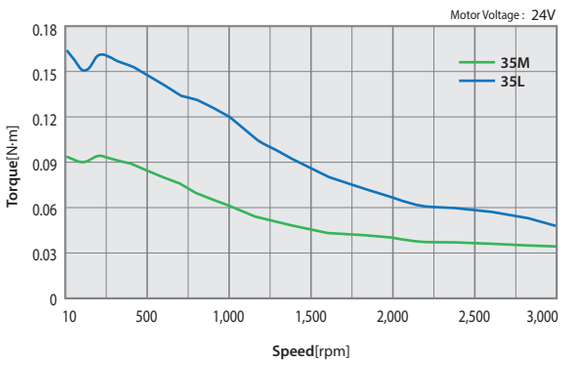
Ezi-SERVO-ST-20 series



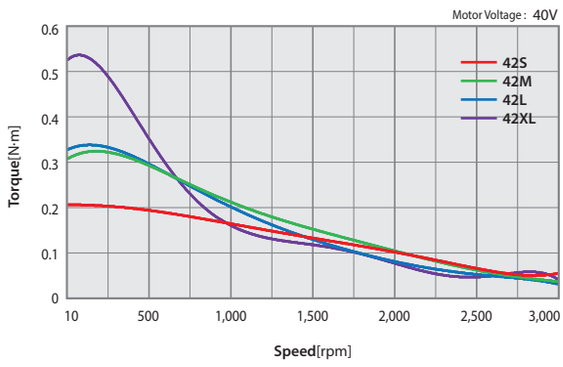
Ezi-SERVO-ST-28 series



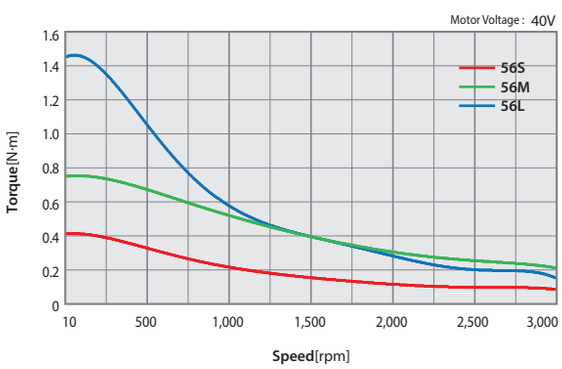
Ezi-SERVO-ST-35 series



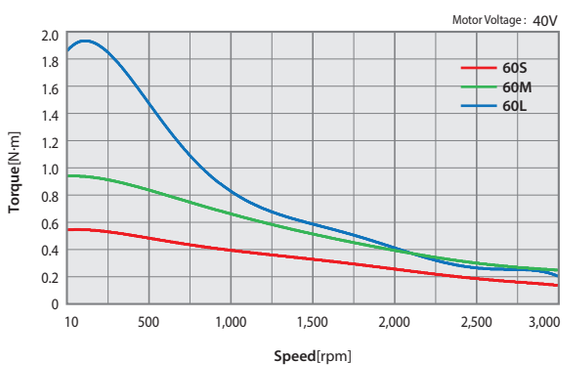
Ezi-SERVO-ST-42 series



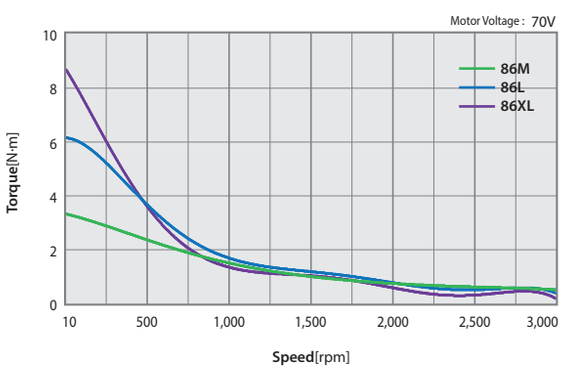
Ezi-SERVO-ST-56 series



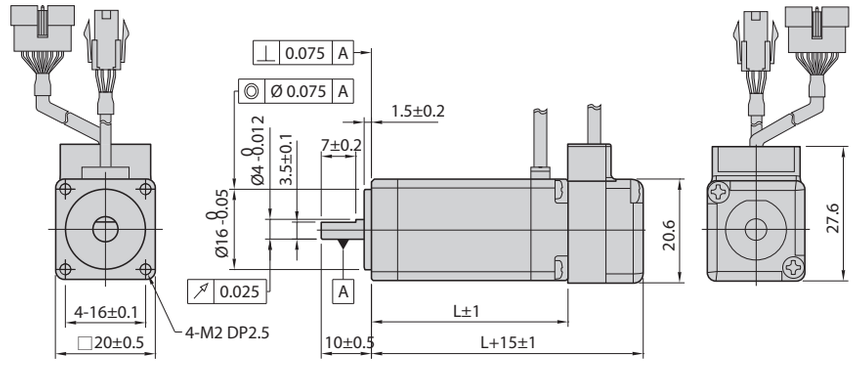
Ezi-SERVO-ST-60 series



Ezi-SERVO-ST-86 series

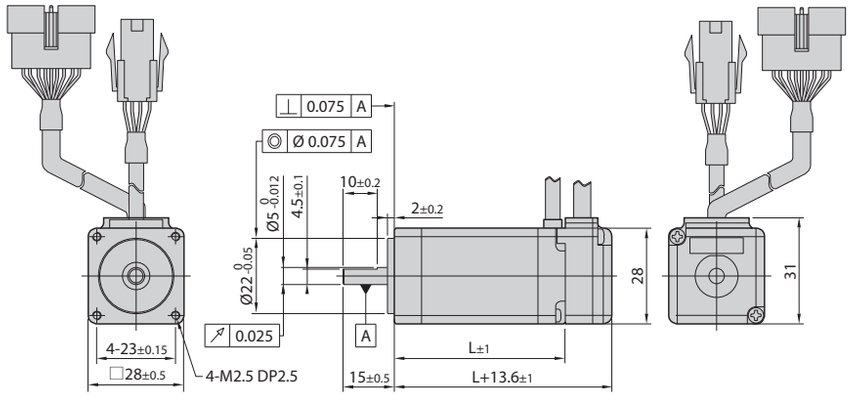


Dimensions of Motor [mm]



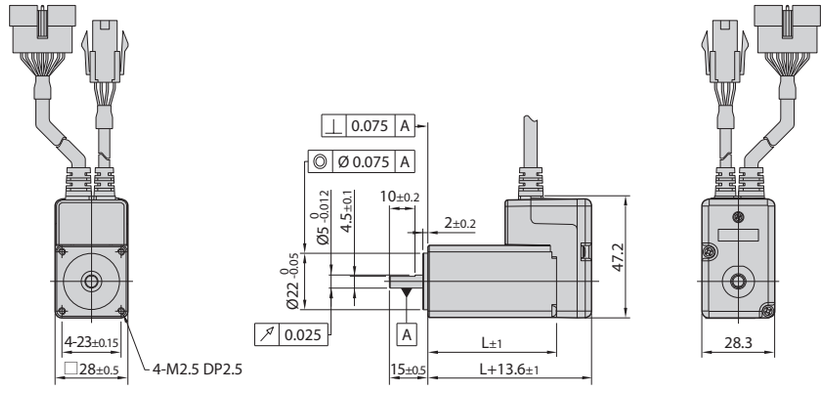
20mm

Model name	Length(L)
EzM-20M	28
EzM-20L	38



28mm

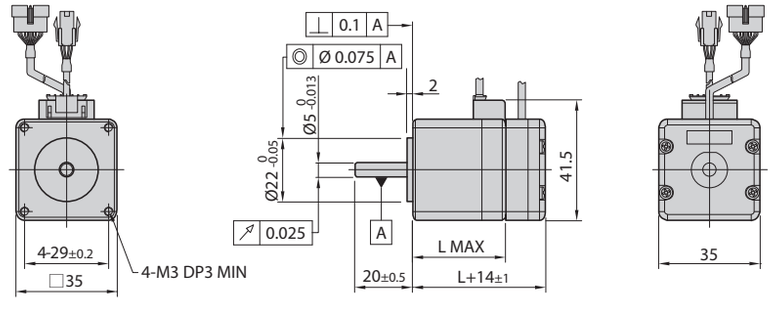
Model name	Length(L)
EzM-28S	32
EzM-28M	45
EzM-28L	50



28mm (Stopper type)

Model name	Length(L)
EzM-28SM	32
EzM-28MM	45
EzM-28LM	50

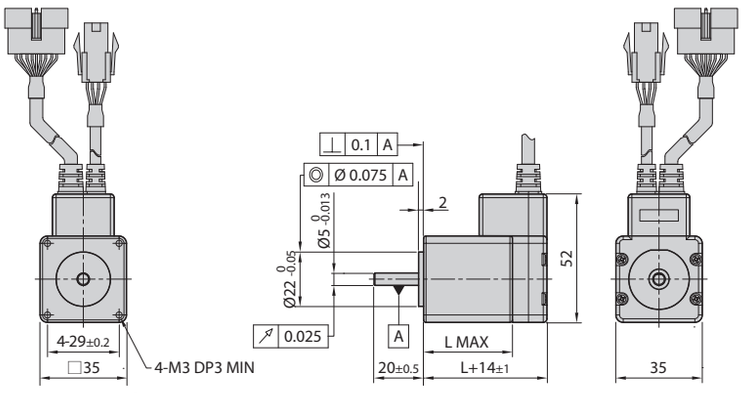
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM-35M	32
EzM-35L	36

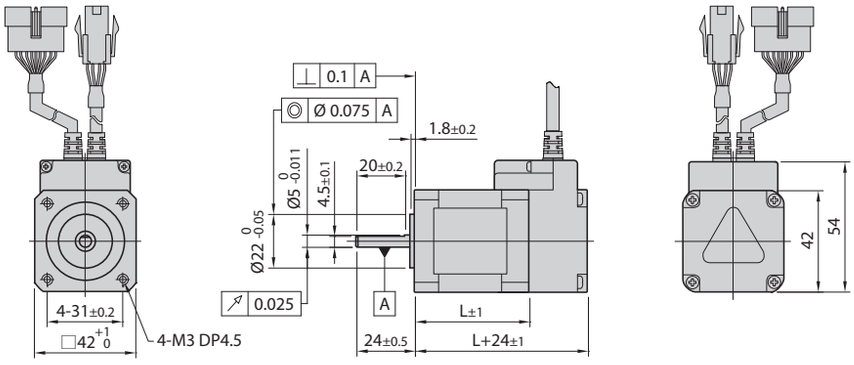
● Dimensions of Motor [mm]



35mm *(Stopper type)*

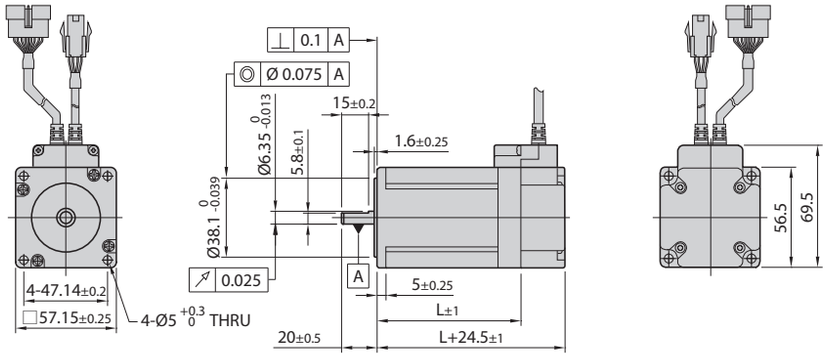
Model name	길이(L)
EzM-35MM	32
EzM-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

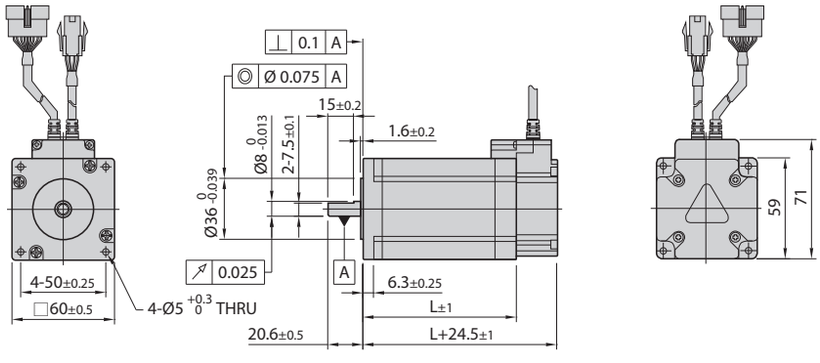
Model name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60



56mm

Model name	Length(L)
EzM-56S	46
EzM-56M	55
EzM-56L	80

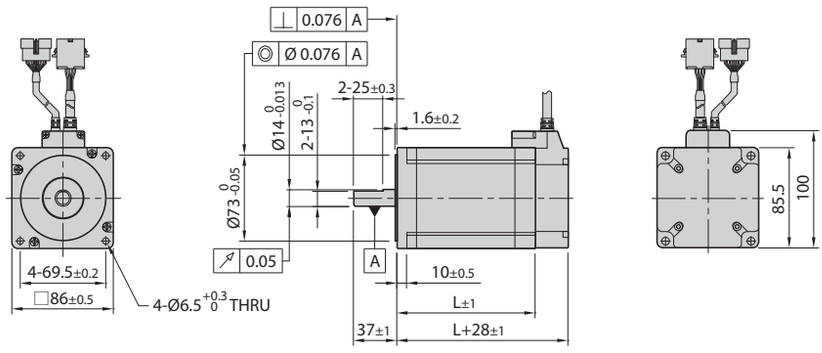
※ There are 2 kinds size of front shaft diameter for EzM-56 series as Ø6.35 and Ø8.0.



60mm

Model name	Length(L)
EzM-60S	47
EzM-60M	56
EzM-60L	85

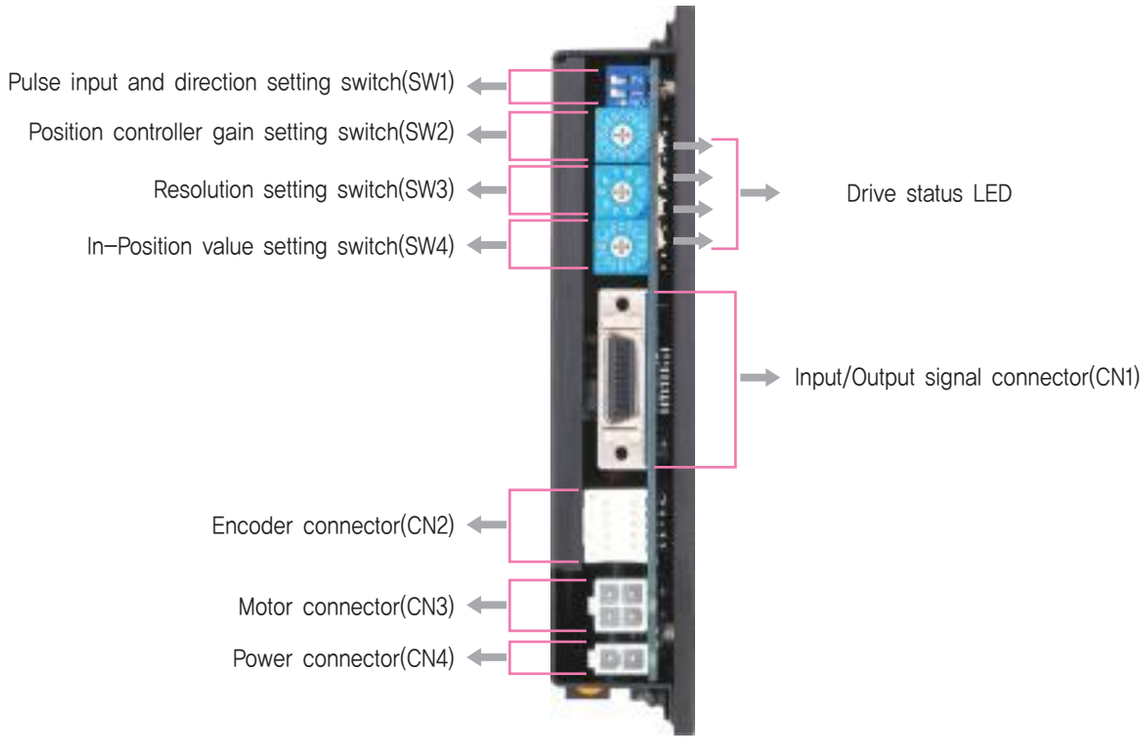
Specifications of Motor with Brake



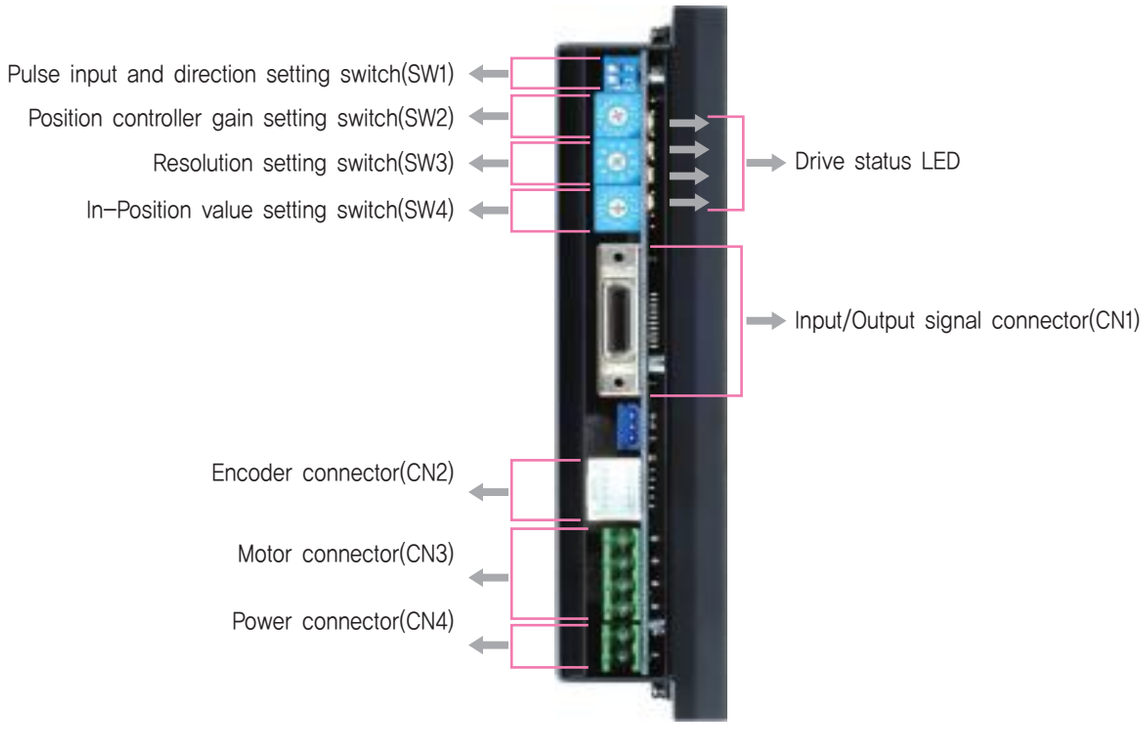
86mm

Model name	Length(L)
EzM-86M	78
EzM-86L	117
EzM-86XL	155

● Settings and Operation



◆ 86mm Motor Drive (EzS-PD-86 series)



1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Lights On when Positioning error reaches within the preset pulse selected by rotary switch
SON	Orange	Servo On/Off Indication	Servo On: Lights On, Servo Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regeneratived Voltage Error	Back-EMF is higher than limit value *2
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state

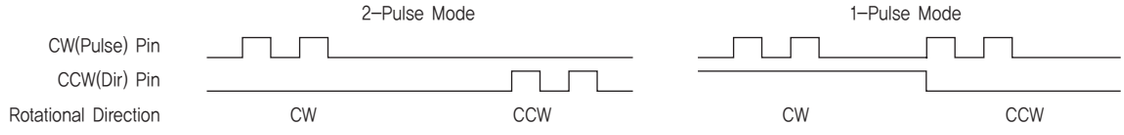


Alarm LED flash
(Ex, Position tracking error)

*1 : Limit value depends on motor model (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model (Refer to the Manual)
※ For the details, please refer to the Manual.

2. Pulse Input Setting Switch(SW1.1)

Indication	Switch Name	Functions
2P/1P	Selecting pulse input mode	Selectable 1-Pulse input mode or 2-Pulse input mode as Pulse input signal. ON: 1-Pulse mode OFF: 2-Pulse mode ※ Default: 2-Pulse mode



3. Rotational Direction Setting Switch(SW1.2)

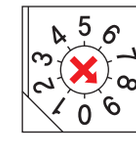
Indication	Switch Name	Functions
DIR	Switching Rotational Direction	Based on CW(+Dir signal) input to driver. ON: CCW(-Direction) OFF: CW(+Direction) ※ Default: CW mode



4. Resolution Setting Switch(SW3)

The Number of pulse per revolution.

Position	Pulse/Revolution	Position	Pulse/Revolution
0	500 *1	5	3,600
1	500	6	5,000
2	1,000	7	6,400
3	1,600	8	7,200
4	2,000	9	10,000



*1 : Resolution of position "0" will be different according to the resolution of encoder adopted to the product.
But in case of the encoder with 10,000[ppr] resolution, it will be set as 500.
※ When selected resolution is more then encoder resolution, motor shall be operated by microstep between pulses.

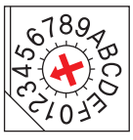
5. Position Controller Gain Setting Switch(SW2)

The Position Controller Gain Switch allows for the correction of the motor position deviation after stopping caused by load and friction. Depending on the motor load, the user may have to select a different gain position to stabilize and to correct positional error quickly.

To tune the controller
1. Set the switch to "0" position.
2. Start to rotate the switch until system becomes stable.
3. Rotate the switch 1~2 position to reach better performance.

Position	Time Constant of the Integral part	Proportional Gain*1
0	1	1
1	1	2
2	1	3
3*2	1	4
4	1	5
5	2	1
6	2	2
7	2	3
8	2	4
9	2	5
A	3	1
B	3	2
C	3	3
D	3	4
E	3	5
F	3	6

*1 : Value in the columns are in relative units. They only show the parameter changes depending on the switch's position.
*2 : Default = 3



6. In-Position Value Setting Switch(SW4)

To select the output condition of In-Position signal, In-Position output signal is generated when the pulse number of positional error is lower than selected In-Position value set by this switch after positioning command is executed.

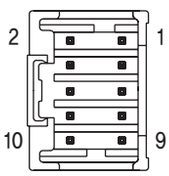
Position	In-Position Value[Pulse] Fast Response	Position	In-Position Value[Pulse] Accurate Response
0*1	0	8	0
1	1	9	1
2	2	A	2
3	3	B	3
4	4	C	4
5	5	D	5
6	6	E	6
7	7	F	7

*1 : Default = 0
※ Please refer to the Manual for setting.



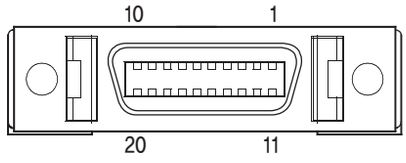
7. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----



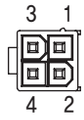
8. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	CW+(Pulse+)	Input
2	CW-(Pulse-)	Input
3	CCW+(Dir+)	Input
4	CCW-(Dir-)	Input
5	A+	Output
6	A-	Output
7	B+	Output
8	B-	Output
9	Z+	Output
10	Z-	Output
11	Alarm	Output
12	In-Position	Output
13	Servo On/Off	Input
14	Alarm Reset	Input
15	NC	----
16	BRAKE+	Output
17	BRAKE-	Output
18	S-GND	Output
19	EXT_GND	Input
20	EXT_24VDC	Input

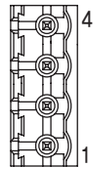


9. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output



※ 86mm motor drive.

10. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

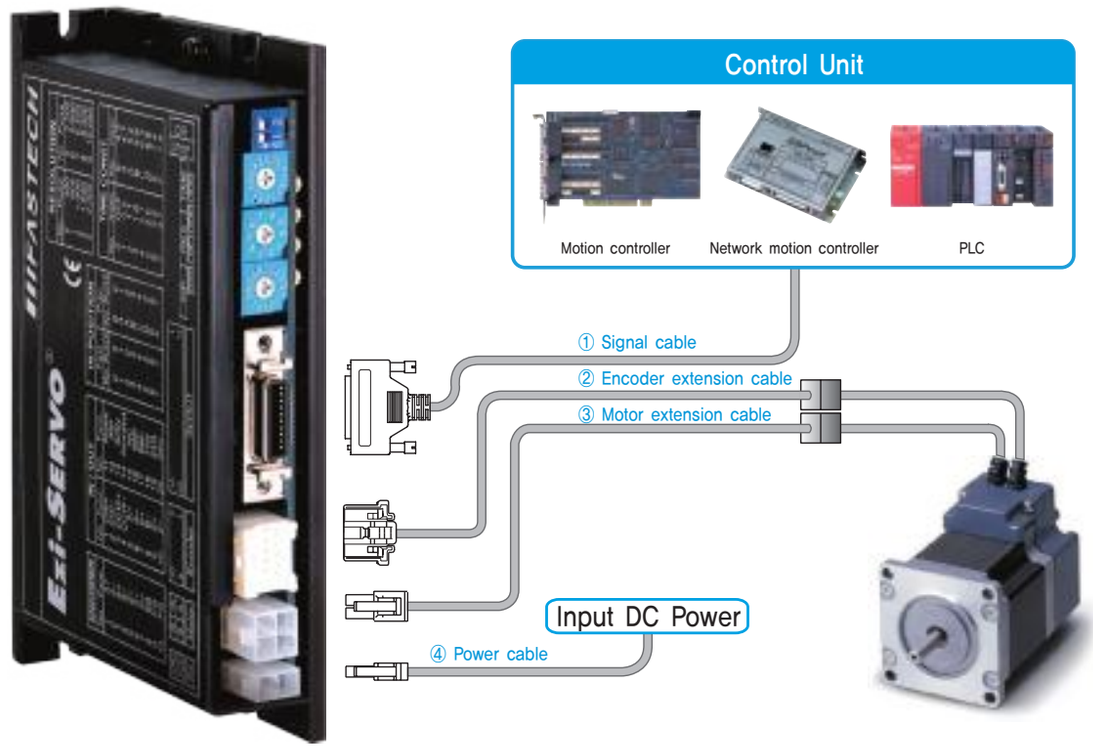


NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input



※ 86mm motor drive.

System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

1. Options

① Signal Cable

Available to connect between Input/Output Control System and Ezi-SERVO ST.

Item	Length [m]	Remark
CSVO-S-□□□F	□□□	Normal Cable
CSVO-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO ST.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO ST.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO ST.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

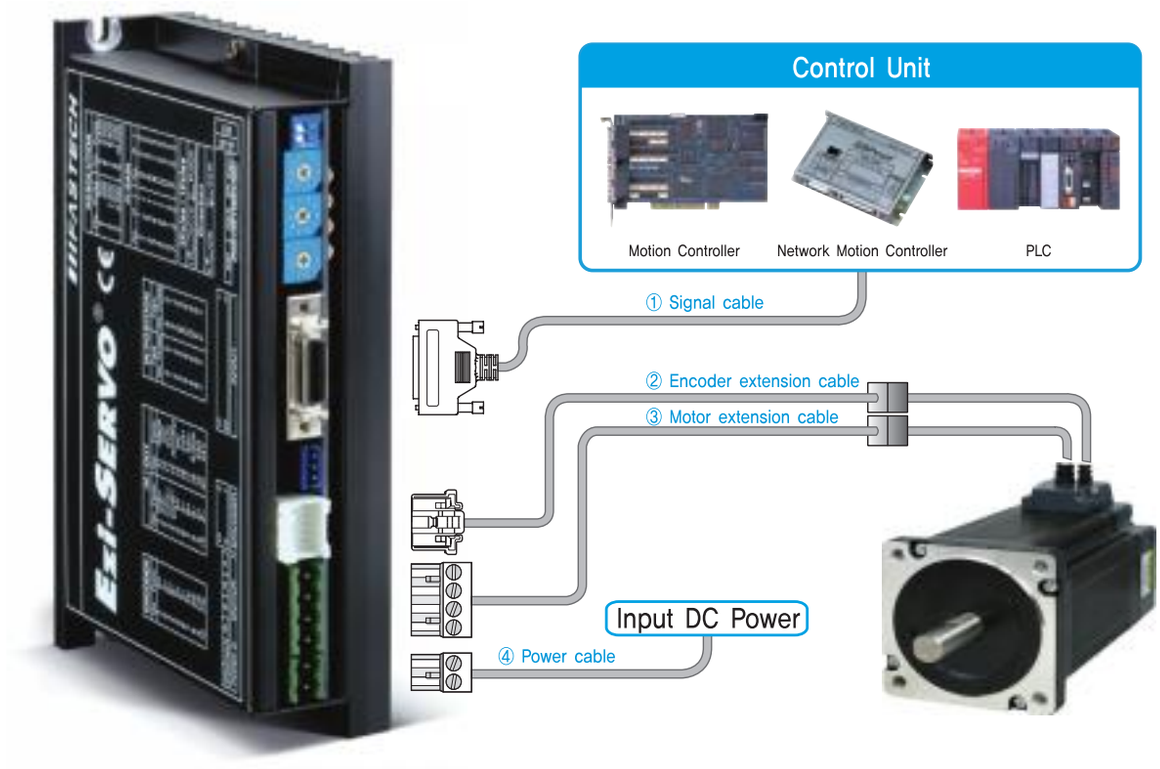
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

1. Options

① Signal Cable

Available to connect between Input/Output Control System and Ezi-SERVO ST.

Item	Length [m]	Remark
CSVO-S-□□□F	□□□	Normal Cable
CSVO-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO ST.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO ST.

Item	Length [m]	Remark
CSVP-M-□□□F	□□□	Normal Cable
CSVP-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO ST.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

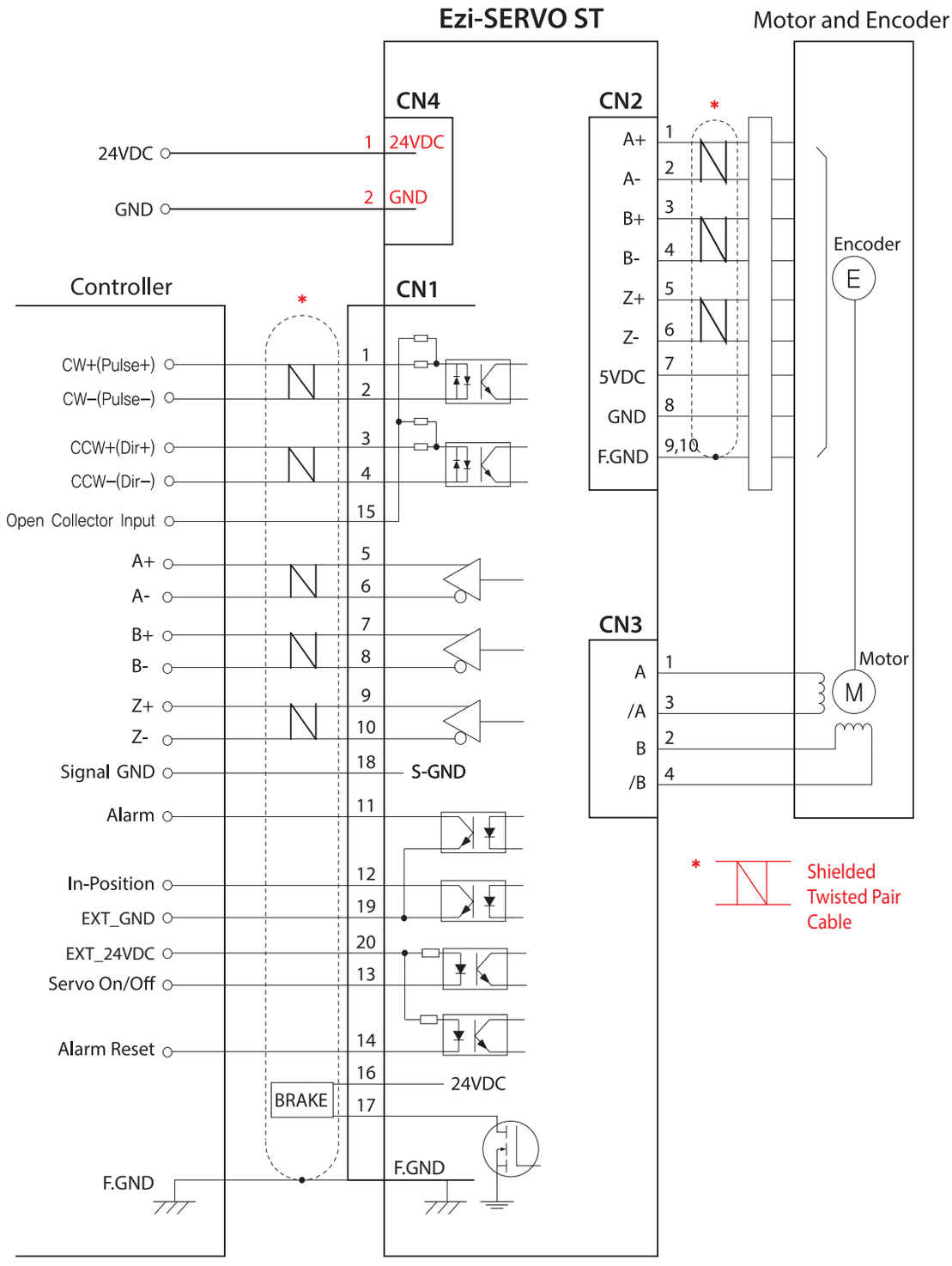
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing Terminal	3191-4R1 1381T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



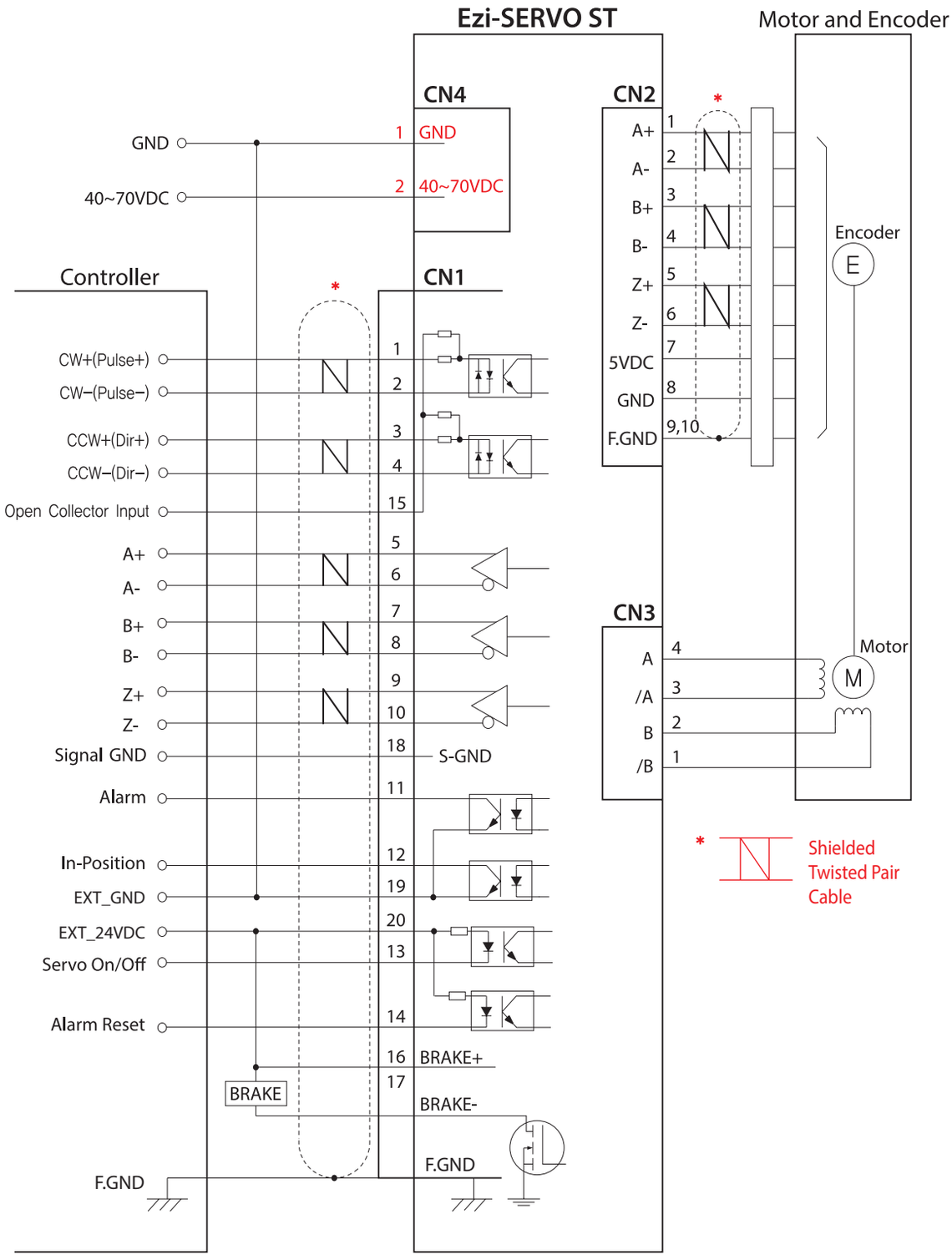
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● External Wiring Diagram [86mm Motor Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

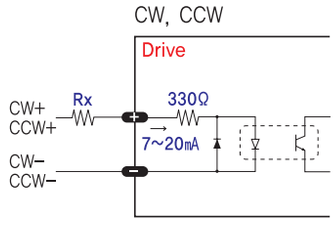
Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

Control Signal Input/Output Description

1 Input Signal

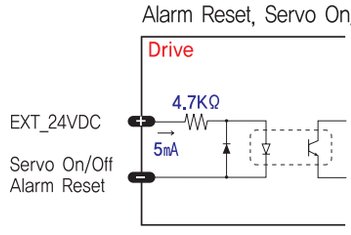
Input signals of the drive are all photocoupler protected. The signal shows the status of internal photocouplers [ON : conduction], [OFF : Non-conduction], not displaying the voltage levels of the signal.



Pin No.	Function
1	CW+
2	CW-
3	CCW+
4	CCW-

◆ CW, CCW Input

This signal can be used to receive a positioning pulse command from a user's host motion controller. The user can select 1-pulse input mode or 2-pulse input mode.
The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor Rx is not used and connected to the driver directly.
When the level of input signal is more than 5V, Rx resistor is required. If the resistor is absent, the drive can be damaged In the case input signal level is 12V, Rx value is 680ohm and 24V, Rx value is 1.8Kohm.



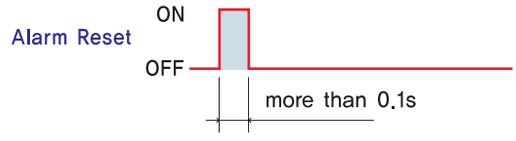
Pin No.	Function
13	Servo On/Off
14	Alarm Reset
20	EXT_24VDC

◆ Servo On/Off Input

This input can be used only to adjust the position by moving the motor shaft manually from the load-side.
By setting the signal [ON], the driver cuts off the power supplied to the motor. Then, output position can be adjusted manually. When setting the signal back to [OFF], the driver resumes to supply the power to the motor and recovers the holding torque. When driving a motor, the signal shall be set [OFF].

◆ Alarm Reset Input

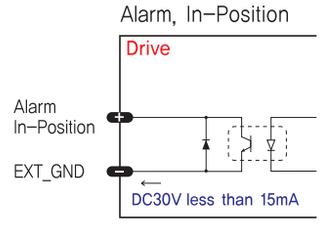
When a protection mode has been activated, a signal to this alarm reset input cancels the Alarm output.



※ By setting the alarm reset input signal [ON], cancel the Alarm output. Before cancel the Alarm output, have to remove the source of alarm.

2 Output Signal

Output signals from the driver are photocoupler protected: Alarm, In-Position and the Line Driver Outputs (encoder signal). In the case of photocoupler outputs, the signal indicates the status of internal photocouplers [ON : conduction], [OFF : Non-conduction], not displaying the voltage levels of the signal.



Pin No.	Function
11	Alarm
12	In-Position
19	EXT_GND

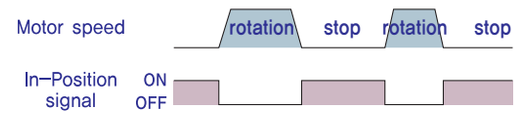
◆ Alarm Output

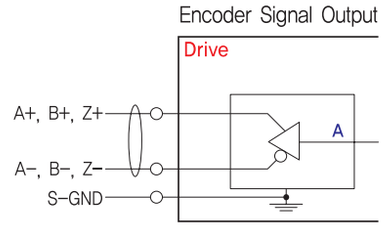
The Alarm output indicates [ON] when the driver is in a normal operation. If a protection mode has been activated, it goes [OFF]. User's host controller needs to detect this signal and stop sending a motor driving command. When the driver detects an abnormal operation such as overload or over current of the motor, it sets the Alarm output to [OFF], flashes the Alarm LED, disconnect the power to a motor and stops the motor simultaneously.

[Caution] Only at the Alarm output port, the photocoupler isolation is in reverse. When the driver is in normal operation the Alarm output is [ON]. On the contrary when the driver is in abnormal operation that start protection mode, the Alarm output is [OFF].

◆ In-Position Output

In-Position signal is [ON] when positioning is completed. This signal is [ON] when the motor position error is within the value set by the switch SW4.





Pin No.	Function
5	A+
6	A-
7	B+
8	B-
9	Z+
10	Z-
18	S-GND

◆ Encoder Signal Output

The encoder signal is a line driver output. This can be used to confirm the stop position.


Ezi-SERVO® mini
FASTECH
PWR
MOTOR
ENCODER
I/O / OUT
INP
SON
PWR
ALM

Ezi-SERVO MINI

Closed Loop System_ Ezi-SERVO MINI

- Miniaturized Compact Size
- Closed Loop System
- No Gain Tuning / No Hunting
- Heat Reduction
- High Resolution
- Fast Response



FASTECH

Fast, Accurate, Smooth Motion

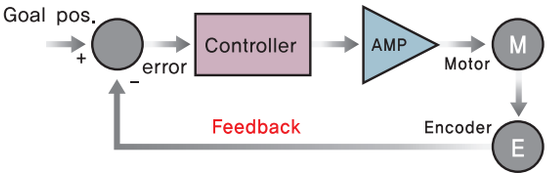
Ezi-SERVO® MINI

Closed Loop Stepping System



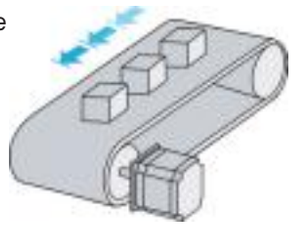
1 Closed Loop System

Ezi-SERVO is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO to update the current position every 25 μsec. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



2 No Gain Tuning

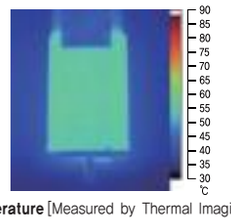
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO is optimized for the application and ready to work right out of the box. The Ezi-SERVO system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO also performs exceptionally, even under heavy loads and high speeds.



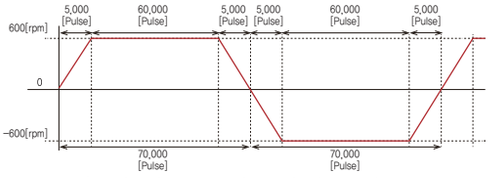
3 Heat Reduction / Energy Saving

(Motor Current Control according to load)

Ezi-SERVO automatically controls motor current according to load. Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy saved.



Motor temperature [Measured by Thermal Imaging Camera]



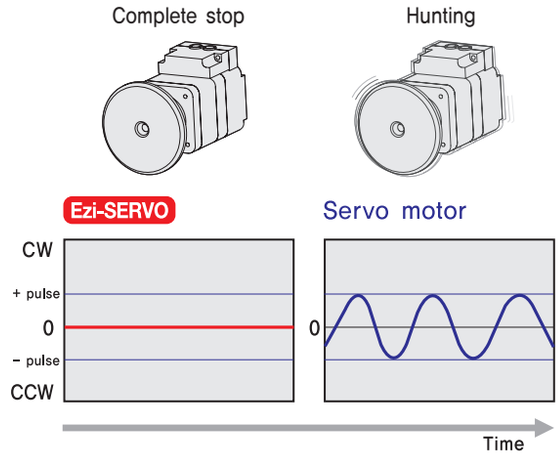
Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]



Example of the Motor Current Control according to load

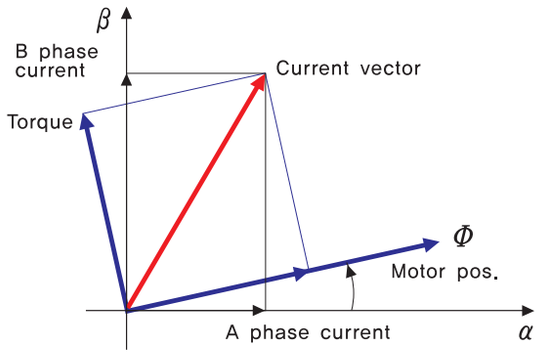
4 No Hunting

Traditional servo motor drives overshoot their position and try to correct overshooting by moving the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO Motion Control System. Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



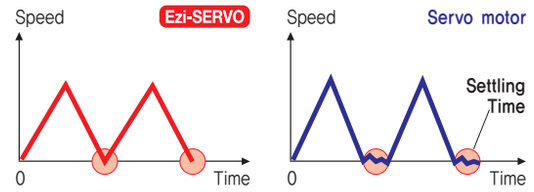
5 Smooth and Accurate

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 32,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



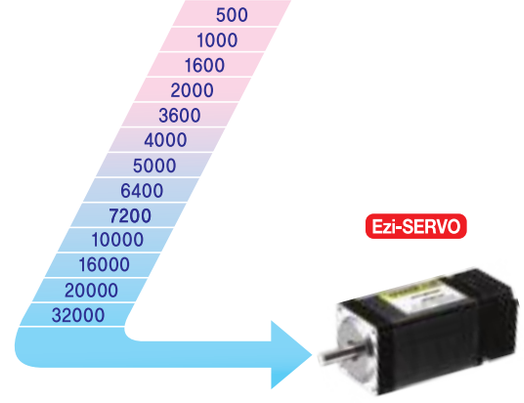
6 Fast Response

Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



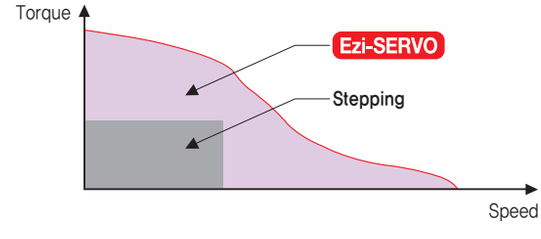
7 High Resolution

The unit of the position command can be divided precisely. (Max. 32,000 pulses/revolution)



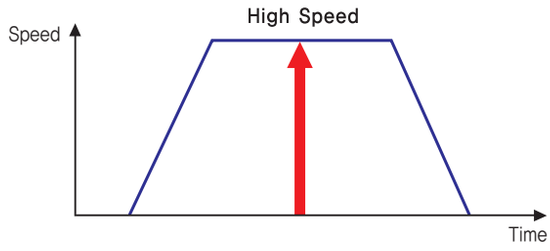
8 High Torque

Compared with common step motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



9 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO MINI Part Numbering

Ezi-SERVO-MI-42M-A-BK-PN05-□

Product Name

Drive Series

MI : Mini Type

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
B : 20,000[ppr]
C : 32,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-MI-20M-F	EzM-20M-F	EzS-PD-MI-20M-F
Ezi-SERVO-MI-20L-F	EzM-20L-F	EzS-PD-MI-20L-F
Ezi-SERVO-MI-28S-D	EzM-28S-D	EzS-PD-MI-28S-D
Ezi-SERVO-MI-28SM-D	EzM-28SM-D	EzS-PD-MI-28S-D
Ezi-SERVO-MI-28M-D	EzM-28M-D	EzS-PD-MI-28M-D
Ezi-SERVO-MI-28MM-D	EzM-28MM-D	EzS-PD-MI-28M-D
Ezi-SERVO-MI-28L-D	EzM-28L-D	EzS-PD-MI-28L-D
Ezi-SERVO-MI-28LM-D	EzM-28LM-D	EzS-PD-MI-28L-D
Ezi-SERVO-MI-35M-D	EzM-35M-D	EzS-PD-MI-35M-D
Ezi-SERVO-MI-35MM-D	EzM-35MM-D	EzS-PD-MI-35M-D
Ezi-SERVO-MI-35L-D	EzM-35L-D	EzS-PD-MI-35L-D
Ezi-SERVO-MI-35LM-D	EzM-35LM-D	EzS-PD-MI-35L-D
Ezi-SERVO-MI-42S-A	EzM-42S-A	EzS-PD-MI-42S-A
Ezi-SERVO-MI-42S-B	EzM-42S-B	EzS-PD-MI-42S-B
Ezi-SERVO-MI-42S-C	EzM-42S-C	EzS-PD-MI-42S-C
Ezi-SERVO-MI-42M-A	EzM-42M-A	EzS-PD-MI-42M-A
Ezi-SERVO-MI-42M-B	EzM-42M-B	EzS-PD-MI-42M-B
Ezi-SERVO-MI-42M-C	EzM-42M-C	EzS-PD-MI-42M-C
Ezi-SERVO-MI-42L-A	EzM-42L-A	EzS-PD-MI-42L-A
Ezi-SERVO-MI-42L-B	EzM-42L-B	EzS-PD-MI-42L-B
Ezi-SERVO-MI-42L-C	EzM-42L-C	EzS-PD-MI-42L-C
Ezi-SERVO-MI-42XL-A	EzM-42XL-A	EzS-PD-MI-42XL-A
Ezi-SERVO-MI-42XL-B	EzM-42XL-B	EzS-PD-MI-42XL-B
Ezi-SERVO-MI-42XL-C	EzM-42XL-C	EzS-PD-MI-42XL-C

* When places an order for Stopper type 28mm,35mm motor, please write "M" additionally after motor length of unit part number.
(Ex: Ezi-SERVO-MI-28LM-D, Ezi-SERVO-MI-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-MI-42S-A-BK	EzM-42S-A-BK	EzS-PD-MI-42S-A
Ezi-SERVO-MI-42S-B-BK	EzM-42S-B-BK	EzS-PD-MI-42S-B
Ezi-SERVO-MI-42M-A-BK	EzM-42M-A-BK	EzS-PD-MI-42M-A
Ezi-SERVO-MI-42M-B-BK	EzM-42M-B-BK	EzS-PD-MI-42M-B
Ezi-SERVO-MI-42L-A-BK	EzM-42L-A-BK	EzS-PD-MI-42L-A
Ezi-SERVO-MI-42L-B-BK	EzM-42L-B-BK	EzS-PD-MI-42L-B
Ezi-SERVO-MI-42XL-A-BK	EzM-42XL-A-BK	EzS-PD-MI-42XL-A
Ezi-SERVO-MI-42XL-B-BK	EzM-42XL-B-BK	EzS-PD-MI-42XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-MI-42S-A-PN3	EzM-42S-A-PN3	EzS-PD-MI-42S-A	1:3
Ezi-SERVO-MI-42S-B-PN3	EzM-42S-B-PN3	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN5	EzM-42S-A-PN5	EzS-PD-MI-42S-A	1:5
Ezi-SERVO-MI-42S-B-PN5	EzM-42S-B-PN5	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN8	EzM-42S-A-PN8	EzS-PD-MI-42S-A	1:8
Ezi-SERVO-MI-42S-B-PN8	EzM-42S-B-PN8	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN10	EzM-42S-A-PN10	EzS-PD-MI-42S-A	1:10
Ezi-SERVO-MI-42S-B-PN10	EzM-42S-B-PN10	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN15	EzM-42S-A-PN15	EzS-PD-MI-42S-A	1:15
Ezi-SERVO-MI-42S-B-PN15	EzM-42S-B-PN15	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN25	EzM-42S-A-PN25	EzS-PD-MI-42S-A	1:25
Ezi-SERVO-MI-42S-B-PN25	EzM-42S-B-PN25	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN40	EzM-42S-A-PN40	EzS-PD-MI-42S-A	1:40
Ezi-SERVO-MI-42S-B-PN40	EzM-42S-B-PN40	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN50	EzM-42S-A-PN50	EzS-PD-MI-42S-A	1:50
Ezi-SERVO-MI-42S-B-PN50	EzM-42S-B-PN50	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42M-A-PN3	EzM-42M-A-PN3	EzS-PD-MI-42M-A	1:3
Ezi-SERVO-MI-42M-B-PN3	EzM-42M-B-PN3	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN5	EzM-42M-A-PN5	EzS-PD-MI-42M-A	1:5
Ezi-SERVO-MI-42M-B-PN5	EzM-42M-B-PN5	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN8	EzM-42M-A-PN8	EzS-PD-MI-42M-A	1:8
Ezi-SERVO-MI-42M-B-PN8	EzM-42M-B-PN8	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN10	EzM-42M-A-PN10	EzS-PD-MI-42M-A	1:10
Ezi-SERVO-MI-42M-B-PN10	EzM-42M-B-PN10	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN15	EzM-42M-A-PN15	EzS-PD-MI-42M-A	1:15
Ezi-SERVO-MI-42M-B-PN15	EzM-42M-B-PN15	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN25	EzM-42M-A-PN25	EzS-PD-MI-42M-A	1:25
Ezi-SERVO-MI-42M-B-PN25	EzM-42M-B-PN25	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN40	EzM-42M-A-PN40	EzS-PD-MI-42M-A	1:40
Ezi-SERVO-MI-42M-B-PN40	EzM-42M-B-PN40	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN50	EzM-42M-A-PN50	EzS-PD-MI-42M-A	1:50
Ezi-SERVO-MI-42M-B-PN50	EzM-42M-B-PN50	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42L-A-PN3	EzM-42L-A-PN3	EzS-PD-MI-42L-A	1:3
Ezi-SERVO-MI-42L-B-PN3	EzM-42L-B-PN3	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN5	EzM-42L-A-PN5	EzS-PD-MI-42L-A	1:5
Ezi-SERVO-MI-42L-B-PN5	EzM-42L-B-PN5	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN8	EzM-42L-A-PN8	EzS-PD-MI-42L-A	1:8
Ezi-SERVO-MI-42L-B-PN8	EzM-42L-B-PN8	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN10	EzM-42L-A-PN10	EzS-PD-MI-42L-A	1:10
Ezi-SERVO-MI-42L-B-PN10	EzM-42L-B-PN10	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN15	EzM-42L-A-PN15	EzS-PD-MI-42L-A	1:15
Ezi-SERVO-MI-42L-B-PN15	EzM-42L-B-PN15	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN25	EzM-42L-A-PN25	EzS-PD-MI-42L-A	1:25
Ezi-SERVO-MI-42L-B-PN25	EzM-42L-B-PN25	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN40	EzM-42L-A-PN40	EzS-PD-MI-42L-A	1:40
Ezi-SERVO-MI-42L-B-PN40	EzM-42L-B-PN40	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN50	EzM-42L-A-PN50	EzS-PD-MI-42L-A	1:50
Ezi-SERVO-MI-42L-B-PN50	EzM-42L-B-PN50	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42XL-A-PN3	EzM-42XL-A-PN3	EzS-PD-MI-42XL-A	1:3
Ezi-SERVO-MI-42XL-B-PN3	EzM-42XL-B-PN3	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN5	EzM-42XL-A-PN5	EzS-PD-MI-42XL-A	1:5
Ezi-SERVO-MI-42XL-B-PN5	EzM-42XL-B-PN5	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN8	EzM-42XL-A-PN8	EzS-PD-MI-42XL-A	1:8
Ezi-SERVO-MI-42XL-B-PN8	EzM-42XL-B-PN8	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN10	EzM-42XL-A-PN10	EzS-PD-MI-42XL-A	1:10
Ezi-SERVO-MI-42XL-B-PN10	EzM-42XL-B-PN10	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN15	EzM-42XL-A-PN15	EzS-PD-MI-42XL-A	1:15
Ezi-SERVO-MI-42XL-B-PN15	EzM-42XL-B-PN15	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN25	EzM-42XL-A-PN25	EzS-PD-MI-42XL-A	1:25
Ezi-SERVO-MI-42XL-B-PN25	EzM-42XL-B-PN25	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN40	EzM-42XL-A-PN40	EzS-PD-MI-42XL-A	1:40
Ezi-SERVO-MI-42XL-B-PN40	EzM-42XL-B-PN40	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN50	EzM-42XL-A-PN50	EzS-PD-MI-42XL-A	1:50
Ezi-SERVO-MI-42XL-B-PN50	EzM-42XL-B-PN50	EzS-PD-MI-42XL-B	

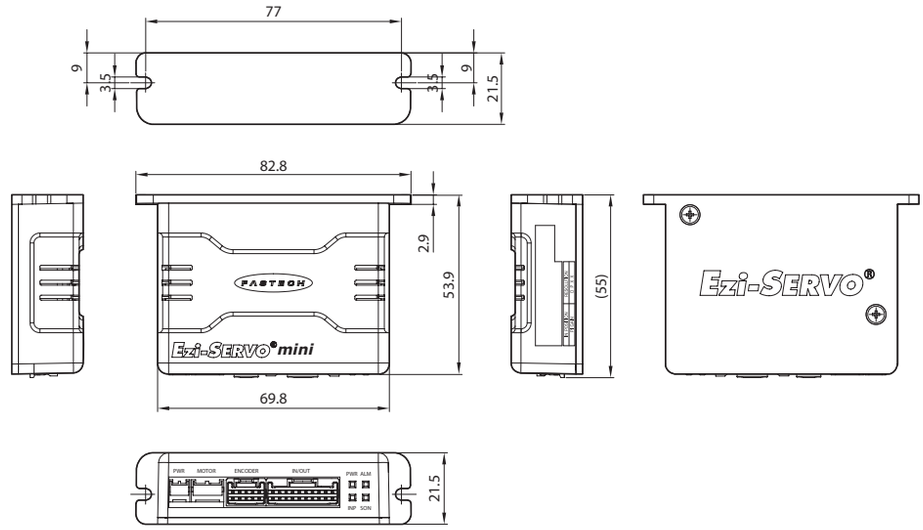
Specifications of Drive

Motor Model		EzM-20 series	EzM-28 series	EzM-35 series	EzM-42 series
Driver Model		EzS-PD-MI-20 series	EzS-PD-MI-28 series	EzS-PD-MI-35 series	EzS-PD-MI-42 series
Input Voltage		24VDC ±10%			
Control Method		Closed loop control with 32bit MCU			
Current Consumption		Max 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000 [rpm] *1			
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 32,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 32,000 (Selectable with DIP switch) *2			
	Max. Input Pulse Frequency	500kHz (Duty 50%)			
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, System Error, ROM Error, Position Overflow Error			
	LED Display	Power status, In-Position status, Servo On status, Alarm status			
	In-Position Selection	0~F (Selectable with DIP switch)			
	Position Gain Selection	0~F (Selectable with DIP switch)			
	Pulse Input Method	1-Pulse / 2-Pulse (Selectable with DIP switch)			
	Rotational Direction	CW/CCW (Selectable with DIP switch)			
	Speed/Position Control Command	Pulse Train Input			
I/O Signal	Input Signals	Position Command Pulse, Servo On/Off, Alarm Reset (Photocoupler Input)			
	Output Signals	In-Position, Alarm (Photocoupler Output) Encoder Signal (A+, A-, B+, B-, Z+, Z-, 26C31 of Equivalent) (Line Driver Output), Brake			

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]

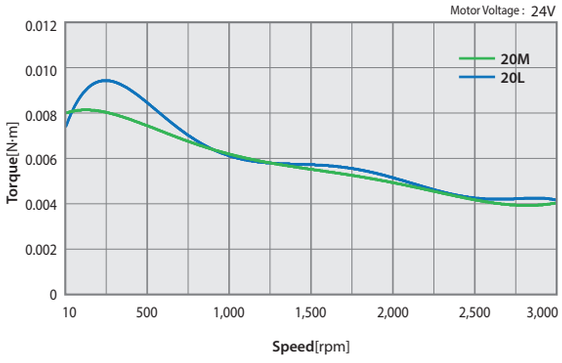


Specifications of Motor

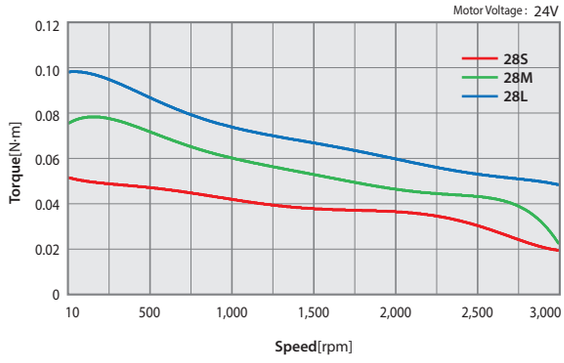
MODEL			EzM-20 series		EzM-28 series			EzM-35 series		EzM-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		$g \cdot cm^2$	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	79	104	147	204	232	194	226	299	364	433	567
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

Torque Characteristics of Motor

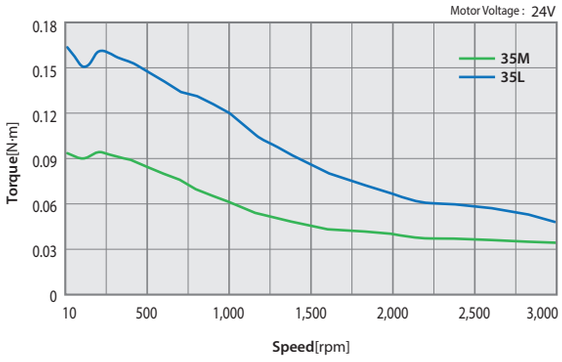
Ezi-SERVO-MI-20 series



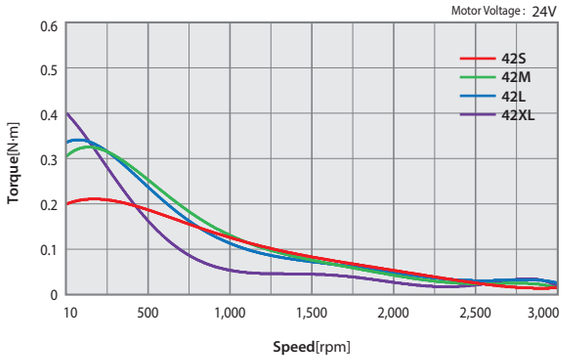
Ezi-SERVO-MI-28 series



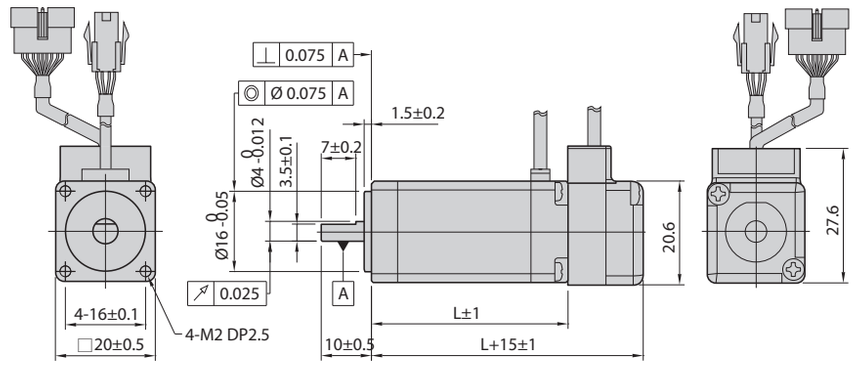
Ezi-SERVO-MI-35 series



Ezi-SERVO-MI-42 series

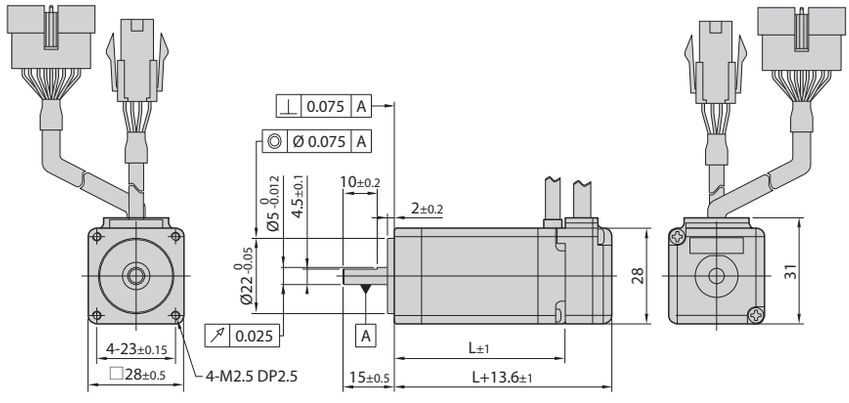


Dimensions of Motor [mm]



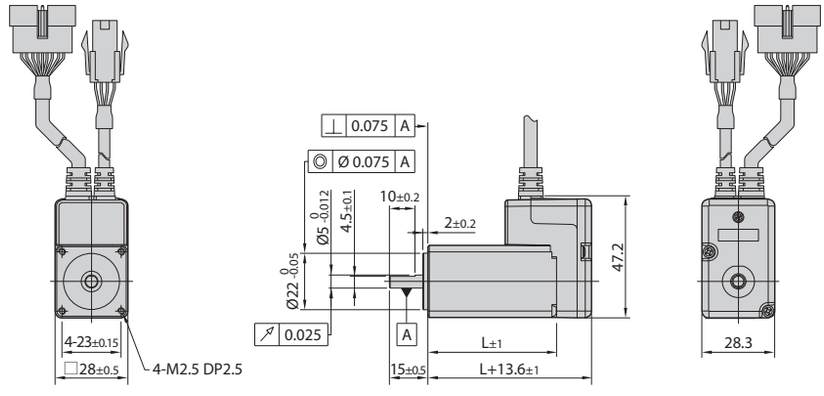
20mm

Model name	Length(L)
EzM-20M	28
EzM-20L	38



28mm

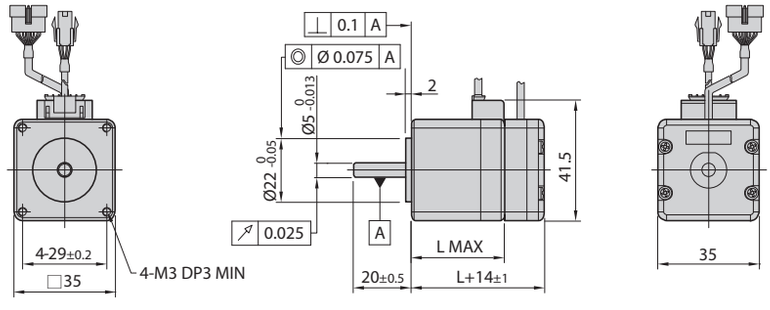
Model name	Length(L)
EzM-28S	32
EzM-28M	45
EzM-28L	50



28mm (Stopper type)

Model name	Length(L)
EzM-28SM	32
EzM-28MM	45
EzM-28LM	50

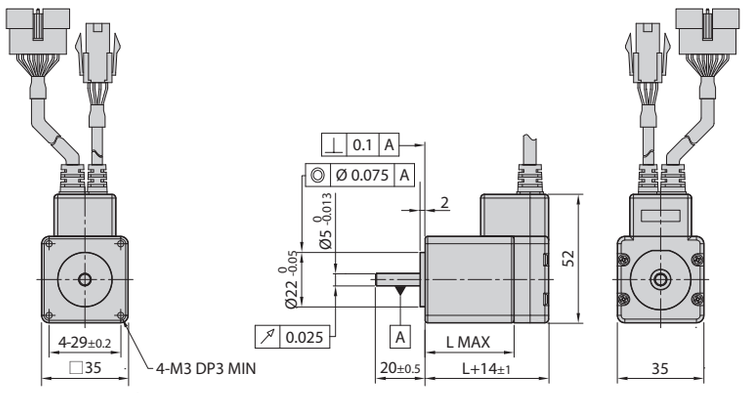
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM-35M	26
EzM-35L	38

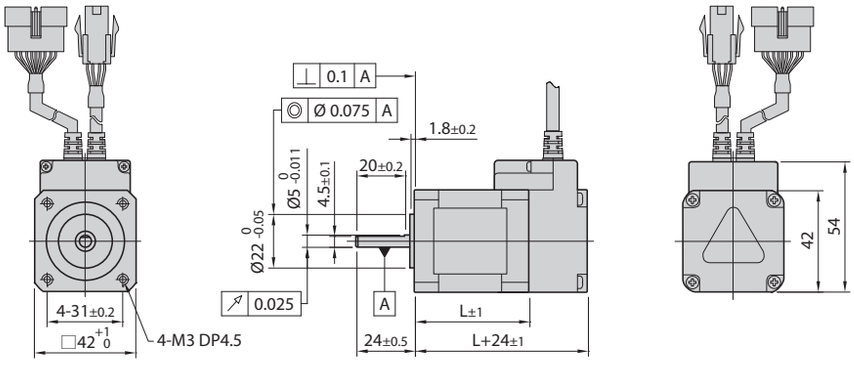
● Dimensions of Motor [mm]



35mm (Stopper type)

Model name	Length(L)
EzM-35MM	32
EzM-35LM	36

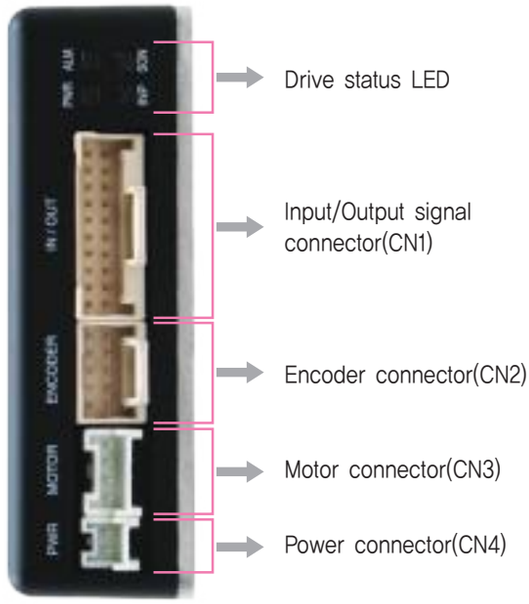
※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.

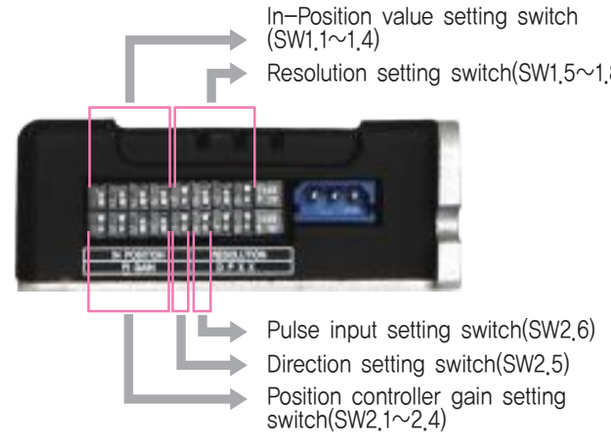


42mm

Model name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60

Settings and Operation



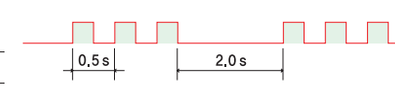


1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Lights On when Positioning error reaches within the preset pulse selected by dip switch
SON	Orange	Servo On/Off Indication	Servo On: Lights On, Servo Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

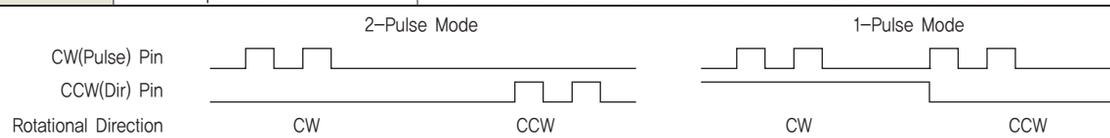
Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds 4.8A
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regeneratived Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state



Alarm LED flash
(Ex, Position tracking error)

2. Pulse Input Setting Switch(SW2.6)

Indication	Switch Name	Functions
P	Selecting pulse input mode	Selectable 1-Pulse input mode or 2-Pulse input mode as Pulse input signal. ON: 1-Pulse mode OFF: 2-Pulse mode ※ Default: 2-Pulse mode



3. Rotational Direction Setting Switch(SW2.5)

Indication	Switch Name	Functions
D	Switching Rotational Direction	Based on CW(+Dir signal) input to driver. ON: CCW(−Direction) OFF: CW(+Direction) ※ Default: CW mode

Direction setting switch: ON

CCW Dir.





Direction setting switch: OFF

CW Dir.

4. Resolution Setting Switch(SW1.5~1.8)

The Number of pulse per revolution.

Position				Pulse/ Revolution	Position				Pulse/ Revolution
8	7	6	5		8	7	6	5	
ON	ON	ON	ON	500*1	OFF	ON	ON	ON	7,200
ON	ON	ON	OFF	500	OFF	ON	ON	OFF	10,000
ON	ON	OFF	ON	1,000	OFF	ON	OFF	ON	NC
ON	ON	OFF	OFF	1,600	OFF	ON	OFF	OFF	NC
ON	OFF	ON	ON	2,000	OFF	OFF	ON	ON	NC
ON	OFF	ON	OFF	3,600	OFF	OFF	ON	OFF	NC
ON	OFF	OFF	ON	5,000	OFF	OFF	OFF	ON	NC
ON	OFF	OFF	OFF	6,400	OFF	OFF	OFF	OFF	NC

*1 : Will be different according to the resolution of encoder adopted to the product.
But in case of the encoder with 10,000[ppr] resolution, it will be set as 500.

※ When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulse.

5. Position Controller Gain Settingn Switch(SW2.1~2.4)

The Position Controller Gain Switch allows for the correction of the motor position deviation after stopping caused by load and friction. Depending on the motor load, the user may have to select a different gain position to stabilize and to correct positional error quickly.

To tune the controller
1. Set the switch to "ON" position.
2. Start to rotate the switch until system becomes stable.
3. Rotate the switch 1~2 position to reach better performance.

Position				Time Constant of the Integral part	Proportional Gain*1
4	3	2	1		
ON	ON	ON	ON	1	1
ON	ON	ON	OFF	1	2
ON	ON	OFF	ON	1	3
ON	ON	OFF	OFF	1	4*2
ON	OFF	ON	ON	1	5
ON	OFF	ON	OFF	2	1
ON	OFF	OFF	ON	2	2
ON	OFF	OFF	OFF	2	3
OFF	ON	ON	ON	2	4
OFF	ON	ON	OFF	2	5
OFF	ON	OFF	ON	3	1
OFF	ON	OFF	OFF	3	2
OFF	OFF	ON	ON	3	3
OFF	OFF	ON	OFF	3	4
OFF	OFF	OFF	ON	3	5
OFF	OFF	OFF	OFF	3	6

*1 : Value in the columns are in relative units. They only show the parameter changes depending on the switch's position.

*2 : Default = ON ON OFF OFF

6. In-Position Value Setting Switch(SW1.1~1.4)

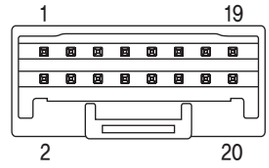
To select the output condition of In-Position signal. In-Position output signal is generated when the pulse number of positional error is lower than selected In-Position value set by this switch after positioning command is executed.

Position				In-Position Value[Pulse] Fast Response	Position				In-Position Value[Pulse] Accurate Response
4	3	2	1		4	3	2	1	
ON	ON	ON	ON	0*1	OFF	ON	ON	ON	0
ON	ON	ON	OFF	1	OFF	ON	ON	OFF	1
ON	ON	OFF	ON	2	OFF	ON	OFF	ON	2
ON	ON	OFF	OFF	3	OFF	ON	OFF	OFF	3
ON	OFF	ON	ON	4	OFF	OFF	ON	ON	4
ON	OFF	ON	OFF	5	OFF	OFF	ON	OFF	5
ON	OFF	OFF	ON	6	OFF	OFF	OFF	ON	6
ON	OFF	OFF	OFF	7	OFF	OFF	OFF	OFF	7

*1 : Default = 0
※ Please refer to the Manual for setting.

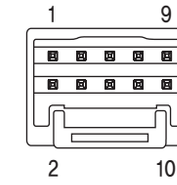
7. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	CW+(Pulse+)	Input
2	CW-(Pulse-)	Input
3	CCW+(Dir+)	Input
4	CCW-(Dir-)	Input
5	A+	Output
6	A-	Output
7	B+	Output
8	B-	Output
9	Z+	Output
10	Z-	Output
11	Alarm	Output
12	In-Position	Output
13	Servo On/Off	Input
14	Alarm Reset	Input
15	NC	-----
16	BRAKE+	Output
17	BRAKE-	Output
18	S-GND	Output
19	EXT_GND	Input
20	EXT_24VDC	Input



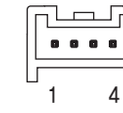
8. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



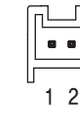
9. Motor Connector(CN3)

NO.	Function	I/O
1	B Phase	Output
2	/B Phase	Output
3	/A Phase	Output
4	A Phase	Output

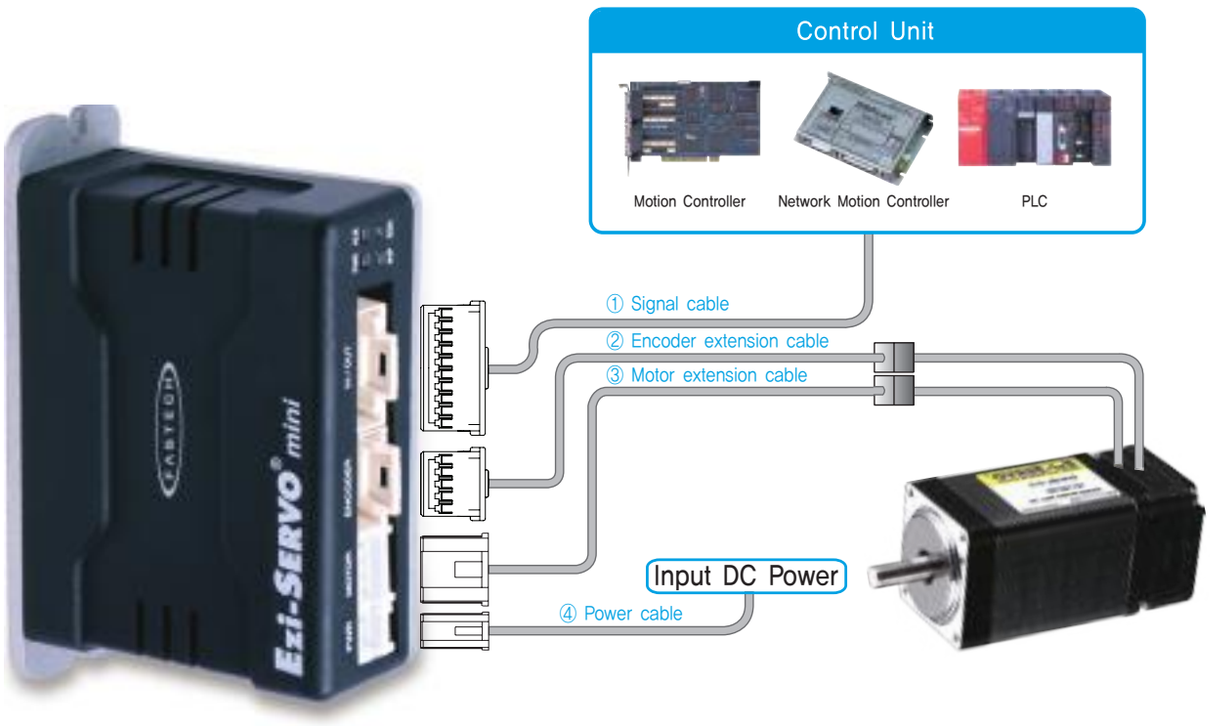


10. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

1. Options

① Signal Cable

Available to connect between Input/Output Control System and Ezi-SERVO MINI.

Item	Length [m]	Remark
CSVI-S-□□□F	□□□	Normal Cable
CSVI-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO MINI.

Item	Length [m]	Remark
CSVI-E-□□□F	□□□	Normal Cable
CSVI-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO MINI.

Item	Length [m]	Remark
CMNB-M-□□□F	□□□	Normal Cable
CMNB-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO MINI.

Item	Length [m]	Remark
CMNB-P-□□□F	□□□	Normal Cable
CMNB-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

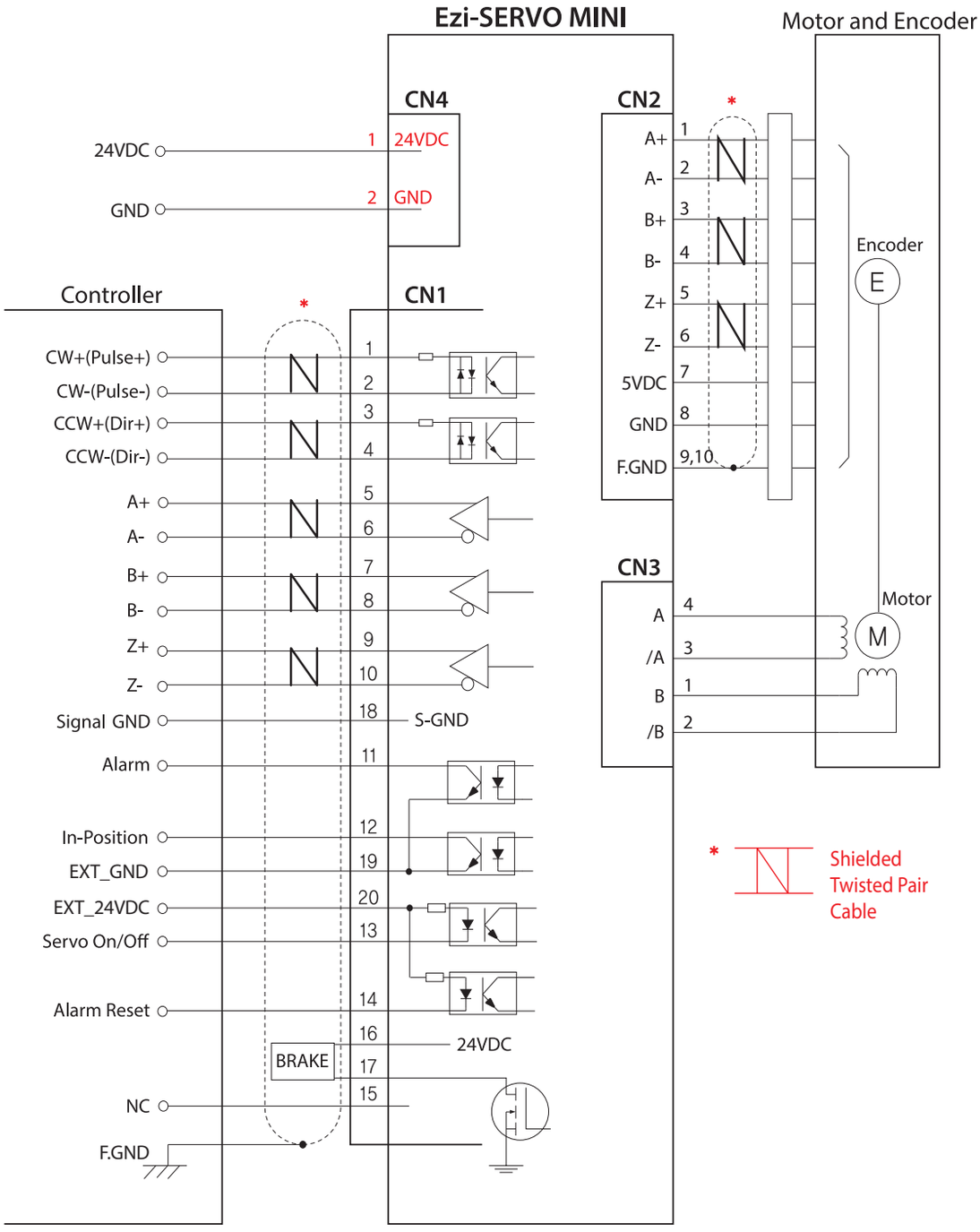
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	PAP-02V-S SPHD-001T-P0.5	JST
Motor	Drive Side (CN3)	Housing Terminal	PAP-04V-S SPHD-001T-P0.5	JST
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	501646-1000 501648-1000(AWG 26~28)	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Housing Terminal	501646-2000 501648-1000(AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

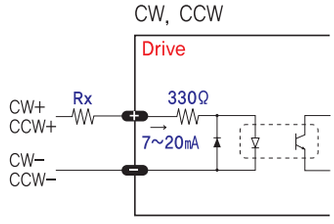
Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

Control Signal Input/Output Description

1 Input Signal

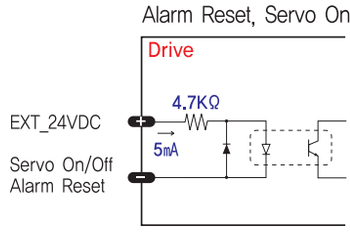
Input signals of the drive are all photocoupler protected. The signal shows the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.



Pin No.	Function
1	CW+
2	CW-
3	CCW+
4	CCW-

◆ CW, CCW Input

This signal can be used to receive a positioning pulse command from a user's host motion controller.
The user can select 1-pulse input mode or 2-pulse input mode. The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor Rx is not used and connected to the driver directly. When the level of input signal is more than 5V, Rx resistor is required. If the resistor is absent, the drive can be damaged. In the caseinput signal level is 12V, Rx value is 680ohm and 24V, Rx value is 1.8Kohm.



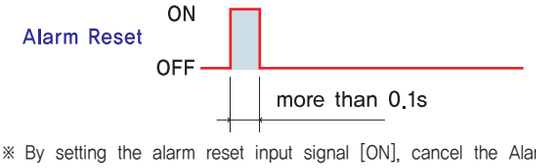
Pin No.	Function
13	Servo On/Off
14	Alarm Reset
20	EXT_24VDC

◆ Servo On/Off Input

This input can be used only to adjust the position by moving the motor shaft manually from the load-side.
By setting the signal [ON], the driver cuts off the power supplied to the motor. Then, output position can be adjusted manually. When setting the signal back to [OFF], the driver resumes to supply the power to the motor and recovers the holding torque. When driving a motor, the signal shall be set [OFF].

◆ Alarm Reset Input

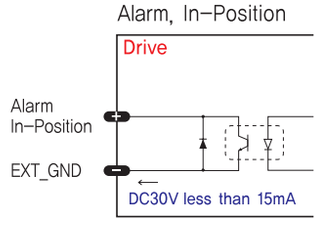
When a protection mode has been activated, a signal to this alarm reset input cancels the Alarm output.



※ By setting the alarm reset input signal [ON], cancel the Alarm output. Before cancel the Alarm output, have to remove the source of alarm.

2 Output Signal

Output signals from the driver are photocoupler protected: Alarm, In-Position and the Line Driver Outputs (encoder signal). In the case of photocoupler outputs, the signal indicates the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.



Pin No.	Function
11	Alarm
12	In-Position
19	EXT_GND

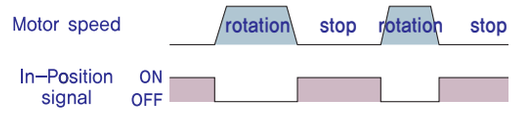
◆ Alarm Output

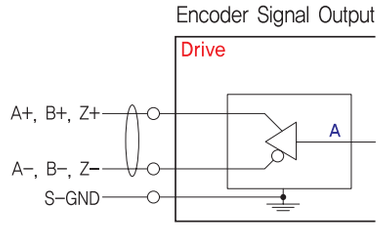
The Alarm output indicates [ON] when the driver is in a normal operation. If a protection mode has been activated, it goes [OFF]. User's host controller needs to detect this signal and stop sending a motor driving command. When the driver detects an abnormal operation such as overload or over current of the motor, it sets the Alarm output to [OFF], flashes the Alarm LED, disconnect the power to a motor and stops the motor simultaneously.

[Caution] Only at the Alarm output port, the photocoupler isolation is in reverse. When the driver is in normal operation the Alarm output is [ON]. On the contrary when the driver is in abnormal operation that start protection mode, the Alarm output is [OFF].

◆ In-Position Output

In-Position signal is [ON] when positioning is completed. This signal is [ON] when the motor position error is within the value set by the switch.





Pin No.	Function
5	A+
6	A-
7	B+
8	B-
9	Z+
10	Z-
18	S-GND

◆ Encoder Signal Output

The encoder signal is a line driver output. This can be used to confirm the stop position.


Ezi-SERVO Plus-R
FASTECH
Ezi-SERVO
EzS-NDR-56L-A

Ezi-SERVO Plus-R

Closed Loop System_ Ezi-SERVO Plus-R

- Embedded Controller
- Position Table
- Closed Loop System
- No Gain Tuning / No Hunting
- High Resolution / Fast Response
- Heat Reduction / Torque Improvement



FASTECH

Fast, Accurate, Smooth Motion

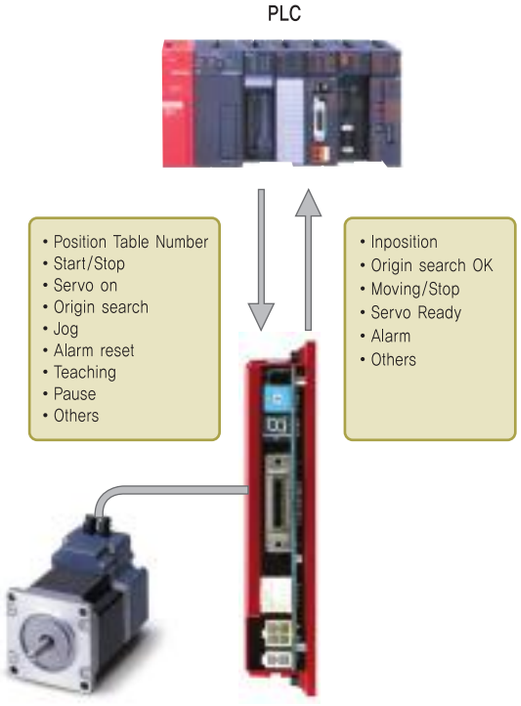
Ezi-SERVO® Plus-R

Closed Loop Stepping System



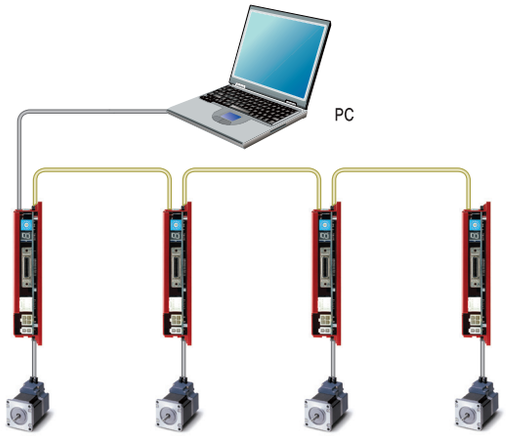
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PLC.
The PLC can monitor the In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PLC.



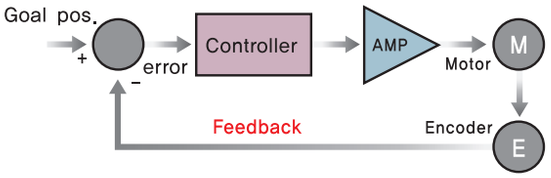
1 Network Based Motion Control

A maximum of 16 axis can be operated from a PC through RS-485 communications. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 7/8/10.



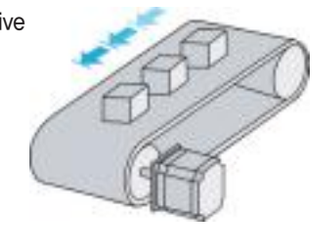
3 Closed Loop System

Ezi-SERVO is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO to update the current position every 25 μsec. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



4 No Gain Tuning

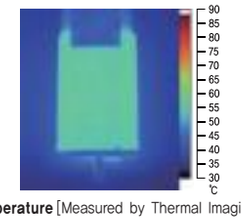
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO is optimized for the application and ready to work right out of the box. The Ezi-SERVO system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO also performs exceptionally, even under heavy loads and high speeds.



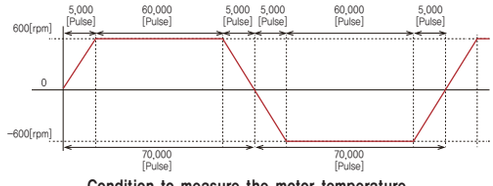
5 Heat Reduction / Energy Saving

(Motor Current Control according to load)

Ezi-SERVO automatically controls motor current according to load. Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]



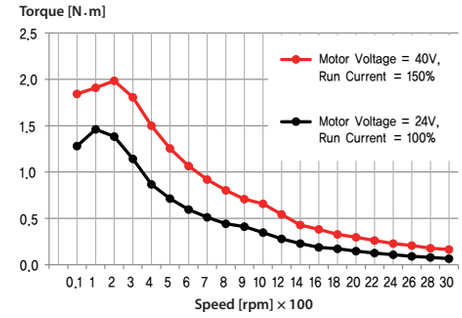
Example of the Motor Current Control according to load

6 Torque Improvement

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run current up to 150%, whereby the torque at low speed is increased.

Torque can be improved by about 30% over the entire speed range.

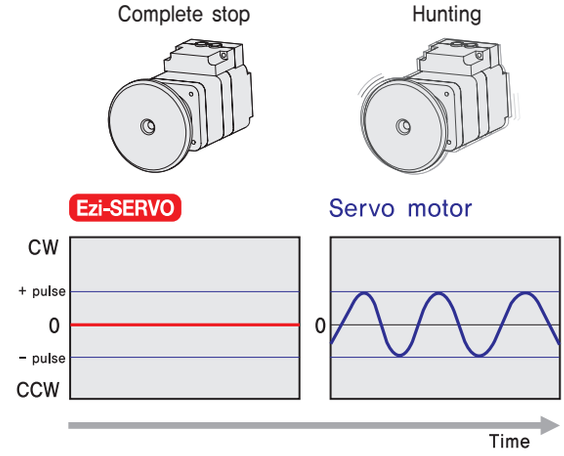


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO-PR-56L
Motor Voltage = 40VDC
Input Voltage = 24VDC

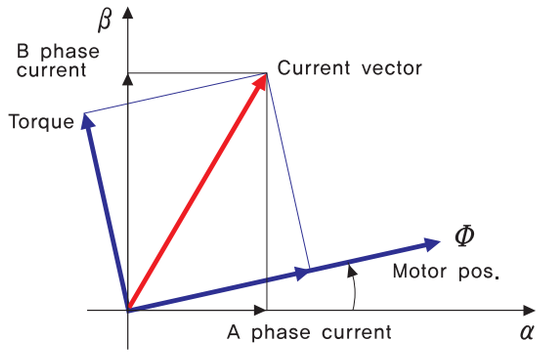
7 No Hunting

Traditional servo motor drives overshoot their position and try to correct overshooting by moving the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO Motion Control System. Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



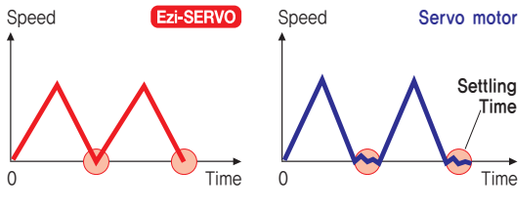
8 Smooth and Accurate

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 32,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



9 Fast Response

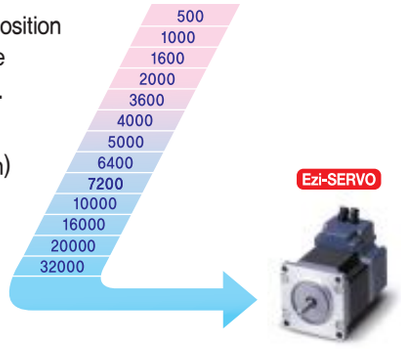
Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



10 High Resolution

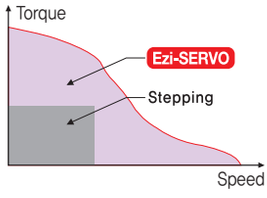
The unit of the position command can be divided precisely.

(Max. 32,000 pulses/revolution)



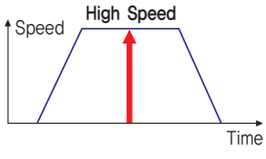
11 High Torque

Compared with common step motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



12 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

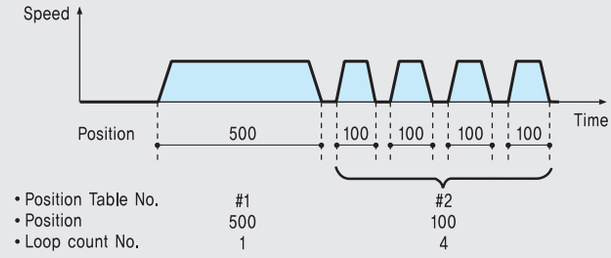
● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Features of Motion Controller

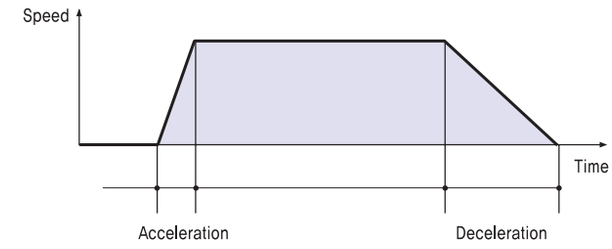
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



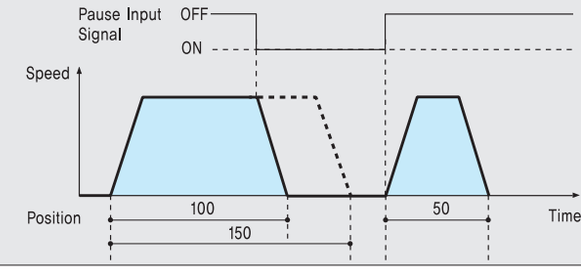
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



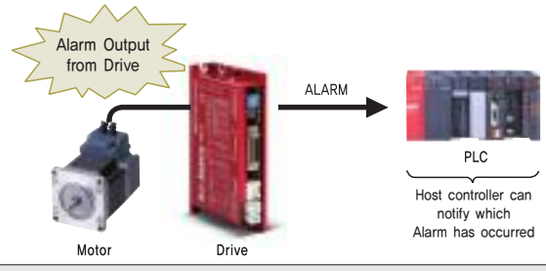
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



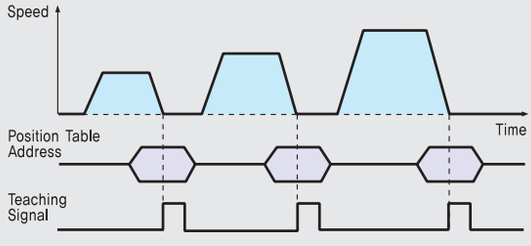
4. Alarm

The number of LED flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

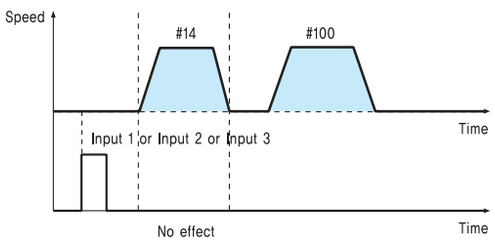


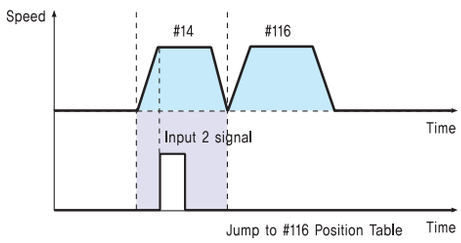
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





● Ezi-SERVO Plus-R Part Numbering

Ezi-SERVO-PR-56L-A-BK-PN05-□

Product Name

Drive Series

PR : Plus RS-485

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
B : 20,000[ppr]
C : 32,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-PR-20M-F	EzM-20M-F	EzS-NDR-20M-F
Ezi-SERVO-PR-20L-F	EzM-20L-F	EzS-NDR-20L-F
Ezi-SERVO-PR-28S-D	EzM-28S-D	EzS-NDR-28S-D
Ezi-SERVO-PR-28SM-D	EzM-28SM-D	EzS-NDR-28S-D
Ezi-SERVO-PR-28M-D	EzM-28M-D	EzS-NDR-28M-D
Ezi-SERVO-PR-28MM-D	EzM-28MM-D	EzS-NDR-28M-D
Ezi-SERVO-PR-28L-D	EzM-28L-D	EzS-NDR-28L-D
Ezi-SERVO-PR-28LM-D	EzM-28LM-D	EzS-NDR-28L-D
Ezi-SERVO-PR-35M-D	EzM-35M-D	EzS-NDR-35M-D
Ezi-SERVO-PR-35MM-D	EzM-35MM-D	EzS-NDR-35M-D
Ezi-SERVO-PR-35L-D	EzM-35L-D	EzS-NDR-35L-D
Ezi-SERVO-PR-35LM-D	EzM-35LM-D	EzS-NDR-35L-D
Ezi-SERVO-PR-42S-A	EzM-42S-A	EzS-NDR-42S-A
Ezi-SERVO-PR-42S-B	EzM-42S-B	EzS-NDR-42S-B
Ezi-SERVO-PR-42S-C	EzM-42S-C	EzS-NDR-42S-C
Ezi-SERVO-PR-42M-A	EzM-42M-A	EzS-NDR-42M-A
Ezi-SERVO-PR-42M-B	EzM-42M-B	EzS-NDR-42M-B
Ezi-SERVO-PR-42M-C	EzM-42M-C	EzS-NDR-42M-C
Ezi-SERVO-PR-42L-A	EzM-42L-A	EzS-NDR-42L-A
Ezi-SERVO-PR-42L-B	EzM-42L-B	EzS-NDR-42L-B
Ezi-SERVO-PR-42L-C	EzM-42L-C	EzS-NDR-42L-C
Ezi-SERVO-PR-42XL-A	EzM-42XL-A	EzS-NDR-42XL-A
Ezi-SERVO-PR-42XL-B	EzM-42XL-B	EzS-NDR-42XL-B
Ezi-SERVO-PR-42XL-C	EzM-42XL-C	EzS-NDR-42XL-C
Ezi-SERVO-PR-56S-A	EzM-56S-A	EzS-NDR-56S-A
Ezi-SERVO-PR-56S-B	EzM-56S-B	EzS-NDR-56S-B
Ezi-SERVO-PR-56S-C	EzM-56S-C	EzS-NDR-56S-C
Ezi-SERVO-PR-56M-A	EzM-56M-A	EzS-NDR-56M-A
Ezi-SERVO-PR-56M-B	EzM-56M-B	EzS-NDR-56M-B
Ezi-SERVO-PR-56M-C	EzM-56M-C	EzS-NDR-56M-C
Ezi-SERVO-PR-56L-A	EzM-56L-A	EzS-NDR-56L-A
Ezi-SERVO-PR-56L-B	EzM-56L-B	EzS-NDR-56L-B
Ezi-SERVO-PR-56L-C	EzM-56L-C	EzS-NDR-56L-C
Ezi-SERVO-PR-60S-A	EzM-60S-A	EzS-NDR-60S-A
Ezi-SERVO-PR-60S-B	EzM-60S-B	EzS-NDR-60S-B
Ezi-SERVO-PR-60S-C	EzM-60S-C	EzS-NDR-60S-C
Ezi-SERVO-PR-60M-A	EzM-60M-A	EzS-NDR-60M-A
Ezi-SERVO-PR-60M-B	EzM-60M-B	EzS-NDR-60M-B
Ezi-SERVO-PR-60M-C	EzM-60M-C	EzS-NDR-60M-C
Ezi-SERVO-PR-60L-A	EzM-60L-A	EzS-NDR-60L-A
Ezi-SERVO-PR-60L-B	EzM-60L-B	EzS-NDR-60L-B
Ezi-SERVO-PR-60L-C	EzM-60L-C	EzS-NDR-60L-C
Ezi-SERVO-PR-86M-A	EzM-86M-A	EzS-NDR-86M-A
Ezi-SERVO-PR-86M-B	EzM-86M-B	EzS-NDR-86M-B
Ezi-SERVO-PR-86M-C	EzM-86M-C	EzS-NDR-86M-C
Ezi-SERVO-PR-86L-A	EzM-86L-A	EzS-NDR-86L-A
Ezi-SERVO-PR-86L-B	EzM-86L-B	EzS-NDR-86L-B
Ezi-SERVO-PR-86L-C	EzM-86L-C	EzS-NDR-86L-C
Ezi-SERVO-PR-86XL-A	EzM-86XL-A	EzS-NDR-86XL-A
Ezi-SERVO-PR-86XL-B	EzM-86XL-B	EzS-NDR-86XL-B
Ezi-SERVO-PR-86XL-C	EzM-86XL-C	EzS-NDR-86XL-C

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex : Ezi-SERVO-PR-28LM-D, Ezi-SERVO-PR-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-PR-42S-A-BK	EzM-42S-A-BK	EzS-NDR-42S-A
Ezi-SERVO-PR-42S-B-BK	EzM-42S-B-BK	EzS-NDR-42S-B
Ezi-SERVO-PR-42M-A-BK	EzM-42M-A-BK	EzS-NDR-42M-A
Ezi-SERVO-PR-42M-B-BK	EzM-42M-B-BK	EzS-NDR-42M-B
Ezi-SERVO-PR-42L-A-BK	EzM-42L-A-BK	EzS-NDR-42L-A
Ezi-SERVO-PR-42L-B-BK	EzM-42L-B-BK	EzS-NDR-42L-B
Ezi-SERVO-PR-42XL-A-BK	EzM-42XL-A-BK	EzS-NDR-42XL-A
Ezi-SERVO-PR-42XL-B-BK	EzM-42XL-B-BK	EzS-NDR-42XL-B
Ezi-SERVO-PR-56S-A-BK	EzM-56S-A-BK	EzS-NDR-56S-A
Ezi-SERVO-PR-56S-B-BK	EzM-56S-B-BK	EzS-NDR-56S-B
Ezi-SERVO-PR-56M-A-BK	EzM-56M-A-BK	EzS-NDR-56M-A
Ezi-SERVO-PR-56M-B-BK	EzM-56M-B-BK	EzS-NDR-56M-B
Ezi-SERVO-PR-56L-A-BK	EzM-56L-A-BK	EzS-NDR-56L-A
Ezi-SERVO-PR-56L-B-BK	EzM-56L-B-BK	EzS-NDR-56L-B
Ezi-SERVO-PR-60S-A-BK	EzM-60S-A-BK	EzS-NDR-60S-A
Ezi-SERVO-PR-60S-B-BK	EzM-60S-B-BK	EzS-NDR-60S-B
Ezi-SERVO-PR-60M-A-BK	EzM-60M-A-BK	EzS-NDR-60M-A
Ezi-SERVO-PR-60M-B-BK	EzM-60M-B-BK	EzS-NDR-60M-B
Ezi-SERVO-PR-60L-A-BK	EzM-60L-A-BK	EzS-NDR-60L-A
Ezi-SERVO-PR-60L-B-BK	EzM-60L-B-BK	EzS-NDR-60L-B
Ezi-SERVO-PR-86M-A-BK	EzM-86M-A-BK	EzS-NDR-86M-A
Ezi-SERVO-PR-86M-B-BK	EzM-86M-B-BK	EzS-NDR-86M-B
Ezi-SERVO-PR-86L-A-BK	EzM-86L-A-BK	EzS-NDR-86L-A
Ezi-SERVO-PR-86L-B-BK	EzM-86L-B-BK	EzS-NDR-86L-B
Ezi-SERVO-PR-86XL-A-BK	EzM-86XL-A-BK	EzS-NDR-86XL-A
Ezi-SERVO-PR-86XL-B-BK	EzM-86XL-B-BK	EzS-NDR-86XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-PR-42S-A-PN3	EzM-42S-A-PN3	EzS-NDR-42S-A	1:3
Ezi-SERVO-PR-42S-B-PN3	EzM-42S-B-PN3	EzS-NDR-42S-B	
Ezi-SERVO-PR-42S-A-PN5	EzM-42S-A-PN5	EzS-NDR-42S-A	1:5
Ezi-SERVO-PR-42S-B-PN5	EzM-42S-B-PN5	EzS-NDR-42S-B	
Ezi-SERVO-PR-42S-A-PN8	EzM-42S-A-PN8	EzS-NDR-42S-A	1:8
Ezi-SERVO-PR-42S-B-PN8	EzM-42S-B-PN8	EzS-NDR-42S-B	
Ezi-SERVO-PR-42S-A-PN10	EzM-42S-A-PN10	EzS-NDR-42S-A	1:10
Ezi-SERVO-PR-42S-B-PN10	EzM-42S-B-PN10	EzS-NDR-42S-B	
Ezi-SERVO-PR-42S-A-PN15	EzM-42S-A-PN15	EzS-NDR-42S-A	1:15
Ezi-SERVO-PR-42S-B-PN15	EzM-42S-B-PN15	EzS-NDR-42S-B	
Ezi-SERVO-PR-42S-A-PN25	EzM-42S-A-PN25	EzS-NDR-42S-A	1:25
Ezi-SERVO-PR-42S-B-PN25	EzM-42S-B-PN25	EzS-NDR-42S-B	
Ezi-SERVO-PR-42S-A-PN40	EzM-42S-A-PN40	EzS-NDR-42S-A	1:40
Ezi-SERVO-PR-42S-B-PN40	EzM-42S-B-PN40	EzS-NDR-42S-B	
Ezi-SERVO-PR-42S-A-PN50	EzM-42S-A-PN50	EzS-NDR-42S-A	1:50
Ezi-SERVO-PR-42S-B-PN50	EzM-42S-B-PN50	EzS-NDR-42S-B	
Ezi-SERVO-PR-42M-A-PN3	EzM-42M-A-PN3	EzS-NDR-42M-A	1:3
Ezi-SERVO-PR-42M-B-PN3	EzM-42M-B-PN3	EzS-NDR-42M-B	
Ezi-SERVO-PR-42M-A-PN5	EzM-42M-A-PN5	EzS-NDR-42M-A	1:5
Ezi-SERVO-PR-42M-B-PN5	EzM-42M-B-PN5	EzS-NDR-42M-B	
Ezi-SERVO-PR-42M-A-PN8	EzM-42M-A-PN8	EzS-NDR-42M-A	1:8
Ezi-SERVO-PR-42M-B-PN8	EzM-42M-B-PN8	EzS-NDR-42M-B	
Ezi-SERVO-PR-42M-A-PN10	EzM-42M-A-PN10	EzS-NDR-42M-A	1:10
Ezi-SERVO-PR-42M-B-PN10	EzM-42M-B-PN10	EzS-NDR-42M-B	
Ezi-SERVO-PR-42M-A-PN15	EzM-42M-A-PN15	EzS-NDR-42M-A	1:15
Ezi-SERVO-PR-42M-B-PN15	EzM-42M-B-PN15	EzS-NDR-42M-B	
Ezi-SERVO-PR-42M-A-PN25	EzM-42M-A-PN25	EzS-NDR-42M-A	1:25
Ezi-SERVO-PR-42M-B-PN25	EzM-42M-B-PN25	EzS-NDR-42M-B	
Ezi-SERVO-PR-42M-A-PN40	EzM-42M-A-PN40	EzS-NDR-42M-A	1:40
Ezi-SERVO-PR-42M-B-PN40	EzM-42M-B-PN40	EzS-NDR-42M-B	
Ezi-SERVO-PR-42M-A-PN50	EzM-42M-A-PN50	EzS-NDR-42M-A	1:50
Ezi-SERVO-PR-42M-B-PN50	EzM-42M-B-PN50	EzS-NDR-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-PR-42L-A-PN3	EzM-42L-A-PN3	EzS-NDR-42L-A	1:3
Ezi-SERVO-PR-42L-B-PN3	EzM-42L-B-PN3	EzS-NDR-42L-B	
Ezi-SERVO-PR-42L-A-PN5	EzM-42L-A-PN5	EzS-NDR-42L-A	1:5
Ezi-SERVO-PR-42L-B-PN5	EzM-42L-B-PN5	EzS-NDR-42L-B	
Ezi-SERVO-PR-42L-A-PN8	EzM-42L-A-PN8	EzS-NDR-42L-A	1:8
Ezi-SERVO-PR-42L-B-PN8	EzM-42L-B-PN8	EzS-NDR-42L-B	
Ezi-SERVO-PR-42L-A-PN10	EzM-42L-A-PN10	EzS-NDR-42L-A	1:10
Ezi-SERVO-PR-42L-B-PN10	EzM-42L-B-PN10	EzS-NDR-42L-B	
Ezi-SERVO-PR-42L-A-PN15	EzM-42L-A-PN15	EzS-NDR-42L-A	1:15
Ezi-SERVO-PR-42L-B-PN15	EzM-42L-B-PN15	EzS-NDR-42L-B	
Ezi-SERVO-PR-42L-A-PN25	EzM-42L-A-PN25	EzS-NDR-42L-A	1:25
Ezi-SERVO-PR-42L-B-PN25	EzM-42L-B-PN25	EzS-NDR-42L-B	
Ezi-SERVO-PR-42L-A-PN40	EzM-42L-A-PN40	EzS-NDR-42L-A	1:40
Ezi-SERVO-PR-42L-B-PN40	EzM-42L-B-PN40	EzS-NDR-42L-B	
Ezi-SERVO-PR-42L-A-PN50	EzM-42L-A-PN50	EzS-NDR-42L-A	1:50
Ezi-SERVO-PR-42L-B-PN50	EzM-42L-B-PN50	EzS-NDR-42L-B	
Ezi-SERVO-PR-42XL-A-PN3	EzM-42XL-A-PN3	EzS-NDR-42XL-A	1:3
Ezi-SERVO-PR-42XL-B-PN3	EzM-42XL-B-PN3	EzS-NDR-42XL-B	
Ezi-SERVO-PR-42XL-A-PN5	EzM-42XL-A-PN5	EzS-NDR-42XL-A	1:5
Ezi-SERVO-PR-42XL-B-PN5	EzM-42XL-B-PN5	EzS-NDR-42XL-B	
Ezi-SERVO-PR-42XL-A-PN8	EzM-42XL-A-PN8	EzS-NDR-42XL-A	1:8
Ezi-SERVO-PR-42XL-B-PN8	EzM-42XL-B-PN8	EzS-NDR-42XL-B	
Ezi-SERVO-PR-42XL-A-PN10	EzM-42XL-A-PN10	EzS-NDR-42XL-A	1:10
Ezi-SERVO-PR-42XL-B-PN10	EzM-42XL-B-PN10	EzS-NDR-42XL-B	
Ezi-SERVO-PR-42XL-A-PN15	EzM-42XL-A-PN15	EzS-NDR-42XL-A	1:15
Ezi-SERVO-PR-42XL-B-PN15	EzM-42XL-B-PN15	EzS-NDR-42XL-B	
Ezi-SERVO-PR-42XL-A-PN25	EzM-42XL-A-PN25	EzS-NDR-42XL-A	1:25
Ezi-SERVO-PR-42XL-B-PN25	EzM-42XL-B-PN25	EzS-NDR-42XL-B	
Ezi-SERVO-PR-42XL-A-PN40	EzM-42XL-A-PN40	EzS-NDR-42XL-A	1:40
Ezi-SERVO-PR-42XL-B-PN40	EzM-42XL-B-PN40	EzS-NDR-42XL-B	
Ezi-SERVO-PR-42XL-A-PN50	EzM-42XL-A-PN50	EzS-NDR-42XL-A	1:50
Ezi-SERVO-PR-42XL-B-PN50	EzM-42XL-B-PN50	EzS-NDR-42XL-B	
Ezi-SERVO-PR-56S-A-PN3	EzM-56S-A-PN3	EzS-NDR-56S-A	1:3
Ezi-SERVO-PR-56S-B-PN3	EzM-56S-B-PN3	EzS-NDR-56S-B	
Ezi-SERVO-PR-56S-A-PN5	EzM-56S-A-PN5	EzS-NDR-56S-A	1:5
Ezi-SERVO-PR-56S-B-PN5	EzM-56S-B-PN5	EzS-NDR-56S-B	
Ezi-SERVO-PR-56S-A-PN8	EzM-56S-A-PN8	EzS-NDR-56S-A	1:8
Ezi-SERVO-PR-56S-B-PN8	EzM-56S-B-PN8	EzS-NDR-56S-B	
Ezi-SERVO-PR-56S-A-PN10	EzM-56S-A-PN10	EzS-NDR-56S-A	1:10
Ezi-SERVO-PR-56S-B-PN10	EzM-56S-B-PN10	EzS-NDR-56S-B	
Ezi-SERVO-PR-56S-A-PN15	EzM-56S-A-PN15	EzS-NDR-56S-A	1:15
Ezi-SERVO-PR-56S-B-PN15	EzM-56S-B-PN15	EzS-NDR-56S-B	
Ezi-SERVO-PR-56S-A-PN25	EzM-56S-A-PN25	EzS-NDR-56S-A	1:25
Ezi-SERVO-PR-56S-B-PN25	EzM-56S-B-PN25	EzS-NDR-56S-B	
Ezi-SERVO-PR-56S-A-PN40	EzM-56S-A-PN40	EzS-NDR-56S-A	1:40
Ezi-SERVO-PR-56S-B-PN40	EzM-56S-B-PN40	EzS-NDR-56S-B	
Ezi-SERVO-PR-56S-A-PN50	EzM-56S-A-PN50	EzS-NDR-56S-A	1:50
Ezi-SERVO-PR-56S-B-PN50	EzM-56S-B-PN50	EzS-NDR-56S-B	
Ezi-SERVO-PR-56M-A-PN3	EzM-56M-A-PN3	EzS-NDR-56M-A	1:3
Ezi-SERVO-PR-56M-B-PN3	EzM-56M-B-PN3	EzS-NDR-56M-B	
Ezi-SERVO-PR-56M-A-PN5	EzM-56M-A-PN5	EzS-NDR-56M-A	1:5
Ezi-SERVO-PR-56M-B-PN5	EzM-56M-B-PN5	EzS-NDR-56M-B	
Ezi-SERVO-PR-56M-A-PN8	EzM-56M-A-PN8	EzS-NDR-56M-A	1:8
Ezi-SERVO-PR-56M-B-PN8	EzM-56M-B-PN8	EzS-NDR-56M-B	
Ezi-SERVO-PR-56M-A-PN10	EzM-56M-A-PN10	EzS-NDR-56M-A	1:10
Ezi-SERVO-PR-56M-B-PN10	EzM-56M-B-PN10	EzS-NDR-56M-B	
Ezi-SERVO-PR-56M-A-PN15	EzM-56M-A-PN15	EzS-NDR-56M-A	1:15
Ezi-SERVO-PR-56M-B-PN15	EzM-56M-B-PN15	EzS-NDR-56M-B	
Ezi-SERVO-PR-56M-A-PN25	EzM-56M-A-PN25	EzS-NDR-56M-A	1:25
Ezi-SERVO-PR-56M-B-PN25	EzM-56M-B-PN25	EzS-NDR-56M-B	
Ezi-SERVO-PR-56M-A-PN40	EzM-56M-A-PN40	EzS-NDR-56M-A	1:40
Ezi-SERVO-PR-56M-B-PN40	EzM-56M-B-PN40	EzS-NDR-56M-B	
Ezi-SERVO-PR-56M-A-PN50	EzM-56M-A-PN50	EzS-NDR-56M-A	1:50
Ezi-SERVO-PR-56M-B-PN50	EzM-56M-B-PN50	EzS-NDR-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-PR-56L-A-PN3	EzM-56L-A-PN3	EzS-NDR-56L-A	1:3
Ezi-SERVO-PR-56L-B-PN3	EzM-56L-B-PN3	EzS-NDR-56L-B	
Ezi-SERVO-PR-56L-A-PN5	EzM-56L-A-PN5	EzS-NDR-56L-A	1:5
Ezi-SERVO-PR-56L-B-PN5	EzM-56L-B-PN5	EzS-NDR-56L-B	
Ezi-SERVO-PR-56L-A-PN8	EzM-56L-A-PN8	EzS-NDR-56L-A	1:8
Ezi-SERVO-PR-56L-B-PN8	EzM-56L-B-PN8	EzS-NDR-56L-B	
Ezi-SERVO-PR-56L-A-PN10	EzM-56L-A-PN10	EzS-NDR-56L-A	1:10
Ezi-SERVO-PR-56L-B-PN10	EzM-56L-B-PN10	EzS-NDR-56L-B	
Ezi-SERVO-PR-56L-A-PN15	EzM-56L-A-PN15	EzS-NDR-56L-A	1:15
Ezi-SERVO-PR-56L-B-PN15	EzM-56L-B-PN15	EzS-NDR-56L-B	
Ezi-SERVO-PR-56L-A-PN25	EzM-56L-A-PN25	EzS-NDR-56L-A	1:25
Ezi-SERVO-PR-56L-B-PN25	EzM-56L-B-PN25	EzS-NDR-56L-B	
Ezi-SERVO-PR-56L-A-PN40	EzM-56L-A-PN40	EzS-NDR-56L-A	1:40
Ezi-SERVO-PR-56L-B-PN40	EzM-56L-B-PN40	EzS-NDR-56L-B	
Ezi-SERVO-PR-56L-A-PN50	EzM-56L-A-PN50	EzS-NDR-56L-A	1:50
Ezi-SERVO-PR-56L-B-PN50	EzM-56L-B-PN50	EzS-NDR-56L-B	
Ezi-SERVO-PR-60S-A-PN3	EzM-60S-A-PN3	EzS-NDR-60S-A	1:3
Ezi-SERVO-PR-60S-B-PN3	EzM-60S-B-PN3	EzS-NDR-60S-B	
Ezi-SERVO-PR-60S-A-PN5	EzM-60S-A-PN5	EzS-NDR-60S-A	1:5
Ezi-SERVO-PR-60S-B-PN5	EzM-60S-B-PN5	EzS-NDR-60S-B	
Ezi-SERVO-PR-60S-A-PN8	EzM-60S-A-PN8	EzS-NDR-60S-A	1:8
Ezi-SERVO-PR-60S-B-PN8	EzM-60S-B-PN8	EzS-NDR-60S-B	
Ezi-SERVO-PR-60S-A-PN10	EzM-60S-A-PN10	EzS-NDR-60S-A	1:10
Ezi-SERVO-PR-60S-B-PN10	EzM-60S-B-PN10	EzS-NDR-60S-B	
Ezi-SERVO-PR-60S-A-PN15	EzM-60S-A-PN15	EzS-NDR-60S-A	1:15
Ezi-SERVO-PR-60S-B-PN15	EzM-60S-B-PN15	EzS-NDR-60S-B	
Ezi-SERVO-PR-60S-A-PN25	EzM-60S-A-PN25	EzS-NDR-60S-A	1:25
Ezi-SERVO-PR-60S-B-PN25	EzM-60S-B-PN25	EzS-NDR-60S-B	
Ezi-SERVO-PR-60S-A-PN40	EzM-60S-A-PN40	EzS-NDR-60S-A	1:40
Ezi-SERVO-PR-60S-B-PN40	EzM-60S-B-PN40	EzS-NDR-60S-B	
Ezi-SERVO-PR-60S-A-PN50	EzM-60S-A-PN50	EzS-NDR-60S-A	1:50
Ezi-SERVO-PR-60S-B-PN50	EzM-60S-B-PN50	EzS-NDR-60S-B	
Ezi-SERVO-PR-60M-A-PN3	EzM-60M-A-PN3	EzS-NDR-60M-A	1:3
Ezi-SERVO-PR-60M-B-PN3	EzM-60M-B-PN3	EzS-NDR-60M-B	
Ezi-SERVO-PR-60M-A-PN5	EzM-60M-A-PN5	EzS-NDR-60M-A	1:5
Ezi-SERVO-PR-60M-B-PN5	EzM-60M-B-PN5	EzS-NDR-60M-B	
Ezi-SERVO-PR-60M-A-PN8	EzM-60M-A-PN8	EzS-NDR-60M-A	1:8
Ezi-SERVO-PR-60M-B-PN8	EzM-60M-B-PN8	EzS-NDR-60M-B	
Ezi-SERVO-PR-60M-A-PN10	EzM-60M-A-PN10	EzS-NDR-60M-A	1:10
Ezi-SERVO-PR-60M-B-PN10	EzM-60M-B-PN10	EzS-NDR-60M-B	
Ezi-SERVO-PR-60M-A-PN15	EzM-60M-A-PN15	EzS-NDR-60M-A	1:15
Ezi-SERVO-PR-60M-B-PN15	EzM-60M-B-PN15	EzS-NDR-60M-B	
Ezi-SERVO-PR-60M-A-PN25	EzM-60M-A-PN25	EzS-NDR-60M-A	1:25
Ezi-SERVO-PR-60M-B-PN25	EzM-60M-B-PN25	EzS-NDR-60M-B	
Ezi-SERVO-PR-60M-A-PN40	EzM-60M-A-PN40	EzS-NDR-60M-A	1:40
Ezi-SERVO-PR-60M-B-PN40	EzM-60M-B-PN40	EzS-NDR-60M-B	
Ezi-SERVO-PR-60M-A-PN50	EzM-60M-A-PN50	EzS-NDR-60M-A	1:50
Ezi-SERVO-PR-60M-B-PN50	EzM-60M-B-PN50	EzS-NDR-60M-B	
Ezi-SERVO-PR-60L-A-PN3	EzM-60L-A-PN3	EzS-NDR-60L-A	1:3
Ezi-SERVO-PR-60L-B-PN3	EzM-60L-B-PN3	EzS-NDR-60L-B	
Ezi-SERVO-PR-60L-A-PN5	EzM-60L-A-PN5	EzS-NDR-60L-A	1:5
Ezi-SERVO-PR-60L-B-PN5	EzM-60L-B-PN5	EzS-NDR-60L-B	
Ezi-SERVO-PR-60L-A-PN8	EzM-60L-A-PN8	EzS-NDR-60L-A	1:8
Ezi-SERVO-PR-60L-B-PN8	EzM-60L-B-PN8	EzS-NDR-60L-B	
Ezi-SERVO-PR-60L-A-PN10	EzM-60L-A-PN10	EzS-NDR-60L-A	1:10
Ezi-SERVO-PR-60L-B-PN10	EzM-60L-B-PN10	EzS-NDR-60L-B	
Ezi-SERVO-PR-60L-A-PN15	EzM-60L-A-PN15	EzS-NDR-60L-A	1:15
Ezi-SERVO-PR-60L-B-PN15	EzM-60L-B-PN15	EzS-NDR-60L-B	
Ezi-SERVO-PR-60L-A-PN25	EzM-60L-A-PN25	EzS-NDR-60L-A	1:25
Ezi-SERVO-PR-60L-B-PN25	EzM-60L-B-PN25	EzS-NDR-60L-B	
Ezi-SERVO-PR-60L-A-PN40	EzM-60L-A-PN40	EzS-NDR-60L-A	1:40
Ezi-SERVO-PR-60L-B-PN40	EzM-60L-B-PN40	EzS-NDR-60L-B	
Ezi-SERVO-PR-60L-A-PN50	EzM-60L-A-PN50	EzS-NDR-60L-A	1:50
Ezi-SERVO-PR-60L-B-PN50	EzM-60L-B-PN50	EzS-NDR-60L-B	

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-PR-86M-A-PN3	EzM-86M-A-PN3	EzS-NDR-86M-A	1:3
Ezi-SERVO-PR-86M-B-PN3	EzM-86M-B-PN3	EzS-NDR-86M-B	
Ezi-SERVO-PR-86M-A-PN5	EzM-86M-A-PN5	EzS-NDR-86M-A	1:5
Ezi-SERVO-PR-86M-B-PN5	EzM-86M-B-PN5	EzS-NDR-86M-B	
Ezi-SERVO-PR-86M-A-PN8	EzM-86M-A-PN8	EzS-NDR-86M-A	1:8
Ezi-SERVO-PR-86M-B-PN8	EzM-86M-B-PN8	EzS-NDR-86M-B	
Ezi-SERVO-PR-86M-A-PN10	EzM-86M-A-PN10	EzS-NDR-86M-A	1:10
Ezi-SERVO-PR-86M-B-PN10	EzM-86M-B-PN10	EzS-NDR-86M-B	
Ezi-SERVO-PR-86M-A-PN15	EzM-86M-A-PN15	EzS-NDR-86M-A	1:15
Ezi-SERVO-PR-86M-B-PN15	EzM-86M-B-PN15	EzS-NDR-86M-B	
Ezi-SERVO-PR-86M-A-PN25	EzM-86M-A-PN25	EzS-NDR-86M-A	1:25
Ezi-SERVO-PR-86M-B-PN25	EzM-86M-B-PN25	EzS-NDR-86M-B	
Ezi-SERVO-PR-86M-A-PN40	EzM-86M-A-PN40	EzS-NDR-86M-A	1:40
Ezi-SERVO-PR-86M-B-PN40	EzM-86M-B-PN40	EzS-NDR-86M-B	
Ezi-SERVO-PR-86M-A-PN50	EzM-86M-A-PN50	EzS-NDR-86M-A	1:50
Ezi-SERVO-PR-86M-B-PN50	EzM-86M-B-PN50	EzS-NDR-86M-B	
Ezi-SERVO-PR-86L-A-PN3	EzM-86L-A-PN3	EzS-NDR-86L-A	1:3
Ezi-SERVO-PR-86L-B-PN3	EzM-86L-B-PN3	EzS-NDR-86L-B	
Ezi-SERVO-PR-86L-A-PN5	EzM-86L-A-PN5	EzS-NDR-86L-A	1:5
Ezi-SERVO-PR-86L-B-PN5	EzM-86L-B-PN5	EzS-NDR-86L-B	
Ezi-SERVO-PR-86L-A-PN8	EzM-86L-A-PN8	EzS-NDR-86L-A	1:8
Ezi-SERVO-PR-86L-B-PN8	EzM-86L-B-PN8	EzS-NDR-86L-B	
Ezi-SERVO-PR-86L-A-PN10	EzM-86L-A-PN10	EzS-NDR-86L-A	1:10
Ezi-SERVO-PR-86L-B-PN10	EzM-86L-B-PN10	EzS-NDR-86L-B	
Ezi-SERVO-PR-86L-A-PN15	EzM-86L-A-PN15	EzS-NDR-86L-A	1:15
Ezi-SERVO-PR-86L-B-PN15	EzM-86L-B-PN15	EzS-NDR-86L-B	
Ezi-SERVO-PR-86L-A-PN25	EzM-86L-A-PN25	EzS-NDR-86L-A	1:25
Ezi-SERVO-PR-86L-B-PN25	EzM-86L-B-PN25	EzS-NDR-86L-B	
Ezi-SERVO-PR-86L-A-PN40	EzM-86L-A-PN40	EzS-NDR-86L-A	1:40
Ezi-SERVO-PR-86L-B-PN40	EzM-86L-B-PN40	EzS-NDR-86L-B	
Ezi-SERVO-PR-86L-A-PN50	EzM-86L-A-PN50	EzS-NDR-86L-A	1:50
Ezi-SERVO-PR-86L-B-PN50	EzM-86L-B-PN50	EzS-NDR-86L-B	
Ezi-SERVO-PR-86XL-A-PN3	EzM-86XL-A-PN3	EzS-NDR-86XL-A	1:3
Ezi-SERVO-PR-86XL-B-PN3	EzM-86XL-B-PN3	EzS-NDR-86XL-B	
Ezi-SERVO-PR-86XL-A-PN5	EzM-86XL-A-PN5	EzS-NDR-86XL-A	1:5
Ezi-SERVO-PR-86XL-B-PN5	EzM-86XL-B-PN5	EzS-NDR-86XL-B	
Ezi-SERVO-PR-86XL-A-PN8	EzM-86XL-A-PN8	EzS-NDR-86XL-A	1:8
Ezi-SERVO-PR-86XL-B-PN8	EzM-86XL-B-PN8	EzS-NDR-86XL-B	
Ezi-SERVO-PR-86XL-A-PN10	EzM-86XL-A-PN10	EzS-NDR-86XL-A	1:10
Ezi-SERVO-PR-86XL-B-PN10	EzM-86XL-B-PN10	EzS-NDR-86XL-B	
Ezi-SERVO-PR-86XL-A-PN15	EzM-86XL-A-PN15	EzS-NDR-86XL-A	1:15
Ezi-SERVO-PR-86XL-B-PN15	EzM-86XL-B-PN15	EzS-NDR-86XL-B	
Ezi-SERVO-PR-86XL-A-PN25	EzM-86XL-A-PN25	EzS-NDR-86XL-A	1:25
Ezi-SERVO-PR-86XL-B-PN25	EzM-86XL-B-PN25	EzS-NDR-86XL-B	
Ezi-SERVO-PR-86XL-A-PN40	EzM-86XL-A-PN40	EzS-NDR-86XL-A	1:40
Ezi-SERVO-PR-86XL-B-PN40	EzM-86XL-B-PN40	EzS-NDR-86XL-B	
Ezi-SERVO-PR-86XL-A-PN50	EzM-86XL-A-PN50	EzS-NDR-86XL-A	1:50
Ezi-SERVO-PR-86XL-B-PN50	EzM-86XL-B-PN50	EzS-NDR-86XL-B	

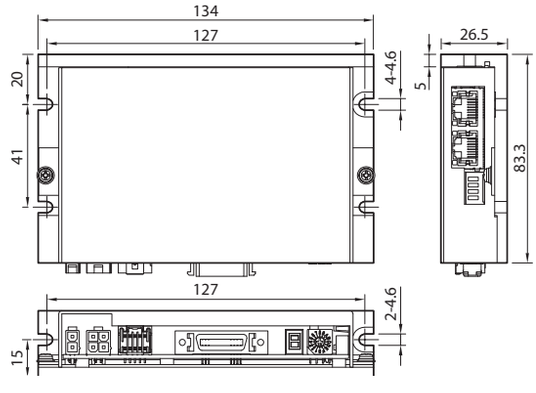
Specifications of Drive

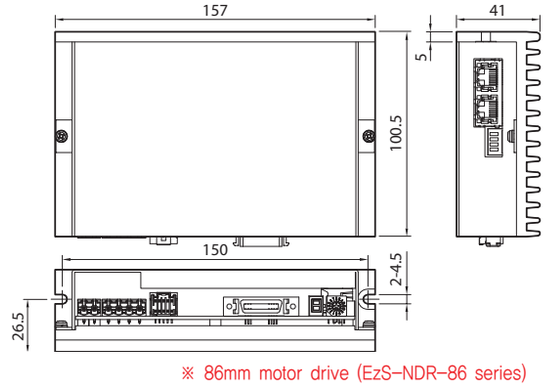
Motor Model		EzM-20 series	EzM-28 series	EzM-35 series	EzM-42 series	EzM-56 series	EzM-60 series	EzM-86 series
Driver Model		EzS-NDR-20 series	EzS-NDR-28 series	EzS-NDR-35 series	EzS-NDR-42 series	EzS-NDR-56 series	EzS-NDR-60 series	EzS-NDR-86 series
Input Voltage		24VDC ±10%						40~70VDC
Control Method		Closed loop control with 32bit MCU						
Multi Axis Drive		Maximum 16 axis through Daisy-Chain						
Position Table		256 motion command steps (Continuous, Wait, Loop, Jump and External start etc.)						
Current Consumption		Max 500mA (Except motor current)						
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃						
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)						
	Vib. Resist.	0.5g						
Function	Rotation Speed	0~3,000 [rpm] *1						
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 32,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 32,000 (Selectable by parameter) *2						
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, System Error, ROM Error, Position Overflow Error						
	LED Display	Power status, Alarm status, In-Position status, Servo On status						
	In-Position Selection	0~15 (Selectable by parameter)						
	Position Gain Selection	0~15 (Selectable by parameter)						
	Rotational Direction	CW/CCW (Selectable by parameter)						
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 9 programmable inputs (Photocoupler)						
	Output Signals	1 dedicated output (Compare Out), 9 programmable outputs (Photocoupler), Brake						
Communication Interface		RS-485 serial communication Communication speed: 9,600~921,600 [bps]						
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm]						
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque						
GUI		User Interface Program within Windows						
Software		Motion Library (DLL) for Windows 7/8/10						

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]





※ 86mm motor drive (EzS-NDR-86 series)

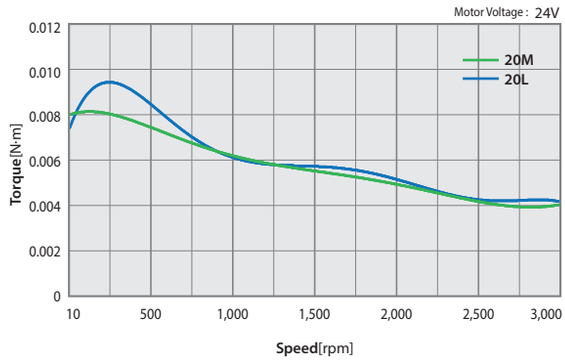
● Specifications of Motor

MODEL			EzM-20 series		EzM-28 series			EzM-35 series		EzM-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	79	104	147	204	232	194	226	299	364	433	567
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

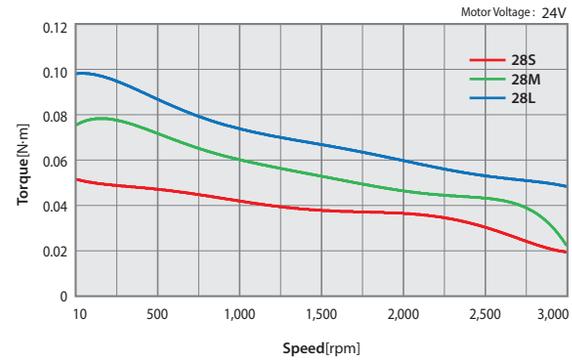
MODEL			EzM-56 series			EzM-60 series			EzM-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	613	784	1231	697	862	1422	2412	3956	5486
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70	270	270	270
	8mm		65	65	65	87	87	87	300	300	300
	13mm		85	85	85	114	114	114	350	350	350
	18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

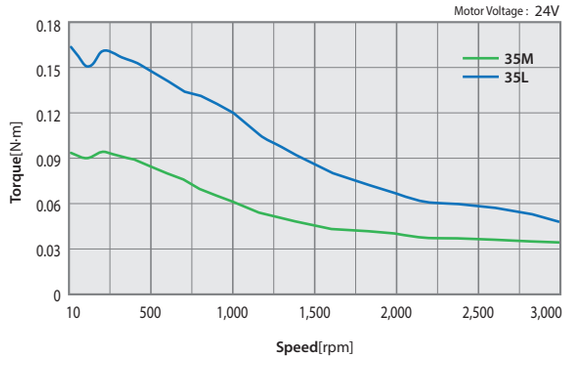
Ezi-SERVO-PR-20 series



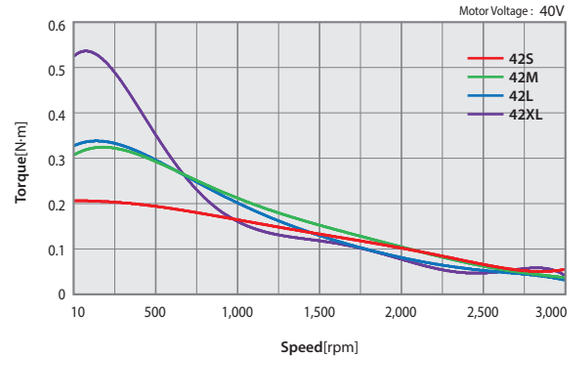
Ezi-SERVO-PR-28 series



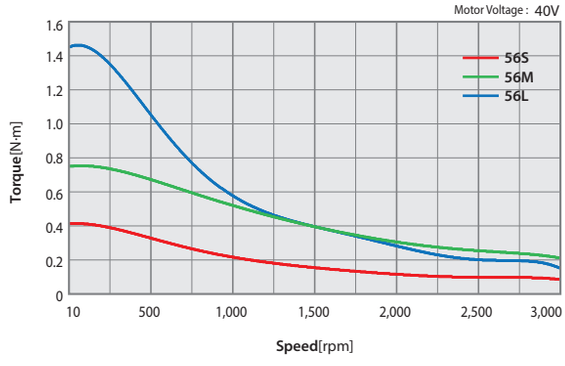
Ezi-SERVO-PR-35 series



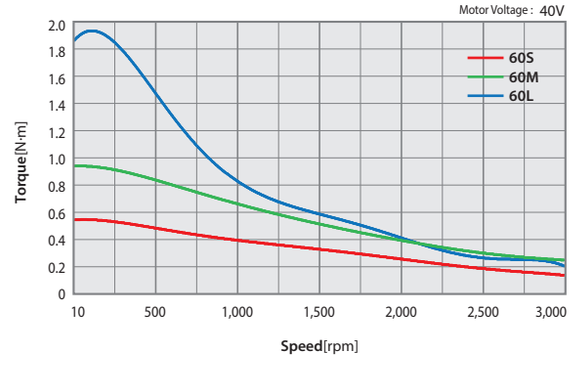
Ezi-SERVO-PR-42 series



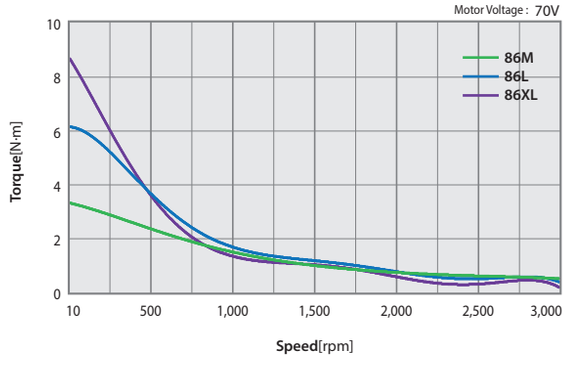
Ezi-SERVO-PR-56 series



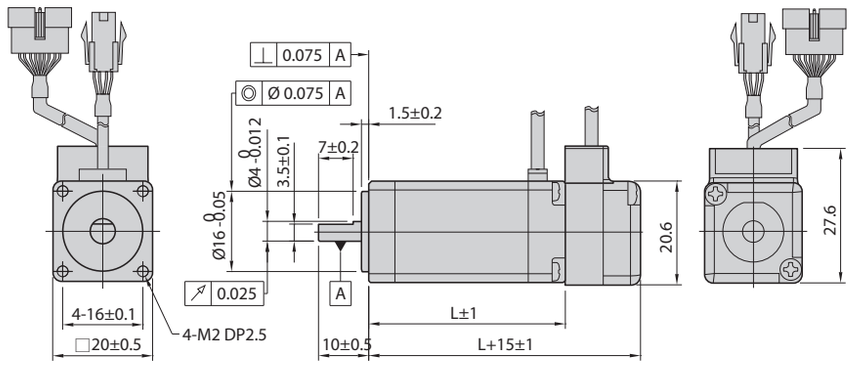
Ezi-SERVO-PR-60 series



Ezi-SERVO-PR-86 series

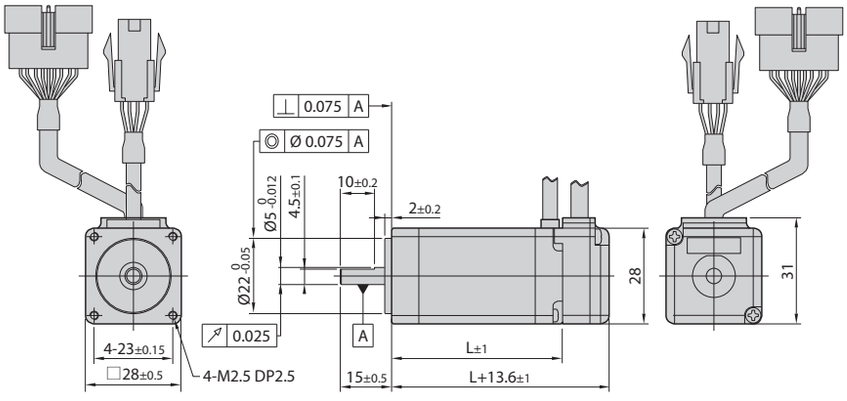


● Dimensions of Motor [mm]



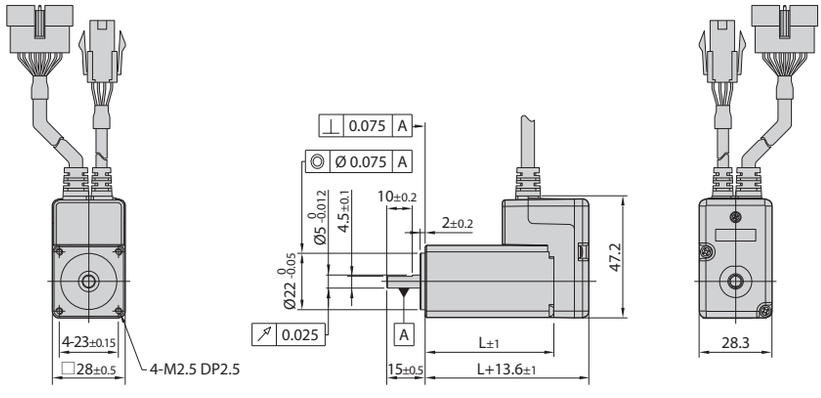
20mm

Model name	Length(L)
EzM-20M	28
EzM-20L	38



28mm

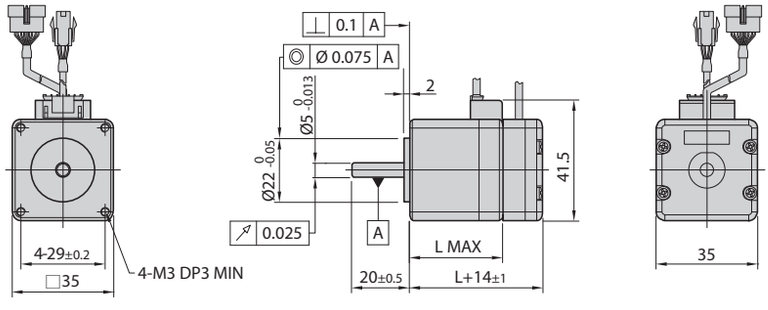
Model name	Length(L)
EzM-28S	32
EzM-28M	45
EzM-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM-28SM	32
EzM-28MM	45
EzM-28LM	50

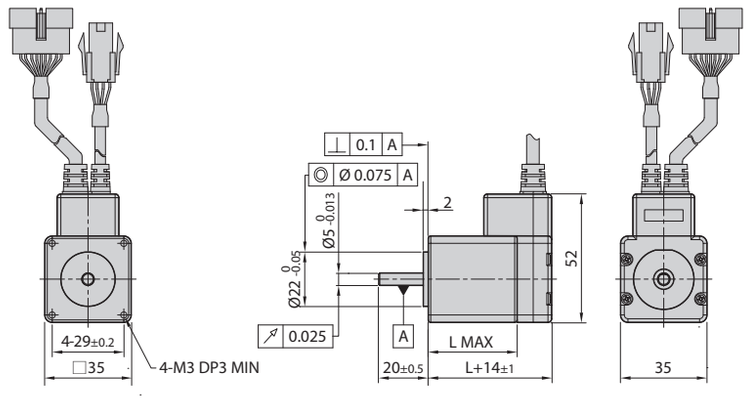
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM-35M	32
EzM-35L	36

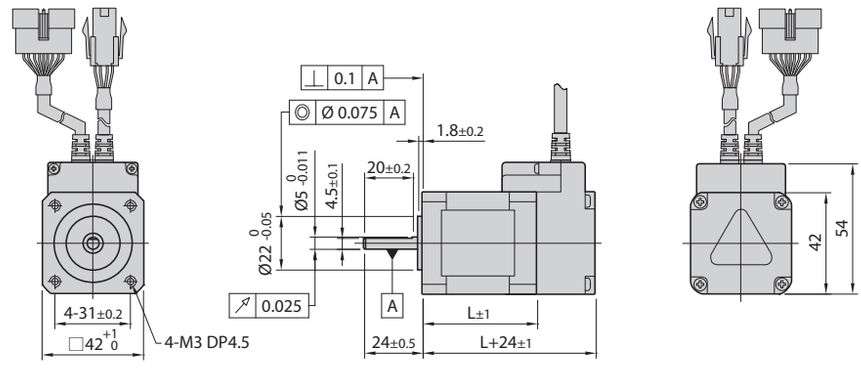
Dimensions of Motor [mm]



35mm (Stopper type)

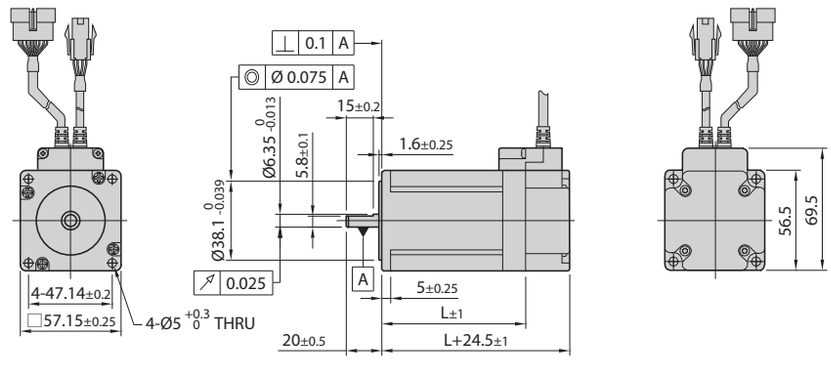
Model name	Length(L)
EzM-35MM	32
EzM-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

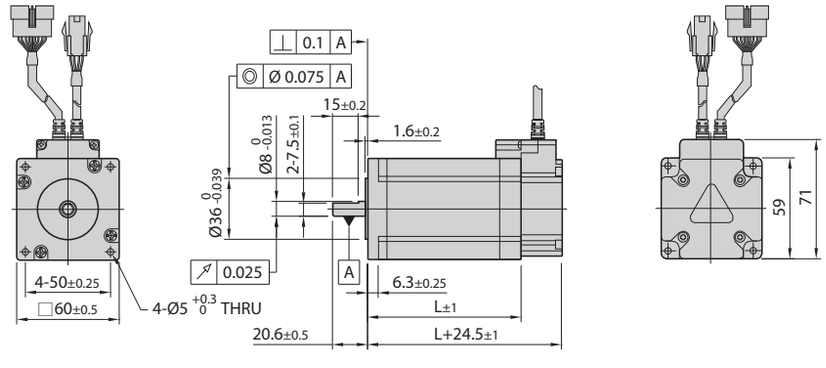
Model name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60



56mm

Model name	Length(L)
EzM-56S	46
EzM-56M	55
EzM-56L	80

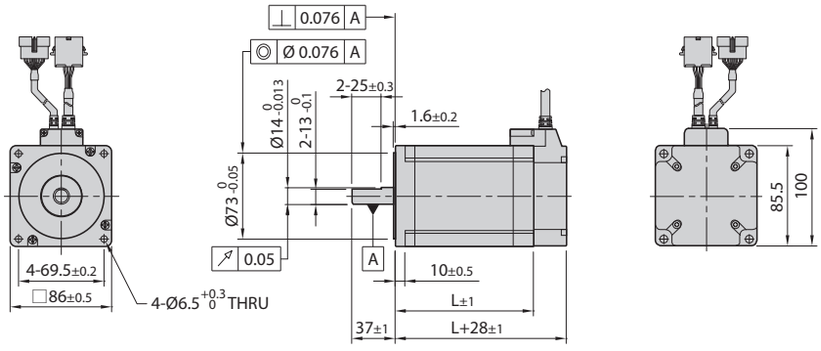
※ There are 2 kinds size of front shaft diameter for EzM-56 series as Ø6.35 and Ø8.0.



60mm

Model name	Length(L)
EzM-60S	47
EzM-60M	56
EzM-60L	85

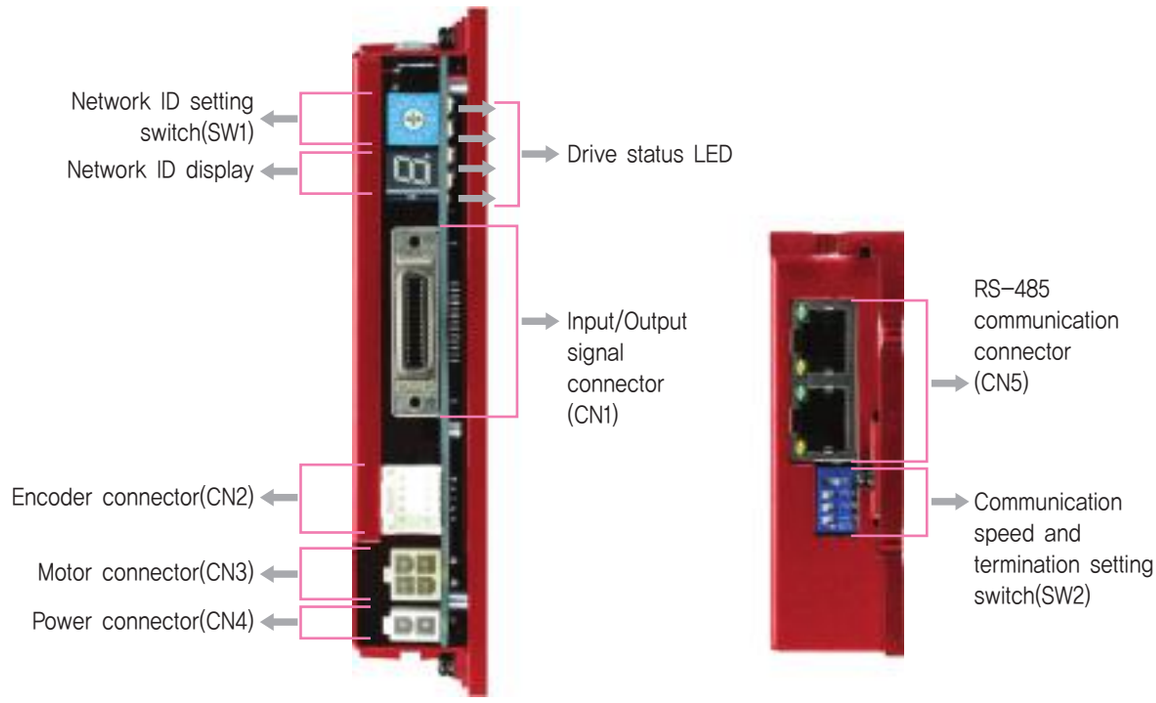
● Dimensions of Motor [mm]



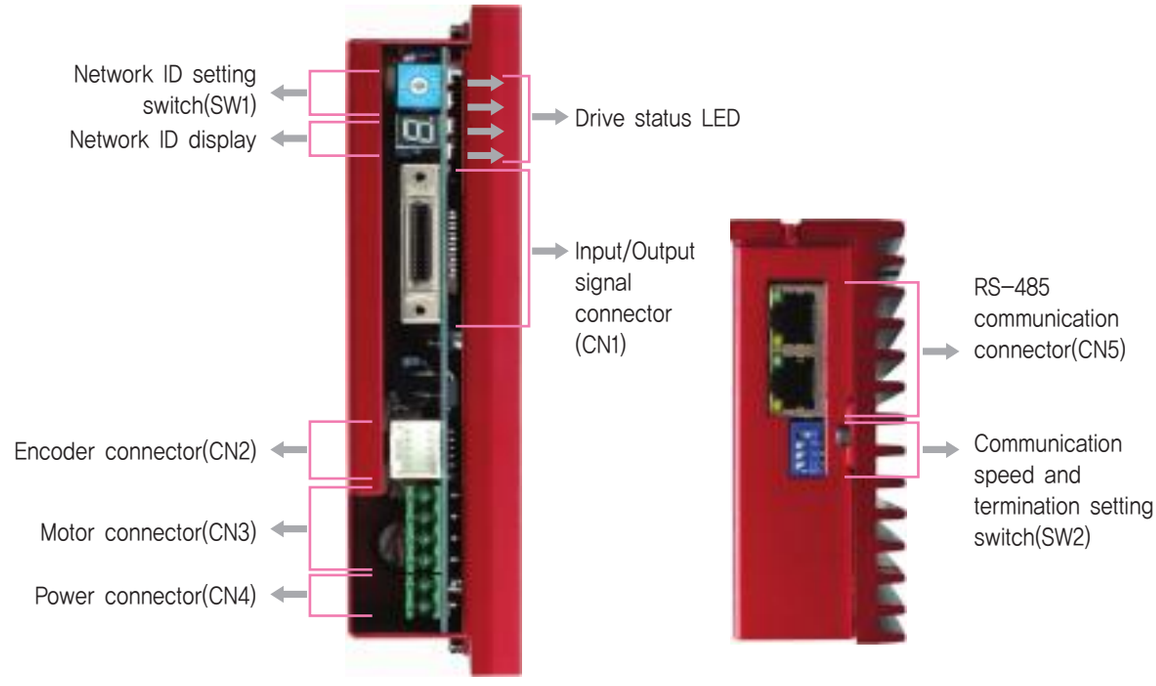
86mm

Model name	Length(L)
EzM-86M	78
EzM-86L	117
EzM-86XL	155

● Settings and Operation



◆ 86mm Motor Drive(EzS-NDR-86 series)

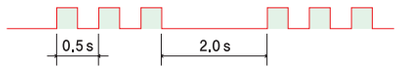


1. Drive status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Lights On when Positioning error reaches within the preset pulse selected by parameter
SON	Orange	Servo On/Off Indication	Servo On: Lights On, Servo Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds the limit value *1
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *2
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state *2



Alarm LED flash
(Ex, Position Tracking Error)

*1 : Limit value depends on motor model (Refer to the Manual)
*2 : Limit value can be change by parameter
*3 : Voltage limit of Back-EMF depends on motor model (Refer to the Manual)

※ For the details, please refer to the Manual.

2. Network ID Setting Switch(SW1)

Position	ID Number	Position	ID Number
0	0	8	8
1	1	9	9
2	2	A	10
3	3	B	11
4	4	C	12
5	5	D	13
6	6	E	14
7	7	F	15

※ Maximum 16 axis can be connected in one network.



3. Communication Speed and Termination Setting Switch(SW2)

Termination Setting Switch(SW2.1)

The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive installed at the end of the network.

Speed Setting Switch(SW2.2~SW2.4)

SW2.2~SW2.4 used for setting speed as follows

SW2.1	SW2.2	SW2.3	SW2.4	Baud Rate[bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

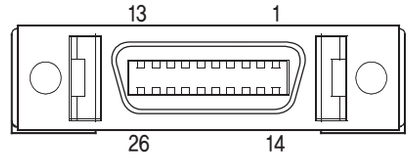
*1 : Default setting value



Speed setting switch
Termination setting switch

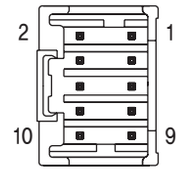
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In6	Input
6	Digital In7	Input
7	Compare Out	Output
8	Digital Out1	Output
9	Digital Out2	Output
10	Digital Out3	Output
11	Digital Out4	Output
12	Digital Out5	Output
13	Digital Out6	Output
14	Digital In2	Input
15	Digital In3	Input
16	Digital In4	Input
17	Digital In5	Input
18	Digital In8	Input
19	Digital In9	Input
20	Digital Out7	Output
21	Digital Out8	Output
22	Digital Out9	Output
23	BRAKE+	Output
24	BRAKE−	Output
25	EXT_GND	Input
26	EXT_24VDC	Input



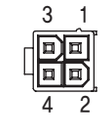
5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----

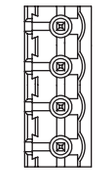


6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output



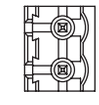
※Only for 86mm motor drive.

7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



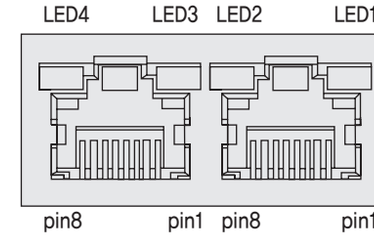
NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input



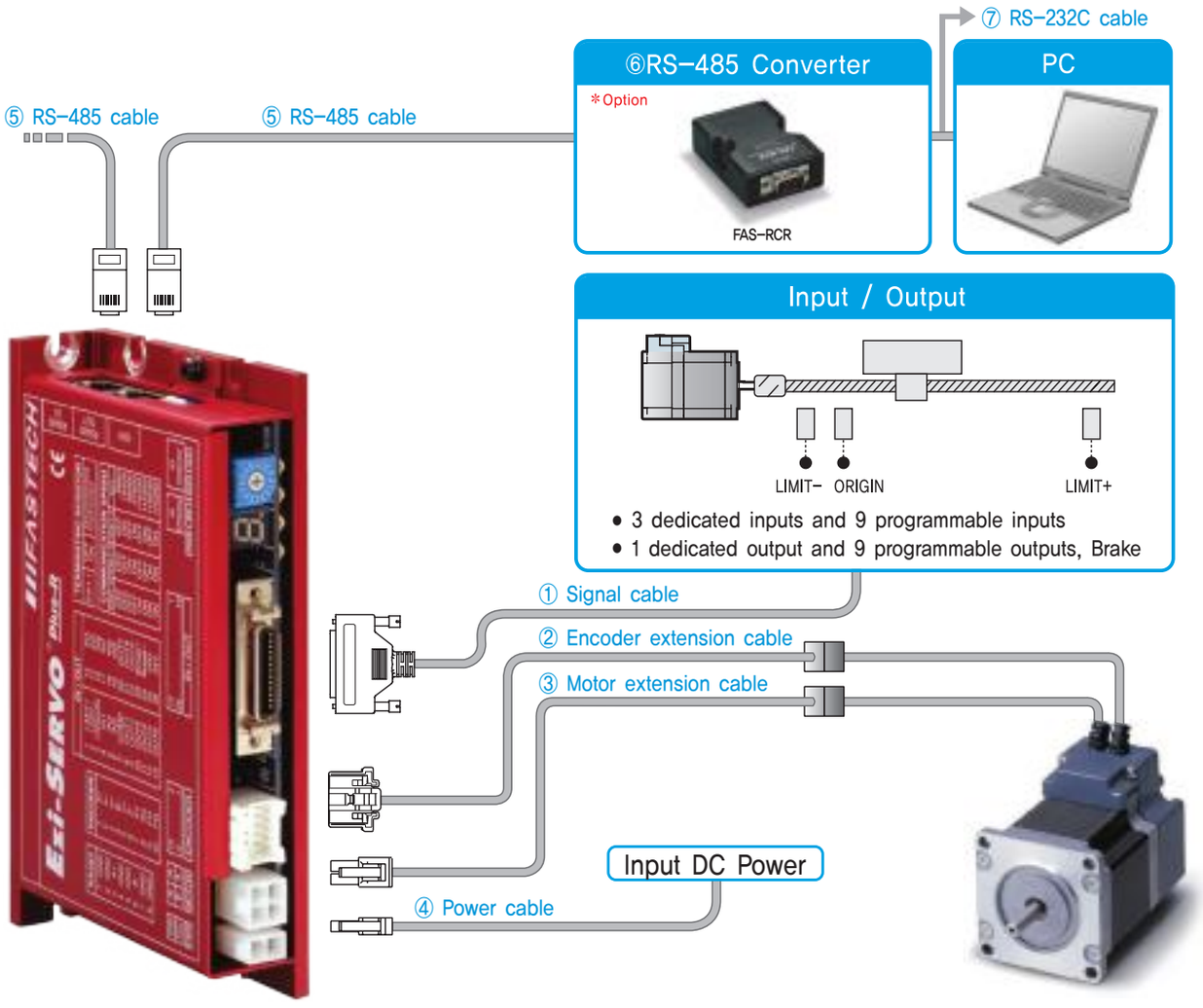
※Only for 86mm motor drive.

8. RS-485 Communication Connector(CN5)

NO.	Function	NO.	Function
1	GND	6	Data−
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Drive status
5	GND	LED 2, 4	Communication status



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	30m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CSVR-S-□□□F	□□□	Normal Cable
CSVR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable

Available to connect between the drives of Ezi-SERVO Plus-R or with FAS-RCR.

Item	Length [m]	Remark
CGNR-R-0R6F	0.6	Normal Cable
CGNR-R-001F	1	
CGNR-R-1R5F	1.5	
CGNR-R-002F	2	
CGNR-R-003F	3	
CGNR-R-005F	5	

⑥ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50X75X23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑦ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F	2	Normal Cable
CGNR-C-003F	3	
CGNR-C-005F	5	

⑧ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-SERVO Plus-R.



⑨ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CIFD-S-□□□F	□□□	Normal Cable
CIFD-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

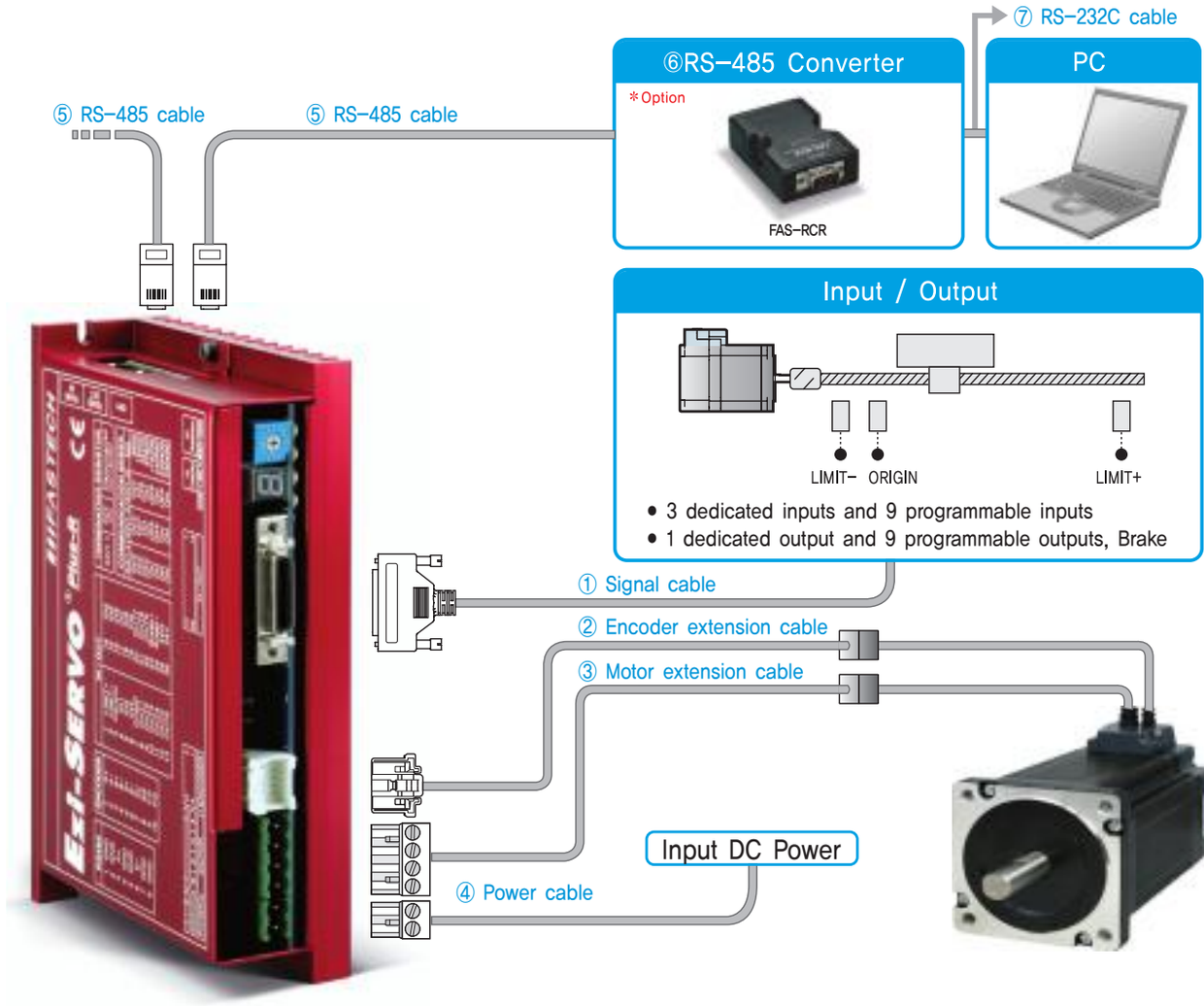
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10126-3000PE 10326-52F0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	30m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CSVR-S-□□□F	□□□	Normal Cable
CSVR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CSVP-M-□□□F	□□□	Normal Cable
CSVP-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable

Available to connect between the drives of Ezi-SERVO Plus-R or with FAS-RCR.

Item	Length [m]	Remark
CGNR-R-0R6F	0.6	Normal Cable
CGNR-R-001F	1	
CGNR-R-1R5F	1.5	
CGNR-R-002F	2	
CGNR-R-003F	3	
CGNR-R-005F	5	

⑥ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50X75X23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑦ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F	2	Normal Cable
CGNR-C-003F	3	
CGNR-C-005F	5	

⑧ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-SERVO Plus-R.



⑨ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-SERVO Plus-R.

Item	Length [m]	Remark
CIFD-S-□□□F	□□□	Normal Cable
CIFD-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

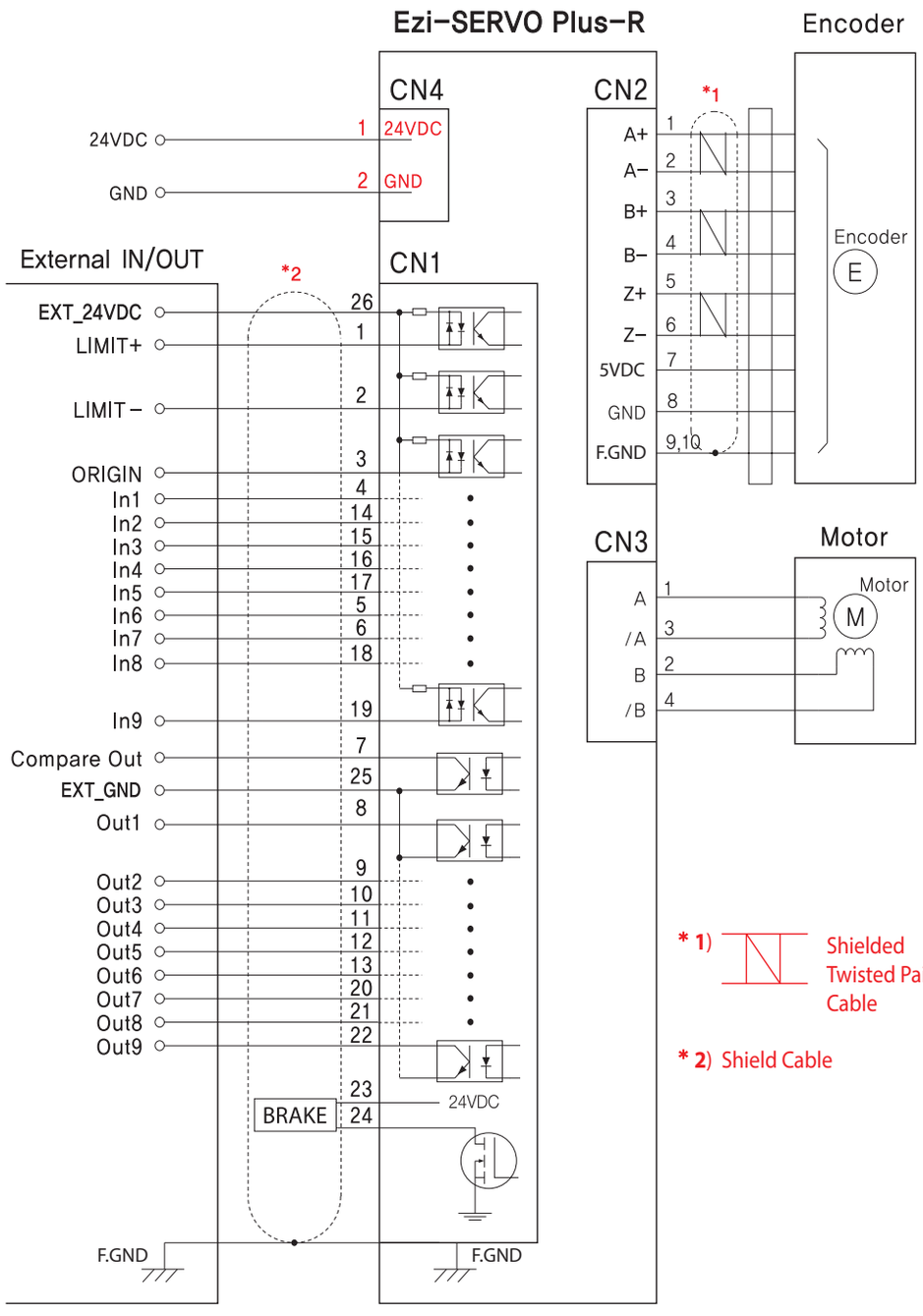
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing Terminal	3191-4R1 1381T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10126-3000PE 10326-52F0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



* 1) Shielded Twisted Pair Cable

* 2) Shield Cable

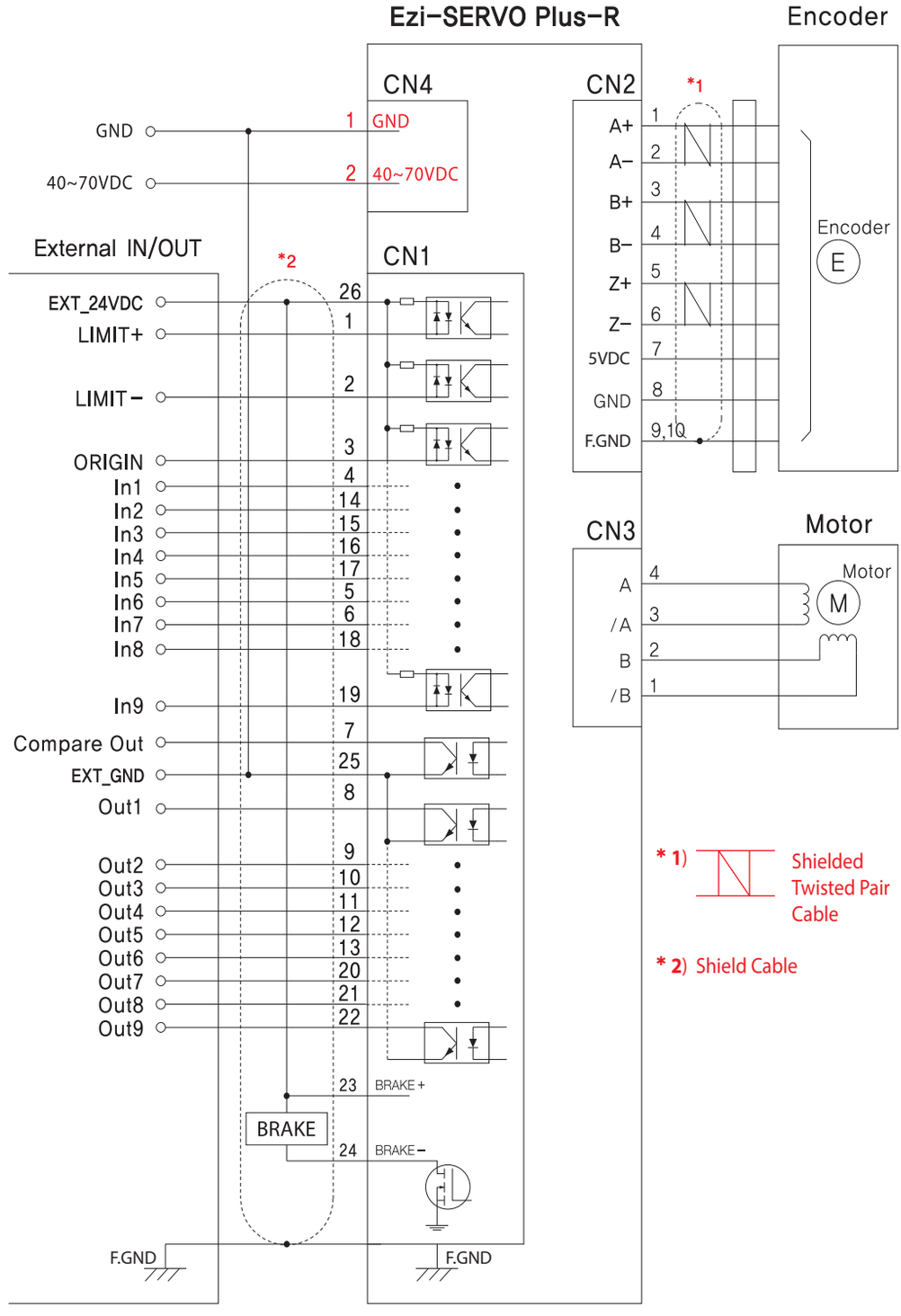
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

External Wiring Diagram [86mm Motor Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● GUI(Graphic User Interface) Screenshot



◆ Controller Lists and Motion Test

This screen display the controller list that connected to system. You can make a single move, jog and origin command and also the motor status is displayed.



◆ Parameter List

All of the parameters are displayed and modified on this screen.



◆ Motion Repeat and Monitor Status

Target position, speed, delay time and repeat count are selected for repeat motion test. Motion library(DLL) is also displayed on screen.



◆ I/O Monitoring and Setting

You can select various digital input and output signals of controller.



◆ Position Table

You can edit the position table and execute it. The position table data can be saved and loaded from Flash ROM and Windows file.

※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.


Ezi-SERVO mini
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
ID
ID SET

Ezi-SERVO Plus-R MINI

Closed Loop System_ Ezi-SERVO Plus-R MINI

- Miniaturized Compact Size
- Embedded Controller
- Position Table
- Closed Loop System
- No Gain Tuning / No Hunting
- High Resolution / Fast Response



FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® Plus-R MINI

Closed Loop Stepping System



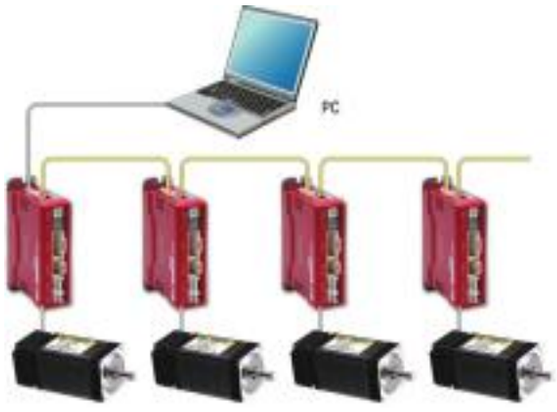
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PLC.
The PLC can monitor the In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 64 positioning points can be set from PLC.



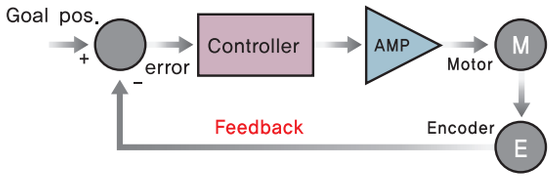
1 Network Based Motion Control

A maximum of 16 axis can be operated from a PC through RS-485 communications. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library (DLL) is provided for programming under Windows 7/8/10.



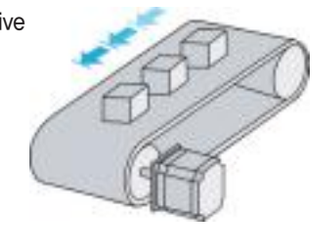
3 Closed Loop System

Ezi-SERVO is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO to update the current position every 25 μsec. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



4 No Gain Tuning

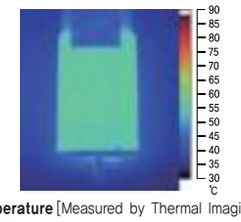
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO is optimized for the application and ready to work right out of the box. The Ezi-SERVO system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO also performs exceptionally, even under heavy loads and high speeds.



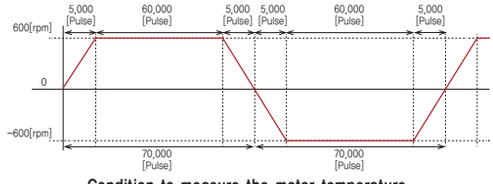
5 Heat Reduction / Energy Saving

(Motor Current Control according to load)

Ezi-SERVO automatically controls motor current according to load. Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]



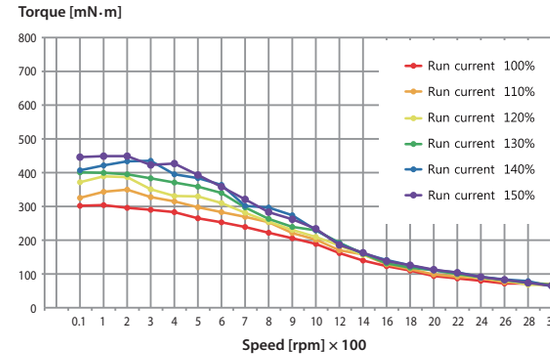
Example of the Motor Current Control according to load

6 Torque Improvement

(Motor Current Setting)

Ezi-SERVO can increase the motor current up to 150% by setting the Run Current by parameter. Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased.

Ezi-SERVO can improve the torque in the low speed range by about 30%.

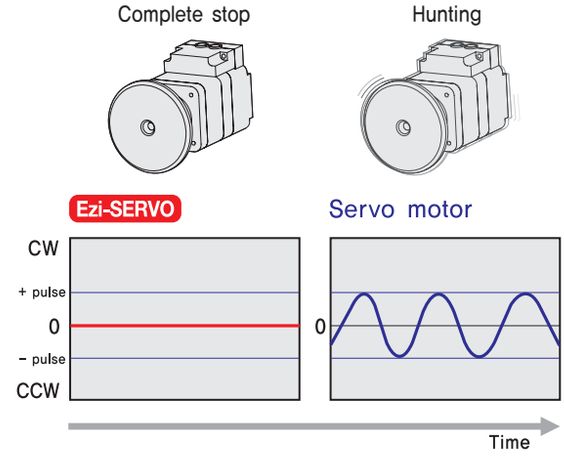


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO-PR-MI-42L
Motor Voltage = 24VDC
Input Voltage = 24VDC

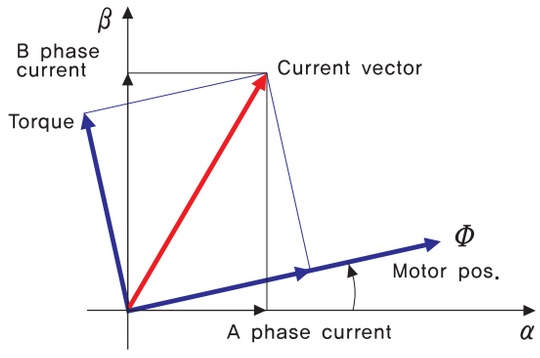
7 No Hunting

Traditional servo motor drives overshoot their position and try to correct overshooting by moving the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO Motion Control System. Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



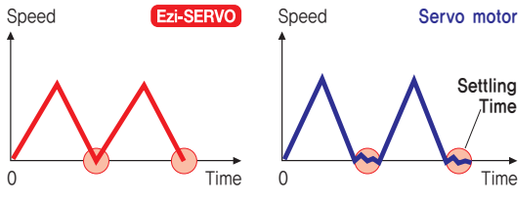
8 Smooth and Accurate

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 32,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



9 Fast Response

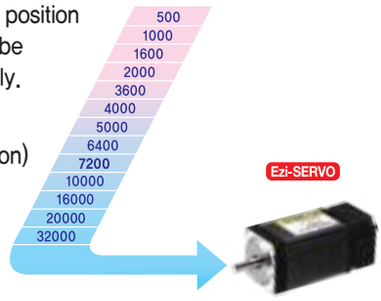
Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



10 High Resolution

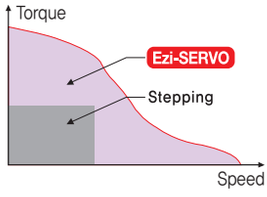
The unit of the position command can be divided precisely.

(Max. 32,000 pulses/revolution)



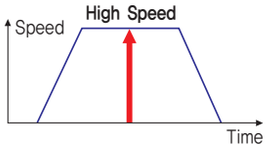
11 High Torque

Compared with common step motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



12 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

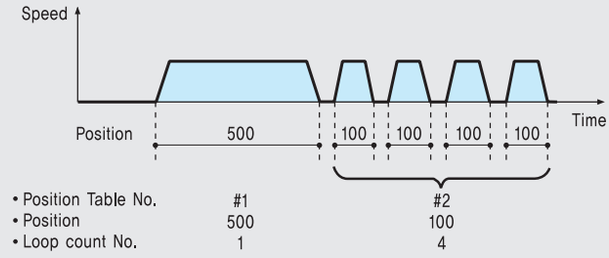
● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Features of Motion Controller

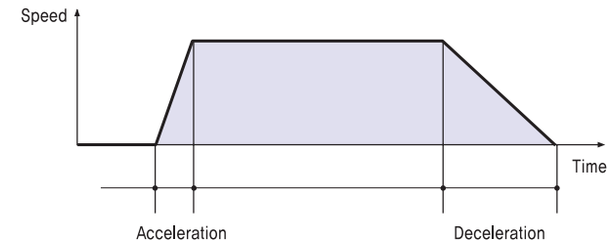
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



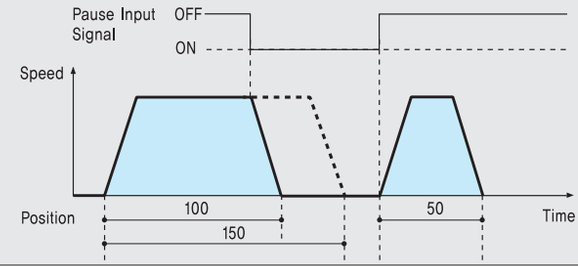
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



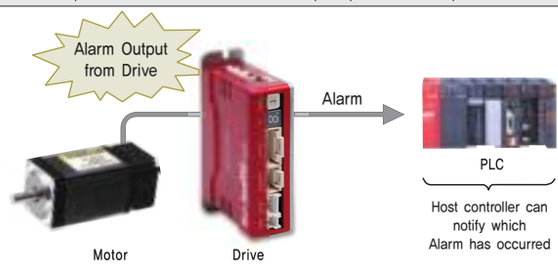
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



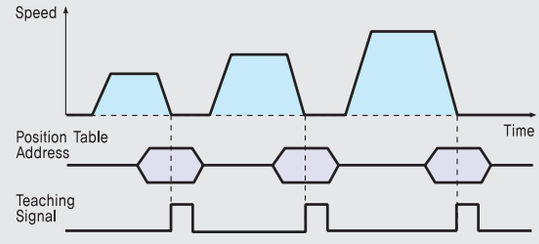
4. Alarm

The number of 7-Segment flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

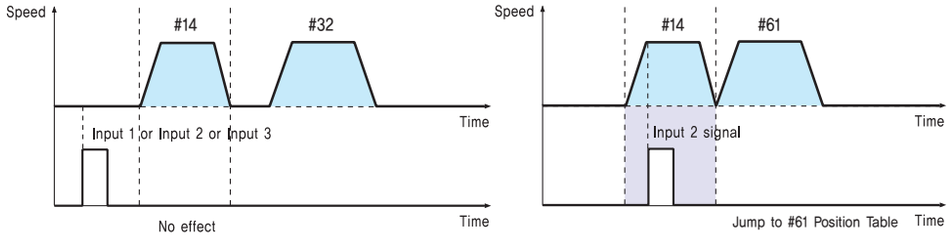


6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		32		60	61	62	



● Ezi-SERVO Plus-R MINI Part Numbering

Ezi-SERVO-PR-MI-42M-A-BK-PN05-□

Product Name

Drive Series

PR : Plus RS-485
MI : Mini Type

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
B : 20,000[ppr]
C : 32,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-PR-MI-20M-F	EzM-20M-F	EzS-NDR-MI-20M-F
Ezi-SERVO-PR-MI-20L-F	EzM-20L-F	EzS-NDR-MI-20L-F
Ezi-SERVO-PR-MI-28S-D	EzM-28S-D	EzS-NDR-MI-28S-D
Ezi-SERVO-PR-MI-28SM-D	EzM-28SM-D	EzS-NDR-MI-28S-D
Ezi-SERVO-PR-MI-28M-D	EzM-28M-D	EzS-NDR-MI-28M-D
Ezi-SERVO-PR-MI-28MM-D	EzM-28MM-D	EzS-NDR-MI-28M-D
Ezi-SERVO-PR-MI-28L-D	EzM-28L-D	EzS-NDR-MI-28L-D
Ezi-SERVO-PR-MI-28LM-D	EzM-28LM-D	EzS-NDR-MI-28L-D
Ezi-SERVO-PR-MI-35M-D	EzM-35M-D	EzS-NDR-MI-35M-D
Ezi-SERVO-PR-MI-35MM-D	EzM-35MM-D	EzS-NDR-MI-35M-D
Ezi-SERVO-PR-MI-35L-D	EzM-35L-D	EzS-NDR-MI-35L-D
Ezi-SERVO-PR-MI-35LM-D	EzM-35LM-D	EzS-NDR-MI-35L-D
Ezi-SERVO-PR-MI-42S-A	EzM-42S-A	EzS-NDR-MI-42S-A
Ezi-SERVO-PR-MI-42S-B	EzM-42S-B	EzS-NDR-MI-42S-B
Ezi-SERVO-PR-MI-42S-C	EzM-42S-C	EzS-NDR-MI-42S-C
Ezi-SERVO-PR-MI-42M-A	EzM-42M-A	EzS-NDR-MI-42M-A
Ezi-SERVO-PR-MI-42M-B	EzM-42M-B	EzS-NDR-MI-42M-B
Ezi-SERVO-PR-MI-42M-C	EzM-42M-C	EzS-NDR-MI-42M-C
Ezi-SERVO-PR-MI-42L-A	EzM-42L-A	EzS-NDR-MI-42L-A
Ezi-SERVO-PR-MI-42L-B	EzM-42L-B	EzS-NDR-MI-42L-B
Ezi-SERVO-PR-MI-42L-C	EzM-42L-C	EzS-NDR-MI-42L-C
Ezi-SERVO-PR-MI-42XL-A	EzM-42XL-A	EzS-NDR-MI-42XL-A
Ezi-SERVO-PR-MI-42XL-B	EzM-42XL-B	EzS-NDR-MI-42XL-B
Ezi-SERVO-PR-MI-42XL-C	EzM-42XL-C	EzS-NDR-MI-42XL-C

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex: Ezi-SERVO-PR-MI-28LM-D, Ezi-SERVO-PR-MI-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-PR-MI-42S-A-BK	EzM-42S-A-BK	EzS-NDR-MI-42S-A
Ezi-SERVO-PR-MI-42S-B-BK	EzM-42S-B-BK	EzS-NDR-MI-42S-B
Ezi-SERVO-PR-MI-42S-C-BK	EzM-42S-C-BK	EzS-NDR-MI-42S-C
Ezi-SERVO-PR-MI-42M-A-BK	EzM-42M-A-BK	EzS-NDR-MI-42M-A
Ezi-SERVO-PR-MI-42M-B-BK	EzM-42M-B-BK	EzS-NDR-MI-42M-B
Ezi-SERVO-PR-MI-42M-C-BK	EzM-42M-C-BK	EzS-NDR-MI-42M-C
Ezi-SERVO-PR-MI-42L-A-BK	EzM-42L-A-BK	EzS-NDR-MI-42L-A
Ezi-SERVO-PR-MI-42L-B-BK	EzM-42L-B-BK	EzS-NDR-MI-42L-B
Ezi-SERVO-PR-MI-42L-C-BK	EzM-42L-C-BK	EzS-NDR-MI-42L-C
Ezi-SERVO-PR-MI-42XL-A-BK	EzM-42XL-A-BK	EzS-NDR-MI-42XL-A
Ezi-SERVO-PR-MI-42XL-B-BK	EzM-42XL-B-BK	EzS-NDR-MI-42XL-B
Ezi-SERVO-PR-MI-42XL-C-BK	EzM-42XL-C-BK	EzS-NDR-MI-42XL-C

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-PR-MI-42S-A-PN3	EzM-42S-A-PN3	EzS-NDR-MI-42S-A	1:3
Ezi-SERVO-PR-MI-42S-B-PN3	EzM-42S-B-PN3	EzS-NDR-MI-42S-B	
Ezi-SERVO-PR-MI-42S-A-PN5	EzM-42S-A-PN5	EzS-NDR-MI-42S-A	1:5
Ezi-SERVO-PR-MI-42S-B-PN5	EzM-42S-B-PN5	EzS-NDR-MI-42S-B	
Ezi-SERVO-PR-MI-42S-A-PN8	EzM-42S-A-PN8	EzS-NDR-MI-42S-A	1:8
Ezi-SERVO-PR-MI-42S-B-PN8	EzM-42S-B-PN8	EzS-NDR-MI-42S-B	
Ezi-SERVO-PR-MI-42S-A-PN10	EzM-42S-A-PN10	EzS-NDR-MI-42S-A	1:10
Ezi-SERVO-PR-MI-42S-B-PN10	EzM-42S-B-PN10	EzS-NDR-MI-42S-B	
Ezi-SERVO-PR-MI-42S-A-PN15	EzM-42S-A-PN15	EzS-NDR-MI-42S-A	1:15
Ezi-SERVO-PR-MI-42S-B-PN15	EzM-42S-B-PN15	EzS-NDR-MI-42S-B	
Ezi-SERVO-PR-MI-42S-A-PN25	EzM-42S-A-PN25	EzS-NDR-MI-42S-A	1:25
Ezi-SERVO-PR-MI-42S-B-PN25	EzM-42S-B-PN25	EzS-NDR-MI-42S-B	
Ezi-SERVO-PR-MI-42S-A-PN40	EzM-42S-A-PN40	EzS-NDR-MI-42S-A	1:40
Ezi-SERVO-PR-MI-42S-B-PN40	EzM-42S-B-PN40	EzS-NDR-MI-42S-B	
Ezi-SERVO-PR-MI-42S-A-PN50	EzM-42S-A-PN50	EzS-NDR-MI-42S-A	1:50
Ezi-SERVO-PR-MI-42S-B-PN50	EzM-42S-B-PN50	EzS-NDR-MI-42S-B	
Ezi-SERVO-PR-MI-42M-A-PN3	EzM-42M-A-PN3	EzS-NDR-MI-42M-A	1:3
Ezi-SERVO-PR-MI-42M-B-PN3	EzM-42M-B-PN3	EzS-NDR-MI-42M-B	
Ezi-SERVO-PR-MI-42M-A-PN5	EzM-42M-A-PN5	EzS-NDR-MI-42M-A	1:5
Ezi-SERVO-PR-MI-42M-B-PN5	EzM-42M-B-PN5	EzS-NDR-MI-42M-B	
Ezi-SERVO-PR-MI-42M-A-PN8	EzM-42M-A-PN8	EzS-NDR-MI-42M-A	1:8
Ezi-SERVO-PR-MI-42M-B-PN8	EzM-42M-B-PN8	EzS-NDR-MI-42M-B	
Ezi-SERVO-PR-MI-42M-A-PN10	EzM-42M-A-PN10	EzS-NDR-MI-42M-A	1:10
Ezi-SERVO-PR-MI-42M-B-PN10	EzM-42M-B-PN10	EzS-NDR-MI-42M-B	
Ezi-SERVO-PR-MI-42M-A-PN15	EzM-42M-A-PN15	EzS-NDR-MI-42M-A	1:15
Ezi-SERVO-PR-MI-42M-B-PN15	EzM-42M-B-PN15	EzS-NDR-MI-42M-B	
Ezi-SERVO-PR-MI-42M-A-PN25	EzM-42M-A-PN25	EzS-NDR-MI-42M-A	1:25
Ezi-SERVO-PR-MI-42M-B-PN25	EzM-42M-B-PN25	EzS-NDR-MI-42M-B	
Ezi-SERVO-PR-MI-42M-A-PN40	EzM-42M-A-PN40	EzS-NDR-MI-42M-A	1:40
Ezi-SERVO-PR-MI-42M-B-PN40	EzM-42M-B-PN40	EzS-NDR-MI-42M-B	
Ezi-SERVO-PR-MI-42M-A-PN50	EzM-42M-A-PN50	EzS-NDR-MI-42M-A	1:50
Ezi-SERVO-PR-MI-42M-B-PN50	EzM-42M-B-PN50	EzS-NDR-MI-42M-B	
Ezi-SERVO-PR-MI-42L-A-PN3	EzM-42L-A-PN3	EzS-NDR-MI-42L-A	1:3
Ezi-SERVO-PR-MI-42L-B-PN3	EzM-42L-B-PN3	EzS-NDR-MI-42L-B	
Ezi-SERVO-PR-MI-42L-A-PN5	EzM-42L-A-PN5	EzS-NDR-MI-42L-A	1:5
Ezi-SERVO-PR-MI-42L-B-PN5	EzM-42L-B-PN5	EzS-NDR-MI-42L-B	
Ezi-SERVO-PR-MI-42L-A-PN8	EzM-42L-A-PN8	EzS-NDR-MI-42L-A	1:8
Ezi-SERVO-PR-MI-42L-B-PN8	EzM-42L-B-PN8	EzS-NDR-MI-42L-B	
Ezi-SERVO-PR-MI-42L-A-PN10	EzM-42L-A-PN10	EzS-NDR-MI-42L-A	1:10
Ezi-SERVO-PR-MI-42L-B-PN10	EzM-42L-B-PN10	EzS-NDR-MI-42L-B	
Ezi-SERVO-PR-MI-42L-A-PN15	EzM-42L-A-PN15	EzS-NDR-MI-42L-A	1:15
Ezi-SERVO-PR-MI-42L-B-PN15	EzM-42L-B-PN15	EzS-NDR-MI-42L-B	
Ezi-SERVO-PR-MI-42L-A-PN25	EzM-42L-A-PN25	EzS-NDR-MI-42L-A	1:25
Ezi-SERVO-PR-MI-42L-B-PN25	EzM-42L-B-PN25	EzS-NDR-MI-42L-B	
Ezi-SERVO-PR-MI-42L-A-PN40	EzM-42L-A-PN40	EzS-NDR-MI-42L-A	1:40
Ezi-SERVO-PR-MI-42L-B-PN40	EzM-42L-B-PN40	EzS-NDR-MI-42L-B	
Ezi-SERVO-PR-MI-42L-A-PN50	EzM-42L-A-PN50	EzS-NDR-MI-42L-A	1:50
Ezi-SERVO-PR-MI-42L-B-PN50	EzM-42L-B-PN50	EzS-NDR-MI-42L-B	
Ezi-SERVO-PR-MI-42XL-A-PN3	EzM-42XL-A-PN3	EzS-NDR-MI-42XL-A	1:3
Ezi-SERVO-PR-MI-42XL-B-PN3	EzM-42XL-B-PN3	EzS-NDR-MI-42XL-B	
Ezi-SERVO-PR-MI-42XL-A-PN5	EzM-42XL-A-PN5	EzS-NDR-MI-42XL-A	1:5
Ezi-SERVO-PR-MI-42XL-B-PN5	EzM-42XL-B-PN5	EzS-NDR-MI-42XL-B	
Ezi-SERVO-PR-MI-42XL-A-PN8	EzM-42XL-A-PN8	EzS-NDR-MI-42XL-A	1:8
Ezi-SERVO-PR-MI-42XL-B-PN8	EzM-42XL-B-PN8	EzS-NDR-MI-42XL-B	
Ezi-SERVO-PR-MI-42XL-A-PN10	EzM-42XL-A-PN10	EzS-NDR-MI-42XL-A	1:10
Ezi-SERVO-PR-MI-42XL-B-PN10	EzM-42XL-B-PN10	EzS-NDR-MI-42XL-B	
Ezi-SERVO-PR-MI-42XL-A-PN15	EzM-42XL-A-PN15	EzS-NDR-MI-42XL-A	1:15
Ezi-SERVO-PR-MI-42XL-B-PN15	EzM-42XL-B-PN15	EzS-NDR-MI-42XL-B	
Ezi-SERVO-PR-MI-42XL-A-PN25	EzM-42XL-A-PN25	EzS-NDR-MI-42XL-A	1:25
Ezi-SERVO-PR-MI-42XL-B-PN25	EzM-42XL-B-PN25	EzS-NDR-MI-42XL-B	
Ezi-SERVO-PR-MI-42XL-A-PN40	EzM-42XL-A-PN40	EzS-NDR-MI-42XL-A	1:40
Ezi-SERVO-PR-MI-42XL-B-PN40	EzM-42XL-B-PN40	EzS-NDR-MI-42XL-B	
Ezi-SERVO-PR-MI-42XL-A-PN50	EzM-42XL-A-PN50	EzS-NDR-MI-42XL-A	1:50
Ezi-SERVO-PR-MI-42XL-B-PN50	EzM-42XL-B-PN50	EzS-NDR-MI-42XL-B	

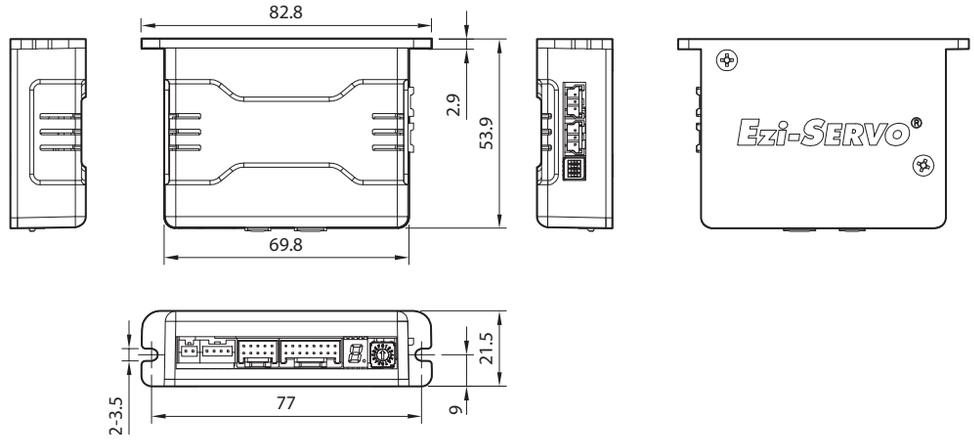
Specifications of Drive

Motor Model		EzM-20 series	EzM-28 series	EzM-35 series	EzM-42 series
Driver Model		EzS-NDR-MI-20 series	EzS-NDR-MI-28 series	EzS-NDR-MI-35 series	EzS-NDR-MI-42 series
Input Voltage		24VDC ±10%			
Control Method		Closed loop control with 32bit MCU			
Multi axis Drive		Maximum 16 axis through Daisy-Chain			
Position Table		64 motion command steps (Continuous, Wait, Loop, Jump and External start etc.)			
Current Consumption		Max 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000 [rpm] *1			
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 32,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 32,000 (Selectable by parameter) *2			
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, System Error, ROM Error, Position Overflow Error			
	7-Segment	Network ID, Status monitoring			
	In-Position Selection	0~15 (Selectable by parameter)			
	Position Gain Selection	0~15 (Selectable by parameter)			
	Rotational Direction	CW/CCW (Selectable by parameter)			
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler)			
	Output Signals	1 dedicated output (Compare Out), 1 programmable output (Photocoupler), Brake			
Communication Interface		The RS-485 serial communication Communication speed: 9,600~921,600 [bps]			
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm]			
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque			
GUI		User Interface Program within Windows			
Software		Motion Library (DLL) for Windows 7/8/10			

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]

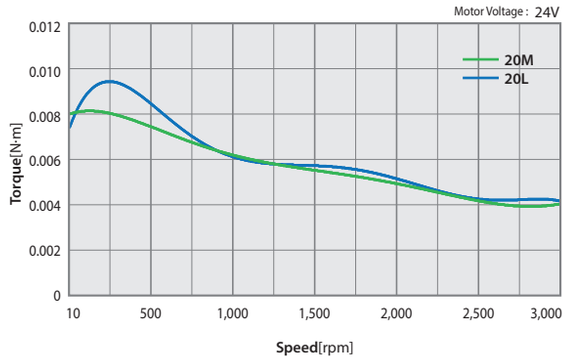


Specifications of Motor

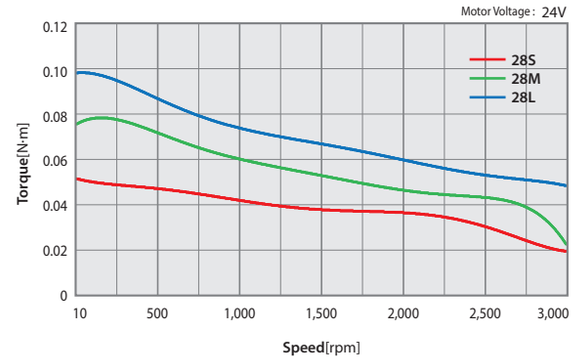
MODEL			EzM-20 series		EzM-28 series			EzM-35 series		EzM-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	79	104	147	204	232	194	226	299	364	433	567
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

Torque Characteristics of Motor

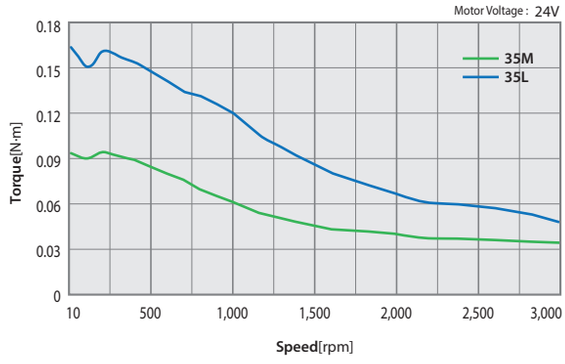
Ezi-SERVO-PR-MI-20 series



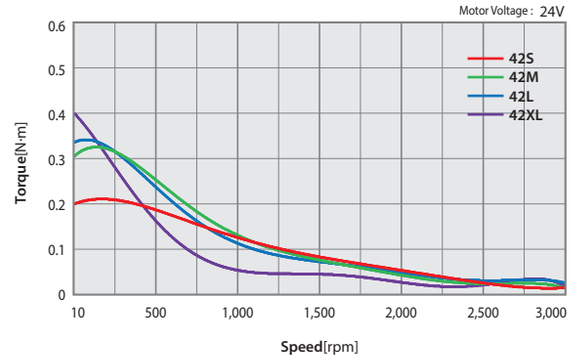
Ezi-SERVO-PR-MI-28 series



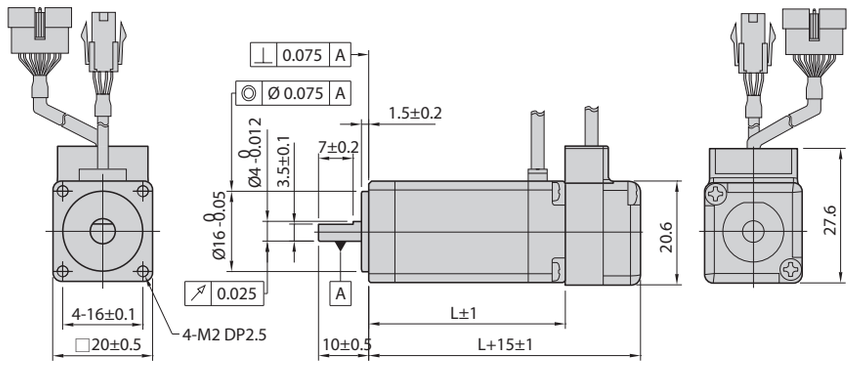
Ezi-SERVO-PR-MI-35 series



Ezi-SERVO-PR-MI-42 series

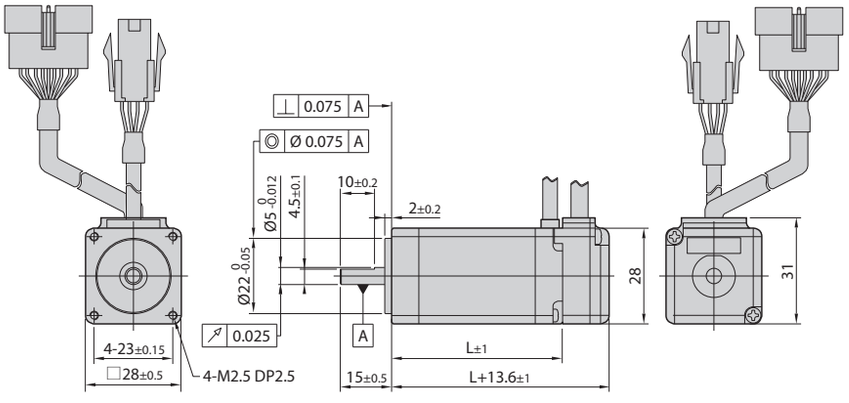


● Dimensions of Motor [mm]



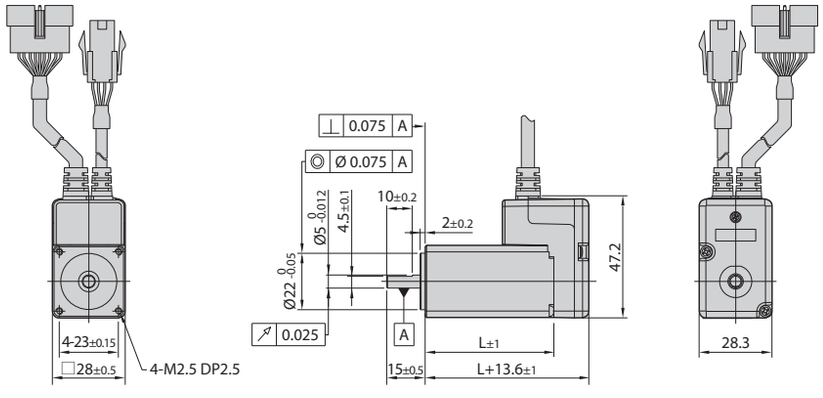
20mm

Model name	Length(L)
EzM-20M	28
EzM-20L	38



28mm

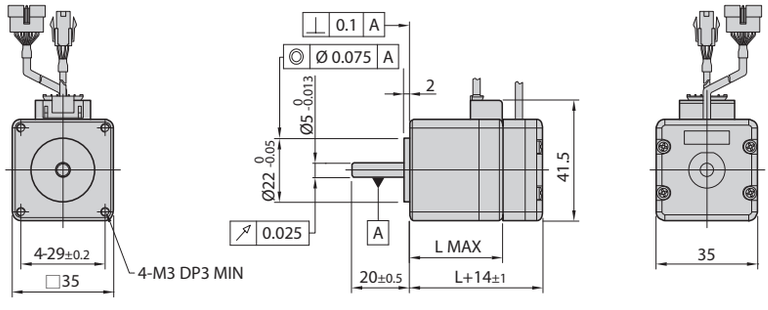
Model name	Length(L)
EzM-28S	32
EzM-28M	45
EzM-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM-28SM	32
EzM-28MM	45
EzM-28LM	50

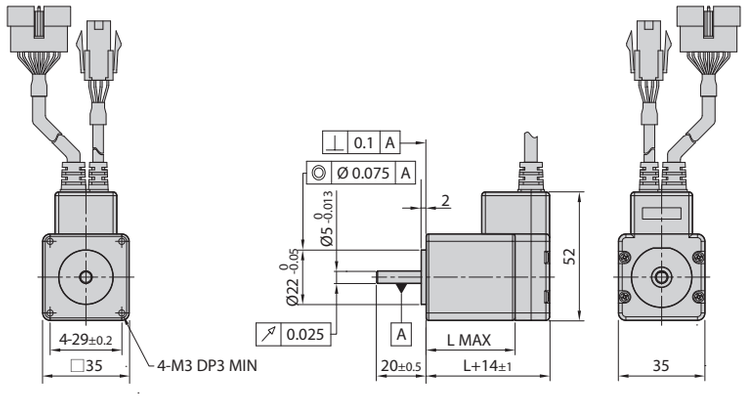
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM-35M	26
EzM-35L	38

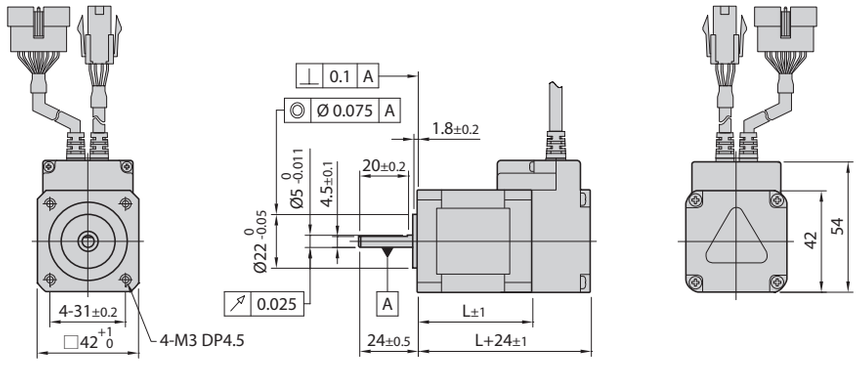
● Dimensions of Motor [mm]



35mm *(Stopper type)*

Model name	Length(L)
EzM-35MM	32
EzM-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

Model name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60

Settings and Operation



Network ID setting switch(SW1)

Network ID display and status monitor

Input/Output signal connector(CN1)

Encoder connector(CN2)

Motor connector(CN3)

Power connector(CN4)



Communication speed and termination setting switch(SW2)

RS-485 communicaton connector(CN5, CN6)

1. Protection Functions and 7-Segment Flash Times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *1
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerativted Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, a position error occurs
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state *1



7-Segment flash
(Ex, Position tracking error)

*1 : Default value can be changed by parameter (Refer to the manual)

※ For the details, please refer to the Manual.

2. Network ID Setting Switch(SW1)

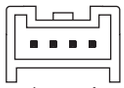
Position	ID Number	Position	ID Number
0	0	8	8
1	1	9	9
2	2	A	10
3	3	B	11
4	4	C	12
5	5	D	13
6	6	E	14
7	7	F	15



※ Maximum 16 axis can be connected in one network.

3. Motor Connector(CN3)

NO.	Function	I/O
1	B Phase	Output
2	/B Phase	Output
3	/A Phase	Output
4	A Phase	Output



4. Communication Speed and Termination Setting Switch(SW2)

Termination Setting Switch(SW2.1)

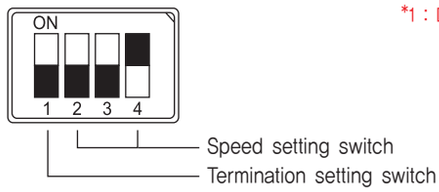
The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive installed at the end of the network.

Speed Setting Switch(SW2.2~SW2.4)

SW2.2~SW2.4 used for setting speed as follows

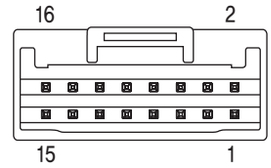
SW2.1	SW2.2	SW2.3	SW2.4	Baud Rate[bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

*1 : Default setting value



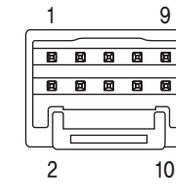
5. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE–	Output
5	LIMIT+	Input
6	LIMIT–	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital In4	Input
12	Digital In5	Input
13	Digital In6	Input
14	Digital In7	Input
15	Compare Out	Output
16	Digital Out1	Output



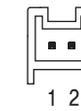
6. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A–	Input
3	B+	Input
4	B–	Input
5	Z+	Input
6	Z–	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



7. Power Connector(CN4)

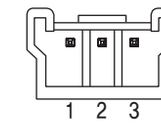
NO.	Function	I/O
1	24VDC	Input
2	GND	Input



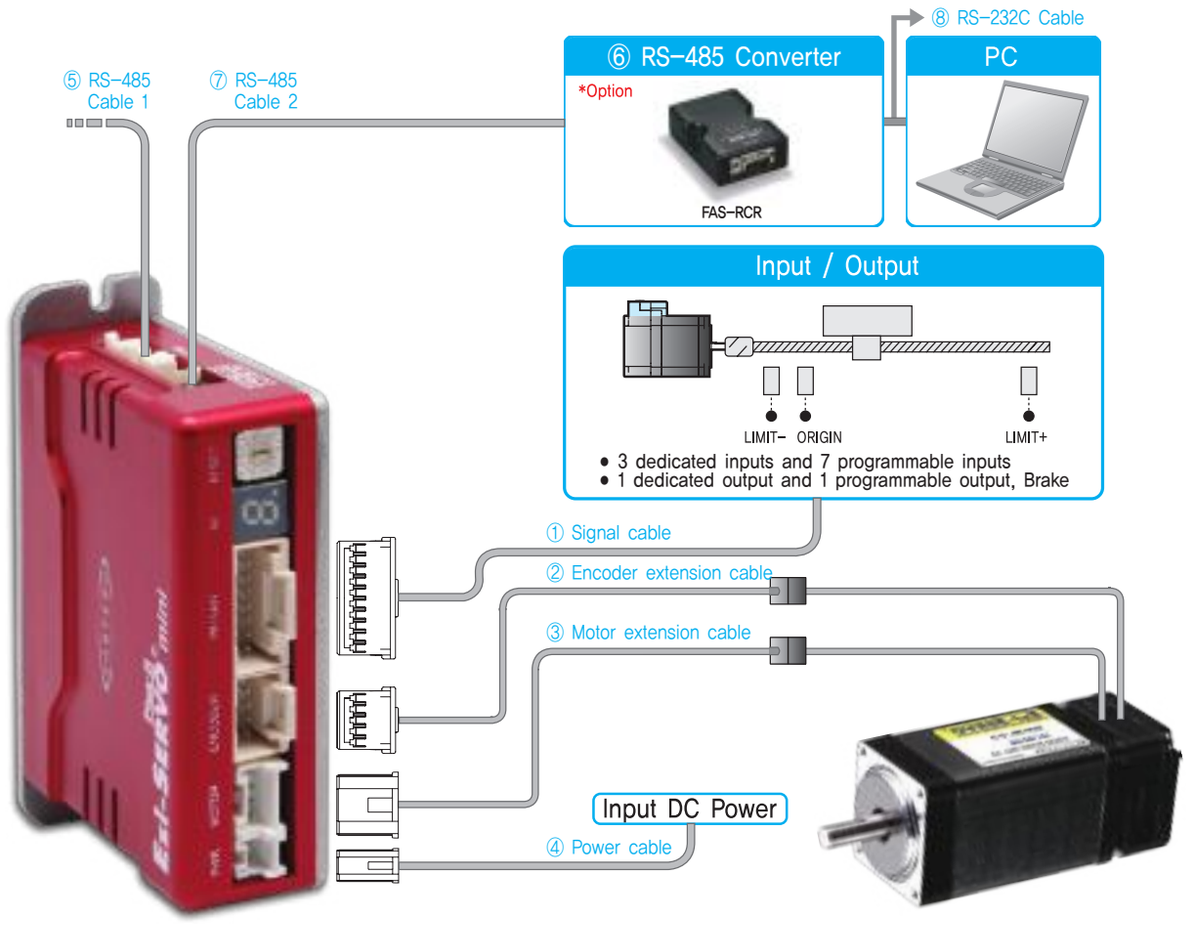
8. RS-485 Communication Connector(CN5, CN6)

RS-485 Communication Port to connect with Host Controller.

NO.	Function
1	Data+
2	Data–
3	GND



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	30m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO Plus-R MINI.

Item	Length [m]	Remark
CSVA-S-□□□F	□□□	Normal Cable
CSVA-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO Plus-R MINI.

Item	Length [m]	Remark
CSVI-E-□□□F	□□□	Normal Cable
CSVI-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to Extended connection between motor and Ezi-SERVO Plus-R MINI.

Item	Length [m]	Remark
CMNB-M-□□□F	□□□	Normal Cable
CMNB-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO Plus-R MINI.

Item	Length [m]	Remark
CMNB-P-□□□F	□□□	Normal Cable
CMNB-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable 1

Common cable to connect Ezi-SERVO-ALL-42/56, Ezi-STEP-ALL-42/56, Ezi-MOTIONLINK Plus-R and Ezi-SERVO Plus-R MINI thru by Network.

Item	Length [m]	Remark
CGNB-R-0R6F	0.6	Normal Cable
CGNB-R-001F	1	
CGNB-R-1R5F	1.5	
CGNB-R-002F	2	
CGNB-R-003F	3	
CGNB-R-005F	5	

⑥ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑦ RS-485 Cable 2

RCR to Ezi-SERVO-ALL-42/56, FAS-RCR to Ezi-STEP-ALL-42/56, FAS-RCR to Ezi-SERVO Plus-R MINI, FAS-RCR to Ezi-MOTIONLINK Plus-R.

Item	Length [m]	Remark
CGNA-R-0R6F	0.6	Normal Cable
CGNA-R-001F	1	
CGNA-R-1R5F	1.5	
CGNA-R-002F	2	
CGNA-R-003F	3	
CGNA-R-005F	5	

⑧ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F	2	Normal Cable
CGNR-C-003F	3	
CGNR-C-005F	5	

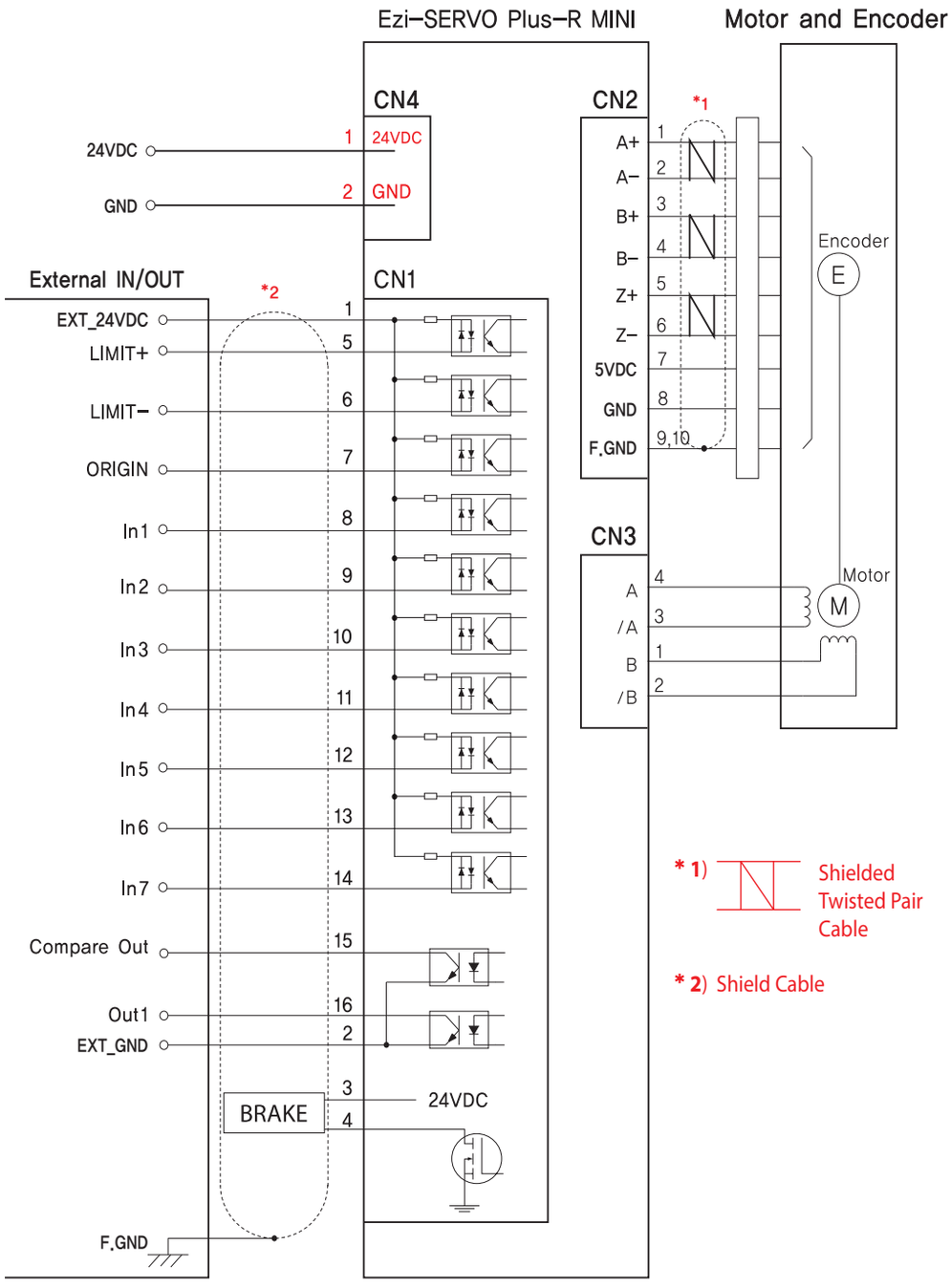
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
RS-485 Communication (CN5, CN6)		Housing Terminal	35507-0300 50212-8100	MOLEX
Power (CN4)		Housing Terminal	PAP-02V-S SPHD-001T-P0.5	JST
Motor	Drive Side (CN3)	Housing Terminal	PAP-04V-S SPHD-001T-P0.5	JST
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	501646-1000 501648-1000(AWG 26~28)	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Housing Terminal	501646-1600 501648-1000(AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● GUI(Graphic User Interface) Screenshot



◆ Controller Lists and Motion Test

This screen display the controller list that connected to system. You can make a single move, jog and origin command and also the motor status is displayed.



◆ Parameter List

All of the parameters are displayed and modified on this screen.



◆ Motion Repeat and Monitor Status

Target position, speed, delay time and repeat count are selected for repeat motion test. Motion library(DLL) is also displayed on screen.



◆ I/O Monitoring and Setting

You can select various digital input and output signals of controller.



◆ Position Table

You can edit the position table and execute it. The position table data can be saved and loaded from Flash ROM and Windows file.

※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.


Ezi-SERVO II

Ezi-SERVO II BT

Closed Loop System_ Ezi-SERVO II BT

- Motor + Encoder + Drive
- Closed Loop System
- No Gain Tuning / No Hunting
- High Resolution / Fast Response
- Heat Reduction



FASTECH

Fast, Accurate, Smooth Motion

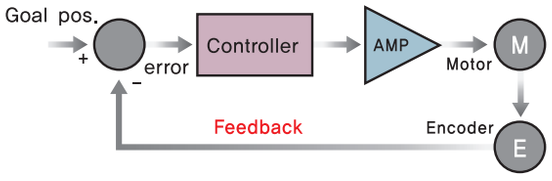
Ezi-SERVO® II BT

Closed Loop Stepping System



2 Closed Loop System

Ezi-SERVO II is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50 μsec. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.

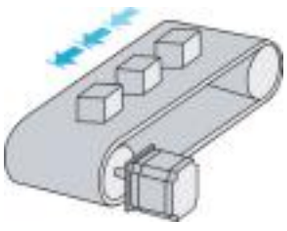


1 Integrated Solution

Ezi-SERVO II BT with integrated Motor and Encoder and Drive has provides the optimum solution that can take full advantage of Ezi-SERVO II by realizing compact size and simple wiring.

3 No Gain Tuning

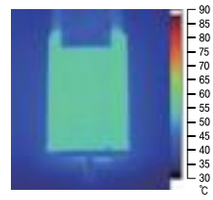
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



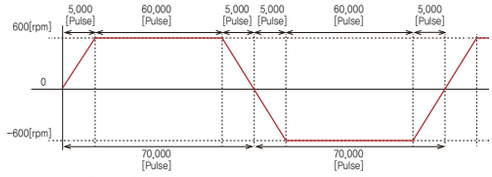
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

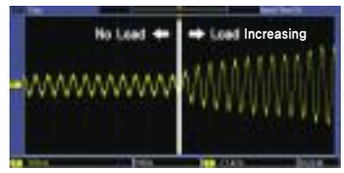
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

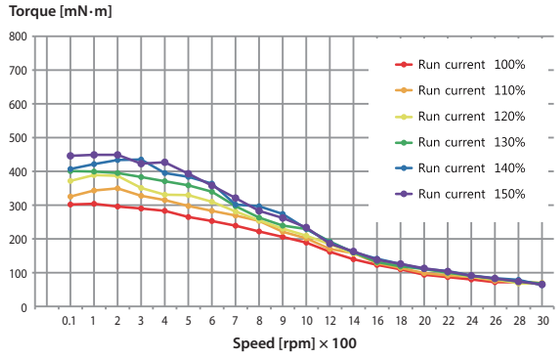


Example of the Motor Current Control according to load

5 Torque Improvement

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased.
Ezi-SERVO II can improve the torque in the low speed range by about 30%.

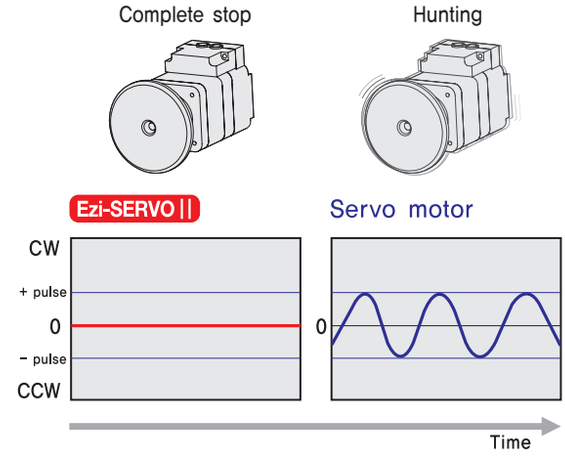


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-BT-42L
Motor Voltage = 24VDC
Input Voltage = 24VDC

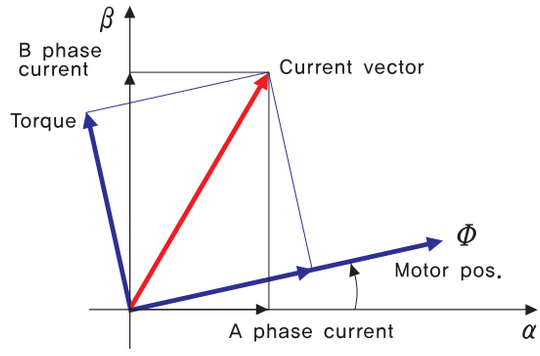
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



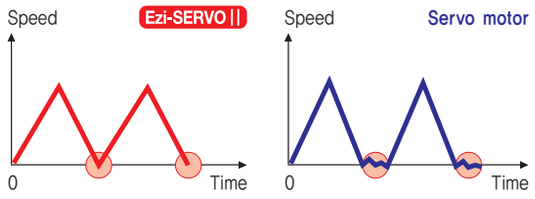
7 Smooth and Accurate

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



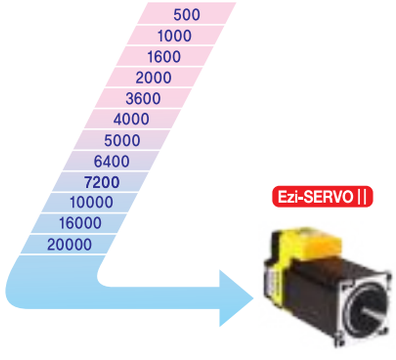
8 Fast Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



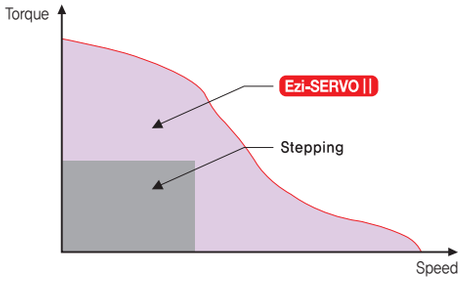
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



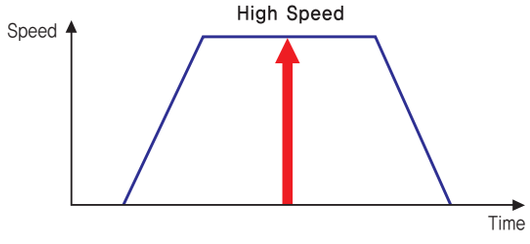
10 High Torque

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Ezi-SERVO II BT Part Numbering

Ezi-SERVO II -BT-42S-A-BK-PN10-□

- **Product Name**
- **Drive Series**
  - BT : Built In
- **Motor Flange Size**
  - 28 : 28mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Encoder Resolution**
  - A : 10,000[ppr]
  - B : 20,000[ppr]
  - D : 16,000[ppr]
- **Brake**
  - Blank : Without Brake
  - BK : Brake
- **Reduction Gear Ratio**
  - Blank – Without Gear
  - PN03 – 1:3
  - PN05 – 1:5
  - PN08 – 1:8
  - PN10 – 1:10
  - PN15 – 1:15
  - PN25 – 1:25
  - PN40 – 1:40
  - PN50 – 1:50
- **User Code**

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-BT-28S-D	Motor & Drive Integrated	
Ezi-SERVO II-BT-28M-D		
Ezi-SERVO II-BT-28L-D		
Ezi-SERVO II-BT-42S-A		
Ezi-SERVO II-BT-42S-B		
Ezi-SERVO II-BT-42M-A		
Ezi-SERVO II-BT-42M-B		
Ezi-SERVO II-BT-42L-A		
Ezi-SERVO II-BT-42L-B		
Ezi-SERVO II-BT-42XL-A		
Ezi-SERVO II-BT-42XL-B		
Ezi-SERVO II-BT-56S-A		
Ezi-SERVO II-BT-56S-B		
Ezi-SERVO II-BT-56M-A		
Ezi-SERVO II-BT-56M-B		
Ezi-SERVO II-BT-56L-A		
Ezi-SERVO II-BT-56L-B		
Ezi-SERVO II-BT-60S-A		
Ezi-SERVO II-BT-60S-B		
Ezi-SERVO II-BT-60M-A		
Ezi-SERVO II-BT-60M-B		
Ezi-SERVO II-BT-60L-A		
Ezi-SERVO II-BT-60L-B		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-BT-42S-A-BK	Motor & Drive Integrated	
Ezi-SERVO II-BT-42S-B-BK		
Ezi-SERVO II-BT-42M-A-BK		
Ezi-SERVO II-BT-42M-B-BK		
Ezi-SERVO II-BT-42L-A-BK		
Ezi-SERVO II-BT-42L-B-BK		
Ezi-SERVO II-BT-42XL-A-BK		
Ezi-SERVO II-BT-42XL-B-BK		
Ezi-SERVO II-BT-56S-A-BK		
Ezi-SERVO II-BT-56S-B-BK		
Ezi-SERVO II-BT-56M-A-BK		
Ezi-SERVO II-BT-56M-B-BK		
Ezi-SERVO II-BT-56L-A-BK		
Ezi-SERVO II-BT-56L-B-BK		
Ezi-SERVO II-BT-60S-A-BK		
Ezi-SERVO II-BT-60S-B-BK		
Ezi-SERVO II-BT-60M-A-BK		
Ezi-SERVO II-BT-60M-B-BK		
Ezi-SERVO II-BT-60L-A-BK		
Ezi-SERVO II-BT-60L-B-BK		

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-BT-42S-A-PN3	Motor & Drive Integrated		1:3
Ezi-SERVO II-BT-42S-B-PN3			
Ezi-SERVO II-BT-42S-A-PN5			1:5
Ezi-SERVO II-BT-42S-B-PN5			
Ezi-SERVO II-BT-42S-A-PN8			1:8
Ezi-SERVO II-BT-42S-B-PN8			
Ezi-SERVO II-BT-42S-A-PN10			1:10
Ezi-SERVO II-BT-42S-B-PN10			
Ezi-SERVO II-BT-42S-A-PN15			1:15
Ezi-SERVO II-BT-42S-B-PN15			
Ezi-SERVO II-BT-42S-A-PN25			1:25
Ezi-SERVO II-BT-42S-B-PN25			
Ezi-SERVO II-BT-42S-A-PN40			1:40
Ezi-SERVO II-BT-42S-B-PN40			
Ezi-SERVO II-BT-42S-A-PN50			1:50
Ezi-SERVO II-BT-42S-B-PN50			
Ezi-SERVO II-BT-42M-A-PN3			1:3
Ezi-SERVO II-BT-42M-B-PN3			
Ezi-SERVO II-BT-42M-A-PN5			1:5
Ezi-SERVO II-BT-42M-B-PN5			
Ezi-SERVO II-BT-42M-A-PN8			1:8
Ezi-SERVO II-BT-42M-B-PN8			
Ezi-SERVO II-BT-42M-A-PN10			1:10
Ezi-SERVO II-BT-42M-B-PN10			
Ezi-SERVO II-BT-42M-A-PN15			1:15
Ezi-SERVO II-BT-42M-B-PN15			
Ezi-SERVO II-BT-42M-A-PN25			1:25
Ezi-SERVO II-BT-42M-B-PN25			
Ezi-SERVO II-BT-42M-A-PN40			1:40
Ezi-SERVO II-BT-42M-B-PN40			
Ezi-SERVO II-BT-42M-A-PN50			1:50
Ezi-SERVO II-BT-42M-B-PN50			
Ezi-SERVO II-BT-42L-A-PN3			1:3
Ezi-SERVO II-BT-42L-B-PN3			
Ezi-SERVO II-BT-42L-A-PN5			1:5
Ezi-SERVO II-BT-42L-B-PN5			
Ezi-SERVO II-BT-42L-A-PN8			1:8
Ezi-SERVO II-BT-42L-B-PN8			
Ezi-SERVO II-BT-42L-A-PN10			1:10
Ezi-SERVO II-BT-42L-B-PN10			
Ezi-SERVO II-BT-42L-A-PN15			1:15
Ezi-SERVO II-BT-42L-B-PN15			
Ezi-SERVO II-BT-42L-A-PN25			1:25
Ezi-SERVO II-BT-42L-B-PN25			
Ezi-SERVO II-BT-42L-A-PN40			1:40
Ezi-SERVO II-BT-42L-B-PN40			
Ezi-SERVO II-BT-42L-A-PN50			1:50
Ezi-SERVO II-BT-42L-B-PN50			
Ezi-SERVO II-BT-42XL-A-PN3			1:3
Ezi-SERVO II-BT-42XL-B-PN3			
Ezi-SERVO II-BT-42XL-A-PN5			1:5
Ezi-SERVO II-BT-42XL-B-PN5			
Ezi-SERVO II-BT-42XL-A-PN8			1:8
Ezi-SERVO II-BT-42XL-B-PN8			
Ezi-SERVO II-BT-42XL-A-PN10			1:10
Ezi-SERVO II-BT-42XL-B-PN10			
Ezi-SERVO II-BT-42XL-A-PN15			1:15
Ezi-SERVO II-BT-42XL-B-PN15			
Ezi-SERVO II-BT-42XL-A-PN25			1:25
Ezi-SERVO II-BT-42XL-B-PN25			
Ezi-SERVO II-BT-42XL-A-PN40			1:40
Ezi-SERVO II-BT-42XL-B-PN40			
Ezi-SERVO II-BT-42XL-A-PN50			1:50
Ezi-SERVO II-BT-42XL-B-PN50			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-BT-56S-A-PN3	Motor & Drive Integrated		1:3
Ezi-SERVO II-BT-56S-B-PN3			
Ezi-SERVO II-BT-56S-A-PN5			1:5
Ezi-SERVO II-BT-56S-B-PN5			
Ezi-SERVO II-BT-56S-A-PN8			1:8
Ezi-SERVO II-BT-56S-B-PN8			
Ezi-SERVO II-BT-56S-A-PN10			1:10
Ezi-SERVO II-BT-56S-B-PN10			
Ezi-SERVO II-BT-56S-A-PN15			1:15
Ezi-SERVO II-BT-56S-B-PN15			
Ezi-SERVO II-BT-56S-A-PN25			1:25
Ezi-SERVO II-BT-56S-B-PN25			
Ezi-SERVO II-BT-56S-A-PN40			1:40
Ezi-SERVO II-BT-56S-B-PN40			
Ezi-SERVO II-BT-56S-A-PN50			1:50
Ezi-SERVO II-BT-56S-B-PN50			
Ezi-SERVO II-BT-56M-A-PN3			1:3
Ezi-SERVO II-BT-56M-B-PN3			
Ezi-SERVO II-BT-56M-A-PN5			1:5
Ezi-SERVO II-BT-56M-B-PN5			
Ezi-SERVO II-BT-56M-A-PN8			1:8
Ezi-SERVO II-BT-56M-B-PN8			
Ezi-SERVO II-BT-56M-A-PN10			1:10
Ezi-SERVO II-BT-56M-B-PN10			
Ezi-SERVO II-BT-56M-A-PN15			1:15
Ezi-SERVO II-BT-56M-B-PN15			
Ezi-SERVO II-BT-56M-A-PN25			1:25
Ezi-SERVO II-BT-56M-B-PN25			
Ezi-SERVO II-BT-56M-A-PN40			1:40
Ezi-SERVO II-BT-56M-B-PN40			
Ezi-SERVO II-BT-56M-A-PN50			1:50
Ezi-SERVO II-BT-56M-B-PN50			
Ezi-SERVO II-BT-56L-A-PN3			1:3
Ezi-SERVO II-BT-56L-B-PN3			
Ezi-SERVO II-BT-56L-A-PN5			1:5
Ezi-SERVO II-BT-56L-B-PN5			
Ezi-SERVO II-BT-56L-A-PN8			1:8
Ezi-SERVO II-BT-56L-B-PN8			
Ezi-SERVO II-BT-56L-A-PN10			1:10
Ezi-SERVO II-BT-56L-B-PN10			
Ezi-SERVO II-BT-56L-A-PN15			1:15
Ezi-SERVO II-BT-56L-B-PN15			
Ezi-SERVO II-BT-56L-A-PN25			1:25
Ezi-SERVO II-BT-56L-B-PN25			
Ezi-SERVO II-BT-56L-A-PN40			1:40
Ezi-SERVO II-BT-56L-B-PN40			
Ezi-SERVO II-BT-56L-A-PN50			1:50
Ezi-SERVO II-BT-56L-B-PN50			
Ezi-SERVO II-BT-60S-A-PN3			1:3
Ezi-SERVO II-BT-60S-B-PN3			
Ezi-SERVO II-BT-60S-A-PN5			1:5
Ezi-SERVO II-BT-60S-B-PN5			
Ezi-SERVO II-BT-60S-A-PN8			1:8
Ezi-SERVO II-BT-60S-B-PN8			
Ezi-SERVO II-BT-60S-A-PN10			1:10
Ezi-SERVO II-BT-60S-B-PN10			
Ezi-SERVO II-BT-60S-A-PN15			1:15
Ezi-SERVO II-BT-60S-B-PN15			
Ezi-SERVO II-BT-60S-A-PN25			1:25
Ezi-SERVO II-BT-60S-B-PN25			
Ezi-SERVO II-BT-60S-A-PN40			1:40
Ezi-SERVO II-BT-60S-B-PN40			
Ezi-SERVO II-BT-60S-A-PN50			1:50
Ezi-SERVO II-BT-60S-B-PN50			

● Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-BT-60M-A-PN3	Motor & Drive Integrated		1:3
Ezi-SERVO II-BT-60M-B-PN3			
Ezi-SERVO II-BT-60M-A-PN5			1:5
Ezi-SERVO II-BT-60M-B-PN5			
Ezi-SERVO II-BT-60M-A-PN8			1:8
Ezi-SERVO II-BT-60M-B-PN8			
Ezi-SERVO II-BT-60M-A-PN10			1:10
Ezi-SERVO II-BT-60M-B-PN10			
Ezi-SERVO II-BT-60M-A-PN15			1:15
Ezi-SERVO II-BT-60M-B-PN15			
Ezi-SERVO II-BT-60M-A-PN25			1:25
Ezi-SERVO II-BT-60M-B-PN25			
Ezi-SERVO II-BT-60M-A-PN40			1:40
Ezi-SERVO II-BT-60M-B-PN40			
Ezi-SERVO II-BT-60M-A-PN50			1:50
Ezi-SERVO II-BT-60M-B-PN50			
Ezi-SERVO II-BT-60L-A-PN3			1:3
Ezi-SERVO II-BT-60L-B-PN3			
Ezi-SERVO II-BT-60L-A-PN5			1:5
Ezi-SERVO II-BT-60L-B-PN5			
Ezi-SERVO II-BT-60L-A-PN8			1:8
Ezi-SERVO II-BT-60L-B-PN8			
Ezi-SERVO II-BT-60L-A-PN10			1:10
Ezi-SERVO II-BT-60L-B-PN10			
Ezi-SERVO II-BT-60L-A-PN15			1:15
Ezi-SERVO II-BT-60L-B-PN15			
Ezi-SERVO II-BT-60L-A-PN25			1:25
Ezi-SERVO II-BT-60L-B-PN25			
Ezi-SERVO II-BT-60L-A-PN40			1:40
Ezi-SERVO II-BT-60L-B-PN40			
Ezi-SERVO II-BT-60L-A-PN50			1:50
Ezi-SERVO II-BT-60L-B-PN50			

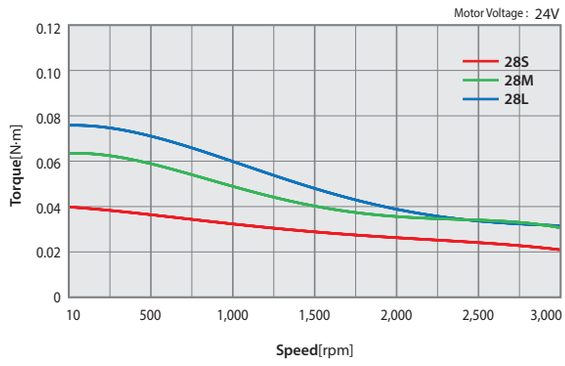
● Specifications of Motor

MODEL			Ezi-SERVO II-BT-28 series			Ezi-SERVO II-BT-42 series			
		UNIT	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		-	BI-POLAR						
NUMBER OF PHASES		-	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	9.0	13	18	35	54	77	114
WEIGHTS		g	170	227	257	340	400	470	600
LENGTH(L)		mm	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	30	30	30	22	22	22	22
	8mm		38	38	38	26	26	26	26
	13mm		53	53	53	33	33	33	33
	18mm		-	-	-	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight						
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)						
INSULATION CLASS		-	CLASS B(130℃)						
OPERATING TEMPERATURE		℃	0 to 55						

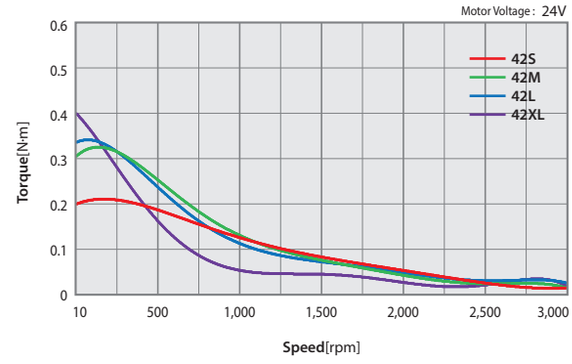
MODEL			Ezi-SERVO II-BT-56 series			Ezi-SERVO II-BT-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		-	BI-POLAR					
NUMBER OF PHASES		-	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690
WEIGHTS		g	640	800	1320	1075	1240	1800
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70
	8mm		65	65	65	87	87	87
	13mm		85	85	85	114	114	114
	18mm		123	123	123	165	165	165
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		-	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

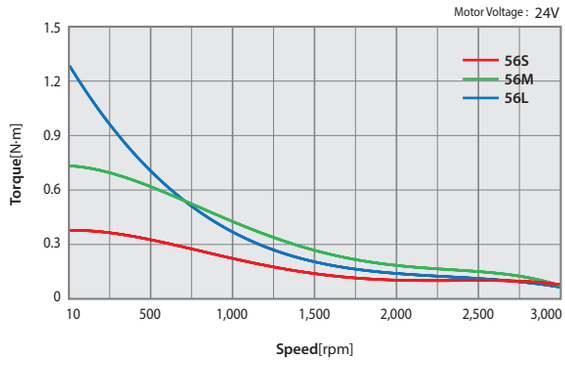
Ezi-SERVO II-BT-28 series



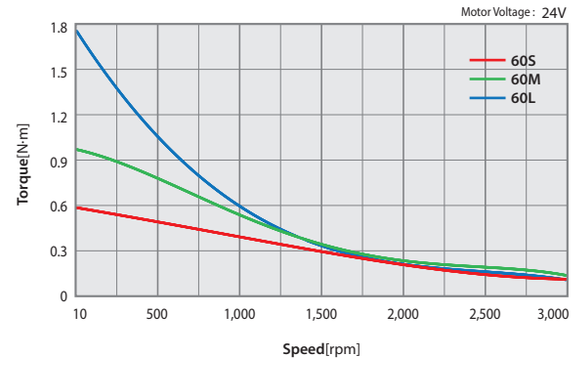
Ezi-SERVO II-BT-42 series



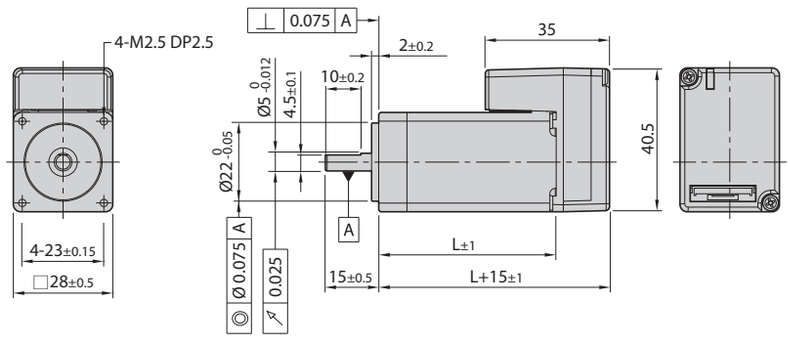
Ezi-SERVO II-BT-56 series



Ezi-SERVO II-BT-60 series

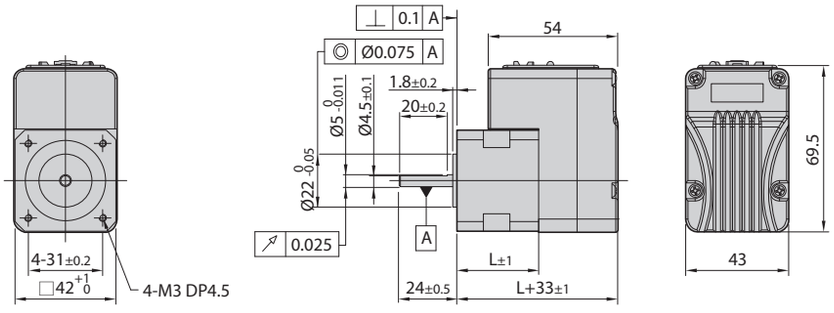


● Dimensions of Motor [mm]



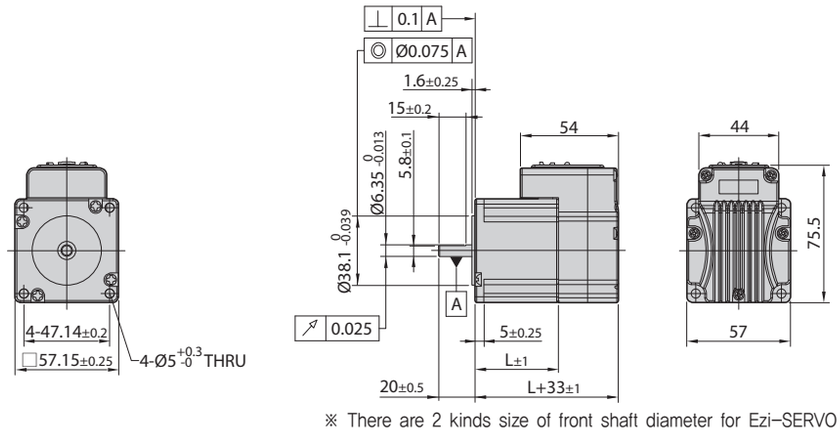
28mm

Model name	Length(L)
28S	32
28M	45
28L	50



42mm

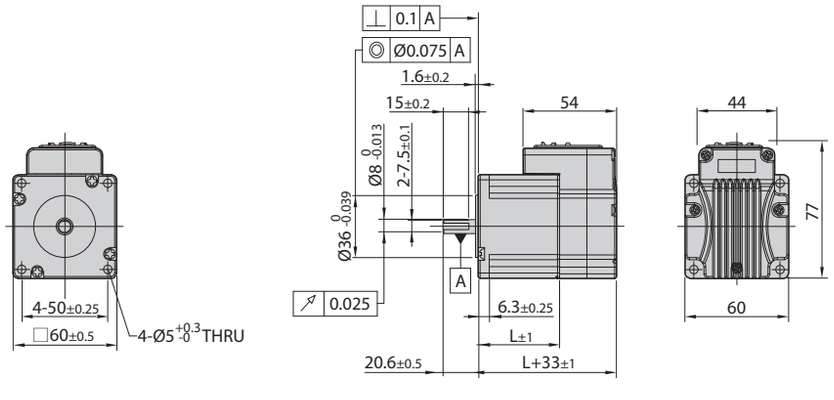
Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60



※ There are 2 kinds size of front shaft diameter for Ezi-SERVO II-BT-56 series as Ø6.35 and Ø8.0.

56mm

Model name	Length(L)
56S	46
56M	55
56L	80



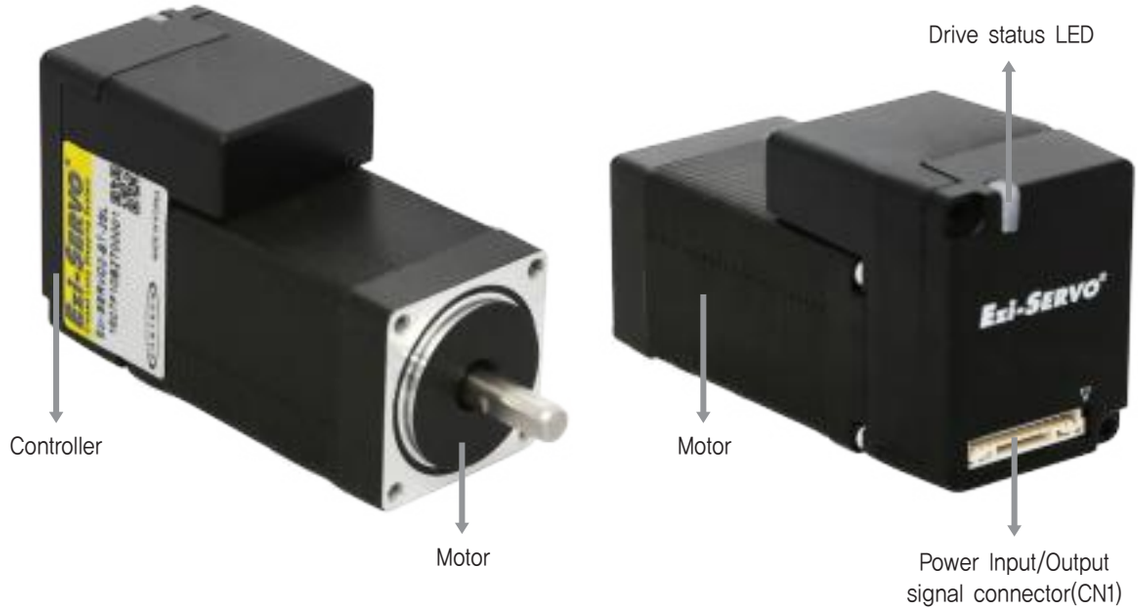
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

● Specifications of Drive [Ezi-SERVO II-BT-28 series]

Model		Ezi-SERVO II-BT-28 series
Input Voltage		24VDC ±10%
Control Method		Closed loop control with 32bit MCU
Current Consumption		Max 500mA (Except motor current)
Operating Condition	Ambient Temperature	· In Use: 0~40℃ · In Storage: -20~70℃
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Rotation Speed	0~3,000 [rpm]
	Resolution [ppr]	500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 (Selectable by parameter) * Default: 16,000
	Max. Input Pulse Frequency	500kHz (Duty 50%)
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error
	In-Position Selection	0~63 (Selectable by parameter) * Default: 0
	Position Gain Selection	0~63 (Selectable by parameter) * Default: 3
	Pulse Input Method	1-Pulse / 2-Pulse (Selectable by parameter) * Default: 2-Pulse Mode
	Rotational Direction	CW/CCW (Selectable by parameter)
	Speed/Position Control Command	Pulse Train Input
I/O Signal	Input Signals	Position Command Pulse, Servo On/Off, Alarm Reset
	Output Signals	In-Position, Alarm

● Settings and Operation [Ezi-SERVO II-BT-28 series]



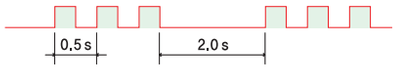
1. Drive Status LED

In the case of Ezi-SERVO II-BT-28 series products, LED can be checked by LED color, lighting, On/Off and blinking.

Status	LED	Description
Disable	Green : ▬ ▬ ▬ ▬ Red :	Green light flashing, Red light off
Enable	Green : ▬▬▬▬ Red :	Green light on, Red light off
In motion	Green : ▬▬▬▬ Red : ▬▬▬▬	Green light on, Red light on
In-position deviation	Green : ● ● ● ● ● ● Red : ● ● ● ● ● ●	Green and Red light alternately flashing
Alarm	Green : Red : ▬ ▬ ▬ ▬	Red light flashing repeatedly as many as alarm number

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds 4.8A
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regeneratived Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error with Encoder connection in drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state



Alarm LED flash
(Ex, Position tracking error)

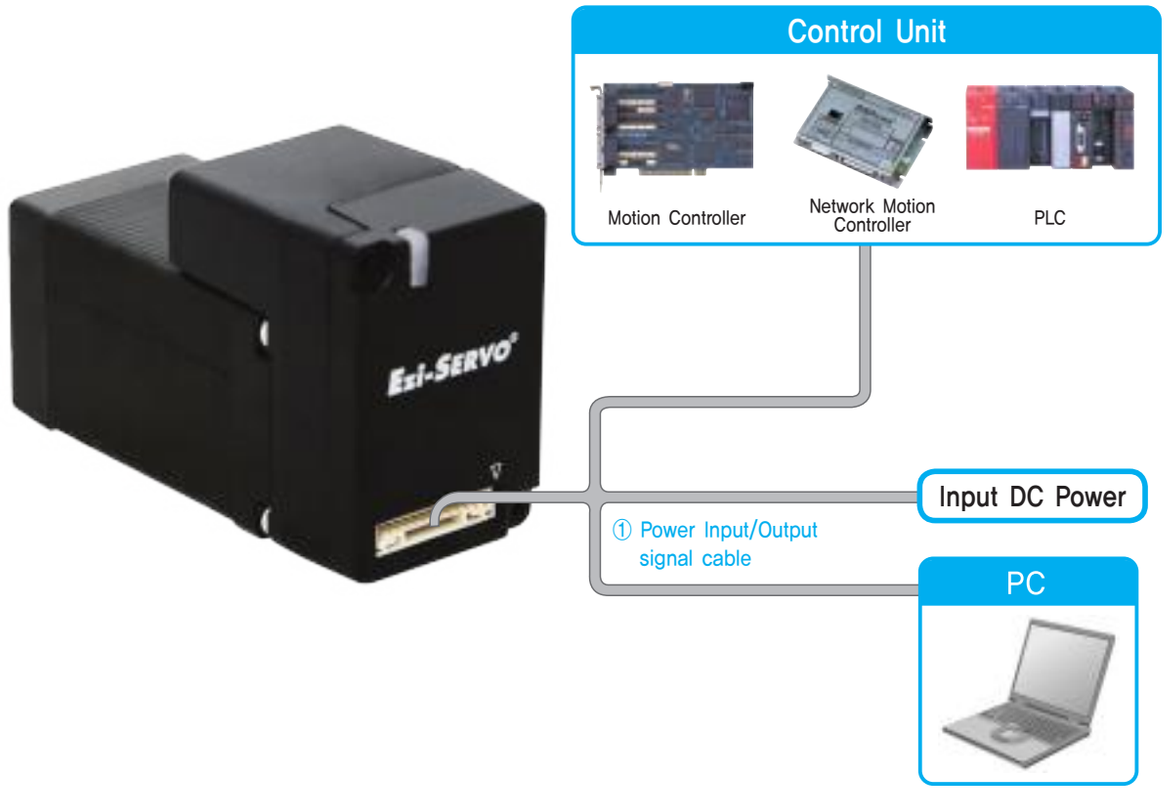
2. Power Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	GND	Input
2	24VDC	Input
3	Tx	Output
4	Rx	Input
5	Alarm	Output
6	In-Position	Output
7	Servo On/Off	Input
8	Alarm Reset	Input
9	CCW+(Dir+)	Input
10	CCW-(Dir-)	Input
11	CW+(Pulse+)	Input
12	CW-(Pulse-)	Input



1 12

● System Configuration [Ezi-SERVO II-BT-28 series]



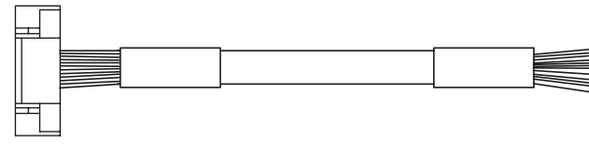
Type	Signal Cable	Power Cable	Parameter Setting Cable
Length supplied	–	–	–
Max. Length	20m	2m	3m

1. Options

① Power Input/Output Signal Cable

Item	Length [m]	Remark
CSVB-A-OR4F	0.4m	Normal Cable

※ This cable is provide item as standard option.



Manufacturer : JST
Housing : GHR-12V-S
Terminal : SSHL-002T-P0.2

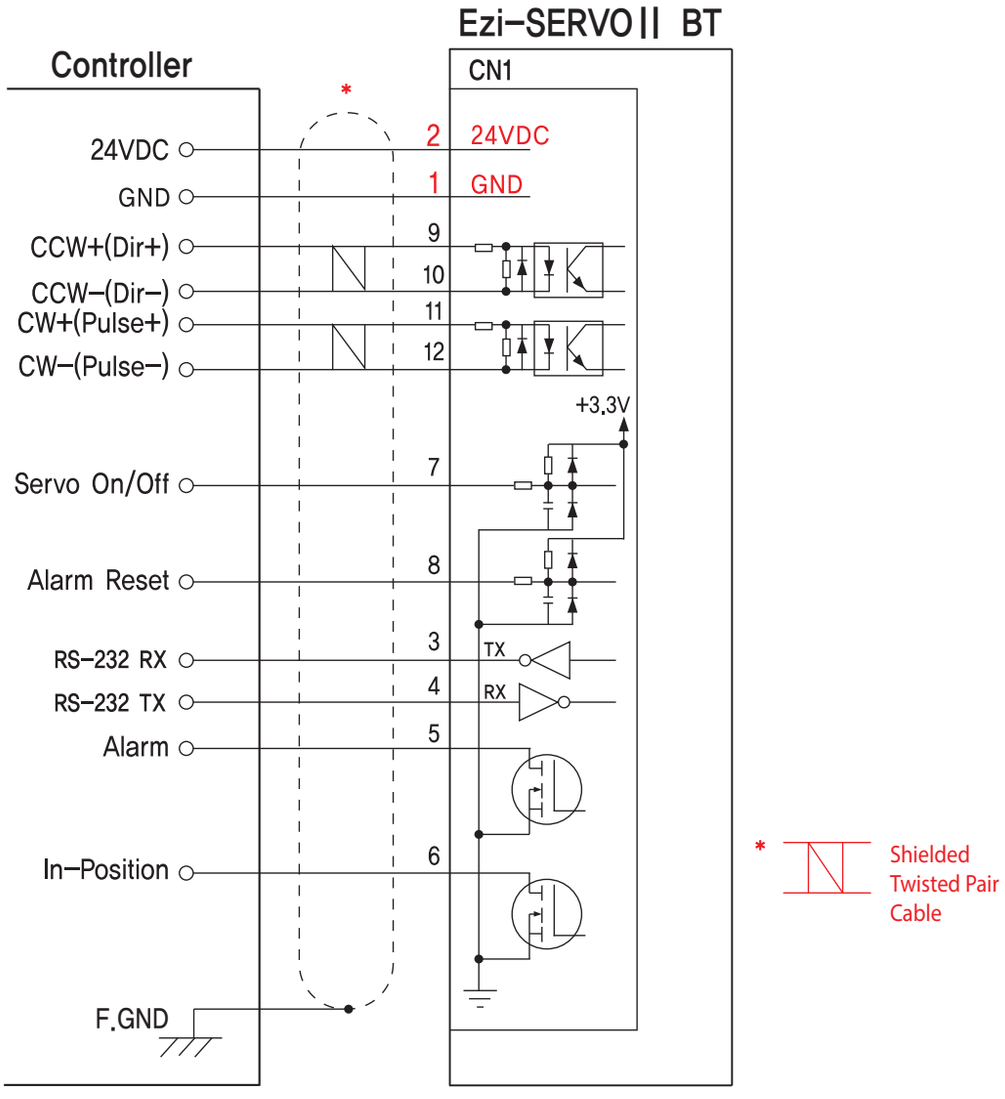
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Signal	Housing Terminal	GHR-12V-S SSHL-002T-P0.2	JST

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [Ezi-SERVO II-BT-28 series]

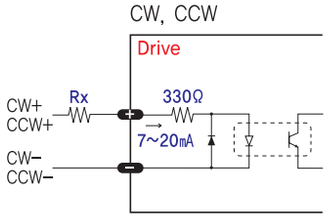


※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● Control Signal Input/Output Description [Ezi-SERVO II-BT-28 series]

1 Input Signal

Pulse input signals of the drive are all photocoupler protected. The signal shows the status of internal photocouplers [ON : Conduction], [OFF : Non-conduction], not displaying the voltage levels of the signal.

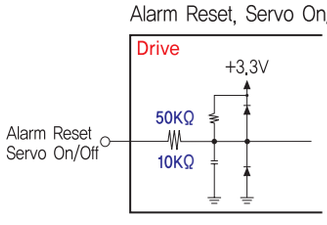


Pin No.	Function
11	CW+
12	CW-
9	CCW+
10	CCW-

◆ CW, CCW Input

This signal can be used to receive a positioning pulse command from a customer host motion controller.
The customer can select 1-Pulse Input mode or 2-Pulse Input mode(refer to switch No.1, SW 1). The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor Rx is not used and connect to the drive directly. When the level of input signal is more than 5V, Rx resistor is required. If the resistor is absent, the drive will be damaged! If the input signal level is 12V, Rx value is 680ohm and 24V, Rx value is 1.8Kohm.

Servo On / Off and Alarm Reset of the drive are operated with voltage level [ON : High] and [OFF : Low].



Pin No.	Function
7	Servo On/Off
8	Alarm Reset

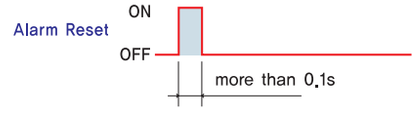
※ Please use the input voltage 5-24VDC. If the input is not connected, it is in the High state. If the input voltage is less than 0.6V, it is the Low state.

◆ Servo On/Off Input

This input can be used only to adjust the position by manually moving the motor shaft from the load-side. By setting the signal [LOW], the drive cuts off the power supply to the motor. Then, one can manually adjust output position. When setting the signal back to [High], the drive resumes the power to the motor and recovers the holding torque. When driving a motor, one needs to set the signal [High].

◆ Alarm Reset Input

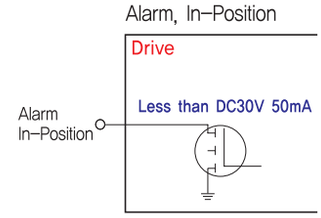
Release the alarm output of the drive where the protection function is activated. When the Alarm Reset input is set to [OFF], the alarm output is canceled. Remove the cause of the alarm before releasing the alarm output. If the cause of the alarm is not removed, the Alarm Reset input will not operate normally even if it is set to [OFF].



※ By setting the alarm reset input signal [ON], cancel the Alarm output. Before cancel the Alarm output, have to remove the source of alarm.

2 Output Signal

Alarm and In-Position signals of the drive are operated by [ON : Conduction] and [OFF : Non-conduction] of open-drain circuit.



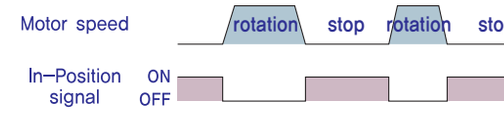
Pin No.	Function
5	Alarm
6	In-Position

◆ Alarm Output

The Alarm output indicates [ON] when the drive is in a normal operation. If a protection mode has been activated, it goes [OFF]. A host controller needs to detect this signal and stop sending a motor driving command. When the drive detects an abnormal operation such as overload or over current of the motor, it sets the Alarm output to [OFF], flashes the Alarm LED, disconnect the power to a motor and stops the motor simultaneously.

◆ In-Position Output

The In-Position output is used to send motor motion to the host controller. When the movement of the motor is completed, the In-Position output becomes [ON].
In-Position output is [ON] when the motor stops within the position deviation set value.

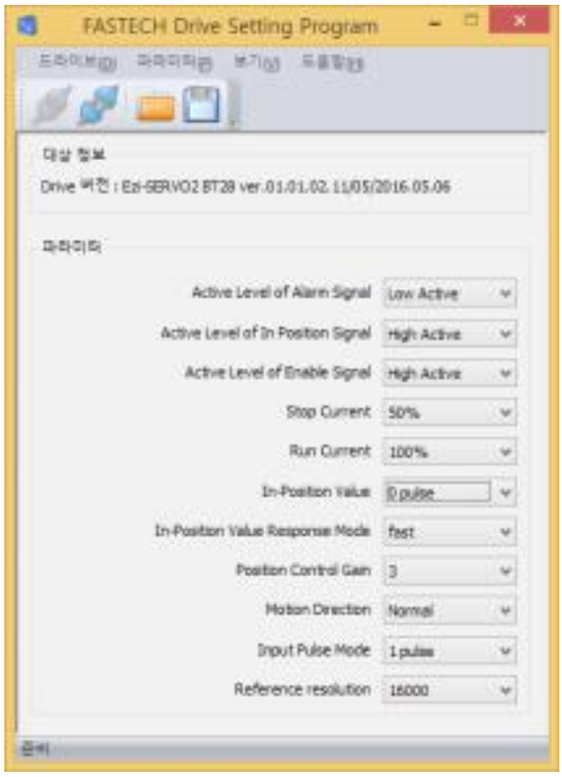


● Parameter Settings [Ezi-SERVO II-BT-28 series]

1 Parameter Setting GUI

(User Interface)

Ezi-SERVO II BT drive utilizes various parameters for operation and some parameters can be changed upon the needs of the user. Ezi-SERVO II BT provides Drive Setting Program for more convenient use. The screen shot in right side is the sample of Drive Setting Program which is used for drive setting and parameter change. User can change and set the parameter such as level of Alarm Reset, Alarm, In-Position Signal, Enable signal and so on. By using this drive setting program, user can find the optimal condition to Ezi-SERVO II BT to fit with the user's own system. Please be noticed that connection for drive setting program shall be done when the Ezi-SERVO II BT is disable staus for safety reason.



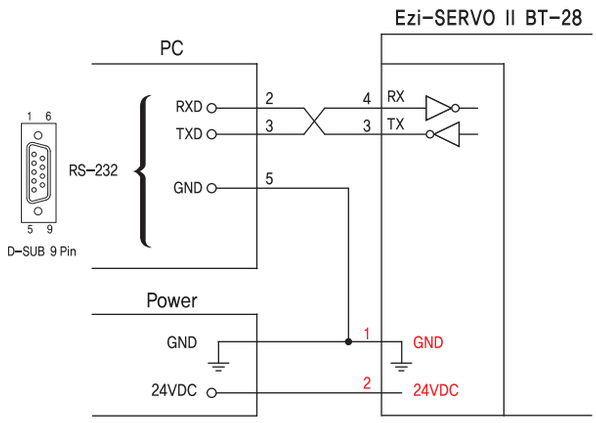
※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)

※ Graphic User Interface(GUI) Program can support Windows 7/8/10.

※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.

2 Parameter Setting wiring Diagram

(Ezi-SERVO II-BT-28 Series)

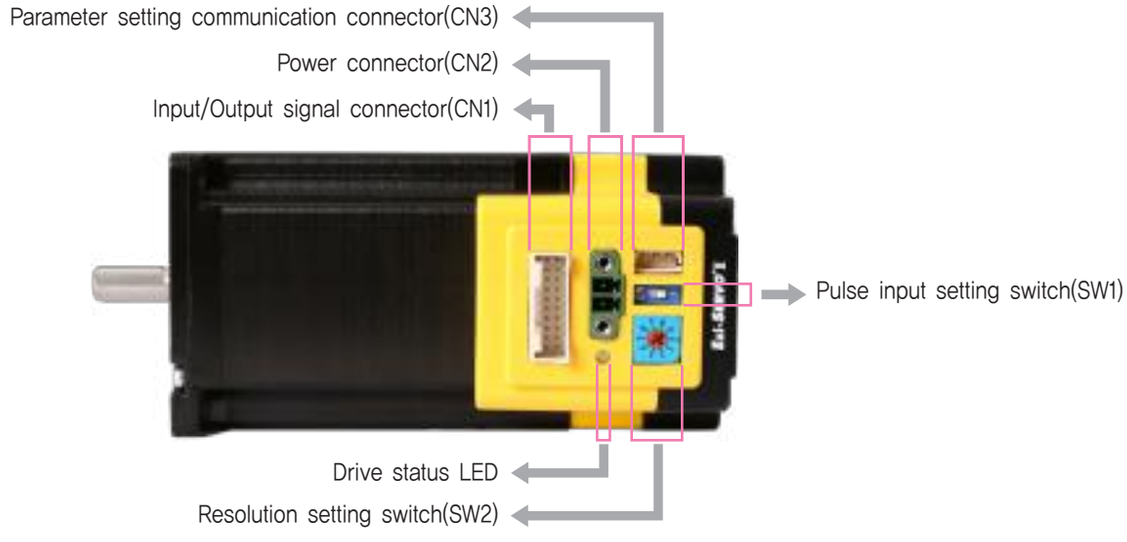


● Specifications of Drive [Ezi-SERVO II-BT-42/56/60 series]

Model		Ezi-SERVO II-BT-42 series	Ezi-SERVO II-BT-56 series	Ezi-SERVO II-BT-60 series
Input Voltage		24VDC ±10%		
Control Method		Closed loop control with 32bit MCU		
Current Consumption		Max 500mA (Except motor current)		
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.	0.5g		
Function	Rotation Speed	0~3,000 [rpm] *1		
	Resolution [ppr]	10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable with Rotary Switch)		
	Max. Input Pulse Frequency	500kHz (Duty 50%)		
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error		
	In-Position Selection	0~63 (Selectable by parameter) * Default: 0		
	Position Gain Selection	0~63 (Selectable by parameter) * Default: 3		
	Pulse Input Method	1-Pulse / 2-Pulse (Selectable with DIP switch) * Default: 2-Pulse Mode		
	Speed/Position Control Command	Pulse Train Input		
I/O Signal	Input Signals	Position Command Pulse, Servo On/Off, Alarm Reset (Photocoupler Input)		
	Output Signals	In-Position, Alarm (Photocoupler output) Encoder signal (A+, A-, B+, B-, Z+, Z-, 26C31 of Equivalent) (Line Driver output), Brake		

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

● Settings and Operation [Ezi-SERVO II-BT-42/56/60 series]

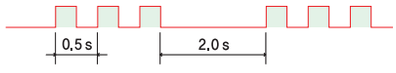


1. Drive status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

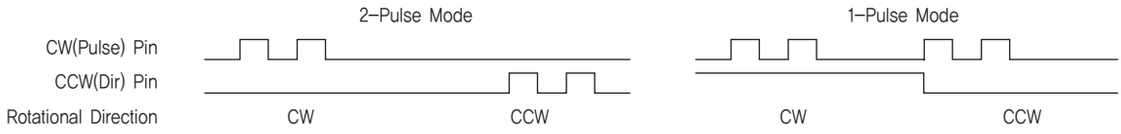
Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the 4.8A
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerated Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error with Encoder connection in drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state



Alarm LED flash
(Ex, Position tracking error)

2. Pulse Input Setting Switch(SW1)

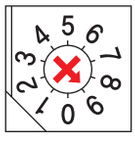
Indication	Switch Name	Functions
2P/1P	Selecting pulse input mode	Selectable 1-Pulse input mode or 2-Pulse input mode as Pulse input signal. ON: 1-Pulse mode OFF: 2-Pulse mode ※ Default: 2-Pulse mode



3. Resolution Setting Switch(SW2)

The Number of pulse per revolution.

Position	Pulse/Revolution	Position	Pulse/Revolution
0	500 *1	5	3,600
1	500	6	5,000
2	1,000	7	6,400
3	1,600	8	7,200
4	2,000	9	10,000

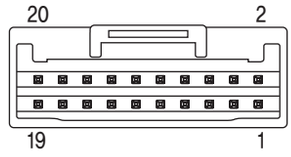


*1 : Resolution of position "0" will be different according to the resolution of encoder adopted to the product. But in case of the encoder with 10,000[ppr] resolution, it will be set as 500.

※ Selected resolution is more then encoder resolution, motor shall be operated by microstep between pulses.

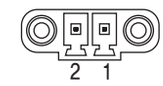
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	CW+(Pulse+)	Input
2	CW−(Pulse−)	Input
3	CCW+(Dir+)	Input
4	CCW−(Dir−)	Input
5	A+	Output
6	A−	Output
7	B+	Output
8	B−	Output
9	Z+	Output
10	Z−	Output
11	Alarm	Output
12	In-Position	Output
13	Servo On/Off	Input
14	Alarm Reset	Input
15	NC	-----
16	BRAKE+	Output
17	BRAKE−	Output
18	S-GND	Output
19	EXT_GND	Input
20	EXT_24VDC	Input



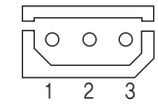
5. Power Connector(CN2)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



6. Parameter Setting Communication Connector(CN3)

NO.	Function	I/O
1	Tx	Output
2	Rx	Input
3	GND	-----



● System Configuration [Ezi-SERVO II-BT-42/56/60 series]



Type	Signal Cable	Power Cable	Parameter Setting Cable
Length supplied	–	–	–
Max. Length	20m	2m	3m

1. Options

① Signal Cable

Available to connect between Control System and Ezi-SERVO II BT.

Item	Length [m]	Remark
CSVB-S-□□□F	□□□	Normal Cable
CSVB-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-SERVO II BT.

Item	Length [m]	Remark
CSVA-P-□□□F	□□□	Normal Cable
CSVA-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

③ Parameter Setting Cable

Cable to connect Ezi-SERVO II BT series and computer. Please use this cable to change parameter of Drive.

Item	Length [m]	Remark
CBTS-C-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 3m length.

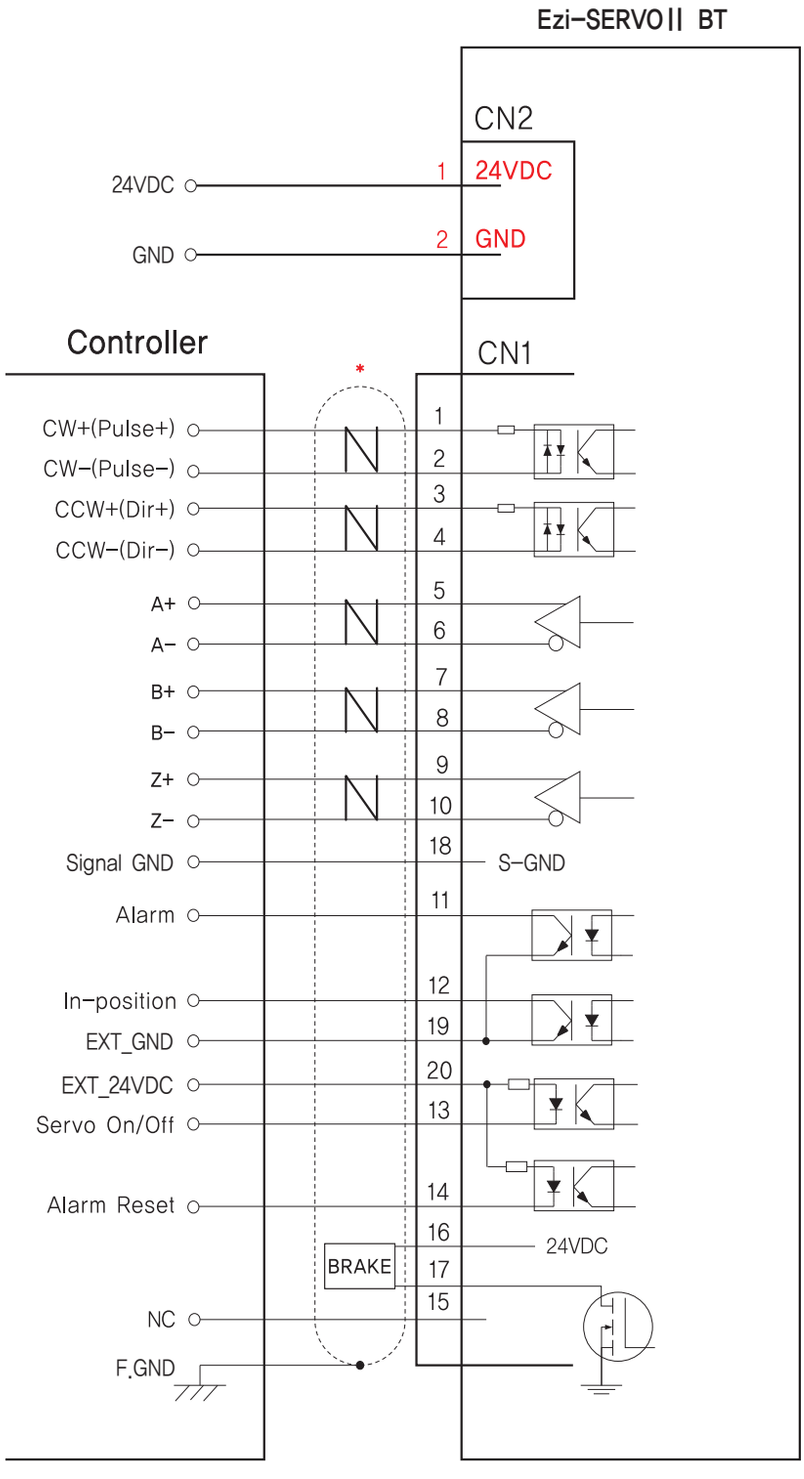
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Terminal Block	MC421-38102	DECA
Signal (CN1)	Housing Terminal	501646-2000 501648-1000(AWG 26~28)	MOLEX
Parameter setting (CN3)	Housing Terminal	5264-03 5263PBTL	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [Ezi-SERVO II-BT-42/56/60 series]

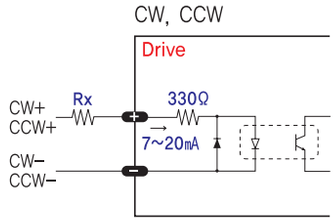


※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● Control Signal Input/Output Description [Ezi-SERVO II-BT-42/56/60 series]

1 Input Signal

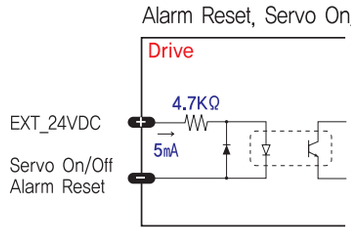
Input signals of the drive are all photocoupler protected. The signal shows the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.



Pin No.	Function
1	CW+
2	CW-
3	CCW+
4	CCW-

◆ CW, CCW Input

This signal can be used to receive a positioning pulse command from a user host motion controller. The user can select 1-pulse input mode or 2-pulse input mode (refer to switch No.1, SW1).
The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor Rx is not used and connect to the driver directly.
When the level of input signal is more than 5V, Rx resistor is required. If the resistor is absent, the drive will be damaged. If the input signal level is 12V, Rx value is 680ohm and 24V, Rx value is 1.8Kohm.



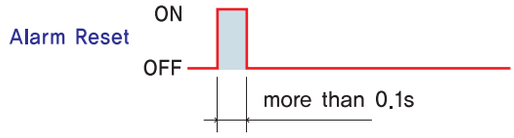
Pin No.	Function
13	Servo On/Off
14	Alarm Reset
20	EXT_24VDC

◆ Servo On/Off Input

This input can be used only to adjust the position by manually moving the motor shaft from the load-side.
By setting the signal [ON], the driver cuts off the power supply to the motor. Then, one can manually adjust output position. When setting the signal back to [OFF], the driver resumes the power to the motor and recovers the holding torque. When driving a motor, one needs to set the signal [OFF].

◆ Alarm Reset Input

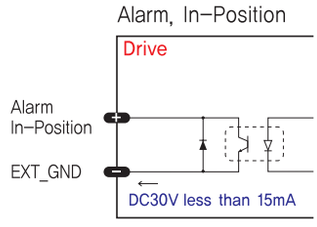
When a protection mode has been activated, a signal to this alarm reset input cancels the Alarm output.



※ By setting the alarm reset input signal [ON], cancel the Alarm output. Before cancel the Alarm output, have to remove the source of alarm.

2 Output Signal

Output signals from the driver are photocoupler protected: Alarm, In-Position and the Line Driver Outputs (encoder signal).
In the case of photocoupler outputs, the signal indicates the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.



Pin No.	Function
11	Alarm
12	In-Position
19	EXT_GND

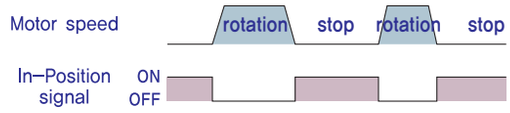
◆ Alarm Output

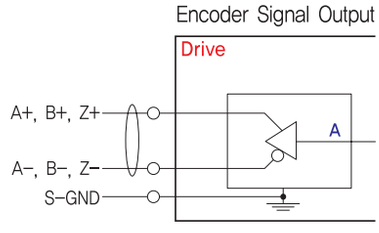
The Alarm output indicates [ON] when the driver is in a normal operation. If a protection mode has been activated, it goes [OFF]. A host controller needs to detect this signal and stop sending a motor driving command. When the driver detects an abnormal operation such as overload or over current of the motor, it sets the Alarm output to [OFF], flashes the Alarm LED, disconnect the power to a motor and stops the motor simultaneously.

[Caution] Only at the Alarm output port, the photocoupler isolation is in reverse. When the driver is in normal operation the Alarm output is [ON]. On the contrary when the driver is in abnormal operation that start protection mode, the Alarm output is [OFF].

◆ In-Position Output

In-Position signal is [ON] when positioning is completed. This signal is [ON] when the motor position error is within the value set by the Parameter.





Pin No.	Function
5	A+
6	A-
7	B+
8	B-
9	Z+
10	Z-
18	S-GND

◆ Encoder Signal Output

The encoder signal is a line driver output. This can be used to confirm the stop position.

● Parameter Settings [Ezi-SERVOII-BT-42/56/60 series]

1 Parameter Setting GUI

(User Interface)

Ezi-SERVO II BT driver utilizes various parameters for operation.
Some parameters need to be adjusted once users feel inconvenience to use or in order to maximize efficiency.
Ezi-SERVO II BT provides parameter modification program for convenience of product usage for users.

The screen shot as below is computer program (GUI) which used for operation process. Users can change and set the parameters of drive for Enable Level, Alarm Reset Level, In-Position Level, Alarm Output Level. Users can use Ezi-SERVO II BT according to its own system.

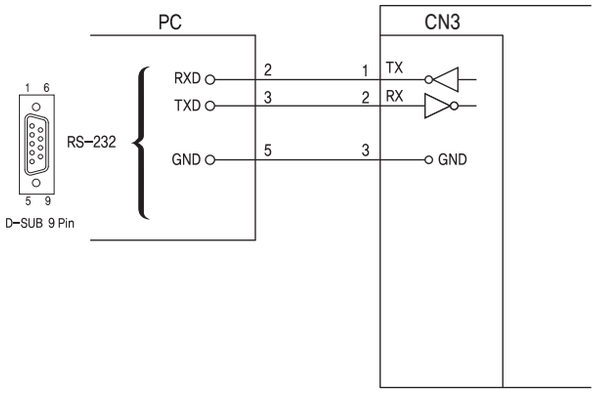
Please connect parameter setting GUI when Ezi-SERVO II BT is Disable state.
For safety reason, Ezi-SERVO II BT can not be connected to setting GUI when it is Enable state.



※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.

2 Parameter Setting wiring Diagram

(Ezi-SERVO II-BT-42/56/60 Series)

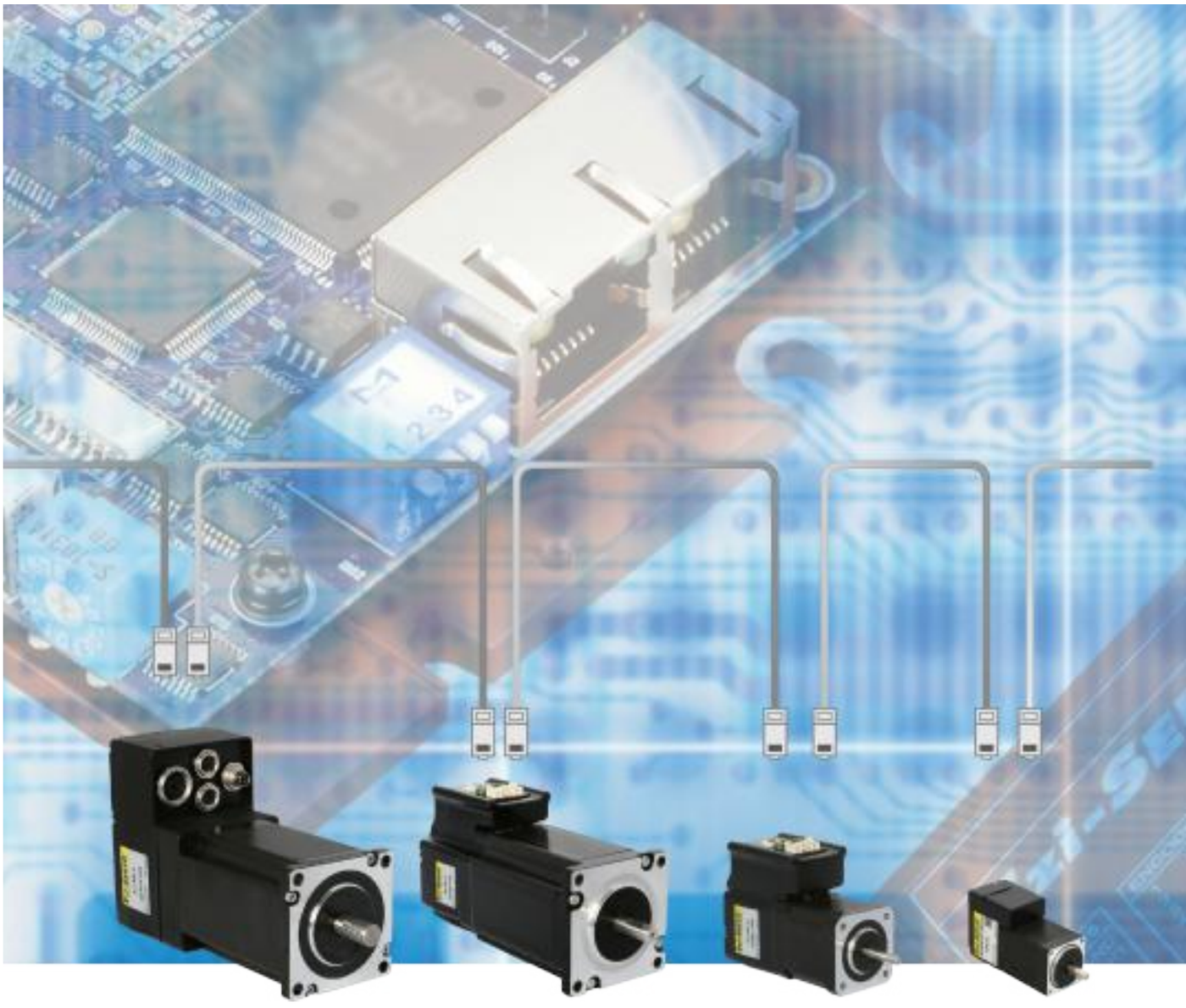



ON
Exi-SERVO

Ezi-SERVO ALL

Closed Loop System_ Ezi-SERVO ALL

- Motor + Encoder + Drive + Controller Integrated
- RS-485 Interface
- Position Table
- Closed Loop System
- No Gain Tuning / No Hunting
- Heat Reduction / Torque Improvement
- IP65 Protection (NEMA24 Size)



FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® ALL

Closed Loop Stepping System



2 Position Table Function

You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PLC.
The PLC can monitor the In-Position, origin search, moving/stop, Servo ready and other digital output signals from a drive. A maximum of 64 positioning points can be set from PLC.



* 28mm product does not support function.

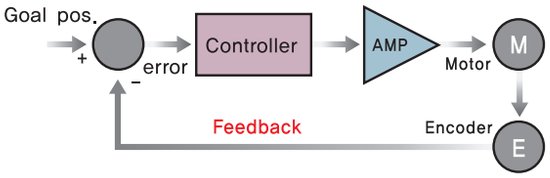
1 Network Based Motion Control

A maximum of 16 axis can be operated from a PC through RS-485 communications. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter.
Motion Library(DLL) is provided for programming under Windows 7/8/10.



3 Closed Loop System

Ezi-SERVO is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO to update the current position every 25 μsec. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



4 Absolute Encoder System

High resolution of absolute position encoder isequipped (single turn: 262,144/rev, multi turn: 4,096/rev) In addition, even power supply of driver shuts off, it enables to know the previous location and the secondary power supply for the encoder (ie : battery) is not required.

※ Only for Ezi-SERVO-ALL-60-ABS series



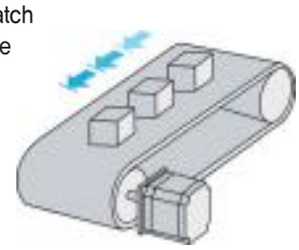
5 IP65 Protection

By acquiring IP65 rating, it can be used in harsh environments like water splashes or lots of dusts.

※ Only for Ezi-SERVO-ALL-60/60-ABS series

6 No Gain Tuning

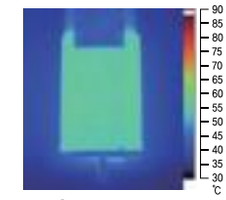
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO is optimized for the application and ready to work right out of the box. The Ezi-SERVO system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO also performs exceptionally, even under heavy loads and high speeds.



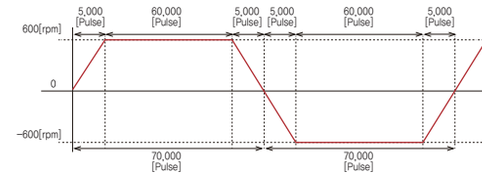
7 Heat Reduction / Energy Saving

(Motor Current Control according to load)

Ezi-SERVO automatically controls motor current according to load. Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]



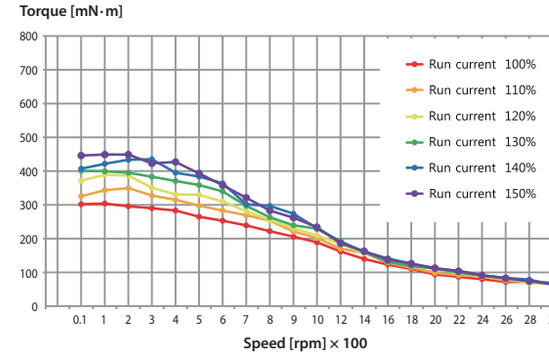
Example of the Motor Current Control according to load

8 Torque Improvement

(Motor Current Setting)

Ezi-SERVO can increase the motor current up to 150% by setting the Run Current by parameter. Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased.

Ezi-SERVO can improve the torque in the low speed range by about 30%.

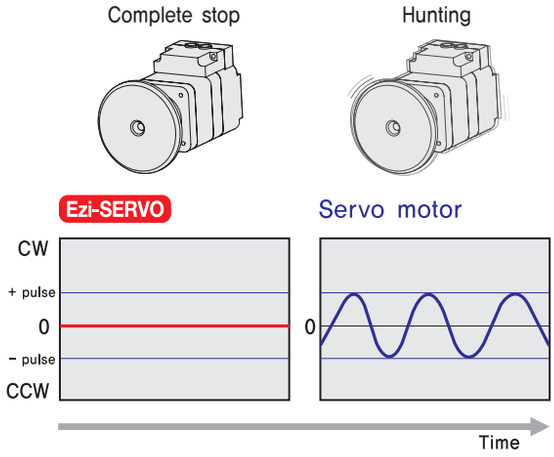


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO-ALL-42L
Motor Voltage = 24VDC
Input Voltage = 24VDC

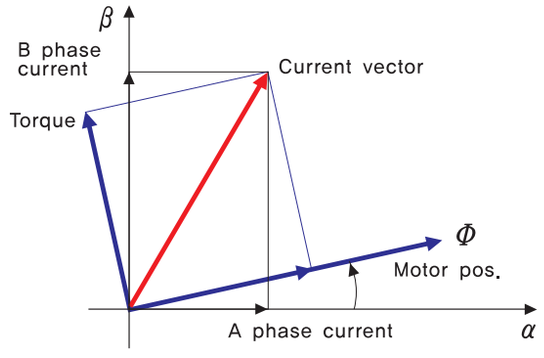
9 No Hunting

Traditional servo motor drives overshoot their position and try to correct overshooting by moving the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO Motion Control System. Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



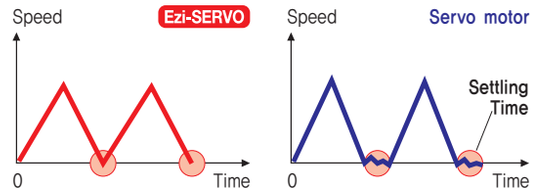
10 Smooth and Accurate

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



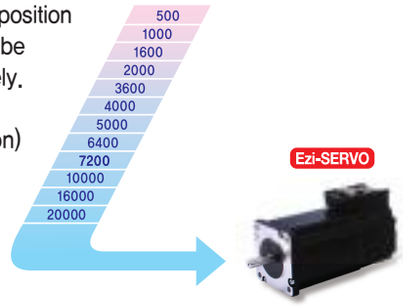
11 Fast Response

Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



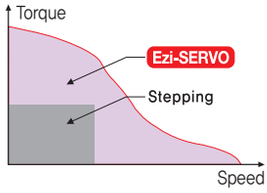
12 High Resolution

The unit of theposition command can be divided precisely. (Max. 20,000 pulses/revolution)



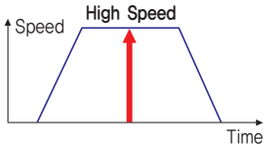
13 High Torque

Compared with common step motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



14 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

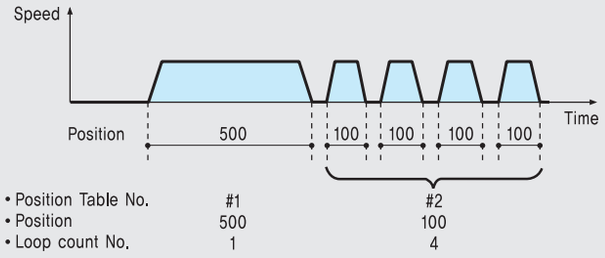
● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Features of Motion Controller

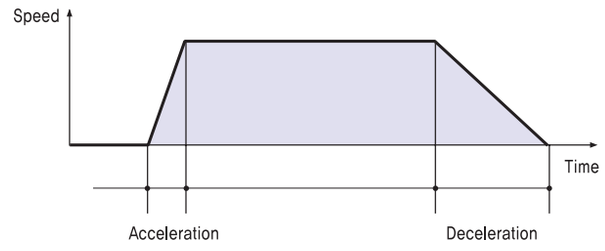
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



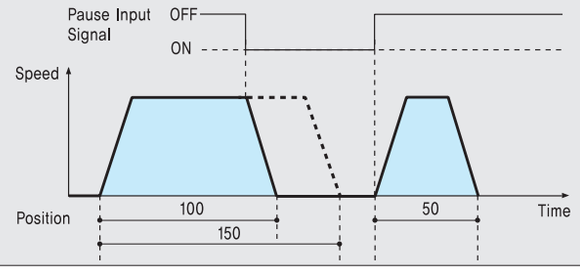
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



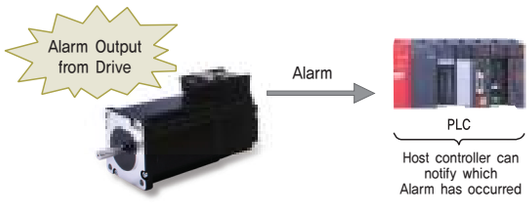
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



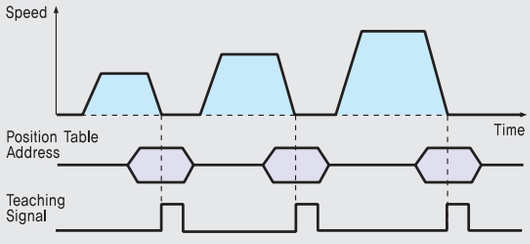
4. Alarm

The number of 7-Segment flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

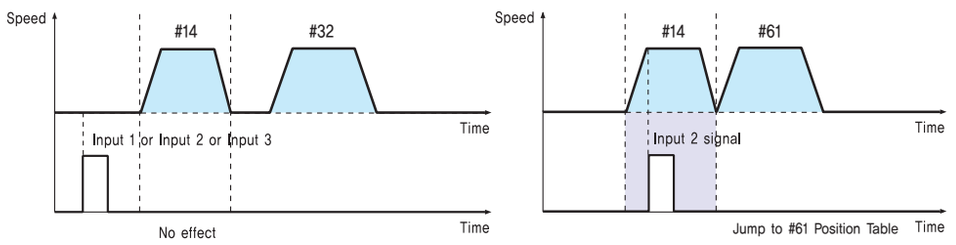


6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		32		60	61	62	



● Ezi-SERVO ALL Part Numbering

Ezi-SERVO-ALL-42S-A-BK-PN05-□

- **Product Name**
- **Drive Series**
  - ALL : All Type
- **Motor Flange Size**
  - 28 : 28mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Encoder Resolution**
  - A : 10,000[ppr]
  - B : 20,000[ppr]
  - D : 16,000[ppr]
  - ABS : Absolute Encoder
- **Brake**
  - Blank : Without Brake
  - BK : Brake
- **Reduction Gear Ratio**
  - Blank – Without Gear
  - PN03 – 1:3
  - PN05 – 1:5
  - PN08 – 1:8
  - PN10 – 1:10
  - PN15 – 1:15
  - PN25 – 1:25
  - PN40 – 1:40
  - PN50 – 1:50
- **User Code**

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ALL-28S-D	Motor & Drive Integrated	
Ezi-SERVO-ALL-28M-D		
Ezi-SERVO-ALL-28L-D		
Ezi-SERVO-ALL-42S-A		
Ezi-SERVO-ALL-42S-B		
Ezi-SERVO-ALL-42M-A		
Ezi-SERVO-ALL-42M-B		
Ezi-SERVO-ALL-42L-A		
Ezi-SERVO-ALL-42L-B		
Ezi-SERVO-ALL-42XL-A		
Ezi-SERVO-ALL-42XL-B		
Ezi-SERVO-ALL-56S-A		
Ezi-SERVO-ALL-56S-B		
Ezi-SERVO-ALL-56M-A		
Ezi-SERVO-ALL-56M-B		
Ezi-SERVO-ALL-56L-A		
Ezi-SERVO-ALL-56L-B		
Ezi-SERVO-ALL-60L-A		
Ezi-SERVO-ALL-60L-B		
Ezi-SERVO-ALL-60L-ABS		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ALL-42S-A-BK	Motor & Drive Integrated	
Ezi-SERVO-ALL-42S-B-BK		
Ezi-SERVO-ALL-42M-A-BK		
Ezi-SERVO-ALL-42M-B-BK		
Ezi-SERVO-ALL-42L-A-BK		
Ezi-SERVO-ALL-42L-B-BK		
Ezi-SERVO-ALL-42XL-A-BK		
Ezi-SERVO-ALL-42XL-B-BK		
Ezi-SERVO-ALL-56S-A-BK		
Ezi-SERVO-ALL-56S-B-BK		
Ezi-SERVO-ALL-56M-A-BK		
Ezi-SERVO-ALL-56M-B-BK		
Ezi-SERVO-ALL-56L-A-BK		
Ezi-SERVO-ALL-56L-B-BK		
Ezi-SERVO-ALL-60L-A-BK		
Ezi-SERVO-ALL-60L-B-BK		
Ezi-SERVO-ALL-60L-ABS-BK		

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-ALL-42S-A-PN3	Motor & Drive Integrated		1:3
Ezi-SERVO-ALL-42S-B-PN3			
Ezi-SERVO-ALL-42S-A-PN5			1:5
Ezi-SERVO-ALL-42S-B-PN5			
Ezi-SERVO-ALL-42S-A-PN8			1:8
Ezi-SERVO-ALL-42S-B-PN8			
Ezi-SERVO-ALL-42S-A-PN10			1:10
Ezi-SERVO-ALL-42S-B-PN10			
Ezi-SERVO-ALL-42S-A-PN15			1:15
Ezi-SERVO-ALL-42S-B-PN15			
Ezi-SERVO-ALL-42S-A-PN25			1:25
Ezi-SERVO-ALL-42S-B-PN25			
Ezi-SERVO-ALL-42S-A-PN40			1:40
Ezi-SERVO-ALL-42S-B-PN40			
Ezi-SERVO-ALL-42S-A-PN50			1:50
Ezi-SERVO-ALL-42S-B-PN50			
Ezi-SERVO-ALL-42M-A-PN3			1:3
Ezi-SERVO-ALL-42M-B-PN3			
Ezi-SERVO-ALL-42M-A-PN5			1:5
Ezi-SERVO-ALL-42M-B-PN5			
Ezi-SERVO-ALL-42M-A-PN8			1:8
Ezi-SERVO-ALL-42M-B-PN8			
Ezi-SERVO-ALL-42M-A-PN10			1:10
Ezi-SERVO-ALL-42M-B-PN10			
Ezi-SERVO-ALL-42M-A-PN15			1:15
Ezi-SERVO-ALL-42M-B-PN15			
Ezi-SERVO-ALL-42M-A-PN25			1:25
Ezi-SERVO-ALL-42M-B-PN25			
Ezi-SERVO-ALL-42M-A-PN40			1:40
Ezi-SERVO-ALL-42M-B-PN40			
Ezi-SERVO-ALL-42M-A-PN50			1:50
Ezi-SERVO-ALL-42M-B-PN50			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-ALL-42L-A-PN3	Motor & Drive Integrated		1:3
Ezi-SERVO-ALL-42L-B-PN3			
Ezi-SERVO-ALL-42L-A-PN5			1:5
Ezi-SERVO-ALL-42L-B-PN5			
Ezi-SERVO-ALL-42L-A-PN8			1:8
Ezi-SERVO-ALL-42L-B-PN8			
Ezi-SERVO-ALL-42L-A-PN10			1:10
Ezi-SERVO-ALL-42L-B-PN10			
Ezi-SERVO-ALL-42L-A-PN15			1:15
Ezi-SERVO-ALL-42L-B-PN15			
Ezi-SERVO-ALL-42L-A-PN25			1:25
Ezi-SERVO-ALL-42L-B-PN25			
Ezi-SERVO-ALL-42L-A-PN40			1:40
Ezi-SERVO-ALL-42L-B-PN40			
Ezi-SERVO-ALL-42L-A-PN50			1:50
Ezi-SERVO-ALL-42L-B-PN50			
Ezi-SERVO-ALL-42XL-A-PN3			1:3
Ezi-SERVO-ALL-42XL-B-PN3			
Ezi-SERVO-ALL-42XL-A-PN5			1:5
Ezi-SERVO-ALL-42XL-B-PN5			
Ezi-SERVO-ALL-42XL-A-PN8			1:8
Ezi-SERVO-ALL-42XL-B-PN8			
Ezi-SERVO-ALL-42XL-A-PN10			1:10
Ezi-SERVO-ALL-42XL-B-PN10			
Ezi-SERVO-ALL-42XL-A-PN15			1:15
Ezi-SERVO-ALL-42XL-B-PN15			
Ezi-SERVO-ALL-42XL-A-PN25			1:25
Ezi-SERVO-ALL-42XL-B-PN25			
Ezi-SERVO-ALL-42XL-A-PN40			1:40
Ezi-SERVO-ALL-42XL-B-PN40			
Ezi-SERVO-ALL-42XL-A-PN50			1:50
Ezi-SERVO-ALL-42XL-B-PN50			
Ezi-SERVO-ALL-56S-A-PN3			1:3
Ezi-SERVO-ALL-56S-B-PN3			
Ezi-SERVO-ALL-56S-A-PN5			1:5
Ezi-SERVO-ALL-56S-B-PN5			
Ezi-SERVO-ALL-56S-A-PN8			1:8
Ezi-SERVO-ALL-56S-B-PN8			
Ezi-SERVO-ALL-56S-A-PN10			1:10
Ezi-SERVO-ALL-56S-B-PN10			
Ezi-SERVO-ALL-56S-A-PN15			1:15
Ezi-SERVO-ALL-56S-B-PN15			
Ezi-SERVO-ALL-56S-A-PN25			1:25
Ezi-SERVO-ALL-56S-B-PN25			
Ezi-SERVO-ALL-56S-A-PN40			1:40
Ezi-SERVO-ALL-56S-B-PN40			
Ezi-SERVO-ALL-56S-A-PN50			1:50
Ezi-SERVO-ALL-56S-B-PN50			
Ezi-SERVO-ALL-56M-A-PN3			1:3
Ezi-SERVO-ALL-56M-B-PN3			
Ezi-SERVO-ALL-56M-A-PN5			1:5
Ezi-SERVO-ALL-56M-B-PN5			
Ezi-SERVO-ALL-56M-A-PN8			1:8
Ezi-SERVO-ALL-56M-B-PN8			
Ezi-SERVO-ALL-56M-A-PN10			1:10
Ezi-SERVO-ALL-56M-B-PN10			
Ezi-SERVO-ALL-56M-A-PN15			1:15
Ezi-SERVO-ALL-56M-B-PN15			
Ezi-SERVO-ALL-56M-A-PN25			1:25
Ezi-SERVO-ALL-56M-B-PN25			
Ezi-SERVO-ALL-56M-A-PN40			1:40
Ezi-SERVO-ALL-56M-B-PN40			
Ezi-SERVO-ALL-56M-A-PN50			1:50
Ezi-SERVO-ALL-56M-B-PN50			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO-ALL-56L-A-PN3	Motor & Drive Integrated		1:3
Ezi-SERVO-ALL-56L-B-PN3			
Ezi-SERVO-ALL-56L-A-PN5			1:5
Ezi-SERVO-ALL-56L-B-PN5			
Ezi-SERVO-ALL-56L-A-PN8			1:8
Ezi-SERVO-ALL-56L-B-PN8			
Ezi-SERVO-ALL-56L-A-PN10			1:10
Ezi-SERVO-ALL-56L-B-PN10			
Ezi-SERVO-ALL-56L-A-PN15			1:15
Ezi-SERVO-ALL-56L-B-PN15			
Ezi-SERVO-ALL-56L-A-PN25			1:25
Ezi-SERVO-ALL-56L-B-PN25			
Ezi-SERVO-ALL-56L-A-PN40			1:40
Ezi-SERVO-ALL-56L-B-PN40			
Ezi-SERVO-ALL-56L-A-PN50			1:50
Ezi-SERVO-ALL-56L-B-PN50			
Ezi-SERVO-ALL-60L-A-PN3			1:3
Ezi-SERVO-ALL-60L-B-PN3			
Ezi-SERVO-ALL-60L-ABS-PN3			
Ezi-SERVO-ALL-60L-A-PN5			1:5
Ezi-SERVO-ALL-60L-B-PN5			
Ezi-SERVO-ALL-60L-ABS-PN5			
Ezi-SERVO-ALL-60L-A-PN8			1:8
Ezi-SERVO-ALL-60L-B-PN8			
Ezi-SERVO-ALL-60L-ABS-PN8			
Ezi-SERVO-ALL-60L-A-PN10			1:10
Ezi-SERVO-ALL-60L-B-PN10			
Ezi-SERVO-ALL-60L-ABS-PN10			
Ezi-SERVO-ALL-60L-A-PN15			1:15
Ezi-SERVO-ALL-60L-B-PN15			
Ezi-SERVO-ALL-60L-ABS-PN15			
Ezi-SERVO-ALL-60L-A-PN25			1:25
Ezi-SERVO-ALL-60L-B-PN25			
Ezi-SERVO-ALL-60L-ABS-PN25			
Ezi-SERVO-ALL-60L-A-PN40			1:40
Ezi-SERVO-ALL-60L-B-PN40			
Ezi-SERVO-ALL-60L-ABS-PN40			
Ezi-SERVO-ALL-60L-A-PN50			1:50
Ezi-SERVO-ALL-60L-B-PN50			
Ezi-SERVO-ALL-60L-ABS-PN50			

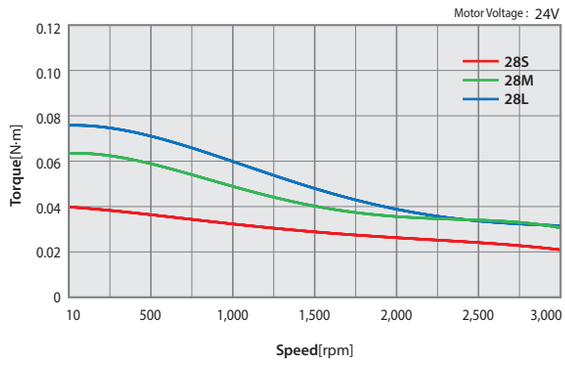
● Specifications of Motor

MODEL			Ezi-SERVO-ALL-28 series			Ezi-SERVO-ALL-42 series			
		UNIT	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		-	BI-POLAR						
NUMBER OF PHASES		-	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	9.0	13	18	35	54	77	114
WEIGHTS		g	170	227	257	340	400	470	600
LENGTH(L)		mm	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	30	30	30	22	22	22	22
	8mm		38	38	38	26	26	26	26
	13mm		53	53	53	33	33	33	33
	18mm		-	-	-	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight						
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)						
INSULATION CLASS		-	CLASS B(130℃)						
OPERATING TEMPERATURE		℃	0 to 55						

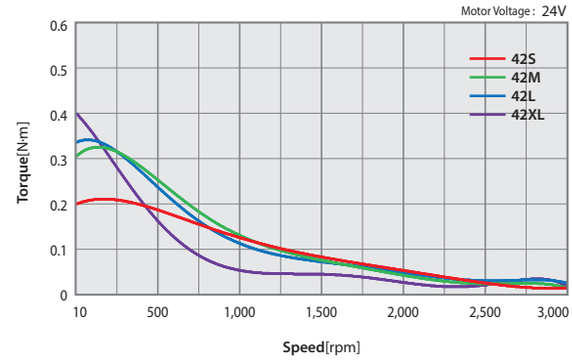
MODEL			Ezi-SERVO-ALL-56 series			Ezi-SERVO-ALL-60 series
		UNIT	56S	56M	56L	60L
DRIVE METHOD		-	BI-POLAR			
NUMBER OF PHASES		-	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	2.4
ROTOR INERTIA		g·cm^2	180	280	520	690
WEIGHTS		g	640	800	1320	1800
LENGTH(L)		mm	46	55	80	85
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70
	8mm		65	65	65	87
	13mm		85	85	85	114
	18mm		123	123	123	165
PERMISSIBLE THRUST LOAD		N	Lower than motor weight			
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)			
INSULATION CLASS		-	CLASS B(130℃)			
OPERATING TEMPERATURE		℃	0 to 55			

Torque Characteristics of Motor

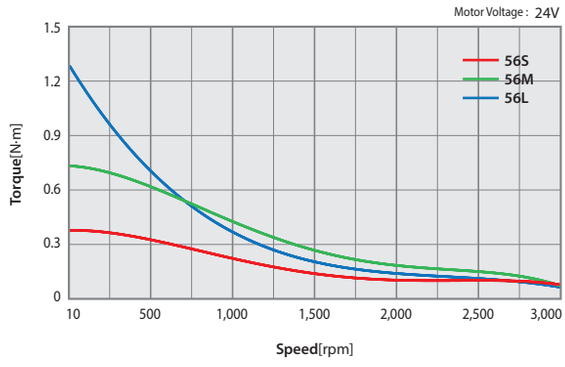
Ezi-SERVO-ALL-28 series



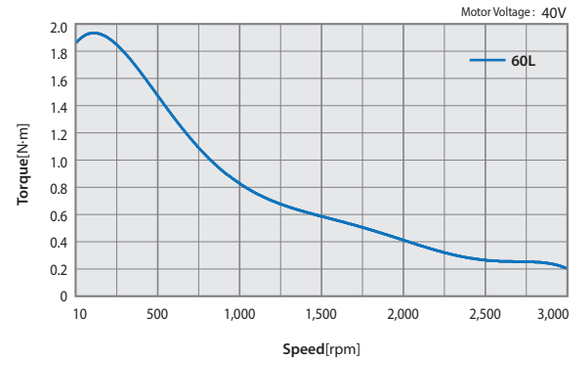
Ezi-SERVO-ALL-42 series



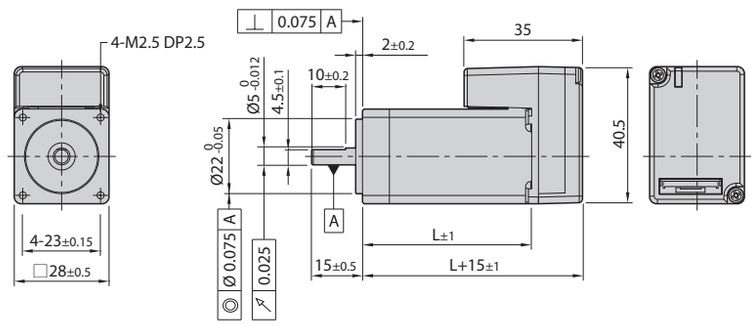
Ezi-SERVO-ALL-56 series



Ezi-SERVO-ALL-60 series

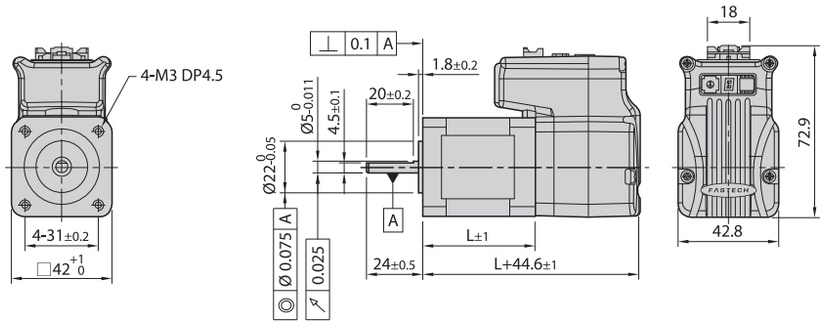


● Dimensions of Motor [mm]



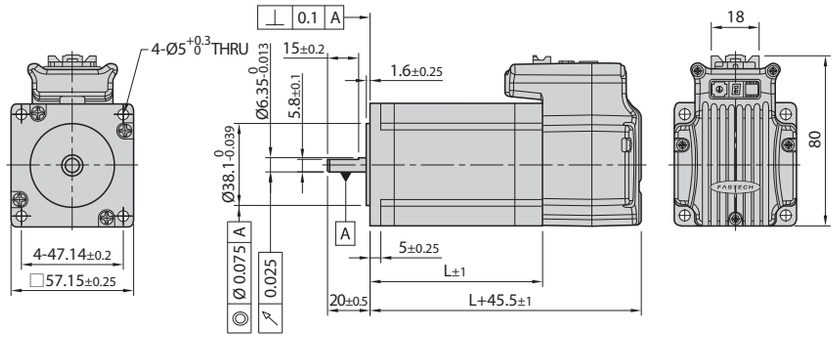
28mm

Model name	Length(L)
28S	32
28M	45
28L	50



42mm

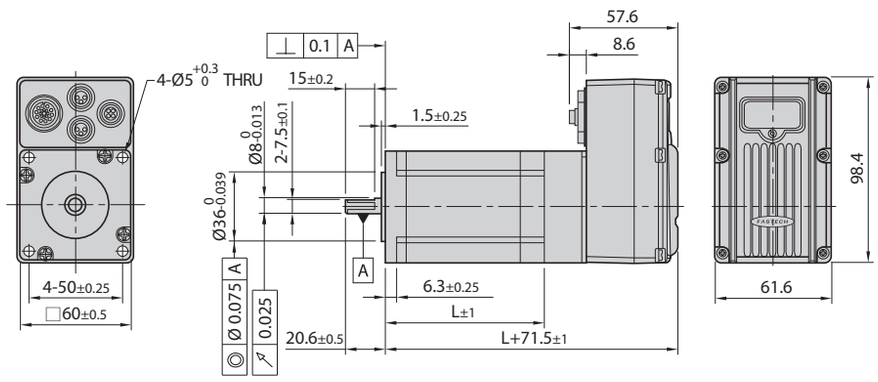
Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

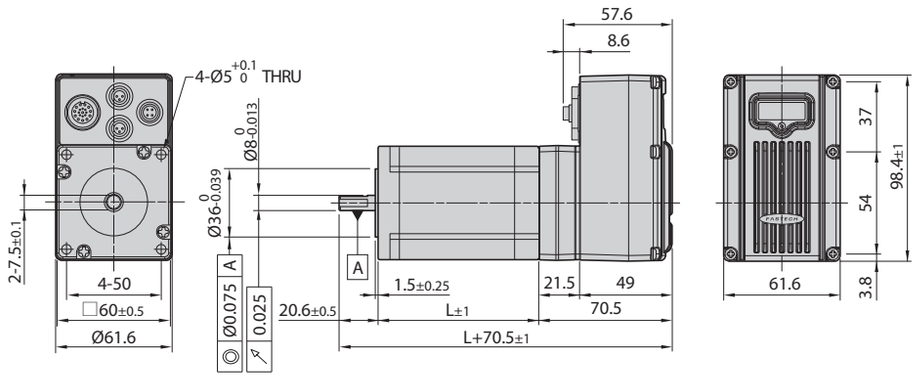
※ There are 2 kinds size of front shaft diameter for Ezi-SERVO-ALL-56 series as Ø6.35 and Ø8.0.



60mm

Model name	Length(L)
60L	85

Dimensions of Motor [mm]



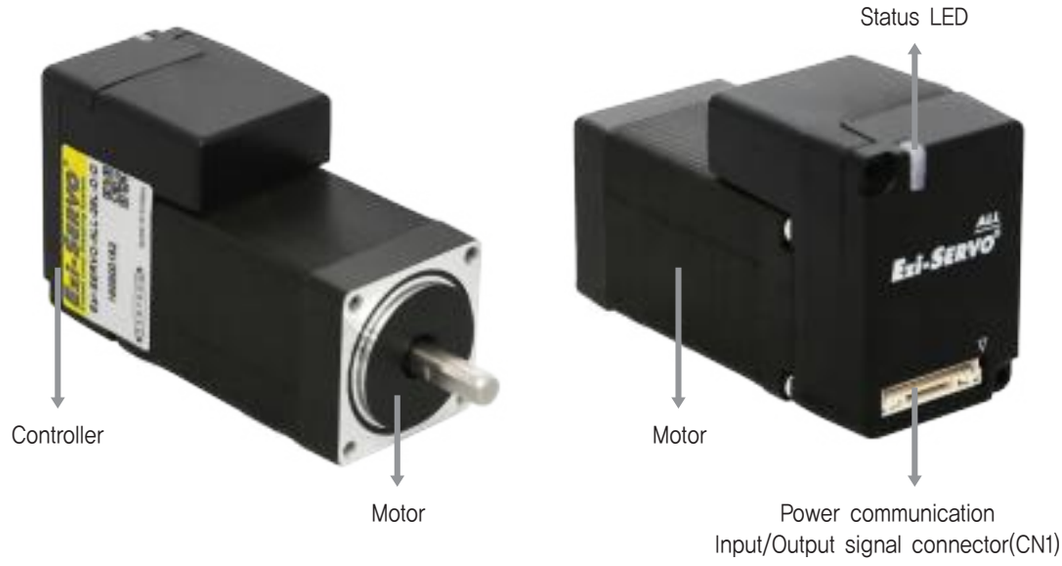
60mm

Model name	Length(L)
60L-ABS	85

● Specifications of Drive [Ezi-SERVO-ALL-28 series]

Model		Ezi-SERVO-ALL-28 series
Input Voltage		24VDC ±10%
Control Method		Closed loop control with 32bit MCU
Multi Axis Drive		Maximum 16 axis through Star Topology
Position Table		Does not support
Current Consumption		Max 500mA (Except motor current)
Operating Condition	Ambient Temperature	· In Use: 0~40℃ · In Storage: -20~70℃
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Rotation Speed	0~3,000 [rpm]
	Resolution [ppr]	500 1,000 1 ,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 (Selectable by parameter)
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error
	In-Position Selection	0~63 (Selectable by parameter)
	Position Gain Selection	0~63 (Selectable by parameter)
	Rotational Direction	CW/CCW (Selectable by parameter)
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 1 programmable input (Photocoupler, NPN/PNP input support)
	Output Signals	Does not support
Communication Interface		RS-485 serial communication Communication speed: 112,500 [bps] (Fixed)
Position Control		· Incremental mode / Absolute mode Data Range: -2,147,483,648 to +2,147,483,647 [pulse] · Operating speed: Max. 3,000 [rpm]
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque
GUI		User Interface Program within Windows
Software		Motion Library (DLL) for Windows 7/8/10

● Settings and Operation [Ezi-SERVO-ALL-28 series]



1. Status LED

In the case of Ezi-SERVO-ALL-28 series products, LED can be checked by LED color, lighting, On/Off and blinking.

Status	LED	Description
Disable	Green : ▬ ▬ ▬ ▬ Red :	Green light flashing, Red light off
Enable	Green : ▬▬▬▬ Red :	Green light on, Red light off
Enable & Communication	Green : ▬▬▬▬ Red : ● ●	Green light on, Rlight flashing
In motion	Green : ▬▬▬▬ Red : ▬▬▬▬	Green light on, Red light on
In-position deviation	Green : ● ● ● ● ● ● Red : ● ● ● ● ● ●	Green and Red light alternately flashing
Alarm	Green : Red : ▬ ▬ ▬ ▬	Red light flashing repeatedly as many as alarm number

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the 4.8A
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run status *1
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive is abnormally high
6	Over Regeneratived Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error with Encoder connection in drive
10	In-Position Error	After operation is finished, a position error occurs
12	ROM Error	Error occurs during tuning execution
15	Position Overflow Error	Position error value is higher than 180° in motor stop state *1



Alarm LED flash
(Ex, Position tracking error)

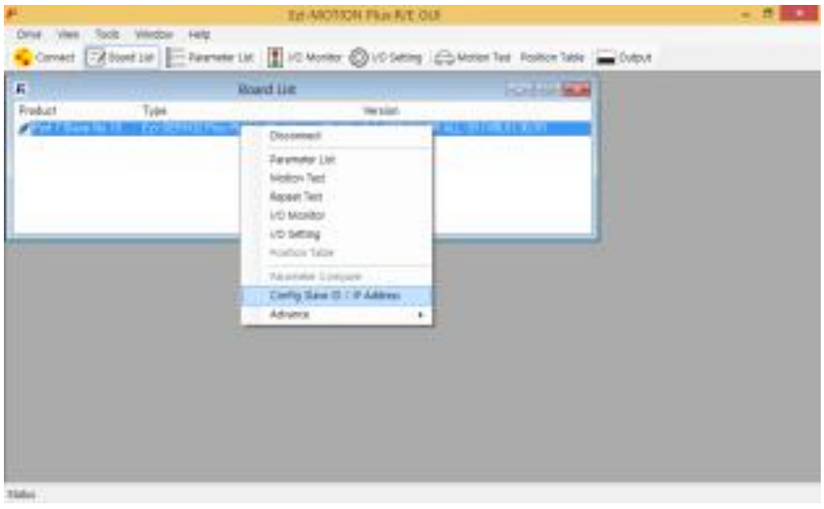
*1 : Default value can be changed by parameter(Refer of the Manual)

2. Termination Setting

When pin 9 and pin 10 of the connector(CN1) are connected externally, the drive is set to the end of the network. If the drive is connected to the end of the communication network, set it to the termination.

3. Network ID Setting

The network ID of Ezi-SERVO-ALL-28 series can be set using Ezi-MOTION Plus-R GUI (Version 6.40.7.12 or later). After connecting the communication, the setting window appears by selecting the product and press the right button of the mouse.



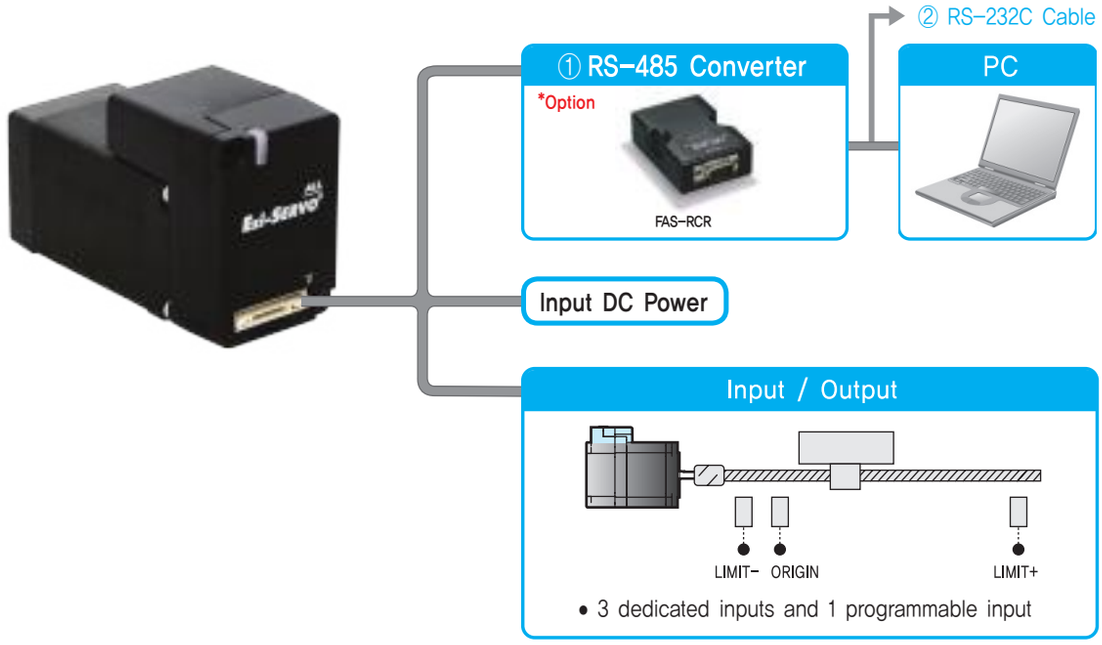
4. Power Communication Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	GND	Input
2	24VDC	Input
3	IO COMMON	Input
4	ORIGIN	Input
5	LIMIT+	Input
6	LIMIT-	Input
7	IN1	Input
9	Termination	Input
10	Data-	Communication
11	Data+	Communication
12	S-GND	Input



1 12

System Configuration [Ezi-SERVO-ALL-28 series]



Type	Signal Cable	Power Cable	RS-485 Cable
Length supplied	-	-	-
Max. Length	20m	2m	30m

1. Options

① FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50X75X23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

② RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F CGNR-C-003F CGNR-C-005F	2 3 5	Normal Cable

③ IFA28-4X(Interface Board)

This board is used to connect Ezi-SERVO-ALL-28's drive and control unit more conveniently. This board supports up to 4 axis.



※ For details, refer to the Ezi-SERVO ALL 28mm manual. (Appendix 13)

④ Interface Cable for IFA28-4X

This is the cable used to connect the Ezi-SERVO-ALL-28 drive to the IFA28-4X interface board.

Item	Length [m]	Remark
CSVA-A-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 5m length.

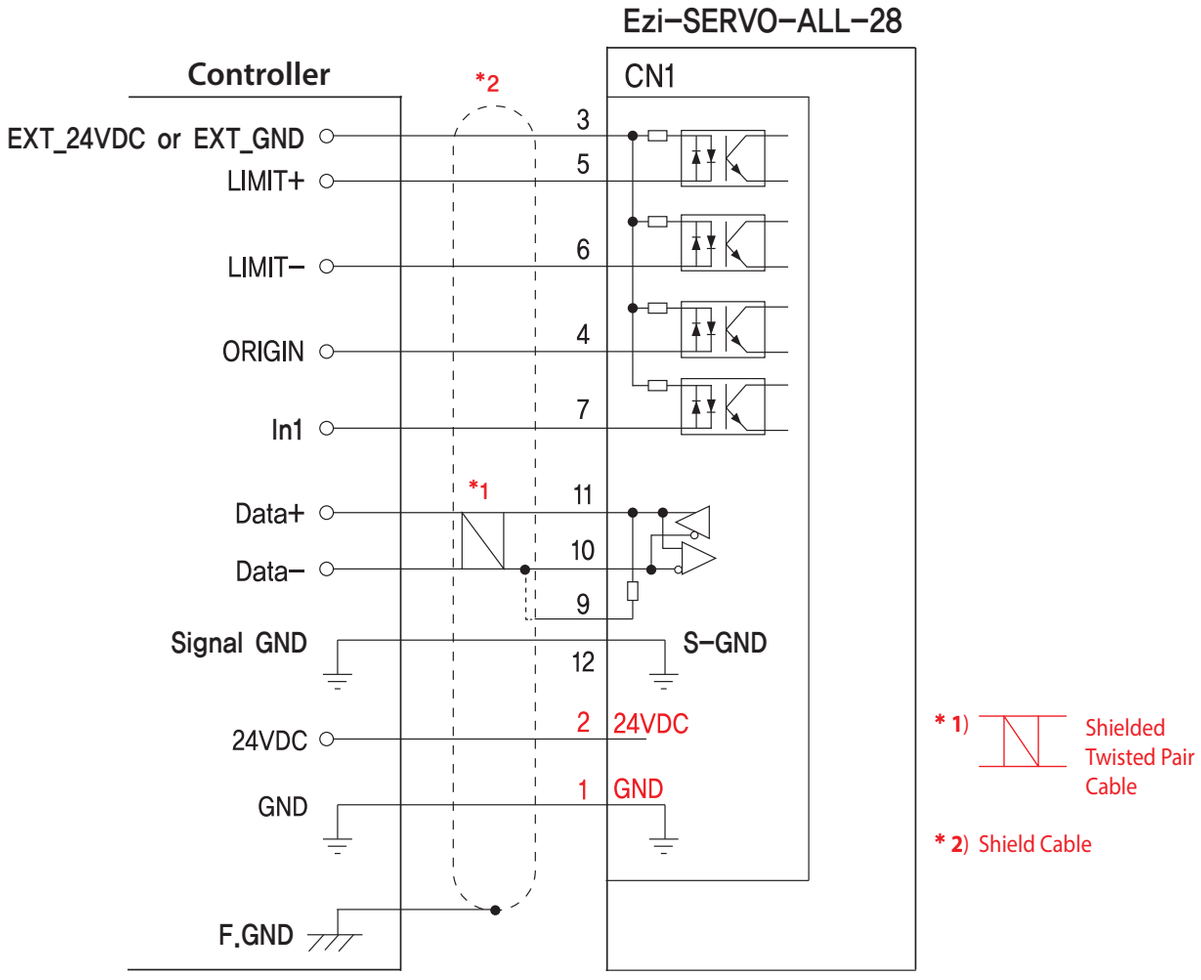
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Signal	Housing Terminal	GHR-12V-S SSHL-002T-P0.2	JST

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [Ezi-SERVO-ALL-28 series]



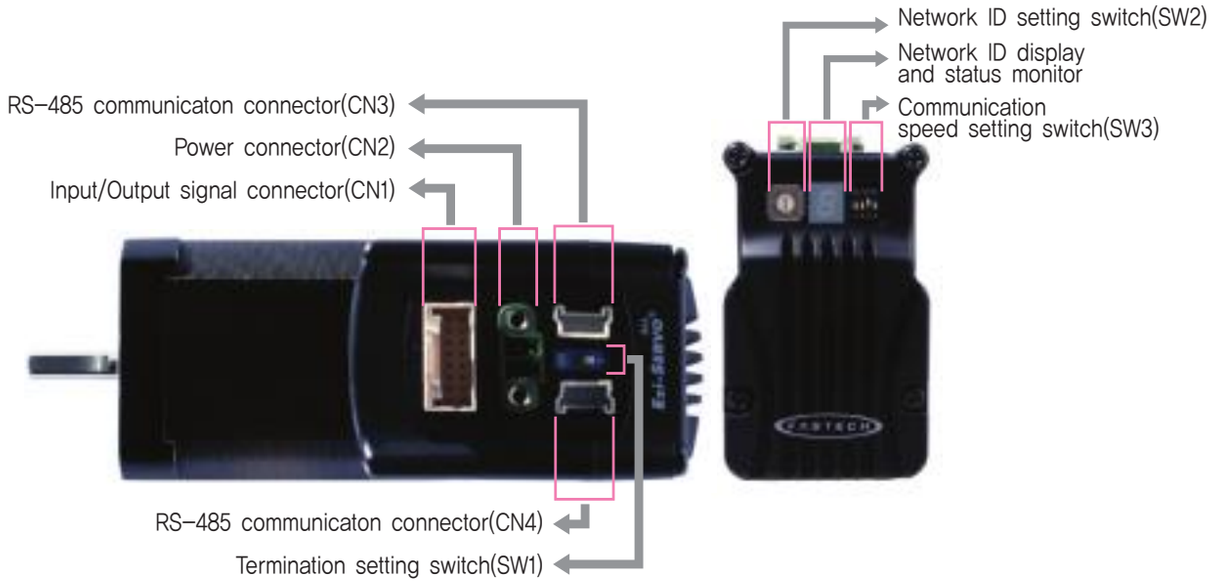
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● Specifications of Drive [Ezi-SERVO-ALL-42/56 series]

Model		Ezi-SERVO-ALL-42 series	Ezi-SERVO-ALL-56 series
Input Voltage		24VDC ±10%	
Control Method		Closed loop control with 32bit MCU	
Multi Axis Drive		Maximum 16 axis through Daisy-Chain	
Position Table		64 motion command steps (Continuous, Wait, Loop, Jump and External start etc.)	
Current Consumption		Max 500mA (Except motor current)	
Operating Condition	Ambient Temperature	· In Use: 0~55℃ · In Storage: -20~70℃	
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)	
	Vib. Resist.	0.5g	
Function	Rotation Speed	0~3,000 [rpm] *1	
	Resolution [ppr]	10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter)	
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error	
	In-Position Selection	0~15 (Selectable by parameter)	
	Position Gain Selection	0~15 (Selectable by parameter)	
	Rotational Direction	CW/CCW (Selectable by parameter)	
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler)	
	Output Signals	1 dedicated output (Compare Out), 1 programmable output (Photocoupler), Brake	
Communication Interface		RS-485 serial communication Communication speed: 9,600~921,600 [bps]	
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm] *1	
Return to Origin		Origin Sensor, Z phase, ±LIMIT sensor, Torque	
GUI		User Interface Program within Windows	
Software		Motion Library (DLL) for Windows 7/8/10	

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

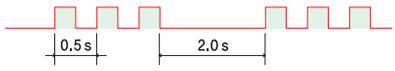
● Settings and Operation [Ezi-SERVO-ALL-42/56 series]



◆ Protection functions and 7-Segment flash times

When Alarm occurs, can recognize main reason of alarming thru by 7-Segment flash times which indicates Network ID.

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the 4.8A
2	Over Speed Error	Motor speed exceed 3,000rpm
3	Position Tracking Error	Position error value is higher than 90° in motor run state *1
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regeneratived Voltage Error	Back-EMF is more than 48V value
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error with Encoder connection in drive
10	In-Position Error	After operation is finished, a position error occurs
12	ROM Error	Error occurs during tuning execution
15	Position Overflow Error	Position error value is higher than 90° in motor stop state *1



7-Segment flash
(Ex, Position tracking error)

*1 : Default value can be changed by parameter(Refer of the Manual)

1. Termination Setting Switch(SW1)

The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive installed at the end of the network.

2. Network ID Setting Switch(SW2)

Position	ID Number	Position	ID Number
0	0	8	8
1	1	9	9
2	2	A	10
3	3	B	11
4	4	C	12
5	5	D	13
6	6	E	14
7	7	F	15



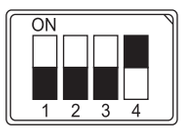
※ Maximum 16 axis can be connected in one network.

3. Communication Speed Setting Switch(SW3)

The purpose of this is to setting the communication speed

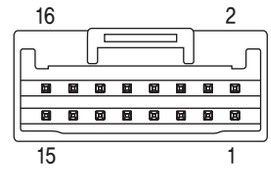
SW3.1	SW3.2	SW3.3	Baud Rate [bps]
OFF	OFF	OFF	9,600
ON	OFF	OFF	19,200
OFF	ON	OFF	38,400
ON	ON	OFF	57,600
OFF	OFF	ON	115,200*1
ON	OFF	ON	230,400
OFF	ON	ON	460,800
ON	ON	ON	921,600

*1 : Default setting value
*2 : SW3.4 is not available to use



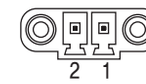
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE−	Output
5	LIMIT+	Input
6	LIMIT−	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital In4	Input
12	Digital In5	Input
13	Digital In6	Input
14	Digital In7	Input
15	Compare Out	Output
16	Digital Out1	Output



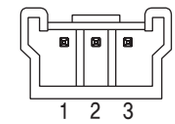
5. Power Connector(CN2)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

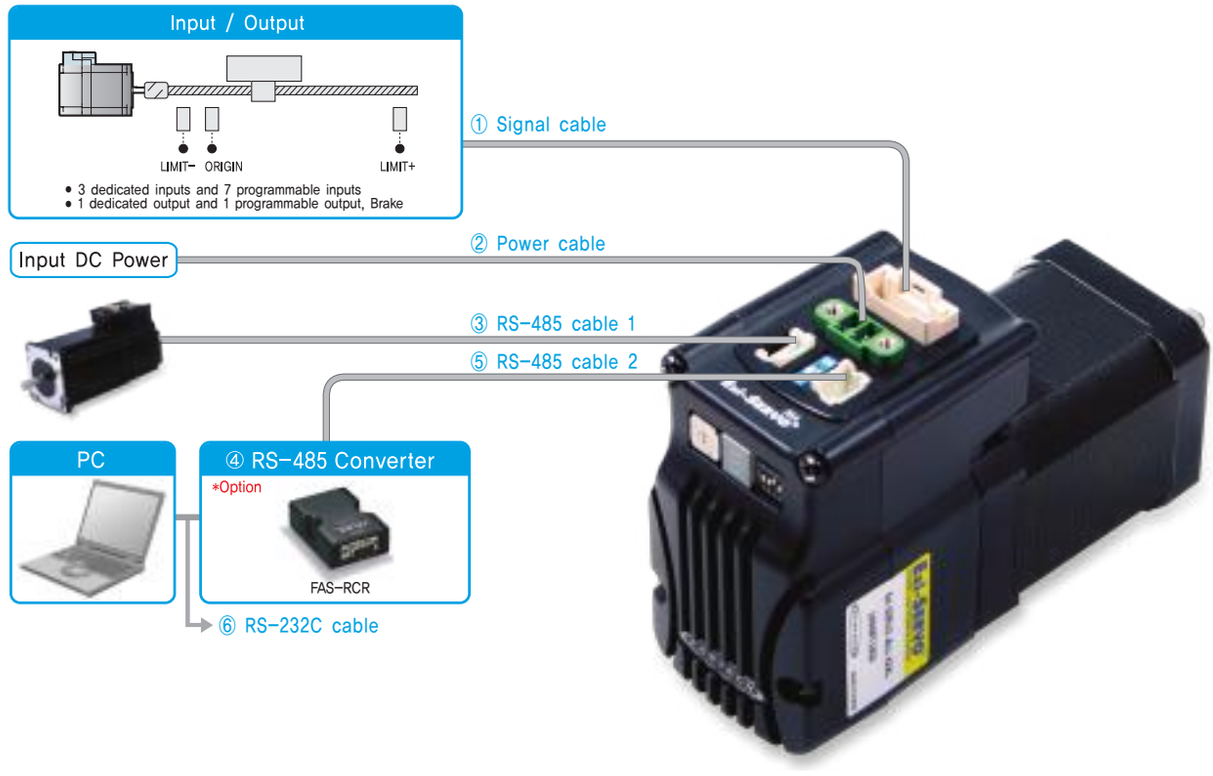


6. RS-485 Communication Connector(CN3, CN4)

NO.	Function
1	Data+
2	Data−
3	GND



● System Configuration [Ezi-SERVO-ALL-42/56 series]



Type	Signal Cable	Power Cable	RS-485 Cable
Length supplied	–	–	–
Max. Length	20m	2m	30m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO-ALL-42/56.

Item	Length [m]	Remark
CSVA-S-□□□F	□□□	Normal Cable
CSVA-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-SERVO-ALL-42/56.

Item	Length [m]	Remark
CSVA-P-□□□F	□□□	Normal Cable
CSVA-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

③ RS-485 Cable 1

Common cable to connect Ezi-SERVO-ALL-42/56, Ezi-STEP-ALL-42/56, Ezi-MOTIONLINK Plus-R and Ezi-SERVO Plus-R MINI thru by Network.

Item	Length [m]	Remark
CGNB-R-0R6F	0.6	Normal Cable
CGNB-R-001F	1	
CGNB-R-1R5F	1.5	
CGNB-R-002F	2	
CGNB-R-003F	3	
CGNB-R-005F	5	

④ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑤ RS-485 Cable 2

RCR to Ezi-SERVO-ALL-42/56, FAS-RCR to Ezi-STEP-ALL-42/56, FAS-RCR to Ezi-SERVO Plus-R MINI, FAS-RCR to Ezi-MOTIONLINK Plus-R

Item	Length [m]	Remark
CGNA-R-0R6F	0.6	Normal Cable
CGNA-R-001F	1	
CGNA-R-1R5F	1.5	
CGNA-R-002F	2	
CGNA-R-003F	3	
CGNA-R-005F	5	

⑥ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F	2	Normal Cable
CGNR-C-003F	3	
CGNR-C-005F	5	

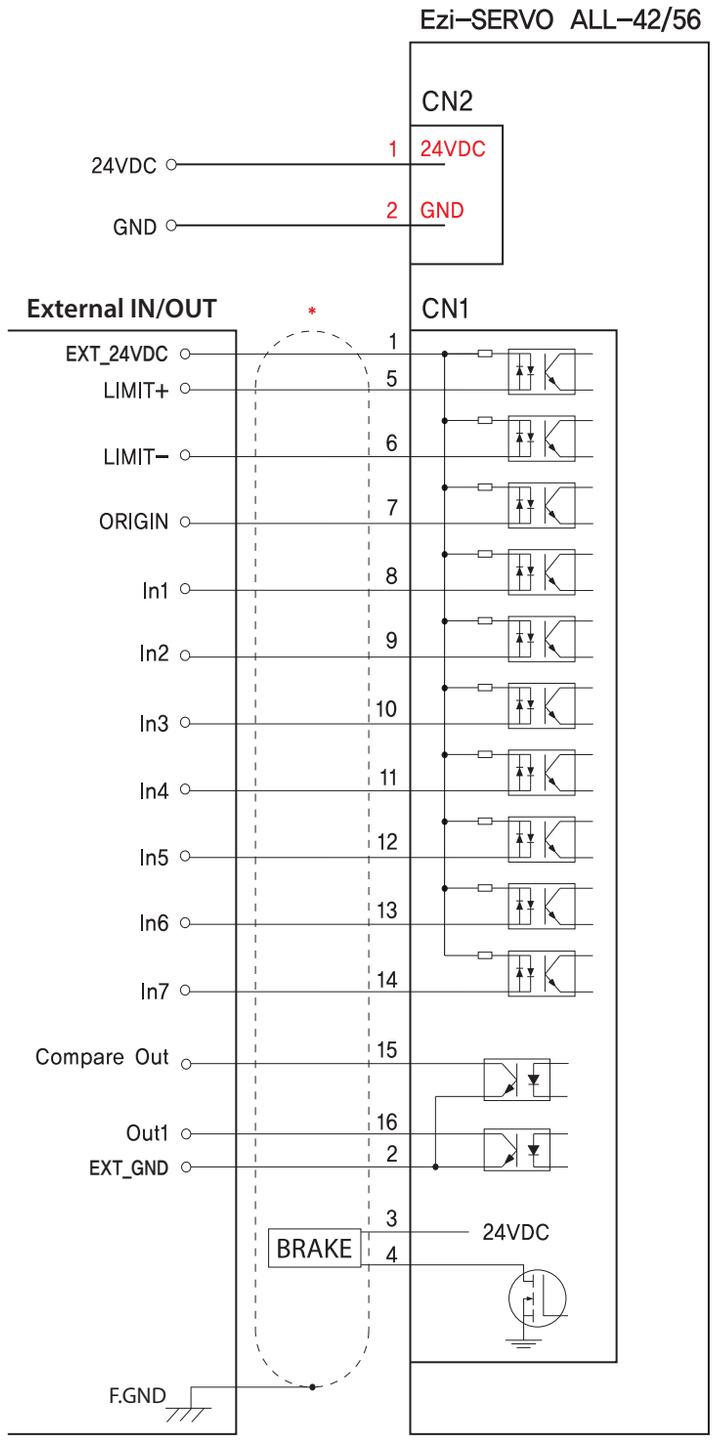
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Terminal Block	MC421-38102	DECA
Signal (CN1)	Housing Terminal	501646-1600 501648-1000(AWG 26~28)	MOLEX
RS-485 Communication (CN3, CN4)	Housing Terminal	35507-0300 50212-8100	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [Ezi-SERVO-ALL-42/56 series]



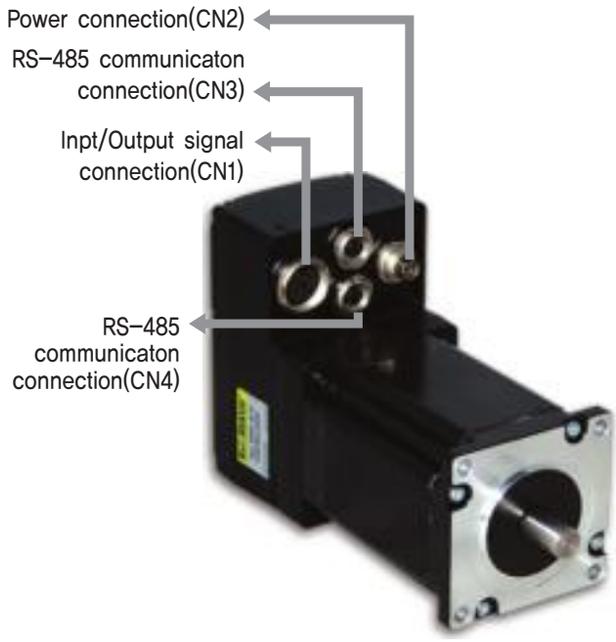
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● Specifications of Drive [Ezi-SERVO-ALL-60/60-ABS series]

Model		Ezi-SERVO-ALL-60 series	Ezi-SERVO-ALL-60-ABS series
Input Voltage		24VDC ±10%	
Control Method		Closed loop control with 32bit MCU	
Multi Axis Drive		Maximum 16 axis through Daisy-Chain	
Position Table		64 motion command steps (Continuous, Wait, Loop, Jump and External start etc.)	
Current Consumption		Max 500mA (Except motor current)	
Operating Condition	Ambient Temperature	· In Use: 0~55℃ · In Storage: -20~70℃	
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)	
	Vib. Resist.	0.5g	
Function	Rotation Speed	0~3,000 [rpm] *1	
	Resolution [ppr]	· 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 · 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter)	· 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 (Selectable by parameter)
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error	
	In-Position Selection	0~15 (Selectable by parameter)	
	Position Gain Selection	0~15 (Selectable by parameter)	
	Rotational Direction	CW/CCW (Selectable by parameter)	
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler)	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 6 programmable inputs (Photocoupler)
	Output Signals	1 dedicated output (Compare Out), 3 programmable outputs (Photocoupler), Brake	6 programmable outputs (Photocoupler), Brake
Communication Interface		RS-485 serial communication Communication speed: 9,600~921,600 [bps]	RS-485 serial communication Communication speed: 115,200 [bps] (Fixed)
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm] *1	
Return to Origin		Origin Sensor, Z phase, ±LIMIT sensor, Torque	
GUI		User Interface Program within Windows	
Software		Motion Library (DLL) for Windows 7/8/10	

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

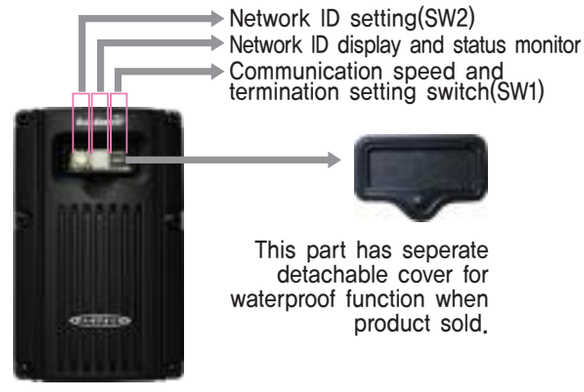
● Settings and Operation [Ezi-SERVO-ALL-60/60-ABS series]



◆ Ezi-SERVO-ALL-60-ABS series



◆ Ezi-SERVO-ALL-60 series



◆ Protection functions and LED or 7-Segment flash times

When Alarm occurs, can recognize main reason of alarming thru by LED or 7-Segment flash times.

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *1
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerativted Voltage Error	Back-EMF is more than 70V value
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error with Encoder connection in drive
10	In-Position Error	After operation is finished, a position error occurs
12	ROM Error	Error occurs during tuning execution
15	Position Overflow Error	Position error value is higher than 180° in motor stop state *1



Alarm LED or 7-Segment flash
(Ex, Position tracking error)

*1 : Default value can be changed by parameter (Refer to the Manual)

1. Network ID Selection Switch(SW2)

Position	ID Number	Position	ID Number
0	0	8	8
1	1	9	9
2	2	A	10
3	3	B	11
4	4	C	12
5	5	D	13
6	6	E	14
7	7	F	15



※ Maximum 16 axis can be connected in one network.
※ Ezi-SERVO-ALL-60 series only.
※ The network ID of Ezi-SERVO-ALL-60-ABS can be set under RS-485 commuication

2. Speed and Termination Setting Switch

◆ Ezi-SERVO-ALL-60 series

Termination Setting Switch(SW1.4)

The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is On if drive installed at the end of the network.

Speed Setting Switch(SW1.1~SW1.3)

SW1.1~ SW1.3 used for setting speed as follows

SW1.1	SW1.2	SW1.3	SW1.4	Baud Rate [bps]
OFF	OFF	OFF	–	9,600
ON	OFF	OFF	–	19,200
OFF	ON	OFF	–	38,400
ON	ON	OFF	–	57,600
OFF	OFF	ON	–	115,200*1
ON	OFF	ON	–	230,400
OFF	ON	ON	–	460,800
ON	ON	ON	–	921,600

*1 : Default setting value



Ezi-SERVO-ALL-60 series
Speed and Termination Setting Switch(SW1)

Termination setting switch
Speed setting switch

◆ Ezi-SERVO-ALL-60-ABS series

Termination Setting Switch(SW1)

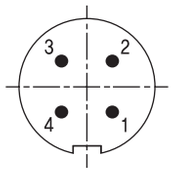
The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is On if drive installed at the end of the network.



Ezi-SERVO-ALL-60-ABS series
Termination Setting Switch(SW1)

3. Power Connector(CN2)

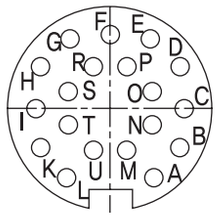
NO.	Function	I/O
1	24VDC	Input
2	24VDC	Input
3	GND	Input
4	GND	Input



4. Input/Output Signal Connector(CN1)

◆ Ezi-SERVO-ALL-60 series

NO.	Function	I/O
A	EXT_24VDC	Input
B	EXT_GND	Input
C	LIMIT+	Input
D	LIMIT–	Input
E	ORIGIN	Input
F	Digital In1	Input
G	Digital In2	Input
H	Digital In3	Input
I	Digital In4	Input
K	Digital In5	Input
L	Digital In6	Input
M	Digital In7	Input
N	Compare Out	Output
O	Digital Out1	Output
P	Digital Out2	Output
R	Digital Out3	Output
S	NC	----
T	BRAKE+	Output
U	BRAKE–	Output

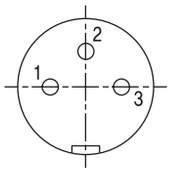


◆ Ezi-SERVO-ALL-60-ABS series

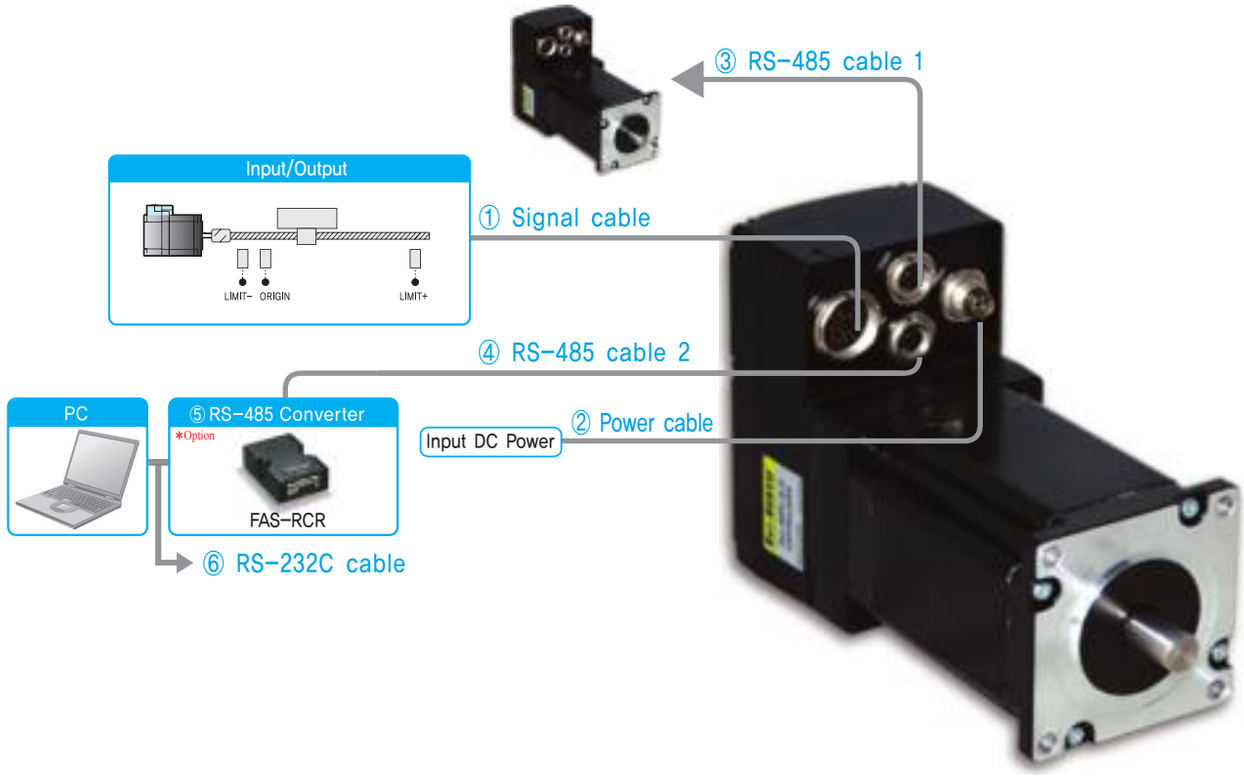
NO.	Function	I/O
A	EXT_24VDC	Input
B	EXT_GND	Input
C	LIMIT+	Input
D	LIMIT–	Input
E	ORIGIN	Input
F	Digital In1	Input
G	Digital In2	Input
H	Digital In3	Input
I	Digital In4	Input
K	Digital In5	Input
L	Digital In6	Input
M	Digital Out1	Output
N	Digital Out2	Output
O	Digital Out3	Output
P	Digital Out4	Output
R	Digital Out5	Output
S	Digital Out6	Output
T	BRAKE+	Output
U	BRAKE–	Output

5. RS-485 Communication Connector(CN3, CN4)

NO.	Function
1	Data+
2	Data–
3	GND



● System Configuration [Ezi-SERVO-ALL-60/60-ABS series]



Type	Signal Cable	Power Cable	RS-485 Cable
Length supplied	-	-	-
Max. Length	20m	2m	30m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO-ALL-60/60-ABS.

Item	Length [m]	Remark
CWPA-S-□□□F*1	□□□	Normal Cable
CWPA-S-□□□M*1	□□□	Robot Cable
CAPA-S-□□□F*2	□□□	Normal Cable
CAPA-S-□□□M*2	□□□	Robot Cable

*1 Ezi-SERVO-ALL-60 series

*2 Ezi-SERVO-ALL-60L-ABS series

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-SERVO-ALL-60/60-ABS.

Item	Length [m]	Remark
CWPA-P-□□□F	□□□	Normal Cable
CWPA-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

③ RS-485 Cable 1

Item	Length [m]	Remark
CWPA-R-0R6F	0.6	Normal Cable
CWPA-R-001F	1	
CWPA-R-1R5F	1.5	
CWPA-R-002F	2	
CWPA-R-003F	3	
CWPA-R-005F	5	

Item	Length [m]	Remark
CWPA-R-0R6M	0.6	Robot Cable
CWPA-R-001M	1	
CWPA-R-1R5M	1.5	
CWPA-R-002M	2	
CWPA-R-003M	3	
CWPA-R-005M	5	

※ Cable to connect Ezi-SERVO-ALL-60/60-ABS series by Network.

④ RS-485 Cable 2

FAS-RCR to Ezi-SERVO-ALL-60/60-ABS series drive.

Item	Length [m]	Remark
CWPB-R-0R6F	0.6	Normal Cable
CWPB-R-001F	1	
CWPB-R-1R5F	1.5	
CWPB-R-002F	2	
CWPB-R-003F	3	
CWPB-R-005F	5	

※ This is a cable to connect Ezi-SERVO-ALL-60/60-ABS series to RS-485 converter.
The connector to the RS-485 converter is RJ45.

⑤ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑥ RS-232C Cable

Item	Length [m]	Remark
CGNR-C-002F	2	Normal Cable
CGNR-C-003F	3	
CGNR-C-005F	5	

⑦ RS-485 Cable 3

Ezi-SERVO-ALL-42/56 series to
Ezi-SERVO-ALL-60/60-ABS series drive.

Item	Length [m]	Remark
CWPC-R-0R6F	0.6	Normal Cable
CWPC-R-001F	1	
CWPC-R-1R5F	1.5	
CWPC-R-002F	2	
CWPC-R-003F	3	
CWPC-R-005F	5	

※ This is a cable to connect Ezi-SERVO-ALL-60/60-ABS series to Ezi-SERVO-ALL-42/56 series.

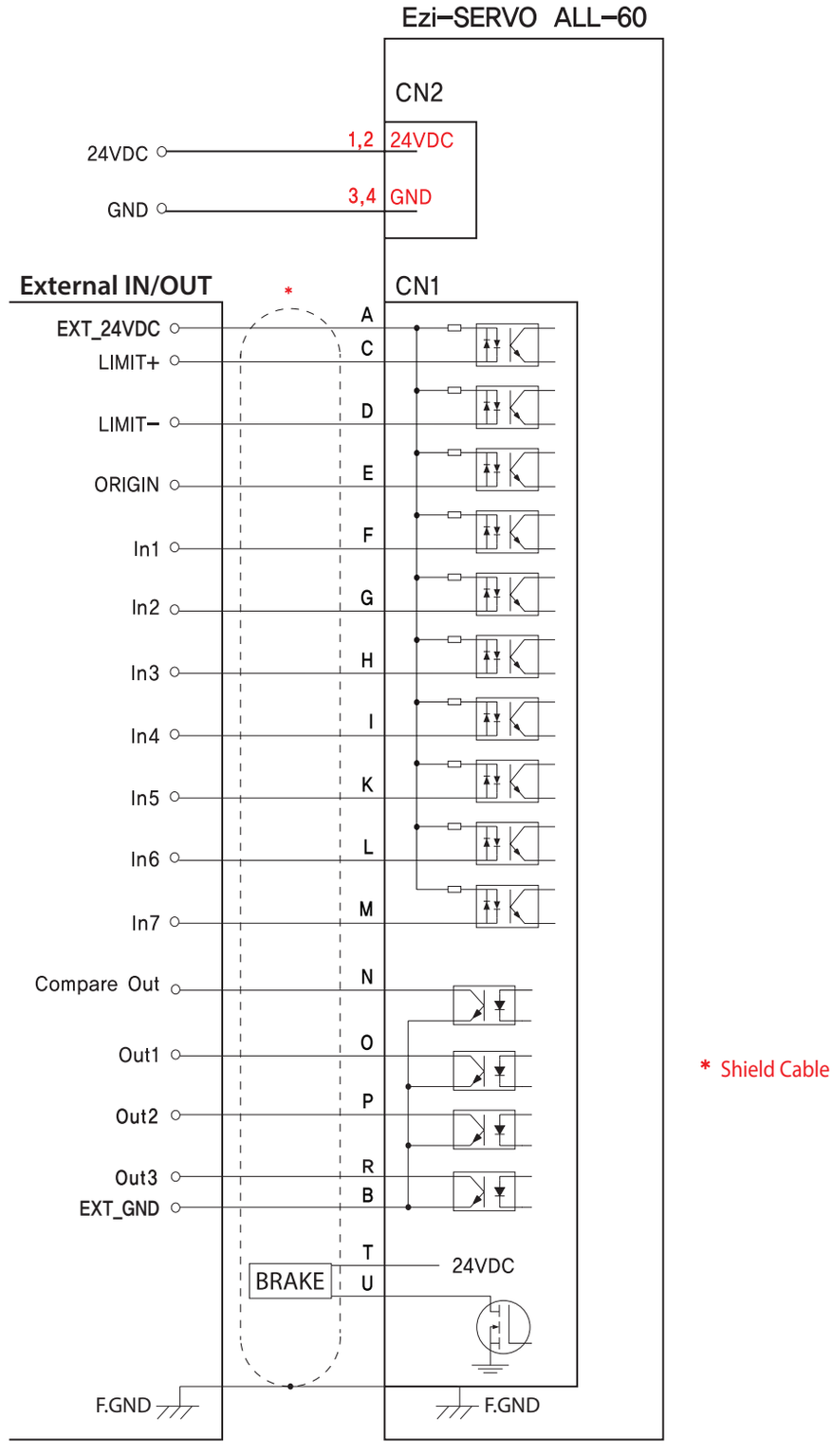
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Connector	99-0410-00-04	BINDER
Signal (CN1)	Connector	99-5461-40-19	BINDER
RS-485 Communication (CN3, CN4)	Connector	99-0405-00-03	BINDER

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

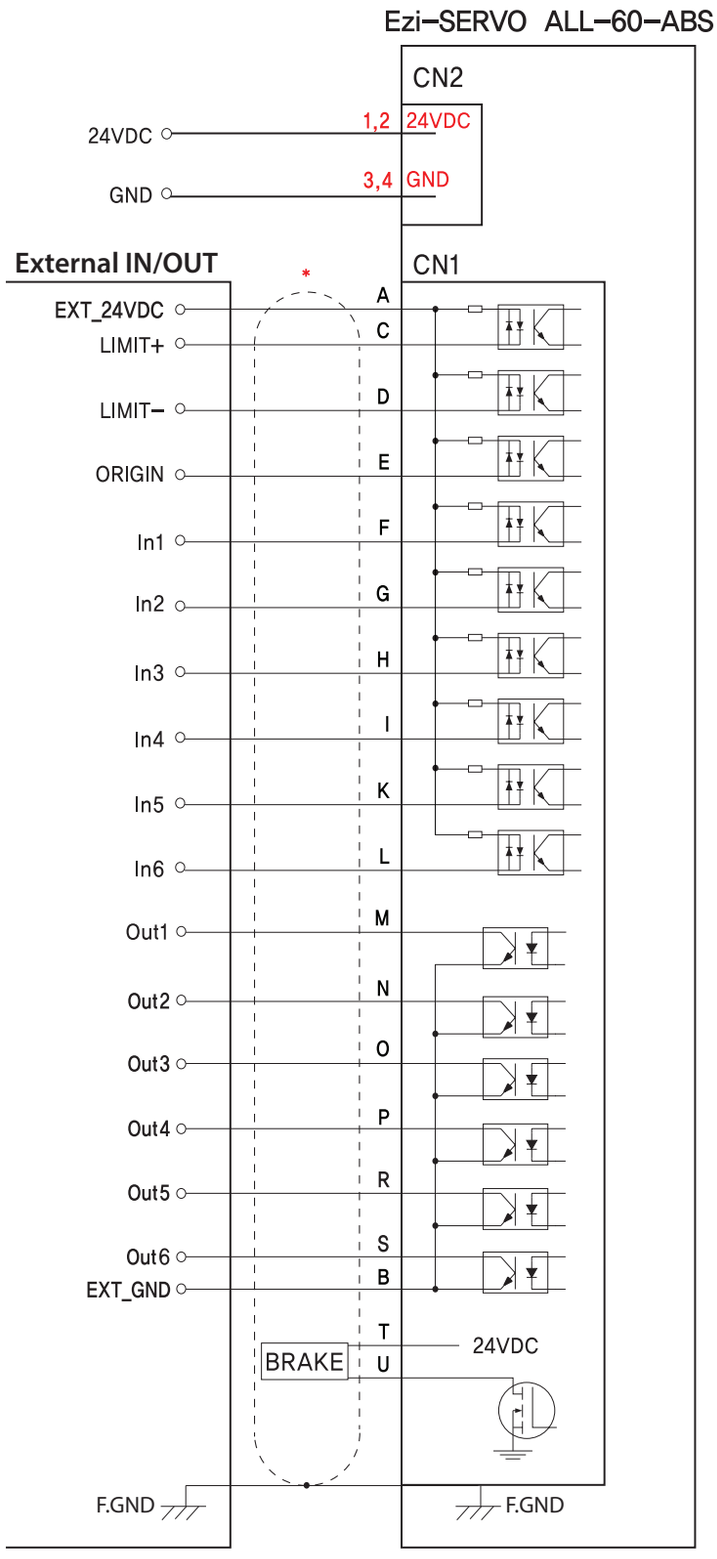
● External Wiring Diagram [Ezi-SERVO-ALL-60 series]



* Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● External Wiring Diagram [Ezi-SERVO-ALL-60-ABS series]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● GUI(Graphic User Interface) Screenshot



◆ Controller Lists and Motion Test

This screen display the controller list that connected to system. You can make a single move, jog and origin command and also the motor status is displayed.



◆ Parameter List

All of the parameters are displayed and modified on this screen.



◆ Motion Repeat and Monitor Status

Target position, speed, delay time and repeat count are selected for repeat motion test. Motion library(DLL) is also displayed on screen.



◆ I/O Monitoring and Setting

You can select various digital input and output signals of controller.



◆ Position Table

You can edit the position table and execute it. The position table data can be saved and loaded from Flash ROM and Windows file.

※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.


Ezi-SERVO® II
EtherCAT
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
ECAT
ECAT ID



Ezi-SERVO II EtherCAT

- CiA 402 Drive Profile Support
- Closed Loop System
- No Gain Tuning / No Hunting
- Heat Reduction / Torque Improvement
- High Resolution / Fast Response



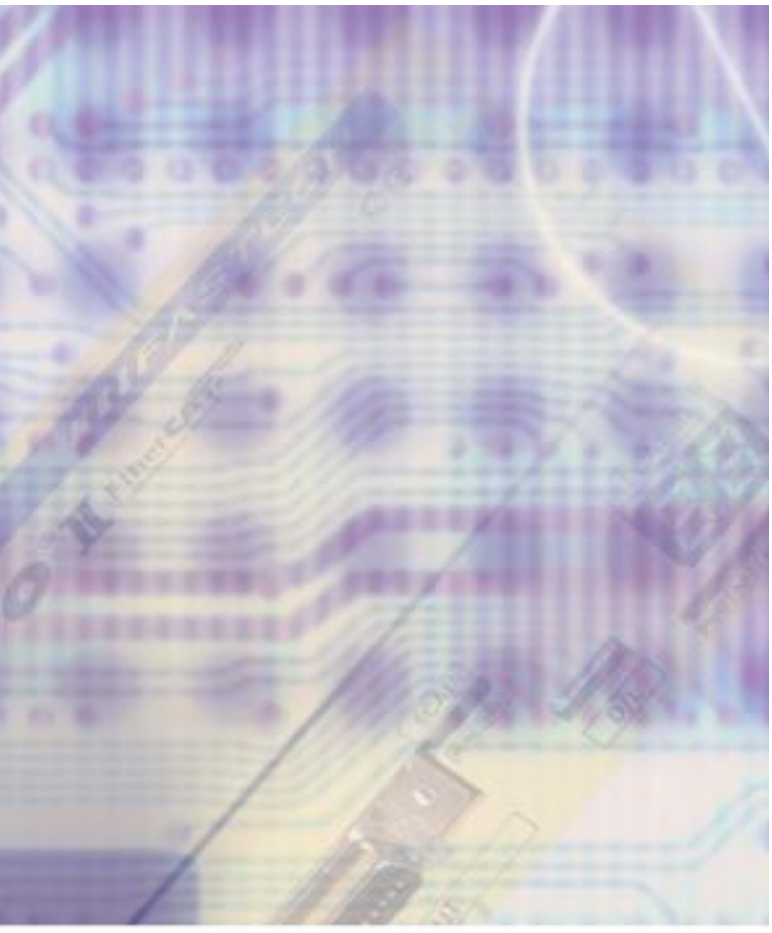
FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® II EtherCAT®

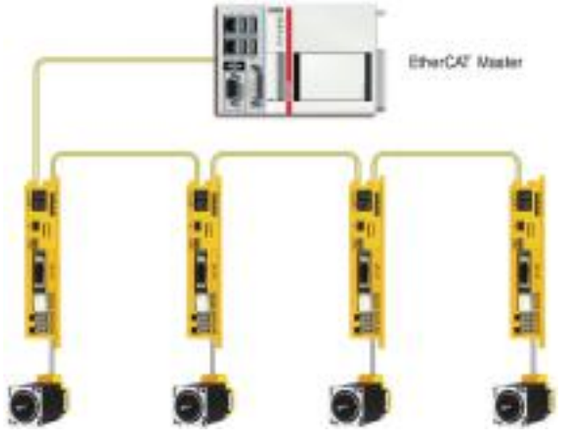
Conformance tested

Closed Loop Stepping System



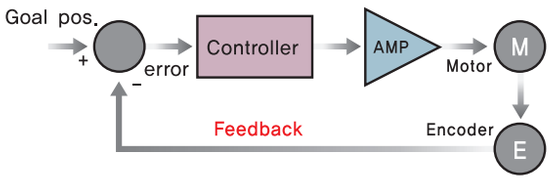
1 EtherCAT Based Motion Control

Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which support CAN application layer over EtherCAT (CoE). CiA 402 Drive Profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



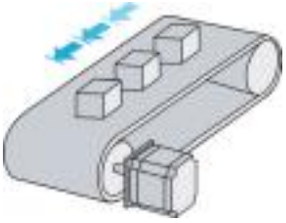
2 Closed Loop System

Ezi-SERVO II is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50 μsec. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

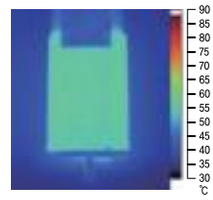
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



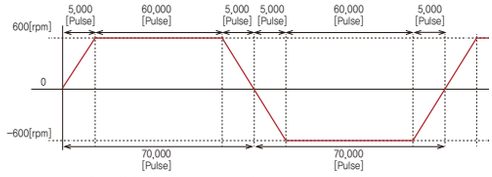
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

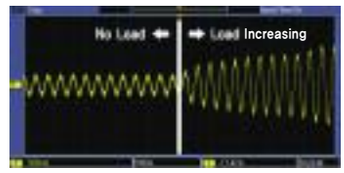
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

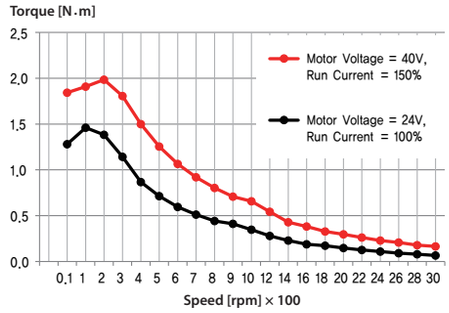


Example of the Motor Current Control according to load

5 Torque Improvement

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

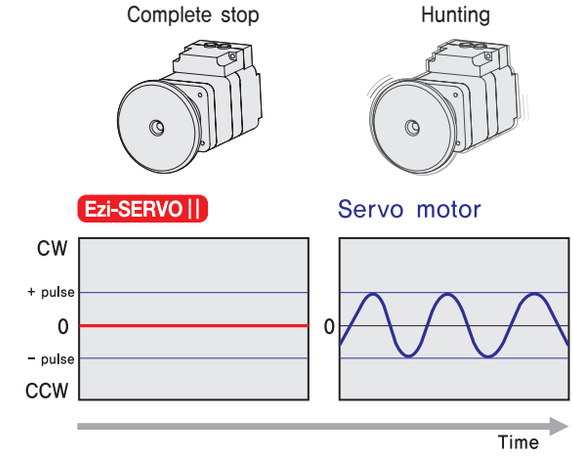


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-56L
Motor Voltage = 40VDC
Input Voltage = 24VDC

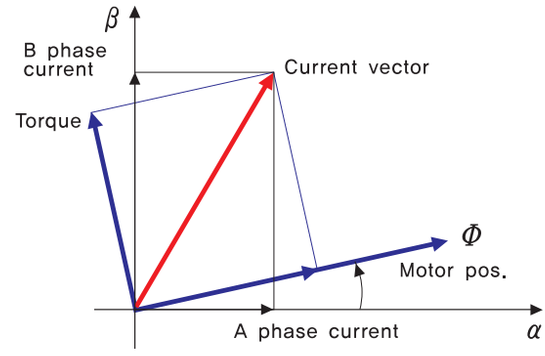
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



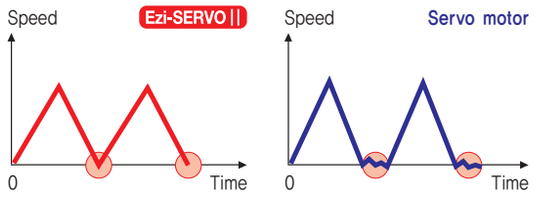
7 Smooth and Accurate

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



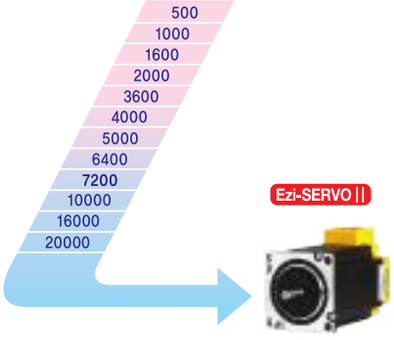
8 Fast Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



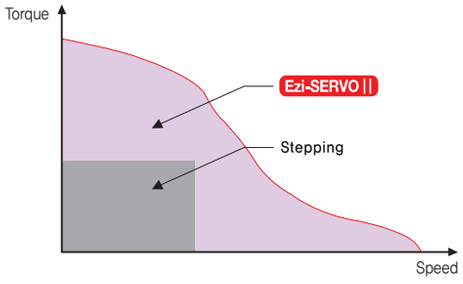
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



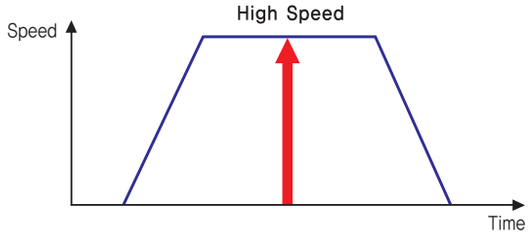
10 High Torque

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

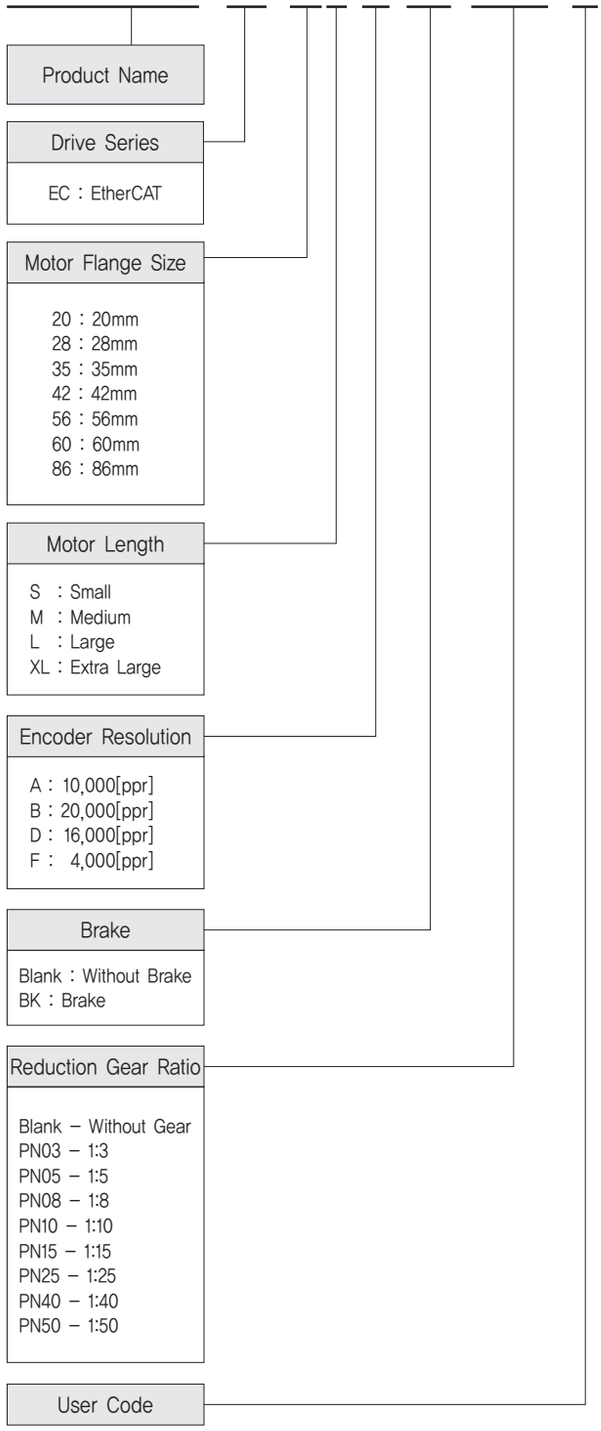
1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO II EtherCAT Part Numbering

Ezi-SERVO II - EC - 56L - A - BK - PN05 - □



● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-20M-F	EzM2-20M-F	EzS2-EC-20M-F
Ezi-SERVO II-EC-20L-F	EzM2-20L-F	EzS2-EC-20L-F
Ezi-SERVO II-EC-28S-D	EzM2-28S-D	EzS2-EC-28S-D
Ezi-SERVO II-EC-28SM-D	EzM2-28SM-D	EzS2-EC-28S-D
Ezi-SERVO II-EC-28M-D	EzM2-28M-D	EzS2-EC-28M-D
Ezi-SERVO II-EC-28MM-D	EzM2-28MM-D	EzS2-EC-28M-D
Ezi-SERVO II-EC-28L-D	EzM2-28L-D	EzS2-EC-28L-D
Ezi-SERVO II-EC-28LM-D	EzM2-28LM-D	EzS2-EC-28L-D
Ezi-SERVO II-EC-35M-D	EzM2-35M-D	EzS2-EC-35M-D
Ezi-SERVO II-EC-35MM-D	EzM2-35MM-D	EzS2-EC-35M-D
Ezi-SERVO II-EC-35L-D	EzM2-35L-D	EzS2-EC-35L-D
Ezi-SERVO II-EC-35LM-D	EzM2-35LM-D	EzS2-EC-35L-D
Ezi-SERVO II-EC-42S-A	EzM2-42S-A	EzS2-EC-42S-A
Ezi-SERVO II-EC-42S-B	EzM2-42S-B	EzS2-EC-42S-B
Ezi-SERVO II-EC-42M-A	EzM2-42M-A	EzS2-EC-42M-A
Ezi-SERVO II-EC-42M-B	EzM2-42M-B	EzS2-EC-42M-B
Ezi-SERVO II-EC-42L-A	EzM2-42L-A	EzS2-EC-42L-A
Ezi-SERVO II-EC-42L-B	EzM2-42L-B	EzS2-EC-42L-B
Ezi-SERVO II-EC-42XL-A	EzM2-42XL-A	EzS2-EC-42XL-A
Ezi-SERVO II-EC-42XL-B	EzM2-42XL-B	EzS2-EC-42XL-B
Ezi-SERVO II-EC-56S-A	EzM2-56S-A	EzS2-EC-56S-A
Ezi-SERVO II-EC-56S-B	EzM2-56S-B	EzS2-EC-56S-B
Ezi-SERVO II-EC-56M-A	EzM2-56M-A	EzS2-EC-56M-A
Ezi-SERVO II-EC-56M-B	EzM2-56M-B	EzS2-EC-56M-B
Ezi-SERVO II-EC-56L-A	EzM2-56L-A	EzS2-EC-56L-A
Ezi-SERVO II-EC-56L-B	EzM2-56L-B	EzS2-EC-56L-B
Ezi-SERVO II-EC-60S-A	EzM2-60S-A	EzS2-EC-60S-A
Ezi-SERVO II-EC-60S-B	EzM2-60S-B	EzS2-EC-60S-B
Ezi-SERVO II-EC-60M-A	EzM2-60M-A	EzS2-EC-60M-A
Ezi-SERVO II-EC-60M-B	EzM2-60M-B	EzS2-EC-60M-B
Ezi-SERVO II-EC-60L-A	EzM2-60L-A	EzS2-EC-60L-A
Ezi-SERVO II-EC-60L-B	EzM2-60L-B	EzS2-EC-60L-B
Ezi-SERVO II-EC-86M-A	EzM2-86M-A	EzS2-EC-86M-A
Ezi-SERVO II-EC-86M-B	EzM2-86M-B	EzS2-EC-86M-B
Ezi-SERVO II-EC-86L-A	EzM2-86L-A	EzS2-EC-86L-A
Ezi-SERVO II-EC-86L-B	EzM2-86L-B	EzS2-EC-86L-B
Ezi-SERVO II-EC-86XL-A	EzM2-86XL-A	EzS2-EC-86XL-A
Ezi-SERVO II-EC-86XL-B	EzM2-86XL-B	EzS2-EC-86XL-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M"additionally after motor length of unit part number.
(Ex: Ezi-SERVO II-EC-28LM-D, Ezi-SERVO II-EC-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-42S-A-BK	EzM2-42S-A-BK	EzS2-EC-42S-A
Ezi-SERVO II-EC-42S-B-BK	EzM2-42S-B-BK	EzS2-EC-42S-B
Ezi-SERVO II-EC-42M-A-BK	EzM2-42M-A-BK	EzS2-EC-42M-A
Ezi-SERVO II-EC-42M-B-BK	EzM2-42M-B-BK	EzS2-EC-42M-B
Ezi-SERVO II-EC-42L-A-BK	EzM2-42L-A-BK	EzS2-EC-42L-A
Ezi-SERVO II-EC-42L-B-BK	EzM2-42L-B-BK	EzS2-EC-42L-B
Ezi-SERVO II-EC-42XL-A-BK	EzM2-42XL-A-BK	EzS2-EC-42XL-A
Ezi-SERVO II-EC-42XL-B-BK	EzM2-42XL-B-BK	EzS2-EC-42XL-B
Ezi-SERVO II-EC-56S-A-BK	EzM2-56S-A-BK	EzS2-EC-56S-A
Ezi-SERVO II-EC-56S-B-BK	EzM2-56S-B-BK	EzS2-EC-56S-B
Ezi-SERVO II-EC-56M-A-BK	EzM2-56M-A-BK	EzS2-EC-56M-A
Ezi-SERVO II-EC-56M-B-BK	EzM2-56M-B-BK	EzS2-EC-56M-B
Ezi-SERVO II-EC-56L-A-BK	EzM2-56L-A-BK	EzS2-EC-56L-A
Ezi-SERVO II-EC-56L-B-BK	EzM2-56L-B-BK	EzS2-EC-56L-B
Ezi-SERVO II-EC-60S-A-BK	EzM2-60S-A-BK	EzS2-EC-60S-A
Ezi-SERVO II-EC-60S-B-BK	EzM2-60S-B-BK	EzS2-EC-60S-B
Ezi-SERVO II-EC-60M-A-BK	EzM2-60M-A-BK	EzS2-EC-60M-A
Ezi-SERVO II-EC-60M-B-BK	EzM2-60M-B-BK	EzS2-EC-60M-B
Ezi-SERVO II-EC-60L-A-BK	EzM2-60L-A-BK	EzS2-EC-60L-A
Ezi-SERVO II-EC-60L-B-BK	EzM2-60L-B-BK	EzS2-EC-60L-B
Ezi-SERVO II-EC-86M-A-BK	EzM2-86M-A-BK	EzS2-EC-86M-A
Ezi-SERVO II-EC-86M-B-BK	EzM2-86M-B-BK	EzS2-EC-86M-B
Ezi-SERVO II-EC-86L-A-BK	EzM2-86L-A-BK	EzS2-EC-86L-A
Ezi-SERVO II-EC-86L-B-BK	EzM2-86L-B-BK	EzS2-EC-86L-B
Ezi-SERVO II-EC-86XL-A-BK	EzM2-86XL-A-BK	EzS2-EC-86XL-A
Ezi-SERVO II-EC-86XL-B-BK	EzM2-86XL-B-BK	EzS2-EC-86XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-42S-A-PN3	EzM2-42S-A-PN3	EzS2-EC-42S-A	1:3
Ezi-SERVO II-EC-42S-B-PN3	EzM2-42S-B-PN3	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN5	EzM2-42S-A-PN5	EzS2-EC-42S-A	1:5
Ezi-SERVO II-EC-42S-B-PN5	EzM2-42S-B-PN5	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN8	EzM2-42S-A-PN8	EzS2-EC-42S-A	1:8
Ezi-SERVO II-EC-42S-B-PN8	EzM2-42S-B-PN8	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN10	EzM2-42S-A-PN10	EzS2-EC-42S-A	1:10
Ezi-SERVO II-EC-42S-B-PN10	EzM2-42S-B-PN10	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN15	EzM2-42S-A-PN15	EzS2-EC-42S-A	1:15
Ezi-SERVO II-EC-42S-B-PN15	EzM2-42S-B-PN15	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN25	EzM2-42S-A-PN25	EzS2-EC-42S-A	1:25
Ezi-SERVO II-EC-42S-B-PN25	EzM2-42S-B-PN25	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN40	EzM2-42S-A-PN40	EzS2-EC-42S-A	1:40
Ezi-SERVO II-EC-42S-B-PN40	EzM2-42S-B-PN40	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN50	EzM2-42S-A-PN50	EzS2-EC-42S-A	1:50
Ezi-SERVO II-EC-42S-B-PN50	EzM2-42S-B-PN50	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42M-A-PN3	EzM2-42M-A-PN3	EzS2-EC-42M-A	1:3
Ezi-SERVO II-EC-42M-B-PN3	EzM2-42M-B-PN3	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN5	EzM2-42M-A-PN5	EzS2-EC-42M-A	1:5
Ezi-SERVO II-EC-42M-B-PN5	EzM2-42M-B-PN5	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN8	EzM2-42M-A-PN8	EzS2-EC-42M-A	1:8
Ezi-SERVO II-EC-42M-B-PN8	EzM2-42M-B-PN8	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN10	EzM2-42M-A-PN10	EzS2-EC-42M-A	1:10
Ezi-SERVO II-EC-42M-B-PN10	EzM2-42M-B-PN10	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN15	EzM2-42M-A-PN15	EzS2-EC-42M-A	1:15
Ezi-SERVO II-EC-42M-B-PN15	EzM2-42M-B-PN15	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN25	EzM2-42M-A-PN25	EzS2-EC-42M-A	1:25
Ezi-SERVO II-EC-42M-B-PN25	EzM2-42M-B-PN25	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN40	EzM2-42M-A-PN40	EzS2-EC-42M-A	1:40
Ezi-SERVO II-EC-42M-B-PN40	EzM2-42M-B-PN40	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN50	EzM2-42M-A-PN50	EzS2-EC-42M-A	1:50
Ezi-SERVO II-EC-42M-B-PN50	EzM2-42M-B-PN50	EzS2-EC-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-42L-A-PN3	EzM2-42L-A-PN3	EzS2-EC-42L-A	1:3
Ezi-SERVO II-EC-42L-B-PN3	EzM2-42L-B-PN3	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN5	EzM2-42L-A-PN5	EzS2-EC-42L-A	1:5
Ezi-SERVO II-EC-42L-B-PN5	EzM2-42L-B-PN5	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN8	EzM2-42L-A-PN8	EzS2-EC-42L-A	1:8
Ezi-SERVO II-EC-42L-B-PN8	EzM2-42L-B-PN8	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN10	EzM2-42L-A-PN10	EzS2-EC-42L-A	1:10
Ezi-SERVO II-EC-42L-B-PN10	EzM2-42L-B-PN10	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN15	EzM2-42L-A-PN15	EzS2-EC-42L-A	1:15
Ezi-SERVO II-EC-42L-B-PN15	EzM2-42L-B-PN15	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN25	EzM2-42L-A-PN25	EzS2-EC-42L-A	1:25
Ezi-SERVO II-EC-42L-B-PN25	EzM2-42L-B-PN25	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN40	EzM2-42L-A-PN40	EzS2-EC-42L-A	1:40
Ezi-SERVO II-EC-42L-B-PN40	EzM2-42L-B-PN40	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN50	EzM2-42L-A-PN50	EzS2-EC-42L-A	1:50
Ezi-SERVO II-EC-42L-B-PN50	EzM2-42L-B-PN50	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-EC-42XL-A	1:3
Ezi-SERVO II-EC-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-EC-42XL-A	1:5
Ezi-SERVO II-EC-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-EC-42XL-A	1:8
Ezi-SERVO II-EC-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-EC-42XL-A	1:10
Ezi-SERVO II-EC-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-EC-42XL-A	1:15
Ezi-SERVO II-EC-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-EC-42XL-A	1:25
Ezi-SERVO II-EC-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-EC-42XL-A	1:40
Ezi-SERVO II-EC-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-EC-42XL-A	1:50
Ezi-SERVO II-EC-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-56S-A-PN3	EzM2-56S-A-PN3	EzS2-EC-56S-A	1:3
Ezi-SERVO II-EC-56S-B-PN3	EzM2-56S-B-PN3	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN5	EzM2-56S-A-PN5	EzS2-EC-56S-A	1:5
Ezi-SERVO II-EC-56S-B-PN5	EzM2-56S-B-PN5	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN8	EzM2-56S-A-PN8	EzS2-EC-56S-A	1:8
Ezi-SERVO II-EC-56S-B-PN8	EzM2-56S-B-PN8	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN10	EzM2-56S-A-PN10	EzS2-EC-56S-A	1:10
Ezi-SERVO II-EC-56S-B-PN10	EzM2-56S-B-PN10	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN15	EzM2-56S-A-PN15	EzS2-EC-56S-A	1:15
Ezi-SERVO II-EC-56S-B-PN15	EzM2-56S-B-PN15	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN25	EzM2-56S-A-PN25	EzS2-EC-56S-A	1:25
Ezi-SERVO II-EC-56S-B-PN25	EzM2-56S-B-PN25	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN40	EzM2-56S-A-PN40	EzS2-EC-56S-A	1:40
Ezi-SERVO II-EC-56S-B-PN40	EzM2-56S-B-PN40	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN50	EzM2-56S-A-PN50	EzS2-EC-56S-A	1:50
Ezi-SERVO II-EC-56S-B-PN50	EzM2-56S-B-PN50	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56M-A-PN3	EzM2-56M-A-PN3	EzS2-EC-56M-A	1:3
Ezi-SERVO II-EC-56M-B-PN3	EzM2-56M-B-PN3	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN5	EzM2-56M-A-PN5	EzS2-EC-56M-A	1:5
Ezi-SERVO II-EC-56M-B-PN5	EzM2-56M-B-PN5	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN8	EzM2-56M-A-PN8	EzS2-EC-56M-A	1:8
Ezi-SERVO II-EC-56M-B-PN8	EzM2-56M-B-PN8	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN10	EzM2-56M-A-PN10	EzS2-EC-56M-A	1:10
Ezi-SERVO II-EC-56M-B-PN10	EzM2-56M-B-PN10	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN15	EzM2-56M-A-PN15	EzS2-EC-56M-A	1:15
Ezi-SERVO II-EC-56M-B-PN15	EzM2-56M-B-PN15	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN25	EzM2-56M-A-PN25	EzS2-EC-56M-A	1:25
Ezi-SERVO II-EC-56M-B-PN25	EzM2-56M-B-PN25	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN40	EzM2-56M-A-PN40	EzS2-EC-56M-A	1:40
Ezi-SERVO II-EC-56M-B-PN40	EzM2-56M-B-PN40	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN50	EzM2-56M-A-PN50	EzS2-EC-56M-A	1:50
Ezi-SERVO II-EC-56M-B-PN50	EzM2-56M-B-PN50	EzS2-EC-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-56L-A-PN3	EzM2-56L-A-PN3	EzS2-EC-56L-A	1:3
Ezi-SERVO II-EC-56L-B-PN3	EzM2-56L-B-PN3	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN5	EzM2-56L-A-PN5	EzS2-EC-56L-A	1:5
Ezi-SERVO II-EC-56L-B-PN5	EzM2-56L-B-PN5	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN8	EzM2-56L-A-PN8	EzS2-EC-56L-A	1:8
Ezi-SERVO II-EC-56L-B-PN8	EzM2-56L-B-PN8	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN10	EzM2-56L-A-PN10	EzS2-EC-56L-A	1:10
Ezi-SERVO II-EC-56L-B-PN10	EzM2-56L-B-PN10	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN15	EzM2-56L-A-PN15	EzS2-EC-56L-A	1:15
Ezi-SERVO II-EC-56L-B-PN15	EzM2-56L-B-PN15	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN25	EzM2-56L-A-PN25	EzS2-EC-56L-A	1:25
Ezi-SERVO II-EC-56L-B-PN25	EzM2-56L-B-PN25	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN40	EzM2-56L-A-PN40	EzS2-EC-56L-A	1:40
Ezi-SERVO II-EC-56L-B-PN40	EzM2-56L-B-PN40	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN50	EzM2-56L-A-PN50	EzS2-EC-56L-A	1:50
Ezi-SERVO II-EC-56L-B-PN50	EzM2-56L-B-PN50	EzS2-EC-56L-B	
Ezi-SERVO II-EC-60S-A-PN3	EzM2-60S-A-PN3	EzS2-EC-60S-A	1:3
Ezi-SERVO II-EC-60S-B-PN3	EzM2-60S-B-PN3	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN5	EzM2-60S-A-PN5	EzS2-EC-60S-A	1:5
Ezi-SERVO II-EC-60S-B-PN5	EzM2-60S-B-PN5	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN8	EzM2-60S-A-PN8	EzS2-EC-60S-A	1:8
Ezi-SERVO II-EC-60S-B-PN8	EzM2-60S-B-PN8	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN10	EzM2-60S-A-PN10	EzS2-EC-60S-A	1:10
Ezi-SERVO II-EC-60S-B-PN10	EzM2-60S-B-PN10	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN15	EzM2-60S-A-PN15	EzS2-EC-60S-A	1:15
Ezi-SERVO II-EC-60S-B-PN15	EzM2-60S-B-PN15	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN25	EzM2-60S-A-PN25	EzS2-EC-60S-A	1:25
Ezi-SERVO II-EC-60S-B-PN25	EzM2-60S-B-PN25	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN40	EzM2-60S-A-PN40	EzS2-EC-60S-A	1:40
Ezi-SERVO II-EC-60S-B-PN40	EzM2-60S-B-PN40	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN50	EzM2-60S-A-PN50	EzS2-EC-60S-A	1:50
Ezi-SERVO II-EC-60S-B-PN50	EzM2-60S-B-PN50	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60M-A-PN3	EzM2-60M-A-PN3	EzS2-EC-60M-A	1:3
Ezi-SERVO II-EC-60M-B-PN3	EzM2-60M-B-PN3	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN5	EzM2-60M-A-PN5	EzS2-EC-60M-A	1:5
Ezi-SERVO II-EC-60M-B-PN5	EzM2-60M-B-PN5	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN8	EzM2-60M-A-PN8	EzS2-EC-60M-A	1:8
Ezi-SERVO II-EC-60M-B-PN8	EzM2-60M-B-PN8	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN10	EzM2-60M-A-PN10	EzS2-EC-60M-A	1:10
Ezi-SERVO II-EC-60M-B-PN10	EzM2-60M-B-PN10	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN15	EzM2-60M-A-PN15	EzS2-EC-60M-A	1:15
Ezi-SERVO II-EC-60M-B-PN15	EzM2-60M-B-PN15	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN25	EzM2-60M-A-PN25	EzS2-EC-60M-A	1:25
Ezi-SERVO II-EC-60M-B-PN25	EzM2-60M-B-PN25	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN40	EzM2-60M-A-PN40	EzS2-EC-60M-A	1:40
Ezi-SERVO II-EC-60M-B-PN40	EzM2-60M-B-PN40	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN50	EzM2-60M-A-PN50	EzS2-EC-60M-A	1:50
Ezi-SERVO II-EC-60M-B-PN50	EzM2-60M-B-PN50	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60L-A-PN3	EzM2-60L-A-PN3	EzS2-EC-60L-A	1:3
Ezi-SERVO II-EC-60L-B-PN3	EzM2-60L-B-PN3	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN5	EzM2-60L-A-PN5	EzS2-EC-60L-A	1:5
Ezi-SERVO II-EC-60L-B-PN5	EzM2-60L-B-PN5	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN8	EzM2-60L-A-PN8	EzS2-EC-60L-A	1:8
Ezi-SERVO II-EC-60L-B-PN8	EzM2-60L-B-PN8	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN10	EzM2-60L-A-PN10	EzS2-EC-60L-A	1:10
Ezi-SERVO II-EC-60L-B-PN10	EzM2-60L-B-PN10	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN15	EzM2-60L-A-PN15	EzS2-EC-60L-A	1:15
Ezi-SERVO II-EC-60L-B-PN15	EzM2-60L-B-PN15	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN25	EzM2-60L-A-PN25	EzS2-EC-60L-A	1:25
Ezi-SERVO II-EC-60L-B-PN25	EzM2-60L-B-PN25	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN40	EzM2-60L-A-PN40	EzS2-EC-60L-A	1:40
Ezi-SERVO II-EC-60L-B-PN40	EzM2-60L-B-PN40	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN50	EzM2-60L-A-PN50	EzS2-EC-60L-A	1:50
Ezi-SERVO II-EC-60L-B-PN50	EzM2-60L-B-PN50	EzS2-EC-60L-B	

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-86M-A-PN3	EzM2-86M-A-PN3	EzS2-EC-86M-A	1:3
Ezi-SERVO II-EC-86M-B-PN3	EzM2-86M-B-PN3	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN5	EzM2-86M-A-PN5	EzS2-EC-86M-A	1:5
Ezi-SERVO II-EC-86M-B-PN5	EzM2-86M-B-PN5	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN8	EzM2-86M-A-PN8	EzS2-EC-86M-A	1:8
Ezi-SERVO II-EC-86M-B-PN8	EzM2-86M-B-PN8	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN10	EzM2-86M-A-PN10	EzS2-EC-86M-A	1:10
Ezi-SERVO II-EC-86M-B-PN10	EzM2-86M-B-PN10	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN15	EzM2-86M-A-PN15	EzS2-EC-86M-A	1:15
Ezi-SERVO II-EC-86M-B-PN15	EzM2-86M-B-PN15	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN25	EzM2-86M-A-PN25	EzS2-EC-86M-A	1:25
Ezi-SERVO II-EC-86M-B-PN25	EzM2-86M-B-PN25	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN40	EzM2-86M-A-PN40	EzS2-EC-86M-A	1:40
Ezi-SERVO II-EC-86M-B-PN40	EzM2-86M-B-PN40	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN50	EzM2-86M-A-PN50	EzS2-EC-86M-A	1:50
Ezi-SERVO II-EC-86M-B-PN50	EzM2-86M-B-PN50	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86L-A-PN3	EzM2-86L-A-PN3	EzS2-EC-86L-A	1:3
Ezi-SERVO II-EC-86L-B-PN3	EzM2-86L-B-PN3	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN5	EzM2-86L-A-PN5	EzS2-EC-86L-A	1:5
Ezi-SERVO II-EC-86L-B-PN5	EzM2-86L-B-PN5	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN8	EzM2-86L-A-PN8	EzS2-EC-86L-A	1:8
Ezi-SERVO II-EC-86L-B-PN8	EzM2-86L-B-PN8	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN10	EzM2-86L-A-PN10	EzS2-EC-86L-A	1:10
Ezi-SERVO II-EC-86L-B-PN10	EzM2-86L-B-PN10	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN15	EzM2-86L-A-PN15	EzS2-EC-86L-A	1:15
Ezi-SERVO II-EC-86L-B-PN15	EzM2-86L-B-PN15	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN25	EzM2-86L-A-PN25	EzS2-EC-86L-A	1:25
Ezi-SERVO II-EC-86L-B-PN25	EzM2-86L-B-PN25	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN40	EzM2-86L-A-PN40	EzS2-EC-86L-A	1:40
Ezi-SERVO II-EC-86L-B-PN40	EzM2-86L-B-PN40	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN50	EzM2-86L-A-PN50	EzS2-EC-86L-A	1:50
Ezi-SERVO II-EC-86L-B-PN50	EzM2-86L-B-PN50	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86XL-A-PN3	EzM2-86XL-A-PN3	EzS2-EC-86XL-A	1:3
Ezi-SERVO II-EC-86XL-B-PN3	EzM2-86XL-B-PN3	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN5	EzM2-86XL-A-PN5	EzS2-EC-86XL-A	1:5
Ezi-SERVO II-EC-86XL-B-PN5	EzM2-86XL-B-PN5	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN8	EzM2-86XL-A-PN8	EzS2-EC-86XL-A	1:8
Ezi-SERVO II-EC-86XL-B-PN8	EzM2-86XL-B-PN8	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN10	EzM2-86XL-A-PN10	EzS2-EC-86XL-A	1:10
Ezi-SERVO II-EC-86XL-B-PN10	EzM2-86XL-B-PN10	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN15	EzM2-86XL-A-PN15	EzS2-EC-86XL-A	1:15
Ezi-SERVO II-EC-86XL-B-PN15	EzM2-86XL-B-PN15	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN25	EzM2-86XL-A-PN25	EzS2-EC-86XL-A	1:25
Ezi-SERVO II-EC-86XL-B-PN25	EzM2-86XL-B-PN25	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN40	EzM2-86XL-A-PN40	EzS2-EC-86XL-A	1:40
Ezi-SERVO II-EC-86XL-B-PN40	EzM2-86XL-B-PN40	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN50	EzM2-86XL-A-PN50	EzS2-EC-86XL-A	1:50
Ezi-SERVO II-EC-86XL-B-PN50	EzM2-86XL-B-PN50	EzS2-EC-86XL-B	

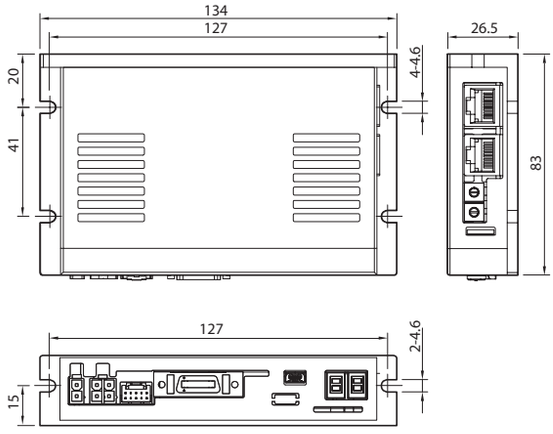
Specifications of Drive

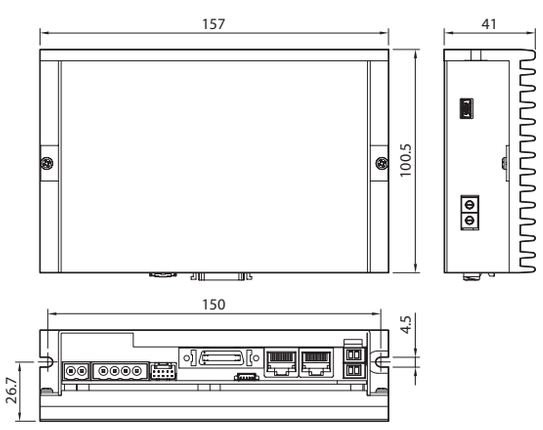
Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series	EzM2-86 series
Driver Model		EzS2-EC-20 series	EzS2-EC-28 series	EzS2-EC-35 series	EzS2-EC-42 series	EzS2-EC-56 series	EzS2-EC-60 series	EzS2-EC-86 series
Input Voltage		24VDC ±10%						40~70VDC
Control Method		Closed loop control with 32bit MCU						
Current Consumption		Max 500mA (Except motor current)						
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃						
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)						
	Vib. Resist.	0.5g						
Function	Rotation Speed	0~3,000 [rpm] *1						
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter) *2						
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error						
	LED Display	Power status, In-Position status, Servo On status, Alarm status						
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)						
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode						
	Synchronization	Free Run, SM Event, DC SYNC Event						
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 user inputs (Photocoupler Input)						
	Output Signals	6 user outputs (Photocoupler Output), Brake						

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]





※ 86mm motor drive (EzS2-EC-86 series)

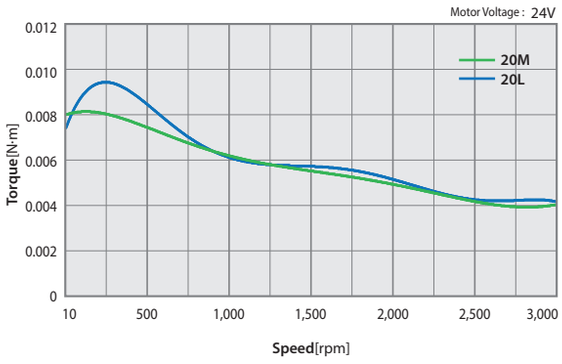
Specifications of Motor

MODEL			EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
VOLTAGE		VDC	2.75	3.0	3.0	3.0	3.0	1.8	2.7	3.36	4.32	4.56	7.2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
RESISTANCE per PHASE		Ohm	5.5	6.0	3.2	3.2	3.2	1.2	1.8	2.8	3.6	3.8	6.0
INDUCTANCE per PHASE		mH	2.0	2.6	2.0	2.7	3.2	1.2	2.6	5.4	7.2	8.0	15.6
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	80	104	147	204	232	194	226	294	357	426	564
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

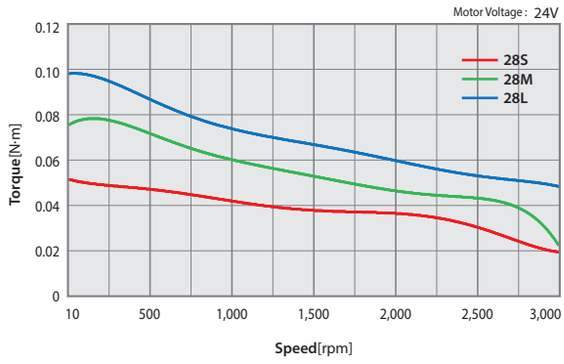
MODEL			EzM2-56 series			EzM2-60 series			EzM2-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
VOLTAGE		VDC	1.56	1.62	2.64	1.32	1.48	2.2	2.34	3.6	4.8
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
RESISTANCE per PHASE		Ohm	0.52	0.54	0.88	0.33	0.37	0.55	0.39	0.6	0.8
INDUCTANCE per PHASE		mH	1.2	2.0	4.0	0.75	1.1	2.7	3.0	6.5	8.68
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	608	784	1230	693	856	1419	2355	3941	5453
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70	270	270	270
	8mm		65	65	65	87	87	87	300	300	300
	13mm		85	85	85	114	114	114	350	350	350
	18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

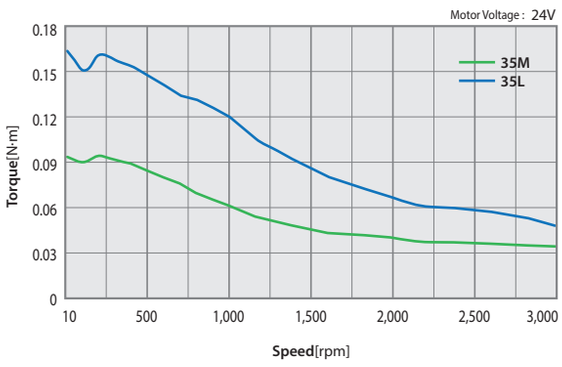
Ezi-SERVO II-EC-20 series



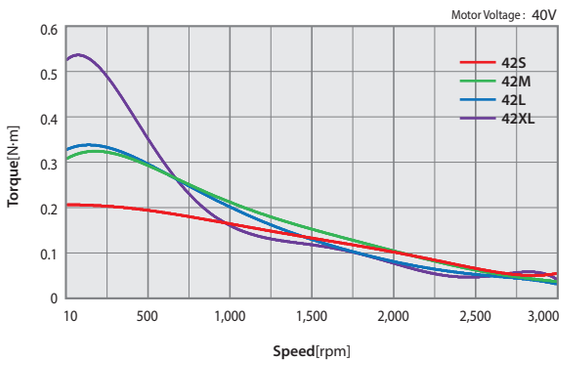
Ezi-SERVO II-EC-28 series



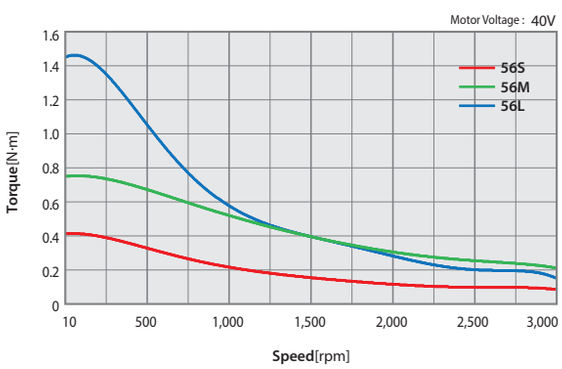
Ezi-SERVO II-EC-35 series



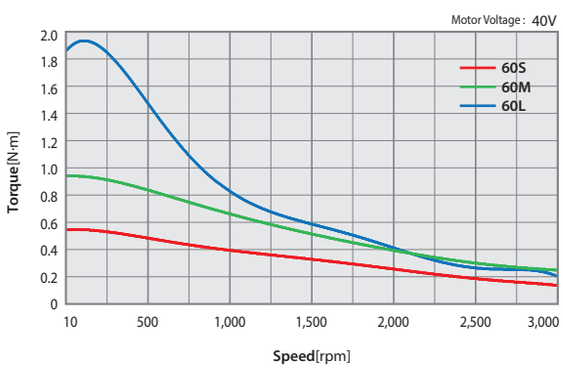
Ezi-SERVO II-EC-42 series



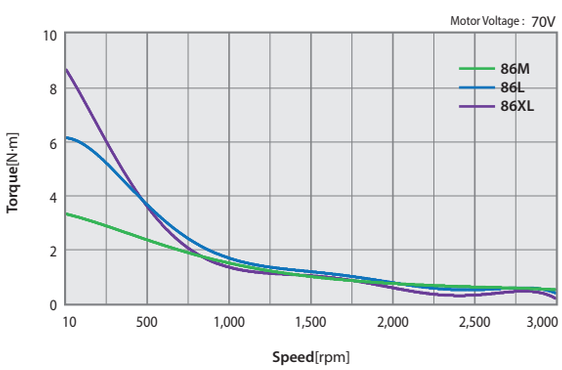
Ezi-SERVO II-EC-56 series



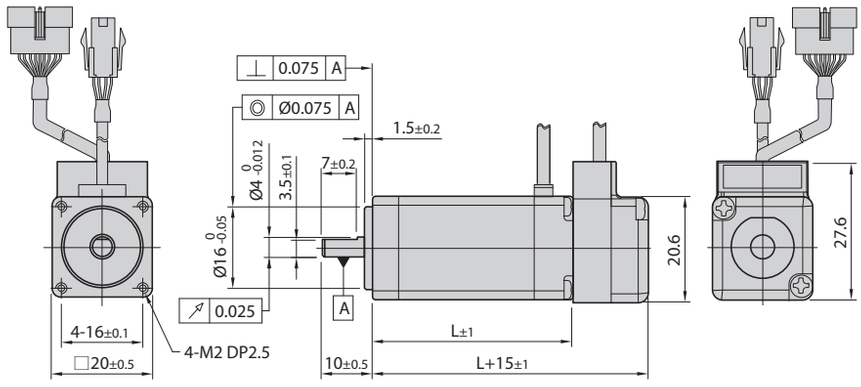
Ezi-SERVO II-EC-60 series



Ezi-SERVO II-EC-86 series

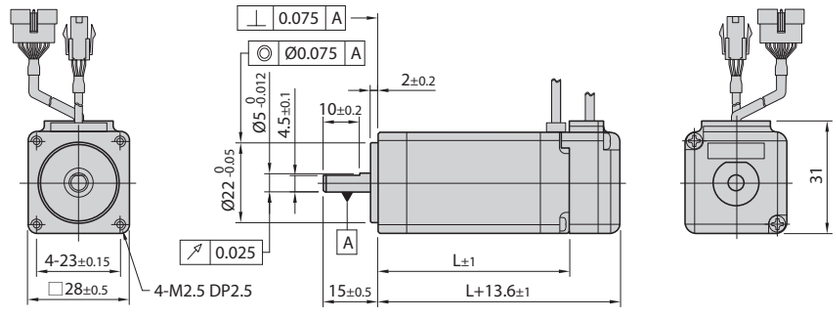


Dimensions of Motor [mm]



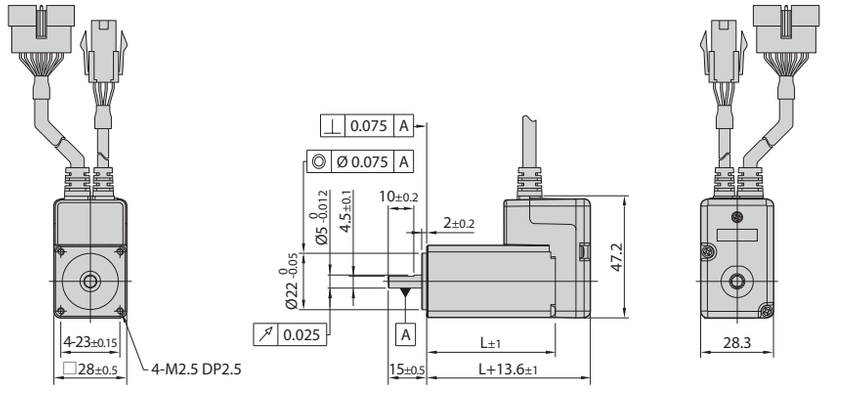
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

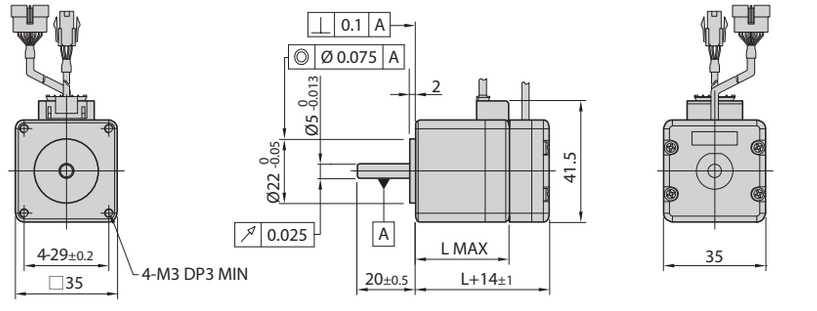
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm (Stopper type)

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

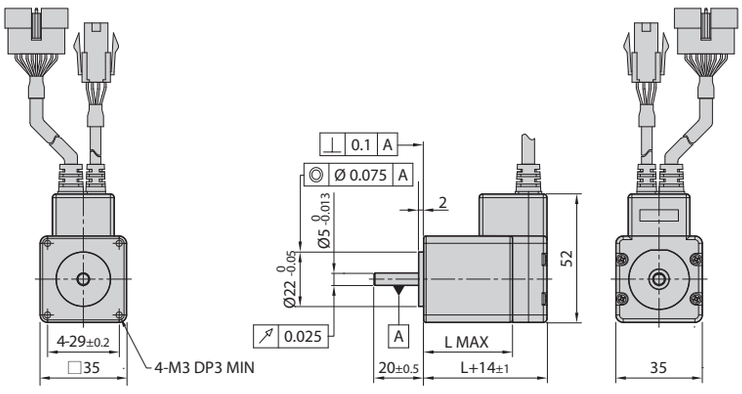
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

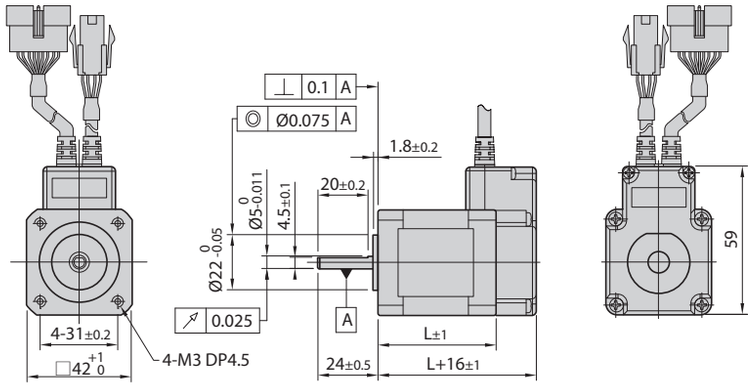
● Dimensions of Motor [mm]



35mm
(Stopper type)

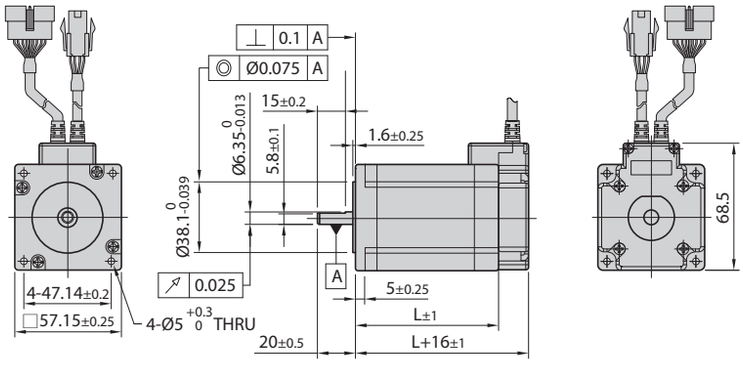
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

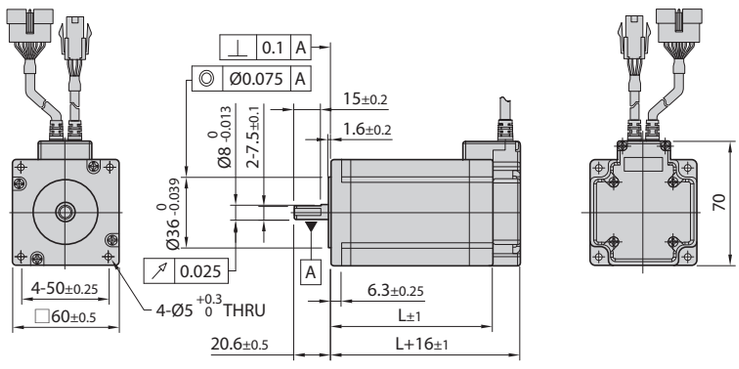
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

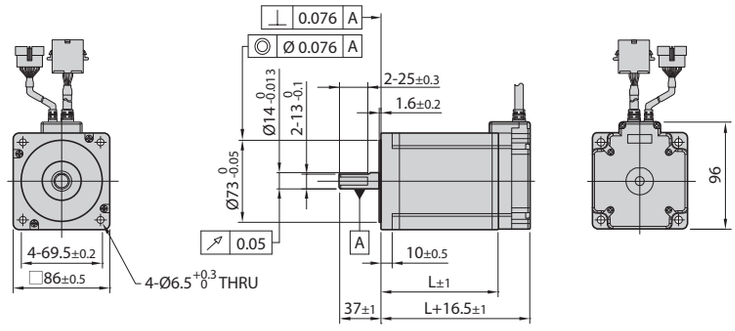
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

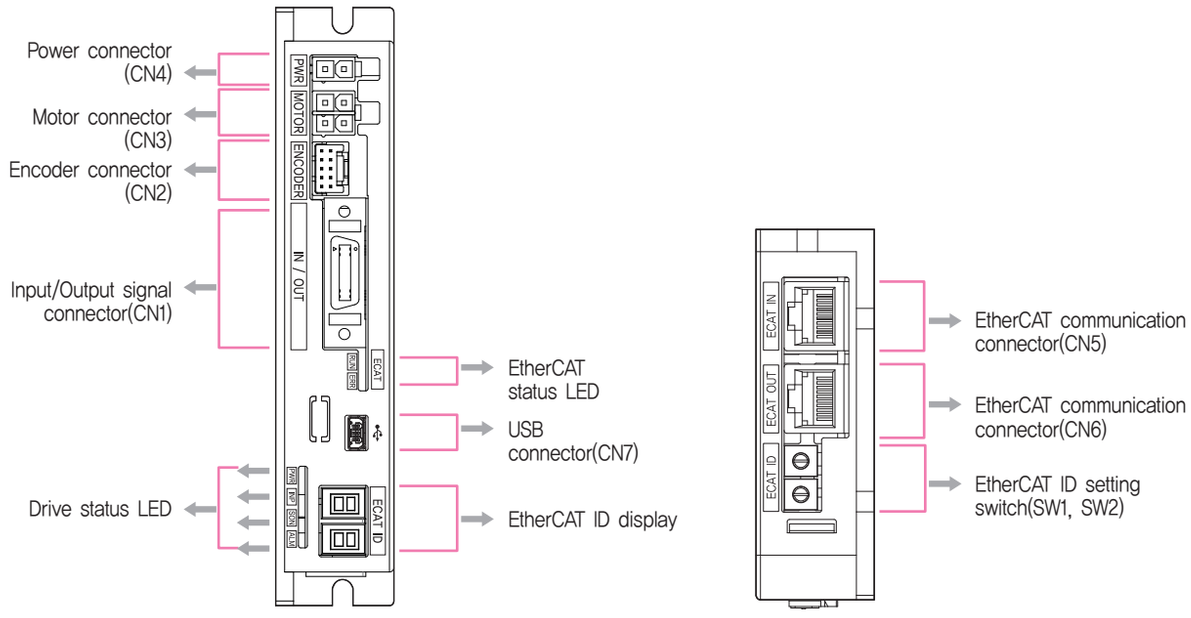
Dimensions of Motor [mm]



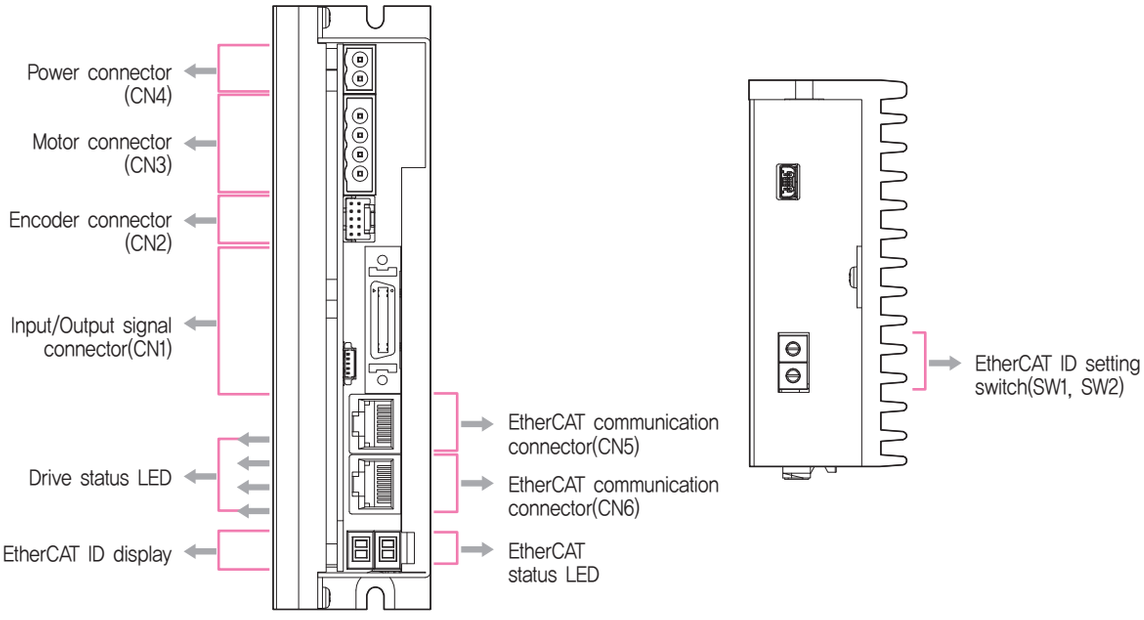
86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

● Settings and Operation

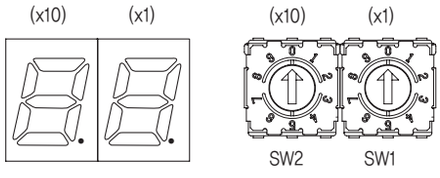


◆ 86mm Motor Drive (EzS2-EC-86 series)



1. EtherCAT ID Display and Setting Switch(SW1, SW2)

There are two Rotary Switches to set value of EtherCAT ID (ECAT Device ID). Switch on the right side indicates the ones' place(X1) and Switch on the left side indicates the tens' place(X10).



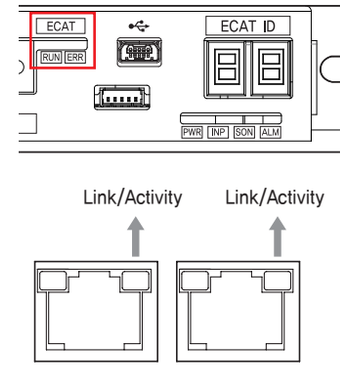
2. EtherCAT Status LED

LED indicates communication status of EtherCAT. Link/Activity LED exists on each port of EtherCAT.

Name	Color	Status	Explanation
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

Name	Color	Status	Explanation
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

Name	Color	Status	Explanation
Link/ Activity	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation



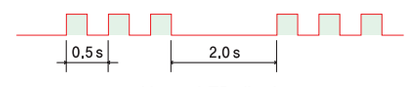
3. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Lights On when Positioning error reaches within the preset pulse selected by parameter
SON	Orange	Servo On/Off Indication	Servo On: Lights On, Servo Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated

◆ Protection functions and LED flash times

Times	Error Code *4	Protection	Conditions
1	E-001	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	E-002	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	E-003	Position Tracking Error	Position error value is higher than 180° in motor run state *2
4	E-004	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	E-005	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	E-007	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	E-008	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	E-010	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)
15	E-015	Position Overflow Error	Position error value is higher than 180° in motor stop state *2

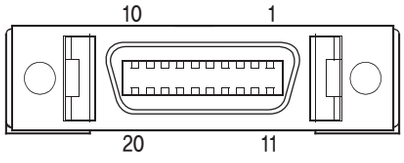
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*4 : When an alarm occurs, error code is displayed on the 7-segment instead of EtherCAT ID.
※ Please refer to uer Manual for the details of protection functions.



Alarm LED flash
(Ex, Position tracking error)

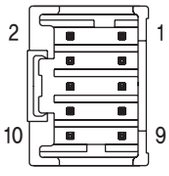
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In2	Input
6	Digital In3	Input
7	Digital In4	Input
8	Digital In5	Input
9	Digital In6	Input
10	Digital In7	Input
11	Digital Out1	Output
12	Digital Out2	Output
13	Digital Out3	Output
14	Digital Out4	Output
15	Digital Out5	Output
16	Digital Out6	Output
17	BRAKE+	Output
18	BRAKE−	Output
19	EXT_GND	Input
20	EXT_24VDC	Input



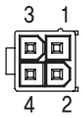
5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----

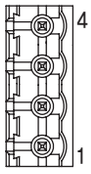


6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output



※ 86mm motor drive.

7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



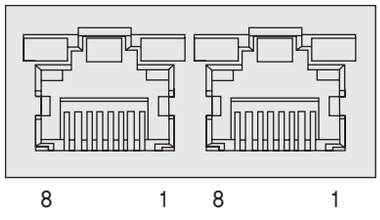
NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input



※ 86mm motor drive.

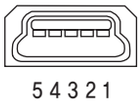
8. EtherCAT Communication Connector(CN5, CN6)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connection hood	F.GND
5	----		

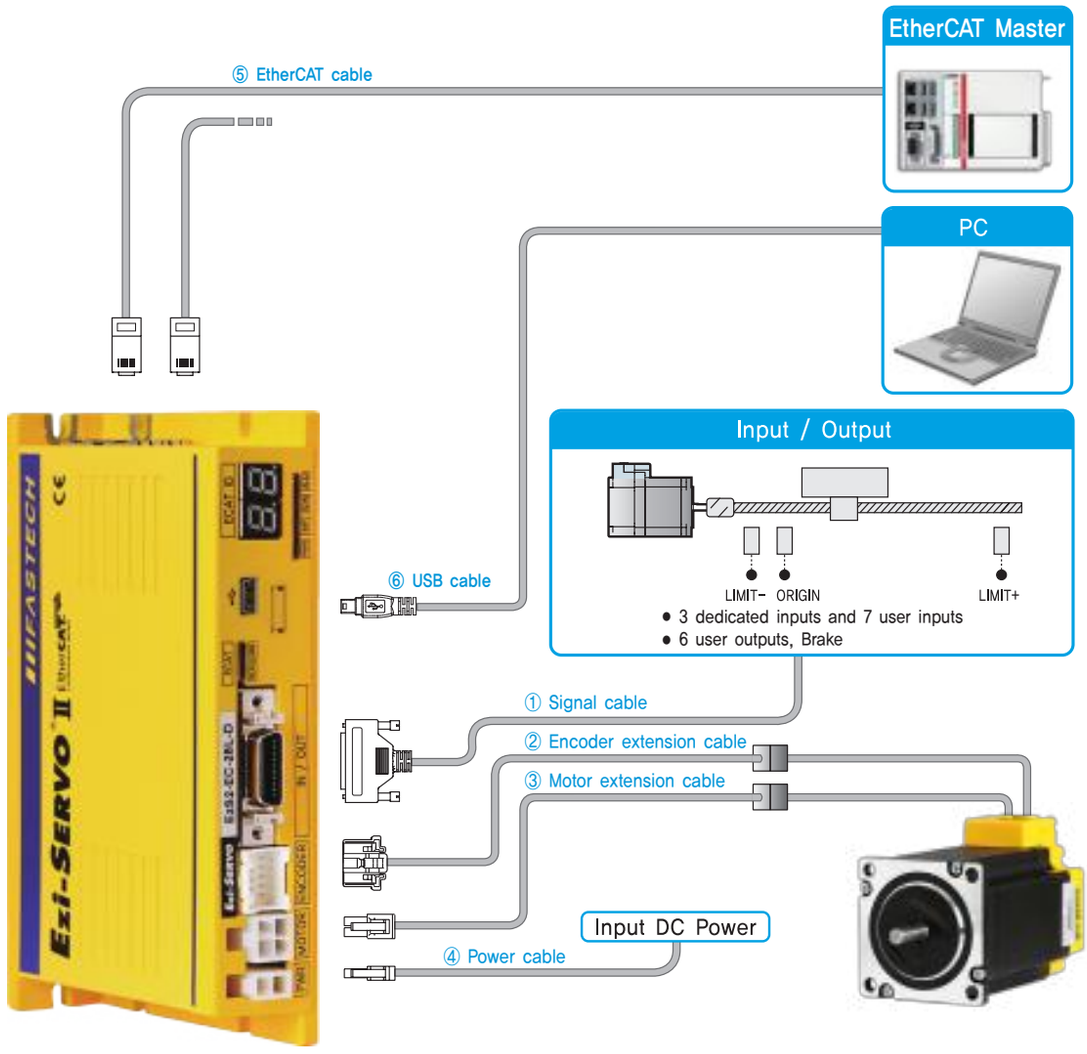


9. USB Connector(CN7)

NO.	Function
1	V_{BUS}
2	D−
3	D+
4	---
5	GND



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable	USB Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	5m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVO-M-□□□F CSVO-M-□□□M	□□□ □□□	Normal Cable Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVO-P-□□□F CSVO-P-□□□M	□□□ □□□	Normal Cable Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ USB Cable

The USB cable is a cable for connecting Ezi-SERVO II EtherCAT to PC through USB communication.

* The USB cable is NOT supplied.
  Use a cable with USB 2.0 Mini Type B connectors.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/ Output signal and Ezi-SERVO II EtherCAT.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CIFN-S-□□□F CIFN-S-□□□M	□□□ □□□	Normal Cable Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

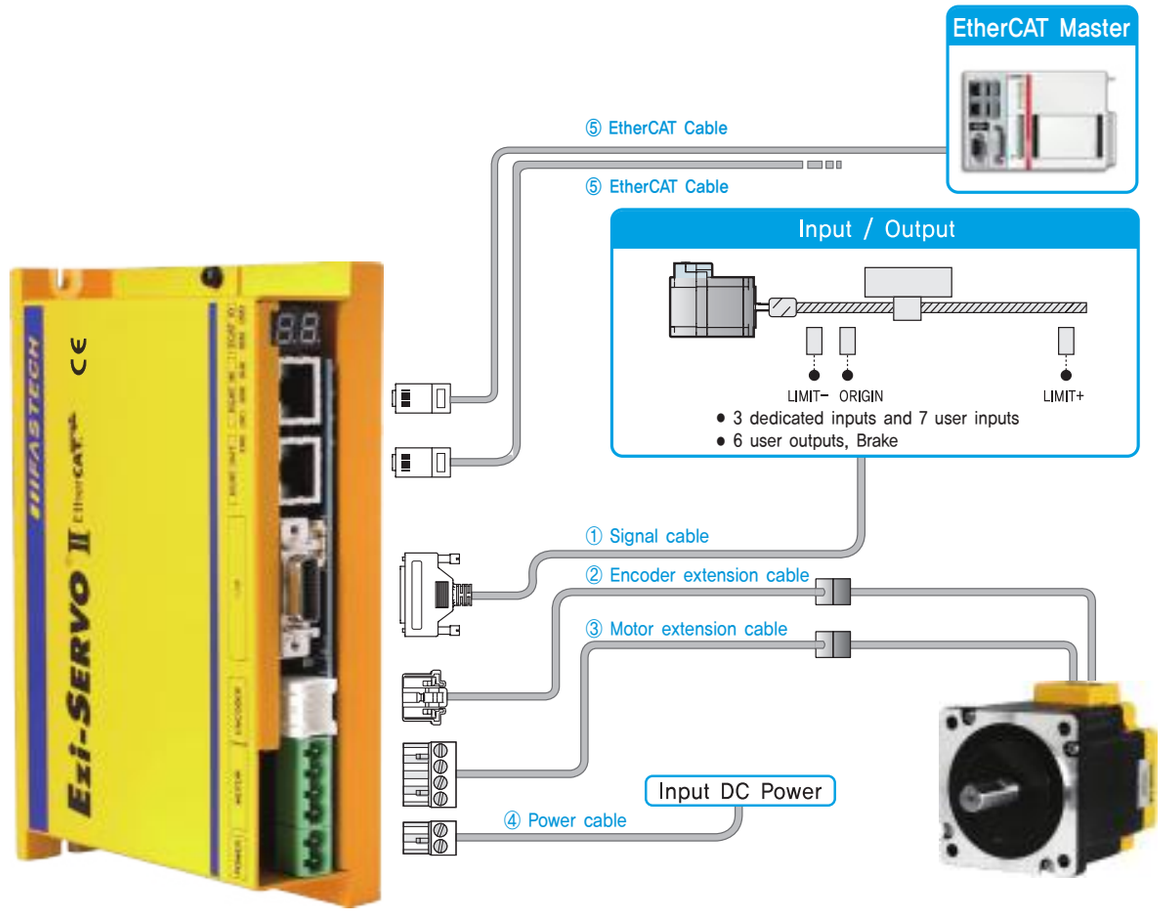
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVP-M-□□□F	□□□	Normal Cable
CSVP-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/ Output signal and Ezi-SERVO II EtherCAT.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

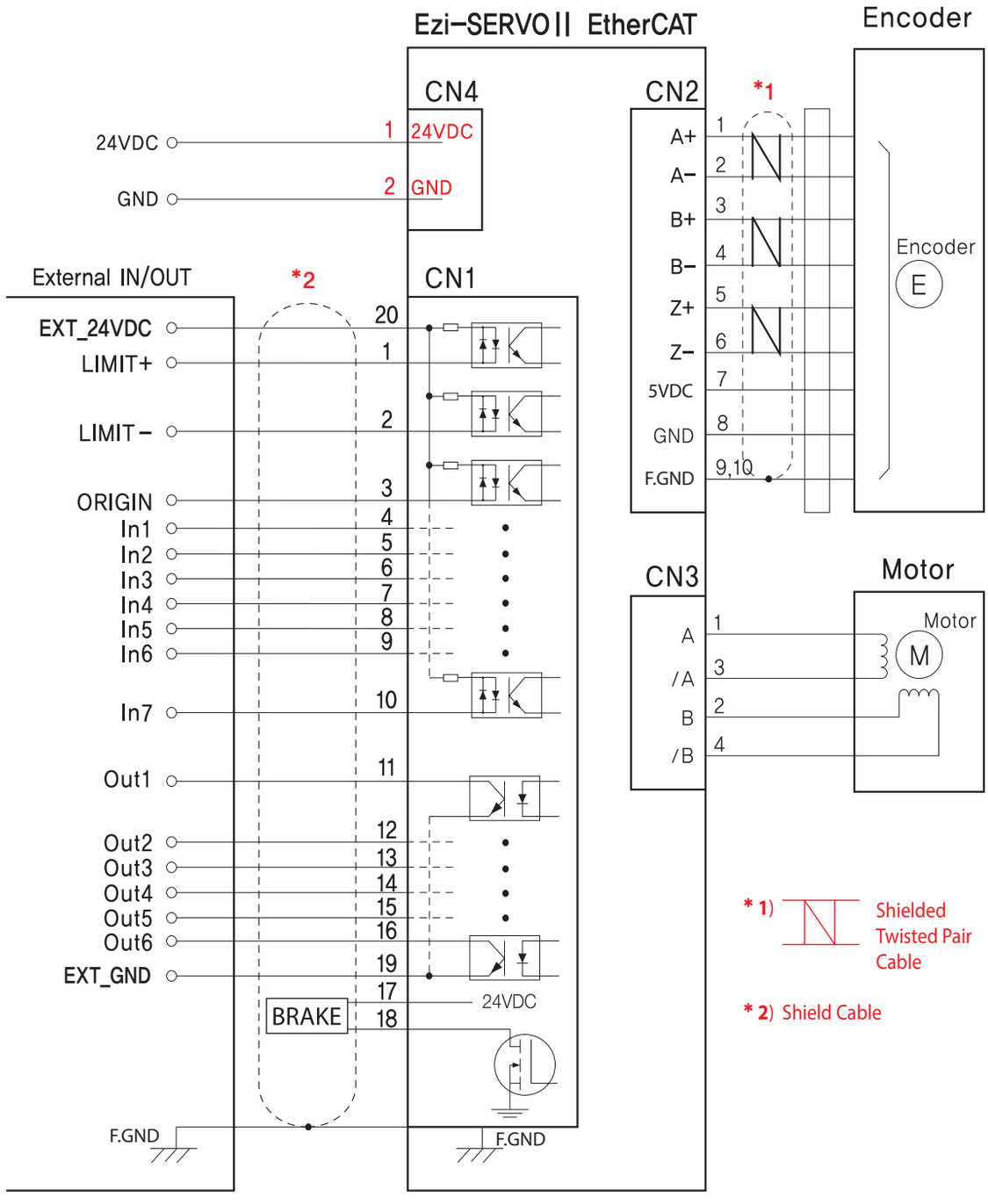
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing Terminal	3191-4R1 1381T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



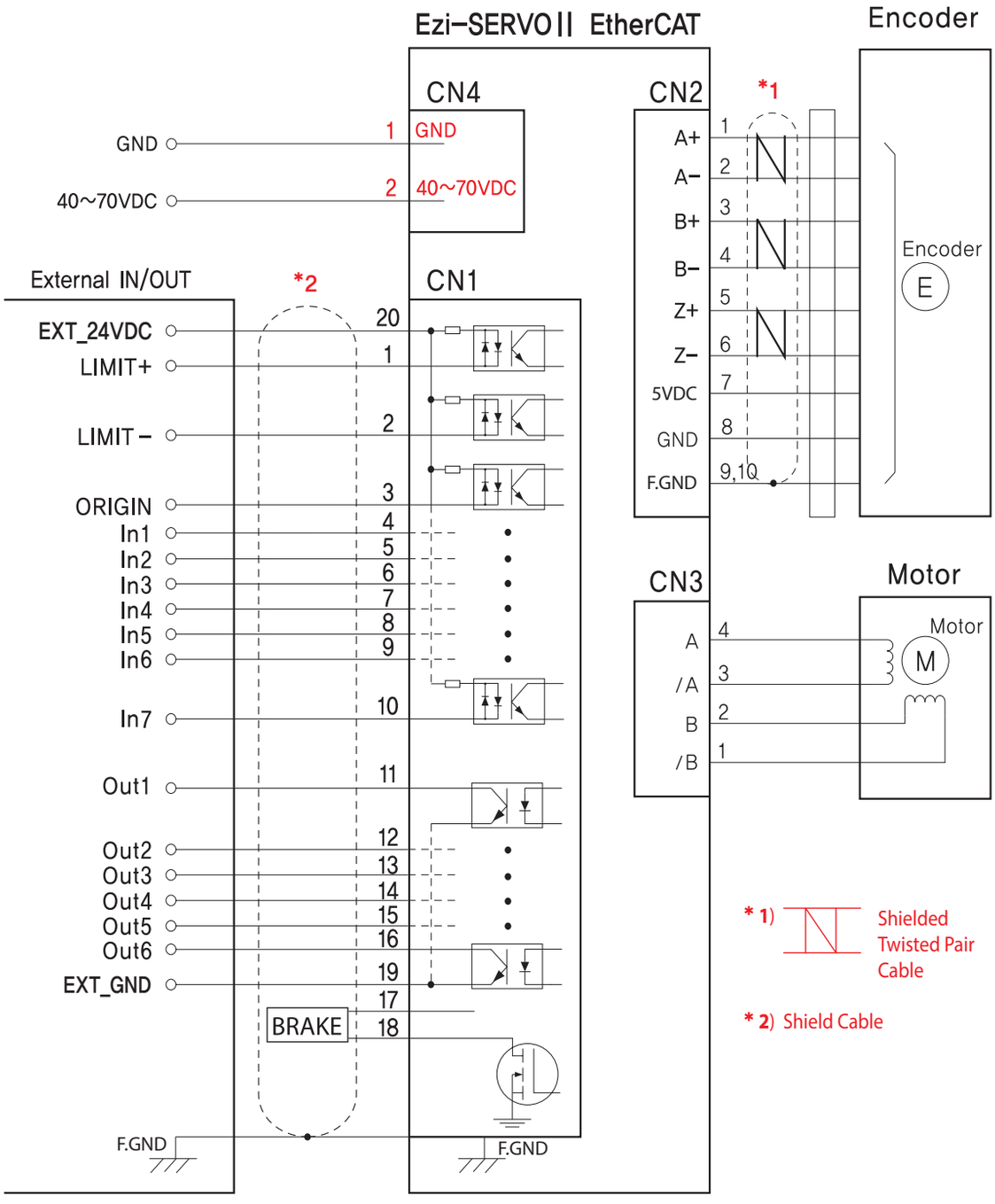
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● External Wiring Diagram [86mm Motor Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EtherCAT
Ezi-SERVO II mini
FASTECH



Ezi-SERVO II EtherCAT MINI

- CiA 402 Drive Profile Support
- Closed Loop System
- No Gain Tuning / No Hunting
- Miniaturized Compact Size
- High Resolution / Fast Response



FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® II EtherCAT® MINI

Closed Loop Stepping System



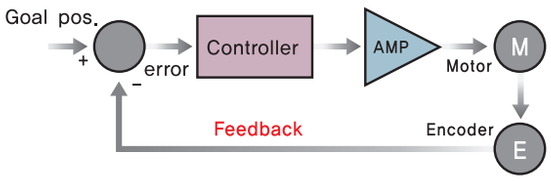
1 EtherCAT Based Motion Control

Ezi-SERVO II EtherCAT MINI is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which support CAN application layer over EtherCAT (CoE). CiA 402 Drive Profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



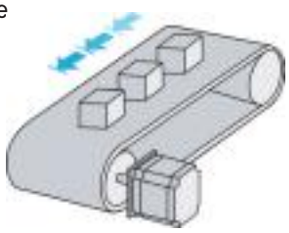
2 Closed Loop System

Ezi-SERVO II is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50 μsec. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

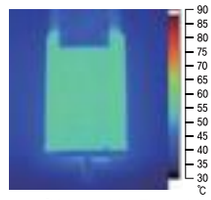
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additional expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



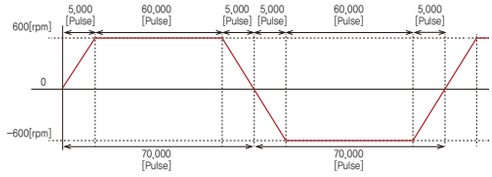
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

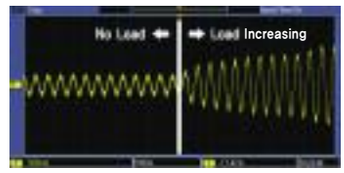
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

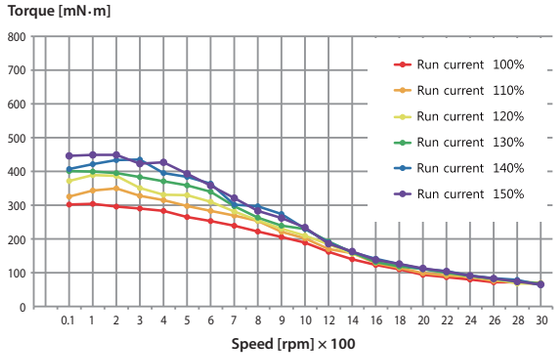


Example of the Motor Current Control according to load

5 Torque Improvement

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore, acceleration and deceleration characteristics and torque characteristics at low speed can be increased.
Ezi-SERVO II can improve the torque in the low speed range by about 30%.

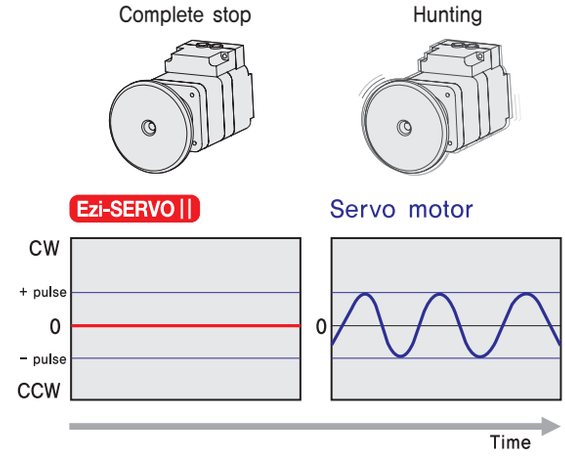


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-MI-42L
Motor Voltage = 24VDC
Input Voltage = 24VDC

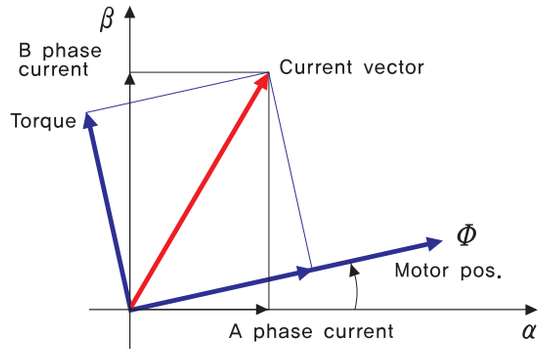
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



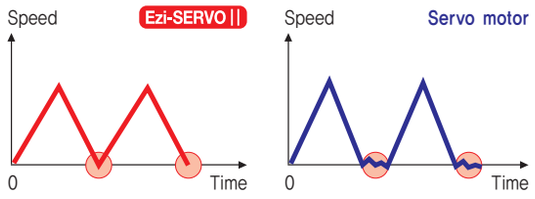
7 Smooth and Accurate

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



8 Fast Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



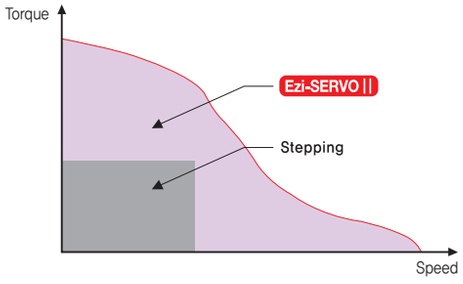
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



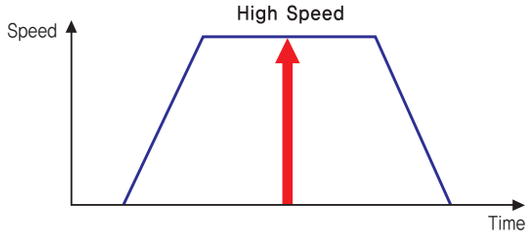
10 High Torque

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependant current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO II EtherCAT MINI Part Numbering

Ezi-SERVO II -EC-MI-42S-A-BK-PN10-□

Product Name

Drive Series

EC : EtherCAT
MI : Mini Type

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
B : 20,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II -EC-MI-20M-F	EzM2-20M-F	EzS2-EC-MI-20M-F
Ezi-SERVO II -EC-MI-20L-F	EzM2-20L-F	EzS2-EC-MI-20L-F
Ezi-SERVO II -EC-MI-28S-D	EzM2-28S-D	EzS2-EC-MI-28S-D
Ezi-SERVO II -EC-MI-28SM-D	EzM2-28SM-D	EzS2-EC-MI-28S-D
Ezi-SERVO II -EC-MI-28M-D	EzM2-28M-D	EzS2-EC-MI-28M-D
Ezi-SERVO II -EC-MI-28MM-D	EzM2-28MM-D	EzS2-EC-MI-28M-D
Ezi-SERVO II -EC-MI-28L-D	EzM2-28L-D	EzS2-EC-MI-28L-D
Ezi-SERVO II -EC-MI-28LM-D	EzM2-28LM-D	EzS2-EC-MI-28L-D
Ezi-SERVO II -EC-MI-35M-D	EzM2-35M-D	EzS2-EC-MI-35M-D
Ezi-SERVO II -EC-MI-35MM-D	EzM2-35MM-D	EzS2-EC-MI-35M-D
Ezi-SERVO II -EC-MI-35L-D	EzM2-35L-D	EzS2-EC-MI-35L-D
Ezi-SERVO II -EC-MI-35LM-D	EzM2-35LM-D	EzS2-EC-MI-35L-D
Ezi-SERVO II -EC-MI-42S-A	EzM2-42S-A	EzS2-EC-MI-42S-A
Ezi-SERVO II -EC-MI-42S-B	EzM2-42S-B	EzS2-EC-MI-42S-B
Ezi-SERVO II -EC-MI-42M-A	EzM2-42M-A	EzS2-EC-MI-42M-A
Ezi-SERVO II -EC-MI-42M-B	EzM2-42M-B	EzS2-EC-MI-42M-B
Ezi-SERVO II -EC-MI-42L-A	EzM2-42L-A	EzS2-EC-MI-42L-A
Ezi-SERVO II -EC-MI-42L-B	EzM2-42L-B	EzS2-EC-MI-42L-B
Ezi-SERVO II -EC-MI-42XL-A	EzM2-42XL-A	EzS2-EC-MI-42XL-A
Ezi-SERVO II -EC-MI-42XL-B	EzM2-42XL-B	EzS2-EC-MI-42XL-B
Ezi-SERVO II -EC-MI-56S-A	EzM2-56S-A	EzS2-EC-MI-56S-A
Ezi-SERVO II -EC-MI-56S-B	EzM2-56S-B	EzS2-EC-MI-56S-B
Ezi-SERVO II -EC-MI-56M-A	EzM2-56M-A	EzS2-EC-MI-56M-A
Ezi-SERVO II -EC-MI-56M-B	EzM2-56M-B	EzS2-EC-MI-56M-B
Ezi-SERVO II -EC-MI-56L-A	EzM2-56L-A	EzS2-EC-MI-56L-A
Ezi-SERVO II -EC-MI-56L-B	EzM2-56L-B	EzS2-EC-MI-56L-B
Ezi-SERVO II -EC-MI-60S-A	EzM2-60S-A	EzS2-EC-MI-60S-A
Ezi-SERVO II -EC-MI-60S-B	EzM2-60S-B	EzS2-EC-MI-60S-B
Ezi-SERVO II -EC-MI-60M-A	EzM2-60M-A	EzS2-EC-MI-60M-A
Ezi-SERVO II -EC-MI-60M-B	EzM2-60M-B	EzS2-EC-MI-60M-B
Ezi-SERVO II -EC-MI-60L-A	EzM2-60L-A	EzS2-EC-MI-60L-A
Ezi-SERVO II -EC-MI-60L-B	EzM2-60L-B	EzS2-EC-MI-60L-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex : Ezi-SERVO II -EC-MI-28LM-D, Ezi-SERVO II -EC-MI-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-MI-42S-A-BK	EzM2-42S-A-BK	EzS2-EC-MI-42S-A
Ezi-SERVO II-EC-MI-42S-B-BK	EzM2-42S-B-BK	EzS2-EC-MI-42S-B
Ezi-SERVO II-EC-MI-42M-A-BK	EzM2-42M-A-BK	EzS2-EC-MI-42M-A
Ezi-SERVO II-EC-MI-42M-B-BK	EzM2-42M-B-BK	EzS2-EC-MI-42M-B
Ezi-SERVO II-EC-MI-42L-A-BK	EzM2-42L-A-BK	EzS2-EC-MI-42L-A
Ezi-SERVO II-EC-MI-42L-B-BK	EzM2-42L-B-BK	EzS2-EC-MI-42L-B
Ezi-SERVO II-EC-MI-42XL-A-BK	EzM2-42XL-A-BK	EzS2-EC-MI-42XL-A
Ezi-SERVO II-EC-MI-42XL-B-BK	EzM2-42XL-B-BK	EzS2-EC-MI-42XL-B
Ezi-SERVO II-EC-MI-56S-A-BK	EzM2-56S-A-BK	EzS2-EC-MI-56S-A
Ezi-SERVO II-EC-MI-56S-B-BK	EzM2-56S-B-BK	EzS2-EC-MI-56S-B
Ezi-SERVO II-EC-MI-56M-A-BK	EzM2-56M-A-BK	EzS2-EC-MI-56M-A
Ezi-SERVO II-EC-MI-56M-B-BK	EzM2-56M-B-BK	EzS2-EC-MI-56M-B
Ezi-SERVO II-EC-MI-56L-A-BK	EzM2-56L-A-BK	EzS2-EC-MI-56L-A
Ezi-SERVO II-EC-MI-56L-B-BK	EzM2-56L-B-BK	EzS2-EC-MI-56L-B
Ezi-SERVO II-EC-MI-60S-A-BK	EzM2-60S-A-BK	EzS2-EC-MI-60S-A
Ezi-SERVO II-EC-MI-60S-B-BK	EzM2-60S-B-BK	EzS2-EC-MI-60S-B
Ezi-SERVO II-EC-MI-60M-A-BK	EzM2-60M-A-BK	EzS2-EC-MI-60M-A
Ezi-SERVO II-EC-MI-60M-B-BK	EzM2-60M-B-BK	EzS2-EC-MI-60M-B
Ezi-SERVO II-EC-MI-60L-A-BK	EzM2-60L-A-BK	EzS2-EC-MI-60L-A
Ezi-SERVO II-EC-MI-60L-B-BK	EzM2-60L-B-BK	EzS2-EC-MI-60L-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-MI-42S-A-PN3	EzM2-42S-A-PN3	EzS2-EC-MI-42S-A	1:3
Ezi-SERVO II-EC-MI-42S-B-PN3	EzM2-42S-B-PN3	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN5	EzM2-42S-A-PN5	EzS2-EC-MI-42S-A	1:5
Ezi-SERVO II-EC-MI-42S-B-PN5	EzM2-42S-B-PN5	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN8	EzM2-42S-A-PN8	EzS2-EC-MI-42S-A	1:8
Ezi-SERVO II-EC-MI-42S-B-PN8	EzM2-42S-B-PN8	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN10	EzM2-42S-A-PN10	EzS2-EC-MI-42S-A	1:10
Ezi-SERVO II-EC-MI-42S-B-PN10	EzM2-42S-B-PN10	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN15	EzM2-42S-A-PN15	EzS2-EC-MI-42S-A	1:15
Ezi-SERVO II-EC-MI-42S-B-PN15	EzM2-42S-B-PN15	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN25	EzM2-42S-A-PN25	EzS2-EC-MI-42S-A	1:25
Ezi-SERVO II-EC-MI-42S-B-PN25	EzM2-42S-B-PN25	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN40	EzM2-42S-A-PN40	EzS2-EC-MI-42S-A	1:40
Ezi-SERVO II-EC-MI-42S-B-PN40	EzM2-42S-B-PN40	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN50	EzM2-42S-A-PN50	EzS2-EC-MI-42S-A	1:50
Ezi-SERVO II-EC-MI-42S-B-PN50	EzM2-42S-B-PN50	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42M-A-PN3	EzM2-42M-A-PN3	EzS2-EC-MI-42M-A	1:3
Ezi-SERVO II-EC-MI-42M-B-PN3	EzM2-42M-B-PN3	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN5	EzM2-42M-A-PN5	EzS2-EC-MI-42M-A	1:5
Ezi-SERVO II-EC-MI-42M-B-PN5	EzM2-42M-B-PN5	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN8	EzM2-42M-A-PN8	EzS2-EC-MI-42M-A	1:8
Ezi-SERVO II-EC-MI-42M-B-PN8	EzM2-42M-B-PN8	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN10	EzM2-42M-A-PN10	EzS2-EC-MI-42M-A	1:10
Ezi-SERVO II-EC-MI-42M-B-PN10	EzM2-42M-B-PN10	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN15	EzM2-42M-A-PN15	EzS2-EC-MI-42M-A	1:15
Ezi-SERVO II-EC-MI-42M-B-PN15	EzM2-42M-B-PN15	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN25	EzM2-42M-A-PN25	EzS2-EC-MI-42M-A	1:25
Ezi-SERVO II-EC-MI-42M-B-PN25	EzM2-42M-B-PN25	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN40	EzM2-42M-A-PN40	EzS2-EC-MI-42M-A	1:40
Ezi-SERVO II-EC-MI-42M-B-PN40	EzM2-42M-B-PN40	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN50	EzM2-42M-A-PN50	EzS2-EC-MI-42M-A	1:50
Ezi-SERVO II-EC-MI-42M-B-PN50	EzM2-42M-B-PN50	EzS2-EC-MI-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-MI-42L-A-PN3	EzM2-42L-A-PN3	EzS2-EC-MI-42L-A	1:3
Ezi-SERVO II-EC-MI-42L-B-PN3	EzM2-42L-B-PN3	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN5	EzM2-42L-A-PN5	EzS2-EC-MI-42L-A	1:5
Ezi-SERVO II-EC-MI-42L-B-PN5	EzM2-42L-B-PN5	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN8	EzM2-42L-A-PN8	EzS2-EC-MI-42L-A	1:8
Ezi-SERVO II-EC-MI-42L-B-PN8	EzM2-42L-B-PN8	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN10	EzM2-42L-A-PN10	EzS2-EC-MI-42L-A	1:10
Ezi-SERVO II-EC-MI-42L-B-PN10	EzM2-42L-B-PN10	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN15	EzM2-42L-A-PN15	EzS2-EC-MI-42L-A	1:15
Ezi-SERVO II-EC-MI-42L-B-PN15	EzM2-42L-B-PN15	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN25	EzM2-42L-A-PN25	EzS2-EC-MI-42L-A	1:25
Ezi-SERVO II-EC-MI-42L-B-PN25	EzM2-42L-B-PN25	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN40	EzM2-42L-A-PN40	EzS2-EC-MI-42L-A	1:40
Ezi-SERVO II-EC-MI-42L-B-PN40	EzM2-42L-B-PN40	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN50	EzM2-42L-A-PN50	EzS2-EC-MI-42L-A	1:50
Ezi-SERVO II-EC-MI-42L-B-PN50	EzM2-42L-B-PN50	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-EC-MI-42XL-A	1:3
Ezi-SERVO II-EC-MI-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-EC-MI-42XL-A	1:5
Ezi-SERVO II-EC-MI-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-EC-MI-42XL-A	1:8
Ezi-SERVO II-EC-MI-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-EC-MI-42XL-A	1:10
Ezi-SERVO II-EC-MI-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-EC-MI-42XL-A	1:15
Ezi-SERVO II-EC-MI-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-EC-MI-42XL-A	1:25
Ezi-SERVO II-EC-MI-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-EC-MI-42XL-A	1:40
Ezi-SERVO II-EC-MI-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-EC-MI-42XL-A	1:50
Ezi-SERVO II-EC-MI-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-56S-A-PN3	EzM2-56S-A-PN3	EzS2-EC-MI-56S-A	1:3
Ezi-SERVO II-EC-MI-56S-B-PN3	EzM2-56S-B-PN3	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN5	EzM2-56S-A-PN5	EzS2-EC-MI-56S-A	1:5
Ezi-SERVO II-EC-MI-56S-B-PN5	EzM2-56S-B-PN5	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN8	EzM2-56S-A-PN8	EzS2-EC-MI-56S-A	1:8
Ezi-SERVO II-EC-MI-56S-B-PN8	EzM2-56S-B-PN8	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN10	EzM2-56S-A-PN10	EzS2-EC-MI-56S-A	1:10
Ezi-SERVO II-EC-MI-56S-B-PN10	EzM2-56S-B-PN10	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN15	EzM2-56S-A-PN15	EzS2-EC-MI-56S-A	1:15
Ezi-SERVO II-EC-MI-56S-B-PN15	EzM2-56S-B-PN15	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN25	EzM2-56S-A-PN25	EzS2-EC-MI-56S-A	1:25
Ezi-SERVO II-EC-MI-56S-B-PN25	EzM2-56S-B-PN25	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN40	EzM2-56S-A-PN40	EzS2-EC-MI-56S-A	1:40
Ezi-SERVO II-EC-MI-56S-B-PN40	EzM2-56S-B-PN40	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN50	EzM2-56S-A-PN50	EzS2-EC-MI-56S-A	1:50
Ezi-SERVO II-EC-MI-56S-B-PN50	EzM2-56S-B-PN50	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56M-A-PN3	EzM2-56M-A-PN3	EzS2-EC-MI-56M-A	1:3
Ezi-SERVO II-EC-MI-56M-B-PN3	EzM2-56M-B-PN3	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN5	EzM2-56M-A-PN5	EzS2-EC-MI-56M-A	1:5
Ezi-SERVO II-EC-MI-56M-B-PN5	EzM2-56M-B-PN5	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN8	EzM2-56M-A-PN8	EzS2-EC-MI-56M-A	1:8
Ezi-SERVO II-EC-MI-56M-B-PN8	EzM2-56M-B-PN8	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN10	EzM2-56M-A-PN10	EzS2-EC-MI-56M-A	1:10
Ezi-SERVO II-EC-MI-56M-B-PN10	EzM2-56M-B-PN10	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN15	EzM2-56M-A-PN15	EzS2-EC-MI-56M-A	1:15
Ezi-SERVO II-EC-MI-56M-B-PN15	EzM2-56M-B-PN15	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN25	EzM2-56M-A-PN25	EzS2-EC-MI-56M-A	1:25
Ezi-SERVO II-EC-MI-56M-B-PN25	EzM2-56M-B-PN25	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN40	EzM2-56M-A-PN40	EzS2-EC-MI-56M-A	1:40
Ezi-SERVO II-EC-MI-56M-B-PN40	EzM2-56M-B-PN40	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN50	EzM2-56M-A-PN50	EzS2-EC-MI-56M-A	1:50
Ezi-SERVO II-EC-MI-56M-B-PN50	EzM2-56M-B-PN50	EzS2-EC-MI-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-MI-56L-A-PN3	EzM2-56L-A-PN3	EzS2-EC-MI-56L-A	1:3
Ezi-SERVO II-EC-MI-56L-B-PN3	EzM2-56L-B-PN3	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN5	EzM2-56L-A-PN5	EzS2-EC-MI-56L-A	1:5
Ezi-SERVO II-EC-MI-56L-B-PN5	EzM2-56L-B-PN5	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN8	EzM2-56L-A-PN8	EzS2-EC-MI-56L-A	1:8
Ezi-SERVO II-EC-MI-56L-B-PN8	EzM2-56L-B-PN8	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN10	EzM2-56L-A-PN10	EzS2-EC-MI-56L-A	1:10
Ezi-SERVO II-EC-MI-56L-B-PN10	EzM2-56L-B-PN10	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN15	EzM2-56L-A-PN15	EzS2-EC-MI-56L-A	1:15
Ezi-SERVO II-EC-MI-56L-B-PN15	EzM2-56L-B-PN15	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN25	EzM2-56L-A-PN25	EzS2-EC-MI-56L-A	1:25
Ezi-SERVO II-EC-MI-56L-B-PN25	EzM2-56L-B-PN25	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN40	EzM2-56L-A-PN40	EzS2-EC-MI-56L-A	1:40
Ezi-SERVO II-EC-MI-56L-B-PN40	EzM2-56L-B-PN40	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN50	EzM2-56L-A-PN50	EzS2-EC-MI-56L-A	1:50
Ezi-SERVO II-EC-MI-56L-B-PN50	EzM2-56L-B-PN50	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-60S-A-PN3	EzM2-60S-A-PN3	EzS2-EC-MI-60S-A	1:3
Ezi-SERVO II-EC-MI-60S-B-PN3	EzM2-60S-B-PN3	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN5	EzM2-60S-A-PN5	EzS2-EC-MI-60S-A	1:5
Ezi-SERVO II-EC-MI-60S-B-PN5	EzM2-60S-B-PN5	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN8	EzM2-60S-A-PN8	EzS2-EC-MI-60S-A	1:8
Ezi-SERVO II-EC-MI-60S-B-PN8	EzM2-60S-B-PN8	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN10	EzM2-60S-A-PN10	EzS2-EC-MI-60S-A	1:10
Ezi-SERVO II-EC-MI-60S-B-PN10	EzM2-60S-B-PN10	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN15	EzM2-60S-A-PN15	EzS2-EC-MI-60S-A	1:15
Ezi-SERVO II-EC-MI-60S-B-PN15	EzM2-60S-B-PN15	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN25	EzM2-60S-A-PN25	EzS2-EC-MI-60S-A	1:25
Ezi-SERVO II-EC-MI-60S-B-PN25	EzM2-60S-B-PN25	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN40	EzM2-60S-A-PN40	EzS2-EC-MI-60S-A	1:40
Ezi-SERVO II-EC-MI-60S-B-PN40	EzM2-60S-B-PN40	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN50	EzM2-60S-A-PN50	EzS2-EC-MI-60S-A	1:50
Ezi-SERVO II-EC-MI-60S-B-PN50	EzM2-60S-B-PN50	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60M-A-PN3	EzM2-60M-A-PN3	EzS2-EC-MI-60M-A	1:3
Ezi-SERVO II-EC-MI-60M-B-PN3	EzM2-60M-B-PN3	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN5	EzM2-60M-A-PN5	EzS2-EC-MI-60M-A	1:5
Ezi-SERVO II-EC-MI-60M-B-PN5	EzM2-60M-B-PN5	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN8	EzM2-60M-A-PN8	EzS2-EC-MI-60M-A	1:8
Ezi-SERVO II-EC-MI-60M-B-PN8	EzM2-60M-B-PN8	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN10	EzM2-60M-A-PN10	EzS2-EC-MI-60M-A	1:10
Ezi-SERVO II-EC-MI-60M-B-PN10	EzM2-60M-B-PN10	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN15	EzM2-60M-A-PN15	EzS2-EC-MI-60M-A	1:15
Ezi-SERVO II-EC-MI-60M-B-PN15	EzM2-60M-B-PN15	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN25	EzM2-60M-A-PN25	EzS2-EC-MI-60M-A	1:25
Ezi-SERVO II-EC-MI-60M-B-PN25	EzM2-60M-B-PN25	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN40	EzM2-60M-A-PN40	EzS2-EC-MI-60M-A	1:40
Ezi-SERVO II-EC-MI-60M-B-PN40	EzM2-60M-B-PN40	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN50	EzM2-60M-A-PN50	EzS2-EC-MI-60M-A	1:50
Ezi-SERVO II-EC-MI-60M-B-PN50	EzM2-60M-B-PN50	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60L-A-PN3	EzM2-60L-A-PN3	EzS2-EC-MI-60L-A	1:3
Ezi-SERVO II-EC-MI-60L-B-PN3	EzM2-60L-B-PN3	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN5	EzM2-60L-A-PN5	EzS2-EC-MI-60L-A	1:5
Ezi-SERVO II-EC-MI-60L-B-PN5	EzM2-60L-B-PN5	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN8	EzM2-60L-A-PN8	EzS2-EC-MI-60L-A	1:8
Ezi-SERVO II-EC-MI-60L-B-PN8	EzM2-60L-B-PN8	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN10	EzM2-60L-A-PN10	EzS2-EC-MI-60L-A	1:10
Ezi-SERVO II-EC-MI-60L-B-PN10	EzM2-60L-B-PN10	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN15	EzM2-60L-A-PN15	EzS2-EC-MI-60L-A	1:15
Ezi-SERVO II-EC-MI-60L-B-PN15	EzM2-60L-B-PN15	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN25	EzM2-60L-A-PN25	EzS2-EC-MI-60L-A	1:25
Ezi-SERVO II-EC-MI-60L-B-PN25	EzM2-60L-B-PN25	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN40	EzM2-60L-A-PN40	EzS2-EC-MI-60L-A	1:40
Ezi-SERVO II-EC-MI-60L-B-PN40	EzM2-60L-B-PN40	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN50	EzM2-60L-A-PN50	EzS2-EC-MI-60L-A	1:50
Ezi-SERVO II-EC-MI-60L-B-PN50	EzM2-60L-B-PN50	EzS2-EC-MI-60L-B	

Specifications of Drive

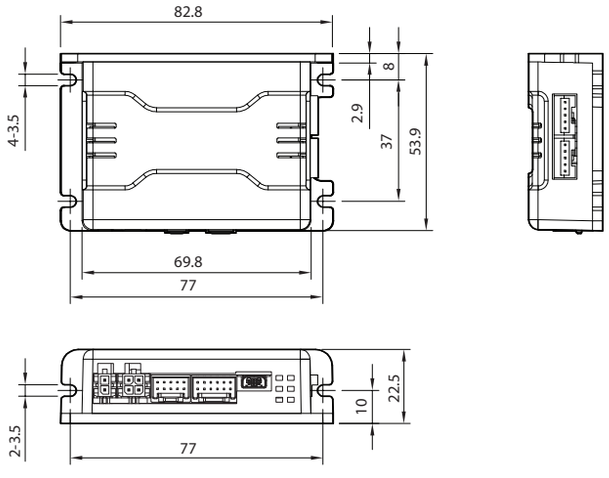
Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series
Driver Model		EzS2-EC-MI-20 series	EzS2-EC-MI-28 series	EzS2-EC-MI-35 series	EzS2-EC-MI-42 series	EzS2-EC-MI-56 series	EzS2-EC-MI-60 series
Input Voltage		24VDC ±10%					
Control Method		Closed loop control with 32bit MCU					
Current Consumption		Max 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ *3 · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000 [rpm] *1					
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter) *2					
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error					
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)					
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode					
	Synchronization	Free Run, SM Event, DC SYNC Event					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 user inputs (Photocoupler Input)					
	Output Signals	2 user outputs (Photocoupler Output), Brake					

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

*3 : The EzS2-EC-MI-56, 60 series are needed to be mounted on an external heat sink or a structure capable of dissipating heat.

Dimensions of Drive [mm]



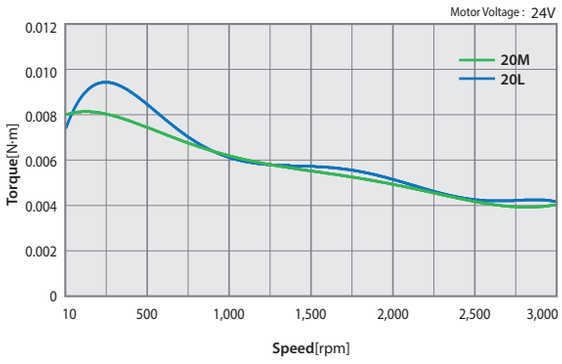
Specifications of Motor

MODEL			EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	80	104	147	204	232	194	226	294	357	426	564
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

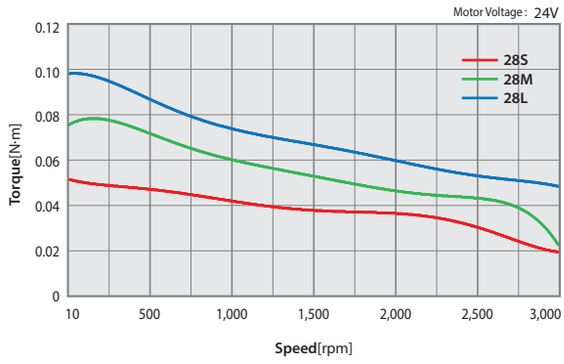
MODEL			EzM2-56 series			EzM2-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690
WEIGHTS		g	608	784	1230	693	856	1419
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70
	8mm		65	65	65	87	87	87
	13mm		85	85	85	114	114	114
	18mm		123	123	123	165	165	165
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

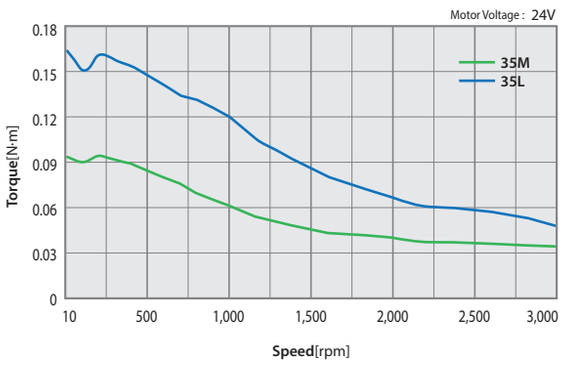
Ezi-SERVO II-EC-MI-20 series



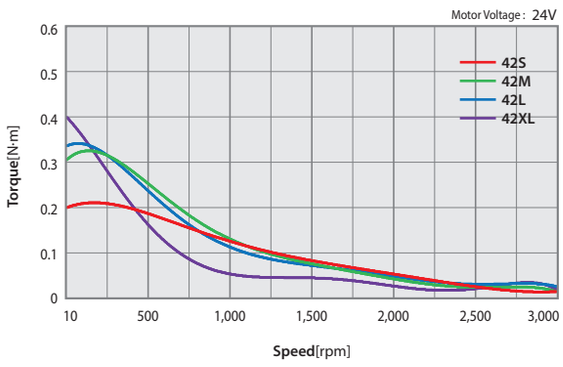
Ezi-SERVO II-EC-MI-28 series



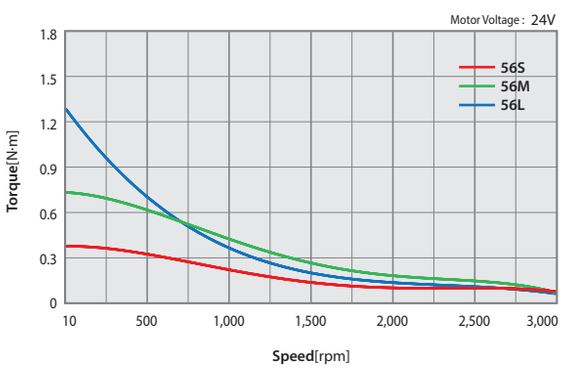
Ezi-SERVO II-EC-MI-35 series



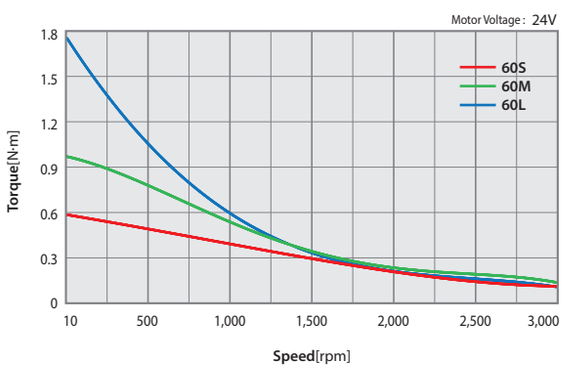
Ezi-SERVO II-EC-MI-42 series



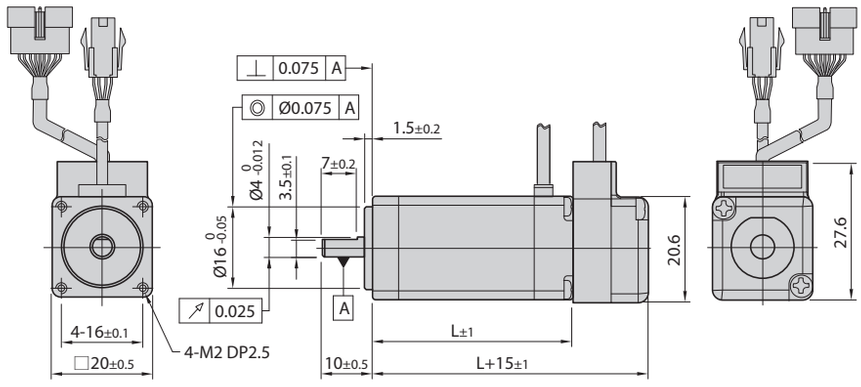
Ezi-SERVO II-EC-MI-56 series



Ezi-SERVO II-EC-MI-60 series

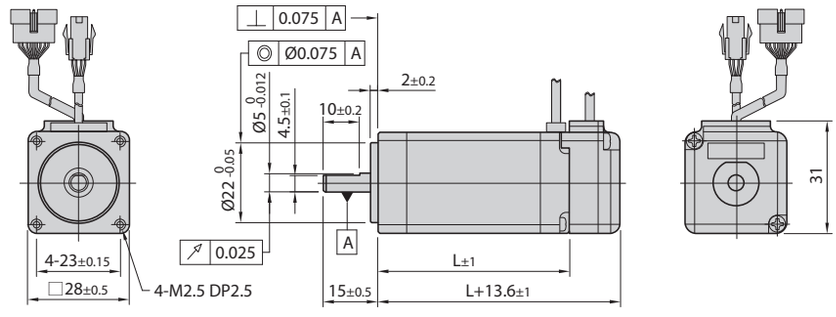


Dimensions of Motor [mm]



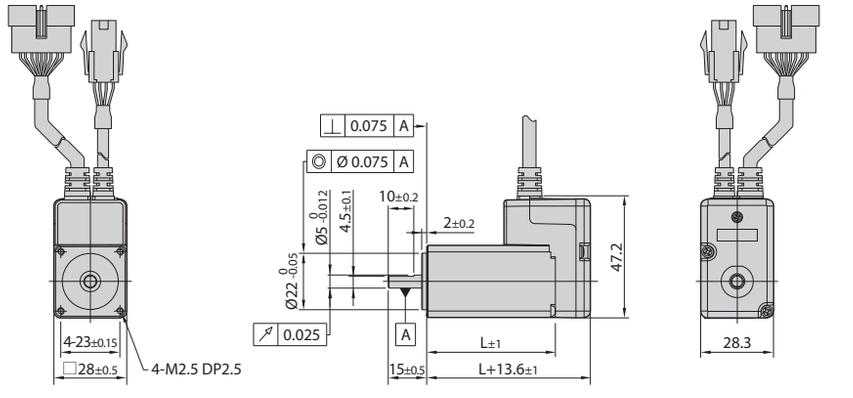
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

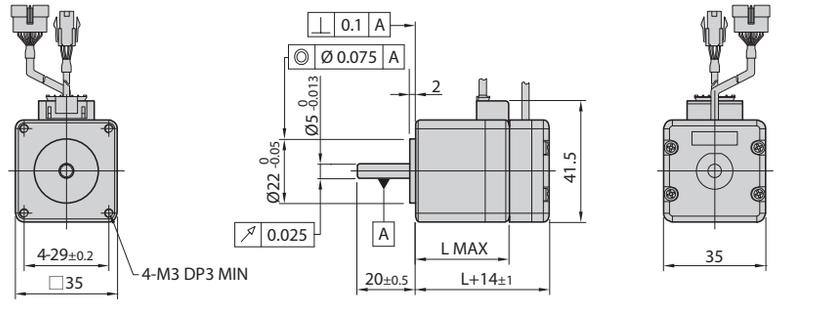
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm (Stopper type)

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

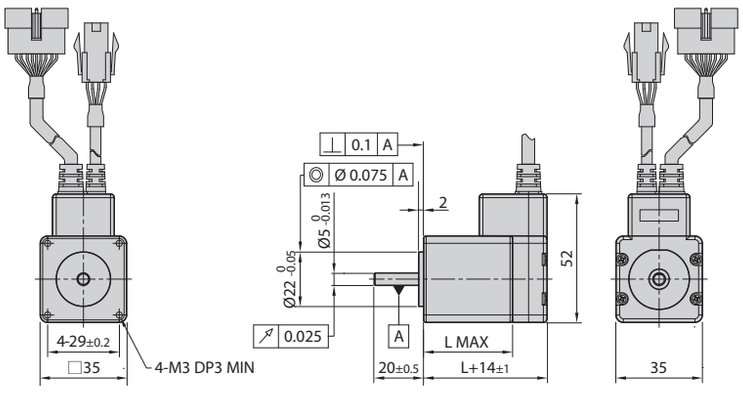
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

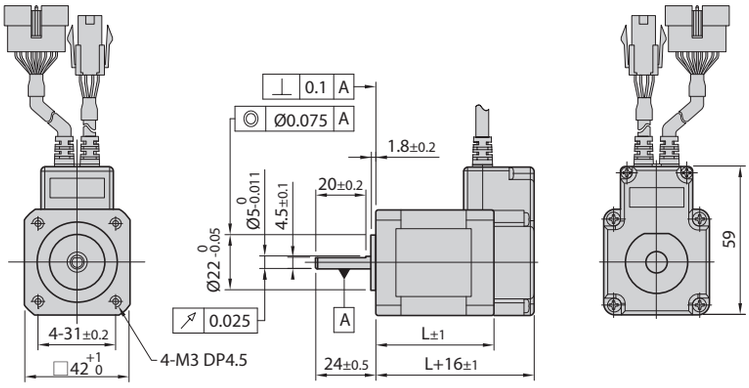
● Dimensions of Motor [mm]



35mm *(Stopper type)*

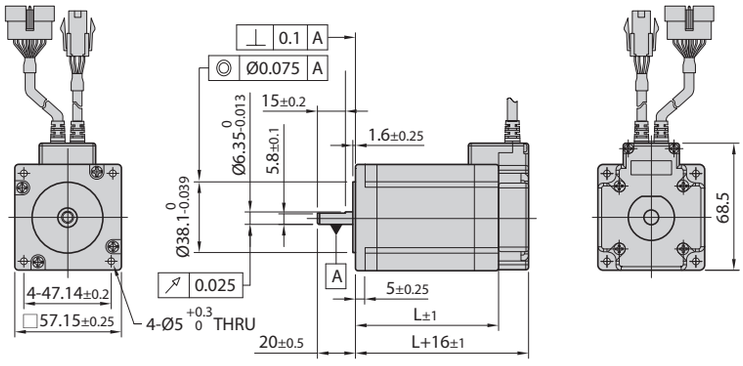
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

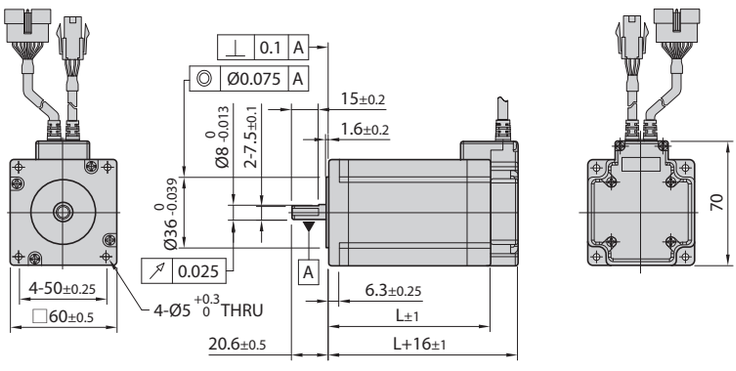
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

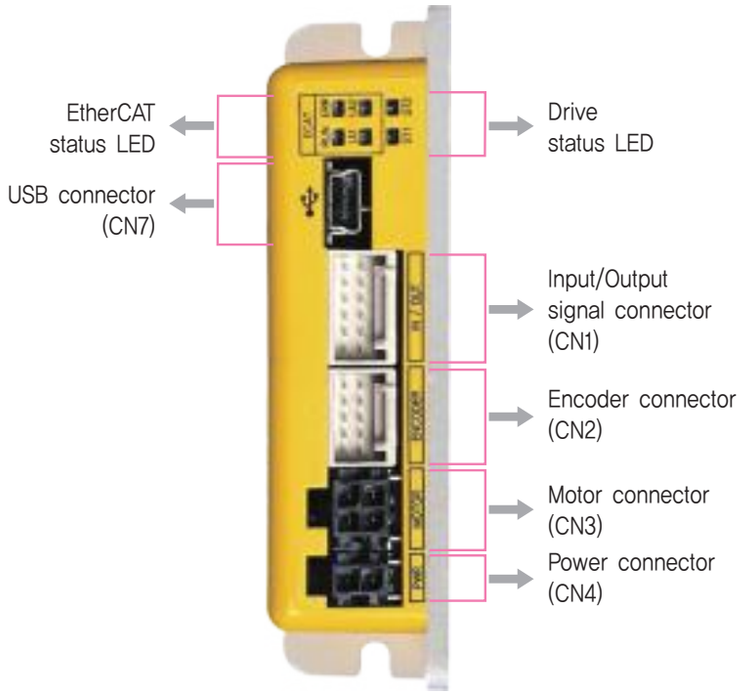
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.

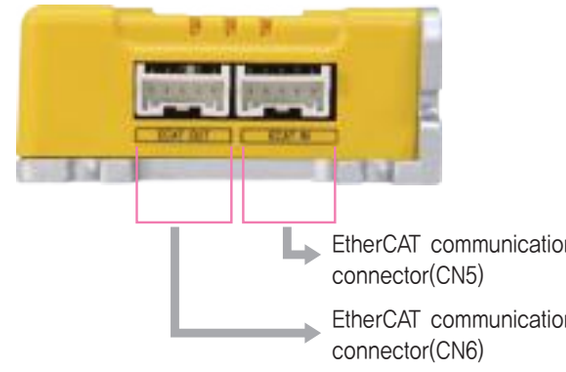


60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

Settings and Operation

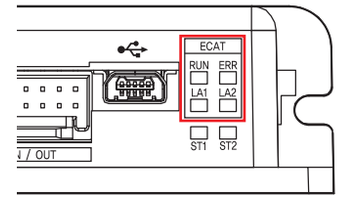




2. EtherCAT Status LED

LED indicates communication status of EtherCAT.

Name	Color	Status	Explanation
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP



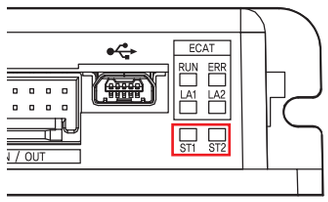
Name	Color	Status	Explanation
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

Name	Color	Status	Explanation
LA1/ LA2	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

2. Drive Status LED

In the case of Ezi-SERVO II EtherCAT MINI series products, LED can be checked by LED color, lighting, On/Off and blinking.

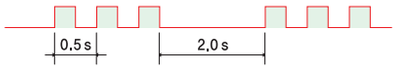
Status	LED	Description
Disable	ST1 : ST2 :	ST1 light flashing, ST2 light off
Enable	ST1 : ST2 :	ST1 light on, ST2 light off
In motion	ST1 : ST2 :	ST1 light on, ST2 light on
In-position deviation	ST1 : ST2 :	ST1 and ST2 light alternately flashing
Alarm	ST1 : ST2 :	ST2 light flashing repeatedly as many as alarm number



◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *2
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state *2

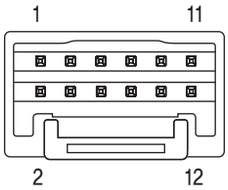
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(Ex, Position tracking error)

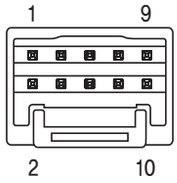
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE-	Output
5	LIMIT+	Input
6	LIMIT-	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital Out1	Output
12	Digital Out2	Output



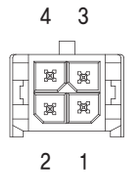
5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



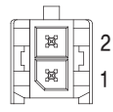
6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



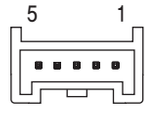
7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



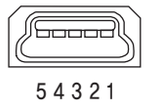
8. EtherCAT Communication Connector(CN5, CN6)

NO.	Function
1	TD+
2	TD–
3	RD+
4	RD–
5	F.GND

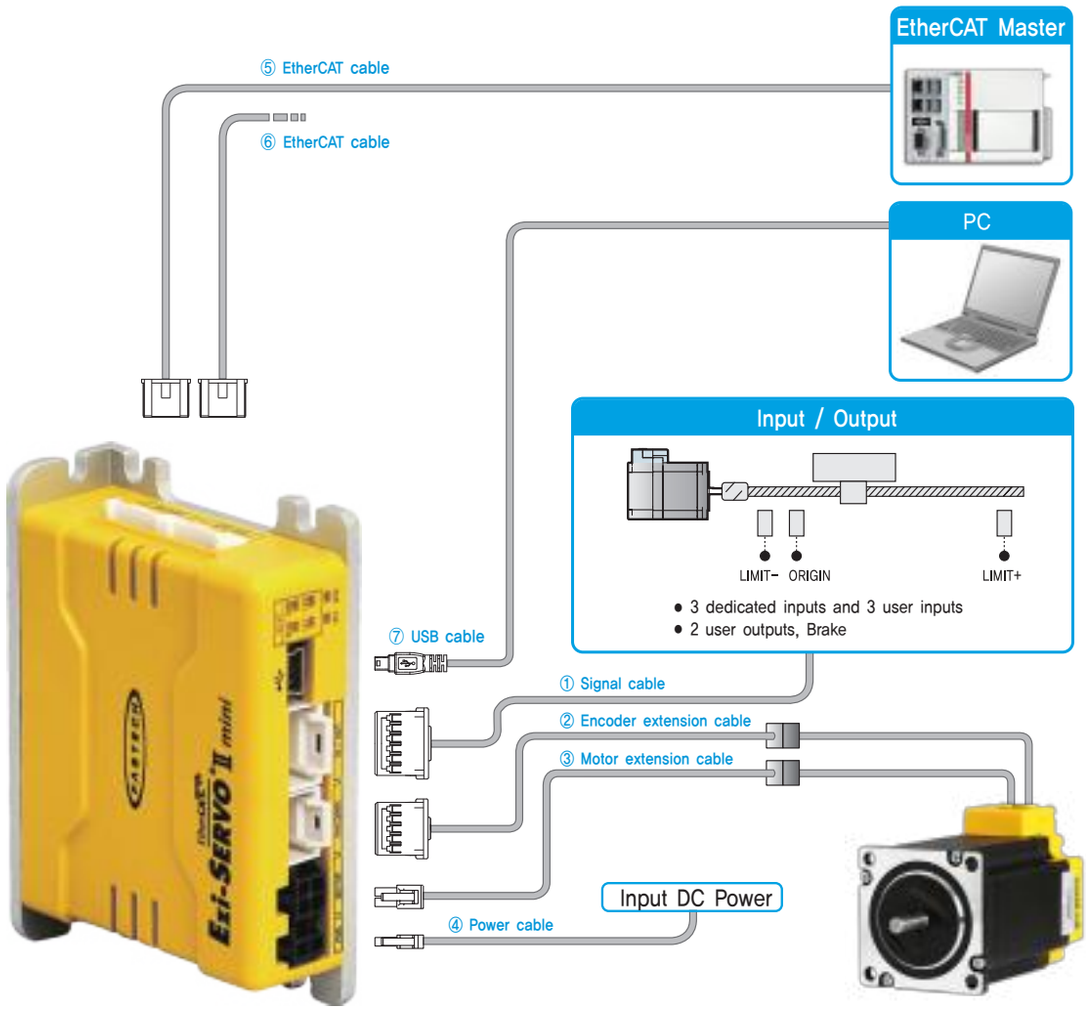


9. USB Connector(CN7)

NO.	Function
1	VBUS
2	D–
3	D+
4	---
5	GND



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable	USB Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	5m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT MINI.

Item	Length [m]	Remark
CSNR-S-□□□F	□□□	Normal Cable
CSNR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II EtherCAT MINI.

Item	Length [m]	Remark
CSVI-E-□□□F	□□□	Normal Cable
CSVI-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II EtherCAT MINI.

Item	Length [m]	Remark
CSMI-M-□□□F	□□□	Normal Cable
CSMI-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT MINI.

Item	Length [m]	Remark
CSMI-P-□□□F	□□□	Normal Cable
CSMI-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNE-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-SERVO II EtherCAT MINI to the controller, Ezi-SERVO II EtherCAT, and Ezi-SERVO II EtherCAT ALL R type with a network.
This cable is composed of a 5-pin connector (Ezi-SERVO II EtherCAT MINI side) and an RJ45 connector.

⑥ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNI-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-SERVO II EtherCAT MINI to Ezi-SERVO II EtherCAT MINI with the network.

⑦ USB Cable

The USB cable is a cable for connecting Ezi-SERVO II EtherCAT MINI to PC through USB communication.

* The USB cable is NOT supplied.
Use a cable with USB 2.0 Mini Type B connectors.

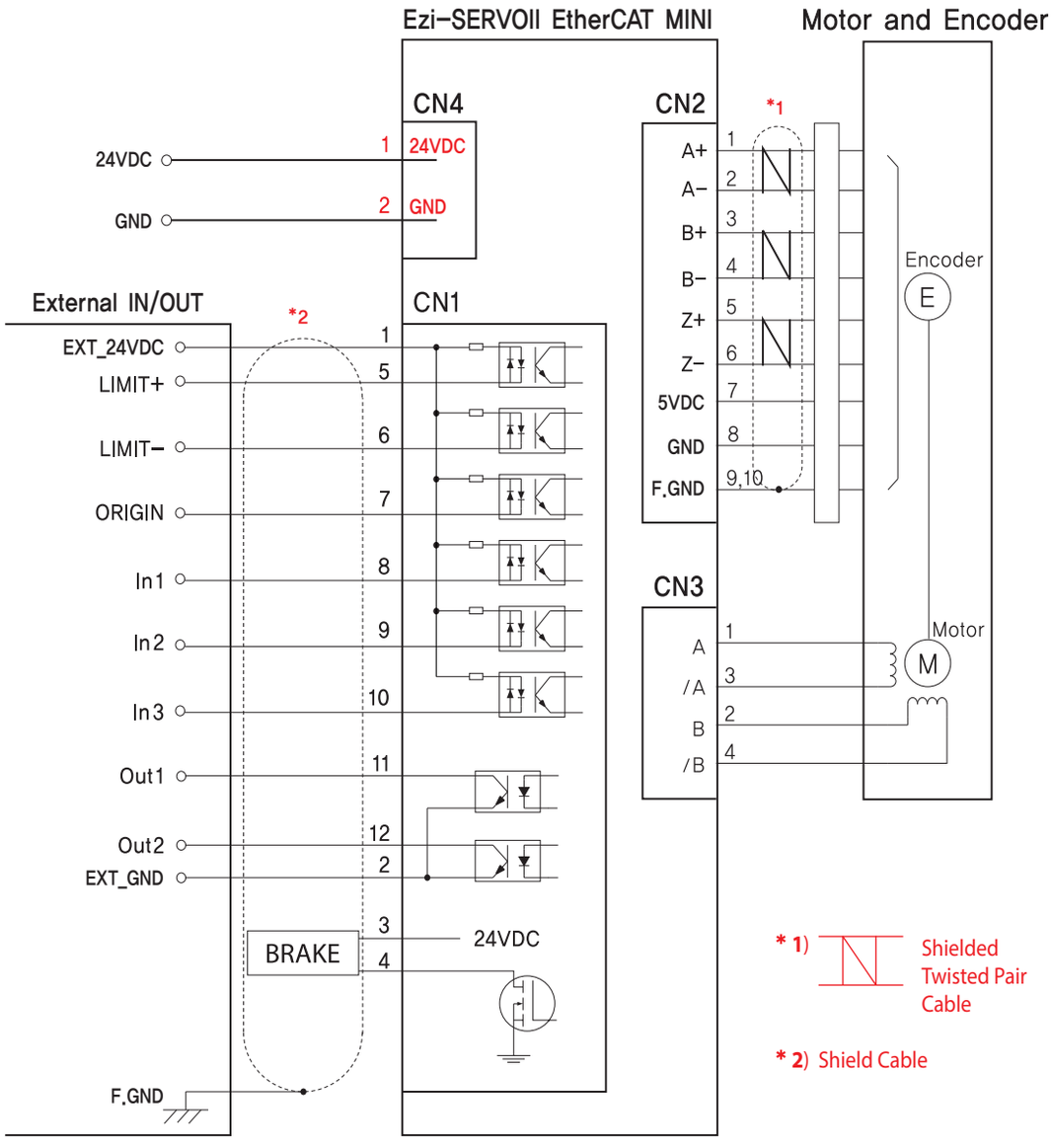
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
EtherCAT Communication (CN5, CN6)		Housing Terminal	PAP-05V-S SPHD-001T-P0.5	JST
Power (CN4)		Housing Terminal	43025-0200 43030-0001	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	43025-0400 43030-0001	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	501646-1000 501648-1000(AWG 26~28)	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Housing Terminal	501646-1200 501648-1000(AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EtherCAT 4X
ECAT OUT
ECAT IN
Ezi-SERVO II EtherCAT
MOTOR
ENCODER
I/O



Ezi-SERVO II EtherCAT 4X

- CiA 402 Drive Profile Support
- Closed Loop System
- No Gain Tuning / No Hunting
- Compact 4-Axis Stepping Motor Drive
- Save Space / Reduce Wiring (Reduce Cost)



FASTECH

Fast, Accurate, Smooth Motion

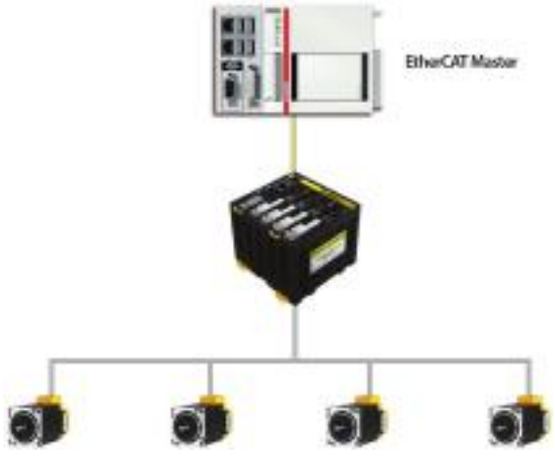
Ezi-SERVO® II EtherCAT 4X

Closed Loop Stepping System



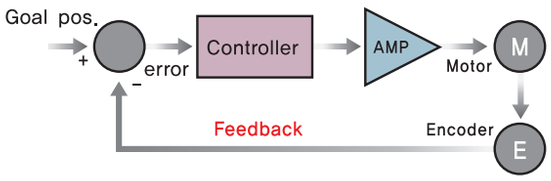
1 EtherCAT Based Motion Control

Ezi-SERVO II EtherCAT 4X is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT 4X is EtherCAT slave module which support CAN application layer over EtherCAT (CoE). CiA 402 Drive Profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



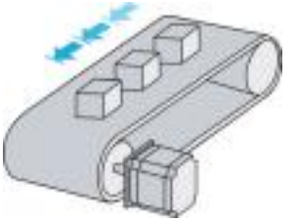
2 Closed Loop System

Ezi-SERVO II is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50 μsec. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

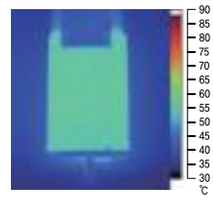
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



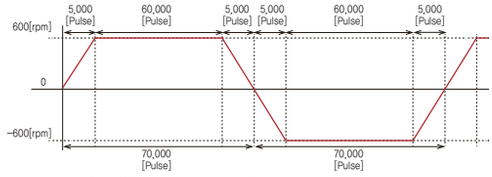
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

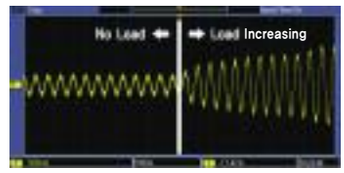
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

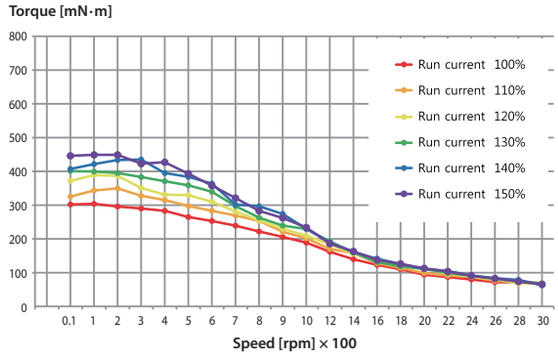


Example of the Motor Current Control according to load

5 Torque Improvement

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased.
Ezi-SERVO II can improve the torque in the low speed range by about 30%.

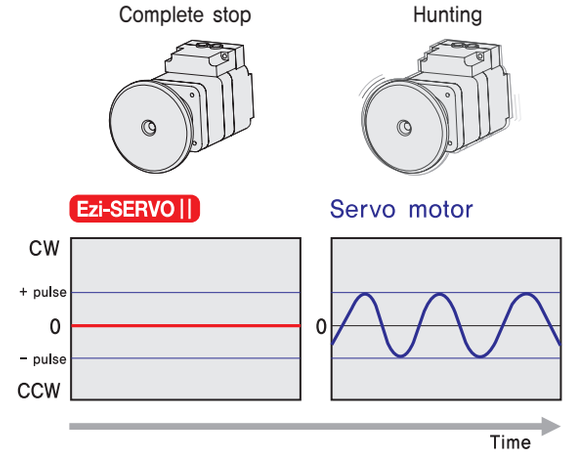


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-4X-42L
Motor Voltage = 24VDC
Input Voltage = 24VDC

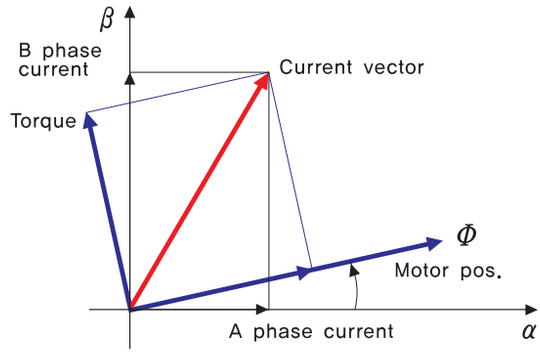
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



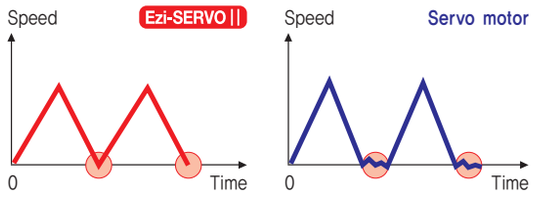
7 Smooth and Accurate

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



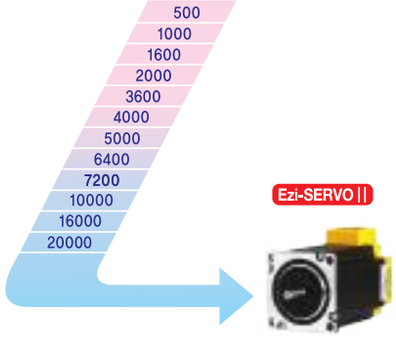
8 Fast Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



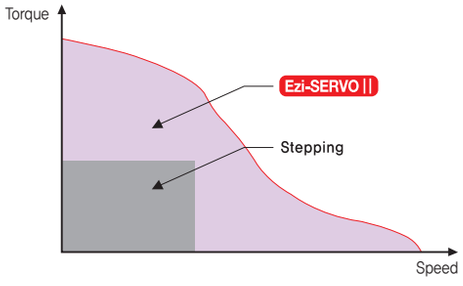
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



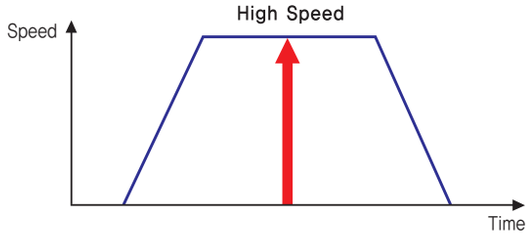
10 High Torque

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



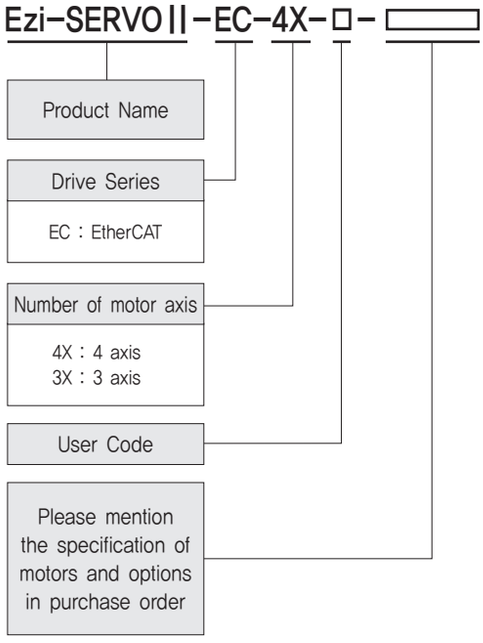
● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO II EtherCAT 4X Part Numbering



● Combination with Standard Motor / Brake

Ezi-SERVO II EtherCAT 4X can use up to 4 motors in one drive. Available motors include Standard Motor, Motor with Brake and Motor with Gearbox. Different Motor Number can be used for each axis. Refer to the Motor Model Number below.

Motor Model Number
EzM2-20M-F
EzM2-20L-F
EzM2-28S-D
EzM2-28SM-D
EzM2-28M-D
EzM2-28MM-D
EzM2-28L-D
EzM2-28LM-D
EzM2-35M-D
EzM2-35MM-D
EzM2-35L-D
EzM2-35LM-D
EzM2-42S-A
EzM2-42S-B
EzM2-42M-A
EzM2-42M-B
EzM2-42L-A
EzM2-42L-B
EzM2-42XL-A
EzM2-42XL-B

Motor Model Number
EzM2-56S-A
EzM2-56S-B
EzM2-56M-A
EzM2-56M-B
EzM2-56L-A
EzM2-56L-B
EzM2-60S-A
EzM2-60S-B
EzM2-60M-A
EzM2-60M-B
EzM2-60L-A
EzM2-60L-B

Motor Model Number with Brake
EzM2-42S-A-BK
EzM2-42S-B-BK
EzM2-42M-A-BK
EzM2-42M-B-BK
EzM2-42L-A-BK
EzM2-42L-B-BK
EzM2-42XL-A-BK
EzM2-42XL-B-BK
EzM2-56S-A-BK
EzM2-56S-B-BK
EzM2-56M-A-BK
EzM2-56M-B-BK
EzM2-56L-A-BK
EzM2-56L-B-BK
EzM2-60S-A-BK
EzM2-60S-B-BK
EzM2-60M-A-BK
EzM2-60M-B-BK
EzM2-60L-A-BK
EzM2-60L-B-BK

* When places an order for Stopper type 28mm motor, please write "M" additionally after motor length of unit part number.(Ex: EzM2-28LM-D, EzM2-35LM-D)

Motor Model Number with Gearbox

Ezi-SERVO II EtherCAT 4X can use up to 4 motors in one drive. Available motors include Standard Motor, Motor with Brake and Motor with Gearbox. Different Motor Number can be used for each axis. Refer to the Motor Model Number below.

Motor Model Number	Reduction gear ratio
EzM2-42S-A-PN3	1:3
EzM2-42S-B-PN3	
EzM2-42S-A-PN5	1:5
EzM2-42S-B-PN5	
EzM2-42S-A-PN8	1:8
EzM2-42S-B-PN8	
EzM2-42S-A-PN10	1:10
EzM2-42S-B-PN10	
EzM2-42S-A-PN15	1:15
EzM2-42S-B-PN15	
EzM2-42S-A-PN25	1:25
EzM2-42S-B-PN25	
EzM2-42S-A-PN40	1:40
EzM2-42S-B-PN40	
EzM2-42S-A-PN50	1:50
EzM2-42S-B-PN50	
EzM2-42M-A-PN3	1:3
EzM2-42M-B-PN3	
EzM2-42M-A-PN5	1:5
EzM2-42M-B-PN5	
EzM2-42M-A-PN8	1:8
EzM2-42M-B-PN8	
EzM2-42M-A-PN10	1:10
EzM2-42M-B-PN10	
EzM2-42M-A-PN15	1:15
EzM2-42M-B-PN15	
EzM2-42M-A-PN25	1:25
EzM2-42M-B-PN25	
EzM2-42M-A-PN40	1:40
EzM2-42M-B-PN40	
EzM2-42M-A-PN50	1:50
EzM2-42M-B-PN50	
EzM2-42L-A-PN3	1:3
EzM2-42L-B-PN3	
EzM2-42L-A-PN5	1:5
EzM2-42L-B-PN5	
EzM2-42L-A-PN8	1:8
EzM2-42L-B-PN8	
EzM2-42L-A-PN10	1:10
EzM2-42L-B-PN10	
EzM2-42L-A-PN15	1:15
EzM2-42L-B-PN15	
EzM2-42L-A-PN25	1:25
EzM2-42L-B-PN25	
EzM2-42L-A-PN40	1:40
EzM2-42L-B-PN40	
EzM2-42L-A-PN50	1:50
EzM2-42L-B-PN50	
EzM2-42XL-A-PN3	1:3
EzM2-42XL-B-PN3	
EzM2-42XL-A-PN5	1:5
EzM2-42XL-B-PN5	
EzM2-42XL-A-PN8	1:8
EzM2-42XL-B-PN8	
EzM2-42XL-A-PN10	1:10
EzM2-42XL-B-PN10	
EzM2-42XL-A-PN15	1:15
EzM2-42XL-B-PN15	
EzM2-42XL-A-PN25	1:25
EzM2-42XL-B-PN25	
EzM2-42XL-A-PN40	1:40
EzM2-42XL-B-PN40	
EzM2-42XL-A-PN50	1:50
EzM2-42XL-B-PN50	

Motor Model Number	Reduction gear ratio
EzM2-56S-A-PN3	1:3
EzM2-56S-B-PN3	
EzM2-56S-A-PN5	1:5
EzM2-56S-B-PN5	
EzM2-56S-A-PN8	1:8
EzM2-56S-B-PN8	
EzM2-56S-A-PN10	1:10
EzM2-56S-B-PN10	
EzM2-56S-A-PN15	1:15
EzM2-56S-B-PN15	
EzM2-56S-A-PN25	1:25
EzM2-56S-B-PN25	
EzM2-56S-A-PN40	1:40
EzM2-56S-B-PN40	
EzM2-56S-A-PN50	1:50
EzM2-56S-B-PN50	
EzM2-56M-A-PN3	1:3
EzM2-56M-B-PN3	
EzM2-56M-A-PN5	1:5
EzM2-56M-B-PN5	
EzM2-56M-A-PN8	1:8
EzM2-56M-B-PN8	
EzM2-56M-A-PN10	1:10
EzM2-56M-B-PN10	
EzM2-56M-A-PN15	1:15
EzM2-56M-B-PN15	
EzM2-56M-A-PN25	1:25
EzM2-56M-B-PN25	
EzM2-56M-A-PN40	1:40
EzM2-56M-B-PN40	
EzM2-56M-A-PN50	1:50
EzM2-56M-B-PN50	
EzM2-56L-A-PN3	1:3
EzM2-56L-B-PN3	
EzM2-56L-A-PN5	1:5
EzM2-56L-B-PN5	
EzM2-56L-A-PN8	1:8
EzM2-56L-B-PN8	
EzM2-56L-A-PN10	1:10
EzM2-56L-B-PN10	
EzM2-56L-A-PN15	1:15
EzM2-56L-B-PN15	
EzM2-56L-A-PN25	1:25
EzM2-56L-B-PN25	
EzM2-56L-A-PN40	1:40
EzM2-56L-B-PN40	
EzM2-56L-A-PN50	1:50
EzM2-56L-B-PN50	

Motor Model Number	Reduction gear ratio
EzM2-60S-A-PN3	1:3
EzM2-60S-B-PN3	
EzM2-60S-A-PN5	1:5
EzM2-60S-B-PN5	
EzM2-60S-A-PN8	1:8
EzM2-60S-B-PN8	
EzM2-60S-A-PN10	1:10
EzM2-60S-B-PN10	
EzM2-60S-A-PN15	1:15
EzM2-60S-B-PN15	
EzM2-60S-A-PN25	1:25
EzM2-60S-B-PN25	
EzM2-60S-A-PN40	1:40
EzM2-60S-B-PN40	
EzM2-60S-A-PN50	1:50
EzM2-60S-B-PN50	
EzM2-60M-A-PN3	1:3
EzM2-60M-B-PN3	
EzM2-60M-A-PN5	1:5
EzM2-60M-B-PN5	
EzM2-60M-A-PN8	1:8
EzM2-60M-B-PN8	
EzM2-60M-A-PN10	1:10
EzM2-60M-B-PN10	
EzM2-60M-A-PN15	1:15
EzM2-60M-B-PN15	
EzM2-60M-A-PN25	1:25
EzM2-60M-B-PN25	
EzM2-60M-A-PN40	1:40
EzM2-60M-B-PN40	
EzM2-60M-A-PN50	1:50
EzM2-60M-B-PN50	
EzM2-60L-A-PN3	1:3
EzM2-60L-B-PN3	
EzM2-60L-A-PN5	1:5
EzM2-60L-B-PN5	
EzM2-60L-A-PN8	1:8
EzM2-60L-B-PN8	
EzM2-60L-A-PN10	1:10
EzM2-60L-B-PN10	
EzM2-60L-A-PN15	1:15
EzM2-60L-B-PN15	
EzM2-60L-A-PN25	1:25
EzM2-60L-B-PN25	
EzM2-60L-A-PN40	1:40
EzM2-60L-B-PN40	
EzM2-60L-A-PN50	1:50
EzM2-60L-B-PN50	

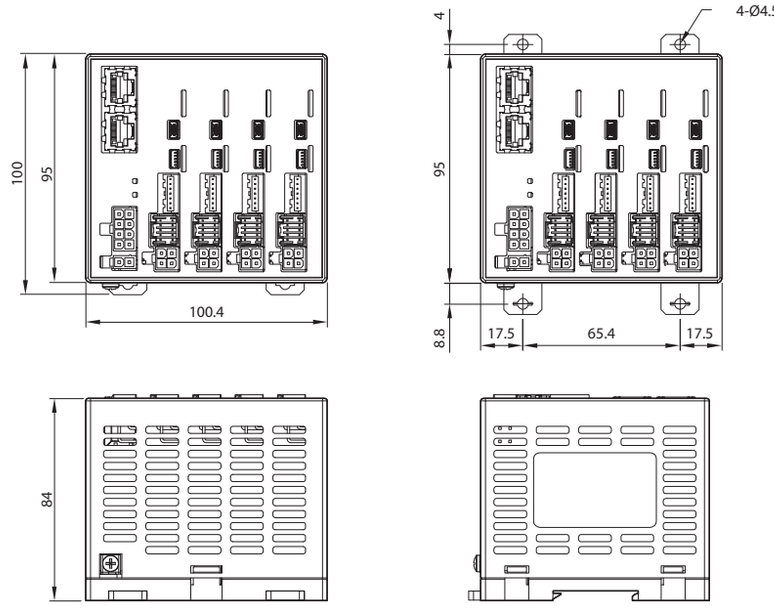
Specifications of Drive

Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series
Driver Model		EzS2-EC-4X, 3X series					
Input Voltage		24VDC ±10%					
Control Method		Closed loop control with 32bit MCU					
Current Consumption		Max 500mA/axis (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000 [rpm] *1					
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter) *2					
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error					
	LED Display	Power status, In-Position status, Servo On status, Alarm status					
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)					
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode					
	Synchronization	Free Run, SM Event, DC SYNC Event					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN)					
	Output Signals	Brake					

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]



※ Can be installed on DIN Rail. (35mm)

※ Outer dimension of 3X drive is the same as 4X.

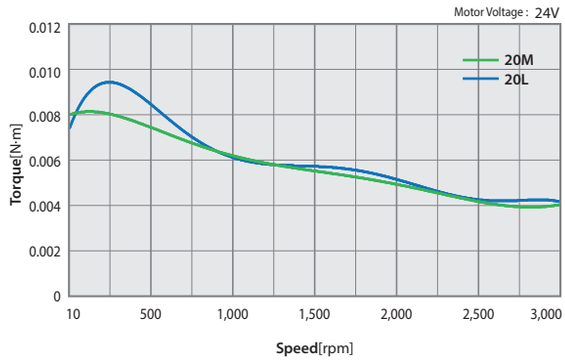
● Specifications of Motor

MODEL			EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	80	104	147	204	232	194	226	294	357	426	564
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

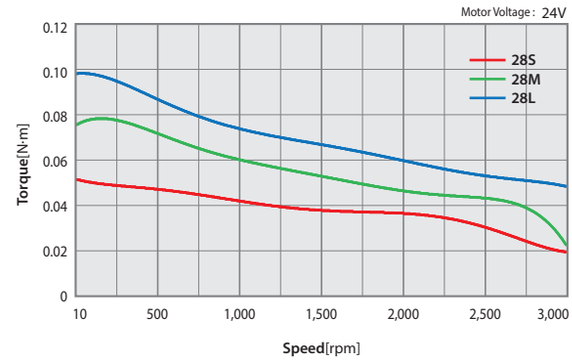
MODEL			EzM2-56 series			EzM2-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690
WEIGHTS		g	608	784	1230	693	856	1419
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70
	8mm		65	65	65	87	87	87
	13mm		85	85	85	114	114	114
	18mm		123	123	123	165	165	165
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

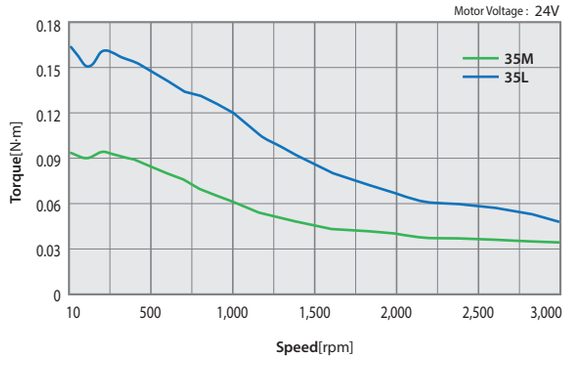
Ezi-SERVO II-EC-4X-20 series



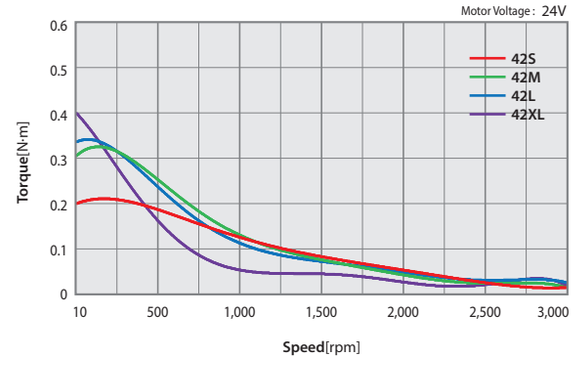
Ezi-SERVO II-EC-4X-28 series



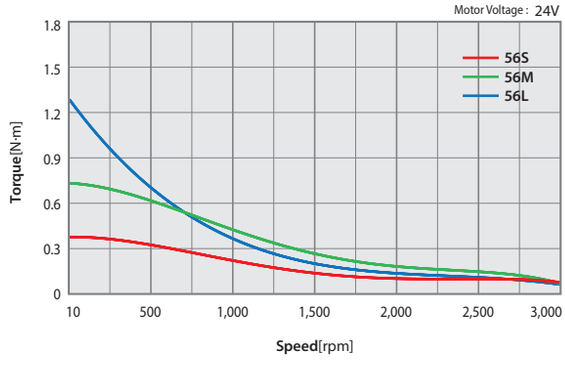
Ezi-SERVO II-EC-4X-35 series



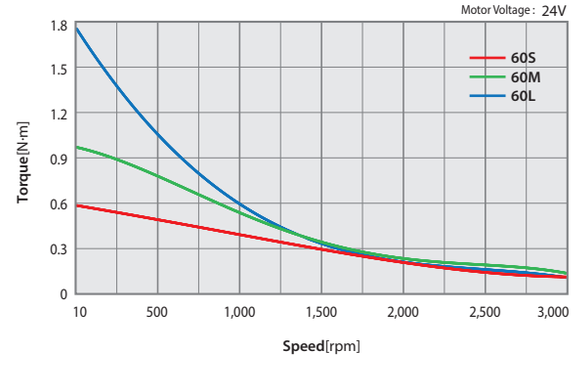
Ezi-SERVO II-EC-4X-42 series



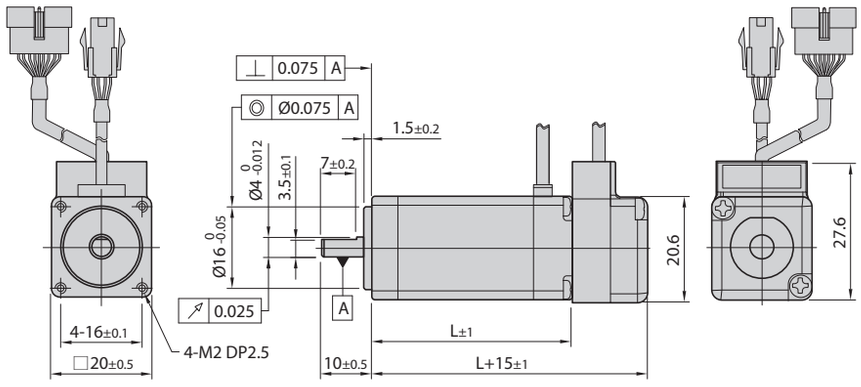
Ezi-SERVO II-EC-4X-56 series



Ezi-SERVO II-EC-4X-60 series

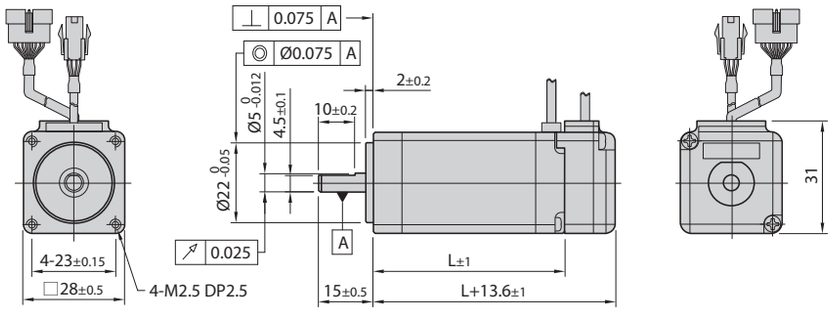


● Dimensions of Motor [mm]



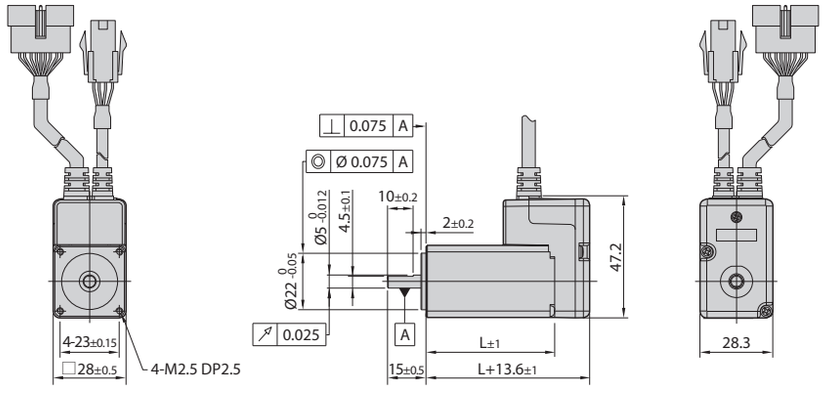
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

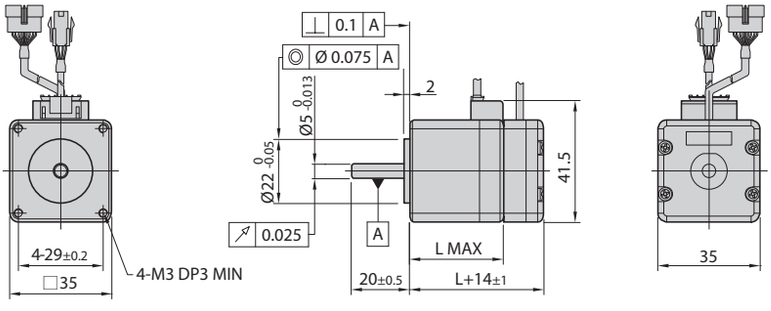
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

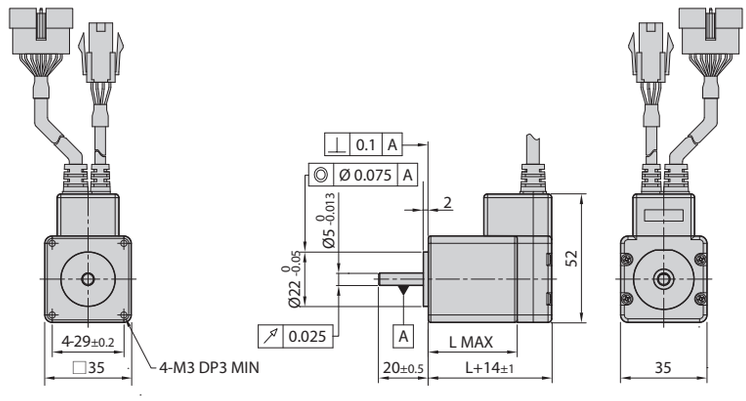
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	26
EzM2-35L	38

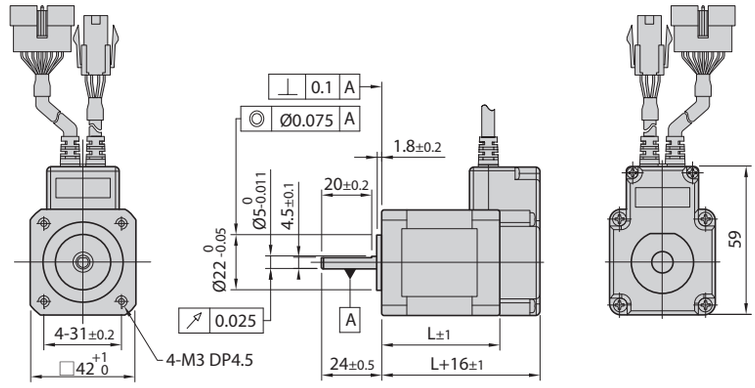
Dimensions of Motor [mm]



35mm (Stopper type)

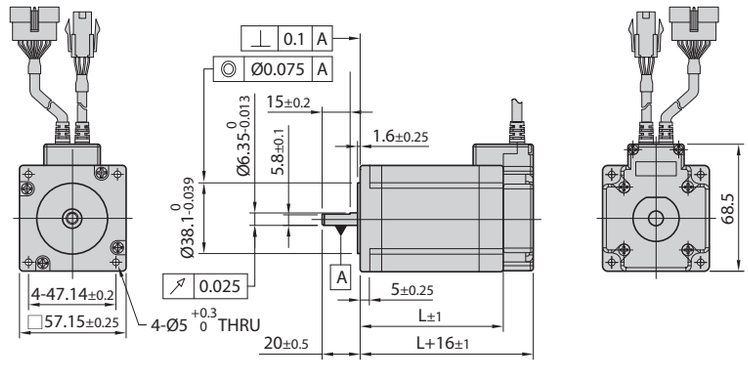
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

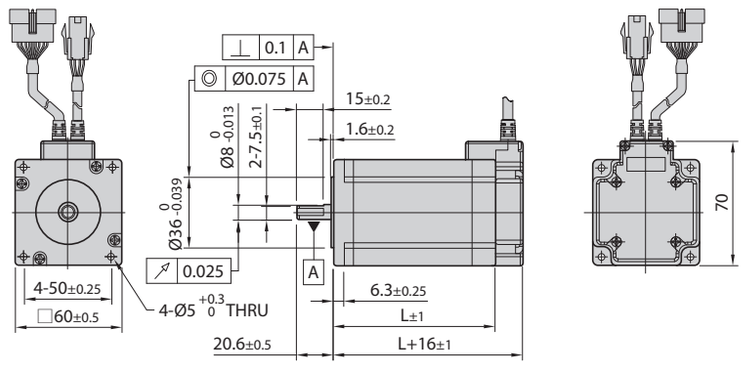
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

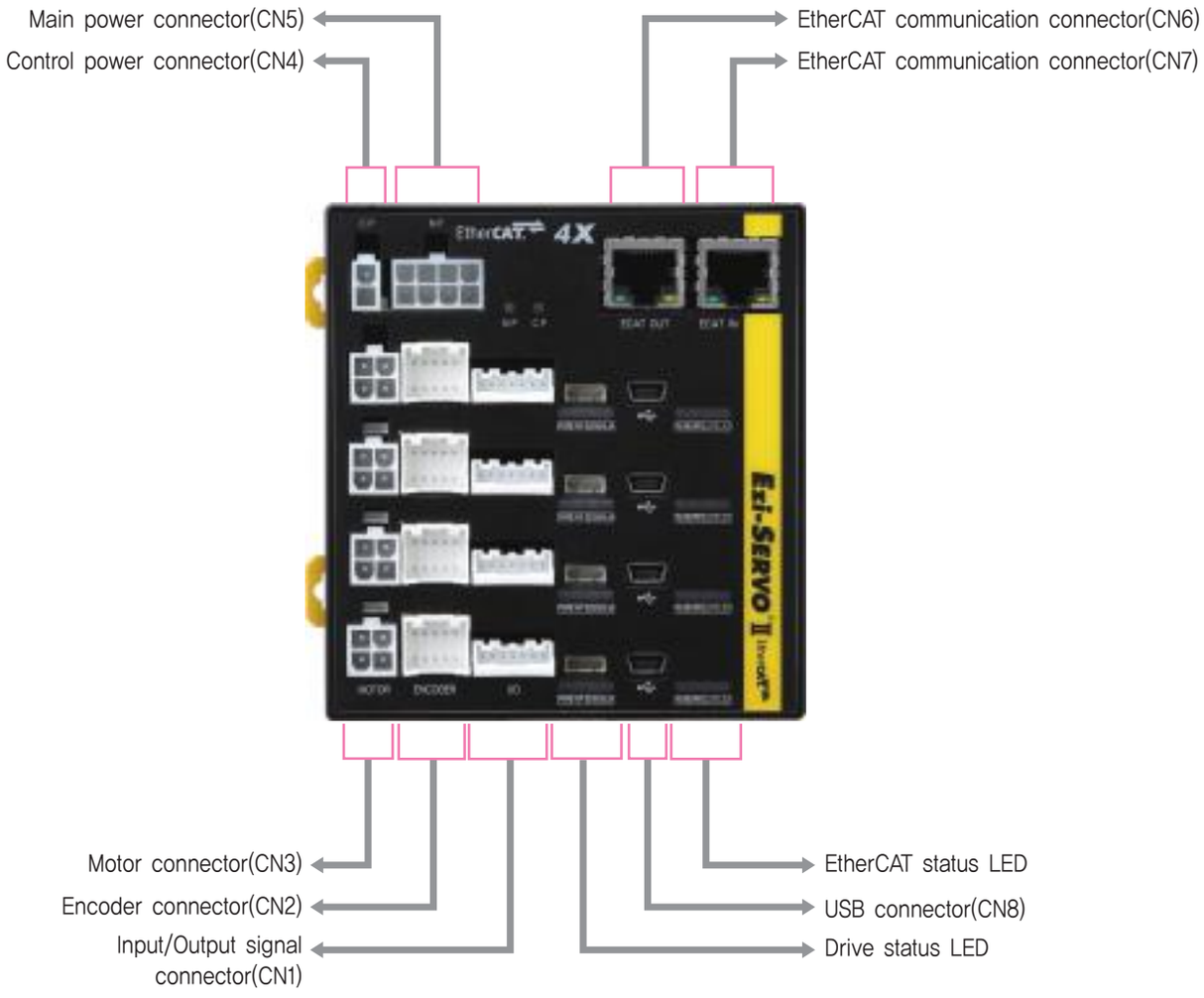
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.

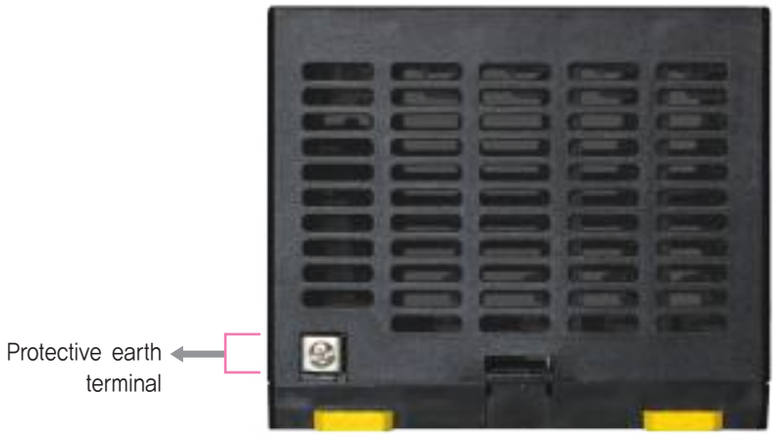


60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

Settings and Operation



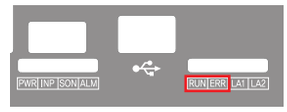


※ Basic configuration of 3X drive is the same as 4X and only difference is number of axis.

1. EtherCAT Status LED

LED indicates communication status of EtherCAT.

Name	Indication	Color	Status	Explanation
Run	RUN	Green	OFF	State INIT or Power OFF
			Blinking	State PRE-OPERATIONAL
			Single Flash	State SAFE-OPERATIONAL
			ON	State OPERATIONAL
			Flickering	State BOOTSTRAP



Name	Indication	Color	Status	Explanation
Error	ERR	Red	OFF	No Error or Power OFF
			Blinking	Invalid Configuration
			Single Flash	Local Error
			Double Flash	Watchdog Time Out

Name	Indication	Color	Status	Explanation
Link/ Activity	LA1 LA2	Green	OFF	Link not Established
			ON	Link Established
			Flickering	Link Established and in Operation

2. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Lights On when Positioning error reaches within the preset pulse selected by parameter
SON	Orange	Servo On/Off Indication	Servo On: Lights On, Servo Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds 4.8A
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *1
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
9	Motor Power Error	The input voltage of the motor power is too low or disconnected
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state *1



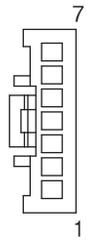
Alarm LED flash
(Ex, Position Tracking Error)

*1 : Default value can be changed by parameter. (Refer to the Manual)

※ For the details, please refer to the Manual.

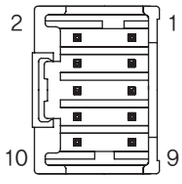
3. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	LIMIT+	Input
4	LIMIT−	Input
5	ORIGIN	Input
6	BRAKE+	Output
7	BRAKE−	Output



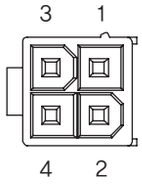
4. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----



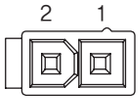
5. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



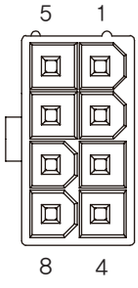
6. Control Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



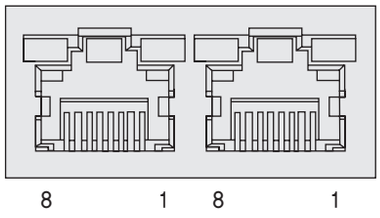
7. Main Power Connector(CN5)

NO.	Function	I/O
1	24VDC	Input
2	24VDC	Input
3	24VDC	Input
4	F.GND	----
5	GND	Input
6	GND	Input
7	GND	Input
8	F.GND	----



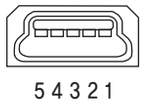
8. EtherCAT Communication Connector(CN6, CN7)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connection hood	F.GND
5	----		

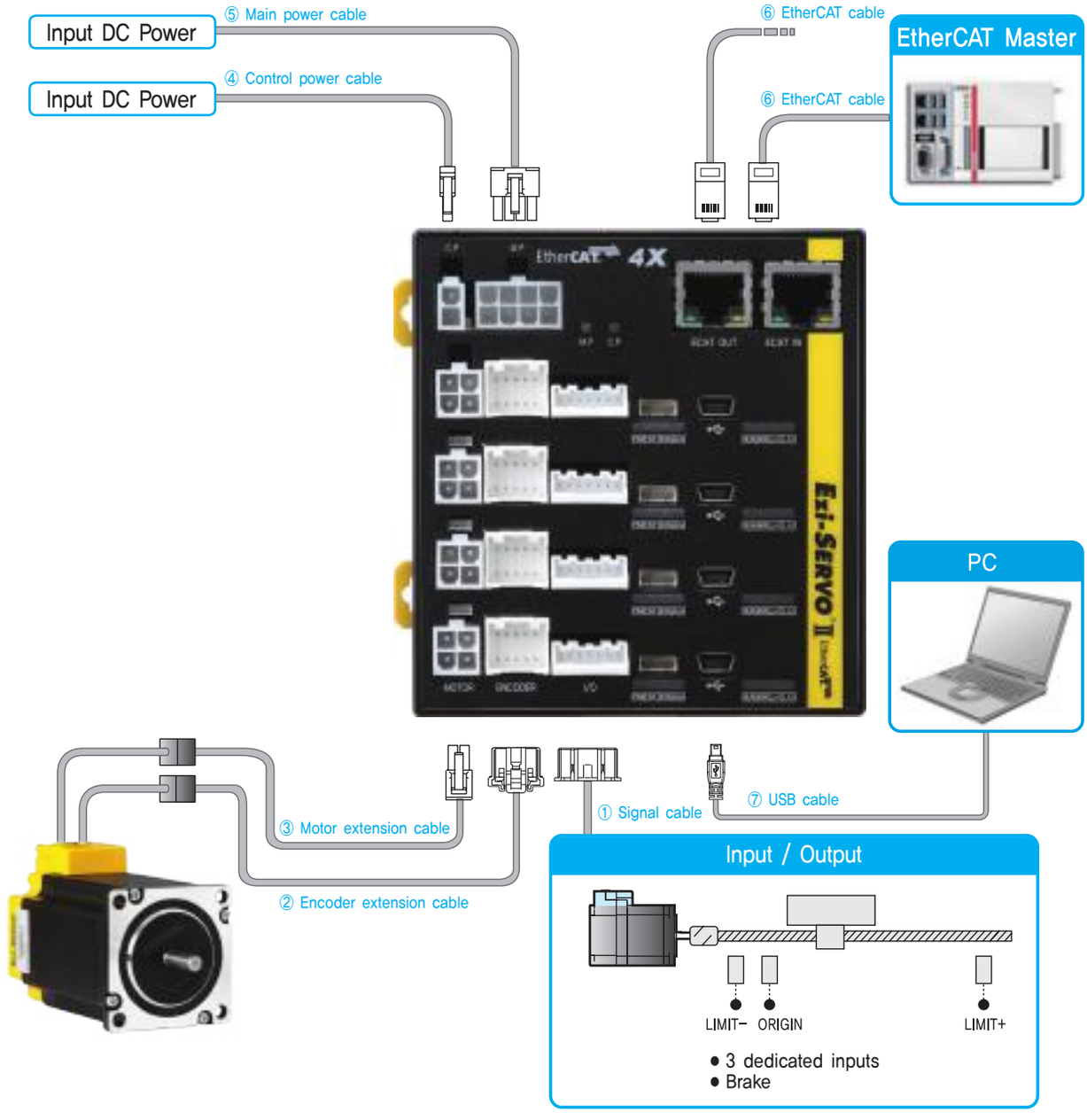


9. USB Connector(CN8)

NO.	Function
1	VBUS
2	D−
3	D+
4	---
5	GND



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Control Power Cable	Main Power Cable	EtherCAT Cable	USB Cable
Length supplied	–	30cm	30cm	–	–	–	–
Max. Length	20m	20m	20m	2m	2m	100m	5m

※ Basic configuration of 3X drive is the same as 4X and only difference is number of axis.

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CECM-S-□□□F	□□□	Normal Cable
CECM-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Control Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Main Power Cable

Available to connect between Main Power and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CECM-P-□□□F	□□□	Normal Cable
CECM-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑥ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑦ USB Cable

The USB cable is a cable for connecting Ezi-SERVO II EtherCAT 4X to PC through USB communication.

* The USB cable is NOT supplied.
  Use a cable with USB 2.0 Mini Type B connectors.

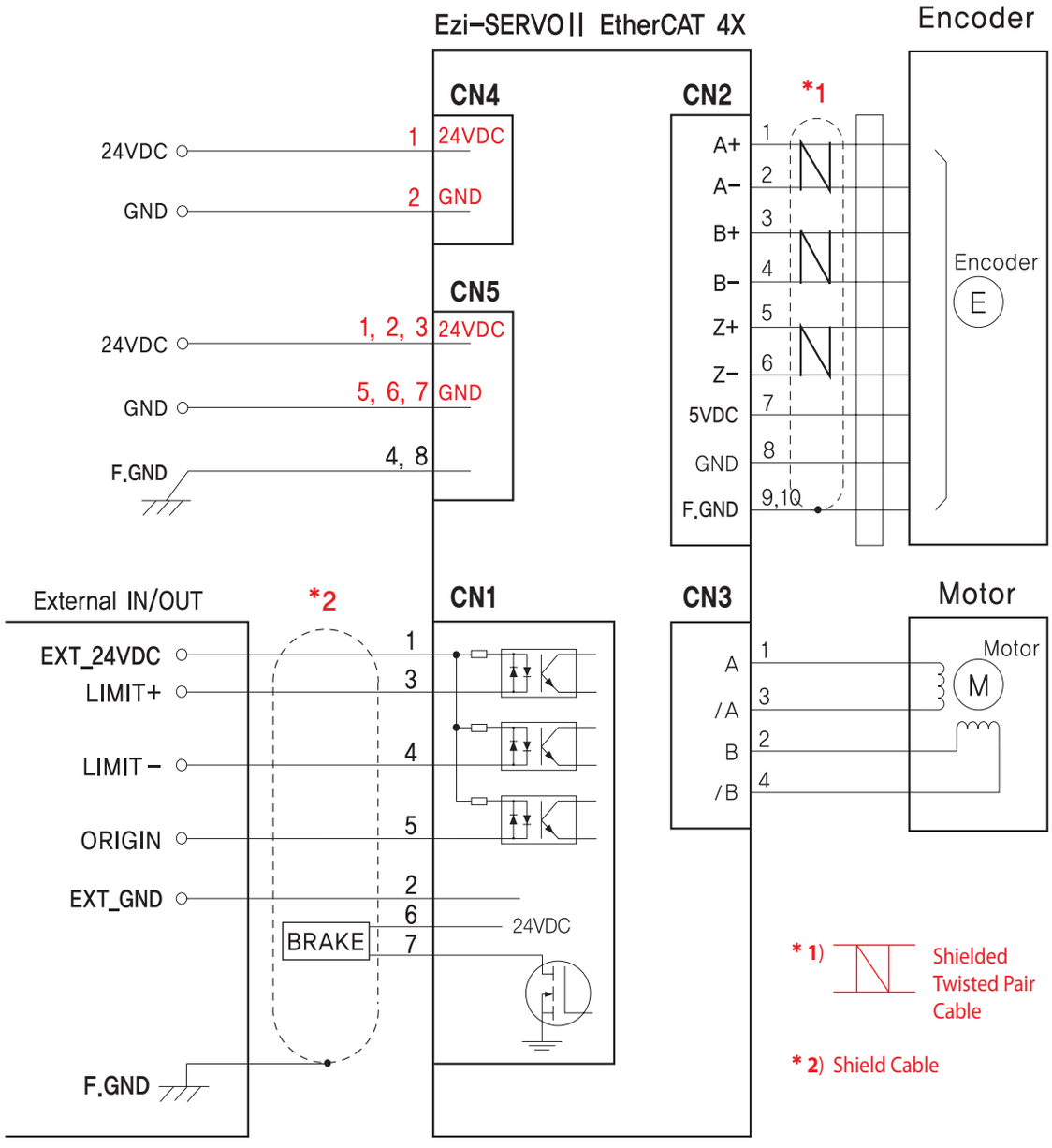
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Main Power (CN5)		Housing Terminal	5557-08R 5556T	MOLEX
Control Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Housing Terminal	PAP-07V-S SPHD-001T-P0.5	JST

※ Above Connector is the most suitable product for the drive applied. Another equivalent Connector can be used.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EziM2-60L
Ezi-SERVO



Ezi-SERVO II EtherCAT ALL

- Motor + Encoder + Drive + EtherCAT Interface
- CiA 402 Drive Profile Support
- Closed Loop System
- No Gain Tuning
- No Hunting
- Heat Reduction
- Torque Improvement

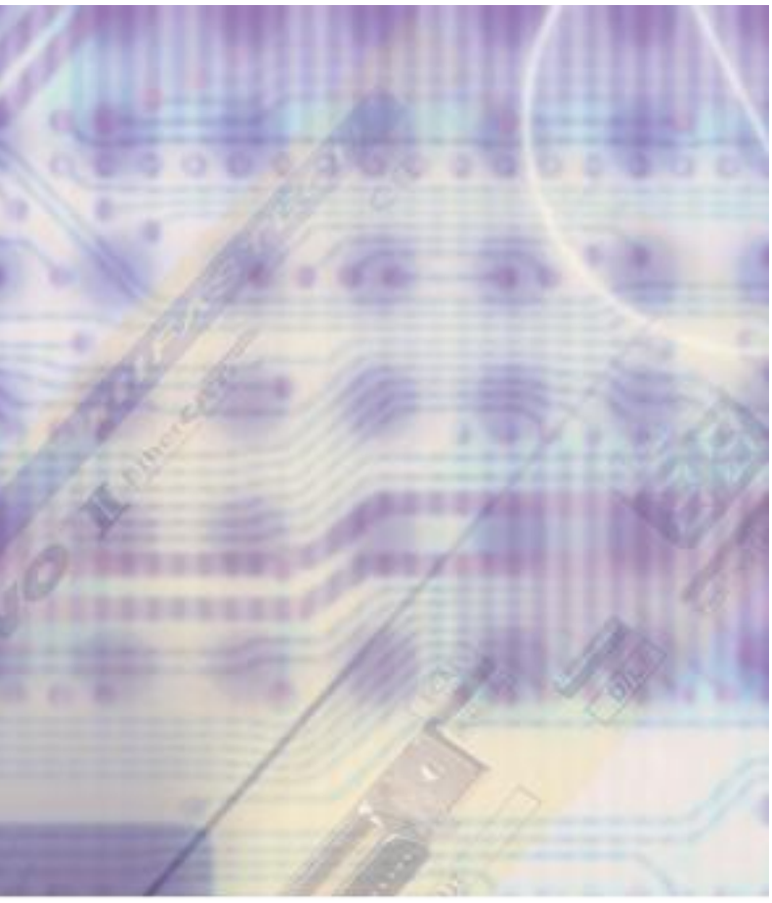


FASTECH

Fast, Accurate, Smooth Motion

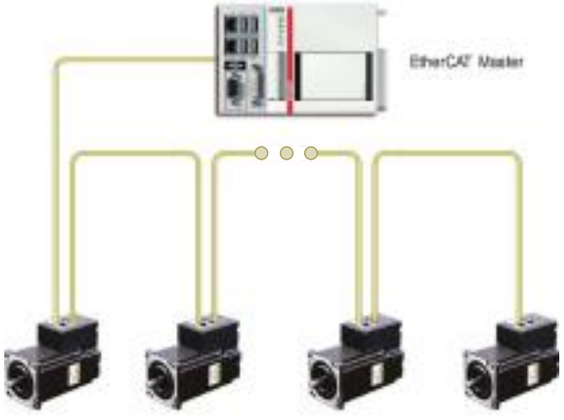
Ezi-SERVO® II EtherCAT® ALL

Closed Loop Stepping System



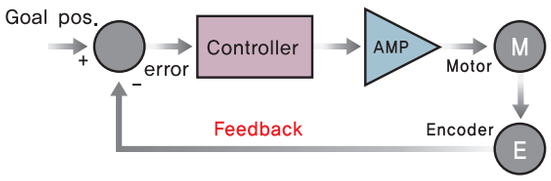
1 EtherCAT Based Motion Control

Ezi-SERVO II EtherCAT ALL is stepping motor control system using EtherCAT, high speed ethernet(100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT ALL is EtherCAT slave module which support CAN application layer over EtherCAT (CoE). CiA 402 Drive Profile implemented.
Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



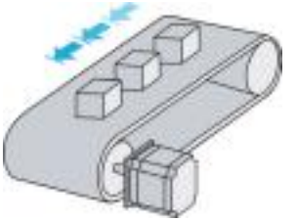
2 Closed Loop System

Ezi-SERVO II is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50 μsec. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

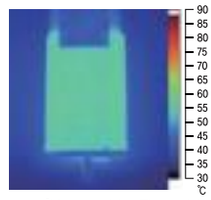
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



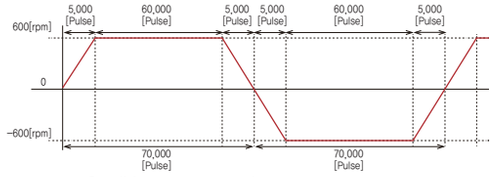
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

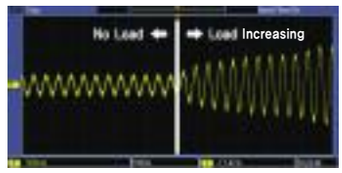
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

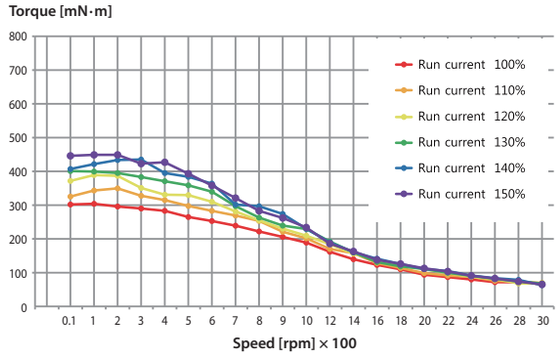


Example of the Motor Current Control according to load

5 Torque Improvement

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased.
Ezi-SERVO II can improve the torque in the low speed range by about 30%.

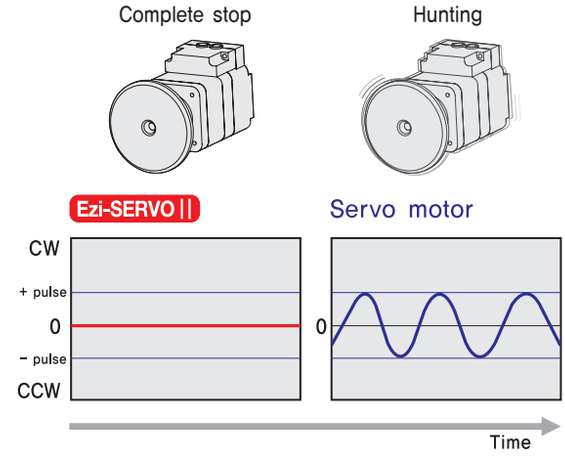


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-ALL-42L

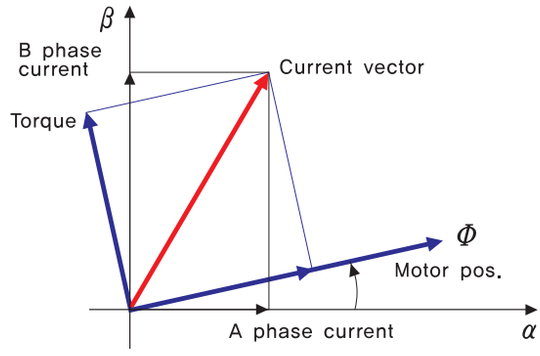
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



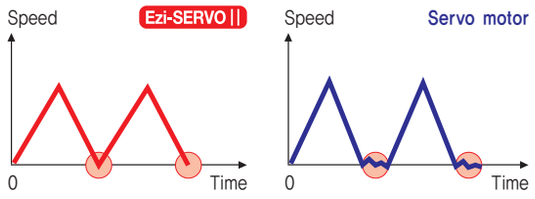
7 Smooth and Accurate

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



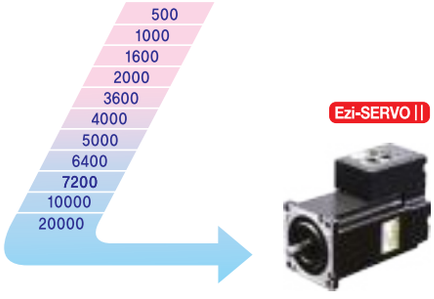
8 Fast Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



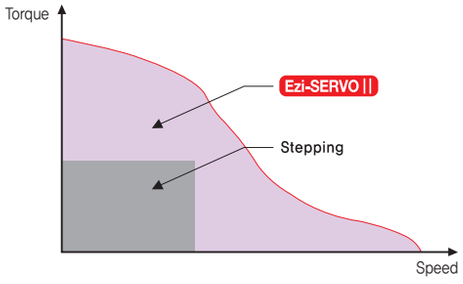
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



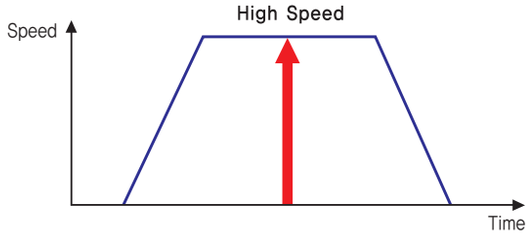
10 High Torque

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Ezi-SERVO II EtherCAT ALL Part Numbering

Ezi-SERVO II -EC-ALL-56L-A-BK-PN05-M-□

Product Name

Drive Series

EC-ALL : EtherCAT ALL

Motor Flange Size

42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
B : 20,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

Connector Type

M : M Connector Type
R : RJ45 Connector Type

User Code

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II -EC-ALL-42M-A-M		
Ezi-SERVO II -EC-ALL-42M-B-M		
Ezi-SERVO II -EC-ALL-42M-A-R		
Ezi-SERVO II -EC-ALL-42M-B-R		
Ezi-SERVO II -EC-ALL-42L-A-M		
Ezi-SERVO II -EC-ALL-42L-B-M		
Ezi-SERVO II -EC-ALL-42L-A-R		
Ezi-SERVO II -EC-ALL-42L-B-R		
Ezi-SERVO II -EC-ALL-42XL-A-M		
Ezi-SERVO II -EC-ALL-42XL-B-M		
Ezi-SERVO II -EC-ALL-42XL-A-R		
Ezi-SERVO II -EC-ALL-42XL-B-R		
Ezi-SERVO II -EC-ALL-56S-A-M		
Ezi-SERVO II -EC-ALL-56S-B-M		
Ezi-SERVO II -EC-ALL-56S-A-R		
Ezi-SERVO II -EC-ALL-56S-B-R		
Ezi-SERVO II -EC-ALL-56M-A-M		
Ezi-SERVO II -EC-ALL-56M-B-M		
Ezi-SERVO II -EC-ALL-56M-A-R		
Ezi-SERVO II -EC-ALL-56M-B-R		
Ezi-SERVO II -EC-ALL-56L-A-M		
Ezi-SERVO II -EC-ALL-56L-B-M		
Ezi-SERVO II -EC-ALL-56L-A-R		
Ezi-SERVO II -EC-ALL-56L-B-R	Motor & Drive Integrated	
Ezi-SERVO II -EC-ALL-60S-A-M		
Ezi-SERVO II -EC-ALL-60S-B-M		
Ezi-SERVO II -EC-ALL-60S-A-R		
Ezi-SERVO II -EC-ALL-60S-B-R		
Ezi-SERVO II -EC-ALL-60M-A-M		
Ezi-SERVO II -EC-ALL-60M-B-M		
Ezi-SERVO II -EC-ALL-60M-A-R		
Ezi-SERVO II -EC-ALL-60M-B-R		
Ezi-SERVO II -EC-ALL-60L-A-M		
Ezi-SERVO II -EC-ALL-60L-B-M		
Ezi-SERVO II -EC-ALL-60L-A-R		
Ezi-SERVO II -EC-ALL-60L-B-R		
Ezi-SERVO II -EC-ALL-86M-A-M		
Ezi-SERVO II -EC-ALL-86M-B-M		
Ezi-SERVO II -EC-ALL-86M-A-R		
Ezi-SERVO II -EC-ALL-86M-B-R		
Ezi-SERVO II -EC-ALL-86L-A-M		
Ezi-SERVO II -EC-ALL-86L-B-M		
Ezi-SERVO II -EC-ALL-86L-A-R		
Ezi-SERVO II -EC-ALL-86L-B-R		
Ezi-SERVO II -EC-ALL-86XL-A-M		
Ezi-SERVO II -EC-ALL-86XL-B-M		
Ezi-SERVO II -EC-ALL-86XL-A-R		
Ezi-SERVO II -EC-ALL-86XL-B-R		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-ALL-42M-A-BK-M	Motor & Drive Integrated	
Ezi-SERVO II-EC-ALL-42M-B-BK-M		
Ezi-SERVO II-EC-ALL-42M-A-BK-R		
Ezi-SERVO II-EC-ALL-42M-B-BK-R		
Ezi-SERVO II-EC-ALL-42L-A-BK-M		
Ezi-SERVO II-EC-ALL-42L-B-BK-M		
Ezi-SERVO II-EC-ALL-42L-A-BK-R		
Ezi-SERVO II-EC-ALL-42L-B-BK-R		
Ezi-SERVO II-EC-ALL-42XL-A-BK-M		
Ezi-SERVO II-EC-ALL-42XL-B-BK-M		
Ezi-SERVO II-EC-ALL-42XL-A-BK-R		
Ezi-SERVO II-EC-ALL-42XL-B-BK-R		
Ezi-SERVO II-EC-ALL-56S-A-BK-M		
Ezi-SERVO II-EC-ALL-56S-B-BK-M		
Ezi-SERVO II-EC-ALL-56S-A-BK-R		
Ezi-SERVO II-EC-ALL-56S-B-BK-R		
Ezi-SERVO II-EC-ALL-56M-A-BK-M		
Ezi-SERVO II-EC-ALL-56M-B-BK-M		
Ezi-SERVO II-EC-ALL-56M-A-BK-R		
Ezi-SERVO II-EC-ALL-56M-B-BK-R		
Ezi-SERVO II-EC-ALL-56L-A-BK-M		
Ezi-SERVO II-EC-ALL-56L-B-BK-M		
Ezi-SERVO II-EC-ALL-56L-A-BK-R		
Ezi-SERVO II-EC-ALL-56L-B-BK-R		
Ezi-SERVO II-EC-ALL-60S-A-BK-M		
Ezi-SERVO II-EC-ALL-60S-B-BK-M		
Ezi-SERVO II-EC-ALL-60S-A-BK-R		
Ezi-SERVO II-EC-ALL-60S-B-BK-R		
Ezi-SERVO II-EC-ALL-60M-A-BK-M		
Ezi-SERVO II-EC-ALL-60M-B-BK-M		
Ezi-SERVO II-EC-ALL-60M-A-BK-R		
Ezi-SERVO II-EC-ALL-60M-B-BK-R		
Ezi-SERVO II-EC-ALL-60L-A-BK-M		
Ezi-SERVO II-EC-ALL-60L-B-BK-M		
Ezi-SERVO II-EC-ALL-60L-A-BK-R		
Ezi-SERVO II-EC-ALL-60L-B-BK-R		
Ezi-SERVO II-EC-ALL-86M-A-BK-M		
Ezi-SERVO II-EC-ALL-86M-B-BK-M		
Ezi-SERVO II-EC-ALL-86M-A-BK-R		
Ezi-SERVO II-EC-ALL-86M-B-BK-R		
Ezi-SERVO II-EC-ALL-86L-A-BK-M		
Ezi-SERVO II-EC-ALL-86L-B-BK-M		
Ezi-SERVO II-EC-ALL-86L-A-BK-R		
Ezi-SERVO II-EC-ALL-86L-B-BK-R		
Ezi-SERVO II-EC-ALL-86XL-A-BK-M		
Ezi-SERVO II-EC-ALL-86XL-B-BK-M		
Ezi-SERVO II-EC-ALL-86XL-A-BK-R		
Ezi-SERVO II-EC-ALL-86XL-B-BK-R		

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-ALL-42M-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-EC-ALL-42M-B-PN3-M			
Ezi-SERVO II-EC-ALL-42M-A-PN3-R			
Ezi-SERVO II-EC-ALL-42M-B-PN3-R			
Ezi-SERVO II-EC-ALL-42M-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-42M-B-PN5-M			
Ezi-SERVO II-EC-ALL-42M-A-PN5-R			
Ezi-SERVO II-EC-ALL-42M-B-PN5-R			
Ezi-SERVO II-EC-ALL-42M-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-42M-B-PN8-M			
Ezi-SERVO II-EC-ALL-42M-A-PN8-R			
Ezi-SERVO II-EC-ALL-42M-B-PN8-R			
Ezi-SERVO II-EC-ALL-42M-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-42M-B-PN10-M			
Ezi-SERVO II-PE-ALL-42M-A-PN10-R			
Ezi-SERVO II-EC-ALL-42M-B-PN10-R			
Ezi-SERVO II-EC-ALL-42M-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-42M-B-PN15-M			
Ezi-SERVO II-EC-ALL-42M-A-PN15-R			
Ezi-SERVO II-EC-ALL-42M-B-PN15-R			
Ezi-SERVO II-EC-ALL-42M-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-42M-B-PN25-M			
Ezi-SERVO II-EC-ALL-42M-A-PN25-R			
Ezi-SERVO II-EC-ALL-42M-B-PN25-R			
Ezi-SERVO II-EC-ALL-42M-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-42M-B-PN40-M			
Ezi-SERVO II-EC-ALL-42M-A-PN40-R			
Ezi-SERVO II-EC-ALL-42M-B-PN40-R			
Ezi-SERVO II-EC-ALL-42M-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-42M-B-PN50-M			
Ezi-SERVO II-EC-ALL-42M-A-PN50-R			
Ezi-SERVO II-EC-ALL-42M-B-PN50-R			
Ezi-SERVO II-EC-ALL-42L-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-42L-B-PN3-M			
Ezi-SERVO II-EC-ALL-42L-A-PN3-R			
Ezi-SERVO II-EC-ALL-42L-B-PN3-R			
Ezi-SERVO II-EC-ALL-42L-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-42L-B-PN5-M			
Ezi-SERVO II-EC-ALL-42L-A-PN5-R			
Ezi-SERVO II-EC-ALL-42L-B-PN5-R			
Ezi-SERVO II-EC-ALL-42L-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-42L-B-PN8-M			
Ezi-SERVO II-EC-ALL-42L-A-PN8-R			
Ezi-SERVO II-EC-ALL-42L-B-PN8-R			
Ezi-SERVO II-EC-ALL-42L-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-42L-B-PN10-M			
Ezi-SERVO II-EC-ALL-42L-A-PN10-R			
Ezi-SERVO II-EC-ALL-42L-B-PN10-R			
Ezi-SERVO II-EC-ALL-42L-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-42L-B-PN15-M			
Ezi-SERVO II-EC-ALL-42L-A-PN15-R			
Ezi-SERVO II-EC-ALL-42L-B-PN15-R			
Ezi-SERVO II-EC-ALL-42L-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-42L-B-PN25-M			
Ezi-SERVO II-EC-ALL-42L-A-PN25-R			
Ezi-SERVO II-EC-ALL-42L-B-PN25-R			
Ezi-SERVO II-EC-ALL-42L-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-42L-B-PN40-M			
Ezi-SERVO II-EC-ALL-42L-A-PN40-R			
Ezi-SERVO II-EC-ALL-42L-B-PN40-R			
Ezi-SERVO II-EC-ALL-42L-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-42L-B-PN50-M			
Ezi-SERVO II-EC-ALL-42L-A-PN50-R			
Ezi-SERVO II-EC-ALL-42L-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-ALL-42XL-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-EC-ALL-42XL-B-PN3-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN3-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN3-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-42XL-B-PN5-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN5-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN5-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-42XL-B-PN8-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN8-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN8-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-42XL-B-PN10-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN10-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN10-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-42XL-B-PN15-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN15-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN15-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-42XL-B-PN25-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN25-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN25-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-42XL-B-PN40-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN40-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN40-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-42XL-B-PN50-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN50-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN50-R			
Ezi-SERVO II-EC-ALL-56S-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-56S-B-PN3-M			
Ezi-SERVO II-EC-ALL-56S-A-PN3-R			
Ezi-SERVO II-EC-ALL-56S-B-PN3-R			
Ezi-SERVO II-EC-ALL-56S-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-56S-B-PN5-M			
Ezi-SERVO II-EC-ALL-56S-A-PN5-R			
Ezi-SERVO II-EC-ALL-56S-B-PN5-R			
Ezi-SERVO II-EC-ALL-56S-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-56S-B-PN8-M			
Ezi-SERVO II-EC-ALL-56S-A-PN8-R			
Ezi-SERVO II-EC-ALL-56S-B-PN8-R			
Ezi-SERVO II-EC-ALL-56S-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-56S-B-PN10-M			
Ezi-SERVO II-EC-ALL-56S-A-PN10-R			
Ezi-SERVO II-EC-ALL-56S-B-PN10-R			
Ezi-SERVO II-EC-ALL-56S-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-56S-B-PN15-M			
Ezi-SERVO II-EC-ALL-56S-A-PN15-R			
Ezi-SERVO II-EC-ALL-56S-B-PN15-R			
Ezi-SERVO II-EC-ALL-56S-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-56S-B-PN25-M			
Ezi-SERVO II-EC-ALL-56S-A-PN25-R			
Ezi-SERVO II-EC-ALL-56S-B-PN25-R			
Ezi-SERVO II-EC-ALL-56S-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-56S-B-PN40-M			
Ezi-SERVO II-EC-ALL-56S-A-PN40-R			
Ezi-SERVO II-EC-ALL-56S-B-PN40-R			
Ezi-SERVO II-EC-ALL-56S-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-56S-B-PN50-M			
Ezi-SERVO II-EC-ALL-56S-A-PN50-R			
Ezi-SERVO II-EC-ALL-56S-B-PN50-R			

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-ALL-56M-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-EC-ALL-56M-B-PN3-M			
Ezi-SERVO II-EC-ALL-56M-A-PN3-R			
Ezi-SERVO II-EC-ALL-56M-B-PN3-R			
Ezi-SERVO II-EC-ALL-56M-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-56M-B-PN5-M			
Ezi-SERVO II-EC-ALL-56M-A-PN5-R			
Ezi-SERVO II-EC-ALL-56M-B-PN5-R			
Ezi-SERVO II-EC-ALL-56M-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-56M-B-PN8-M			
Ezi-SERVO II-EC-ALL-56M-A-PN8-R			
Ezi-SERVO II-EC-ALL-56M-B-PN8-R			
Ezi-SERVO II-EC-ALL-56M-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-56M-B-PN10-M			
Ezi-SERVO II-EC-ALL-56M-A-PN10-R			
Ezi-SERVO II-EC-ALL-56M-B-PN10-R			
Ezi-SERVO II-EC-ALL-56M-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-56M-B-PN15-M			
Ezi-SERVO II-EC-ALL-56M-A-PN15-R			
Ezi-SERVO II-EC-ALL-56M-B-PN15-R			
Ezi-SERVO II-EC-ALL-56M-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-56M-B-PN25-M			
Ezi-SERVO II-EC-ALL-56M-A-PN25-R			
Ezi-SERVO II-EC-ALL-56M-B-PN25-R			
Ezi-SERVO II-EC-ALL-56M-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-56M-B-PN40-M			
Ezi-SERVO II-EC-ALL-56M-A-PN40-R			
Ezi-SERVO II-EC-ALL-56M-B-PN40-R			
Ezi-SERVO II-EC-ALL-56M-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-56M-B-PN50-M			
Ezi-SERVO II-EC-ALL-56M-A-PN50-R			
Ezi-SERVO II-EC-ALL-56M-B-PN50-R			
Ezi-SERVO II-EC-ALL-56L-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-56L-B-PN3-M			
Ezi-SERVO II-EC-ALL-56L-A-PN3-R			
Ezi-SERVO II-EC-ALL-56L-B-PN3-R			
Ezi-SERVO II-EC-ALL-56L-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-56L-B-PN5-M			
Ezi-SERVO II-EC-ALL-56L-A-PN5-R			
Ezi-SERVO II-EC-ALL-56L-B-PN5-R			
Ezi-SERVO II-EC-ALL-56L-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-56L-B-PN8-M			
Ezi-SERVO II-EC-ALL-56L-A-PN8-R			
Ezi-SERVO II-EC-ALL-56L-B-PN8-R			
Ezi-SERVO II-EC-ALL-56L-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-56L-B-PN10-M			
Ezi-SERVO II-EC-ALL-56L-A-PN10-R			
Ezi-SERVO II-EC-ALL-56L-B-PN10-R			
Ezi-SERVO II-EC-ALL-56L-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-56L-B-PN15-M			
Ezi-SERVO II-EC-ALL-56L-A-PN15-R			
Ezi-SERVO II-EC-ALL-56L-B-PN15-R			
Ezi-SERVO II-EC-ALL-56L-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-56L-B-PN25-M			
Ezi-SERVO II-EC-ALL-56L-A-PN25-R			
Ezi-SERVO II-EC-ALL-56L-B-PN25-R			
Ezi-SERVO II-EC-ALL-56L-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-56L-B-PN40-M			
Ezi-SERVO II-EC-ALL-56L-A-PN40-R			
Ezi-SERVO II-EC-ALL-56L-B-PN40-R			
Ezi-SERVO II-EC-ALL-56L-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-56L-B-PN50-M			
Ezi-SERVO II-EC-ALL-56L-A-PN50-R			
Ezi-SERVO II-EC-ALL-56L-B-PN50-R			

● Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	감속비
Ezi-SERVO II-EC-ALL-60S-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-EC-ALL-60S-B-PN3-M			
Ezi-SERVO II-EC-ALL-60S-A-PN3-R			
Ezi-SERVO II-EC-ALL-60S-B-PN3-R			
Ezi-SERVO II-EC-ALL-60S-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-60S-B-PN5-M			
Ezi-SERVO II-EC-ALL-60S-A-PN5-R			
Ezi-SERVO II-EC-ALL-60S-B-PN5-R			
Ezi-SERVO II-EC-ALL-60S-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-60S-B-PN8-M			
Ezi-SERVO II-EC-ALL-60S-A-PN8-R			
Ezi-SERVO II-EC-ALL-60S-B-PN8-R			
Ezi-SERVO II-EC-ALL-60S-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-60S-B-PN10-M			
Ezi-SERVO II-EC-ALL-60S-A-PN10-R			
Ezi-SERVO II-EC-ALL-60S-B-PN10-R			
Ezi-SERVO II-EC-ALL-60S-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-60S-B-PN15-M			
Ezi-SERVO II-EC-ALL-60S-A-PN15-R			
Ezi-SERVO II-EC-ALL-60S-B-PN15-R			
Ezi-SERVO II-EC-ALL-60S-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-60S-B-PN25-M			
Ezi-SERVO II-EC-ALL-60S-A-PN25-R			
Ezi-SERVO II-EC-ALL-60S-B-PN25-R			
Ezi-SERVO II-EC-ALL-60S-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-60S-B-PN40-M			
Ezi-SERVO II-EC-ALL-60S-A-PN40-R			
Ezi-SERVO II-EC-ALL-60S-B-PN40-R			
Ezi-SERVO II-EC-ALL-60S-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-60S-B-PN50-M			
Ezi-SERVO II-EC-ALL-60S-A-PN50-R			
Ezi-SERVO II-EC-ALL-60S-B-PN50-R			
Ezi-SERVO II-EC-ALL-60M-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-60M-B-PN3-M			
Ezi-SERVO II-EC-ALL-60M-A-PN3-R			
Ezi-SERVO II-EC-ALL-60M-B-PN3-R			
Ezi-SERVO II-EC-ALL-60M-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-60M-B-PN5-M			
Ezi-SERVO II-EC-ALL-60M-A-PN5-R			
Ezi-SERVO II-EC-ALL-60M-B-PN5-R			
Ezi-SERVO II-EC-ALL-60M-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-60M-B-PN8-M			
Ezi-SERVO II-EC-ALL-60M-A-PN8-R			
Ezi-SERVO II-EC-ALL-60M-B-PN8-R			
Ezi-SERVO II-EC-ALL-60M-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-60M-B-PN10-M			
Ezi-SERVO II-EC-ALL-60M-A-PN10-R			
Ezi-SERVO II-EC-ALL-60M-B-PN10-R			
Ezi-SERVO II-EC-ALL-60M-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-60M-B-PN15-M			
Ezi-SERVO II-EC-ALL-60M-A-PN15-R			
Ezi-SERVO II-EC-ALL-60M-B-PN15-R			
Ezi-SERVO II-EC-ALL-60M-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-60M-B-PN25-M			
Ezi-SERVO II-EC-ALL-60M-A-PN25-R			
Ezi-SERVO II-EC-ALL-60M-B-PN25-R			
Ezi-SERVO II-EC-ALL-60M-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-60M-B-PN40-M			
Ezi-SERVO II-EC-ALL-60M-A-PN40-R			
Ezi-SERVO II-EC-ALL-60M-B-PN40-R			
Ezi-SERVO II-EC-ALL-60M-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-60M-B-PN50-M			
Ezi-SERVO II-EC-ALL-60M-A-PN50-R			
Ezi-SERVO II-EC-ALL-60M-B-PN50-R			

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-ALL-60L-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-EC-ALL-60L-B-PN3-M			
Ezi-SERVO II-EC-ALL-60L-A-PN3-R			
Ezi-SERVO II-EC-ALL-60L-B-PN3-R			
Ezi-SERVO II-EC-ALL-60L-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-60L-B-PN5-M			
Ezi-SERVO II-EC-ALL-60L-A-PN5-R			
Ezi-SERVO II-EC-ALL-60L-B-PN5-R			
Ezi-SERVO II-EC-ALL-60L-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-60L-B-PN8-M			
Ezi-SERVO II-EC-ALL-60L-A-PN8-R			
Ezi-SERVO II-EC-ALL-60L-B-PN8-R			
Ezi-SERVO II-EC-ALL-60L-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-60L-B-PN10-M			
Ezi-SERVO II-EC-ALL-60L-A-PN10-R			
Ezi-SERVO II-EC-ALL-60L-B-PN10-R			
Ezi-SERVO II-EC-ALL-60L-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-60L-B-PN15-M			
Ezi-SERVO II-EC-ALL-60L-A-PN15-R			
Ezi-SERVO II-EC-ALL-60L-B-PN15-R			
Ezi-SERVO II-EC-ALL-60L-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-60L-B-PN25-M			
Ezi-SERVO II-EC-ALL-60L-A-PN25-R			
Ezi-SERVO II-EC-ALL-60L-B-PN25-R			
Ezi-SERVO II-EC-ALL-60L-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-60L-B-PN40-M			
Ezi-SERVO II-EC-ALL-60L-A-PN40-R			
Ezi-SERVO II-EC-ALL-60L-B-PN40-R			
Ezi-SERVO II-EC-ALL-60L-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-60L-B-PN50-M			
Ezi-SERVO II-EC-ALL-60L-A-PN50-R			
Ezi-SERVO II-EC-ALL-60L-B-PN50-R			
Ezi-SERVO II-EC-ALL-86M-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-86M-B-PN3-M			
Ezi-SERVO II-EC-ALL-86M-A-PN3-R			
Ezi-SERVO II-EC-ALL-86M-B-PN3-R			
Ezi-SERVO II-EC-ALL-86M-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-86M-B-PN5-M			
Ezi-SERVO II-EC-ALL-86M-A-PN5-R			
Ezi-SERVO II-EC-ALL-86M-B-PN5-R			
Ezi-SERVO II-EC-ALL-86M-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-86M-B-PN8-M			
Ezi-SERVO II-EC-ALL-86M-A-PN8-R			
Ezi-SERVO II-EC-ALL-86M-B-PN8-R			
Ezi-SERVO II-EC-ALL-86M-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-86M-B-PN10-M			
Ezi-SERVO II-EC-ALL-86M-A-PN10-R			
Ezi-SERVO II-EC-ALL-86M-B-PN10-R			
Ezi-SERVO II-EC-ALL-86M-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-86M-B-PN15-M			
Ezi-SERVO II-EC-ALL-86M-A-PN15-R			
Ezi-SERVO II-EC-ALL-86M-B-PN15-R			
Ezi-SERVO II-EC-ALL-86M-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-86M-B-PN25-M			
Ezi-SERVO II-EC-ALL-86M-A-PN25-R			
Ezi-SERVO II-EC-ALL-86M-B-PN25-R			
Ezi-SERVO II-EC-ALL-86M-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-86M-B-PN40-M			
Ezi-SERVO II-EC-ALL-86M-A-PN40-R			
Ezi-SERVO II-EC-ALL-86M-B-PN40-R			
Ezi-SERVO II-EC-ALL-86M-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-86M-B-PN50-M			
Ezi-SERVO II-EC-ALL-86M-A-PN50-R			
Ezi-SERVO II-EC-ALL-86M-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-EC-ALL-86L-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-EC-ALL-86L-B-PN3-M			
Ezi-SERVO II-EC-ALL-86L-A-PN3-R			
Ezi-SERVO II-EC-ALL-86L-B-PN3-R			
Ezi-SERVO II-EC-ALL-86L-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-86L-B-PN5-M			
Ezi-SERVO II-EC-ALL-86L-A-PN5-R			
Ezi-SERVO II-EC-ALL-86L-B-PN5-R			
Ezi-SERVO II-EC-ALL-86L-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-86L-B-PN8-M			
Ezi-SERVO II-EC-ALL-86L-A-PN8-R			
Ezi-SERVO II-EC-ALL-86L-B-PN8-R			
Ezi-SERVO II-EC-ALL-86L-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-86L-B-PN10-M			
Ezi-SERVO II-EC-ALL-86L-A-PN10-R			
Ezi-SERVO II-EC-ALL-86L-B-PN10-R			
Ezi-SERVO II-EC-ALL-86L-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-86L-B-PN15-M			
Ezi-SERVO II-EC-ALL-86L-A-PN15-R			
Ezi-SERVO II-EC-ALL-86L-B-PN15-R			
Ezi-SERVO II-EC-ALL-86L-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-86L-B-PN25-M			
Ezi-SERVO II-EC-ALL-86L-A-PN25-R			
Ezi-SERVO II-EC-ALL-86L-B-PN25-R			
Ezi-SERVO II-EC-ALL-86L-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-86L-B-PN40-M			
Ezi-SERVO II-EC-ALL-86L-A-PN40-R			
Ezi-SERVO II-EC-ALL-86L-B-PN40-R			
Ezi-SERVO II-EC-ALL-86L-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-86L-B-PN50-M			
Ezi-SERVO II-EC-ALL-86L-A-PN50-R			
Ezi-SERVO II-EC-ALL-86L-B-PN50-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-86XL-B-PN3-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN3-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN3-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-86XL-B-PN5-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN5-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN5-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-86XL-B-PN8-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN8-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN8-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-86XL-B-PN10-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN10-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN10-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-86XL-B-PN15-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN15-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN15-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-86XL-B-PN25-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN25-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN25-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-86XL-B-PN40-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN40-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN40-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-86XL-B-PN50-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN50-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN50-R			

Specifications of Drive

Driver Model		Ezi-SERVOII-EC-ALL -42 series	Ezi-SERVOII-EC-ALL -56 series	Ezi-SERVOII-EC-ALL -60 series	Ezi-SERVOII-EC-ALL -86 series
Input Voltage		24VDC ±10%			40~70VDC
Control Method		Closed loop control with 32bit ARM			
Current Consumption		Max 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000 [rpm] *1			
	Resolution [ppr]	10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter)			
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error			
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)			
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode			
	Synchronization	Free Run, SM Event, DC SYNC Event			
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 user inputs (Photocoupler Input)			
	Output Signals	2 user outputs (Photocoupler Output), Brake			

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

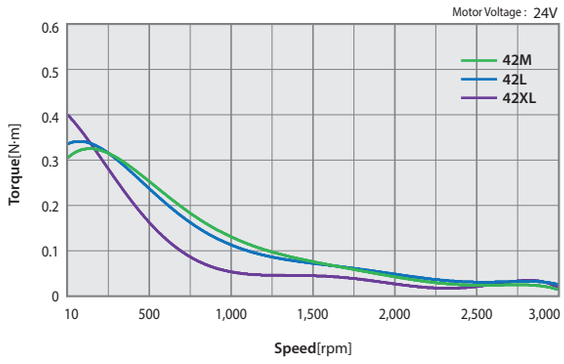
Specifications of Motor

MODEL			Ezi-SERVOII-EC-ALL -42 series			Ezi-SERVOII-EC-ALL -56 series		
		UNIT	42M	42L	42XL	56S	56M	56L
DRIVE METHOD		-	BI-POLAR					
NUMBER OF PHASES		-	2	2	2	2	2	2
CURRENT per PHASE		A	1.2	1.2	1.2	3.0	3.0	3.0
HOLDING TORQUE		N·m	0.44	0.5	0.65	0.64	1.0	1.5
ROTOR INERTIA		g·cm^2	54	77	114	180	280	520
WEIGHTS		g	440	520	660	760	920	1360
LENGTH(L)		mm	40	48	60	46	55	80
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	22	22	22	52	52	52
	8mm		26	26	26	65	65	65
	13mm		33	33	33	85	85	85
	18mm		46	46	46	123	123	123
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		-	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

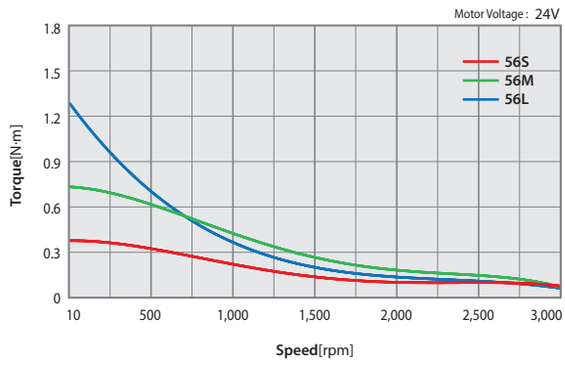
MODEL			Ezi-SERVOII-EC-ALL -60 series			Ezi-SERVOII-EC-ALL -86 series		
		UNIT	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		-	BI-POLAR					
NUMBER OF PHASES		-	2	2	2	2	2	2
CURRENT per PHASE		A	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	240	490	690	1800	3600	5400
WEIGHTS		g	840	980	1540	2682	4226	5756
LENGTH(L)		mm	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	70	70	70	270	270	270
	8mm		87	87	87	300	300	300
	13mm		114	114	114	350	350	350
	18mm		165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		-	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

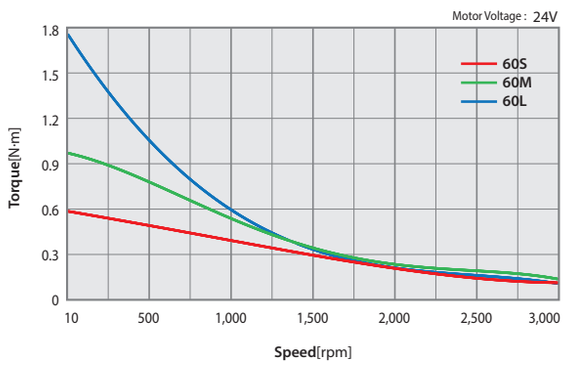
Ezi-SERVO II-EC-ALL-42 series



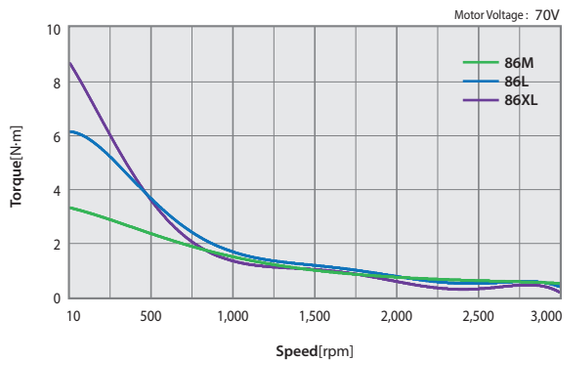
Ezi-SERVO II-EC-ALL-56 series



Ezi-SERVO II-EC-ALL-60 series

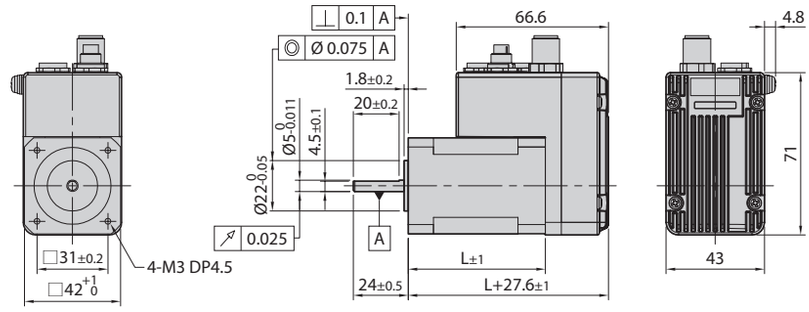


Ezi-SERVO II-EC-ALL-86 series



● Dimensions of Motor [mm]

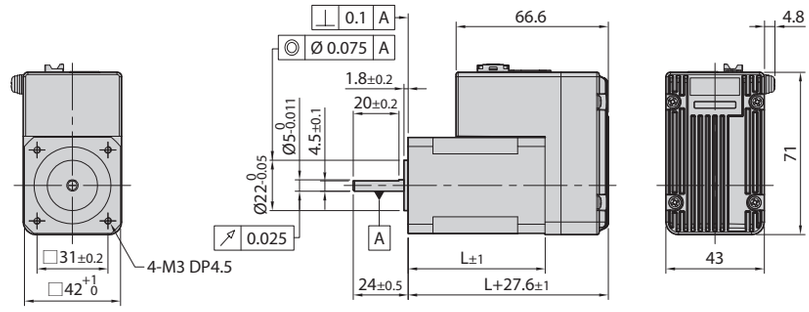
◆ M Type



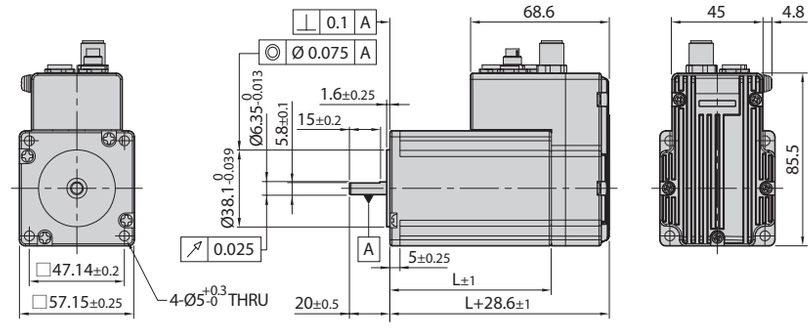
42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

◆ R Type



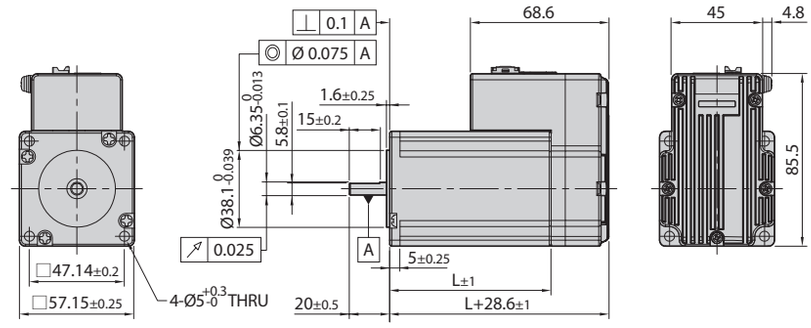
◆ M Type



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

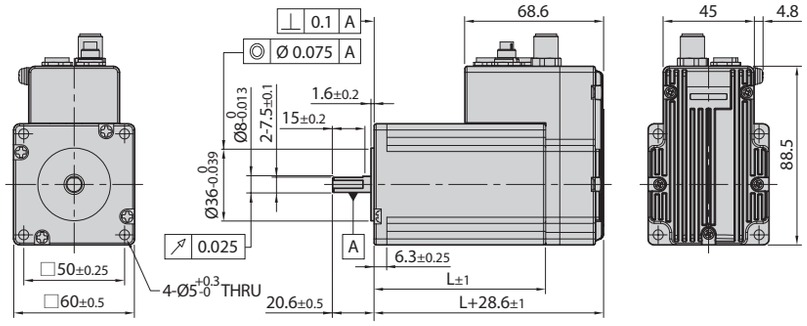
◆ R Type



※ There are 2 kinds size of front shaft diameter for Ezi-SERVO II-EC-ALL-56 series as Ø6.35 and Ø8.0.

● Dimensions of Motor [mm]

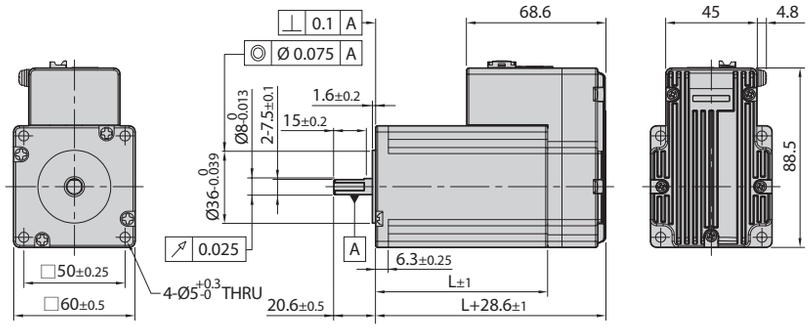
◆ M Type



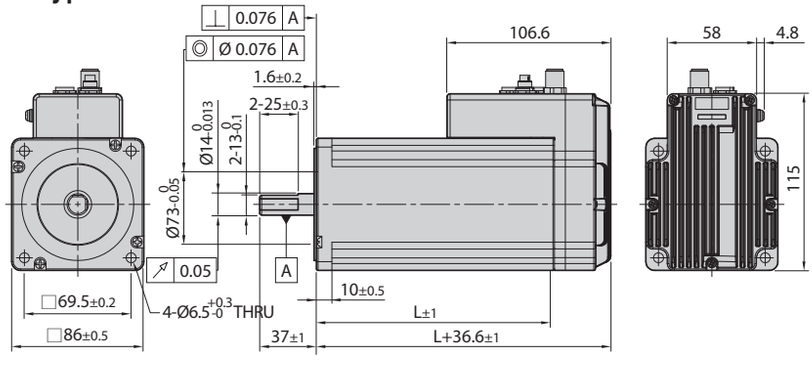
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

◆ R Type



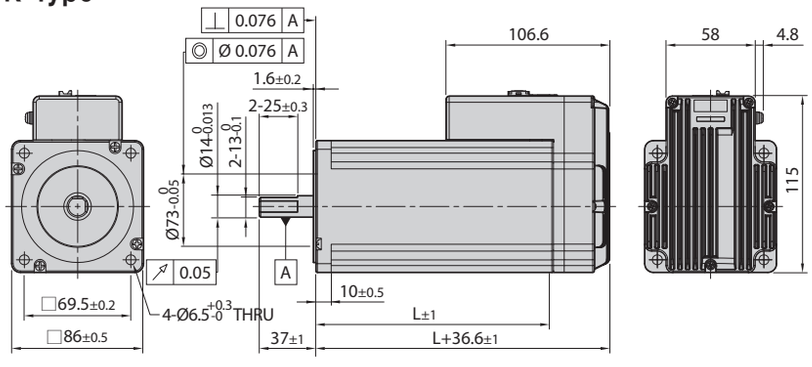
◆ M Type



86mm

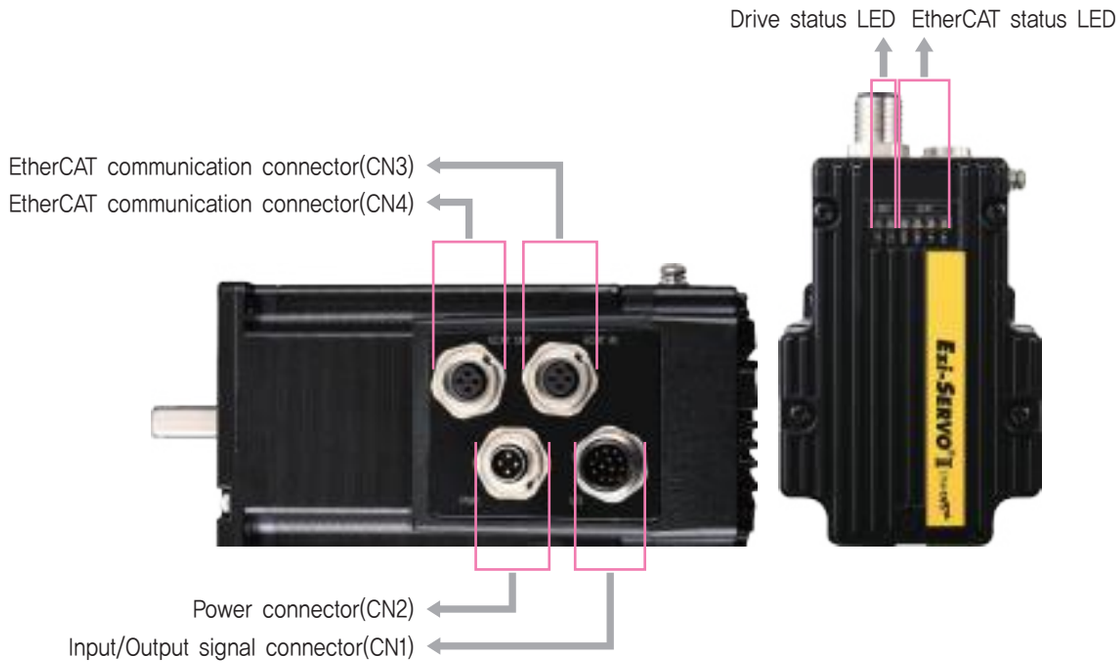
Model name	Length(L)
86M	78
86L	117
86XL	155

◆ R Type

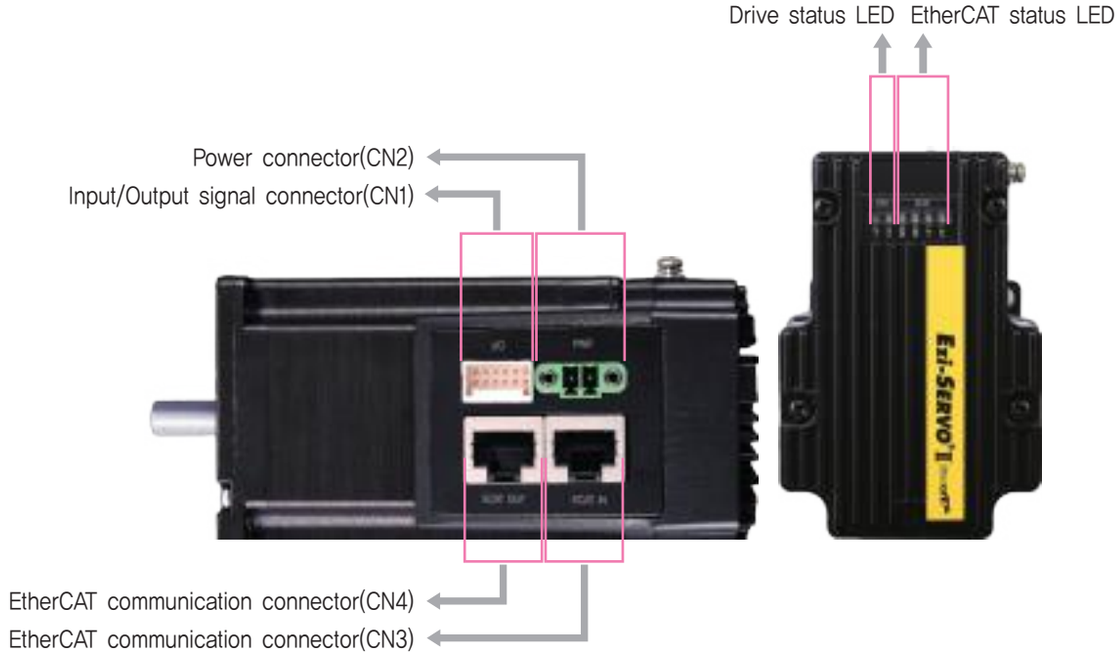


Settings and Operation

◆ M Type



◆ R Type



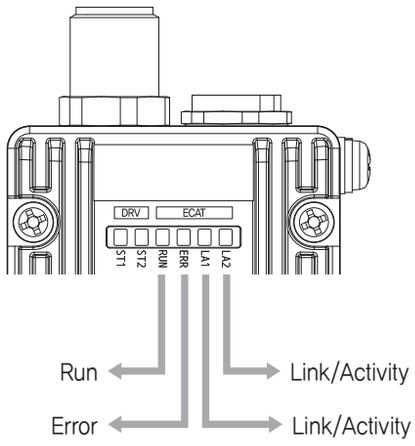
1. EtherCAT Status LED

LED indicates communication status of EtherCAT.

Name	Color	Status	Explanation
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

Name	Color	Status	Explanation
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

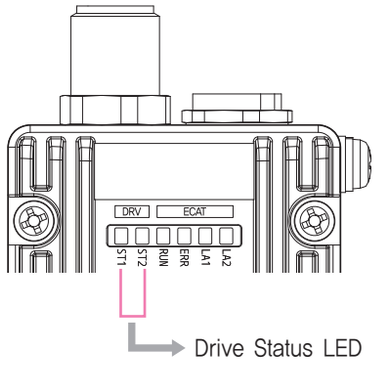
Name	Color	Status	Explanation
LA1/ LA2	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation



2. Drive Status LED

In the case of Ezi-SERVO II EtherCAT ALL series products, LED can be checked by LED color, lighting, On/Off and blinking.

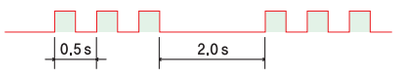
Status	LED	Description
Disable	ST1 : ST2 :	ST1 light flashing, ST2 light off
Enable	ST1 : ST2 :	ST1 light on, ST2 light off
In motion	ST1 : ST2 :	ST1 light on, ST2 light on
In-position deviation	ST1 : ST2 :	ST1 and ST2 light alternately flashing
Alarm	ST1 : ST2 :	ST2 light flashing repeatedly as many as alarm number



◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *2
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state *2

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
※ Please refer to uer Manual for the details of protection functions.

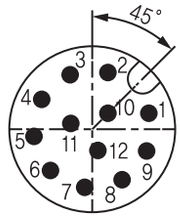


Alarm LED flash
(Ex: Position tracking error)

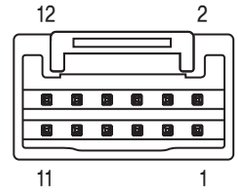
3. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE–	Output
5	LIMIT+	Input
6	LIMIT–	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital Out1	Output
12	Digital Out2	Output

◆ M Type



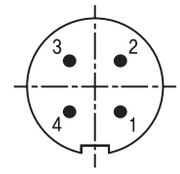
◆ R Type



4. Power Connector(CN2)

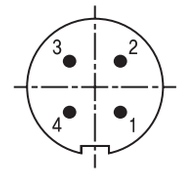
◆ M Type

NO.	Function	I/O
1	24VDC	Input
2	24VDC	Input
3	GND	Input
4	GND	Input



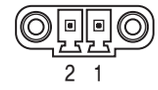
◆ M Type(86mm)

NO.	Function	I/O
1	40~70VDC	Input
2	40~70VDC	Input
3	GND	Input
4	GND	Input



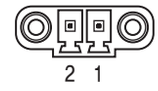
◆ R Type

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



◆ R Type(86mm)

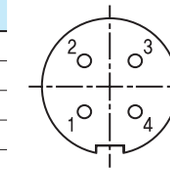
NO.	Function	I/O
1	40~70VDC	Input
2	GND	Input



5. EtherCAT Communication Connector(CN3, CN4)

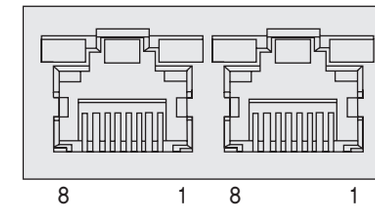
◆ M Type

NO.	Function
1	TD+
2	TD–
3	RD+
4	RD–
Connection hood	F.GND

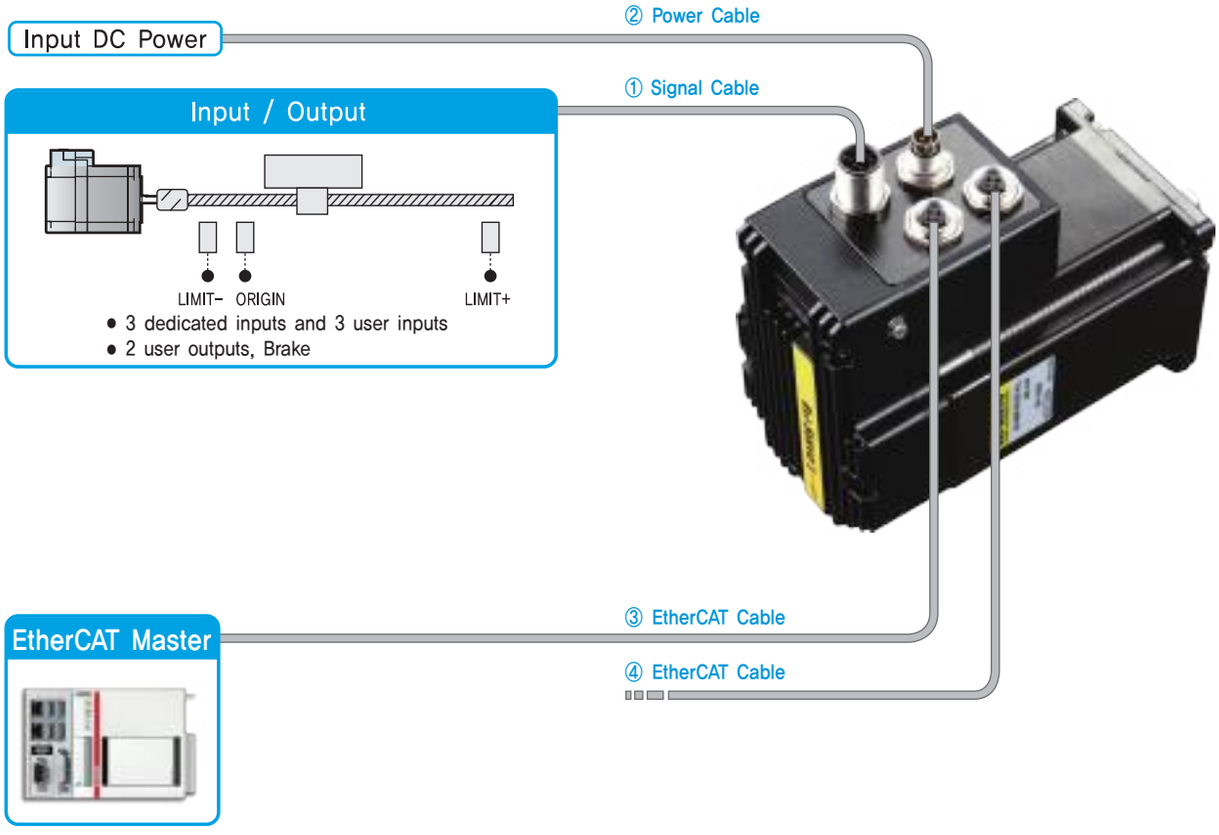


◆ R Type

NO.	Function	NO.	Function
1	TD+	6	RD–
2	TD–	7	----
3	RD+	8	----
4	----	Connection hood	F.GND
5	----		



● System Configuration [M Type]



Type	Signal Cable	Power Cable	EtherCAT Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT ALL.

Item	Length [m]	Remark
CSNM-S-□□□F	□□□	Normal Cable
CSNM-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT ALL.

Item	Length [m]	Remark
CWPA-P-□□□F	□□□	Normal Cable
CWPA-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

③ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNM-EC-□□□F	□□□	Normal Cable
CGNM-EC-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This is a cable that connects Ezi-SERVO II EtherCAT ALL M type to EtherCAT Master, Ezi-SERVO II EtherCAT, and Ezi-SERVO II EtherCAT ALL R type in a network. It is composed of M type connector and RJ45 connector.

④ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CWMD-EC-□□□F	□□□	Normal Cable
CWMD-EC-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This is a cable that connects Ezi-SERVO II EtherCAT ALL M type to Ezi-SERVO II EtherCAT ALL M type in a network.

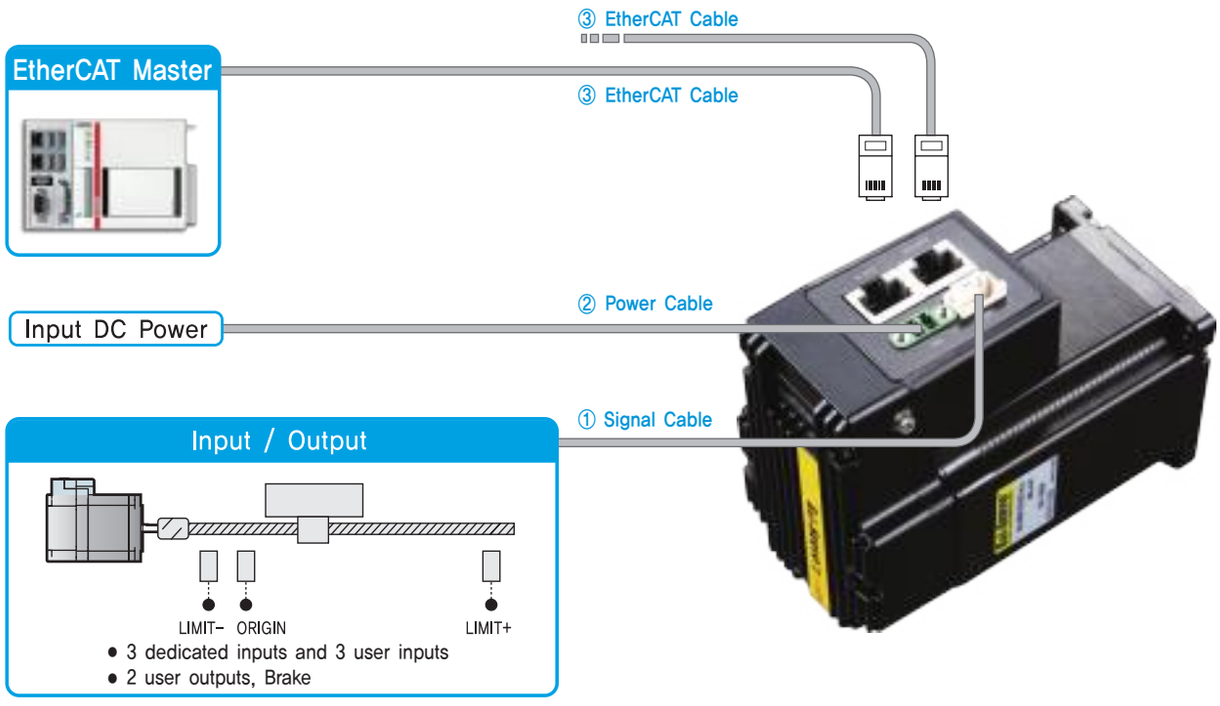
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Connector	99 0410 75 04	BINDER
Signal (CN1)	Connector	99 0492 52 12	BINDER
EtherCAT Communication (CN3, CN4)	Connector	99 0409 75 04	BINDER

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

System Configuration [R Type]



Type	Signal Cable	Power Cable	EtherCAT Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT ALL.

Item	Length [m]	Remark
CSNR-S-□□□F	□□□	Normal Cable
CSNR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT ALL.

Item	Length [m]	Remark
CSVA-P-□□□F	□□□	Normal Cable
CSVA-P-□□□M	□□□	Robot Cable
CSPA-P-□□□F*1	□□□	Normal Cable
CSPA-P-□□□M*1	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.
*1 : R Type 86mm

③ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable
CGNR-EC-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

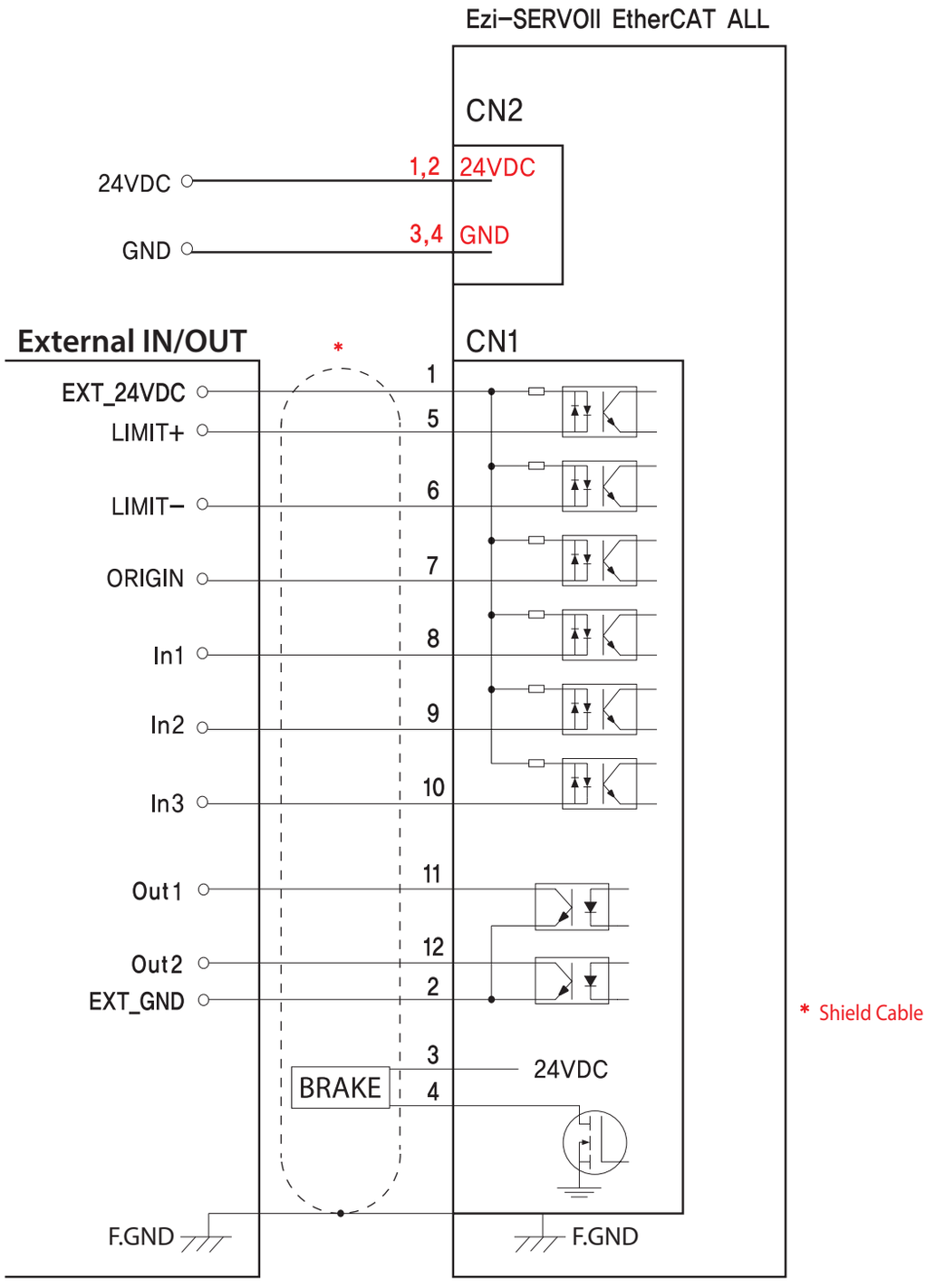
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Terminal Block	MC421-38102	DECA
Signal (CN1)	Housing Terminal	501646-1200 501648-1000(AWG 26~28)	MOLEX

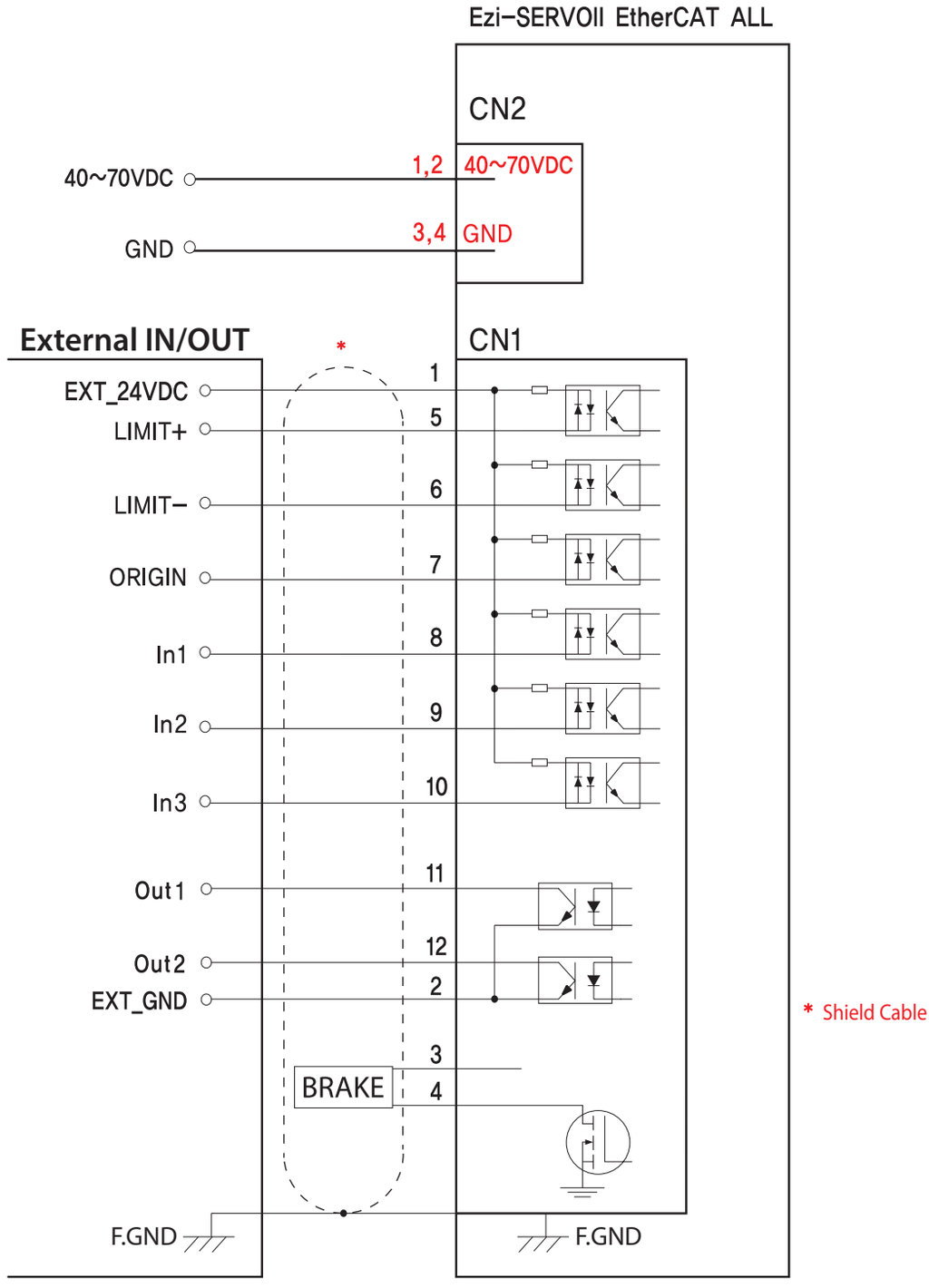
※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [M Type]



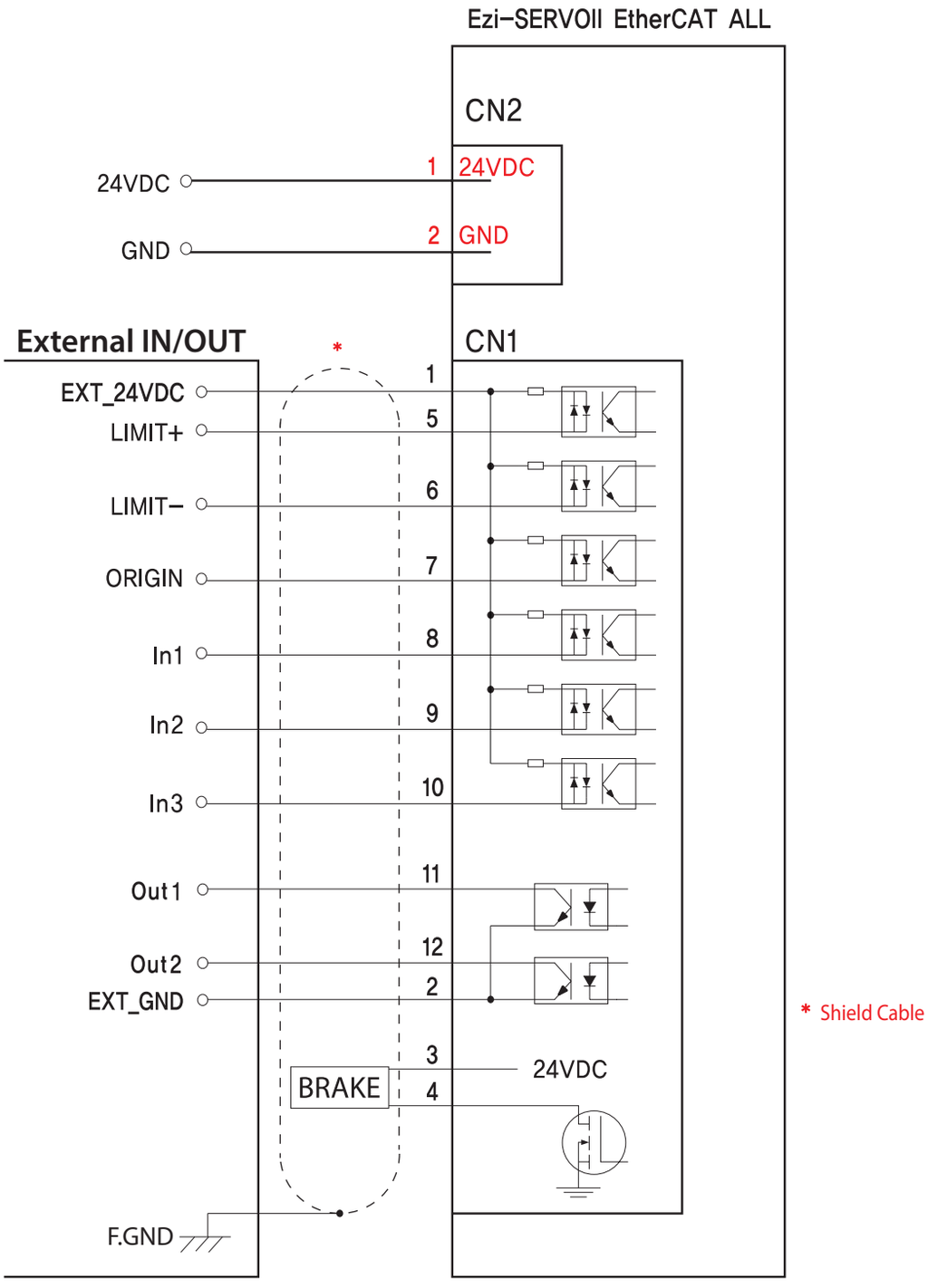
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● External Wiring Diagram [M Type 86mm]



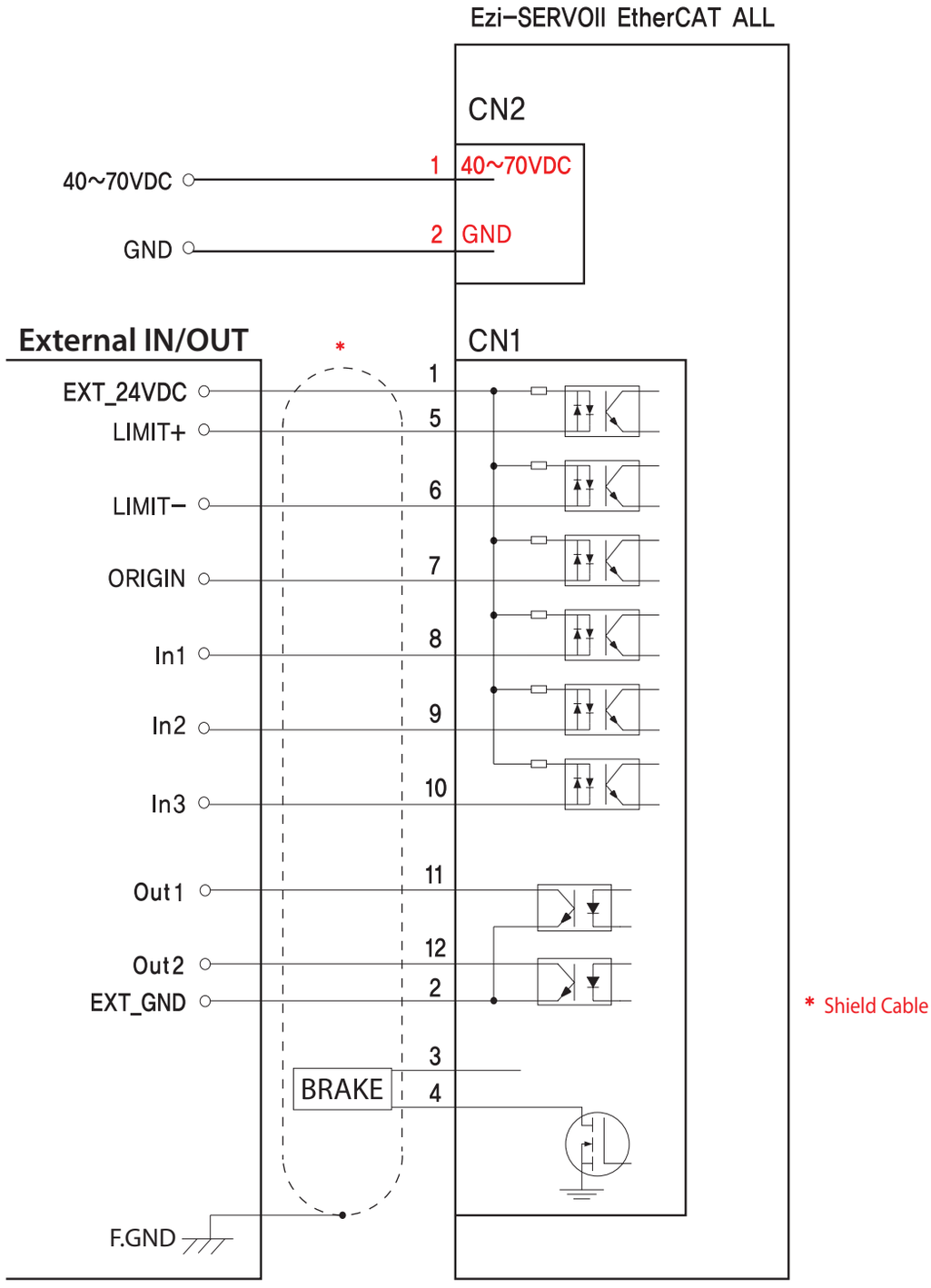
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● External Wiring Diagram [R Type]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● External Wiring Diagram [R type 86mm]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.


Ezi-SERVO II Plus-E
Ezi-SERVO
Ez82-PE-60L-A
[PWR] [MOTOR] [ENCODER]

Ezi-SERVO II Plus-E

Ezi-SERVO II Plus-E

- Embedded Controller
- Ethernet Interface
- Position Table
- Closed Loop System
- No Gain Tuning / No Hunting
- High Resolution / Fast Response
- Heat Reduction / Torque Improvement

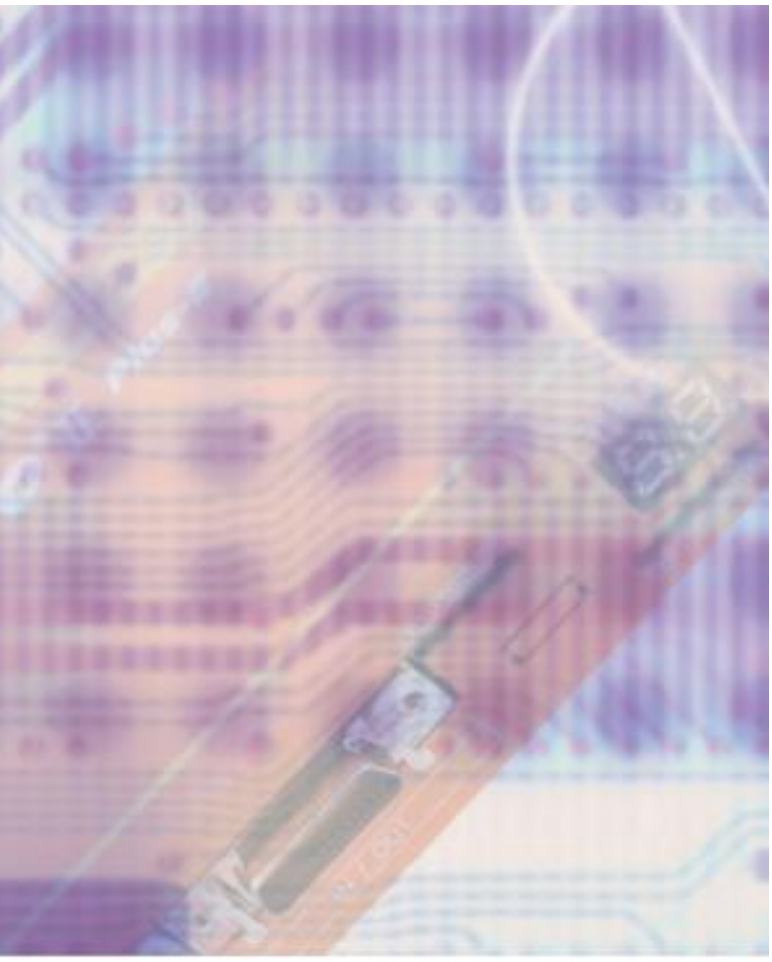


FASTECH

Fast, Accurate, Smooth Motion

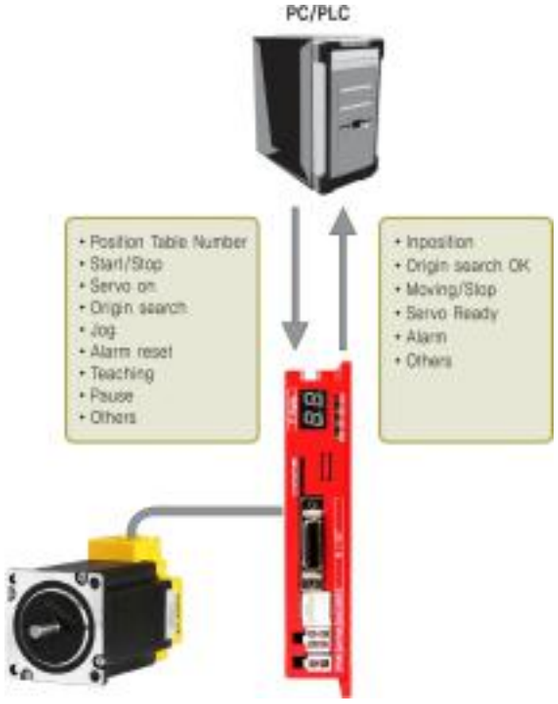
Ezi-SERVO® II Plus-E

Closed Loop Stepping System



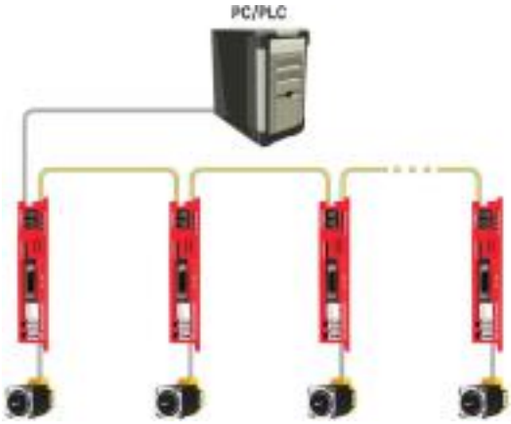
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC.
The PC can monitor the In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC.



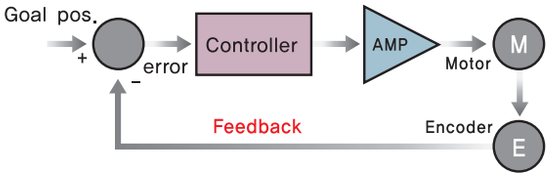
1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 7/8/10.



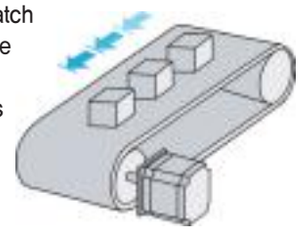
3 Closed Loop System

Ezi-SERVO II is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50 μsec. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



4 No Gain Tuning

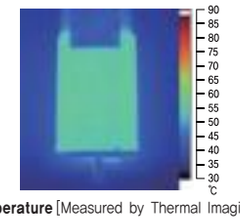
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



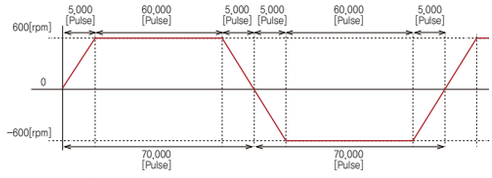
5 Heat Reduction / Energy Saving

(Motor Current Control according to load)

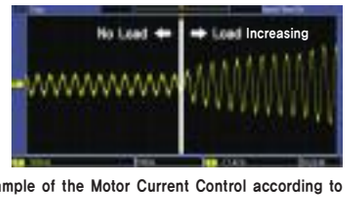
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

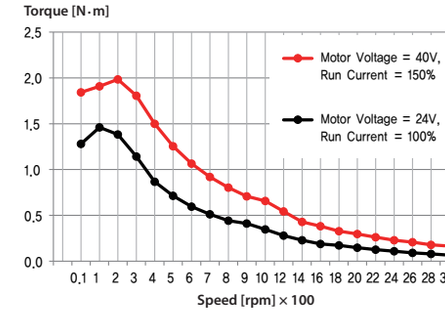


Example of the Motor Current Control according to load

6 Torque Improvement

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

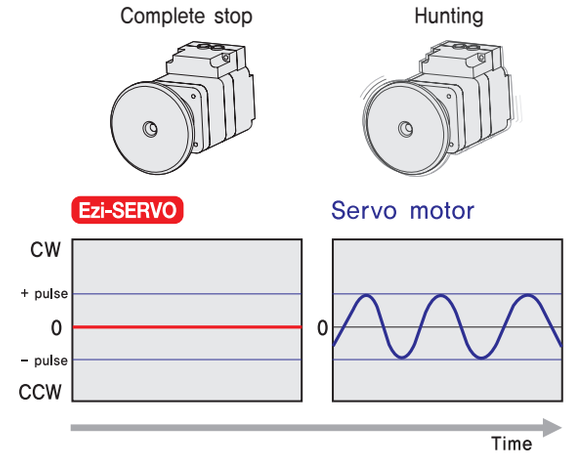


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-PE-56L
Motor Voltage = 40VDC
Input Voltage = 24VDC

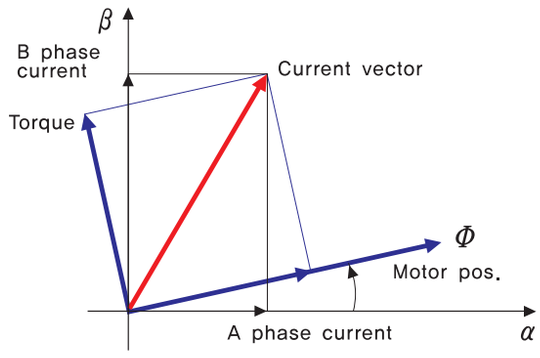
7 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



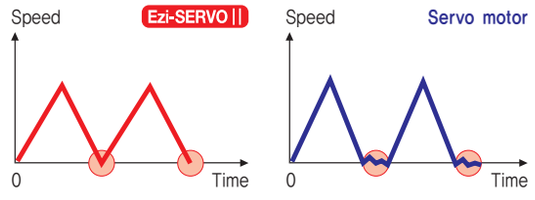
8 Smooth and Accurate

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



9 Fast Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



10 High Resolution

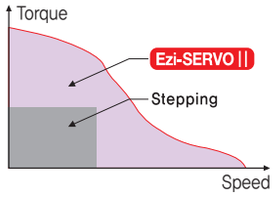
The unit of the position command can be divided precisely.

(Max. 20,000 pulses/revolution)



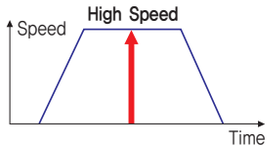
11 High Torque

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



12 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

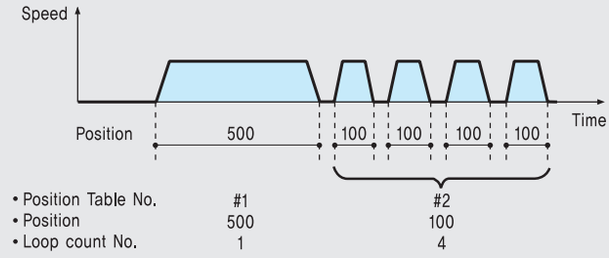
● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Features of Motion Controller

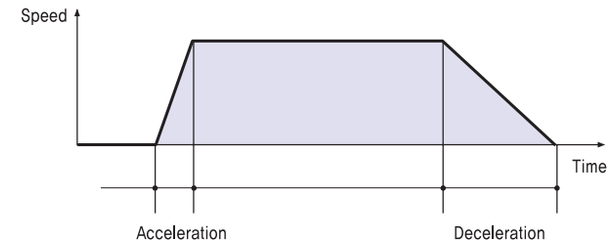
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



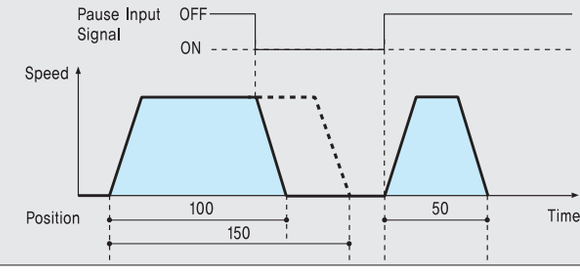
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



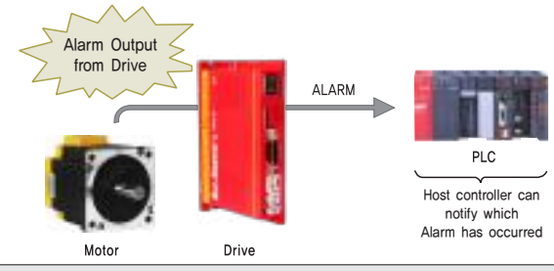
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



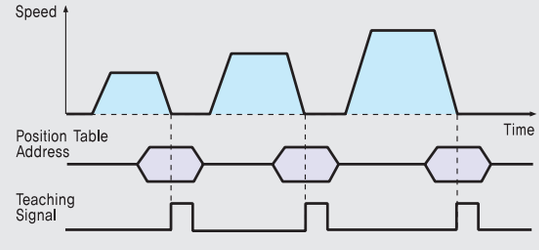
4. Alarm

The number of LED flashing time and information displayed on the 7-Segment indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

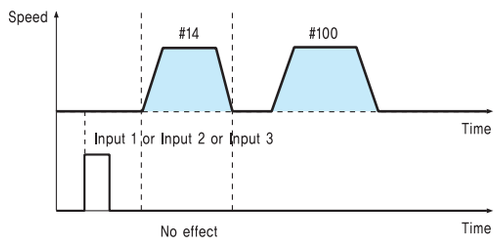


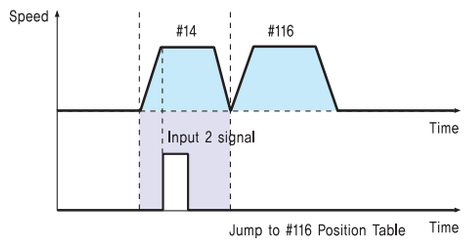
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





● Ezi-SERVO II Plus-E Part Numbering

Ezi-SERVO II -PE-42S-A-BK-PN10-□

- **Product Name**
- **Drive Series**
  - PE : Plus Ethernet
- **Motor Flange Size**
  - 20 : 20mm
  - 28 : 28mm
  - 35 : 35mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Encoder Resolution**
  - A : 10,000[ppr]
  - B : 20,000[ppr]
  - D : 16,000[ppr]
  - F : 4,000[ppr]
- **Brake**
  - Blank : Without Brake
  - BK : Brake
- **Reduction Gear Ratio**
  - Blank – Without Gear
  - PN03 – 1:3
  - PN05 – 1:5
  - PN08 – 1:8
  - PN10 – 1:10
  - PN15 – 1:15
  - PN25 – 1:25
  - PN40 – 1:40
  - PN50 – 1:50
- **User Code**

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II -PE-20M-F	EzM2-20M-F	EzS2-PE-20M-F
Ezi-SERVO II -PE-20L-F	EzM2-20L-F	EzS2-PE-20L-F
Ezi-SERVO II -PE-28S-D	EzM2-28S-D	EzS2-PE-28S-D
Ezi-SERVO II -PE-28SM-D	EzM2-28SM-D	EzS2-PE-28S-D
Ezi-SERVO II -PE-28M-D	EzM2-28M-D	EzS2-PE-28M-D
Ezi-SERVO II -PE-28MM-D	EzM2-28MM-D	EzS2-PE-28M-D
Ezi-SERVO II -PE-28L-D	EzM2-28L-D	EzS2-PE-28L-D
Ezi-SERVO II -PE-28LM-D	EzM2-28LM-D	EzS2-PE-28L-D
Ezi-SERVO II -PE-35M-D	EzM2-35M-D	EzS2-PE-35M-D
Ezi-SERVO II -PE-35MM-D	EzM2-35MM-D	EzS2-PE-35M-D
Ezi-SERVO II -PE-35L-D	EzM2-35L-D	EzS2-PE-35L-D
Ezi-SERVO II -PE-35LM-D	EzM2-35LM-D	EzS2-PE-35L-D
Ezi-SERVO II -PE-42S-A	EzM2-42S-A	EzS2-PE-42S-A
Ezi-SERVO II -PE-42S-B	EzM2-42S-B	EzS2-PE-42S-B
Ezi-SERVO II -PE-42M-A	EzM2-42M-A	EzS2-PE-42M-A
Ezi-SERVO II -PE-42M-B	EzM2-42M-B	EzS2-PE-42M-B
Ezi-SERVO II -PE-42L-A	EzM2-42L-A	EzS2-PE-42L-A
Ezi-SERVO II -PE-42L-B	EzM2-42L-B	EzS2-PE-42L-B
Ezi-SERVO II -PE-42XL-A	EzM2-42XL-A	EzS2-PE-42XL-A
Ezi-SERVO II -PE-42XL-B	EzM2-42XL-B	EzS2-PE-42XL-B
Ezi-SERVO II -PE-56S-A	EzM2-56S-A	EzS2-PE-56S-A
Ezi-SERVO II -PE-56S-B	EzM2-56S-B	EzS2-PE-56S-B
Ezi-SERVO II -PE-56M-A	EzM2-56M-A	EzS2-PE-56M-A
Ezi-SERVO II -PE-56M-B	EzM2-56M-B	EzS2-PE-56M-B
Ezi-SERVO II -PE-56L-A	EzM2-56L-A	EzS2-PE-56L-A
Ezi-SERVO II -PE-56L-B	EzM2-56L-B	EzS2-PE-56L-B
Ezi-SERVO II -PE-60S-A	EzM2-60S-A	EzS2-PE-60S-A
Ezi-SERVO II -PE-60S-B	EzM2-60S-B	EzS2-PE-60S-B
Ezi-SERVO II -PE-60M-A	EzM2-60M-A	EzS2-PE-60M-A
Ezi-SERVO II -PE-60M-B	EzM2-60M-B	EzS2-PE-60M-B
Ezi-SERVO II -PE-60L-A	EzM2-60L-A	EzS2-PE-60L-A
Ezi-SERVO II -PE-60L-B	EzM2-60L-B	EzS2-PE-60L-B
Ezi-SERVO II -PE-86M-A	EzM2-86M-A	EzS2-PE-86M-A
Ezi-SERVO II -PE-86M-B	EzM2-86M-B	EzS2-PE-86M-B
Ezi-SERVO II -PE-86L-A	EzM2-86L-A	EzS2-PE-86L-A
Ezi-SERVO II -PE-86L-B	EzM2-86L-B	EzS2-PE-86L-B
Ezi-SERVO II -PE-86XL-A	EzM2-86XL-A	EzS2-PE-86XL-A
Ezi-SERVO II -PE-86XL-B	EzM2-86XL-B	EzS2-PE-86XL-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex : Ezi-SERVO II -PE-28LM-D, Ezi-SERVO II -PE-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-PE-42S-A-BK	EzM2-42S-A-BK	EzS2-PE-42S-A
Ezi-SERVO II-PE-42S-B-BK	EzM2-42S-B-BK	EzS2-PE-42S-B
Ezi-SERVO II-PE-42M-A-BK	EzM2-42M-A-BK	EzS2-PE-42M-A
Ezi-SERVO II-PE-42M-B-BK	EzM2-42M-B-BK	EzS2-PE-42M-B
Ezi-SERVO II-PE-42L-A-BK	EzM2-42L-A-BK	EzS2-PE-42L-A
Ezi-SERVO II-PE-42L-B-BK	EzM2-42L-B-BK	EzS2-PE-42L-B
Ezi-SERVO II-PE-42XL-A-BK	EzM2-42XL-A-BK	EzS2-PE-42XL-A
Ezi-SERVO II-PE-42XL-B-BK	EzM2-42XL-B-BK	EzS2-PE-42XL-B
Ezi-SERVO II-PE-56S-A-BK	EzM2-56S-A-BK	EzS2-PE-56S-A
Ezi-SERVO II-PE-56S-B-BK	EzM2-56S-B-BK	EzS2-PE-56S-B
Ezi-SERVO II-PE-56M-A-BK	EzM2-56M-A-BK	EzS2-PE-56M-A
Ezi-SERVO II-PE-56M-B-BK	EzM2-56M-B-BK	EzS2-PE-56M-B
Ezi-SERVO II-PE-56L-A-BK	EzM2-56L-A-BK	EzS2-PE-56L-A
Ezi-SERVO II-PE-56L-B-BK	EzM2-56L-B-BK	EzS2-PE-56L-B
Ezi-SERVO II-PE-60S-A-BK	EzM2-60S-A-BK	EzS2-PE-60S-A
Ezi-SERVO II-PE-60S-B-BK	EzM2-60S-B-BK	EzS2-PE-60S-B
Ezi-SERVO II-PE-60M-A-BK	EzM2-60M-A-BK	EzS2-PE-60M-A
Ezi-SERVO II-PE-60M-B-BK	EzM2-60M-B-BK	EzS2-PE-60M-B
Ezi-SERVO II-PE-60L-A-BK	EzM2-60L-A-BK	EzS2-PE-60L-A
Ezi-SERVO II-PE-60L-B-BK	EzM2-60L-B-BK	EzS2-PE-60L-B
Ezi-SERVO II-PE-86M-A-BK	EzM2-86M-A-BK	EzS2-PE-86M-A
Ezi-SERVO II-PE-86M-B-BK	EzM2-86M-B-BK	EzS2-PE-86M-B
Ezi-SERVO II-PE-86L-A-BK	EzM2-86L-A-BK	EzS2-PE-86L-A
Ezi-SERVO II-PE-86L-B-BK	EzM2-86L-B-BK	EzS2-PE-86L-B
Ezi-SERVO II-PE-86XL-A-BK	EzM2-86XL-A-BK	EzS2-PE-86XL-A
Ezi-SERVO II-PE-86XL-B-BK	EzM2-86XL-B-BK	EzS2-PE-86XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-42S-A-PN3	EzM2-42S-A-PN3	EzS2-PE-42S-A	1:3
Ezi-SERVO II-PE-42S-B-PN3	EzM2-42S-B-PN3	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN5	EzM2-42S-A-PN5	EzS2-PE-42S-A	1:5
Ezi-SERVO II-PE-42S-B-PN5	EzM2-42S-B-PN5	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN8	EzM2-42S-A-PN8	EzS2-PE-42S-A	1:8
Ezi-SERVO II-PE-42S-B-PN8	EzM2-42S-B-PN8	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN10	EzM2-42S-A-PN10	EzS2-PE-42S-A	1:10
Ezi-SERVO II-PE-42S-B-PN10	EzM2-42S-B-PN10	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN15	EzM2-42S-A-PN15	EzS2-PE-42S-A	1:15
Ezi-SERVO II-PE-42S-B-PN15	EzM2-42S-B-PN15	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN25	EzM2-42S-A-PN25	EzS2-PE-42S-A	1:25
Ezi-SERVO II-PE-42S-B-PN25	EzM2-42S-B-PN25	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN40	EzM2-42S-A-PN40	EzS2-PE-42S-A	1:40
Ezi-SERVO II-PE-42S-B-PN40	EzM2-42S-B-PN40	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN50	EzM2-42S-A-PN50	EzS2-PE-42S-A	1:50
Ezi-SERVO II-PE-42S-B-PN50	EzM2-42S-B-PN50	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42M-A-PN3	EzM2-42M-A-PN3	EzS2-PE-42M-A	1:3
Ezi-SERVO II-PE-42M-B-PN3	EzM2-42M-B-PN3	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN5	EzM2-42M-A-PN5	EzS2-PE-42M-A	1:5
Ezi-SERVO II-PE-42M-B-PN5	EzM2-42M-B-PN5	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN8	EzM2-42M-A-PN8	EzS2-PE-42M-A	1:8
Ezi-SERVO II-PE-42M-B-PN8	EzM2-42M-B-PN8	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN10	EzM2-42M-A-PN10	EzS2-PE-42M-A	1:10
Ezi-SERVO II-PE-42M-B-PN10	EzM2-42M-B-PN10	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN15	EzM2-42M-A-PN15	EzS2-PE-42M-A	1:15
Ezi-SERVO II-PE-42M-B-PN15	EzM2-42M-B-PN15	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN25	EzM2-42M-A-PN25	EzS2-PE-42M-A	1:25
Ezi-SERVO II-PE-42M-B-PN25	EzM2-42M-B-PN25	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN40	EzM2-42M-A-PN40	EzS2-PE-42M-A	1:40
Ezi-SERVO II-PE-42M-B-PN40	EzM2-42M-B-PN40	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN50	EzM2-42M-A-PN50	EzS2-PE-42M-A	1:50
Ezi-SERVO II-PE-42M-B-PN50	EzM2-42M-B-PN50	EzS2-PE-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-42L-A-PN3	EzM2-42L-A-PN3	EzS2-PE-42L-A	1:3
Ezi-SERVO II-PE-42L-B-PN3	EzM2-42L-B-PN3	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN5	EzM2-42L-A-PN5	EzS2-PE-42L-A	1:5
Ezi-SERVO II-PE-42L-B-PN5	EzM2-42L-B-PN5	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN8	EzM2-42L-A-PN8	EzS2-PE-42L-A	1:8
Ezi-SERVO II-PE-42L-B-PN8	EzM2-42L-B-PN8	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN10	EzM2-42L-A-PN10	EzS2-PE-42L-A	1:10
Ezi-SERVO II-PE-42L-B-PN10	EzM2-42L-B-PN10	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN15	EzM2-42L-A-PN15	EzS2-PE-42L-A	1:15
Ezi-SERVO II-PE-42L-B-PN15	EzM2-42L-B-PN15	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN25	EzM2-42L-A-PN25	EzS2-PE-42L-A	1:25
Ezi-SERVO II-PE-42L-B-PN25	EzM2-42L-B-PN25	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN40	EzM2-42L-A-PN40	EzS2-PE-42L-A	1:40
Ezi-SERVO II-PE-42L-B-PN40	EzM2-42L-B-PN40	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN50	EzM2-42L-A-PN50	EzS2-PE-42L-A	1:50
Ezi-SERVO II-PE-42L-B-PN50	EzM2-42L-B-PN50	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-PE-42XL-A	1:3
Ezi-SERVO II-PE-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-PE-42XL-A	1:5
Ezi-SERVO II-PE-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-PE-42XL-A	1:8
Ezi-SERVO II-PE-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-PE-42XL-A	1:10
Ezi-SERVO II-PE-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-PE-42XL-A	1:15
Ezi-SERVO II-PE-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-PE-42XL-A	1:25
Ezi-SERVO II-PE-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-PE-42XL-A	1:40
Ezi-SERVO II-PE-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-PE-42XL-A	1:50
Ezi-SERVO II-PE-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-56S-A-PN3	EzM2-56S-A-PN3	EzS2-PE-56S-A	1:3
Ezi-SERVO II-PE-56S-B-PN3	EzM2-56S-B-PN3	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN5	EzM2-56S-A-PN5	EzS2-PE-56S-A	1:5
Ezi-SERVO II-PE-56S-B-PN5	EzM2-56S-B-PN5	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN8	EzM2-56S-A-PN8	EzS2-PE-56S-A	1:8
Ezi-SERVO II-PE-56S-B-PN8	EzM2-56S-B-PN8	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN10	EzM2-56S-A-PN10	EzS2-PE-56S-A	1:10
Ezi-SERVO II-PE-56S-B-PN10	EzM2-56S-B-PN10	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN15	EzM2-56S-A-PN15	EzS2-PE-56S-A	1:15
Ezi-SERVO II-PE-56S-B-PN15	EzM2-56S-B-PN15	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN25	EzM2-56S-A-PN25	EzS2-PE-56S-A	1:25
Ezi-SERVO II-PE-56S-B-PN25	EzM2-56S-B-PN25	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN40	EzM2-56S-A-PN40	EzS2-PE-56S-A	1:40
Ezi-SERVO II-PE-56S-B-PN40	EzM2-56S-B-PN40	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN50	EzM2-56S-A-PN50	EzS2-PE-56S-A	1:50
Ezi-SERVO II-PE-56S-B-PN50	EzM2-56S-B-PN50	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56M-A-PN3	EzM2-56M-A-PN3	EzS2-PE-56M-A	1:3
Ezi-SERVO II-PE-56M-B-PN3	EzM2-56M-B-PN3	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN5	EzM2-56M-A-PN5	EzS2-PE-56M-A	1:5
Ezi-SERVO II-PE-56M-B-PN5	EzM2-56M-B-PN5	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN8	EzM2-56M-A-PN8	EzS2-PE-56M-A	1:8
Ezi-SERVO II-PE-56M-B-PN8	EzM2-56M-B-PN8	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN10	EzM2-56M-A-PN10	EzS2-PE-56M-A	1:10
Ezi-SERVO II-PE-56M-B-PN10	EzM2-56M-B-PN10	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN15	EzM2-56M-A-PN15	EzS2-PE-56M-A	1:15
Ezi-SERVO II-PE-56M-B-PN15	EzM2-56M-B-PN15	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN25	EzM2-56M-A-PN25	EzS2-PE-56M-A	1:25
Ezi-SERVO II-PE-56M-B-PN25	EzM2-56M-B-PN25	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN40	EzM2-56M-A-PN40	EzS2-PE-56M-A	1:40
Ezi-SERVO II-PE-56M-B-PN40	EzM2-56M-B-PN40	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN50	EzM2-56M-A-PN50	EzS2-PE-56M-A	1:50
Ezi-SERVO II-PE-56M-B-PN50	EzM2-56M-B-PN50	EzS2-PE-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-56L-A-PN3	EzM2-56L-A-PN3	EzS2-PE-56L-A	1:3
Ezi-SERVO II-PE-56L-B-PN3	EzM2-56L-B-PN3	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN5	EzM2-56L-A-PN5	EzS2-PE-56L-A	1:5
Ezi-SERVO II-PE-56L-B-PN5	EzM2-56L-B-PN5	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN8	EzM2-56L-A-PN8	EzS2-PE-56L-A	1:8
Ezi-SERVO II-PE-56L-B-PN8	EzM2-56L-B-PN8	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN10	EzM2-56L-A-PN10	EzS2-PE-56L-A	1:10
Ezi-SERVO II-PE-56L-B-PN10	EzM2-56L-B-PN10	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN15	EzM2-56L-A-PN15	EzS2-PE-56L-A	1:15
Ezi-SERVO II-PE-56L-B-PN15	EzM2-56L-B-PN15	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN25	EzM2-56L-A-PN25	EzS2-PE-56L-A	1:25
Ezi-SERVO II-PE-56L-B-PN25	EzM2-56L-B-PN25	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN40	EzM2-56L-A-PN40	EzS2-PE-56L-A	1:40
Ezi-SERVO II-PE-56L-B-PN40	EzM2-56L-B-PN40	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN50	EzM2-56L-A-PN50	EzS2-PE-56L-A	1:50
Ezi-SERVO II-PE-56L-B-PN50	EzM2-56L-B-PN50	EzS2-PE-56L-B	
Ezi-SERVO II-PE-60S-A-PN3	EzM2-60S-A-PN3	EzS2-PE-60S-A	1:3
Ezi-SERVO II-PE-60S-B-PN3	EzM2-60S-B-PN3	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN5	EzM2-60S-A-PN5	EzS2-PE-60S-A	1:5
Ezi-SERVO II-PE-60S-B-PN5	EzM2-60S-B-PN5	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN8	EzM2-60S-A-PN8	EzS2-PE-60S-A	1:8
Ezi-SERVO II-PE-60S-B-PN8	EzM2-60S-B-PN8	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN10	EzM2-60S-A-PN10	EzS2-PE-60S-A	1:10
Ezi-SERVO II-PE-60S-B-PN10	EzM2-60S-B-PN10	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN15	EzM2-60S-A-PN15	EzS2-PE-60S-A	1:15
Ezi-SERVO II-PE-60S-B-PN15	EzM2-60S-B-PN15	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN25	EzM2-60S-A-PN25	EzS2-PE-60S-A	1:25
Ezi-SERVO II-PE-60S-B-PN25	EzM2-60S-B-PN25	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN40	EzM2-60S-A-PN40	EzS2-PE-60S-A	1:40
Ezi-SERVO II-PE-60S-B-PN40	EzM2-60S-B-PN40	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN50	EzM2-60S-A-PN50	EzS2-PE-60S-A	1:50
Ezi-SERVO II-PE-60S-B-PN50	EzM2-60S-B-PN50	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60M-A-PN3	EzM2-60M-A-PN3	EzS2-PE-60M-A	1:3
Ezi-SERVO II-PE-60M-B-PN3	EzM2-60M-B-PN3	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN5	EzM2-60M-A-PN5	EzS2-PE-60M-A	1:5
Ezi-SERVO II-PE-60M-B-PN5	EzM2-60M-B-PN5	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN8	EzM2-60M-A-PN8	EzS2-PE-60M-A	1:8
Ezi-SERVO II-PE-60M-B-PN8	EzM2-60M-B-PN8	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN10	EzM2-60M-A-PN10	EzS2-PE-60M-A	1:10
Ezi-SERVO II-PE-60M-B-PN10	EzM2-60M-B-PN10	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN15	EzM2-60M-A-PN15	EzS2-PE-60M-A	1:15
Ezi-SERVO II-PE-60M-B-PN15	EzM2-60M-B-PN15	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN25	EzM2-60M-A-PN25	EzS2-PE-60M-A	1:25
Ezi-SERVO II-PE-60M-B-PN25	EzM2-60M-B-PN25	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN40	EzM2-60M-A-PN40	EzS2-PE-60M-A	1:40
Ezi-SERVO II-PE-60M-B-PN40	EzM2-60M-B-PN40	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN50	EzM2-60M-A-PN50	EzS2-PE-60M-A	1:50
Ezi-SERVO II-PE-60M-B-PN50	EzM2-60M-B-PN50	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60L-A-PN3	EzM2-60L-A-PN3	EzS2-PE-60L-A	1:3
Ezi-SERVO II-PE-60L-B-PN3	EzM2-60L-B-PN3	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN5	EzM2-60L-A-PN5	EzS2-PE-60L-A	1:5
Ezi-SERVO II-PE-60L-B-PN5	EzM2-60L-B-PN5	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN8	EzM2-60L-A-PN8	EzS2-PE-60L-A	1:8
Ezi-SERVO II-PE-60L-B-PN8	EzM2-60L-B-PN8	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN10	EzM2-60L-A-PN10	EzS2-PE-60L-A	1:10
Ezi-SERVO II-PE-60L-B-PN10	EzM2-60L-B-PN10	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN15	EzM2-60L-A-PN15	EzS2-PE-60L-A	1:15
Ezi-SERVO II-PE-60L-B-PN15	EzM2-60L-B-PN15	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN25	EzM2-60L-A-PN25	EzS2-PE-60L-A	1:25
Ezi-SERVO II-PE-60L-B-PN25	EzM2-60L-B-PN25	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN40	EzM2-60L-A-PN40	EzS2-PE-60L-A	1:40
Ezi-SERVO II-PE-60L-B-PN40	EzM2-60L-B-PN40	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN50	EzM2-60L-A-PN50	EzS2-PE-60L-A	1:50
Ezi-SERVO II-PE-60L-B-PN50	EzM2-60L-B-PN50	EzS2-PE-60L-B	

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-86M-A-PN3	EzM2-86M-A-PN3	EzS2-PE-86M-A	1:3
Ezi-SERVO II-PE-86M-B-PN3	EzM2-86M-B-PN3	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN5	EzM2-86M-A-PN5	EzS2-PE-86M-A	1:5
Ezi-SERVO II-PE-86M-B-PN5	EzM2-86M-B-PN5	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN8	EzM2-86M-A-PN8	EzS2-PE-86M-A	1:8
Ezi-SERVO II-PE-86M-B-PN8	EzM2-86M-B-PN8	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN10	EzM2-86M-A-PN10	EzS2-PE-86M-A	1:10
Ezi-SERVO II-PE-86M-B-PN10	EzM2-86M-B-PN10	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN15	EzM2-86M-A-PN15	EzS2-PE-86M-A	1:15
Ezi-SERVO II-PE-86M-B-PN15	EzM2-86M-B-PN15	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN25	EzM2-86M-A-PN25	EzS2-PE-86M-A	1:25
Ezi-SERVO II-PE-86M-B-PN25	EzM2-86M-B-PN25	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN40	EzM2-86M-A-PN40	EzS2-PE-86M-A	1:40
Ezi-SERVO II-PE-86M-B-PN40	EzM2-86M-B-PN40	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN50	EzM2-86M-A-PN50	EzS2-PE-86M-A	1:50
Ezi-SERVO II-PE-86M-B-PN50	EzM2-86M-B-PN50	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86L-A-PN3	EzM2-86L-A-PN3	EzS2-PE-86L-A	1:3
Ezi-SERVO II-PE-86L-B-PN3	EzM2-86L-B-PN3	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN5	EzM2-86L-A-PN5	EzS2-PE-86L-A	1:5
Ezi-SERVO II-PE-86L-B-PN5	EzM2-86L-B-PN5	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN8	EzM2-86L-A-PN8	EzS2-PE-86L-A	1:8
Ezi-SERVO II-PE-86L-B-PN8	EzM2-86L-B-PN8	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN10	EzM2-86L-A-PN10	EzS2-PE-86L-A	1:10
Ezi-SERVO II-PE-86L-B-PN10	EzM2-86L-B-PN10	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN15	EzM2-86L-A-PN15	EzS2-PE-86L-A	1:15
Ezi-SERVO II-PE-86L-B-PN15	EzM2-86L-B-PN15	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN25	EzM2-86L-A-PN25	EzS2-PE-86L-A	1:25
Ezi-SERVO II-PE-86L-B-PN25	EzM2-86L-B-PN25	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN40	EzM2-86L-A-PN40	EzS2-PE-86L-A	1:40
Ezi-SERVO II-PE-86L-B-PN40	EzM2-86L-B-PN40	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN50	EzM2-86L-A-PN50	EzS2-PE-86L-A	1:50
Ezi-SERVO II-PE-86L-B-PN50	EzM2-86L-B-PN50	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86XL-A-PN3	EzM2-86XL-A-PN3	EzS2-PE-86XL-A	1:3
Ezi-SERVO II-PE-86XL-B-PN3	EzM2-86XL-B-PN3	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN5	EzM2-86XL-A-PN5	EzS2-PE-86XL-A	1:5
Ezi-SERVO II-PE-86XL-B-PN5	EzM2-86XL-B-PN5	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN8	EzM2-86XL-A-PN8	EzS2-PE-86XL-A	1:8
Ezi-SERVO II-PE-86XL-B-PN8	EzM2-86XL-B-PN8	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN10	EzM2-86XL-A-PN10	EzS2-PE-86XL-A	1:10
Ezi-SERVO II-PE-86XL-B-PN10	EzM2-86XL-B-PN10	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN15	EzM2-86XL-A-PN15	EzS2-PE-86XL-A	1:15
Ezi-SERVO II-PE-86XL-B-PN15	EzM2-86XL-B-PN15	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN25	EzM2-86XL-A-PN25	EzS2-PE-86XL-A	1:25
Ezi-SERVO II-PE-86XL-B-PN25	EzM2-86XL-B-PN25	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN40	EzM2-86XL-A-PN40	EzS2-PE-86XL-A	1:40
Ezi-SERVO II-PE-86XL-B-PN40	EzM2-86XL-B-PN40	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN50	EzM2-86XL-A-PN50	EzS2-PE-86XL-A	1:50
Ezi-SERVO II-PE-86XL-B-PN50	EzM2-86XL-B-PN50	EzS2-PE-86XL-B	

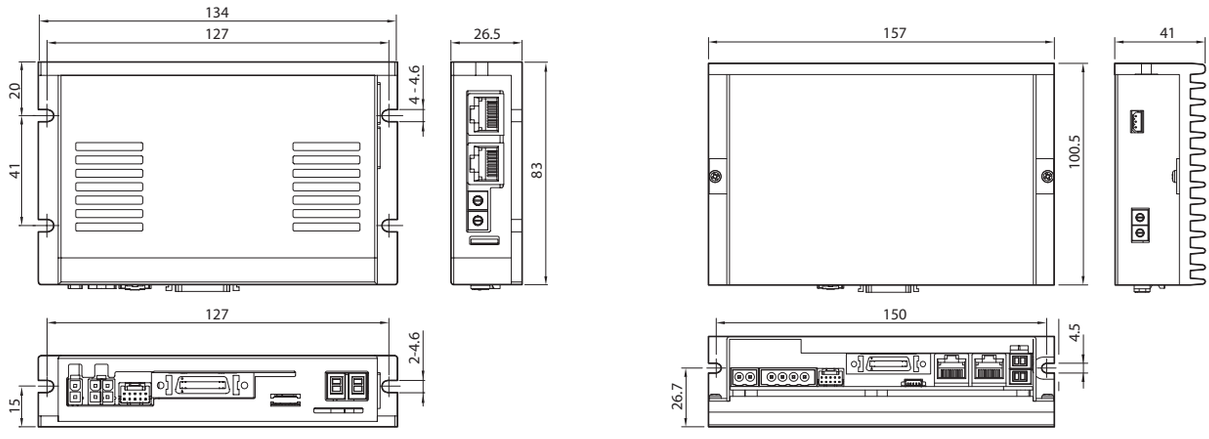
Specifications of Drive

Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series	EzM2-86 series
Driver Model		EzS2-PE-20 series	EzS2-PE-28 series	EzS2-PE-35 series	EzS2-PE-42 series	EzS2-PE-56 series	EzS2-PE-60 series	EzS2-PE-86 series
Input Voltage		24VDC ±10%						40~70VDC
Control Method		Closed loop control with 32bit MCU						
Multi Axis Drive		Maximum 254 axis operating (Selectable IP: 1~254)						
Position Table		256 motion command steps (Speed, External start, Jump, Loop, Wait and PT finish etc.)						
Current Consumption		Max 500mA (Except motor current)						
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃						
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)						
	Vib. Resist.	0.5g						
Function	Rotation Speed	0~3,000 [rpm] *1						
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter) *2						
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error						
	LED Display	Power status, In-Position status, Servo On status, Alarm status						
	In-Position Selection	0~63 (Selectable by parameter)						
	Position Gain Selection	0~63 (Selectable by parameter)						
	Rotational Direction	CW/CCW (Selectable by parameter)						
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 9 programmable inputs (Photocoupler)						
	Output Signals	1 dedicated output (Compare Out), 9 programmable outputs (Photocoupler), Brake						
Communication Interface		Ethernet communication, Dual port Ethernet switch embeded, Communication speed: 10/100 Base - T/TX Full-Duplex						
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm]						
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque						
GUI		User Interface Program within Windows						
Library		Motion Library (DLL) for windows 7/8/10						

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]



※ 86mm motor drive (EzS2-PE-86 series)

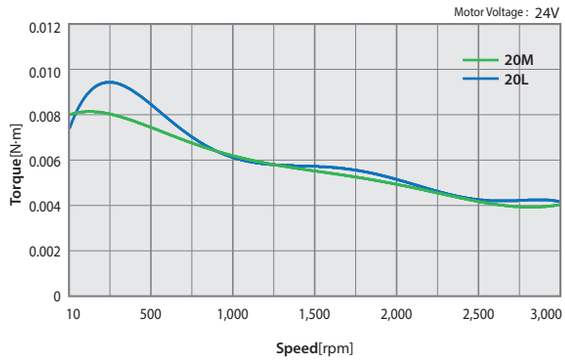
Specifications of Motor

MODEL			EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	80	104	147	204	232	194	226	294	357	426	564
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

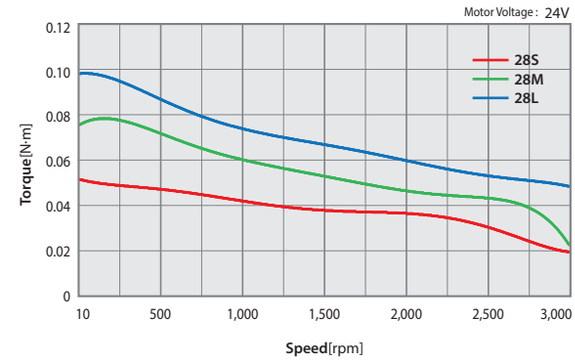
MODEL			EzM2-56 series			EzM2-60 series			EzM2-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	608	784	1230	693	856	1419	2355	3941	5453
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70	270	270	270
	8mm		65	65	65	87	87	87	300	300	300
	13mm		85	85	85	114	114	114	350	350	350
	18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

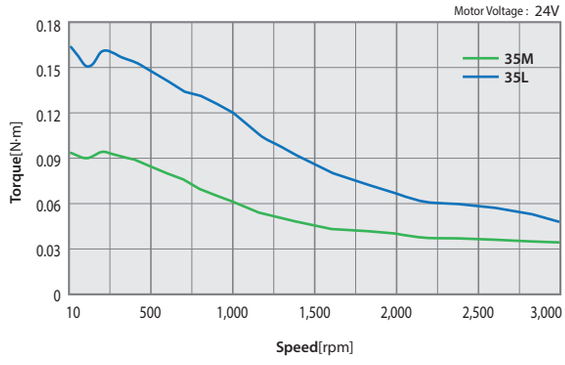
Ezi-SERVOII-PE-20 series



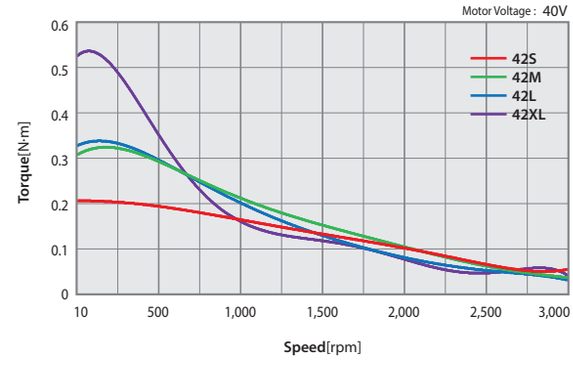
Ezi-SERVOII-PE-28 series



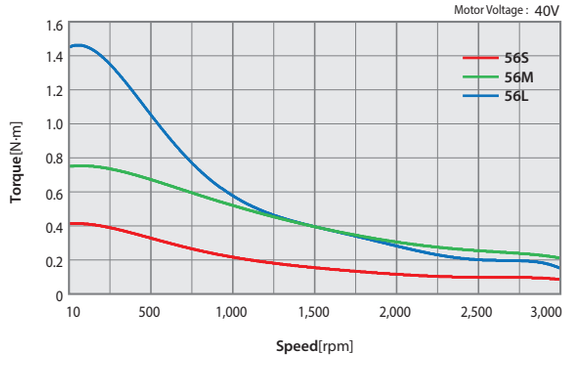
Ezi-SERVOII-PE-35 series



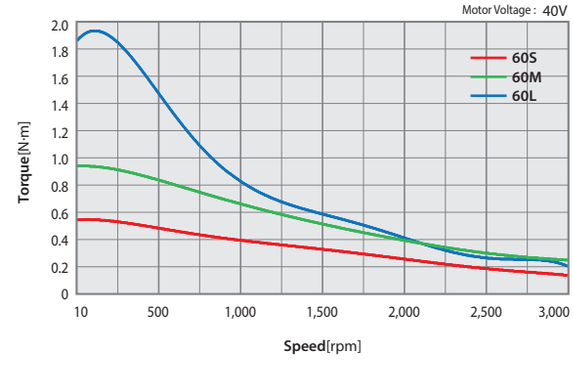
Ezi-SERVOII-PE-42 series



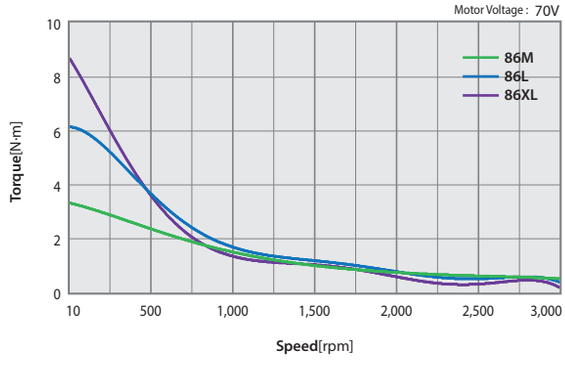
Ezi-SERVOII-PE-56 series



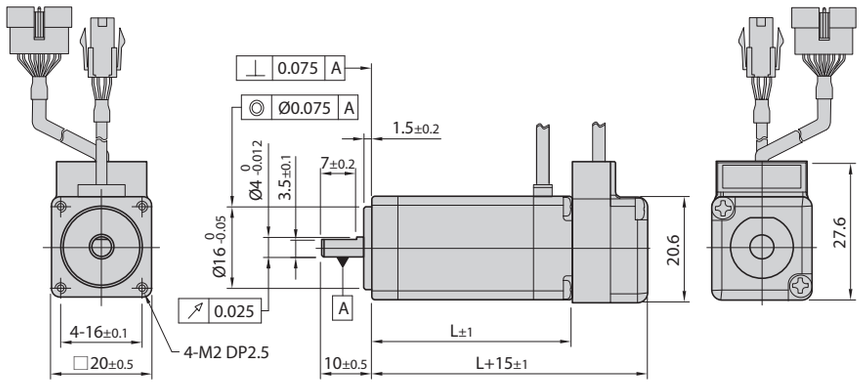
Ezi-SERVOII-PE-60 series



Ezi-SERVOII-PE-86 series

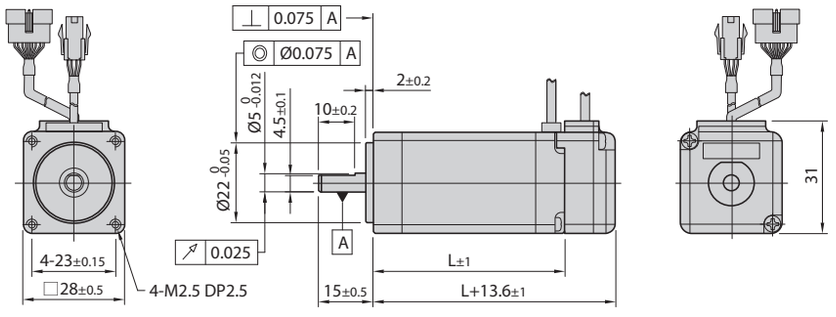


● Dimensions of Motor [mm]



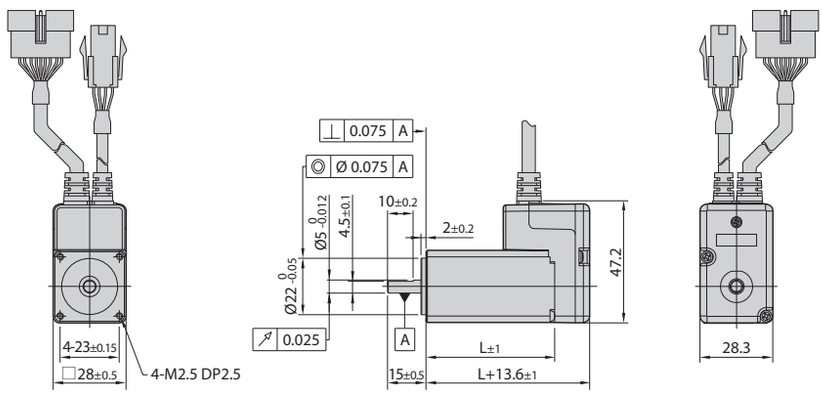
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

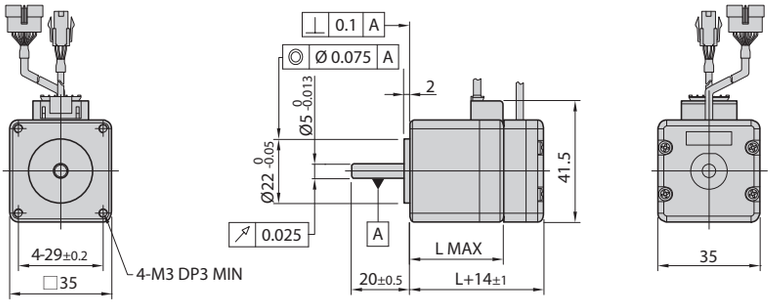
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

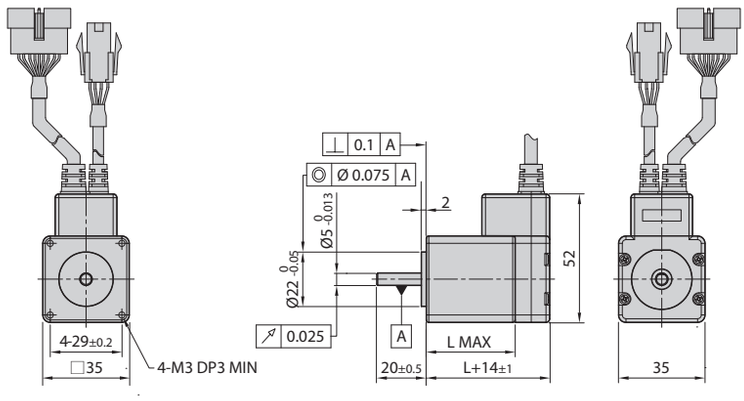
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

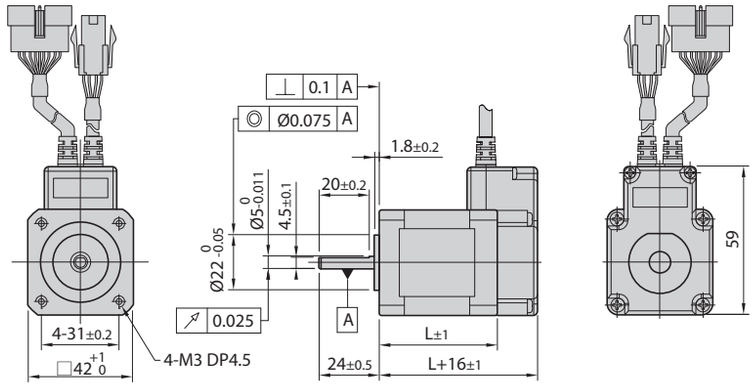
Dimensions of Motor [mm]



35mm (Stopper type)

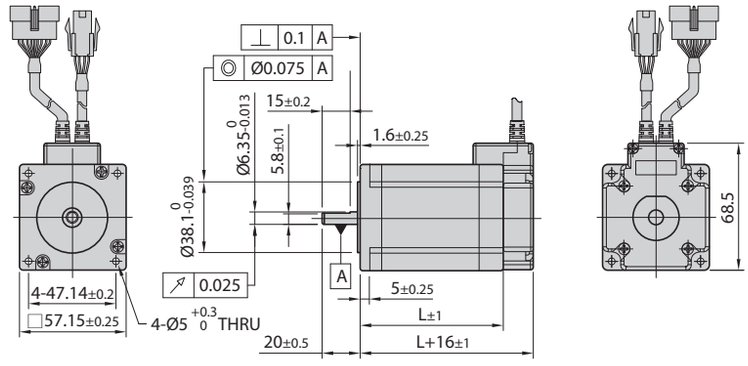
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

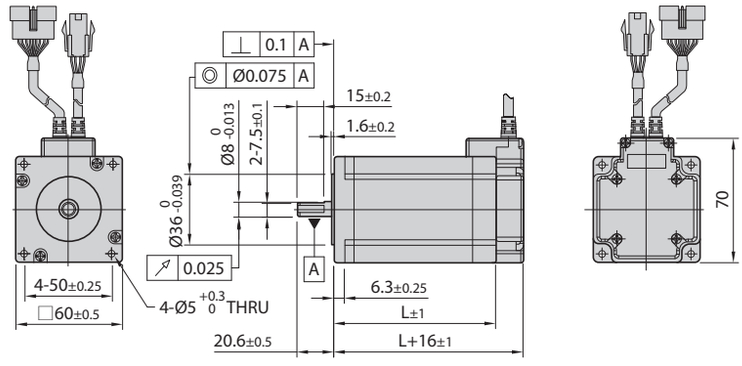
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

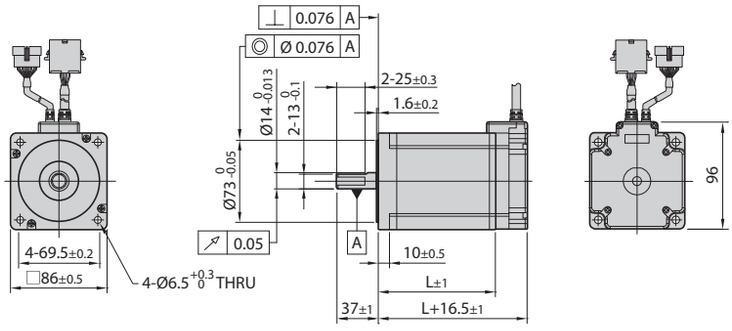
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

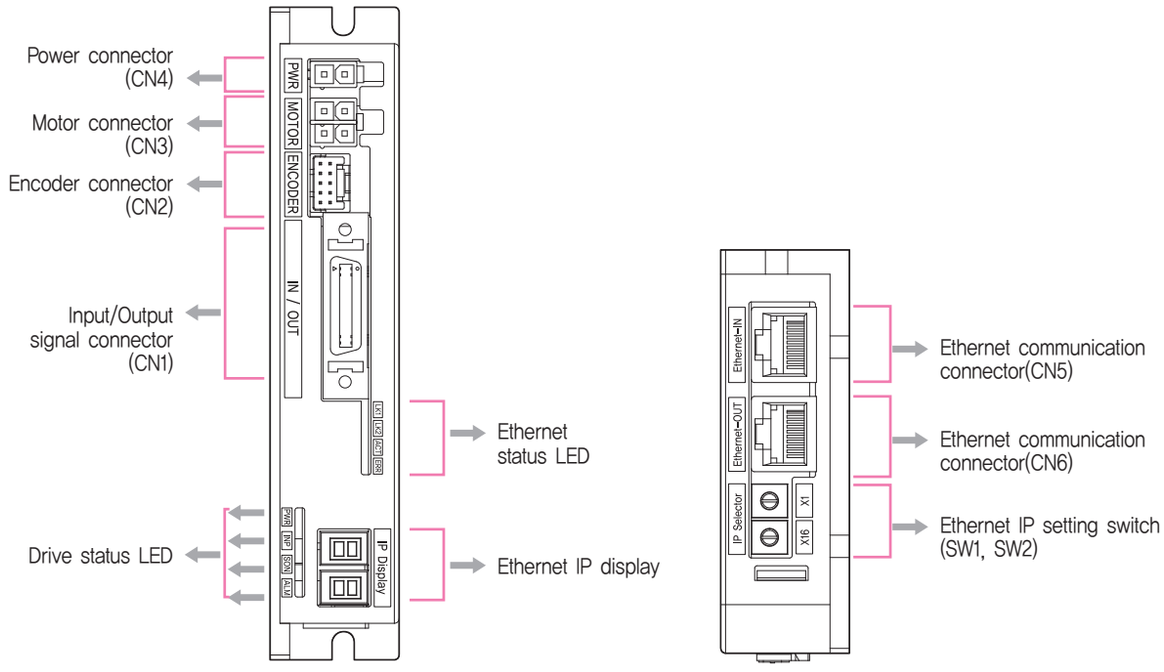
● Dimensions of Motor [mm]



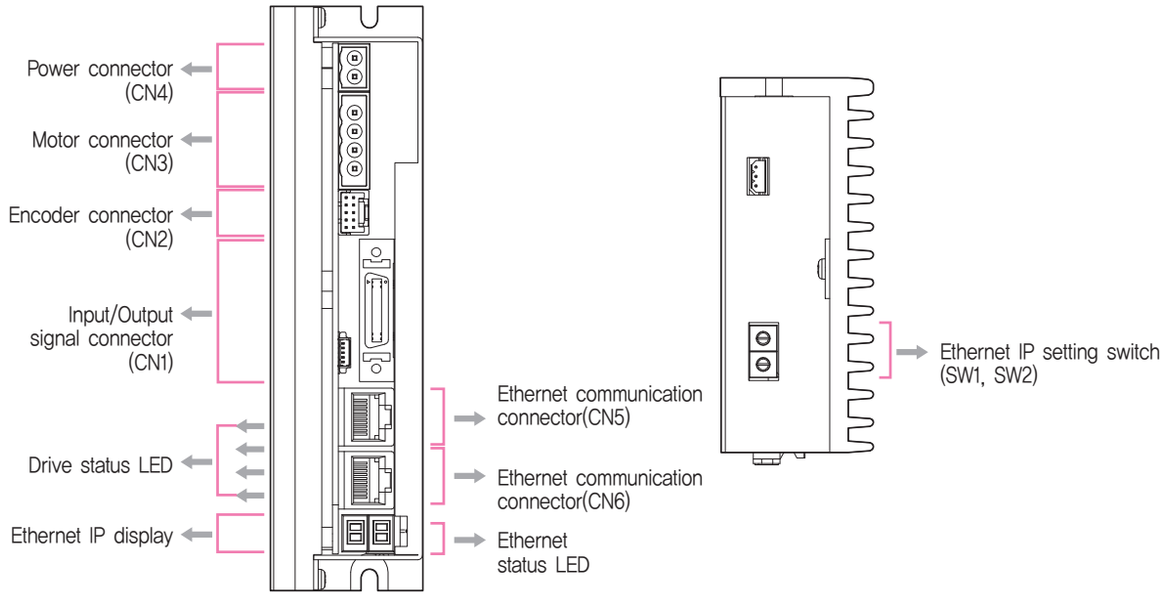
86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

Settings and Operation

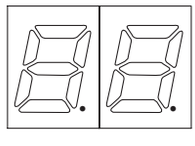


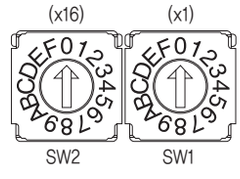
◆ 86mm Motor Drive (EzS2-PE-86 Series)



1. Ethernet IP Display and Setting Switch(SW1, SW2)

It can be set the value of the fourth digit of Ethernet IP through the setting switch. Set the product's IP not to overlap with the connected products. The first, second and third values of IP can be set through the GUI. Please refer to the manual for details. When the switch is set to 255 (FF), IP is automatically set, ignoring the setting. (DHCP function)
The fourth digit of the Ethernet IP is displayed in 7-Segment.





Ex) In case of SW1 : **7** and SW2 : **5**
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

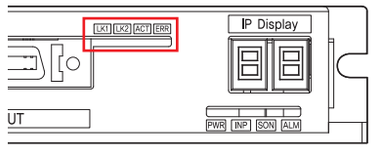
2. Ethernet Status LED

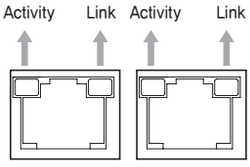
LED indicates communication status of Ethernet. Link/Activity LED exists on each port of Ethernet.

Name	Color	Status	Explanation
ERR	Red	OFF	No Error status
		ON	Local Error

Name	Color	Status	Explanation
LK1/ LK2	Green	OFF	Link deactivated
		ON	Link activated

Name	Color	Status	Explanation
Activity	Yellow	OFF	No operating
		Flickering	Operting



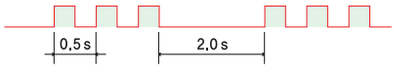


3. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Lights On when Positioning error reaches within the preset pulse selected by parameter
SON	Orange	Servo On / Off Indication	Servo On: Lights On, Servo Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated

◆ Protection functions and LED flash times

Times	Error Code *4	Protection	Conditions
1	E-001	Over Current Error	The current through power devices in drive exceeds 4.8A *1
2	E-002	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	E-003	Position Tracking Error	Position error value is higher than 180° in motor run state *2
4	E-004	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	E-005	Over Temperature Error	Temperature of inside of drive exceed 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	E-007	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	E-008	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	E-010	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)
15	E-015	Position Overflow Error	Position error value is higher than 180° in motor stop state *2

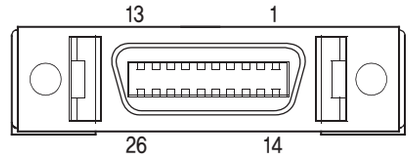


Alarm LED flash
(Ex, Position tracking error)

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*4 : When an alarm occurs, error code is displayed on the 7-segment instead of Ethernet IP.
※ Please refer to uer Manual for the details of protection functions.

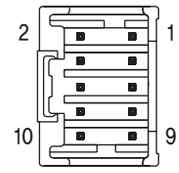
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In6	Input
6	Digital In7	Input
7	Compare Out	Output
8	Digital Out1	Output
9	Digital Out2	Output
10	Digital Out3	Output
11	Digital Out4	Output
12	Digital Out5	Output
13	Digital Out6	Output
14	Digital In2	Input
15	Digital In3	Input
16	Digital In4	Input
17	Digital In5	Input
18	Digital In8	Input
19	Digital In9	Input
20	Digital Out7	Output
21	Digital Out8	Output
22	Digital Out9	Output
23	BRAKE+	Output
24	BRAKE−	Output
25	EXT_GND	Input
26	EXT_24VDC	Input



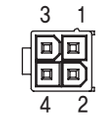
5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----

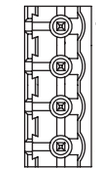


6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output



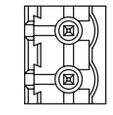
※ 86mm motor drive.

7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



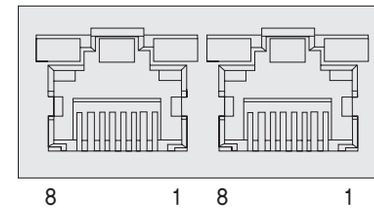
NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input



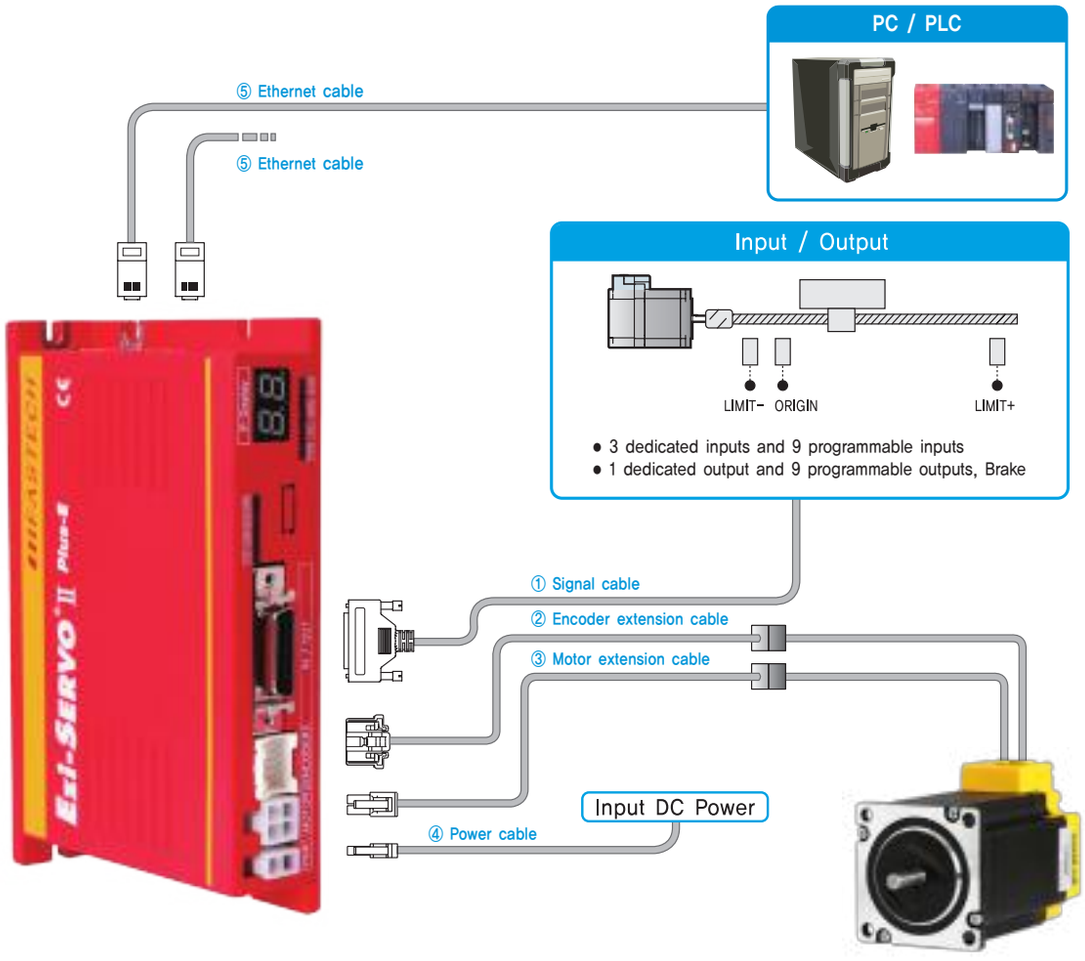
※ 86mm motor drive.

8. Ethernet Communication Connector(CN5, CN6)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connection hood	F.GND
5	----		



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CSVR-S-□□□F	□□□	Normal Cable
CSVR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Ethernet Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-SERVO II Plus-E.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CIFD-S-□□□F	□□□	Normal Cable
CIFD-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

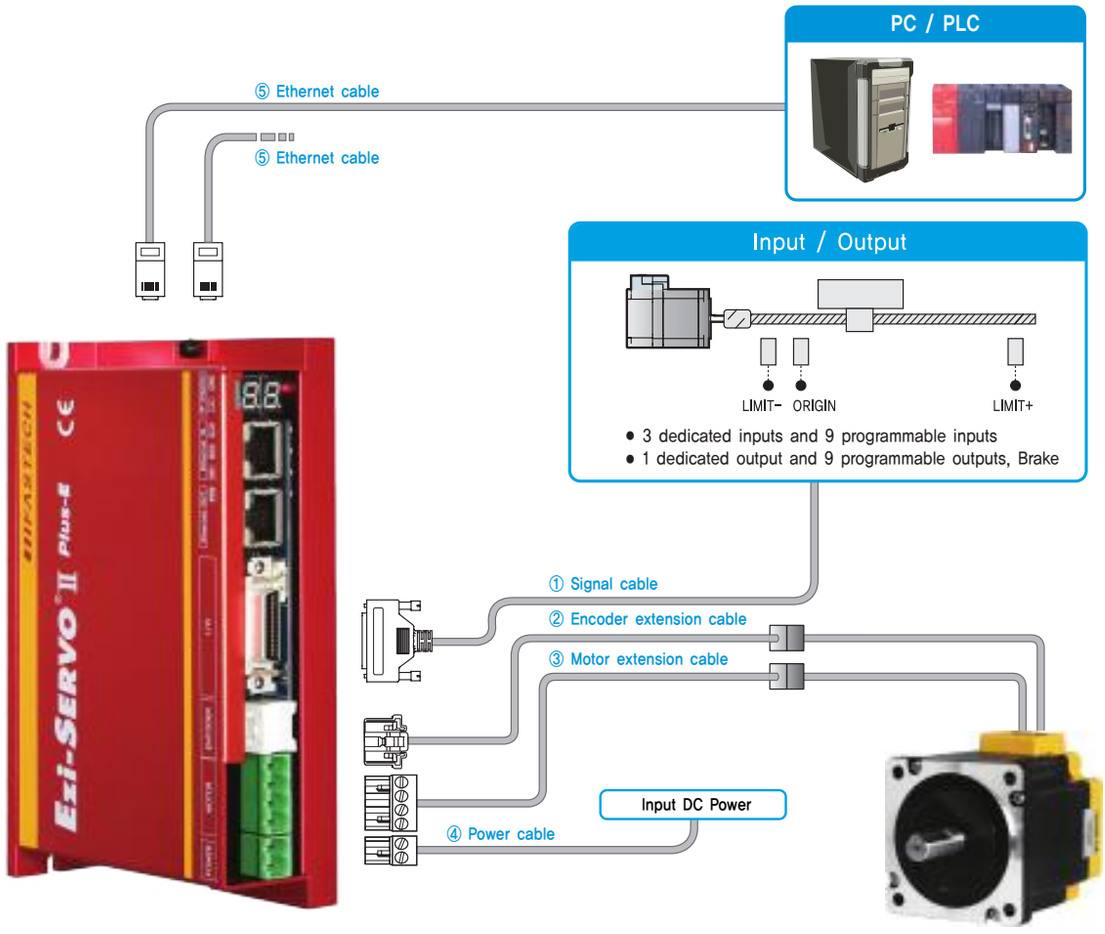
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10126-3000PE 10326-52F0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CSVR-S-□□□F	□□□	Normal Cable
CSVR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CSVP-M-□□□F	□□□	Normal Cable
CSVP-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Ethernet Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-SERVO II Plus-E.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-SERVO II Plus-E.

Item	Length [m]	Remark
CIFD-S-□□□F	□□□	Normal Cable
CIFD-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

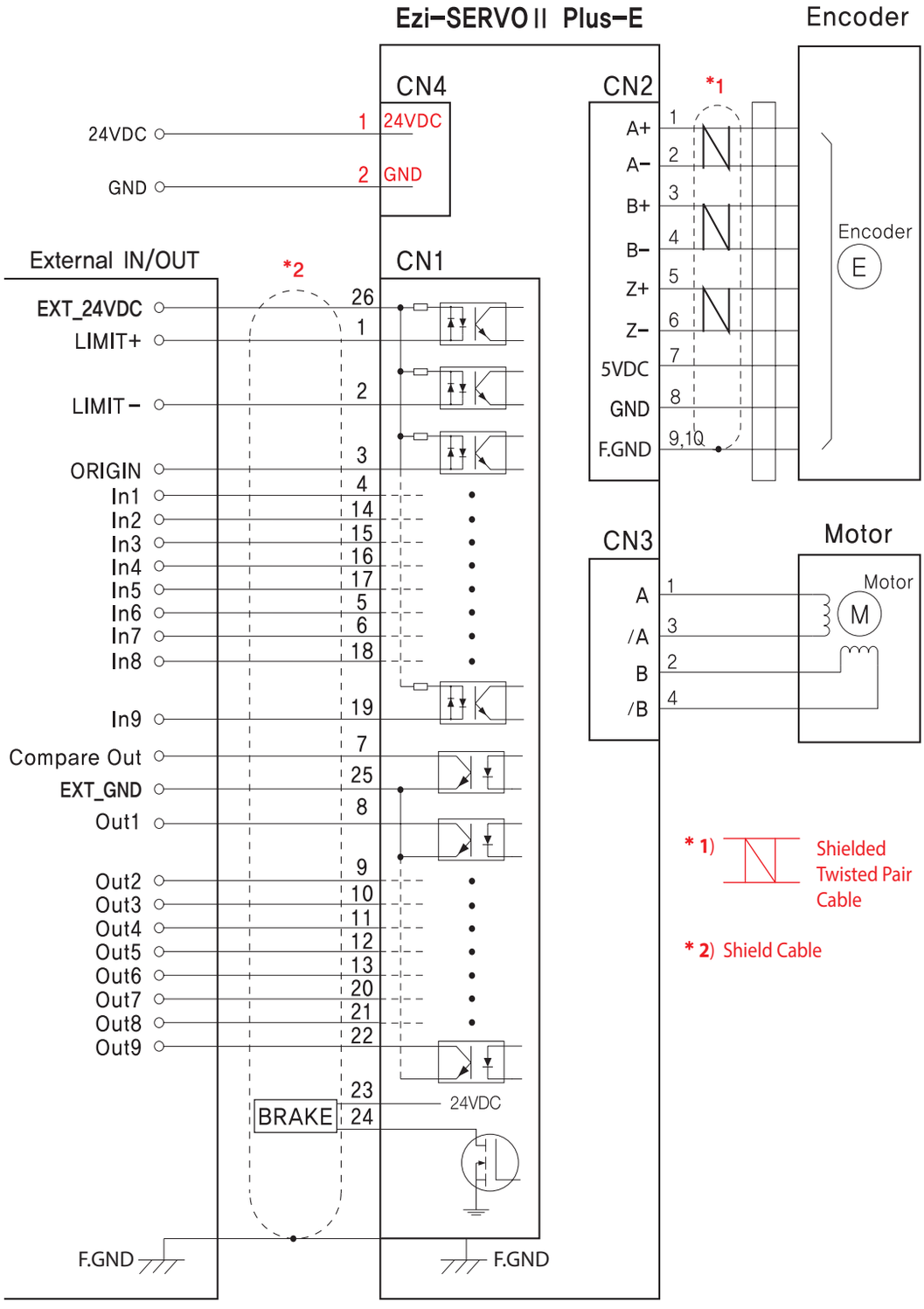
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacture
Power (CN4)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing Terminal	3191-4R1 1381T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10126-3000PE 10326-52F0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



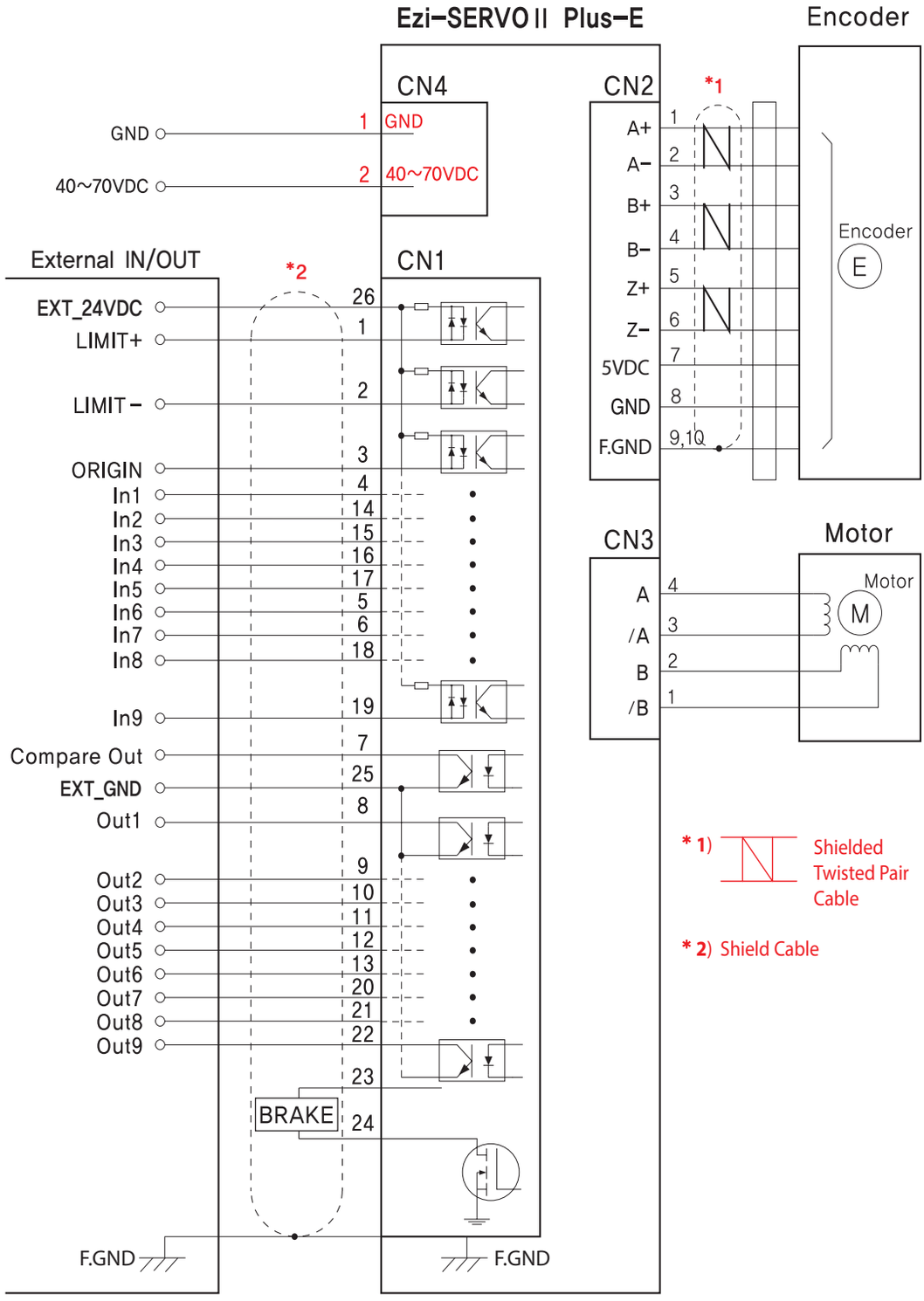
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● External Wiring Diagram [86mm Motor Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


Ezi-SERVO Plus-E II mini
FASTECH

Ezi-SERVO II Plus-E MINI

Ezi-SERVO II Plus-E MINI

- Embedded Controller
- Ethernet Interface
- Position Table
- Closed Loop System
- No Gain Tuning / No Hunting
- High Resolution / Fast Response
- Miniaturized Compact Size

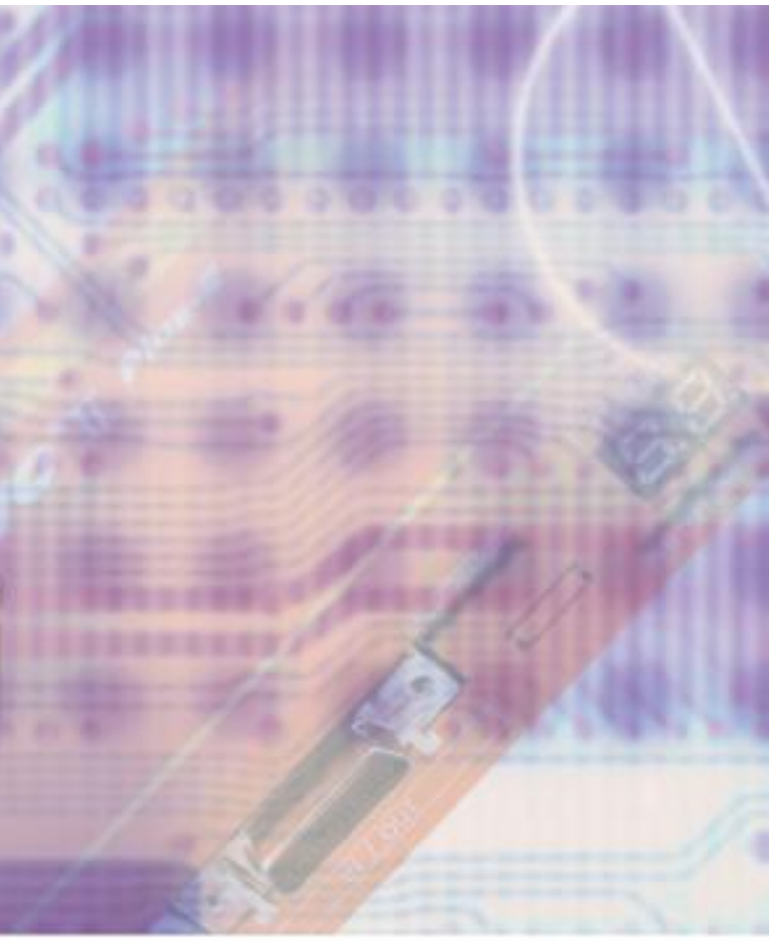


FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® II Plus-E MINI

Closed Loop Stepping System



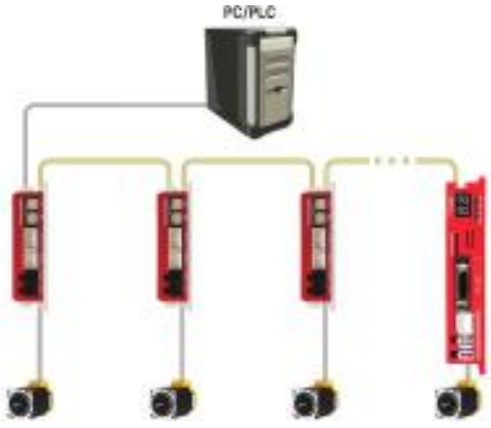
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC.
The PC can monitor the In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC.



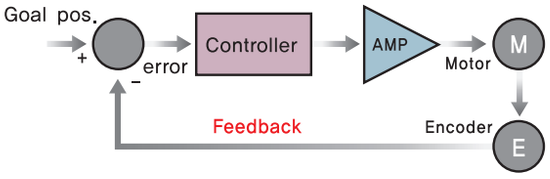
1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 7/8/10.



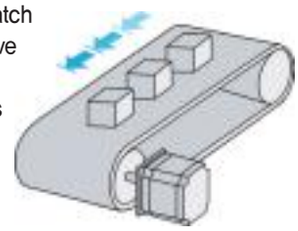
3 Closed Loop System

Ezi-SERVO II is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50 μsec. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



4 No Gain Tuning

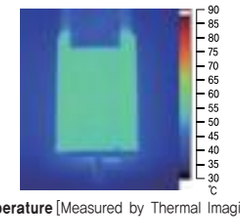
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo' s gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additional expensive and bulky gearbox.
Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



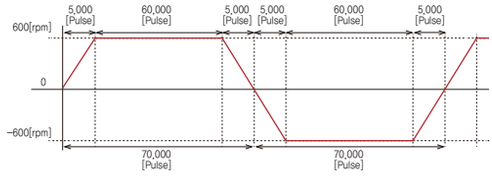
5 Heat Reduction / Energy Saving

(Motor Current Control according to load)

Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

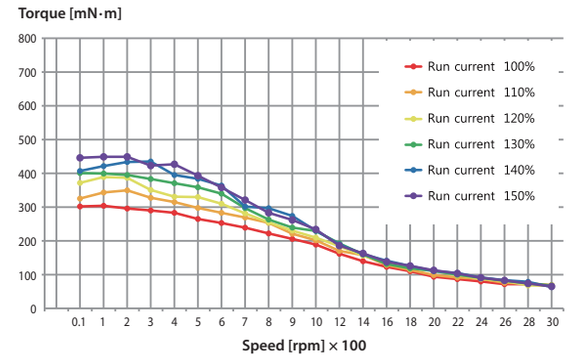


Example of the Motor Current Control according to load

6 Torque Improvement

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore, acceleration and deceleration characteristics and torque characteristics at low speed can be increased.
Ezi-SERVO II can improve the torque in the low speed range by about 30%.

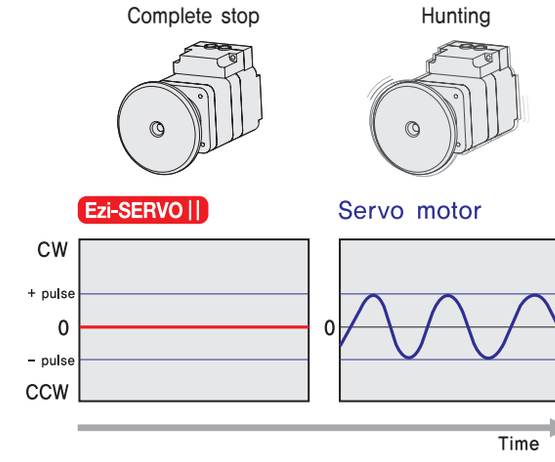


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-PE-MI-42L
Motor Voltage = 24VDC
Input Voltage = 24VDC

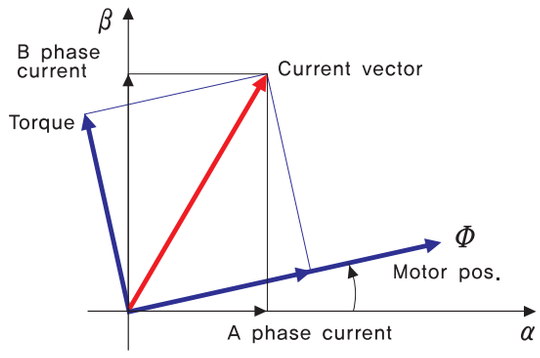
7 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



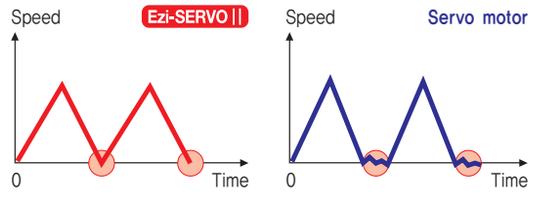
8 Smooth and Accurate

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



9 Fast Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



10 High Resolution

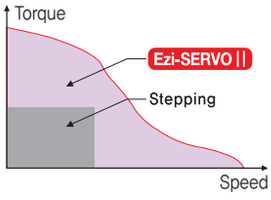
The unit of the position command can be divided precisely.

(Max. 20,000 pulses/revolution)



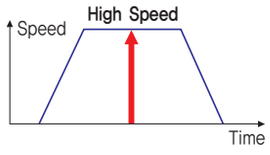
11 High Torque

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



12 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependant current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

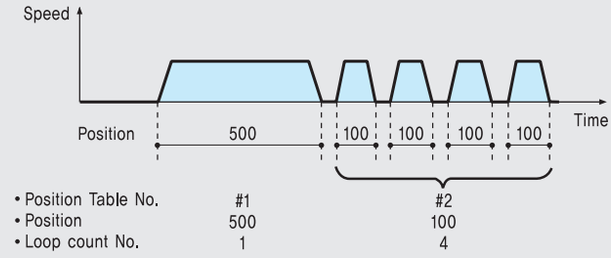
● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Features of Motion Controller

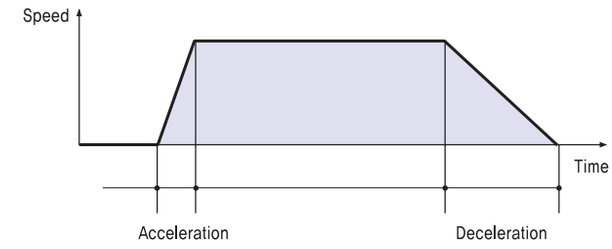
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



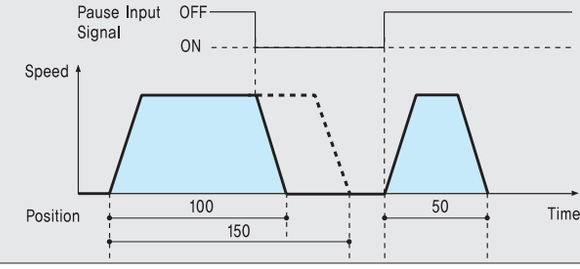
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



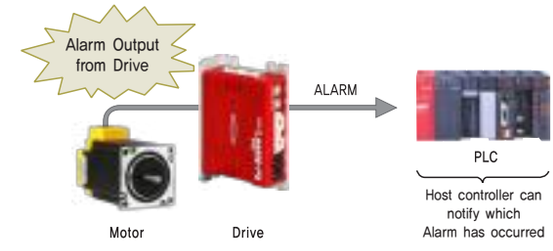
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



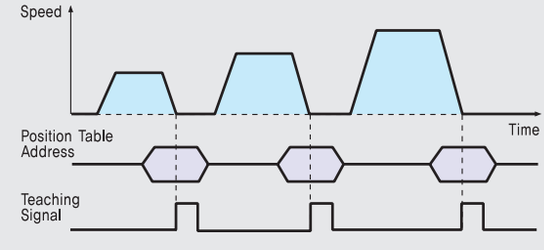
4. Alarm

The number of LED flashing time and information displayed on the 7-Segment indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

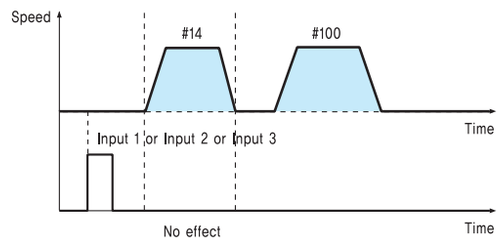


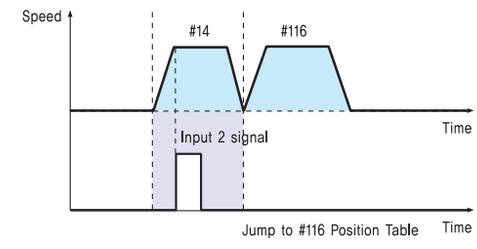
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





● Ezi-SERVO II Plus-E MINI Part Numbering

Ezi-SERVO II -PE-MI-42S-A-BK-PN10-□

Product Name

Drive Series
PE : Plus Ethernet
MI : Mini Type

Motor Flange Size
20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length
S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution
A : 10,000[ppr]
B : 20,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake
Blank : Without Brake
BK : Brake

Reduction Gear Ratio
Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II -PE-MI-20M-F	EzM2-20M-F	EzS2-PE-MI-20M-F
Ezi-SERVO II -PE-MI-20L-F	EzM2-20L-F	EzS2-PE-MI-20L-F
Ezi-SERVO II -PE-MI-28S-D	EzM2-28S-D	EzS2-PE-MI-28S-D
Ezi-SERVO II -PE-MI-28SM-D	EzM2-28SM-D	EzS2-PE-MI-28S-D
Ezi-SERVO II -PE-MI-28M-D	EzM2-28M-D	EzS2-PE-MI-28M-D
Ezi-SERVO II -PE-MI-28MM-D	EzM2-28MM-D	EzS2-PE-MI-28M-D
Ezi-SERVO II -PE-MI-28L-D	EzM2-28L-D	EzS2-PE-MI-28L-D
Ezi-SERVO II -PE-MI-28LM-D	EzM2-28LM-D	EzS2-PE-MI-28L-D
Ezi-SERVO II -PE-MI-35M-D	EzM2-35M-D	EzS2-PE-MI-35M-D
Ezi-SERVO II -PE-MI-35MM-D	EzM2-35MM-D	EzS2-PE-MI-35M-D
Ezi-SERVO II -PE-MI-35L-D	EzM2-35L-D	EzS2-PE-MI-35L-D
Ezi-SERVO II -PE-MI-35LM-D	EzM2-35LM-D	EzS2-PE-MI-35L-D
Ezi-SERVO II -PE-MI-42S-A	EzM2-42S-A	EzS2-PE-MI-42S-A
Ezi-SERVO II -PE-MI-42S-B	EzM2-42S-B	EzS2-PE-MI-42S-B
Ezi-SERVO II -PE-MI-42M-A	EzM2-42M-A	EzS2-PE-MI-42M-A
Ezi-SERVO II -PE-MI-42M-B	EzM2-42M-B	EzS2-PE-MI-42M-B
Ezi-SERVO II -PE-MI-42L-A	EzM2-42L-A	EzS2-PE-MI-42L-A
Ezi-SERVO II -PE-MI-42L-B	EzM2-42L-B	EzS2-PE-MI-42L-B
Ezi-SERVO II -PE-MI-42XL-A	EzM2-42XL-A	EzS2-PE-MI-42XL-A
Ezi-SERVO II -PE-MI-42XL-B	EzM2-42XL-B	EzS2-PE-MI-42XL-B
Ezi-SERVO II -PE-MI-56S-A	EzM2-56S-A	EzS2-PE-MI-56S-A
Ezi-SERVO II -PE-MI-56S-B	EzM2-56S-B	EzS2-PE-MI-56S-B
Ezi-SERVO II -PE-MI-56M-A	EzM2-56M-A	EzS2-PE-MI-56M-A
Ezi-SERVO II -PE-MI-56M-B	EzM2-56M-B	EzS2-PE-MI-56M-B
Ezi-SERVO II -PE-MI-56L-A	EzM2-56L-A	EzS2-PE-MI-56L-A
Ezi-SERVO II -PE-MI-56L-B	EzM2-56L-B	EzS2-PE-MI-56L-B
Ezi-SERVO II -PE-MI-60S-A	EzM2-60S-A	EzS2-PE-MI-60S-A
Ezi-SERVO II -PE-MI-60S-B	EzM2-60S-B	EzS2-PE-MI-60S-B
Ezi-SERVO II -PE-MI-60M-A	EzM2-60M-A	EzS2-PE-MI-60M-A
Ezi-SERVO II -PE-MI-60M-B	EzM2-60M-B	EzS2-PE-MI-60M-B
Ezi-SERVO II -PE-MI-60L-A	EzM2-60L-A	EzS2-PE-MI-60L-A
Ezi-SERVO II -PE-MI-60L-B	EzM2-60L-B	EzS2-PE-MI-60L-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex : Ezi-SERVO II -PE-MI-28LM-D, Ezi-SERVO II -PE-MI-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-PE-MI-42S-A-BK	EzM2-42S-A-BK	EzS2-PE-MI-42S-A
Ezi-SERVO II-PE-MI-42S-B-BK	EzM2-42S-B-BK	EzS2-PE-MI-42S-B
Ezi-SERVO II-PE-MI-42M-A-BK	EzM2-42M-A-BK	EzS2-PE-MI-42M-A
Ezi-SERVO II-PE-MI-42M-B-BK	EzM2-42M-B-BK	EzS2-PE-MI-42M-B
Ezi-SERVO II-PE-MI-42L-A-BK	EzM2-42L-A-BK	EzS2-PE-MI-42L-A
Ezi-SERVO II-PE-MI-42L-B-BK	EzM2-42L-B-BK	EzS2-PE-MI-42L-B
Ezi-SERVO II-PE-MI-42XL-A-BK	EzM2-42XL-A-BK	EzS2-PE-MI-42XL-A
Ezi-SERVO II-PE-MI-42XL-B-BK	EzM2-42XL-B-BK	EzS2-PE-MI-42XL-B
Ezi-SERVO II-PE-MI-56S-A-BK	EzM2-56S-A-BK	EzS2-PE-MI-56S-A
Ezi-SERVO II-PE-MI-56S-B-BK	EzM2-56S-B-BK	EzS2-PE-MI-56S-B
Ezi-SERVO II-PE-MI-56M-A-BK	EzM2-56M-A-BK	EzS2-PE-MI-56M-A
Ezi-SERVO II-PE-MI-56M-B-BK	EzM2-56M-B-BK	EzS2-PE-MI-56M-B
Ezi-SERVO II-PE-MI-56L-A-BK	EzM2-56L-A-BK	EzS2-PE-MI-56L-A
Ezi-SERVO II-PE-MI-56L-B-BK	EzM2-56L-B-BK	EzS2-PE-MI-56L-B
Ezi-SERVO II-PE-MI-60S-A-BK	EzM2-56S-A-BK	EzS2-PE-MI-56S-A
Ezi-SERVO II-PE-MI-60S-B-BK	EzM2-56S-B-BK	EzS2-PE-MI-56S-B
Ezi-SERVO II-PE-MI-60M-A-BK	EzM2-56M-A-BK	EzS2-PE-MI-56M-A
Ezi-SERVO II-PE-MI-60M-B-BK	EzM2-56M-B-BK	EzS2-PE-MI-56M-B
Ezi-SERVO II-PE-MI-60L-A-BK	EzM2-56L-A-BK	EzS2-PE-MI-56L-A
Ezi-SERVO II-PE-MI-60L-B-BK	EzM2-56L-B-BK	EzS2-PE-MI-56L-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-MI-42S-A-PN3	EzM2-42S-A-PN3	EzS2-PE-MI-42S-A	1:3
Ezi-SERVO II-PE-MI-42S-B-PN3	EzM2-42S-B-PN3	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN5	EzM2-42S-A-PN5	EzS2-PE-MI-42S-A	1:5
Ezi-SERVO II-PE-MI-42S-B-PN5	EzM2-42S-B-PN5	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN8	EzM2-42S-A-PN8	EzS2-PE-MI-42S-A	1:8
Ezi-SERVO II-PE-MI-42S-B-PN8	EzM2-42S-B-PN8	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN10	EzM2-42S-A-PN10	EzS2-PE-MI-42S-A	1:10
Ezi-SERVO II-PE-MI-42S-B-PN10	EzM2-42S-B-PN10	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN15	EzM2-42S-A-PN15	EzS2-PE-MI-42S-A	1:15
Ezi-SERVO II-PE-MI-42S-B-PN15	EzM2-42S-B-PN15	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN25	EzM2-42S-A-PN25	EzS2-PE-MI-42S-A	1:25
Ezi-SERVO II-PE-MI-42S-B-PN25	EzM2-42S-B-PN25	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN40	EzM2-42S-A-PN40	EzS2-PE-MI-42S-A	1:40
Ezi-SERVO II-PE-MI-42S-B-PN40	EzM2-42S-B-PN40	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN50	EzM2-42S-A-PN50	EzS2-PE-MI-42S-A	1:50
Ezi-SERVO II-PE-MI-42S-B-PN50	EzM2-42S-B-PN50	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42M-A-PN3	EzM2-42M-A-PN3	EzS2-PE-MI-42M-A	1:3
Ezi-SERVO II-PE-MI-42M-B-PN3	EzM2-42M-B-PN3	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN5	EzM2-42M-A-PN5	EzS2-PE-MI-42M-A	1:5
Ezi-SERVO II-PE-MI-42M-B-PN5	EzM2-42M-B-PN5	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN8	EzM2-42M-A-PN8	EzS2-PE-MI-42M-A	1:8
Ezi-SERVO II-PE-MI-42M-B-PN8	EzM2-42M-B-PN8	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN10	EzM2-42M-A-PN10	EzS2-PE-MI-42M-A	1:10
Ezi-SERVO II-PE-MI-42M-B-PN10	EzM2-42M-B-PN10	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN15	EzM2-42M-A-PN15	EzS2-PE-MI-42M-A	1:15
Ezi-SERVO II-PE-MI-42M-B-PN15	EzM2-42M-B-PN15	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN25	EzM2-42M-A-PN25	EzS2-PE-MI-42M-A	1:25
Ezi-SERVO II-PE-MI-42M-B-PN25	EzM2-42M-B-PN25	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN40	EzM2-42M-A-PN40	EzS2-PE-MI-42M-A	1:40
Ezi-SERVO II-PE-MI-42M-B-PN40	EzM2-42M-B-PN40	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN50	EzM2-42M-A-PN50	EzS2-PE-MI-42M-A	1:50
Ezi-SERVO II-PE-MI-42M-B-PN50	EzM2-42M-B-PN50	EzS2-PE-MI-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-MI-42L-A-PN3	EzM2-42L-A-PN3	EzS2-PE-MI-42L-A	1:3
Ezi-SERVO II-PE-MI-42L-B-PN3	EzM2-42L-B-PN3	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN5	EzM2-42L-A-PN5	EzS2-PE-MI-42L-A	1:5
Ezi-SERVO II-PE-MI-42L-B-PN5	EzM2-42L-B-PN5	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN8	EzM2-42L-A-PN8	EzS2-PE-MI-42L-A	1:8
Ezi-SERVO II-PE-MI-42L-B-PN8	EzM2-42L-B-PN8	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN10	EzM2-42L-A-PN10	EzS2-PE-MI-42L-A	1:10
Ezi-SERVO II-PE-MI-42L-B-PN10	EzM2-42L-B-PN10	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN15	EzM2-42L-A-PN15	EzS2-PE-MI-42L-A	1:15
Ezi-SERVO II-PE-MI-42L-B-PN15	EzM2-42L-B-PN15	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN25	EzM2-42L-A-PN25	EzS2-PE-MI-42L-A	1:25
Ezi-SERVO II-PE-MI-42L-B-PN25	EzM2-42L-B-PN25	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN40	EzM2-42L-A-PN40	EzS2-PE-MI-42L-A	1:40
Ezi-SERVO II-PE-MI-42L-B-PN40	EzM2-42L-B-PN40	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN50	EzM2-42L-A-PN50	EzS2-PE-MI-42L-A	1:50
Ezi-SERVO II-PE-MI-42L-B-PN50	EzM2-42L-B-PN50	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-PE-MI-42XL-A	1:3
Ezi-SERVO II-PE-MI-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-PE-MI-42XL-A	1:5
Ezi-SERVO II-PE-MI-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-PE-MI-42XL-A	1:8
Ezi-SERVO II-PE-MI-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-PE-MI-42XL-A	1:10
Ezi-SERVO II-PE-MI-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-PE-MI-42XL-A	1:15
Ezi-SERVO II-PE-MI-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-PE-MI-42XL-A	1:25
Ezi-SERVO II-PE-MI-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-PE-MI-42XL-A	1:40
Ezi-SERVO II-PE-MI-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-PE-MI-42XL-A	1:50
Ezi-SERVO II-PE-MI-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-56S-A-PN3	EzM2-56S-A-PN3	EzS2-PE-MI-56S-A	1:3
Ezi-SERVO II-PE-MI-56S-B-PN3	EzM2-56S-B-PN3	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN5	EzM2-56S-A-PN5	EzS2-PE-MI-56S-A	1:5
Ezi-SERVO II-PE-MI-56S-B-PN5	EzM2-56S-B-PN5	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN8	EzM2-56S-A-PN8	EzS2-PE-MI-56S-A	1:8
Ezi-SERVO II-PE-MI-56S-B-PN8	EzM2-56S-B-PN8	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN10	EzM2-56S-A-PN10	EzS2-PE-MI-56S-A	1:10
Ezi-SERVO II-PE-MI-56S-B-PN10	EzM2-56S-B-PN10	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN15	EzM2-56S-A-PN15	EzS2-PE-MI-56S-A	1:15
Ezi-SERVO II-PE-MI-56S-B-PN15	EzM2-56S-B-PN15	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN25	EzM2-56S-A-PN25	EzS2-PE-MI-56S-A	1:25
Ezi-SERVO II-PE-MI-56S-B-PN25	EzM2-56S-B-PN25	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN40	EzM2-56S-A-PN40	EzS2-PE-MI-56S-A	1:40
Ezi-SERVO II-PE-MI-56S-B-PN40	EzM2-56S-B-PN40	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN50	EzM2-56S-A-PN50	EzS2-PE-MI-56S-A	1:50
Ezi-SERVO II-PE-MI-56S-B-PN50	EzM2-56S-B-PN50	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56M-A-PN3	EzM2-56M-A-PN3	EzS2-PE-MI-56M-A	1:3
Ezi-SERVO II-PE-MI-56M-B-PN3	EzM2-56M-B-PN3	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN5	EzM2-56M-A-PN5	EzS2-PE-MI-56M-A	1:5
Ezi-SERVO II-PE-MI-56M-B-PN5	EzM2-56M-B-PN5	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN8	EzM2-56M-A-PN8	EzS2-PE-MI-56M-A	1:8
Ezi-SERVO II-PE-MI-56M-B-PN8	EzM2-56M-B-PN8	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN10	EzM2-56M-A-PN10	EzS2-PE-MI-56M-A	1:10
Ezi-SERVO II-PE-MI-56M-B-PN10	EzM2-56M-B-PN10	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN15	EzM2-56M-A-PN15	EzS2-PE-MI-56M-A	1:15
Ezi-SERVO II-PE-MI-56M-B-PN15	EzM2-56M-B-PN15	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN25	EzM2-56M-A-PN25	EzS2-PE-MI-56M-A	1:25
Ezi-SERVO II-PE-MI-56M-B-PN25	EzM2-56M-B-PN25	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN40	EzM2-56M-A-PN40	EzS2-PE-MI-56M-A	1:40
Ezi-SERVO II-PE-MI-56M-B-PN40	EzM2-56M-B-PN40	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN50	EzM2-56M-A-PN50	EzS2-PE-MI-56M-A	1:50
Ezi-SERVO II-PE-MI-56M-B-PN50	EzM2-56M-B-PN50	EzS2-PE-MI-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-MI-56L-A-PN3	EzM2-56L-A-PN3	EzS2-PE-MI-56L-A	1:3
Ezi-SERVO II-PE-MI-56L-B-PN3	EzM2-56L-B-PN3	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN5	EzM2-56L-A-PN5	EzS2-PE-MI-56L-A	1:5
Ezi-SERVO II-PE-MI-56L-B-PN5	EzM2-56L-B-PN5	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN8	EzM2-56L-A-PN8	EzS2-PE-MI-56L-A	1:8
Ezi-SERVO II-PE-MI-56L-B-PN8	EzM2-56L-B-PN8	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN10	EzM2-56L-A-PN10	EzS2-PE-MI-56L-A	1:10
Ezi-SERVO II-PE-MI-56L-B-PN10	EzM2-56L-B-PN10	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN15	EzM2-56L-A-PN15	EzS2-PE-MI-56L-A	1:15
Ezi-SERVO II-PE-MI-56L-B-PN15	EzM2-56L-B-PN15	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN25	EzM2-56L-A-PN25	EzS2-PE-MI-56L-A	1:25
Ezi-SERVO II-PE-MI-56L-B-PN25	EzM2-56L-B-PN25	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN40	EzM2-56L-A-PN40	EzS2-PE-MI-56L-A	1:40
Ezi-SERVO II-PE-MI-56L-B-PN40	EzM2-56L-B-PN40	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN50	EzM2-56L-A-PN50	EzS2-PE-MI-56L-A	1:50
Ezi-SERVO II-PE-MI-56L-B-PN50	EzM2-56L-B-PN50	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-60S-A-PN3	EzM2-60S-A-PN3	EzS2-PE-MI-60S-A	1:3
Ezi-SERVO II-PE-MI-60S-B-PN3	EzM2-60S-B-PN3	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN5	EzM2-60S-A-PN5	EzS2-PE-MI-60S-A	1:5
Ezi-SERVO II-PE-MI-60S-B-PN5	EzM2-60S-B-PN5	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN8	EzM2-60S-A-PN8	EzS2-PE-MI-60S-A	1:8
Ezi-SERVO II-PE-MI-60S-B-PN8	EzM2-60S-B-PN8	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN10	EzM2-60S-A-PN10	EzS2-PE-MI-60S-A	1:10
Ezi-SERVO II-PE-MI-60S-B-PN10	EzM2-60S-B-PN10	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN15	EzM2-60S-A-PN15	EzS2-PE-MI-60S-A	1:15
Ezi-SERVO II-PE-MI-60S-B-PN15	EzM2-60S-B-PN15	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN25	EzM2-60S-A-PN25	EzS2-PE-MI-60S-A	1:25
Ezi-SERVO II-PE-MI-60S-B-PN25	EzM2-60S-B-PN25	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN40	EzM2-60S-A-PN40	EzS2-PE-MI-60S-A	1:40
Ezi-SERVO II-PE-MI-60S-B-PN40	EzM2-60S-B-PN40	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN50	EzM2-60S-A-PN50	EzS2-PE-MI-60S-A	1:50
Ezi-SERVO II-PE-MI-60S-B-PN50	EzM2-60S-B-PN50	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60M-A-PN3	EzM2-60M-A-PN3	EzS2-PE-MI-60M-A	1:3
Ezi-SERVO II-PE-MI-60M-B-PN3	EzM2-60M-B-PN3	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN5	EzM2-60M-A-PN5	EzS2-PE-MI-60M-A	1:5
Ezi-SERVO II-PE-MI-60M-B-PN5	EzM2-60M-B-PN5	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN8	EzM2-60M-A-PN8	EzS2-PE-MI-60M-A	1:8
Ezi-SERVO II-PE-MI-60M-B-PN8	EzM2-60M-B-PN8	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN10	EzM2-60M-A-PN10	EzS2-PE-MI-60M-A	1:10
Ezi-SERVO II-PE-MI-60M-B-PN10	EzM2-60M-B-PN10	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN15	EzM2-60M-A-PN15	EzS2-PE-MI-60M-A	1:15
Ezi-SERVO II-PE-MI-60M-B-PN15	EzM2-60M-B-PN15	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN25	EzM2-60M-A-PN25	EzS2-PE-MI-60M-A	1:25
Ezi-SERVO II-PE-MI-60M-B-PN25	EzM2-60M-B-PN25	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN40	EzM2-60M-A-PN40	EzS2-PE-MI-60M-A	1:40
Ezi-SERVO II-PE-MI-60M-B-PN40	EzM2-60M-B-PN40	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN50	EzM2-60M-A-PN50	EzS2-PE-MI-60M-A	1:50
Ezi-SERVO II-PE-MI-60M-B-PN50	EzM2-60M-B-PN50	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60L-A-PN3	EzM2-60L-A-PN3	EzS2-PE-MI-60L-A	1:3
Ezi-SERVO II-PE-MI-60L-B-PN3	EzM2-60L-B-PN3	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN5	EzM2-60L-A-PN5	EzS2-PE-MI-60L-A	1:5
Ezi-SERVO II-PE-MI-60L-B-PN5	EzM2-60L-B-PN5	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN8	EzM2-60L-A-PN8	EzS2-PE-MI-60L-A	1:8
Ezi-SERVO II-PE-MI-60L-B-PN8	EzM2-60L-B-PN8	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN10	EzM2-60L-A-PN10	EzS2-PE-MI-60L-A	1:10
Ezi-SERVO II-PE-MI-60L-B-PN10	EzM2-60L-B-PN10	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN15	EzM2-60L-A-PN15	EzS2-PE-MI-60L-A	1:15
Ezi-SERVO II-PE-MI-60L-B-PN15	EzM2-60L-B-PN15	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN25	EzM2-60L-A-PN25	EzS2-PE-MI-60L-A	1:25
Ezi-SERVO II-PE-MI-60L-B-PN25	EzM2-60L-B-PN25	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN40	EzM2-60L-A-PN40	EzS2-PE-MI-60L-A	1:40
Ezi-SERVO II-PE-MI-60L-B-PN40	EzM2-60L-B-PN40	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN50	EzM2-60L-A-PN50	EzS2-PE-MI-60L-A	1:50
Ezi-SERVO II-PE-MI-60L-B-PN50	EzM2-60L-B-PN50	EzS2-PE-MI-60L-B	

Specifications of Drive

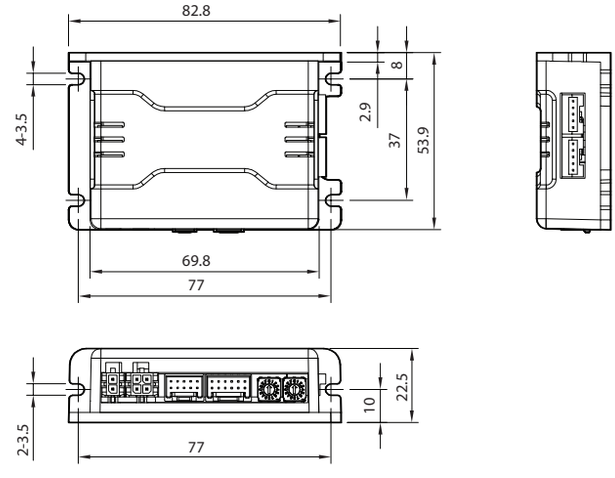
Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series
Driver Model		EzS2-PE-MI-20 series	EzS2-PE-MI-28 series	EzS2-PE-MI-35 series	EzS2-PE-MI-42 series	EzS2-PE-MI-56 series	EzS2-PE-MI-60 series
Input Voltage		24VDC ±10%					
Control Method		Closed loop control with 32bit MCU					
Multi Axis Drive		Maximum 254 axis operating (Selectable IP: 1~254)					
Position Table		256 motion command steps (Speed, External start, Jump, Loop, Wait and PT finish etc.)					
Current Consumption		Max 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ *3 · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000 [rpm] *1					
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter) *2					
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error					
	In-Position Selection	0~63 (Selectable by parameter)					
	Position Gain Selection	0~63 (Selectable by parameter)					
	Rotational Direction	CW/CCW (Selectable by parameter)					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler input)					
	Output Signals	1 dedicated output (Compare Out), 1 programmable outputs (Photocoupler output), Brake					
Communication Interface		Ethernet communication, Dual port Ethernet switch embeded, Communication speed: 10/100 Base - T/TX Full-Duplex					
Position Control		· Incremental mode / Absolute mode Data Range: -2,147,483,648~+2,147,483,647 [pulse] · Operating speed: Max. 3,000 [rpm]					
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque					
GUI		User Interface Program within Windows					
Library		Motion Library (DLL) for windows 7/8/10					

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

*3 : The EzS2-PE-MI-56, 60 series are needed to be mounted on an external heat sink or a structure capable of dissipating heat.

Dimensions of Drive [mm]



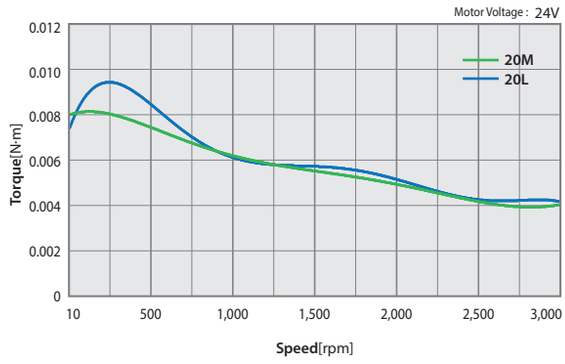
● Specifications of Motor

MODEL			EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	80	104	147	204	232	194	226	294	357	426	564
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

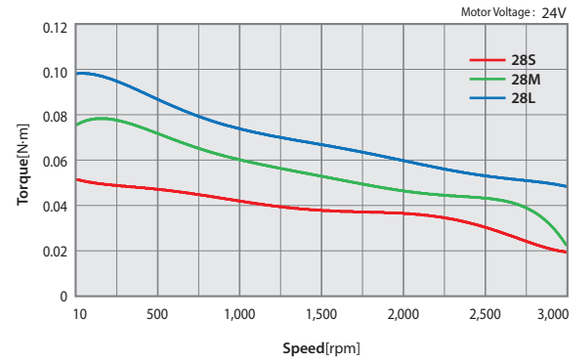
MODEL			EzM2-56 series			EzM2-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690
WEIGHTS		g	608	784	1230	693	856	1419
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70
	8mm		65	65	65	87	87	87
	13mm		85	85	85	114	114	114
	18mm		123	123	123	165	165	165
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

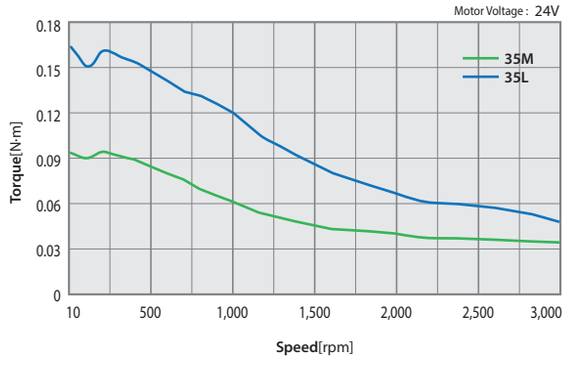
Ezi-SERVO II-PE-MI-20 series



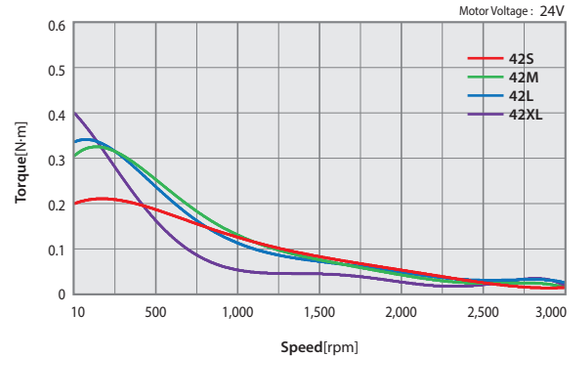
Ezi-SERVO II-PE-MI-28 series



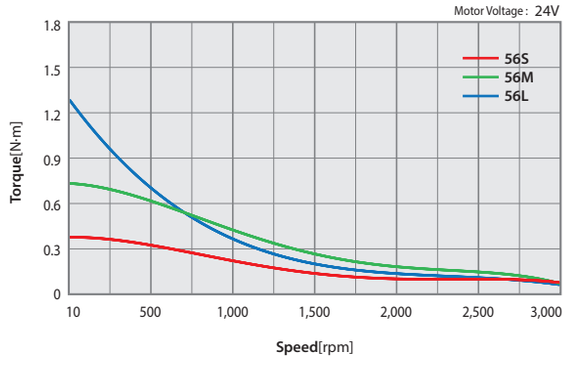
Ezi-SERVO II-PE-MI-35 series



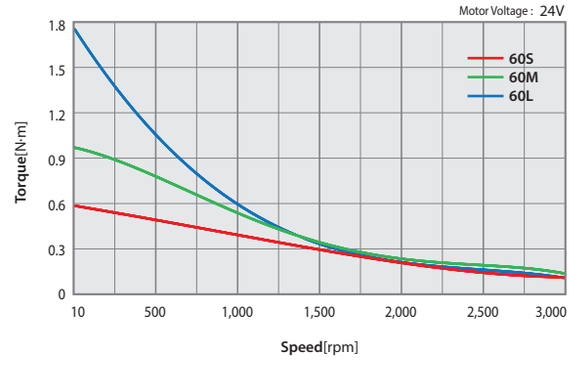
Ezi-SERVO II-PE-MI-42 series



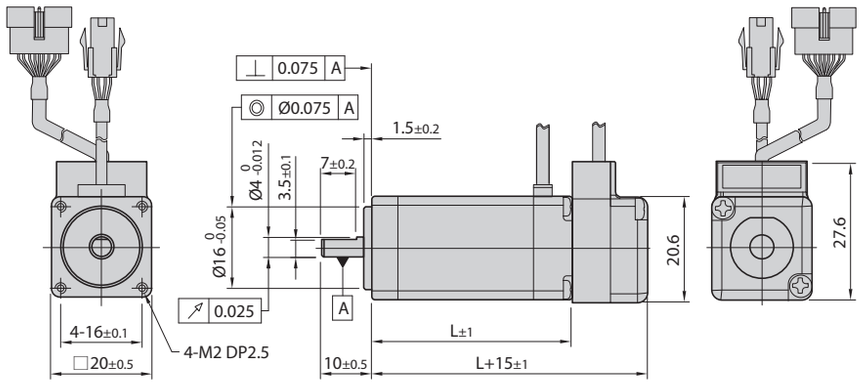
Ezi-SERVO II-PE-MI-56 series



Ezi-SERVO II-PE-MI-60 series

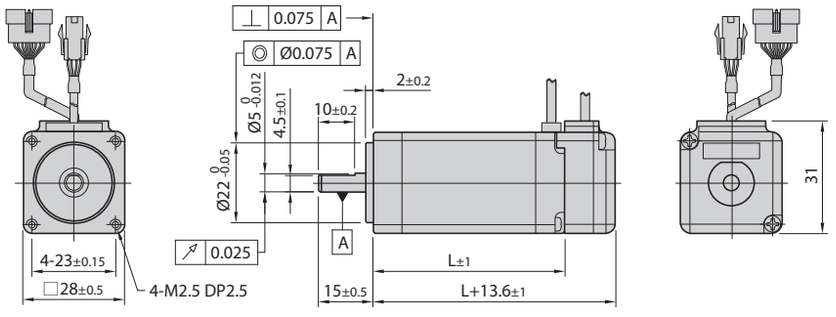


● Dimensions of Motor [mm]



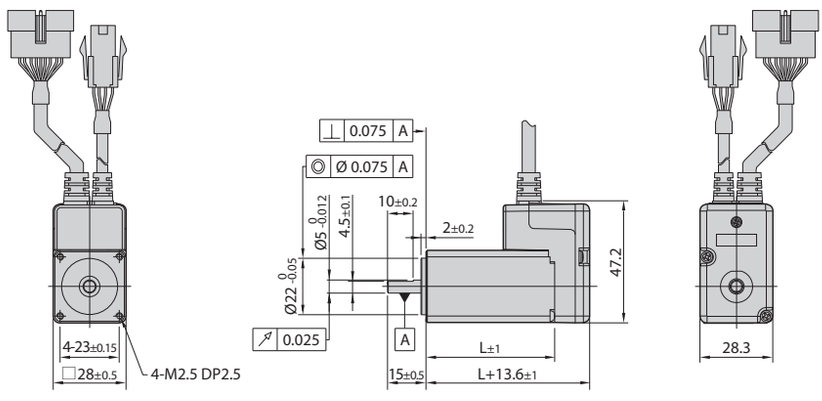
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

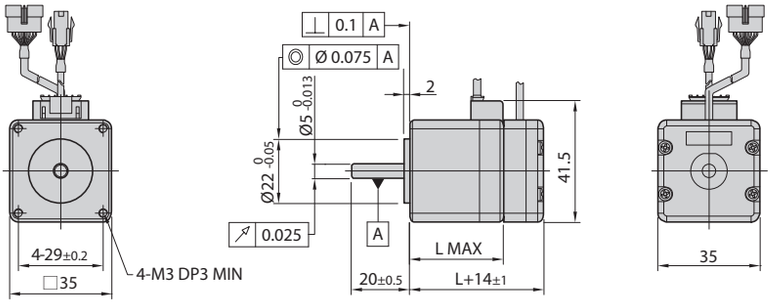
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

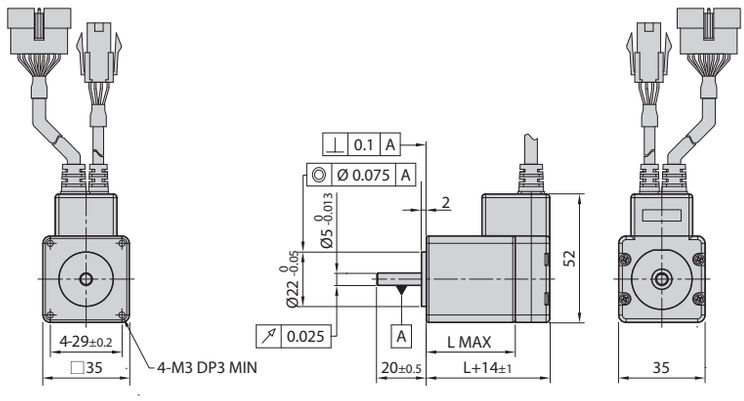
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

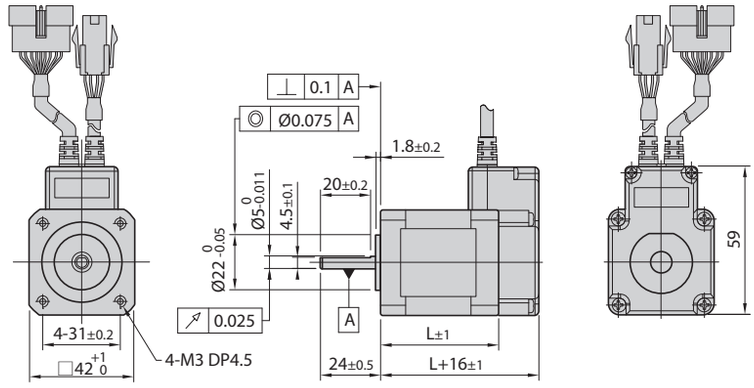
Dimensions of Motor [mm]



35mm (Stopper type)

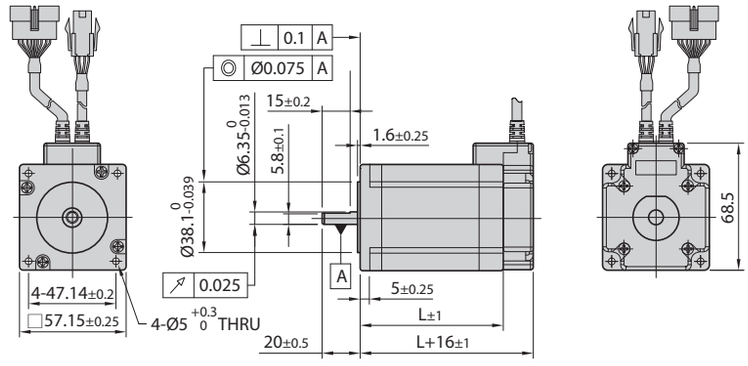
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

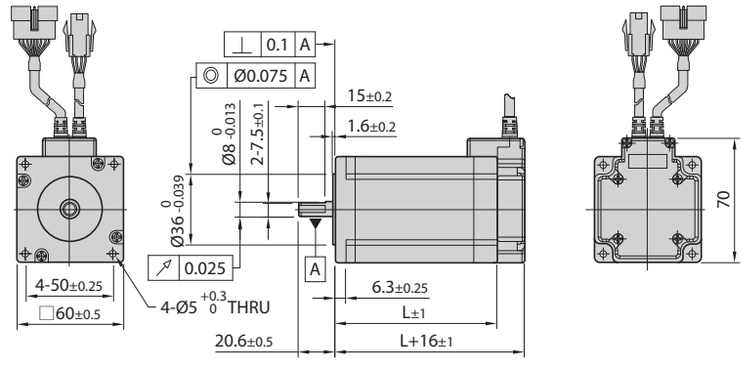
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

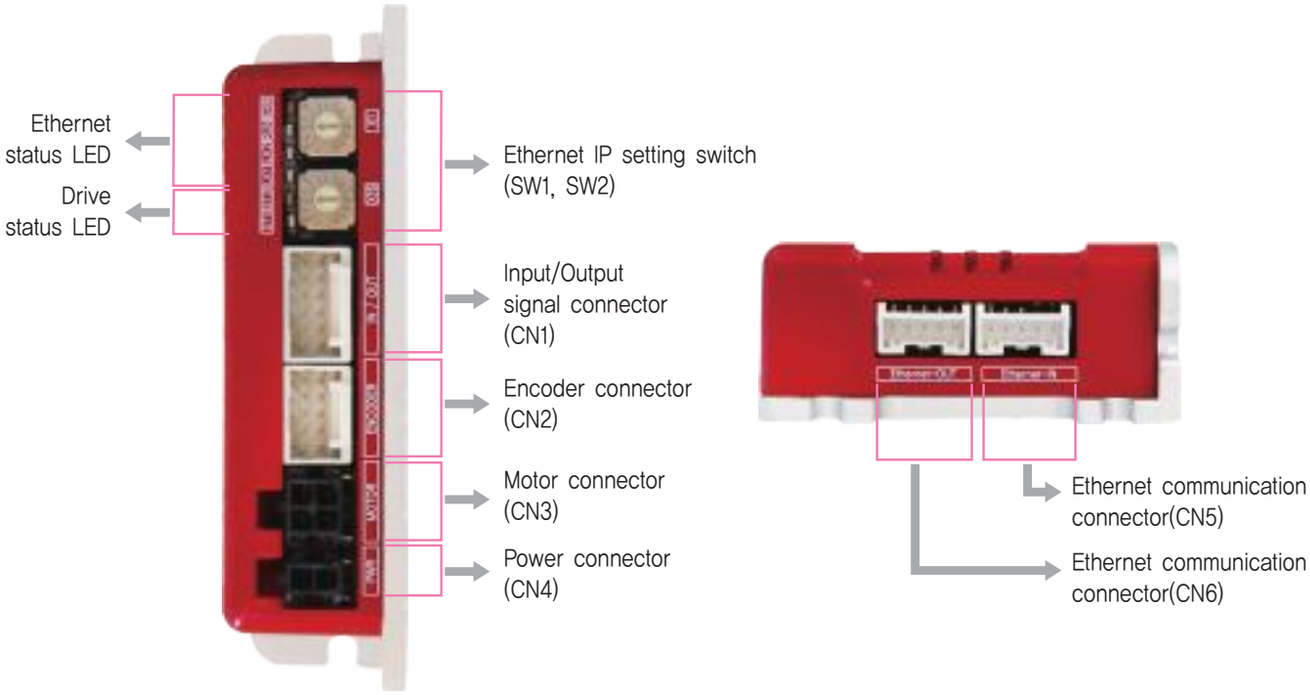
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

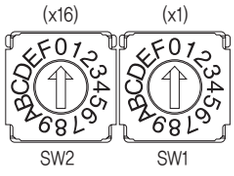
Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

Settings and Operation



1. Ethernet IP Setting Switch(SW1, SW2)

It can be set the value of the fourth digit of Ethernet IP through the setting switch. Set the product's IP not to overlap with the connected products. The first, second and third values of IP can be set through the GUI. Please refer to the manual for details. When the switch is set to 255 (FF), IP is automatically set, ignoring the setting. (DHCP function)



Ex) In case of SW1 : **7** and SW2 : **5**
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

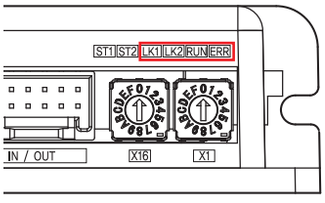
2. Ethernet Status LED

LED indicates communication status of Ethernet.

Name	Color	Status	Explanation
ERR	Red	OFF	No Error status
		ON	Local Error

Name	Color	Status	Explanation
LK1/ LK2	Green	OFF	Link deactivated
		ON	Link activated

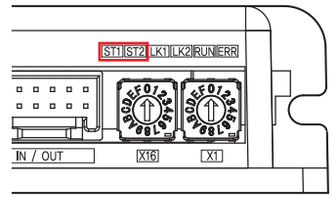
Name	Color	Status	Explanation
RUN	Orange	Blinking	Normally operating



3. Drive Status LED

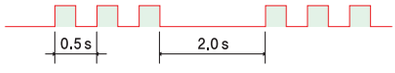
In the case of Ezi-SERVO II Plus-E MINI series products, LED can be checked by LED color, lighting, On/Off and blinking.

Status	LED	Description
Disable	ST1 : ST2 :	ST1 light flashing, ST2 light off
Enable	ST1 : ST2 :	ST1 light on, ST2 light off
In motion	ST1 : ST2 :	ST1 light on, ST2 light on
In-position deviation	ST1 : ST2 :	ST1 and ST2 light alternately flashing
Alarm	ST1 : ST2 :	ST2 light flashing repeatedly as many as alarm number



◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A *1
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *2
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Temperature of inside of drive exceed 85℃
6	Over Regeneratived Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state *2

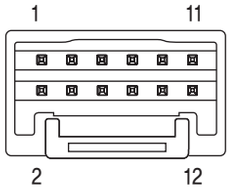


Alarm LED flash
(Ex: Position tracking error)

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
※ Please refer to user Manual for the details of protection functions.

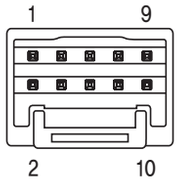
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE–	Output
5	LIMIT+	Input
6	LIMIT–	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Compare Out	Output
12	Digital Out1	Output



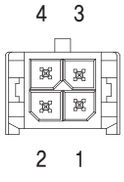
5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A–	Input
3	B+	Input
4	B–	Input
5	Z+	Input
6	Z–	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----



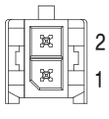
6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



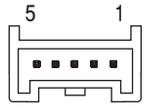
7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

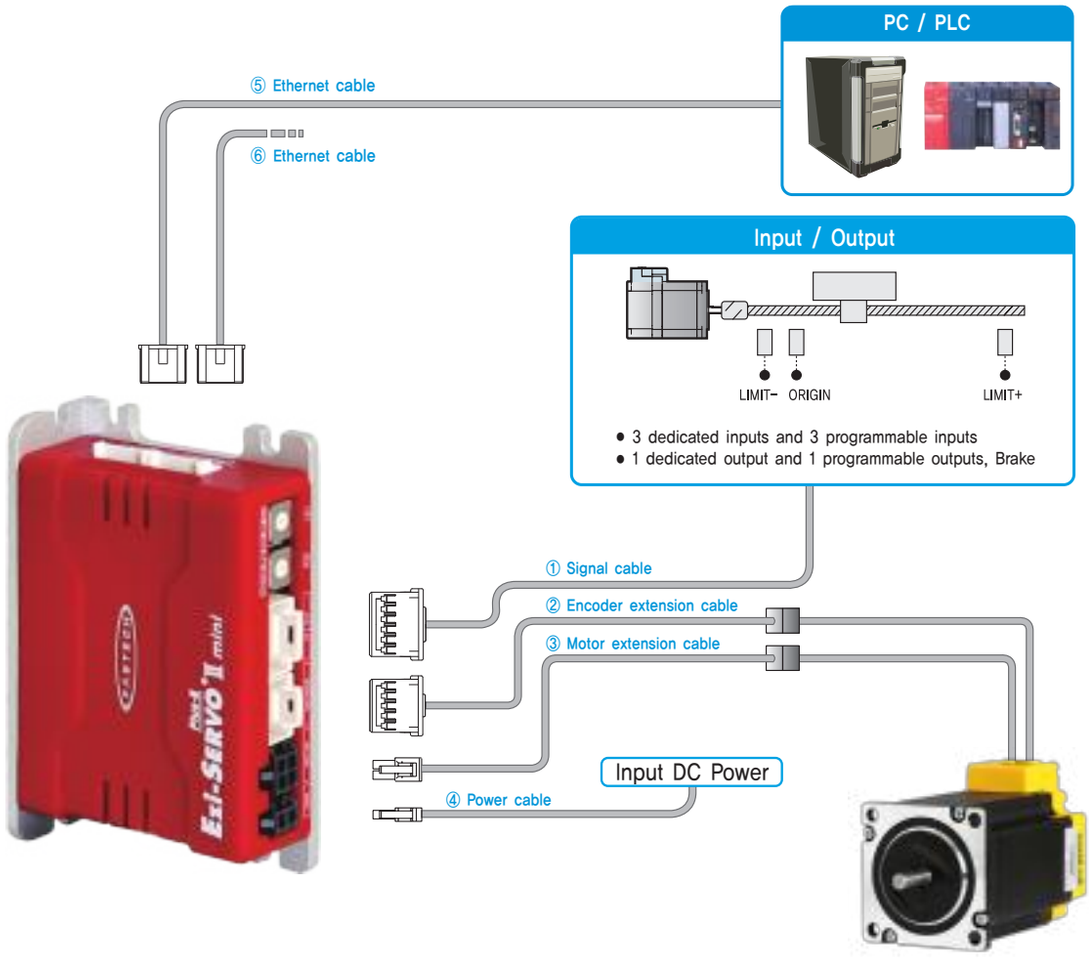


8. Ethernet Communication Connector(CN5, CN6)

NO.	Function
1	TD+
2	TD–
3	RD+
4	RD–
5	F.GND



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II Plus-E MINI.

Item	Length [m]	Remark
CSER-S-□□□F	□□□	Normal Cable
CSER-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II Plus-E MINI.

Item	Length [m]	Remark
CSVI-E-□□□F	□□□	Normal Cable
CSVI-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II Plus-E MINI.

Item	Length [m]	Remark
CSMI-M-□□□F CSMI-M-□□□M	□□□ □□□	Normal Cable Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II Plus-E MINI.

Item	Length [m]	Remark
CSMI-P-□□□F CSMI-P-□□□M	□□□ □□□	Normal Cable Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Ethernet Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNE-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-SERVO II Plus-E MINI to the controller, Ezi-SERVO II Plus-E, and Ezi-SERVO II Plus-E ALL R type with a network.
  This cable is composed of a 5-pin connector (Ezi-SERVO II Plus-E MINI side) and an RJ45 connector.

⑥ Ethernet Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNI-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-SERVO II Plus-E MINI to Ezi-SERVO II Plus-E MINI with the network.

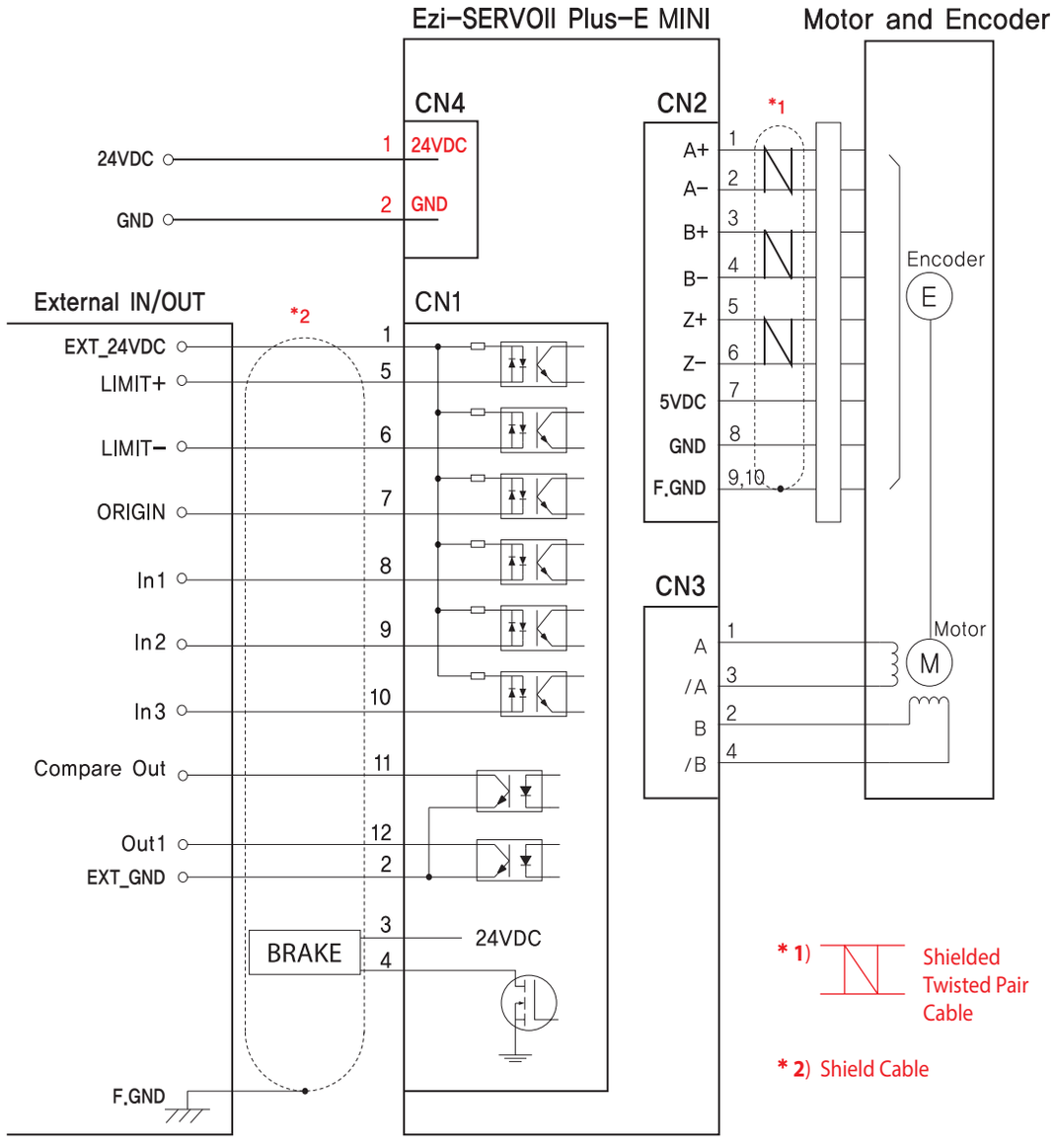
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Ethernet Communication (CN5, CN6)		Housing Terminal	PAP-05V-S SPHD-001T-P0.5	JST
Power (CN4)		Housing Terminal	43025-0200 43030-0001	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	43025-0400 43030-0001	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	501646-1000 501648-1000(AWG 26~28)	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Housing Terminal	501646-1200 501648-1000(AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

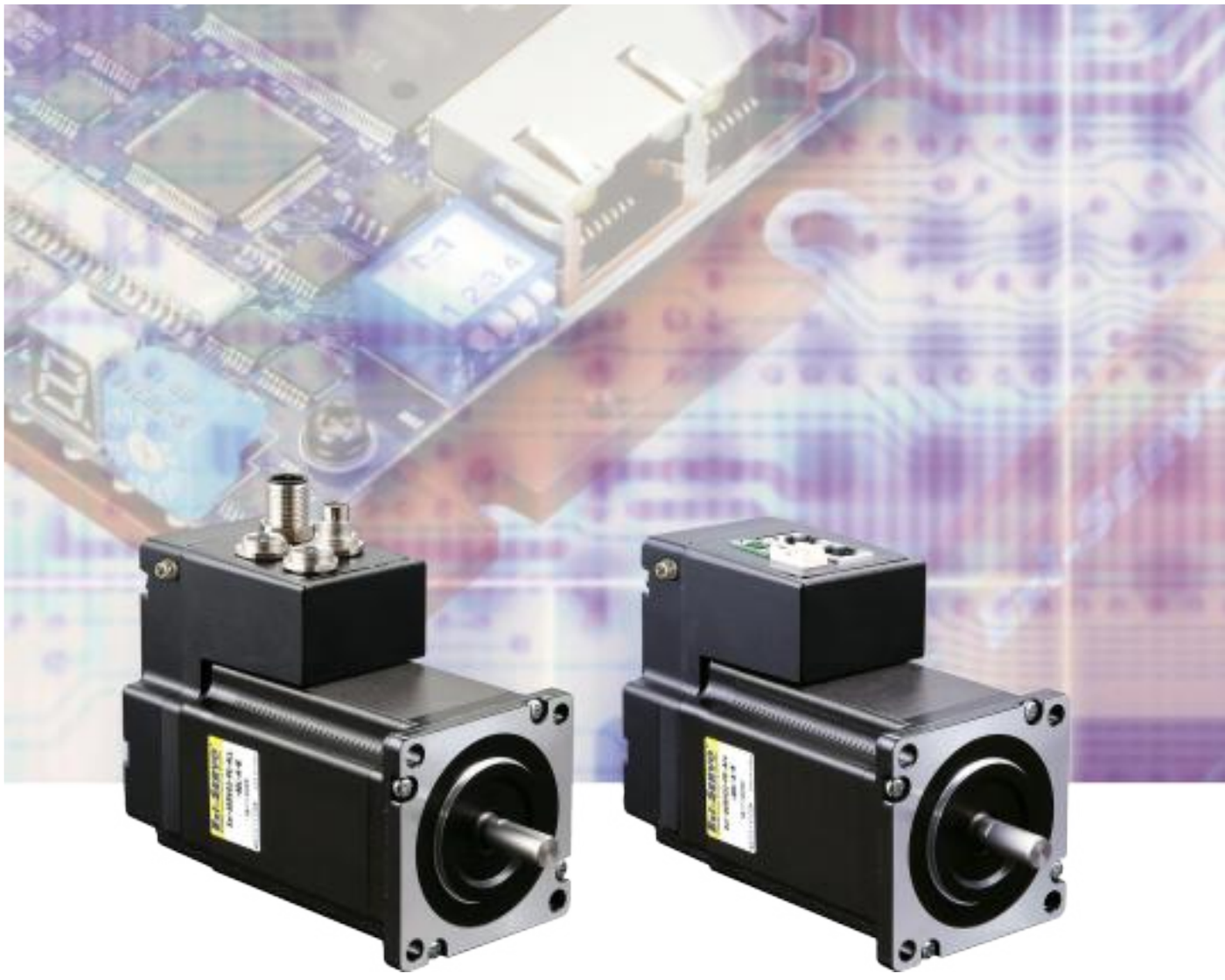
Careful connection will be required to protect the drive from any damages.


EtherCAT
EtWS-60L
Eti-SERVO Plus-E

Ezi-SERVO II Plus-E ALL

Ezi-SERVO II Plus-E ALL

- Motor + Encoder + Drive + Controller Integrated
- Ethernet Interface
- Closed Loop System
- No Gain Tuning
- No Hunting
- Heat Reduction
- Torque Improvement

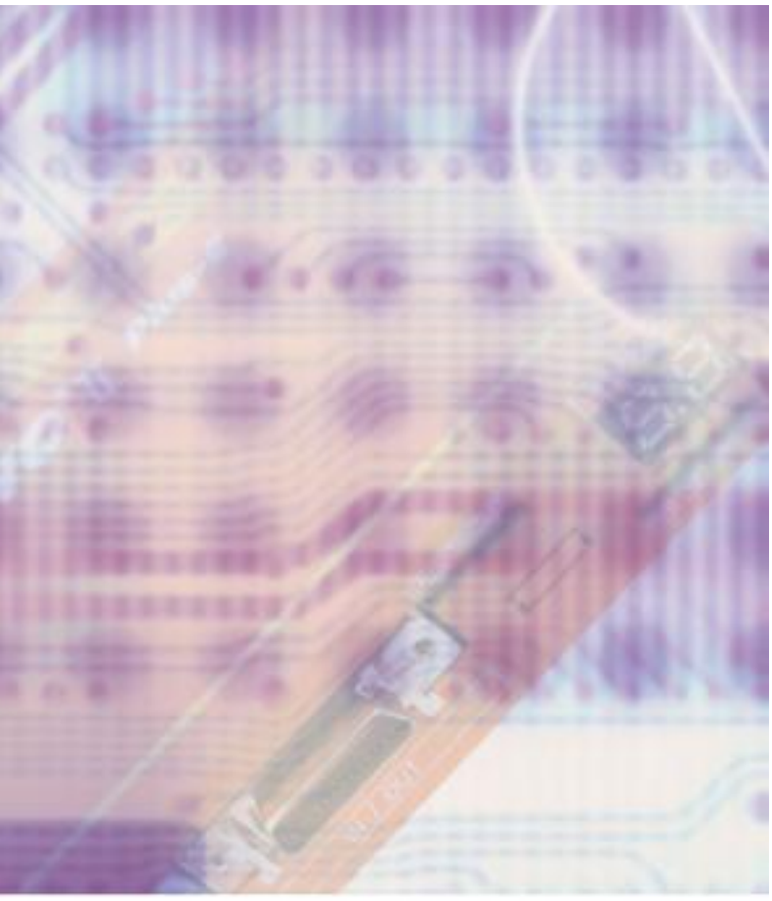


FASTECH

Fast, Accurate, Smooth Motion

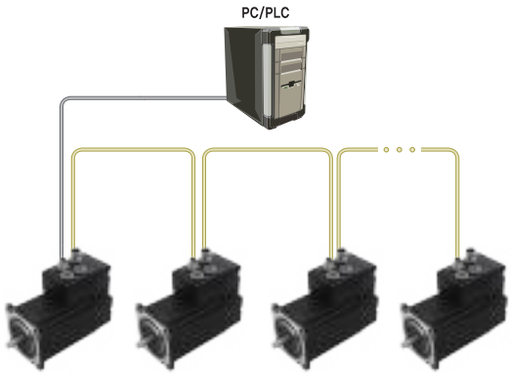
Ezi-SERVO® II Plus-E ALL

Closed Loop Stepping System



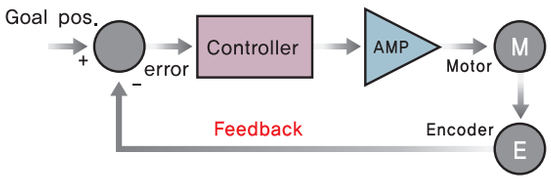
1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC/PLC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 7/8/10.



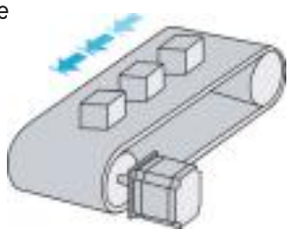
2 Closed Loop System

Ezi-SERVO II is an innovative closed loop stepping system that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50 μsec. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

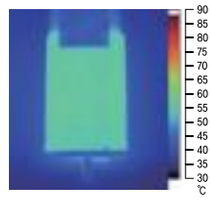
To ensure machine performance, smoothness, positional error and low servo noise, Conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additional expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



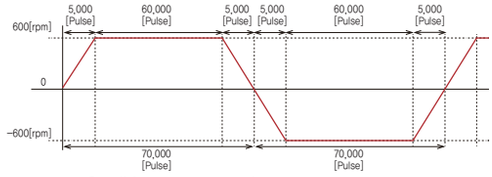
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

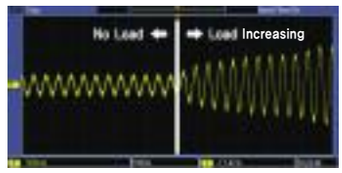
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low, and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

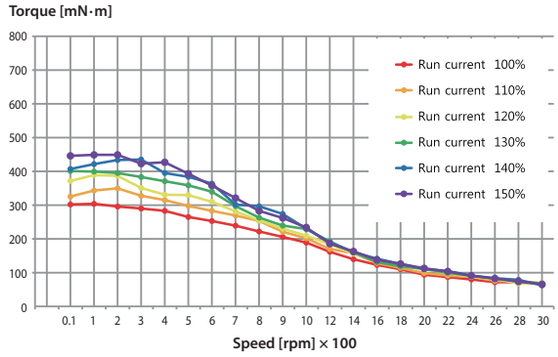


Example of the Motor Current Control according to load

5 Torque Improvement

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore, acceleration and deceleration characteristics and torque characteristics at low speed can be increased.
Ezi-SERVO II can improve the torque in the low speed range by about 30%.

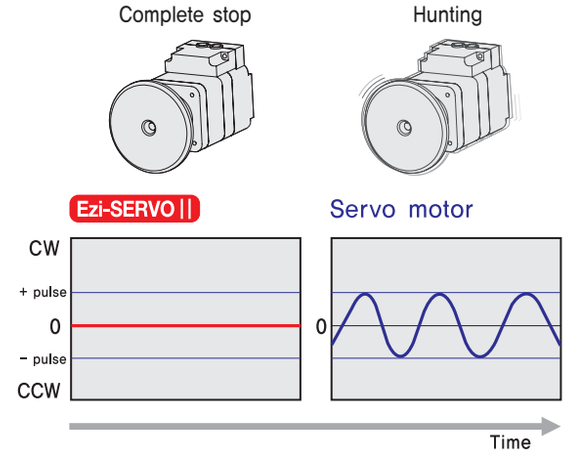


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-PE-ALL-42L

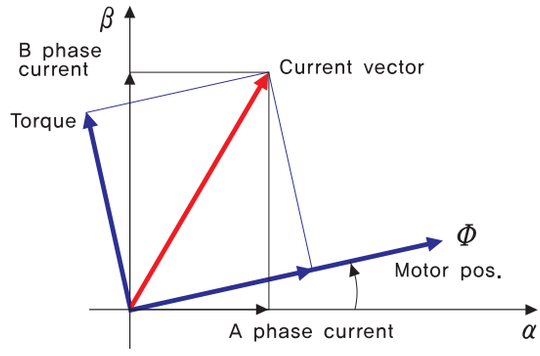
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



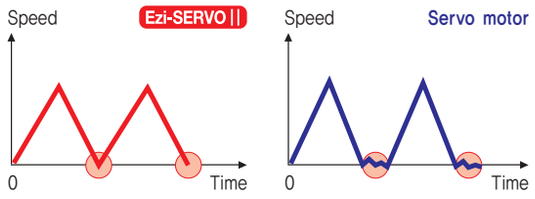
7 Smooth and Accurate

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



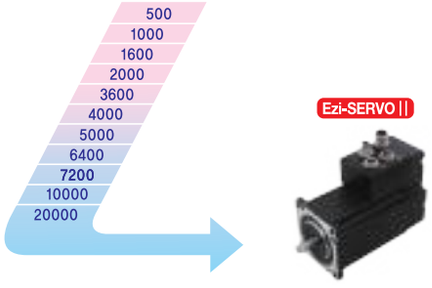
8 Fast Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



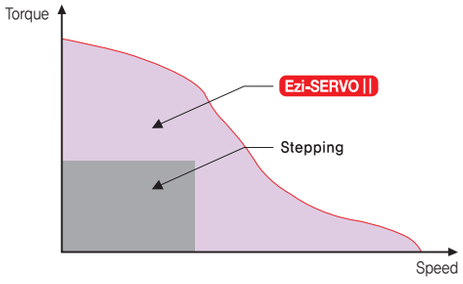
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



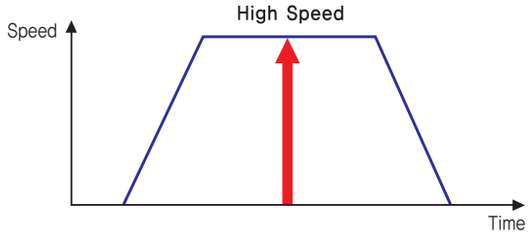
10 High Torque

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO II Plus-E ALL Part Numbering

Ezi-SERVO II-PE-ALL-56L-A-BK-PN05-M-□

Product Name

Drive Series

PE-ALL : Ethernet ALL

Motor Flange Size

42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
B : 20,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

Connector Type

M : M Connector Type
R : RJ45 Connector Type

User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-PE-ALL-42M-A-M	Motor & Drive Integrated	
Ezi-SERVO II-PE-ALL-42M-B-M		
Ezi-SERVO II-PE-ALL-42M-A-R		
Ezi-SERVO II-PE-ALL-42M-B-R		
Ezi-SERVO II-PE-ALL-42L-A-M		
Ezi-SERVO II-PE-ALL-42L-B-M		
Ezi-SERVO II-PE-ALL-42L-A-R		
Ezi-SERVO II-PE-ALL-42L-B-R		
Ezi-SERVO II-PE-ALL-42XL-A-M		
Ezi-SERVO II-PE-ALL-42XL-B-M		
Ezi-SERVO II-PE-ALL-42XL-A-R		
Ezi-SERVO II-PE-ALL-42XL-B-R		
Ezi-SERVO II-PE-ALL-56S-A-M		
Ezi-SERVO II-PE-ALL-56S-B-M		
Ezi-SERVO II-PE-ALL-56S-A-R		
Ezi-SERVO II-PE-ALL-56S-B-R		
Ezi-SERVO II-PE-ALL-56M-A-M		
Ezi-SERVO II-PE-ALL-56M-B-M		
Ezi-SERVO II-PE-ALL-56M-A-R		
Ezi-SERVO II-PE-ALL-56M-B-R		
Ezi-SERVO II-PE-ALL-56L-A-M		
Ezi-SERVO II-PE-ALL-56L-B-M		
Ezi-SERVO II-PE-ALL-56L-A-R		
Ezi-SERVO II-PE-ALL-56L-B-R		
Ezi-SERVO II-PE-ALL-60S-A-M		
Ezi-SERVO II-PE-ALL-60S-B-M		
Ezi-SERVO II-PE-ALL-60S-A-R		
Ezi-SERVO II-PE-ALL-60S-B-R		
Ezi-SERVO II-PE-ALL-60M-A-M		
Ezi-SERVO II-PE-ALL-60M-B-M		
Ezi-SERVO II-PE-ALL-60M-A-R		
Ezi-SERVO II-PE-ALL-60M-B-R		
Ezi-SERVO II-PE-ALL-60L-A-M		
Ezi-SERVO II-PE-ALL-60L-B-M		
Ezi-SERVO II-PE-ALL-60L-A-R		
Ezi-SERVO II-PE-ALL-60L-B-R		
Ezi-SERVO II-PE-ALL-86M-A-M		
Ezi-SERVO II-PE-ALL-86M-B-M		
Ezi-SERVO II-PE-ALL-86M-A-R		
Ezi-SERVO II-PE-ALL-86M-B-R		
Ezi-SERVO II-PE-ALL-86L-A-M		
Ezi-SERVO II-PE-ALL-86L-B-M		
Ezi-SERVO II-PE-ALL-86L-A-R		
Ezi-SERVO II-PE-ALL-86L-B-R		
Ezi-SERVO II-PE-ALL-86XL-A-M		
Ezi-SERVO II-PE-ALL-86XL-B-M		
Ezi-SERVO II-PE-ALL-86XL-A-R		
Ezi-SERVO II-PE-ALL-86XL-B-R		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-PE-ALL-42M-A-BK-M	Motor & Drive Integrated	
Ezi-SERVO II-PE-ALL-42M-B-BK-M		
Ezi-SERVO II-PE-ALL-42M-A-BK-R		
Ezi-SERVO II-PE-ALL-42M-B-BK-R		
Ezi-SERVO II-PE-ALL-42L-A-BK-M		
Ezi-SERVO II-PE-ALL-42L-B-BK-M		
Ezi-SERVO II-PE-ALL-42L-A-BK-R		
Ezi-SERVO II-PE-ALL-42L-B-BK-R		
Ezi-SERVO II-PE-ALL-42XL-A-BK-M		
Ezi-SERVO II-PE-ALL-42XL-B-BK-M		
Ezi-SERVO II-PE-ALL-42XL-A-BK-R		
Ezi-SERVO II-PE-ALL-42XL-B-BK-R		
Ezi-SERVO II-PE-ALL-56S-A-BK-M		
Ezi-SERVO II-PE-ALL-56S-B-BK-M		
Ezi-SERVO II-PE-ALL-56S-A-BK-R		
Ezi-SERVO II-PE-ALL-56S-B-BK-R		
Ezi-SERVO II-PE-ALL-56M-A-BK-M		
Ezi-SERVO II-PE-ALL-56M-B-BK-M		
Ezi-SERVO II-PE-ALL-56M-A-BK-R		
Ezi-SERVO II-PE-ALL-56M-B-BK-R		
Ezi-SERVO II-PE-ALL-56L-A-BK-M		
Ezi-SERVO II-PE-ALL-56L-B-BK-M		
Ezi-SERVO II-PE-ALL-56L-A-BK-R		
Ezi-SERVO II-PE-ALL-56L-B-BK-R		
Ezi-SERVO II-PE-ALL-60S-A-BK-M		
Ezi-SERVO II-PE-ALL-60S-B-BK-M		
Ezi-SERVO II-PE-ALL-60S-A-BK-R		
Ezi-SERVO II-PE-ALL-60S-B-BK-R		
Ezi-SERVO II-PE-ALL-60M-A-BK-M		
Ezi-SERVO II-PE-ALL-60M-B-BK-M		
Ezi-SERVO II-PE-ALL-60M-A-BK-R		
Ezi-SERVO II-PE-ALL-60M-B-BK-R		
Ezi-SERVO II-PE-ALL-60L-A-BK-M		
Ezi-SERVO II-PE-ALL-60L-B-BK-M		
Ezi-SERVO II-PE-ALL-60L-A-BK-R		
Ezi-SERVO II-PE-ALL-60L-B-BK-R		
Ezi-SERVO II-PE-ALL-86M-A-BK-M		
Ezi-SERVO II-PE-ALL-86M-B-BK-M		
Ezi-SERVO II-PE-ALL-86M-A-BK-R		
Ezi-SERVO II-PE-ALL-86M-B-BK-R		
Ezi-SERVO II-PE-ALL-86L-A-BK-M		
Ezi-SERVO II-PE-ALL-86L-B-BK-M		
Ezi-SERVO II-PE-ALL-86L-A-BK-R		
Ezi-SERVO II-PE-ALL-86L-B-BK-R		
Ezi-SERVO II-PE-ALL-86XL-A-BK-M		
Ezi-SERVO II-PE-ALL-86XL-B-BK-M		
Ezi-SERVO II-PE-ALL-86XL-A-BK-R		
Ezi-SERVO II-PE-ALL-86XL-B-BK-R		

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-ALL-42M-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-PE-ALL-42M-B-PN3-M			
Ezi-SERVO II-PE-ALL-42M-A-PN3-R			
Ezi-SERVO II-PE-ALL-42M-B-PN3-R			
Ezi-SERVO II-PE-ALL-42M-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-42M-B-PN5-M			
Ezi-SERVO II-PE-ALL-42M-A-PN5-R			
Ezi-SERVO II-PE-ALL-42M-B-PN5-R			
Ezi-SERVO II-PE-ALL-42M-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-42M-B-PN8-M			
Ezi-SERVO II-PE-ALL-42M-A-PN8-R			
Ezi-SERVO II-PE-ALL-42M-B-PN8-R			
Ezi-SERVO II-PE-ALL-42M-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-42M-B-PN10-M			
Ezi-SERVO II-PE-ALL-42M-A-PN10-R			
Ezi-SERVO II-PE-ALL-42M-B-PN10-R			
Ezi-SERVO II-PE-ALL-42M-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-42M-B-PN15-M			
Ezi-SERVO II-PE-ALL-42M-A-PN15-R			
Ezi-SERVO II-PE-ALL-42M-B-PN15-R			
Ezi-SERVO II-PE-ALL-42M-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-42M-B-PN25-M			
Ezi-SERVO II-PE-ALL-42M-A-PN25-R			
Ezi-SERVO II-PE-ALL-42M-B-PN25-R			
Ezi-SERVO II-PE-ALL-42M-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-42M-B-PN40-M			
Ezi-SERVO II-PE-ALL-42M-A-PN40-R			
Ezi-SERVO II-PE-ALL-42M-B-PN40-R			
Ezi-SERVO II-PE-ALL-42M-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-42M-B-PN50-M			
Ezi-SERVO II-PE-ALL-42M-A-PN50-R			
Ezi-SERVO II-PE-ALL-42M-B-PN50-R			
Ezi-SERVO II-PE-ALL-42L-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-42L-B-PN3-M			
Ezi-SERVO II-PE-ALL-42L-A-PN3-R			
Ezi-SERVO II-PE-ALL-42L-B-PN3-R			
Ezi-SERVO II-PE-ALL-42L-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-42L-B-PN5-M			
Ezi-SERVO II-PE-ALL-42L-A-PN5-R			
Ezi-SERVO II-PE-ALL-42L-B-PN5-R			
Ezi-SERVO II-PE-ALL-42L-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-42L-B-PN8-M			
Ezi-SERVO II-PE-ALL-42L-A-PN8-R			
Ezi-SERVO II-PE-ALL-42L-B-PN8-R			
Ezi-SERVO II-PE-ALL-42L-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-42L-B-PN10-M			
Ezi-SERVO II-PE-ALL-42L-A-PN10-R			
Ezi-SERVO II-PE-ALL-42L-B-PN10-R			
Ezi-SERVO II-PE-ALL-42L-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-42L-B-PN15-M			
Ezi-SERVO II-PE-ALL-42L-A-PN15-R			
Ezi-SERVO II-PE-ALL-42L-B-PN15-R			
Ezi-SERVO II-PE-ALL-42L-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-42L-B-PN25-M			
Ezi-SERVO II-PE-ALL-42L-A-PN25-R			
Ezi-SERVO II-PE-ALL-42L-B-PN25-R			
Ezi-SERVO II-PE-ALL-42L-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-42L-B-PN40-M			
Ezi-SERVO II-PE-ALL-42L-A-PN40-R			
Ezi-SERVO II-PE-ALL-42L-B-PN40-R			
Ezi-SERVO II-PE-ALL-42L-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-42L-B-PN50-M			
Ezi-SERVO II-PE-ALL-42L-A-PN50-R			
Ezi-SERVO II-PE-ALL-42L-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-ALL-42XL-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-PE-ALL-42XL-B-PN3-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN3-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN3-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-42XL-B-PN5-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN5-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN5-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-42XL-B-PN8-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN8-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN8-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-42XL-B-PN10-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN10-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN10-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-42XL-B-PN15-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN15-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN15-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-42XL-B-PN25-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN25-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN25-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-42XL-B-PN40-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN40-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN40-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-42XL-B-PN50-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN50-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN50-R			
Ezi-SERVO II-PE-ALL-56S-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-56S-B-PN3-M			
Ezi-SERVO II-PE-ALL-56S-A-PN3-R			
Ezi-SERVO II-PE-ALL-56S-B-PN3-R			
Ezi-SERVO II-PE-ALL-56S-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-56S-B-PN5-M			
Ezi-SERVO II-PE-ALL-56S-A-PN5-R			
Ezi-SERVO II-PE-ALL-56S-B-PN5-R			
Ezi-SERVO II-PE-ALL-56S-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-56S-B-PN8-M			
Ezi-SERVO II-PE-ALL-56S-A-PN8-R			
Ezi-SERVO II-PE-ALL-56S-B-PN8-R			
Ezi-SERVO II-PE-ALL-56S-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-56S-B-PN10-M			
Ezi-SERVO II-PE-ALL-56S-A-PN10-R			
Ezi-SERVO II-PE-ALL-56S-B-PN10-R			
Ezi-SERVO II-PE-ALL-56S-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-56S-B-PN15-M			
Ezi-SERVO II-PE-ALL-56S-A-PN15-R			
Ezi-SERVO II-PE-ALL-56S-B-PN15-R			
Ezi-SERVO II-PE-ALL-56S-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-56S-B-PN25-M			
Ezi-SERVO II-PE-ALL-56S-A-PN25-R			
Ezi-SERVO II-PE-ALL-56S-B-PN25-R			
Ezi-SERVO II-PE-ALL-56S-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-56S-B-PN40-M			
Ezi-SERVO II-PE-ALL-56S-A-PN40-R			
Ezi-SERVO II-PE-ALL-56S-B-PN40-R			
Ezi-SERVO II-PE-ALL-56S-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-56S-B-PN50-M			
Ezi-SERVO II-PE-ALL-56S-A-PN50-R			
Ezi-SERVO II-PE-ALL-56S-B-PN50-R			

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-ALL-56M-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-PE-ALL-56M-B-PN3-M			
Ezi-SERVO II-PE-ALL-56M-A-PN3-R			
Ezi-SERVO II-PE-ALL-56M-B-PN3-R			
Ezi-SERVO II-PE-ALL-56M-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-56M-B-PN5-M			
Ezi-SERVO II-PE-ALL-56M-A-PN5-R			
Ezi-SERVO II-PE-ALL-56M-B-PN5-R			
Ezi-SERVO II-PE-ALL-56M-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-56M-B-PN8-M			
Ezi-SERVO II-PE-ALL-56M-A-PN8-R			
Ezi-SERVO II-PE-ALL-56M-B-PN8-R			
Ezi-SERVO II-PE-ALL-56M-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-56M-B-PN10-M			
Ezi-SERVO II-PE-ALL-56M-A-PN10-R			
Ezi-SERVO II-PE-ALL-56M-B-PN10-R			
Ezi-SERVO II-PE-ALL-56M-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-56M-B-PN15-M			
Ezi-SERVO II-PE-ALL-56M-A-PN15-R			
Ezi-SERVO II-PE-ALL-56M-B-PN15-R			
Ezi-SERVO II-PE-ALL-56M-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-56M-B-PN25-M			
Ezi-SERVO II-PE-ALL-56M-A-PN25-R			
Ezi-SERVO II-PE-ALL-56M-B-PN25-R			
Ezi-SERVO II-PE-ALL-56M-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-56M-B-PN40-M			
Ezi-SERVO II-PE-ALL-56M-A-PN40-R			
Ezi-SERVO II-PE-ALL-56M-B-PN40-R			
Ezi-SERVO II-PE-ALL-56M-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-56M-B-PN50-M			
Ezi-SERVO II-PE-ALL-56M-A-PN50-R			
Ezi-SERVO II-PE-ALL-56M-B-PN50-R			
Ezi-SERVO II-PE-ALL-56L-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-56L-B-PN3-M			
Ezi-SERVO II-PE-ALL-56L-A-PN3-R			
Ezi-SERVO II-PE-ALL-56L-B-PN3-R			
Ezi-SERVO II-PE-ALL-56L-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-56L-B-PN5-M			
Ezi-SERVO II-PE-ALL-56L-A-PN5-R			
Ezi-SERVO II-PE-ALL-56L-B-PN5-R			
Ezi-SERVO II-PE-ALL-56L-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-56L-B-PN8-M			
Ezi-SERVO II-PE-ALL-56L-A-PN8-R			
Ezi-SERVO II-PE-ALL-56L-B-PN8-R			
Ezi-SERVO II-PE-ALL-56L-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-56L-B-PN10-M			
Ezi-SERVO II-PE-ALL-56L-A-PN10-R			
Ezi-SERVO II-PE-ALL-56L-B-PN10-R			
Ezi-SERVO II-PE-ALL-56L-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-56L-B-PN15-M			
Ezi-SERVO II-PE-ALL-56L-A-PN15-R			
Ezi-SERVO II-PE-ALL-56L-B-PN15-R			
Ezi-SERVO II-PE-ALL-56L-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-56L-B-PN25-M			
Ezi-SERVO II-PE-ALL-56L-A-PN25-R			
Ezi-SERVO II-PE-ALL-56L-B-PN25-R			
Ezi-SERVO II-PE-ALL-56L-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-56L-B-PN40-M			
Ezi-SERVO II-PE-ALL-56L-A-PN40-R			
Ezi-SERVO II-PE-ALL-56L-B-PN40-R			
Ezi-SERVO II-PE-ALL-56L-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-56L-B-PN50-M			
Ezi-SERVO II-PE-ALL-56L-A-PN50-R			
Ezi-SERVO II-PE-ALL-56L-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-ALL-60S-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-PE-ALL-60S-B-PN3-M			
Ezi-SERVO II-PE-ALL-60S-A-PN3-R			
Ezi-SERVO II-PE-ALL-60S-B-PN3-R			
Ezi-SERVO II-PE-ALL-60S-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-60S-B-PN5-M			
Ezi-SERVO II-PE-ALL-60S-A-PN5-R			
Ezi-SERVO II-PE-ALL-60S-B-PN5-R			
Ezi-SERVO II-PE-ALL-60S-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-60S-B-PN8-M			
Ezi-SERVO II-PE-ALL-60S-A-PN8-R			
Ezi-SERVO II-PE-ALL-60S-B-PN8-R			
Ezi-SERVO II-PE-ALL-60S-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-60S-B-PN10-M			
Ezi-SERVO II-PE-ALL-60S-A-PN10-R			
Ezi-SERVO II-PE-ALL-60S-B-PN10-R			
Ezi-SERVO II-PE-ALL-60S-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-60S-B-PN15-M			
Ezi-SERVO II-PE-ALL-60S-A-PN15-R			
Ezi-SERVO II-PE-ALL-60S-B-PN15-R			
Ezi-SERVO II-PE-ALL-60S-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-60S-B-PN25-M			
Ezi-SERVO II-PE-ALL-60S-A-PN25-R			
Ezi-SERVO II-PE-ALL-60S-B-PN25-R			
Ezi-SERVO II-PE-ALL-60S-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-60S-B-PN40-M			
Ezi-SERVO II-PE-ALL-60S-A-PN40-R			
Ezi-SERVO II-PE-ALL-60S-B-PN40-R			
Ezi-SERVO II-PE-ALL-60S-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-60S-B-PN50-M			
Ezi-SERVO II-PE-ALL-60S-A-PN50-R			
Ezi-SERVO II-PE-ALL-60S-B-PN50-R			
Ezi-SERVO II-PE-ALL-60M-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-60M-B-PN3-M			
Ezi-SERVO II-PE-ALL-60M-A-PN3-R			
Ezi-SERVO II-PE-ALL-60M-B-PN3-R			
Ezi-SERVO II-PE-ALL-60M-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-60M-B-PN5-M			
Ezi-SERVO II-PE-ALL-60M-A-PN5-R			
Ezi-SERVO II-PE-ALL-60M-B-PN5-R			
Ezi-SERVO II-PE-ALL-60M-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-60M-B-PN8-M			
Ezi-SERVO II-PE-ALL-60M-A-PN8-R			
Ezi-SERVO II-PE-ALL-60M-B-PN8-R			
Ezi-SERVO II-PE-ALL-60M-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-60M-B-PN10-M			
Ezi-SERVO II-PE-ALL-60M-A-PN10-R			
Ezi-SERVO II-PE-ALL-60M-B-PN10-R			
Ezi-SERVO II-PE-ALL-60M-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-60M-B-PN15-M			
Ezi-SERVO II-PE-ALL-60M-A-PN15-R			
Ezi-SERVO II-PE-ALL-60M-B-PN15-R			
Ezi-SERVO II-PE-ALL-60M-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-60M-B-PN25-M			
Ezi-SERVO II-PE-ALL-60M-A-PN25-R			
Ezi-SERVO II-PE-ALL-60M-B-PN25-R			
Ezi-SERVO II-PE-ALL-60M-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-60M-B-PN40-M			
Ezi-SERVO II-PE-ALL-60M-A-PN40-R			
Ezi-SERVO II-PE-ALL-60M-B-PN40-R			
Ezi-SERVO II-PE-ALL-60M-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-60M-B-PN50-M			
Ezi-SERVO II-PE-ALL-60M-A-PN50-R			
Ezi-SERVO II-PE-ALL-60M-B-PN50-R			

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-ALL-60L-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-PE-ALL-60L-B-PN3-M			
Ezi-SERVO II-PE-ALL-60L-A-PN3-R			
Ezi-SERVO II-PE-ALL-60L-B-PN3-R			
Ezi-SERVO II-PE-ALL-60L-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-60L-B-PN5-M			
Ezi-SERVO II-PE-ALL-60L-A-PN5-R			
Ezi-SERVO II-PE-ALL-60L-B-PN5-R			
Ezi-SERVO II-PE-ALL-60L-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-60L-B-PN8-M			
Ezi-SERVO II-PE-ALL-60L-A-PN8-R			
Ezi-SERVO II-PE-ALL-60L-B-PN8-R			
Ezi-SERVO II-PE-ALL-60L-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-60L-B-PN10-M			
Ezi-SERVO II-PE-ALL-60L-A-PN10-R			
Ezi-SERVO II-PE-ALL-60L-B-PN10-R			
Ezi-SERVO II-PE-ALL-60L-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-60L-B-PN15-M			
Ezi-SERVO II-PE-ALL-60L-A-PN15-R			
Ezi-SERVO II-PE-ALL-60L-B-PN15-R			
Ezi-SERVO II-PE-ALL-60L-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-60L-B-PN25-M			
Ezi-SERVO II-PE-ALL-60L-A-PN25-R			
Ezi-SERVO II-PE-ALL-60L-B-PN25-R			
Ezi-SERVO II-PE-ALL-60L-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-60L-B-PN40-M			
Ezi-SERVO II-PE-ALL-60L-A-PN40-R			
Ezi-SERVO II-PE-ALL-60L-B-PN40-R			
Ezi-SERVO II-PE-ALL-60L-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-60L-B-PN50-M			
Ezi-SERVO II-PE-ALL-60L-A-PN50-R			
Ezi-SERVO II-PE-ALL-60L-B-PN50-R			
Ezi-SERVO II-PE-ALL-86M-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-86M-B-PN3-M			
Ezi-SERVO II-PE-ALL-86M-A-PN3-R			
Ezi-SERVO II-PE-ALL-86M-B-PN3-R			
Ezi-SERVO II-PE-ALL-86M-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-86M-B-PN5-M			
Ezi-SERVO II-PE-ALL-86M-A-PN5-R			
Ezi-SERVO II-PE-ALL-86M-B-PN5-R			
Ezi-SERVO II-PE-ALL-86M-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-86M-B-PN8-M			
Ezi-SERVO II-PE-ALL-86M-A-PN8-R			
Ezi-SERVO II-PE-ALL-86M-B-PN8-R			
Ezi-SERVO II-PE-ALL-86M-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-86M-B-PN10-M			
Ezi-SERVO II-PE-ALL-86M-A-PN10-R			
Ezi-SERVO II-PE-ALL-86M-B-PN10-R			
Ezi-SERVO II-PE-ALL-86M-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-86M-B-PN15-M			
Ezi-SERVO II-PE-ALL-86M-A-PN15-R			
Ezi-SERVO II-PE-ALL-86M-B-PN15-R			
Ezi-SERVO II-PE-ALL-86M-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-86M-B-PN25-M			
Ezi-SERVO II-PE-ALL-86M-A-PN25-R			
Ezi-SERVO II-PE-ALL-86M-B-PN25-R			
Ezi-SERVO II-PE-ALL-86M-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-86M-B-PN40-M			
Ezi-SERVO II-PE-ALL-86M-A-PN40-R			
Ezi-SERVO II-PE-ALL-86M-B-PN40-R			
Ezi-SERVO II-PE-ALL-86M-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-86M-B-PN50-M			
Ezi-SERVO II-PE-ALL-86M-A-PN50-R			
Ezi-SERVO II-PE-ALL-86M-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-PE-ALL-86L-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-PE-ALL-86L-B-PN3-M			
Ezi-SERVO II-PE-ALL-86L-A-PN3-R			
Ezi-SERVO II-PE-ALL-86L-B-PN3-R			
Ezi-SERVO II-PE-ALL-86L-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-86L-B-PN5-M			
Ezi-SERVO II-PE-ALL-86L-A-PN5-R			
Ezi-SERVO II-PE-ALL-86L-B-PN5-R			
Ezi-SERVO II-PE-ALL-86L-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-86L-B-PN8-M			
Ezi-SERVO II-PE-ALL-86L-A-PN8-R			
Ezi-SERVO II-PE-ALL-86L-B-PN8-R			
Ezi-SERVO II-PE-ALL-86L-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-86L-B-PN10-M			
Ezi-SERVO II-PE-ALL-86L-A-PN10-R			
Ezi-SERVO II-PE-ALL-86L-B-PN10-R			
Ezi-SERVO II-PE-ALL-86L-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-86L-B-PN15-M			
Ezi-SERVO II-PE-ALL-86L-A-PN15-R			
Ezi-SERVO II-PE-ALL-86L-B-PN15-R			
Ezi-SERVO II-PE-ALL-86L-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-86L-B-PN25-M			
Ezi-SERVO II-PE-ALL-86L-A-PN25-R			
Ezi-SERVO II-PE-ALL-86L-B-PN25-R			
Ezi-SERVO II-PE-ALL-86L-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-86L-B-PN40-M			
Ezi-SERVO II-PE-ALL-86L-A-PN40-R			
Ezi-SERVO II-PE-ALL-86L-B-PN40-R			
Ezi-SERVO II-PE-ALL-86L-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-86L-B-PN50-M			
Ezi-SERVO II-PE-ALL-86L-A-PN50-R			
Ezi-SERVO II-PE-ALL-86L-B-PN50-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-86XL-B-PN3-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN3-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN3-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-86XL-B-PN5-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN5-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN5-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-86XL-B-PN8-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN8-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN8-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-86XL-B-PN10-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN10-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN10-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-86XL-B-PN15-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN15-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN15-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-86XL-B-PN25-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN25-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN25-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-86XL-B-PN40-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN40-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN40-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-86XL-B-PN50-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN50-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN50-R			

Specifications of Drive

Driver Model		Ezi-SERVO II-PE-ALL -42 series	Ezi-SERVO II-PE-ALL -56 series	Ezi-SERVO II-PE-ALL -60 series	Ezi-SERVO II-PE-ALL -86 series
Input Voltage		24VDC ±10%			40~70VDC
Control Method		Closed loop control with 32bit MCU			
Current Consumption		Max 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use : 0~50℃ · In Storage : -20~70℃			
	Humidity	· In Use : 35~85% RH (Non-Condensing) · In Storage : 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000 [rpm] *1			
	Resolution [ppr]	10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter)			
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error			
	In-Position Selection	0~63 (Selectable by parameter)			
	Position Gain Selection	0~63 (Selectable by parameter)			
	Rotational Direction	CW/CCW (Selectable by parameter)			
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler)			
	Output Signals	1 dedicated output (Compare Out), 1 programmable output (Photocoupler), Brake			
Communication Interface		Ethernet communication, Dual port Ethernet switch embeded, Communication speed: 10/100 Base - T/TX Full Duplex			
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm]			
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque			
GUI		User Interface Program within Windows			
Library		Motion Library (DLL) for windows 7/8/10			

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

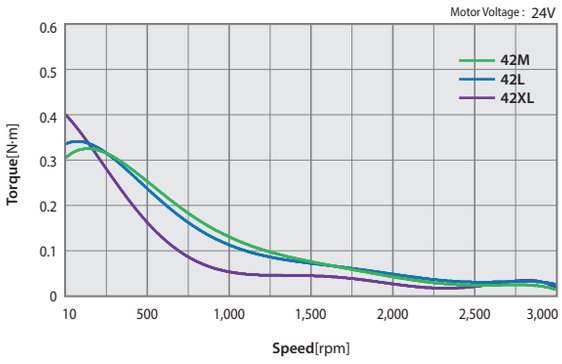
Specifications of Motor

MODEL			Ezi-SERVO II-PE-ALL -42 series			Ezi-SERVO II-PE-ALL -56 series		
		UNIT	42M	42L	42XL	56S	56M	56L
DRIVE METHOD		-	BI-POLAR					
NUMBER OF PHASES		-	2	2	2	2	2	2
CURRENT per PHASE		A	1.2	1.2	1.2	3.0	3.0	3.0
HOLDING TORQUE		N·m	0.44	0.5	0.65	0.64	1.0	1.5
ROTOR INERTIA		g·cm^2	54	77	114	180	280	520
WEIGHTS		g	440	520	660	760	920	1360
LENGTH(L)		mm	40	48	60	46	55	80
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	22	22	22	52	52	52
	8mm		26	26	26	65	65	65
	13mm		33	33	33	85	85	85
	18mm		46	46	46	123	123	123
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		-	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

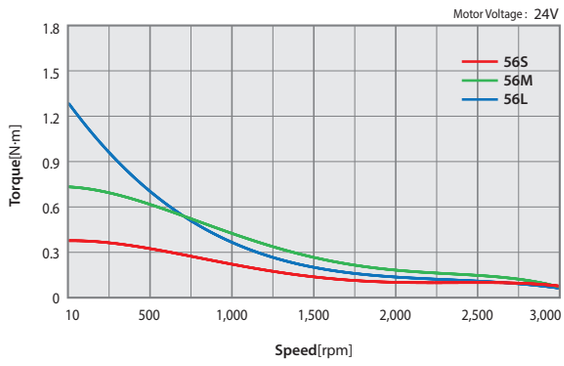
MODEL			Ezi-SERVO II-PE-ALL -60 series			Ezi-SERVO II-PE-ALL -86 series		
		UNIT	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		-	BI-POLAR					
NUMBER OF PHASES		-	2	2	2	2	2	2
CURRENT per PHASE		A	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	240	490	690	1800	3600	5400
WEIGHTS		g	840	980	1540	2682	4226	5756
LENGTH(L)		mm	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	70	70	70	270	270	270
	8mm		87	87	87	300	300	300
	13mm		114	114	114	350	350	350
	18mm		165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		-	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

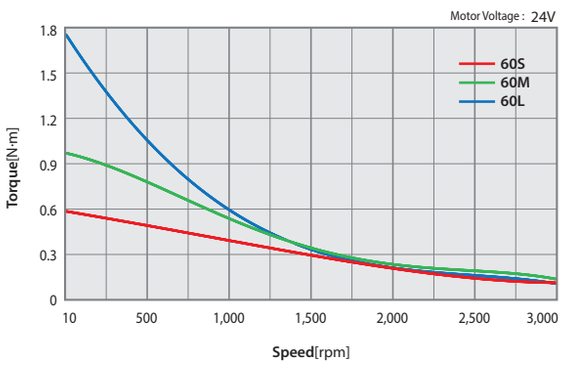
Ezi-SERVO II-PE-ALL-42 series



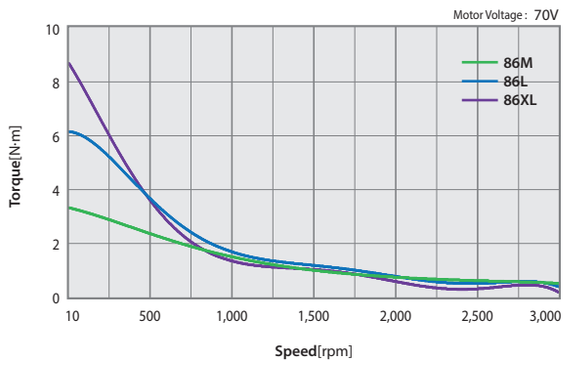
Ezi-SERVO II-PE-ALL-56 series



Ezi-SERVO II-PE-ALL-60 series

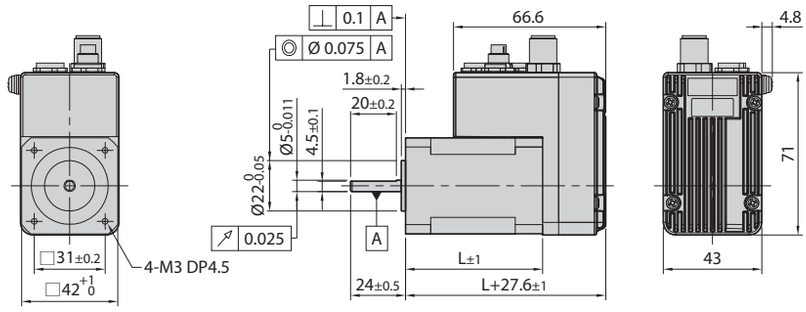


Ezi-SERVO II-PE-ALL-86 series

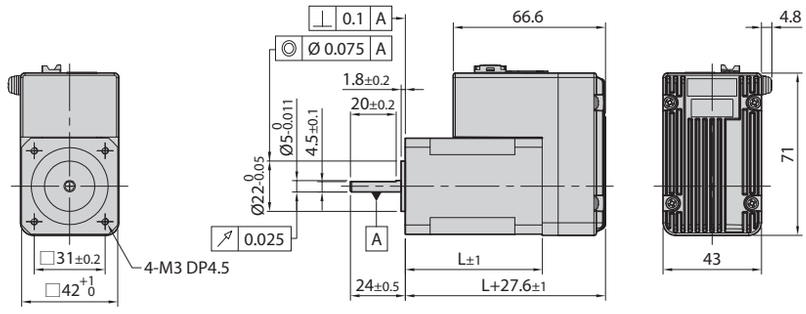


Dimensions of Motor [mm]

◆ M Type



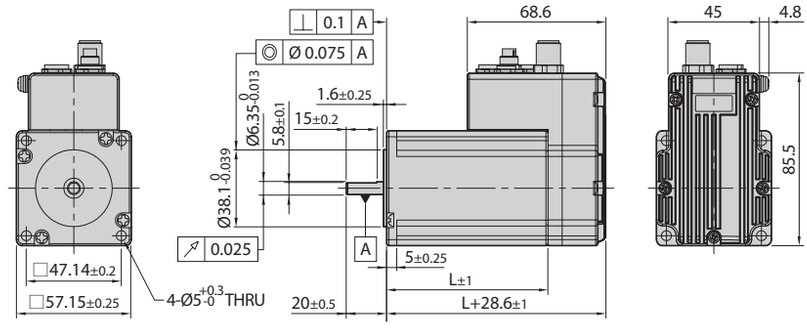
◆ R Type



42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

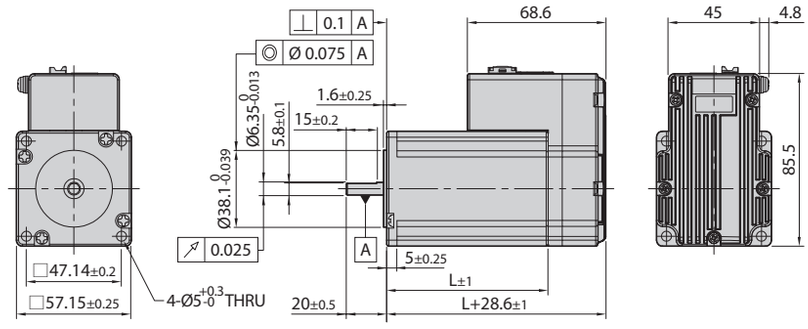
◆ M Type



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

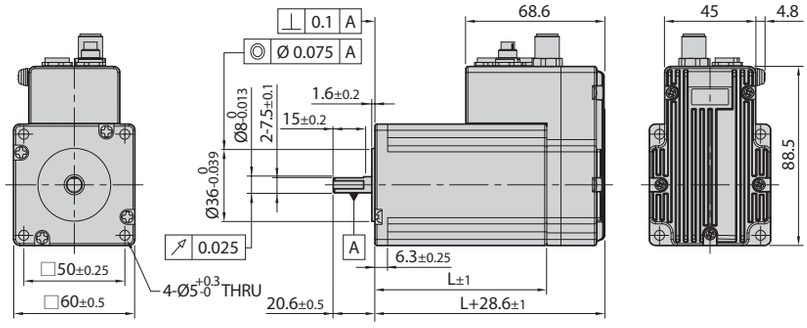
◆ R Type



※ There are 2 kinds size of front shaft diameter for Ezi-SERVO II-PE-ALL-56 series as Ø6.35 and Ø8.0.

● Dimensions of Motor [mm]

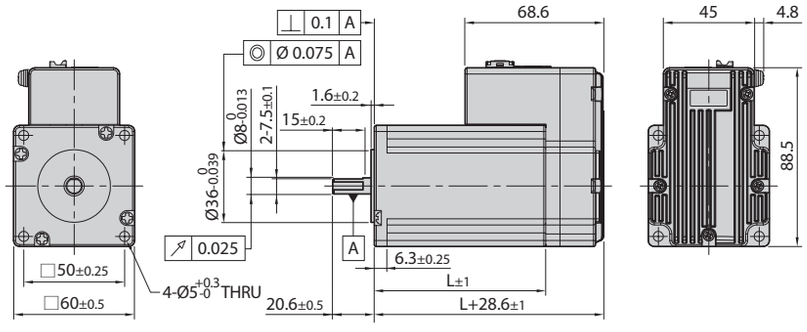
◆ M Type



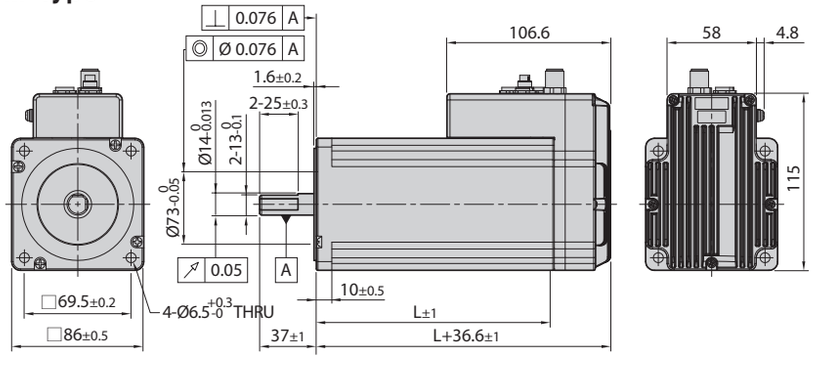
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

◆ R Type



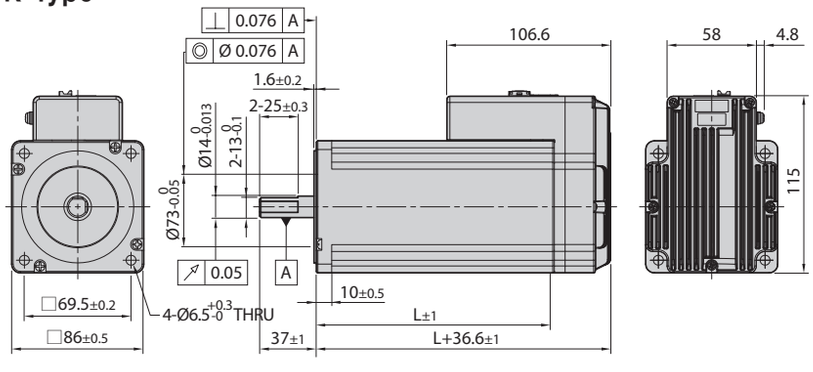
◆ M Type



86mm

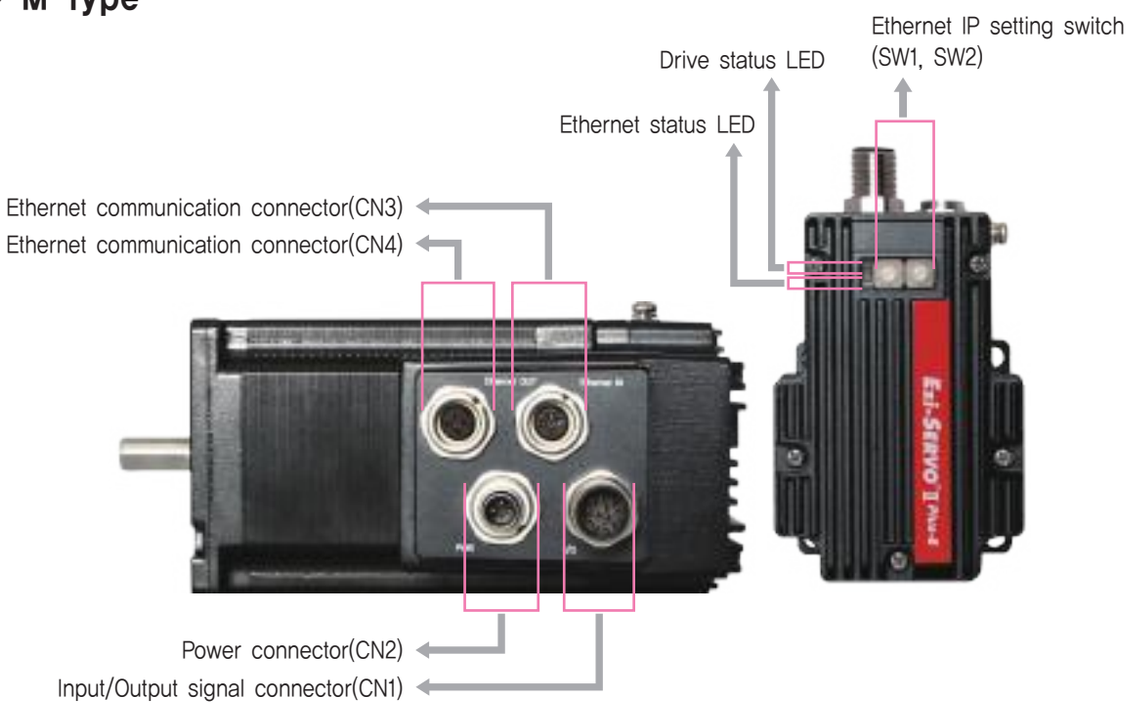
Model name	Length(L)
86M	78
86L	117
86XL	155

◆ R Type

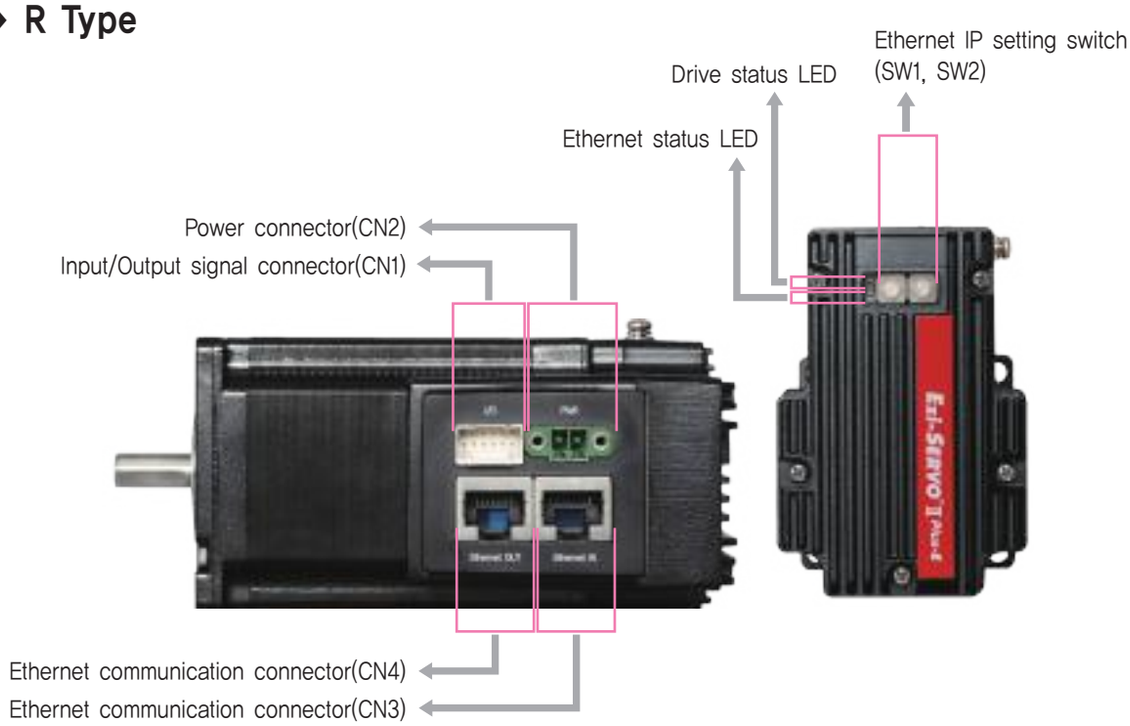


● Settings and Operation

◆ M Type

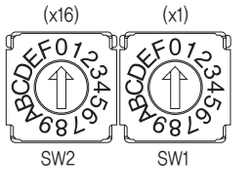


◆ R Type



1. Ethernet IP Setting Switch(SW1, SW2)

It can be set the value of the fourth digit of Ethernet IP through the setting switch. Set the product's IP not to overlap with the connected products. The first, second and third values of IP can be set through the GUI. Please refer to the manual for details. When the switch is set to 255 (FF), IP is automatically set, ignoring the setting. (DHCP function)
The fourth digit of the Ethernet IP is displayed in 7-Segment.

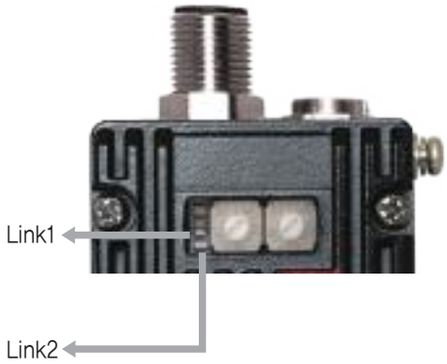


Ex) In case of SW1 : **7**, and SW2 : **5**
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

2. Ethernet Status LED

LED indicates communication status of Ethernet.

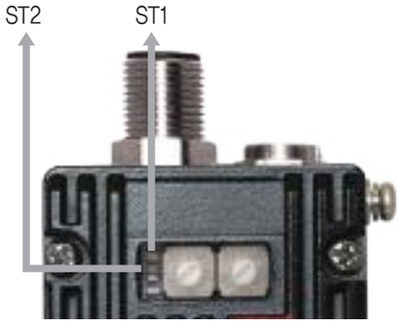
Name	Color	Status	Explanation
Link1,2	Green	OFF	Link deactivated
		ON	Link activated



3. Drive Status LED

In the case of Ezi-SERVO II Plus-E ALL series products, LED can be checked by LED color, lighting, On/Off and blinking.

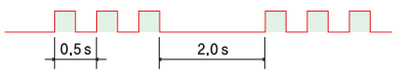
Status	LED	Description
Disable	ST1 : ST2 :	ST1 light flashing, ST2 light off
Enable	ST1 : ST2 :	ST1 light on, ST2 light off
In motion	ST1 : ST2 :	ST1 light on, ST2 light on
In-position deviation	ST1 : ST2 :	ST1 and ST2 light alternately flashing
Alarm	ST1 : ST2 :	ST2 light flashing repeatedly as many as alarm number



◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *2
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state *2

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
※ Please refer to uer Manual for the details of protection functions.

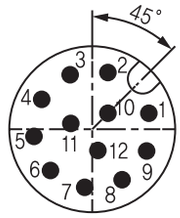


Alarm LED flash
(Ex: Position tracking error)

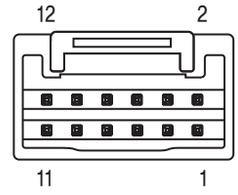
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE−	Output
5	LIMIT+	Input
6	LIMIT−	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Compare Out	Output
12	Digital Out1	Output

◆ M Type



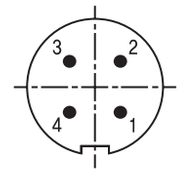
◆ R Type



5. Power Connector(CN2)

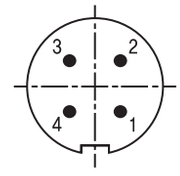
◆ M Type

NO.	Function	I/O
1	24VDC	Input
2	24VDC	Input
3	GND	Input
4	GND	Input



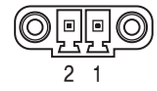
◆ M Type(86mm)

NO.	Function	I/O
1	40~70VDC	Input
2	40~70VDC	Input
3	GND	Input
4	GND	Input



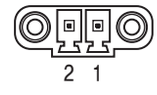
◆ R Type

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



◆ R Type(86mm)

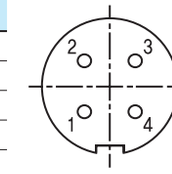
NO.	Function	I/O
1	40~70VDC	Input
2	GND	Input



6. Ethernet Communication Connector(CN3, CN4)

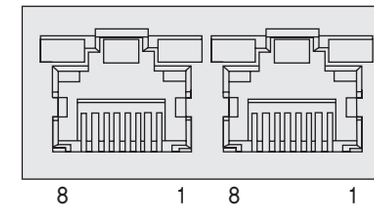
◆ M Type

NO.	Function
1	TD+
2	TD−
3	RD+
4	RD−
Connection hood	F.GND

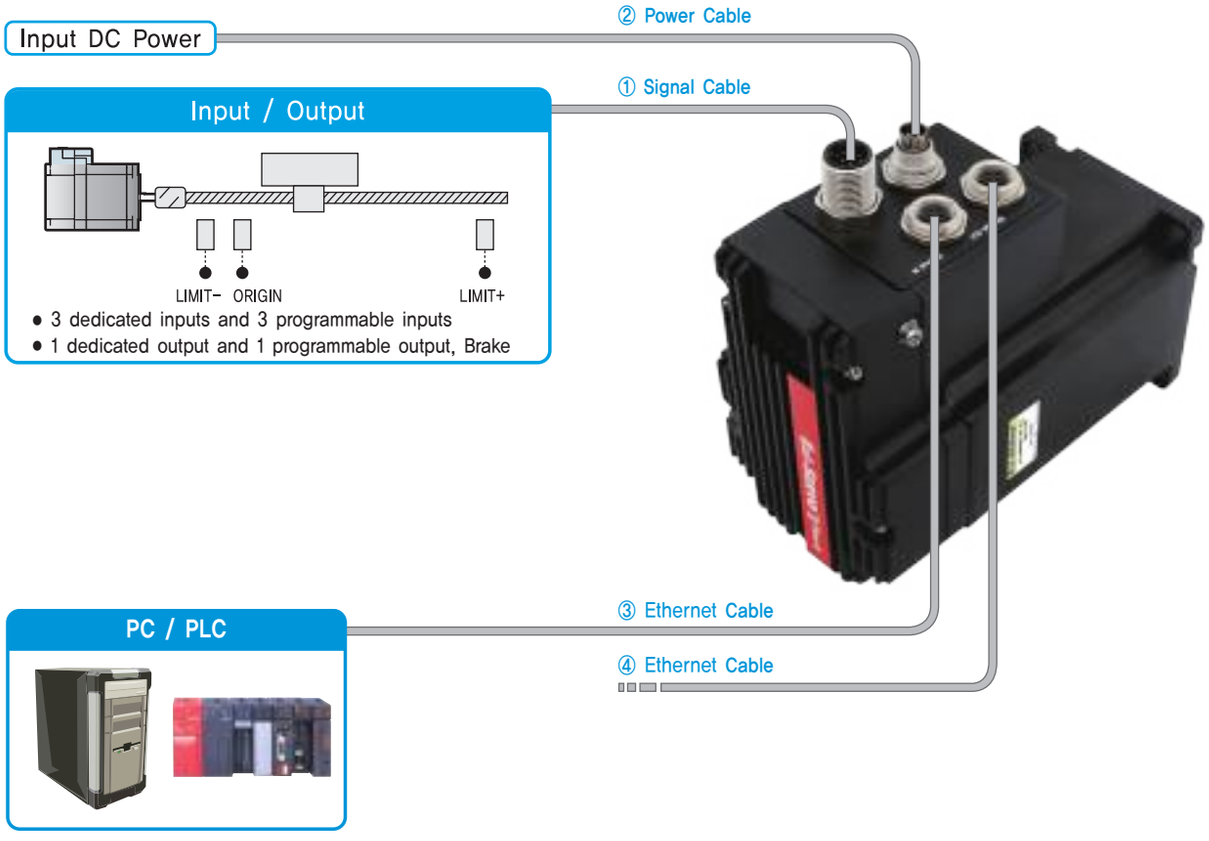


◆ R Type

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connection hood	F.GND
5	----		



System Configuration [M Type]



Type	Signal Cable	Power Cable	Ethernet Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II Plus-E ALL.

Item	Length [m]	Remark
CSEM-S-□□□F	□□□	Normal Cable
CSEM-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-SERVO II Plus-E ALL.

Item	Length [m]	Remark
CWPA-P-□□□F	□□□	Normal Cable
CWPA-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

③ Ethernet Cable

Shielded Twisted Pair(STP) cable of category 5e or higher.

Item	Length [m]	Remark
CGNM-EC-□□□F	□□□	Normal Cable
CGNM-EC-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This is a cable that connects Ezi-SERVO II Plus-E ALL M type to Ethernet Master, Ezi-SERVO II Plus-E, and Ezi-SERVO II Plus-E ALL R type in a network. It is composed of M type connector and RJ45 connector.

④ Ethernet Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CWMD-EC-□□□F	□□□	Normal Cable
CWMD-EC-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This is a cable that connects Ezi-SERVO II Plus-E ALL M type to Ezi-SERVO II Plus-E ALL M type in a network.

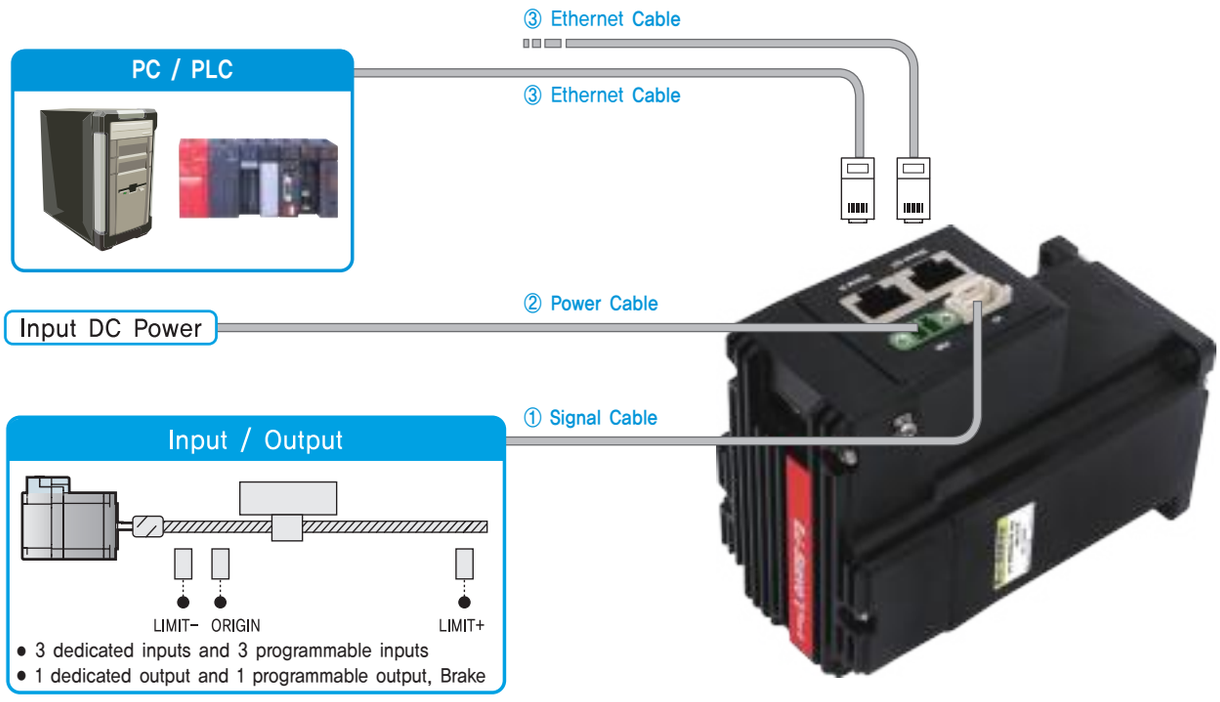
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Connector	99 0410 75 04	BINDER
Signal (CN1)	Connector	99 0492 52 12	BINDER
Ethernet Communication (CN3, CN4)	Connector	99 0409 75 04	BINDER

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

System Configuration [R Type]



Type	Signal Cable	Power Cable	Ethernet Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II Plus-E ALL.

Item	Length [m]	Remark
CSER-S-□□□F	□□□	Normal Cable
CSER-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-SERVO II Plus-E ALL.

Item	Length [m]	Remark
CSVA-P-□□□F	□□□	Normal Cable
CSVA-P-□□□M	□□□	Robot Cable
CSPA-P-□□□F*1	□□□	Normal Cable
CSPA-P-□□□M*1	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.
*1 : R Type 86mm

③ Ethernet Cable

Shielded Twisted Pair(STP) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable
CGNR-EC-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

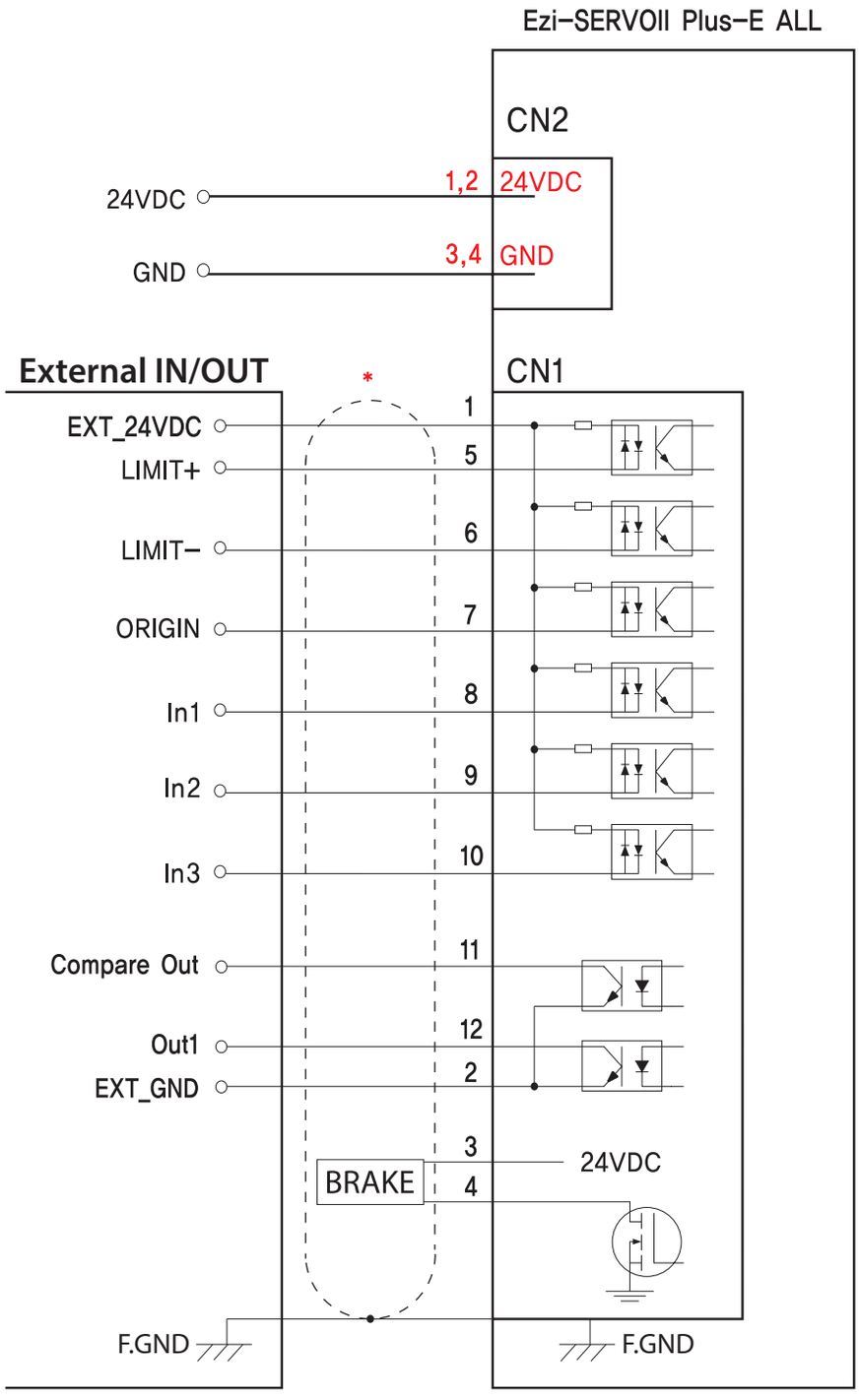
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Terminal Block	AKZ1550/2F-3.81	PTR
Signal (CN1)	Housing Terminal	501646-1200 501648-1000(AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

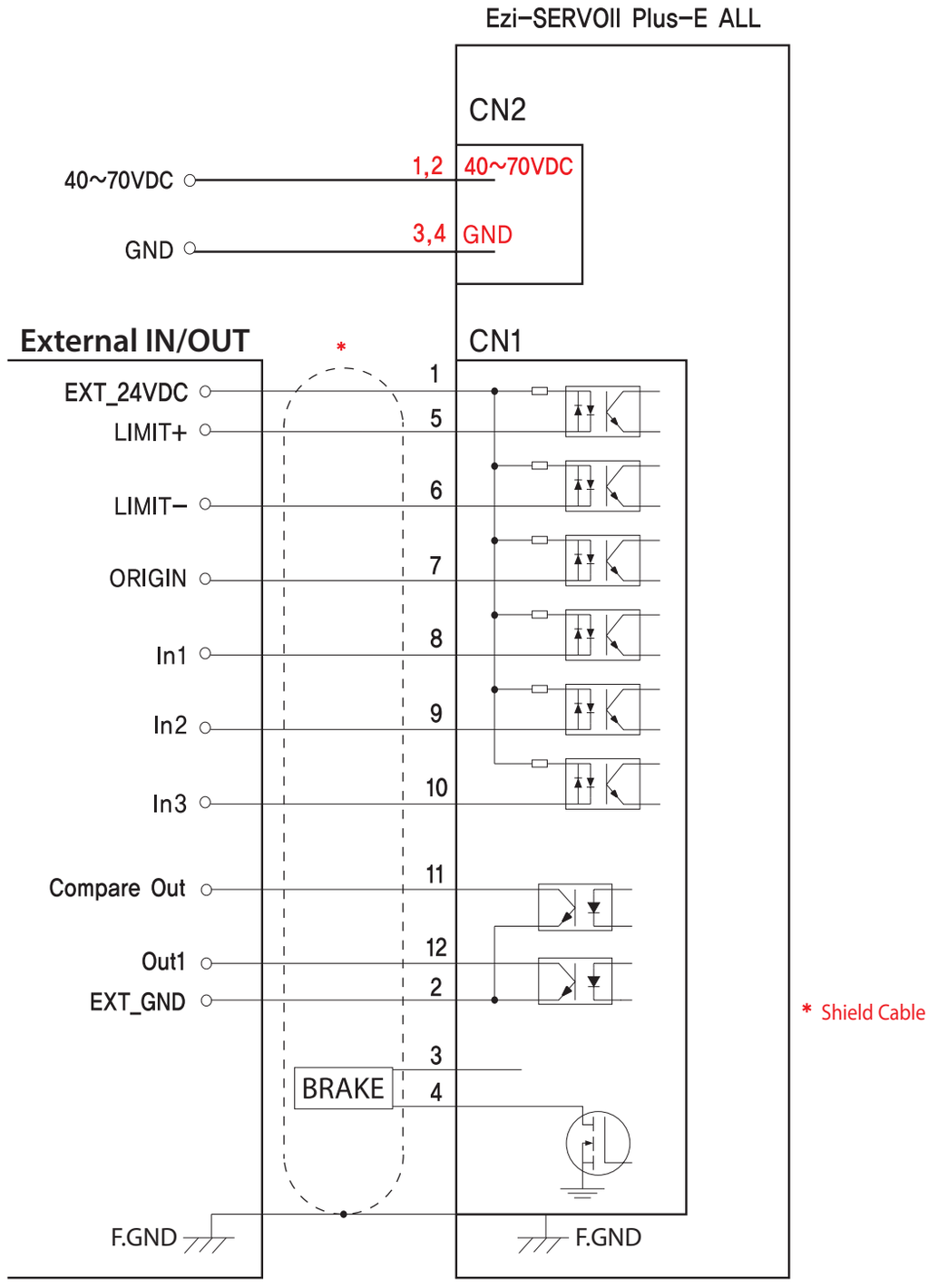
● External Wiring Diagram [M Type]



* Shield Cable

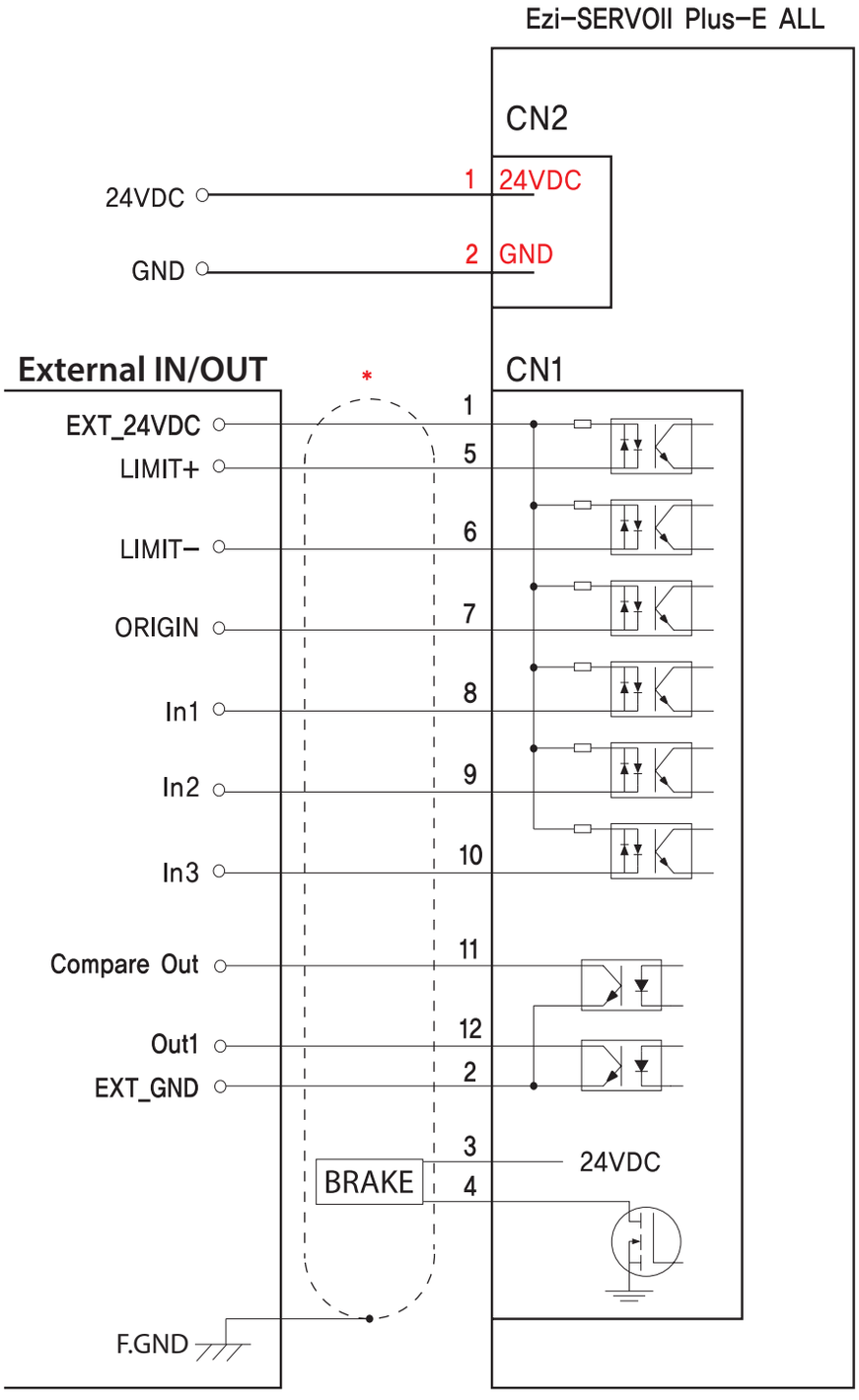
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● External Wiring Diagram [M Type 86mm]



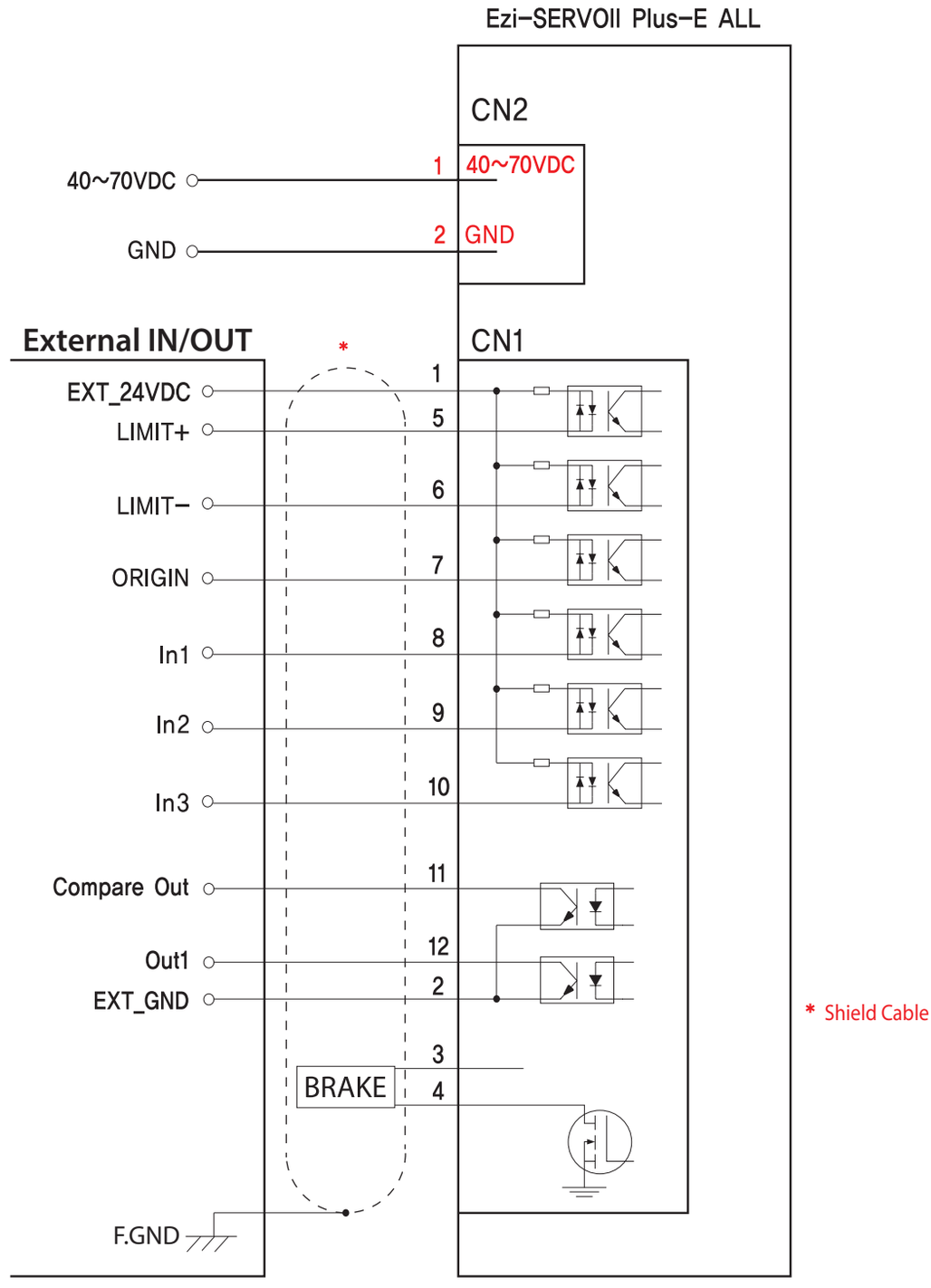
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● External Wiring Diagram [R Type]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● External Wiring Diagram [R Type 86mm]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.


Ezi-SERVO II CC-Link
FASTECH
Ezi-SERVO
EzS2-CL-42XL-A
SW1
RS-485
STATION NO.

Ezi-SERVO II CC-Link

Ezi-SERVO II CC-Link

- Embedded Controller
- Position Table
- Closed Loop System
- No Gain Tuning / No Hunting
- Heat Reduction / Torque Improvement

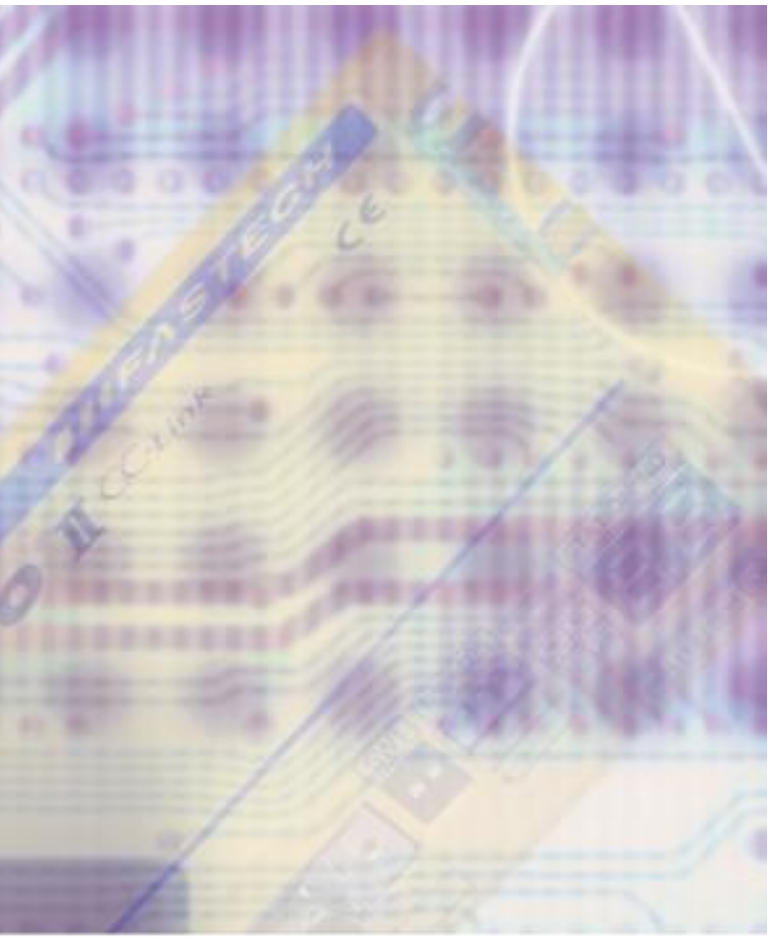


FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® II CC-Link

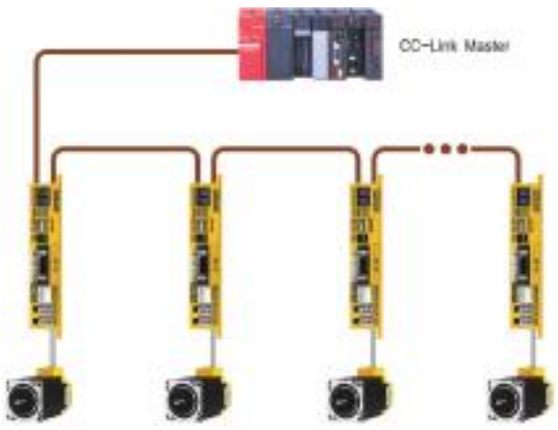
Closed Loop Stepping System



1 CC-Link Based Motion Control

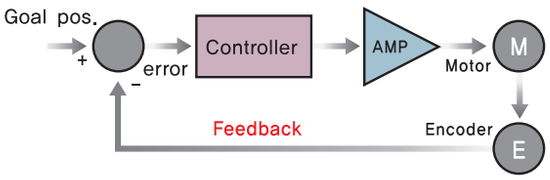
Ezi-SERVO II CC-Link is a stepping motor control system that supports CC-Link with high speed fieldbus (max. 10Mbps).
Ezi-SERVO II CC-Link is a remote device module supporting CC-Link network. Multi-function control is possible by occupying 1 station and 2 stations in CC-Link and motion and monitoring functions are processed by device commands.

※ Maximum number of axis able to be connected
· 1 station : 42 axis · 2 station : 32 axis



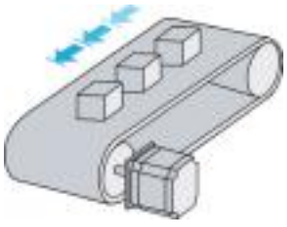
2 Closed Loop System

Ezi-SERVO II is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50 μsec. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

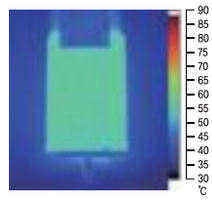
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



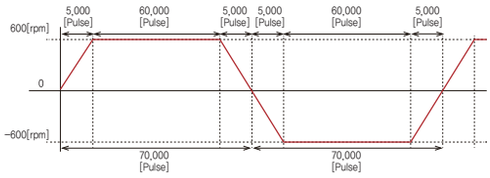
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

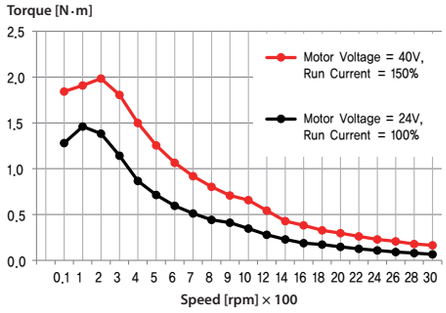


Example of the Motor Current Control according to load

5 Torque Improvement

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

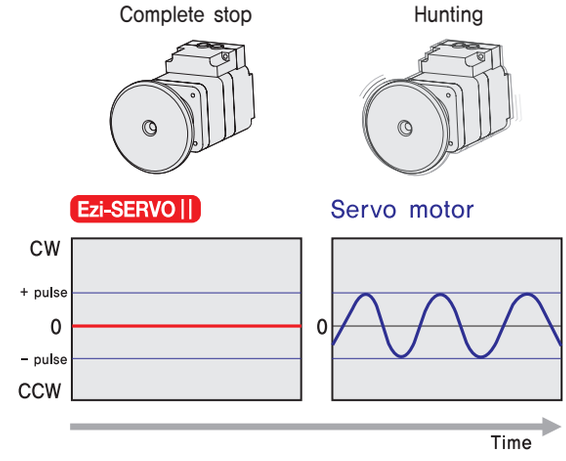


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-CL-56L
Motor Voltage = 40VDC
Input Voltage = 24VDC

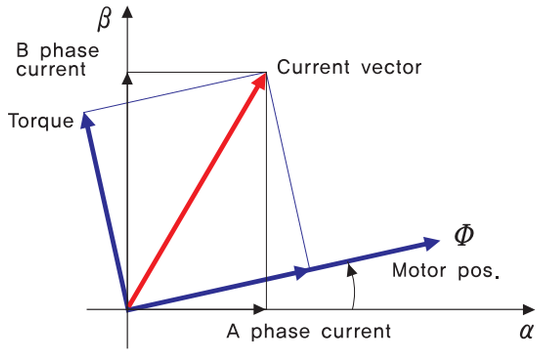
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



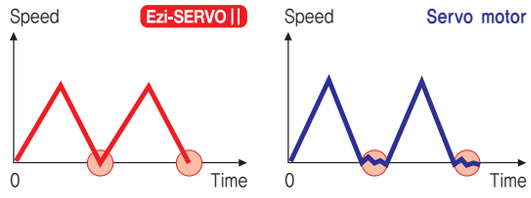
7 Smooth and Accurate

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



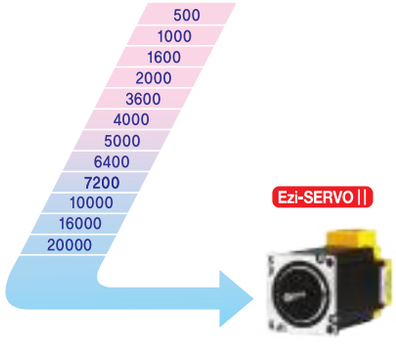
8 Fast Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



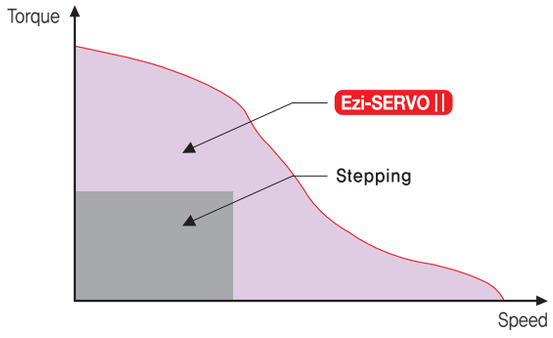
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



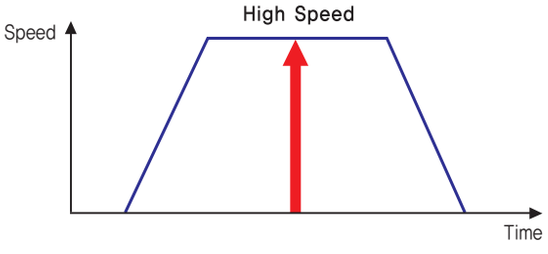
10 High Torque

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Control Stepping Drive

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load variations.

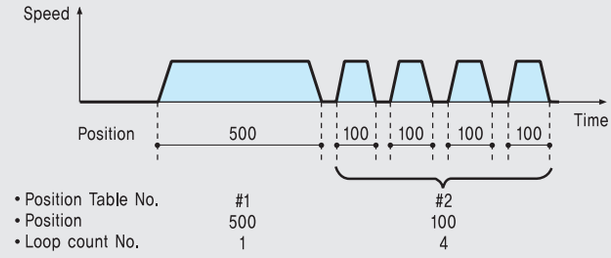
● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Features of Motion Controller

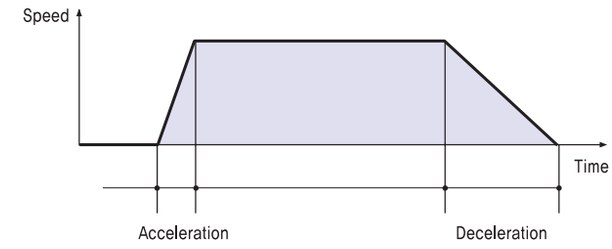
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



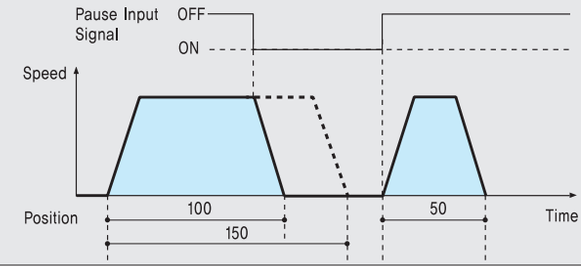
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



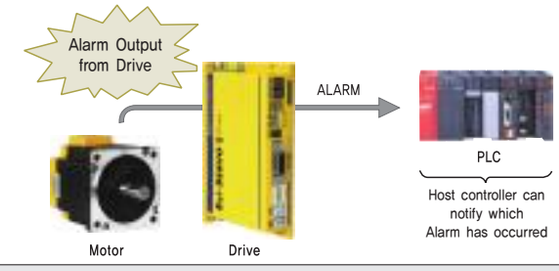
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



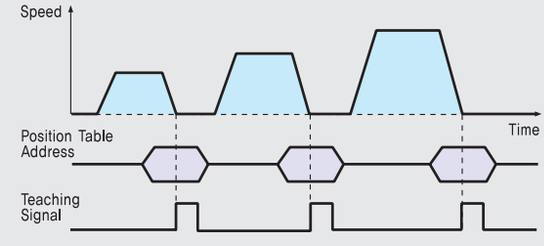
4. Alarm

The number of LED flashing time and information displayed on the 7-Segment indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

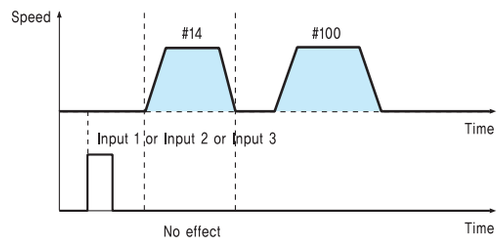


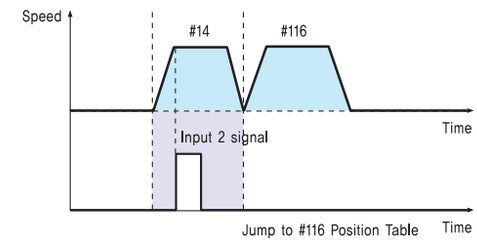
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





● Ezi-SERVO II CC-Link Part Numbering

Ezi-SERVO II -CL-56L-A-BK-PN05-□

Product Name

Drive Series

CL : CC-Link

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
B : 20,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II -CL-20M-F	EzM2-20M-F	EzS2-CL-20M-F
Ezi-SERVO II -CL-20L-F	EzM2-20L-F	EzS2-CL-20L-F
Ezi-SERVO II -CL-28S-D	EzM2-28S-D	EzS2-CL-28S-D
Ezi-SERVO II -CL-28SM-D	EzM2-28SM-D	EzS2-CL-28S-D
Ezi-SERVO II -CL-28M-D	EzM2-28M-D	EzS2-CL-28M-D
Ezi-SERVO II -CL-28MM-D	EzM2-28MM-D	EzS2-CL-28M-D
Ezi-SERVO II -CL-28L-D	EzM2-28L-D	EzS2-CL-28L-D
Ezi-SERVO II -CL-28LM-D	EzM2-28LM-D	EzS2-CL-28L-D
Ezi-SERVO II -CL-35M-D	EzM2-35M-D	EzS2-CL-35M-D
Ezi-SERVO II -CL-35MM-D	EzM2-35MM-D	EzS2-CL-35M-D
Ezi-SERVO II -CL-35L-D	EzM2-35L-D	EzS2-CL-35L-D
Ezi-SERVO II -CL-35LM-D	EzM2-35LM-D	EzS2-CL-35L-D
Ezi-SERVO II -CL-42S-A	EzM2-42S-A	EzS2-CL-42S-A
Ezi-SERVO II -CL-42S-B	EzM2-42S-B	EzS2-CL-42S-B
Ezi-SERVO II -CL-42M-A	EzM2-42M-A	EzS2-CL-42M-A
Ezi-SERVO II -CL-42M-B	EzM2-42M-B	EzS2-CL-42M-B
Ezi-SERVO II -CL-42L-A	EzM2-42L-A	EzS2-CL-42L-A
Ezi-SERVO II -CL-42L-B	EzM2-42L-B	EzS2-CL-42L-B
Ezi-SERVO II -CL-42XL-A	EzM2-42XL-A	EzS2-CL-42XL-A
Ezi-SERVO II -CL-42XL-B	EzM2-42XL-B	EzS2-CL-42XL-B
Ezi-SERVO II -CL-56S-A	EzM2-56S-A	EzS2-CL-56S-A
Ezi-SERVO II -CL-56S-B	EzM2-56S-B	EzS2-CL-56S-B
Ezi-SERVO II -CL-56M-A	EzM2-56M-A	EzS2-CL-56M-A
Ezi-SERVO II -CL-56M-B	EzM2-56M-B	EzS2-CL-56M-B
Ezi-SERVO II -CL-56L-A	EzM2-56L-A	EzS2-CL-56L-A
Ezi-SERVO II -CL-56L-B	EzM2-56L-B	EzS2-CL-56L-B
Ezi-SERVO II -CL-60S-A	EzM2-60S-A	EzS2-CL-60S-A
Ezi-SERVO II -CL-60S-B	EzM2-60S-B	EzS2-CL-60S-B
Ezi-SERVO II -CL-60M-A	EzM2-60M-A	EzS2-CL-60M-A
Ezi-SERVO II -CL-60M-B	EzM2-60M-B	EzS2-CL-60M-B
Ezi-SERVO II -CL-60L-A	EzM2-60L-A	EzS2-CL-60L-A
Ezi-SERVO II -CL-60L-B	EzM2-60L-B	EzS2-CL-60L-B
Ezi-SERVO II -CL-86M-A	EzM2-86M-A	EzS2-CL-86M-A
Ezi-SERVO II -CL-86M-B	EzM2-86M-B	EzS2-CL-86M-B
Ezi-SERVO II -CL-86L-A	EzM2-86L-A	EzS2-CL-86L-A
Ezi-SERVO II -CL-86L-B	EzM2-86L-B	EzS2-CL-86L-B
Ezi-SERVO II -CL-86XL-A	EzM2-86XL-A	EzS2-CL-86XL-A
Ezi-SERVO II -CL-86XL-B	EzM2-86XL-B	EzS2-CL-86XL-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex : Ezi-SERVO II -CL-28LM-D, Ezi-SERVO II -CL-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-CL-42S-A-BK	EzM2-42S-A-BK	EzS2-CL-42S-A
Ezi-SERVO II-CL-42S-B-BK	EzM2-42S-B-BK	EzS2-CL-42S-B
Ezi-SERVO II-CL-42M-A-BK	EzM2-42M-A-BK	EzS2-CL-42M-A
Ezi-SERVO II-CL-42M-B-BK	EzM2-42M-B-BK	EzS2-CL-42M-B
Ezi-SERVO II-CL-42L-A-BK	EzM2-42L-A-BK	EzS2-CL-42L-A
Ezi-SERVO II-CL-42L-B-BK	EzM2-42L-B-BK	EzS2-CL-42L-B
Ezi-SERVO II-CL-42XL-A-BK	EzM2-42XL-A-BK	EzS2-CL-42XL-A
Ezi-SERVO II-CL-42XL-B-BK	EzM2-42XL-B-BK	EzS2-CL-42XL-B
Ezi-SERVO II-CL-56S-A-BK	EzM2-56S-A-BK	EzS2-CL-56S-A
Ezi-SERVO II-CL-56S-B-BK	EzM2-56S-B-BK	EzS2-CL-56S-B
Ezi-SERVO II-CL-56M-A-BK	EzM2-56M-A-BK	EzS2-CL-56M-A
Ezi-SERVO II-CL-56M-B-BK	EzM2-56M-B-BK	EzS2-CL-56M-B
Ezi-SERVO II-CL-56L-A-BK	EzM2-56L-A-BK	EzS2-CL-56L-A
Ezi-SERVO II-CL-56L-B-BK	EzM2-56L-B-BK	EzS2-CL-56L-B
Ezi-SERVO II-CL-60S-A-BK	EzM2-60S-A-BK	EzS2-CL-60S-A
Ezi-SERVO II-CL-60S-B-BK	EzM2-60S-B-BK	EzS2-CL-60S-B
Ezi-SERVO II-CL-60M-A-BK	EzM2-60M-A-BK	EzS2-CL-60M-A
Ezi-SERVO II-CL-60M-B-BK	EzM2-60M-B-BK	EzS2-CL-60M-B
Ezi-SERVO II-CL-60L-A-BK	EzM2-60L-A-BK	EzS2-CL-60L-A
Ezi-SERVO II-CL-60L-B-BK	EzM2-60L-B-BK	EzS2-CL-60L-B
Ezi-SERVO II-CL-86M-A-BK	EzM2-86M-A-BK	EzS2-CL-86M-A
Ezi-SERVO II-CL-86M-B-BK	EzM2-86M-B-BK	EzS2-CL-86M-B
Ezi-SERVO II-CL-86L-A-BK	EzM2-86L-A-BK	EzS2-CL-86L-A
Ezi-SERVO II-CL-86L-B-BK	EzM2-86L-B-BK	EzS2-CL-86L-B
Ezi-SERVO II-CL-86XL-A-BK	EzM2-86XL-A-BK	EzS2-CL-86XL-A
Ezi-SERVO II-CL-86XL-B-BK	EzM2-86XL-B-BK	EzS2-CL-86XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-CL-42S-A-PN3	EzM2-42S-A-PN3	EzS2-CL-42S-A	1:3
Ezi-SERVO II-CL-42S-B-PN3	EzM2-42S-B-PN3	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN5	EzM2-42S-A-PN5	EzS2-CL-42S-A	1:5
Ezi-SERVO II-CL-42S-B-PN5	EzM2-42S-B-PN5	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN8	EzM2-42S-A-PN8	EzS2-CL-42S-A	1:8
Ezi-SERVO II-CL-42S-B-PN8	EzM2-42S-B-PN8	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN10	EzM2-42S-A-PN10	EzS2-CL-42S-A	1:10
Ezi-SERVO II-CL-42S-B-PN10	EzM2-42S-B-PN10	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN15	EzM2-42S-A-PN15	EzS2-CL-42S-A	1:15
Ezi-SERVO II-CL-42S-B-PN15	EzM2-42S-B-PN15	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN25	EzM2-42S-A-PN25	EzS2-CL-42S-A	1:25
Ezi-SERVO II-CL-42S-B-PN25	EzM2-42S-B-PN25	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN40	EzM2-42S-A-PN40	EzS2-CL-42S-A	1:40
Ezi-SERVO II-CL-42S-B-PN40	EzM2-42S-B-PN40	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN50	EzM2-42S-A-PN50	EzS2-CL-42S-A	1:50
Ezi-SERVO II-CL-42S-B-PN50	EzM2-42S-B-PN50	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42M-A-PN3	EzM2-42M-A-PN3	EzS2-CL-42M-A	1:3
Ezi-SERVO II-CL-42M-B-PN3	EzM2-42M-B-PN3	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN5	EzM2-42M-A-PN5	EzS2-CL-42M-A	1:5
Ezi-SERVO II-CL-42M-B-PN5	EzM2-42M-B-PN5	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN8	EzM2-42M-A-PN8	EzS2-CL-42M-A	1:8
Ezi-SERVO II-CL-42M-B-PN8	EzM2-42M-B-PN8	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN10	EzM2-42M-A-PN10	EzS2-CL-42M-A	1:10
Ezi-SERVO II-CL-42M-B-PN10	EzM2-42M-B-PN10	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN15	EzM2-42M-A-PN15	EzS2-CL-42M-A	1:15
Ezi-SERVO II-CL-42M-B-PN15	EzM2-42M-B-PN15	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN25	EzM2-42M-A-PN25	EzS2-CL-42M-A	1:25
Ezi-SERVO II-CL-42M-B-PN25	EzM2-42M-B-PN25	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN40	EzM2-42M-A-PN40	EzS2-CL-42M-A	1:40
Ezi-SERVO II-CL-42M-B-PN40	EzM2-42M-B-PN40	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN50	EzM2-42M-A-PN50	EzS2-CL-42M-A	1:50
Ezi-SERVO II-CL-42M-B-PN50	EzM2-42M-B-PN50	EzS2-CL-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-CL-42L-A-PN3	EzM2-42L-A-PN3	EzS2-CL-42L-A	1:3
Ezi-SERVO II-CL-42L-B-PN3	EzM2-42L-B-PN3	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN5	EzM2-42L-A-PN5	EzS2-CL-42L-A	1:5
Ezi-SERVO II-CL-42L-B-PN5	EzM2-42L-B-PN5	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN8	EzM2-42L-A-PN8	EzS2-CL-42L-A	1:8
Ezi-SERVO II-CL-42L-B-PN8	EzM2-42L-B-PN8	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN10	EzM2-42L-A-PN10	EzS2-CL-42L-A	1:10
Ezi-SERVO II-CL-42L-B-PN10	EzM2-42L-B-PN10	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN15	EzM2-42L-A-PN15	EzS2-CL-42L-A	1:15
Ezi-SERVO II-CL-42L-B-PN15	EzM2-42L-B-PN15	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN25	EzM2-42L-A-PN25	EzS2-CL-42L-A	1:25
Ezi-SERVO II-CL-42L-B-PN25	EzM2-42L-B-PN25	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN40	EzM2-42L-A-PN40	EzS2-CL-42L-A	1:40
Ezi-SERVO II-CL-42L-B-PN40	EzM2-42L-B-PN40	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN50	EzM2-42L-A-PN50	EzS2-CL-42L-A	1:50
Ezi-SERVO II-CL-42L-B-PN50	EzM2-42L-B-PN50	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-CL-42XL-A	1:3
Ezi-SERVO II-CL-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-CL-42XL-A	1:5
Ezi-SERVO II-CL-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-CL-42XL-A	1:8
Ezi-SERVO II-CL-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-CL-42XL-A	1:10
Ezi-SERVO II-CL-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-CL-42XL-A	1:15
Ezi-SERVO II-CL-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-CL-42XL-A	1:25
Ezi-SERVO II-CL-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-CL-42XL-A	1:40
Ezi-SERVO II-CL-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-CL-42XL-A	1:50
Ezi-SERVO II-CL-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-56S-A-PN3	EzM2-56S-A-PN3	EzS2-CL-56S-A	1:3
Ezi-SERVO II-CL-56S-B-PN3	EzM2-56S-B-PN3	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN5	EzM2-56S-A-PN5	EzS2-CL-56S-A	1:5
Ezi-SERVO II-CL-56S-B-PN5	EzM2-56S-B-PN5	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN8	EzM2-56S-A-PN8	EzS2-CL-56S-A	1:8
Ezi-SERVO II-CL-56S-B-PN8	EzM2-56S-B-PN8	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN10	EzM2-56S-A-PN10	EzS2-CL-56S-A	1:10
Ezi-SERVO II-CL-56S-B-PN10	EzM2-56S-B-PN10	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN15	EzM2-56S-A-PN15	EzS2-CL-56S-A	1:15
Ezi-SERVO II-CL-56S-B-PN15	EzM2-56S-B-PN15	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN25	EzM2-56S-A-PN25	EzS2-CL-56S-A	1:25
Ezi-SERVO II-CL-56S-B-PN25	EzM2-56S-B-PN25	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN40	EzM2-56S-A-PN40	EzS2-CL-56S-A	1:40
Ezi-SERVO II-CL-56S-B-PN40	EzM2-56S-B-PN40	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN50	EzM2-56S-A-PN50	EzS2-CL-56S-A	1:50
Ezi-SERVO II-CL-56S-B-PN50	EzM2-56S-B-PN50	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56M-A-PN3	EzM2-56M-A-PN3	EzS2-CL-56M-A	1:3
Ezi-SERVO II-CL-56M-B-PN3	EzM2-56M-B-PN3	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN5	EzM2-56M-A-PN5	EzS2-CL-56M-A	1:5
Ezi-SERVO II-CL-56M-B-PN5	EzM2-56M-B-PN5	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN8	EzM2-56M-A-PN8	EzS2-CL-56M-A	1:8
Ezi-SERVO II-CL-56M-B-PN8	EzM2-56M-B-PN8	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN10	EzM2-56M-A-PN10	EzS2-CL-56M-A	1:10
Ezi-SERVO II-CL-56M-B-PN10	EzM2-56M-B-PN10	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN15	EzM2-56M-A-PN15	EzS2-CL-56M-A	1:15
Ezi-SERVO II-CL-56M-B-PN15	EzM2-56M-B-PN15	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN25	EzM2-56M-A-PN25	EzS2-CL-56M-A	1:25
Ezi-SERVO II-CL-56M-B-PN25	EzM2-56M-B-PN25	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN40	EzM2-56M-A-PN40	EzS2-CL-56M-A	1:40
Ezi-SERVO II-CL-56M-B-PN40	EzM2-56M-B-PN40	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN50	EzM2-56M-A-PN50	EzS2-CL-56M-A	1:50
Ezi-SERVO II-CL-56M-B-PN50	EzM2-56M-B-PN50	EzS2-CL-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-CL-56L-A-PN3	EzM2-56L-A-PN3	EzS2-CL-56L-A	1:3
Ezi-SERVO II-CL-56L-B-PN3	EzM2-56L-B-PN3	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN5	EzM2-56L-A-PN5	EzS2-CL-56L-A	1:5
Ezi-SERVO II-CL-56L-B-PN5	EzM2-56L-B-PN5	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN8	EzM2-56L-A-PN8	EzS2-CL-56L-A	1:8
Ezi-SERVO II-CL-56L-B-PN8	EzM2-56L-B-PN8	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN10	EzM2-56L-A-PN10	EzS2-CL-56L-A	1:10
Ezi-SERVO II-CL-56L-B-PN10	EzM2-56L-B-PN10	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN15	EzM2-56L-A-PN15	EzS2-CL-56L-A	1:15
Ezi-SERVO II-CL-56L-B-PN15	EzM2-56L-B-PN15	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN25	EzM2-56L-A-PN25	EzS2-CL-56L-A	1:25
Ezi-SERVO II-CL-56L-B-PN25	EzM2-56L-B-PN25	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN40	EzM2-56L-A-PN40	EzS2-CL-56L-A	1:40
Ezi-SERVO II-CL-56L-B-PN40	EzM2-56L-B-PN40	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN50	EzM2-56L-A-PN50	EzS2-CL-56L-A	1:50
Ezi-SERVO II-CL-56L-B-PN50	EzM2-56L-B-PN50	EzS2-CL-56L-B	
Ezi-SERVO II-CL-60S-A-PN3	EzM2-60S-A-PN3	EzS2-CL-60S-A	1:3
Ezi-SERVO II-CL-60S-B-PN3	EzM2-60S-B-PN3	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN5	EzM2-60S-A-PN5	EzS2-CL-60S-A	1:5
Ezi-SERVO II-CL-60S-B-PN5	EzM2-60S-B-PN5	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN8	EzM2-60S-A-PN8	EzS2-CL-60S-A	1:8
Ezi-SERVO II-CL-60S-B-PN8	EzM2-60S-B-PN8	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN10	EzM2-60S-A-PN10	EzS2-CL-60S-A	1:10
Ezi-SERVO II-CL-60S-B-PN10	EzM2-60S-B-PN10	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN15	EzM2-60S-A-PN15	EzS2-CL-60S-A	1:15
Ezi-SERVO II-CL-60S-B-PN15	EzM2-60S-B-PN15	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN25	EzM2-60S-A-PN25	EzS2-CL-60S-A	1:25
Ezi-SERVO II-CL-60S-B-PN25	EzM2-60S-B-PN25	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN40	EzM2-60S-A-PN40	EzS2-CL-60S-A	1:40
Ezi-SERVO II-CL-60S-B-PN40	EzM2-60S-B-PN40	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN50	EzM2-60S-A-PN50	EzS2-CL-60S-A	1:50
Ezi-SERVO II-CL-60S-B-PN50	EzM2-60S-B-PN50	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60M-A-PN3	EzM2-60M-A-PN3	EzS2-CL-60M-A	1:3
Ezi-SERVO II-CL-60M-B-PN3	EzM2-60M-B-PN3	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN5	EzM2-60M-A-PN5	EzS2-CL-60M-A	1:5
Ezi-SERVO II-CL-60M-B-PN5	EzM2-60M-B-PN5	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN8	EzM2-60M-A-PN8	EzS2-CL-60M-A	1:8
Ezi-SERVO II-CL-60M-B-PN8	EzM2-60M-B-PN8	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN10	EzM2-60M-A-PN10	EzS2-CL-60M-A	1:10
Ezi-SERVO II-CL-60M-B-PN10	EzM2-60M-B-PN10	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN15	EzM2-60M-A-PN15	EzS2-CL-60M-A	1:15
Ezi-SERVO II-CL-60M-B-PN15	EzM2-60M-B-PN15	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN25	EzM2-60M-A-PN25	EzS2-CL-60M-A	1:25
Ezi-SERVO II-CL-60M-B-PN25	EzM2-60M-B-PN25	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN40	EzM2-60M-A-PN40	EzS2-CL-60M-A	1:40
Ezi-SERVO II-CL-60M-B-PN40	EzM2-60M-B-PN40	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN50	EzM2-60M-A-PN50	EzS2-CL-60M-A	1:50
Ezi-SERVO II-CL-60M-B-PN50	EzM2-60M-B-PN50	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60L-A-PN3	EzM2-60L-A-PN3	EzS2-CL-60L-A	1:3
Ezi-SERVO II-CL-60L-B-PN3	EzM2-60L-B-PN3	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN5	EzM2-60L-A-PN5	EzS2-CL-60L-A	1:5
Ezi-SERVO II-CL-60L-B-PN5	EzM2-60L-B-PN5	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN8	EzM2-60L-A-PN8	EzS2-CL-60L-A	1:8
Ezi-SERVO II-CL-60L-B-PN8	EzM2-60L-B-PN8	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN10	EzM2-60L-A-PN10	EzS2-CL-60L-A	1:10
Ezi-SERVO II-CL-60L-B-PN10	EzM2-60L-B-PN10	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN15	EzM2-60L-A-PN15	EzS2-CL-60L-A	1:15
Ezi-SERVO II-CL-60L-B-PN15	EzM2-60L-B-PN15	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN25	EzM2-60L-A-PN25	EzS2-CL-60L-A	1:25
Ezi-SERVO II-CL-60L-B-PN25	EzM2-60L-B-PN25	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN40	EzM2-60L-A-PN40	EzS2-CL-60L-A	1:40
Ezi-SERVO II-CL-60L-B-PN40	EzM2-60L-B-PN40	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN50	EzM2-60L-A-PN50	EzS2-CL-60L-A	1:50
Ezi-SERVO II-CL-60L-B-PN50	EzM2-60L-B-PN50	EzS2-CL-60L-B	

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
Ezi-SERVO II-CL-86M-A-PN3	EzM2-86M-A-PN3	EzS2-CL-86M-A	1:3
Ezi-SERVO II-CL-86M-B-PN3	EzM2-86M-B-PN3	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN5	EzM2-86M-A-PN5	EzS2-CL-86M-A	1:5
Ezi-SERVO II-CL-86M-B-PN5	EzM2-86M-B-PN5	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN8	EzM2-86M-A-PN8	EzS2-CL-86M-A	1:8
Ezi-SERVO II-CL-86M-B-PN8	EzM2-86M-B-PN8	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN10	EzM2-86M-A-PN10	EzS2-CL-86M-A	1:10
Ezi-SERVO II-CL-86M-B-PN10	EzM2-86M-B-PN10	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN15	EzM2-86M-A-PN15	EzS2-CL-86M-A	1:15
Ezi-SERVO II-CL-86M-B-PN15	EzM2-86M-B-PN15	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN25	EzM2-86M-A-PN25	EzS2-CL-86M-A	1:25
Ezi-SERVO II-CL-86M-B-PN25	EzM2-86M-B-PN25	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN40	EzM2-86M-A-PN40	EzS2-CL-86M-A	1:40
Ezi-SERVO II-CL-86M-B-PN40	EzM2-86M-B-PN40	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN50	EzM2-86M-A-PN50	EzS2-CL-86M-A	1:50
Ezi-SERVO II-CL-86M-B-PN50	EzM2-86M-B-PN50	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86L-A-PN3	EzM2-86L-A-PN3	EzS2-CL-86L-A	1:3
Ezi-SERVO II-CL-86L-B-PN3	EzM2-86L-B-PN3	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN5	EzM2-86L-A-PN5	EzS2-CL-86L-A	1:5
Ezi-SERVO II-CL-86L-B-PN5	EzM2-86L-B-PN5	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN8	EzM2-86L-A-PN8	EzS2-CL-86L-A	1:8
Ezi-SERVO II-CL-86L-B-PN8	EzM2-86L-B-PN8	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN10	EzM2-86L-A-PN10	EzS2-CL-86L-A	1:10
Ezi-SERVO II-CL-86L-B-PN10	EzM2-86L-B-PN10	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN15	EzM2-86L-A-PN15	EzS2-CL-86L-A	1:15
Ezi-SERVO II-CL-86L-B-PN15	EzM2-86L-B-PN15	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN25	EzM2-86L-A-PN25	EzS2-CL-86L-A	1:25
Ezi-SERVO II-CL-86L-B-PN25	EzM2-86L-B-PN25	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN40	EzM2-86L-A-PN40	EzS2-CL-86L-A	1:40
Ezi-SERVO II-CL-86L-B-PN40	EzM2-86L-B-PN40	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN50	EzM2-86L-A-PN50	EzS2-CL-86L-A	1:50
Ezi-SERVO II-CL-86L-B-PN50	EzM2-86L-B-PN50	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86XL-A-PN3	EzM2-86XL-A-PN3	EzS2-CL-86XL-A	1:3
Ezi-SERVO II-CL-86XL-B-PN3	EzM2-86XL-B-PN3	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN5	EzM2-86XL-A-PN5	EzS2-CL-86XL-A	1:5
Ezi-SERVO II-CL-86XL-B-PN5	EzM2-86XL-B-PN5	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN8	EzM2-86XL-A-PN8	EzS2-CL-86XL-A	1:8
Ezi-SERVO II-CL-86XL-B-PN8	EzM2-86XL-B-PN8	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN10	EzM2-86XL-A-PN10	EzS2-CL-86XL-A	1:10
Ezi-SERVO II-CL-86XL-B-PN10	EzM2-86XL-B-PN10	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN15	EzM2-86XL-A-PN15	EzS2-CL-86XL-A	1:15
Ezi-SERVO II-CL-86XL-B-PN15	EzM2-86XL-B-PN15	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN25	EzM2-86XL-A-PN25	EzS2-CL-86XL-A	1:25
Ezi-SERVO II-CL-86XL-B-PN25	EzM2-86XL-B-PN25	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN40	EzM2-86XL-A-PN40	EzS2-CL-86XL-A	1:40
Ezi-SERVO II-CL-86XL-B-PN40	EzM2-86XL-B-PN40	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN50	EzM2-86XL-A-PN50	EzS2-CL-86XL-A	1:50
Ezi-SERVO II-CL-86XL-B-PN50	EzM2-86XL-B-PN50	EzS2-CL-86XL-B	

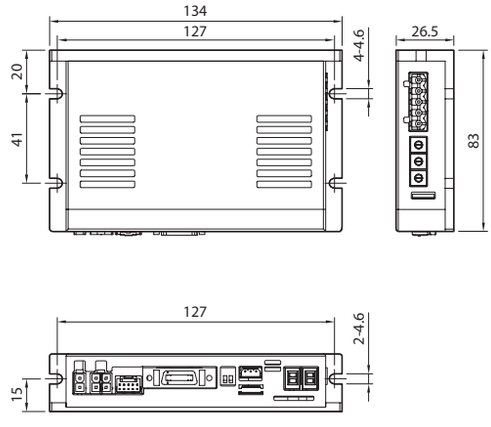
Specifications of Drive

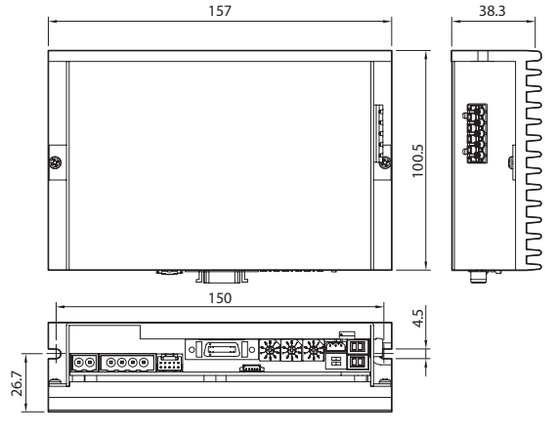
Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series	EzM2-86 series
Driver Model		EzS2-CL-20 series	EzS2-CL-28 series	EzS2-CL-35 series	EzS2-CL-42 series	EzS2-CL-56 series	EzS2-CL-60 series	EzS2-CL-86 series
Input Voltage		24VDC ±10%						40~70VDC
Control Method		Closed loop control with 32bit MCU						
Current Consumption		Max 500mA (Except motor current)						
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃						
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)						
	Vib. Resist.	0.5g						
Function	Rotation Speed	0~3,000 [rpm] *1						
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter) *2						
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error						
	LED Display	Power status, Alarm status, In-Position status, Servo On status						
	In-Position Selection	0~63 (Selectable by parameter)						
	Position Gain Selection	0~63 (Selectable by parameter)						
	Rotational Direction	CW/CCW (Selectable by parameter)						
CC-Link	Station Type	Remote Device Station						
	Number of Occupied Station	1 station, 2 station						
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler)						
	Output Signals	6 programmable outputs (Photocoupler), Brake						

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]





※ 86mm motor drive (EzS2-CL-86 series)

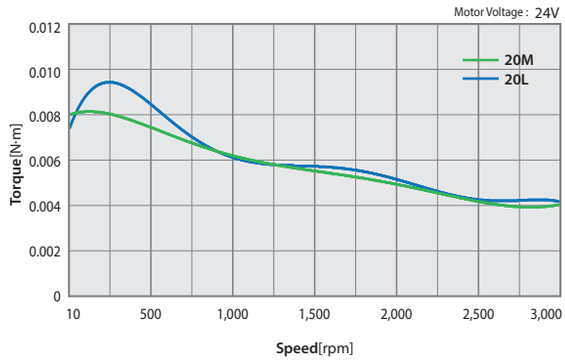
● Specifications of Motor

MODEL			EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
		UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS		g	80	104	147	204	232	194	226	294	357	426	564
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

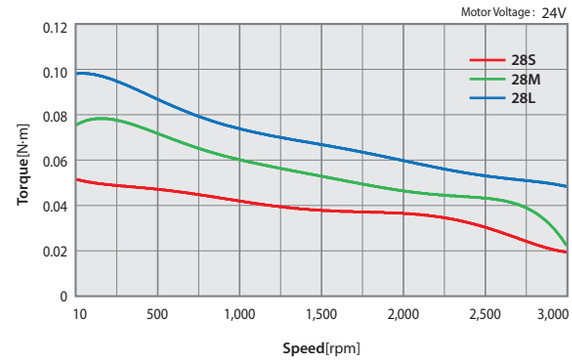
MODEL			EzM2-56 series			EzM2-60 series			EzM2-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	608	784	1230	693	856	1419	2355	3941	5453
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70	270	270	270
	8mm		65	65	65	87	87	87	300	300	300
	13mm		85	85	85	114	114	114	350	350	350
	18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

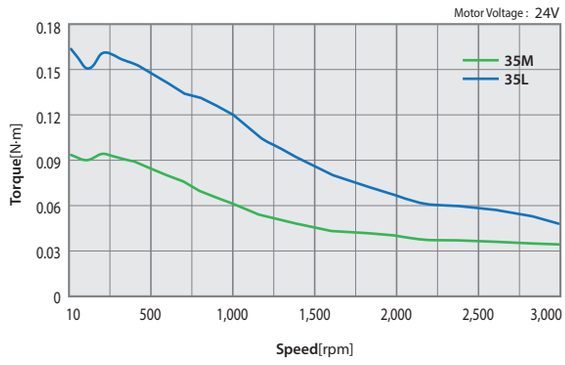
Ezi-SERVOII-CL-20 series



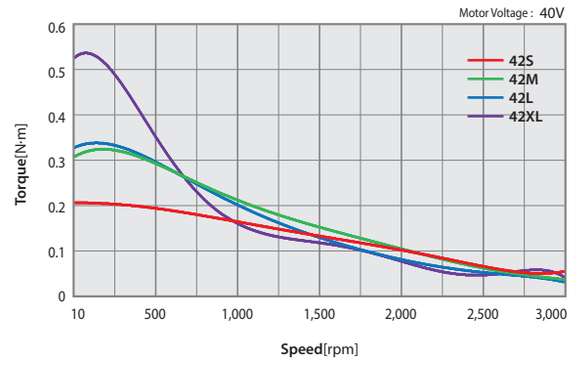
Ezi-SERVOII-CL-28 series



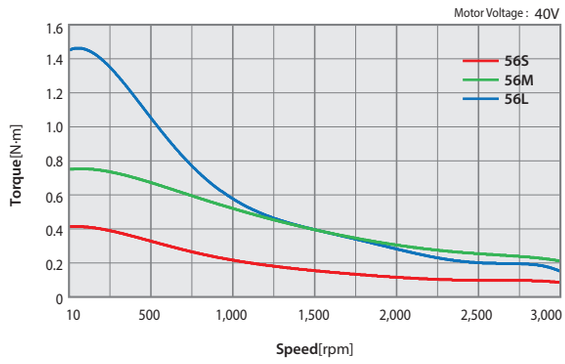
Ezi-SERVOII-CL-35 series



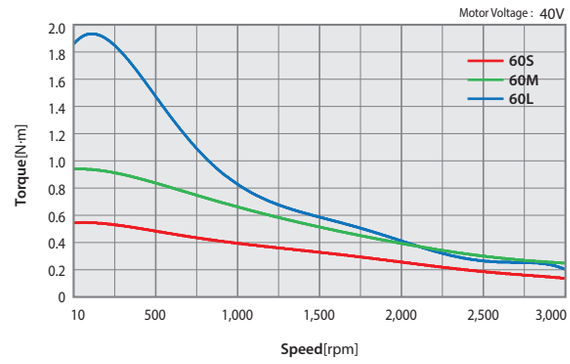
Ezi-SERVOII-CL-42 series



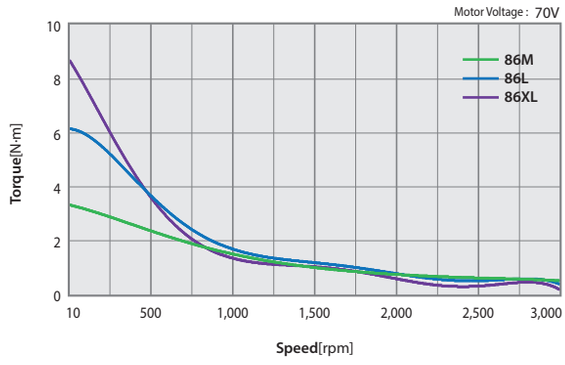
Ezi-SERVOII-CL-56 series



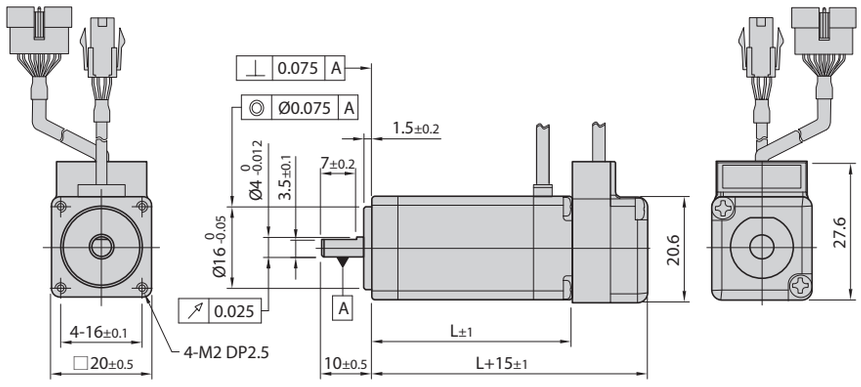
Ezi-SERVOII-CL-60 series



Ezi-SERVOII-CL-86 series

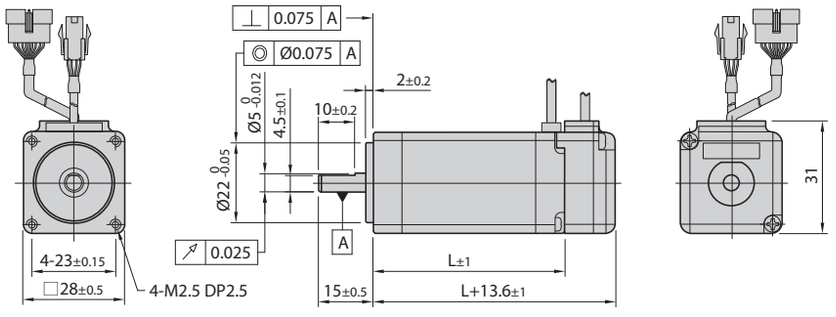


● Dimensions of Motor [mm]



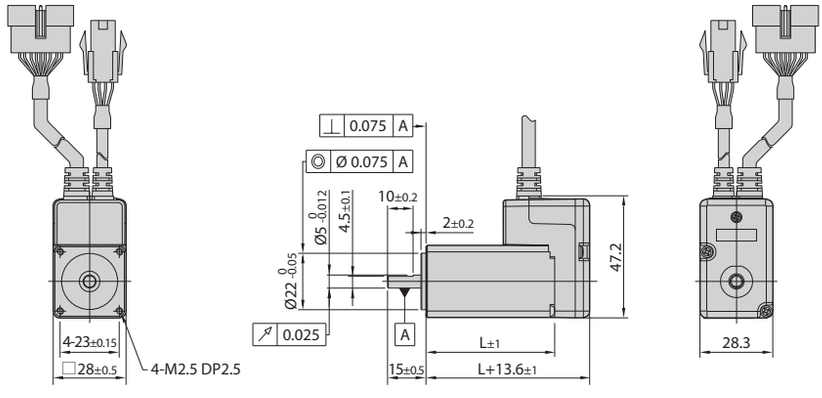
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

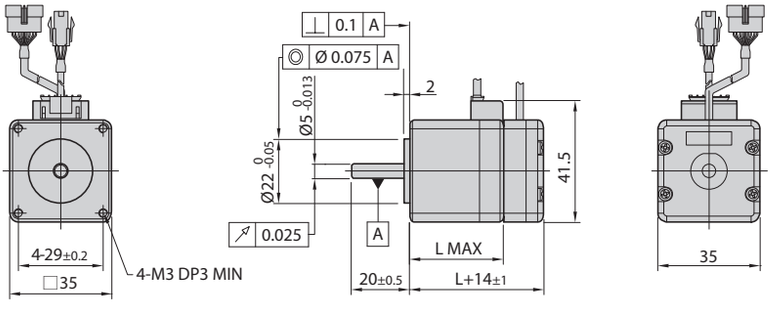
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

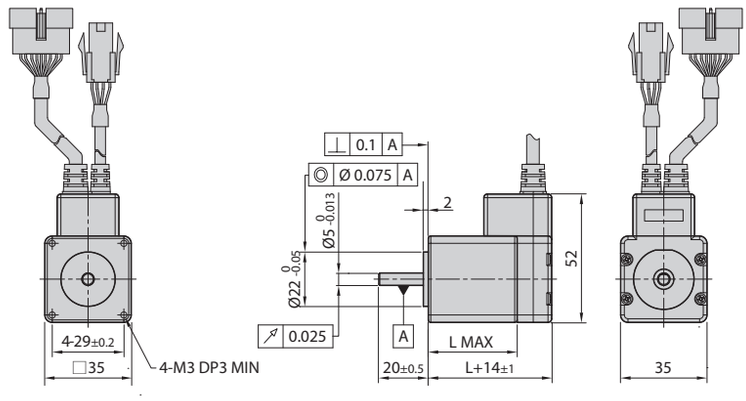
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

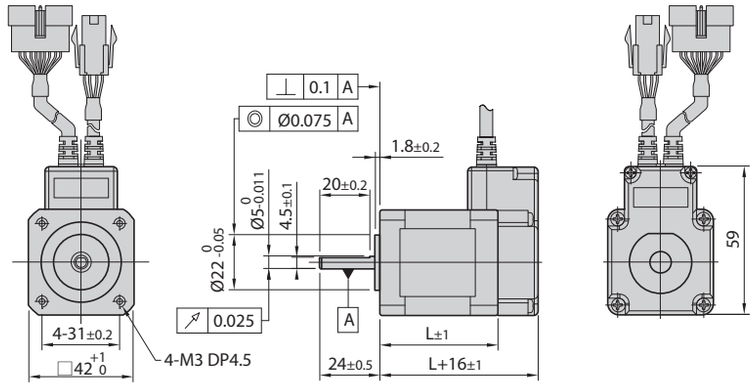
● Dimensions of Motor [mm]



35mm (Stopper type)

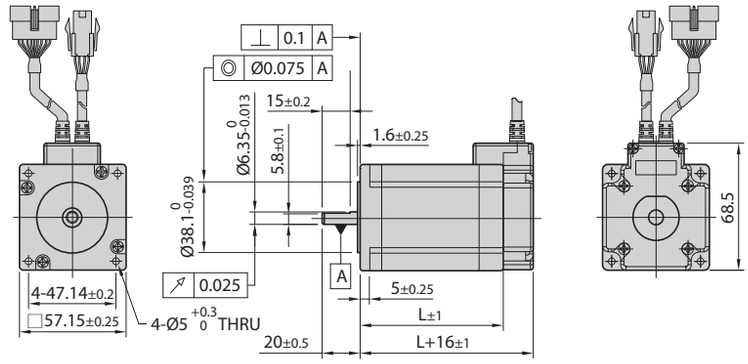
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

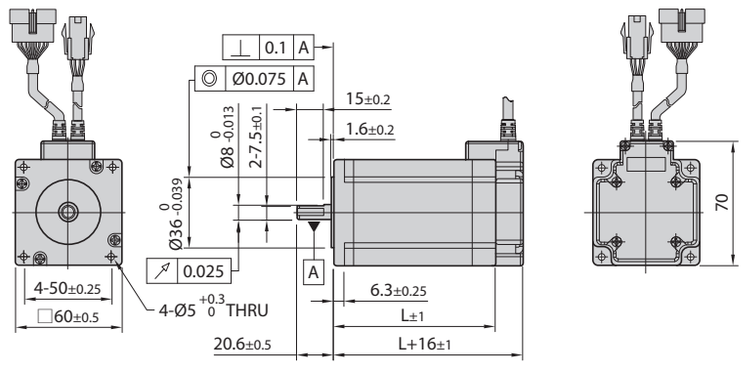
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

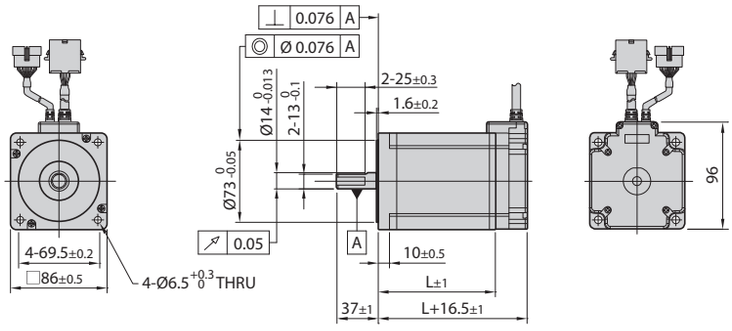
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

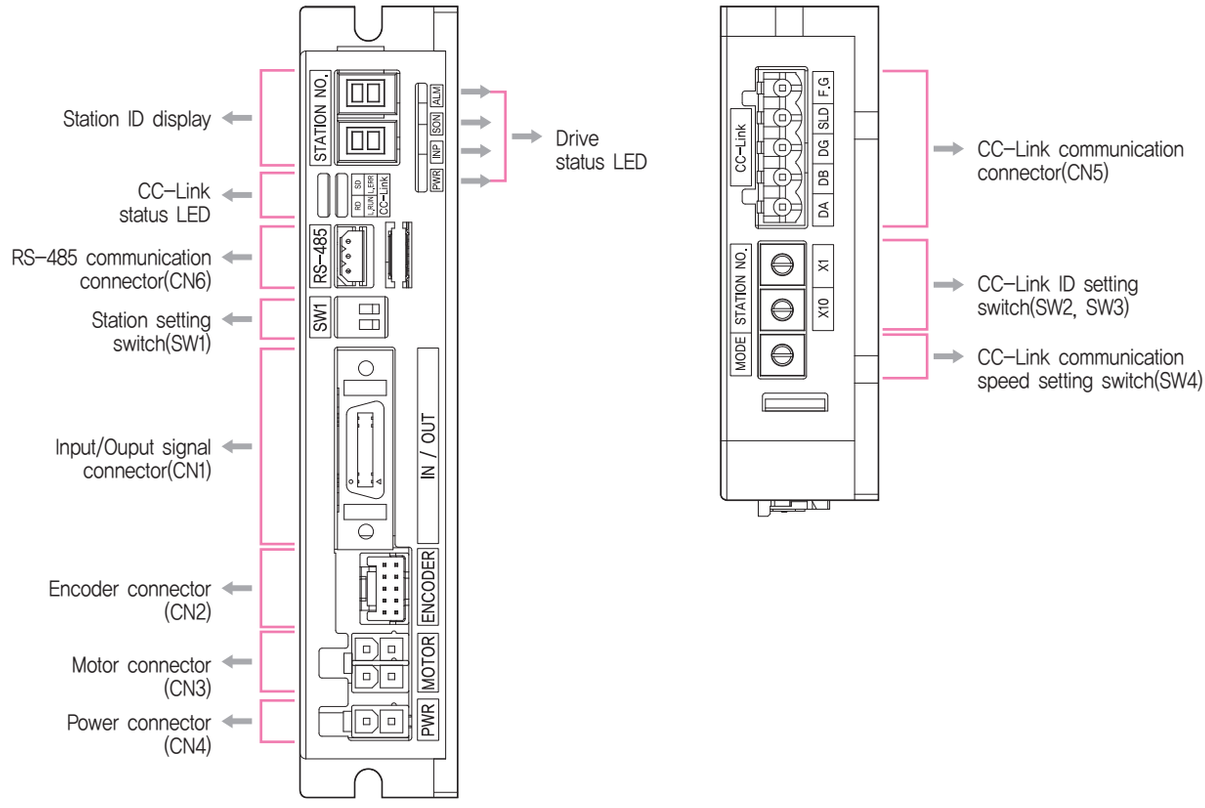
● Dimensions of Motor [mm]



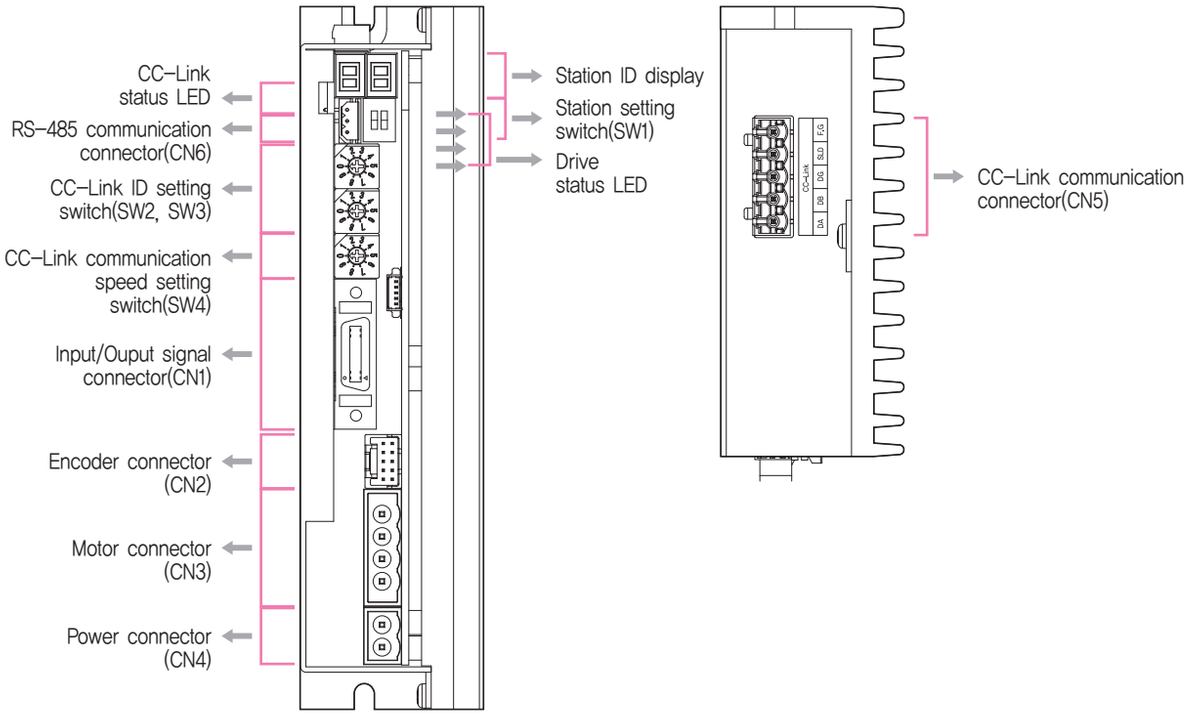
86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

● Settings and Operation



◆ 86mm Motor Drive(EzS2-CL-86 series)



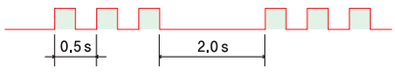
1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power Input Indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Lights On when Positioning error reaches within the preset pulse selected by parameter
SON	Orange	Servo On / Off Indication	Servo On: Lights On, Servo Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated

◆ Protection functions and LED flash times

Times	Error Code *4	Protection	Conditions
1	E-□01	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	E-□02	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	E-□03	Position Tracking Error	Position error value is higher than 180° in motor run state *2
4	E-□04	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	E-□05	Over Temperature Error	Temperature of inside of drive exceed 85℃
6	E-□06	Over Regeneratived Voltage Error	Back-EMF is higher than limit value *3
7	E-□07	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	E-□08	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	E-□0A	In-Position Error	After operation is finished, a position error occurs
12	E-□0C	ROM Error	Error occurs in parameter storage device(ROM)
15	E-□0F	Position Overflow Error	Position error value is higher than 180° in motor stop state *2

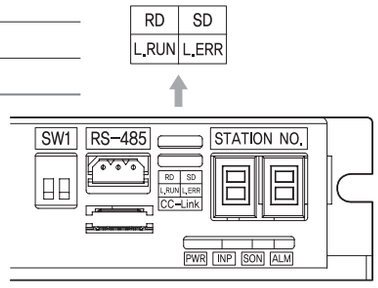
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMP depends on motor model. (Refer to the Manual)
*4 : When an alarm occurs, error code is displayed on the 7-segment instead of CC-Link ID.
※ Please refer to the Manual for the details of protection functions.
※ □ is the CC-Link error code.



Alarm LED flash
(Ex, Position tracking error)

2. CC-Link Status LED

Name	Color	Status	Function	Explanation
L.RUN	Green	Off	Power Off	Checking the power status.
			No network connection	Checking the status of the network cable and Master controller.
		On	Normal operation	CC-Link network connection is normal status.
L.ERR	Red	Off	Normal operation	No error occurred
		On	Critical error	Communication process fails.
		Flashing	Communication error	Error occurred in the CC-Link network. Check the 7-segment display information and process it.
		Random flashing	CRC error, Network cable error	There is a contact error of the network connector or noise in the cable line. To Check the terminating resistor attachment status, network wiring and the grounding status of the frame.
RD	Orange	Off	No Data receiving	
		On	Data receiving	
SD	Yellow	Off	No Data transmissiOn	
		On	Data transmitting	



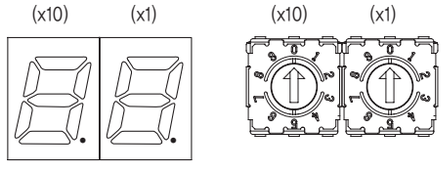
◆ CC-Link network status 7-segment display information

Error Code	Description
E-0□□.	Normal CC-Link network status
E-1□□.	CC-Link station number switch setting is incorrect
E-2□□.	CC-Link mode switch setting is incorrect
E-3□□.	CC-Link station number switch setting is changed
E-4□□.	CC-Link mode switch setting is changed
E-5□□.	CRC error occurs in CC-Link communication
E-6□□.	Timeout occurs during communication with master
E-7□□.	Communication with master is disconnected
E-8□□.	CC-Link Processor Error 1
E-9□□.	CC-Link Processor Error 2
E-A□□.	Data link error
E-B□□.	Remote I/O error
E-C□□.	Remote register error

※□□ is the drive error code.

3. CC-Link Station Display and Setting Switch(SW2, SW3)

There are two Rotary switch to set value of CC-Link station No. Switch on the right side(×1) indicates the one's(1) digit and Switch on the left side(×10) indicates ten's(10) digit.



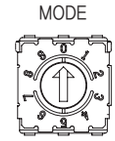
※ Default setting is '00'

4. CC-Link Communication Speed Setting Switch(SW4)

This is a switch to set communication speed of CC-Link. (The case of the product is marked with 'MODE'.)

MODE	CC-Link Baud Rate
0	156 kbps*1
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps
5	NONE
6	NONE
7	NONE
8	NONE
9	NONE

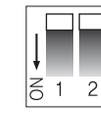
*1 : Defaule = 156kbps



5. CC-Link Station Setting Switch(SW1)

Ezi-SERVOII CC-Link provides various functions depending on the station occupancy. Select the station occupancy with Dip-switch(SW1).

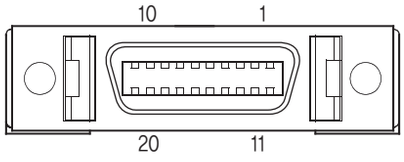
SW1.1	SW1.2	Occupation
OFF	OFF	1 station occupation*1
ON	OFF	2 station occupation



*1 : Defaule = '1 station occupation'

6. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In2	Input
6	Digital In3	Input
7	Digital In4	Input
8	Digital In5	Input
9	Digital In6	Input
10	Digital In7	Input
11	Digital Out1	Output
12	Digital Out2	Output
13	Digital Out3	Output
14	Digital Out4	Output
15	Digital Out5	Output
16	Digital Out6	Output
17	BRAKE+	Output
18	BRAKE−	Output
19	EXT_GND	Input
20	EXT_24VDC	Input



9. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



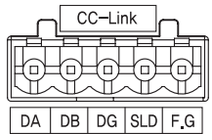
NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input



※ 86mm motor drive.

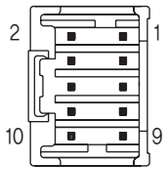
10. CC-Link Communication Connector(CN5)

NO.	Function
1	DA
2	DB
3	DG
4	SLD
5	F.GND



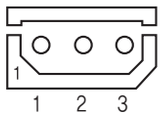
7. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----



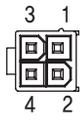
11. RS-485 Communication Connector(CN6)

NO.	Function
1	Data+
2	Data−
3	GND

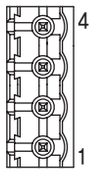


8. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output

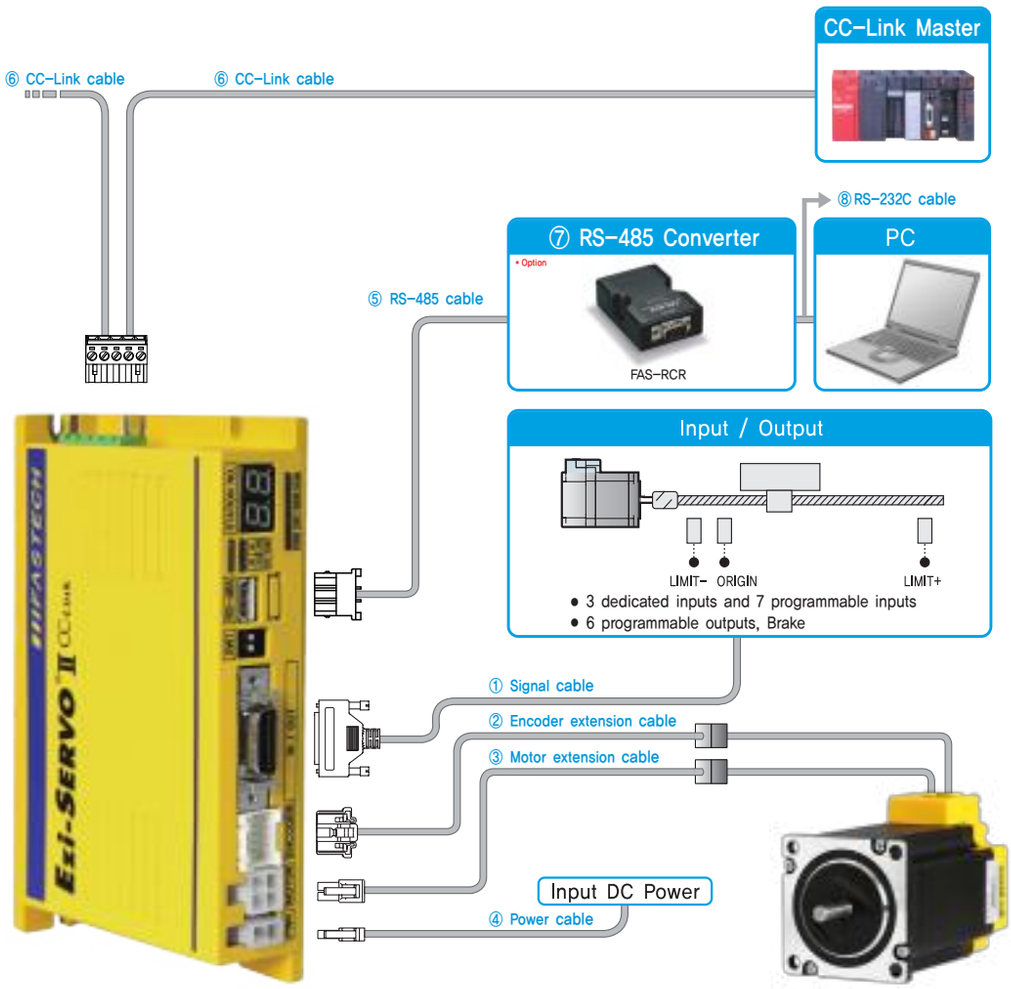


NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output



※ 86mm motor drive.

System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II CC-Link.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II CC-Link.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II CC-Link.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II CC-Link.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable

Ezi-SERVO II CC-Link RS-485 network.

Item	Length [m]	Remark
CGNR-RT-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑥ CC-Link Network Cable

It is a cable to connect Ezi-SERVO II CC-Link to CC-Link network.

* This cable is not provided and it is recommended to use the cable specified by CC-Link Association.

⑦ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑧ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F CGNR-C-003F CGNR-C-005F	2 3 5	Normal Cable

⑨ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-SERVO II CC-Link.



⑩ Interface Cable

Available to Connect between TB-Plus Interface Board and Ezi-SERVO II CC-Link.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

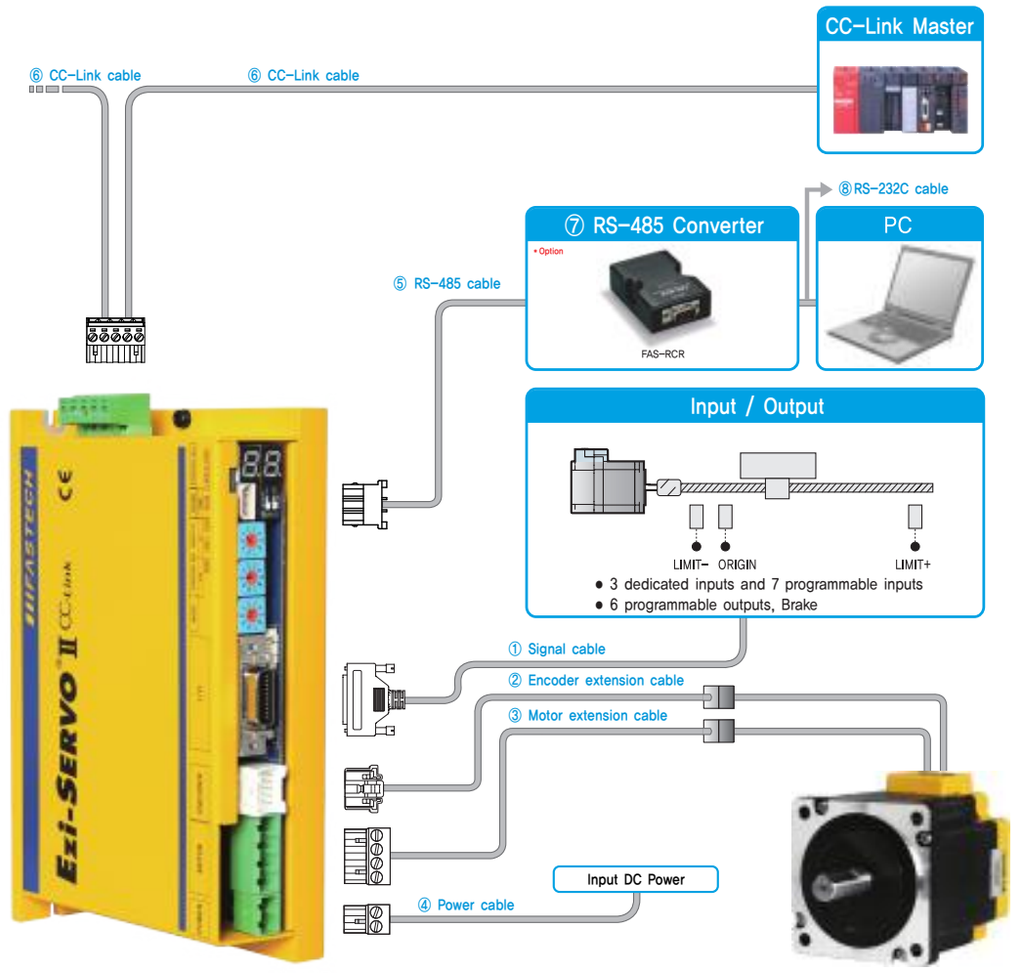
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M
CC-Link Communication (CN5)		Terminal Block	AK950-5	PTR
RS-485 Communication (CN6)		Housing Terminal	5264-03 5263PBT	MOLEX

※ Above Connector is the most suitable product for the drive applied. Another equivalent Connector can be used.

● System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Standard Length	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II CC-Link.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II CC-Link.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II CC-Link.

Item	Length [m]	Remark
CSVP-M-□□□F	□□□	Normal Cable
CSVP-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II CC-Link.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable

Ezi-SERVOII CC-Link RS-485 network.

Item	Length [m]	Remark
CGNR-RT-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑥ CC-Link Network Cable

It is a cable to connect Ezi-SERVO II CC-Link to CC-Link network.

* This cable is not provided and it is recommended to use the cable specified by CC-Link Association.

⑦ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑧ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F CGNR-C-003F CGNR-C-005F	2 3 5	Normal Cable

⑨ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-SERVOII CC-Link.



⑩ Interface Cable

Available to Connect between TB-Plus Interface Board and Ezi-SERVOII CC-Link.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

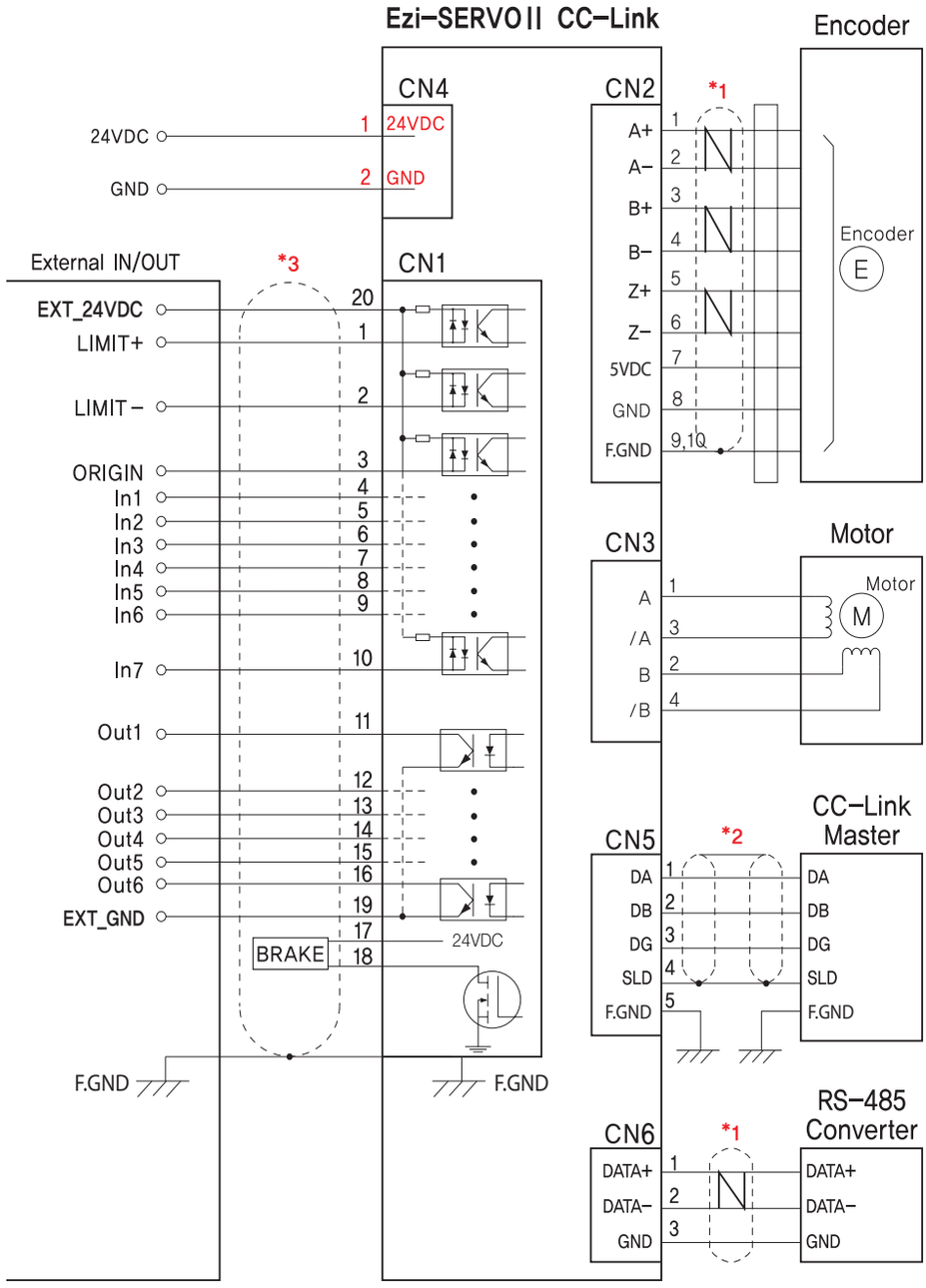
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing Terminal	3191-4R1 1381T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M
CC-Link Communication (CN5)		Terminal Block	AK950-5	PTR
RS-485 Communication (CN6)		Housing Terminal	5264-03 5263PBT	MOLEX

※ Above Connector is the most suitable product for the drive applied. Another equivalent Connector can be used.

External Wiring Diagram



* 1) Shielded Twisted Pair Cable

* 2) CC-Link Cable

* 3) Shield Cable

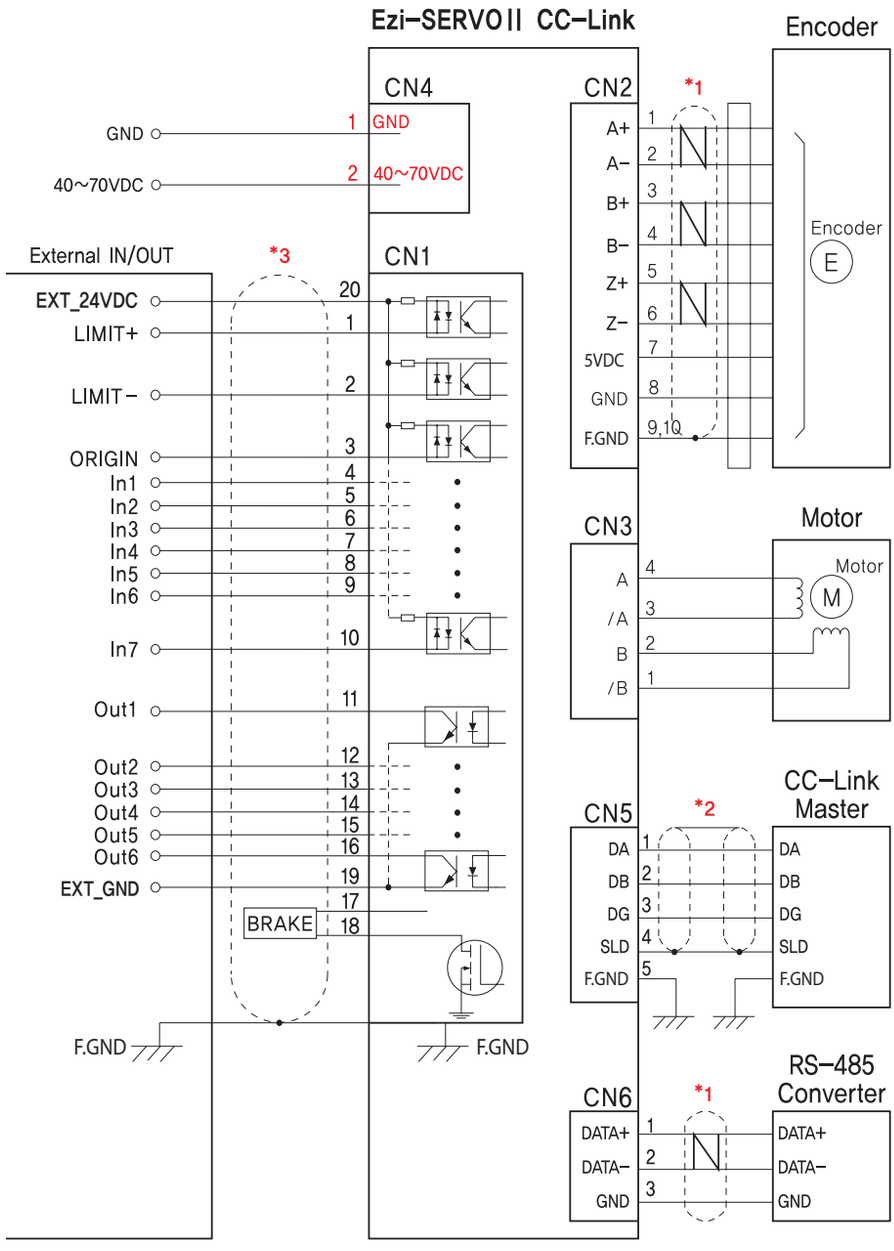
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● External Wiring Diagram [86mm Motor Drive]



* 1) Shielded Twisted Pair Cable

* 2) CC-Link Cable

* 3) Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

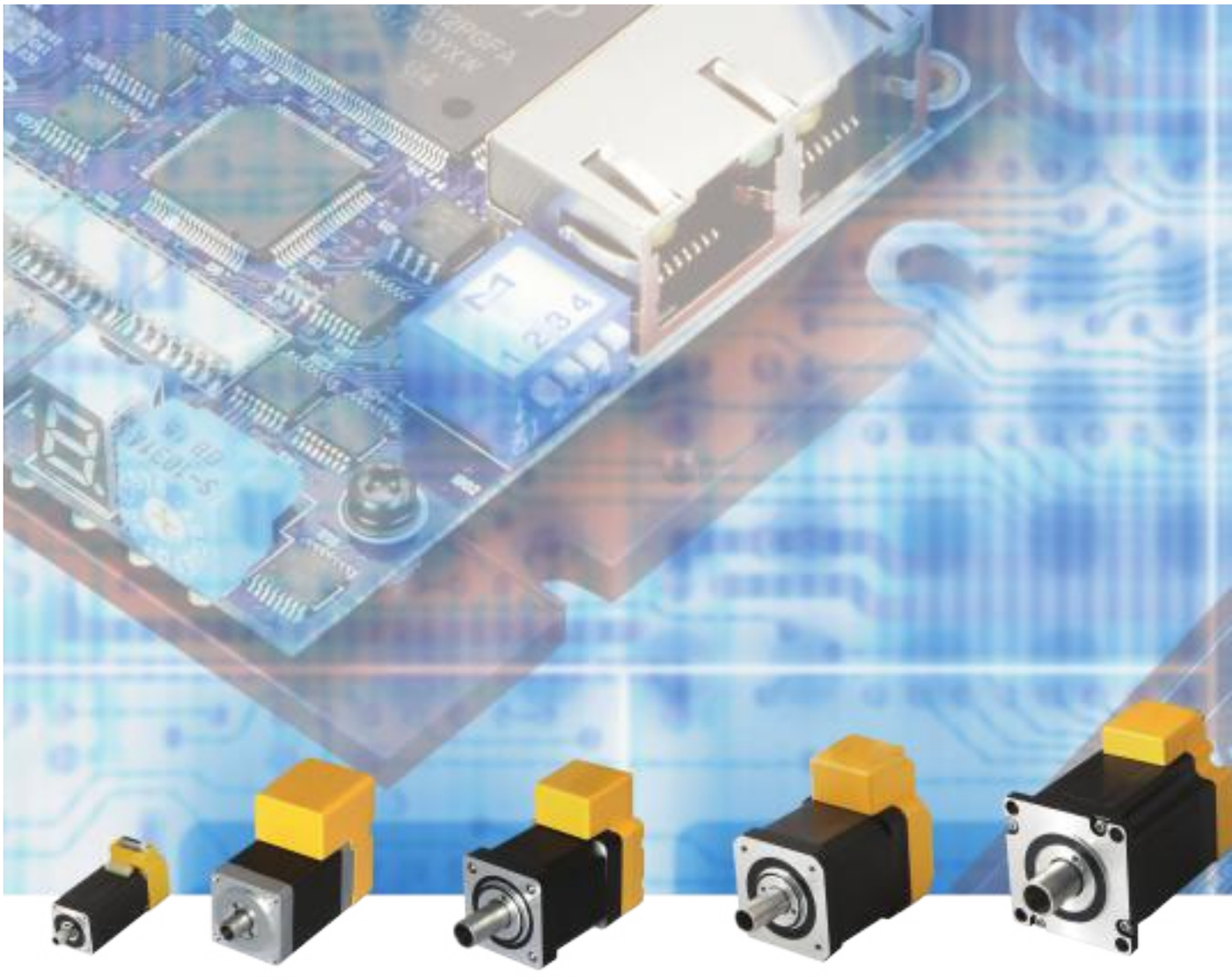
Careful connection will be required to protect the drive from any damages.



Ezi-SERVO HS

Ezi-SERVO HS

- Hollow Shaft Motor with High Resolution Encoder
- Closed Loop System
- High Precision Position Control
- High Torque, Low Temperature
- EtherCAT, Ethernet, CC-Link Support



- Ezi-SERVO HS(Hollow Shaft) is a unit product that combines a Hollow Shaft Motor and Ezi-SERVO, which is a Closed Loop System.

FASTECH
Fast, Accurate, Smooth Motion

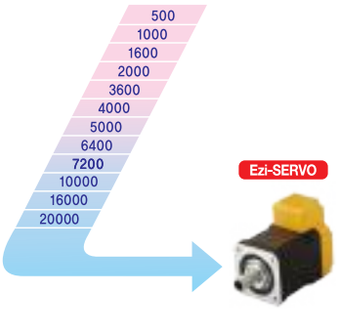
Ezi-SERVO® HS

Closed Loop Stepping System



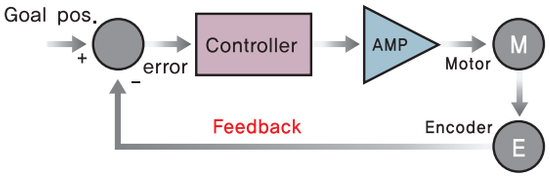
2 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



3 Closed Loop System

Ezi-SERVO is an innovative Closed Loop System that utilizes a high-resolution motor mounted encoder to monitor current position constantly. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepper motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



1 Hollow Shaft

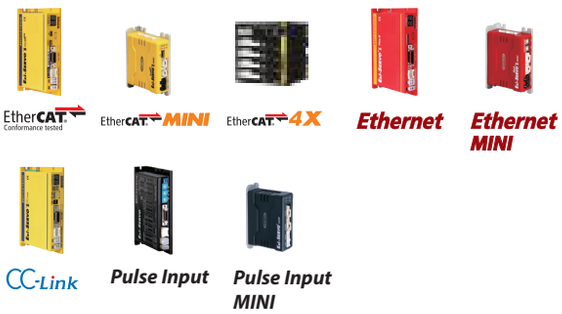
There is a hole in the motor shaft, so it can be used for inserting cable or pipe, which provides design flexibility and convenience.

Motor size	Hollow shaft inner diameter [mm]	Hollow shaft outer diameter [mm]
20mm	Ø3	Ø5
28mm	Ø5	Ø7
35mm	Ø8	Ø10
42mm	Ø8	Ø10
56mm	Ø12	Ø15
86mm	Ø16	Ø20



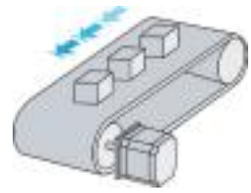
4 Supporting Various Field Network

Ezi-SERVO is a unit product that combines Ezi-SERVO, a high performance closed loop step drive. Ezi-SERVO that support field networks such as EtherCAT, Ethernet and CC-Link can be connected to master controllers such as PC/PLC through corresponding field networks. In case of Ezi-SERVO II Plus-E products, motion library (DLL) for Windows 7/8/10 can be provided.



5 No Gain Tuning

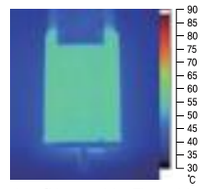
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more than one axis are interdependent. Ezi-SERVO employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO is optimized for the application and ready to work right out of the box. The Ezi-SERVO system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO is especially well suited for low stiffness loads(for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO also performs exceptionally, even under heavy loads and high speeds.



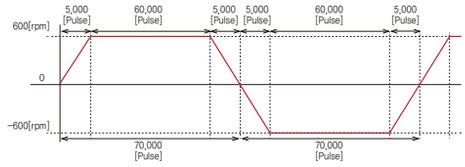
6 Heat Reduction / Energy Saving

(Motor Current Control according to load)

Ezi-SERVO automatically controls motor current according to load. Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

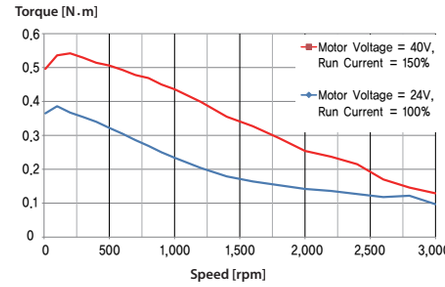


Example of the Motor Current Control according to load

7 Torque Improvement

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

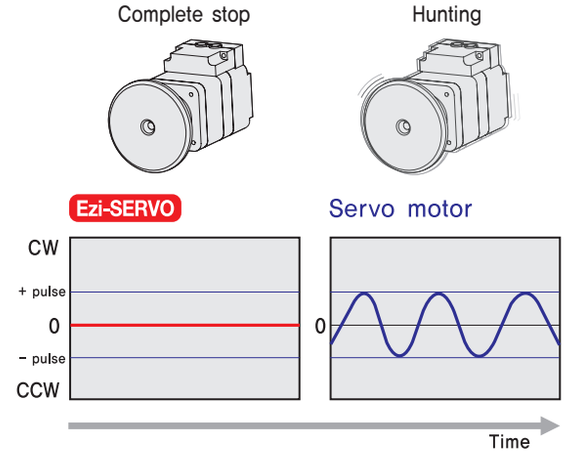


※ The torque at high speed is improved about 30%

Measured Condition : Drive = Ezi-SERVO II-PE-42L
Motor Voltage = 40VDC
Input Voltage = 24VDC

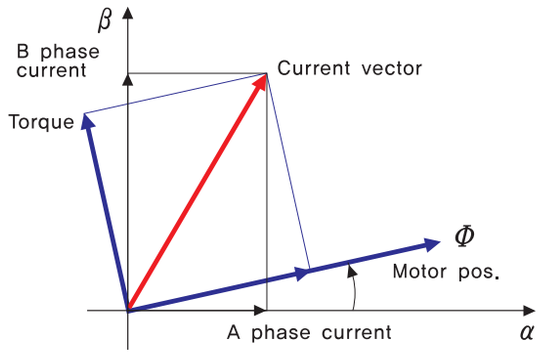
8 No Hunting

Traditional servo motor drives overshoot their position and try to correct overshooting by moving the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO Motion Control System. Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



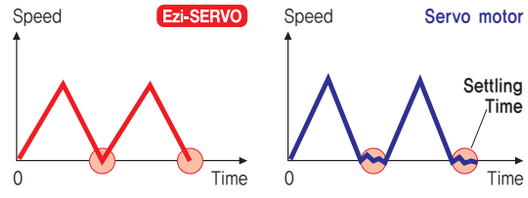
9 Smooth and Accurate

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



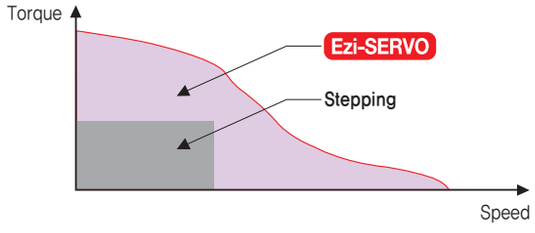
10 Fast Response

Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



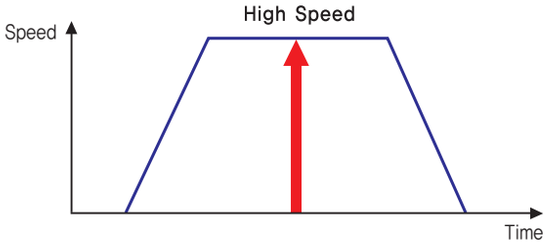
11 High Torque

Compared with common step motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



12 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



13 Examples of Ezi-SERVO HS Applications

Passing Optical Instruments



Feed Through Cabling



Dispensing System



Ezi-SERVO HS Part Numbering

Ezi-SERVO-HS-ST-56L-A-□

Product Name

Drive Type

EC : EtherCAT
EC-MI : EtherCAT Mini Type
EC-4X : EtherCAT 4 axis
PE : Plus Ethernet
PE-MI : Plus Ethernet Mini Type
CL : CC-Link
ST : Pulse Input
MI : Pulse Input Mini Type

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large

Encoder Resolution

A : 10,000[ppr]
B : 20,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

User Code

Applicable Product Line-up

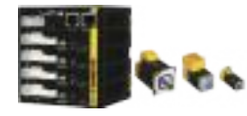
Product	Specification
Ezi-SERVO II EtherCAT	Embedded EtherCAT
Ezi-SERVO II EtherCAT MINI	Embedded EtherCAT Mini Type
Ezi-SERVO II EtherCAT 4X	Embedded EtherCAT 4 axis
Ezi-SERVO II Plus-E	Ethernet based controller integrated product
Ezi-SERVO II Plus-E MINI	Ethernet based controller integrated product Mini Type
Ezi-SERVO II CC-Link	Embedded CC-Link
Ezi-SERVO ST	Pulse Input Type
Ezi-SERVO MINI	Pulse Input Mini Type



Ezi-SERVO II EtherCAT
(EtherCAT)



Ezi-SERVO II EtherCAT MINI
(EtherCAT / Mini Type)



Ezi-SERVO II EtherCAT 4X
(EtherCAT)



Ezi-SERVO II Plus-E
(Ethernet)



Ezi-SERVO II Plus-E MINI
(Ethernet / Mini Type)



Ezi-SERVO II CC-Link
(CC-Link)



Ezi-SERVO ST
(Pulse Input)



Ezi-SERVO MINI
(Pulse Input / Mini Type)

Motor, Drive Combination

· Ezi-SERVO II EtherCAT

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-EC-20M-F	HSE-20M-F	EzS2-EC-HS20M-F
Ezi-SERVO-HS-EC-20L-F	HSE-20L-F	EzS2-EC-HS20L-F
Ezi-SERVO-HS-EC-28SM-D	HSE-28SM-D	EzS2-EC-HS28S-D
Ezi-SERVO-HS-EC-28MM-D	HSE-28MM-D	EzS2-EC-HS28M-D
Ezi-SERVO-HS-EC-35MM-D	HSE-35MM-D	EzS2-EC-HS35M-D
Ezi-SERVO-HS-EC-35LM-D	HSE-35LM-D	EzS2-EC-HS35L-D
Ezi-SERVO-HS-EC-42S-A	HSE-42S-A	EzS2-EC-HS42S-A
Ezi-SERVO-HS-EC-42S-B	HSE-42S-B	EzS2-EC-HS42S-B
Ezi-SERVO-HS-EC-42L-A	HSE-42L-A	EzS2-EC-HS42L-A
Ezi-SERVO-HS-EC-42L-B	HSE-42L-B	EzS2-EC-HS42L-B
Ezi-SERVO-HS-EC-56S-A	HSE-56S-A	EzS2-EC-HS56S-A
Ezi-SERVO-HS-EC-56S-B	HSE-56S-B	EzS2-EC-HS56S-B
Ezi-SERVO-HS-EC-56M-A	HSE-56M-A	EzS2-EC-HS56M-A
Ezi-SERVO-HS-EC-56M-B	HSE-56M-B	EzS2-EC-HS56M-B
Ezi-SERVO-HS-EC-86M-A	HSE-86M-A	EzS2-EC-HS86M-A
Ezi-SERVO-HS-EC-86M-B	HSE-86M-B	EzS2-EC-HS86M-B

· Ezi-SERVO II Plus-E

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-PE-20M-F	HSE-20M-F	EzS2-PE-HS20M-F
Ezi-SERVO-HS-PE-20L-F	HSE-20L-F	EzS2-PE-HS20L-F
Ezi-SERVO-HS-PE-28SM-D	HSE-28SM-D	EzS2-PE-HS28S-D
Ezi-SERVO-HS-PE-28MM-D	HSE-28MM-D	EzS2-PE-HS28M-D
Ezi-SERVO-HS-PE-35MM-D	HSE-35MM-D	EzS2-PE-HS35M-D
Ezi-SERVO-HS-PE-35LM-D	HSE-35LM-D	EzS2-PE-HS35L-D
Ezi-SERVO-HS-PE-42S-A	HSE-42S-A	EzS2-PE-HS42S-A
Ezi-SERVO-HS-PE-42S-B	HSE-42S-B	EzS2-PE-HS42S-B
Ezi-SERVO-HS-PE-42L-A	HSE-42L-A	EzS2-PE-HS42L-A
Ezi-SERVO-HS-PE-42L-B	HSE-42L-B	EzS2-PE-HS42L-B
Ezi-SERVO-HS-PE-56S-A	HSE-56S-A	EzS2-PE-HS56S-A
Ezi-SERVO-HS-PE-56S-B	HSE-56S-B	EzS2-PE-HS56S-B
Ezi-SERVO-HS-PE-56M-A	HSE-56M-A	EzS2-PE-HS56M-A
Ezi-SERVO-HS-PE-56M-B	HSE-56M-B	EzS2-PE-HS56M-B
Ezi-SERVO-HS-PE-86M-A	HSE-86M-A	EzS2-PE-HS86M-A
Ezi-SERVO-HS-PE-86M-B	HSE-86M-B	EzS2-PE-HS86M-B

· Ezi-SERVO II EtherCAT MINI

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-EC-MI-20M-F	HSE-20M-F	EzS2-EC-MI-HS20M-F
Ezi-SERVO-HS-EC-MI-20L-F	HSE-20L-F	EzS2-EC-MI-HS20L-F
Ezi-SERVO-HS-EC-MI-28SM-D	HSE-28SM-D	EzS2-EC-MI-HS28S-D
Ezi-SERVO-HS-EC-MI-28MM-D	HSE-28MM-D	EzS2-EC-MI-HS28M-D
Ezi-SERVO-HS-EC-MI-35MM-D	HSE-35MM-D	EzS2-EC-MI-HS35M-D
Ezi-SERVO-HS-EC-MI-35LM-D	HSE-35LM-D	EzS2-EC-MI-HS35L-D
Ezi-SERVO-HS-EC-MI-42S-A	HSE-42S-A	EzS2-EC-MI-HS42S-A
Ezi-SERVO-HS-EC-MI-42S-B	HSE-42S-B	EzS2-EC-MI-HS42S-B
Ezi-SERVO-HS-EC-MI-42L-A	HSE-42L-A	EzS2-EC-MI-HS42L-A
Ezi-SERVO-HS-EC-MI-42L-B	HSE-42L-B	EzS2-EC-MI-HS42L-B
Ezi-SERVO-HS-EC-MI-56S-A	HSE-56S-A	EzS2-EC-MI-HS56S-A
Ezi-SERVO-HS-EC-MI-56S-B	HSE-56S-B	EzS2-EC-MI-HS56S-B
Ezi-SERVO-HS-EC-MI-56M-A	HSE-56M-A	EzS2-EC-MI-HS56M-A
Ezi-SERVO-HS-EC-MI-56M-B	HSE-56M-B	EzS2-EC-MI-HS56M-B

· Ezi-SERVO II Plus-E MINI

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-PE-MI-20M-F	HSE-20M-F	EzS2-PE-MI-HS20M-F
Ezi-SERVO-HS-PE-MI-20L-F	HSE-20L-F	EzS2-PE-MI-HS20L-F
Ezi-SERVO-HS-PE-MI-28SM-D	HSE-28SM-D	EzS2-PE-MI-HS28S-D
Ezi-SERVO-HS-PE-MI-28MM-D	HSE-28MM-D	EzS2-PE-MI-HS28M-D
Ezi-SERVO-HS-PE-MI-35MM-D	HSE-35MM-D	EzS2-PE-MI-HS35M-D
Ezi-SERVO-HS-PE-MI-35LM-D	HSE-35LM-D	EzS2-PE-MI-HS35L-D
Ezi-SERVO-HS-PE-MI-42S-A	HSE-42S-A	EzS2-PE-MI-HS42S-A
Ezi-SERVO-HS-PE-MI-42S-B	HSE-42S-B	EzS2-PE-MI-HS42S-B
Ezi-SERVO-HS-PE-MI-42L-A	HSE-42L-A	EzS2-PE-MI-HS42L-A
Ezi-SERVO-HS-PE-MI-42L-B	HSE-42L-B	EzS2-PE-MI-HS42L-B
Ezi-SERVO-HS-PE-MI-56S-A	HSE-56S-A	EzS2-PE-MI-HS56S-A
Ezi-SERVO-HS-PE-MI-56S-B	HSE-56S-B	EzS2-PE-MI-HS56S-B
Ezi-SERVO-HS-PE-MI-56M-A	HSE-56M-A	EzS2-PE-MI-HS56M-A
Ezi-SERVO-HS-PE-MI-56M-B	HSE-56M-B	EzS2-PE-MI-HS56M-B

· Ezi-SERVO II EtherCAT 4X

For motor and drive combinations, please contact local dealer or FASTECH sales department. In case of Ezi-SERVO II EtherCAT 4X products, the drives are basically provided in 4 axis. It can be purchased 3 axis for user's convenience.

· Ezi-SERVO II CC-Link

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-CL-20M-F	HSE-20M-F	EzS2-CL-HS20M-F
Ezi-SERVO-HS-CL-20L-F	HSE-20L-F	EzS2-CL-HS20L-F
Ezi-SERVO-HS-CL-28SM-D	HSE-28SM-D	EzS2-CL-HS28S-D
Ezi-SERVO-HS-CL-28MM-D	HSE-28MM-D	EzS2-CL-HS28M-D
Ezi-SERVO-HS-CL-35MM-D	HSE-35MM-D	EzS2-CL-HS35M-D
Ezi-SERVO-HS-CL-35LM-D	HSE-35LM-D	EzS2-CL-HS35L-D
Ezi-SERVO-HS-CL-42S-A	HSE-42S-A	EzS2-CL-HS42S-A
Ezi-SERVO-HS-CL-42S-B	HSE-42S-B	EzS2-CL-HS42S-B
Ezi-SERVO-HS-CL-42L-A	HSE-42L-A	EzS2-CL-HS42L-A
Ezi-SERVO-HS-CL-42L-B	HSE-42L-B	EzS2-CL-HS42L-B
Ezi-SERVO-HS-CL-56S-A	HSE-56S-A	EzS2-CL-HS56S-A
Ezi-SERVO-HS-CL-56S-B	HSE-56S-B	EzS2-CL-HS56S-B
Ezi-SERVO-HS-CL-56M-A	HSE-56M-A	EzS2-CL-HS56M-A
Ezi-SERVO-HS-CL-56M-B	HSE-56M-B	EzS2-CL-HS56M-B
Ezi-SERVO-HS-CL-86M-A	HSE-86M-A	EzS2-CL-HS86M-A
Ezi-SERVO-HS-CL-86M-B	HSE-86M-B	EzS2-CL-HS86M-B

Motor, Drive Combination

· Ezi-SERVO ST

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-ST-20M-F	HSE-20M-F	EzS-PD-HS20M-F
Ezi-SERVO-HS-ST-20L-F	HSE-20L-F	EzS-PD-HS20L-F
Ezi-SERVO-HS-ST-28SM-D	HSE-28SM-D	EzS-PD-HS28S-D
Ezi-SERVO-HS-ST-28MM-D	HSE-28MM-D	EzS-PD-HS28M-D
Ezi-SERVO-HS-ST-35MM-D	HSE-35MM-D	EzS-PD-HS35M-D
Ezi-SERVO-HS-ST-35LM-D	HSE-35LM-D	EzS-PD-HS35L-D
Ezi-SERVO-HS-ST-42S-A	HSE-42S-A	EzS-PD-HS42S-A
Ezi-SERVO-HS-ST-42S-B	HSE-42S-B	EzS-PD-HS42S-B
Ezi-SERVO-HS-ST-42L-A	HSE-42L-A	EzS-PD-HS42L-A
Ezi-SERVO-HS-ST-42L-B	HSE-42L-B	EzS-PD-HS42L-B
Ezi-SERVO-HS-ST-56S-A	HSE-56S-A	EzS-PD-HS56S-A
Ezi-SERVO-HS-ST-56S-B	HSE-56S-B	EzS-PD-HS56S-B
Ezi-SERVO-HS-ST-56M-A	HSE-56M-A	EzS-PD-HS56M-A
Ezi-SERVO-HS-ST-56M-B	HSE-56M-B	EzS-PD-HS56M-B
Ezi-SERVO-HS-ST-86M-A	HSE-86M-A	EzS-PD-HS86M-A
Ezi-SERVO-HS-ST-86M-B	HSE-86M-B	EzS-PD-HS86M-B

· Ezi-SERVO MINI

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-MI-20M-F	HSE-20M-F	EzS-PD-MI-HS20M-F
Ezi-SERVO-HS-MI-20L-F	HSE-20L-F	EzS-PD-MI-HS20L-F
Ezi-SERVO-HS-MI-28SM-D	HSE-28SM-D	EzS-PD-MI-HS28S-D
Ezi-SERVO-HS-MI-28MM-D	HSE-28MM-D	EzS-PD-MI-HS28M-D
Ezi-SERVO-HS-MI-35MM-D	HSE-35MM-D	EzS-PD-MI-HS35M-D
Ezi-SERVO-HS-MI-35LM-D	HSE-35LM-D	EzS-PD-MI-HS35L-D
Ezi-SERVO-HS-MI-42S-A	HSE-42S-A	EzS-PD-MI-HS42S-A
Ezi-SERVO-HS-MI-42S-B	HSE-42S-B	EzS-PD-MI-HS42S-B
Ezi-SERVO-HS-MI-42L-A	HSE-42L-A	EzS-PD-MI-HS42L-A
Ezi-SERVO-HS-MI-42L-B	HSE-42L-B	EzS-PD-MI-HS42L-B

● Specifications of Motor

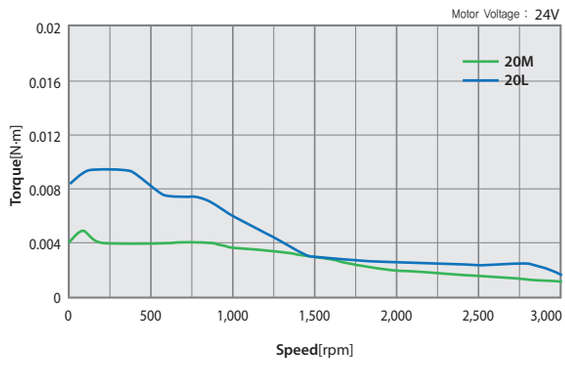
MODEL			HSE-20 series		HSE-28 series		HSE-35 series	
		UNIT	20M	20L	28S	28M	35M	35L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	1.0	1.0	1.0	1.0
HOLDING TORQUE		N·m	0.014	0.02	0.053	0.117	0.19	0.36
ROTOR INERTIA		g·cm^2	2.45	3.7	6.23	11	17	28
WEIGHTS		g	80	100	159	212	211	289
LENGTH(L)		mm	27.2	38.1	33.35	45	33.6	45.6
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	38	38	22	22
	8mm		30	30	53	53	26	26
	13mm		–	–	–	–	33	33
	18mm		–	–	–	–	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

MODEL			HSE-42 series		HSE-56 series		HSE-86 series
		UNIT	42S	42L	56S	56M	86M
DRIVE METHOD		–	BI-POLAR				
NUMBER OF PHASES		–	2	2	2	2	2
CURRENT per PHASE		A	1.0	2.5	2.0	2.5	3.0
HOLDING TORQUE		N·m	0.31	0.56	1.2	2.1	4.5
ROTOR INERTIA		g·cm^2	30.3	58.1	147.1	281.2	1265.3
WEIGHTS		g	281	420	566	880	2226
LENGTH(L)		mm	34.1	48.1	45	65	76
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	22	22	52	52	270
	8mm		26	26	65	65	300
	13mm		33	33	85	85	350
	18mm		46	46	123	123	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight				
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)				
INSULATION CLASS		–	CLASS B(130℃)				
OPERATING TEMPERATURE		℃	0 to 55				

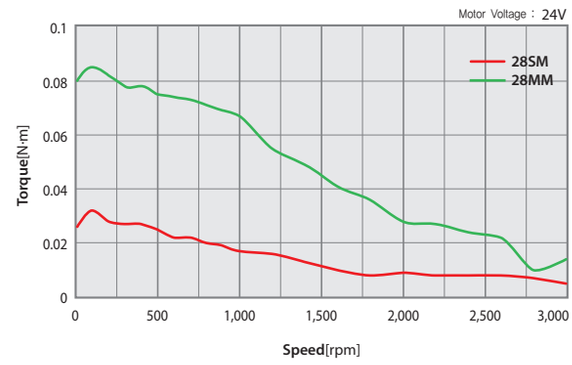
Torque Characteristics of Motor

Applicable Model			
Ezi-SERVO-HS-EC	Ezi-SERVO-HS-PE	Ezi-SERVO-HS-CL	Ezi-SERVO-HS-ST

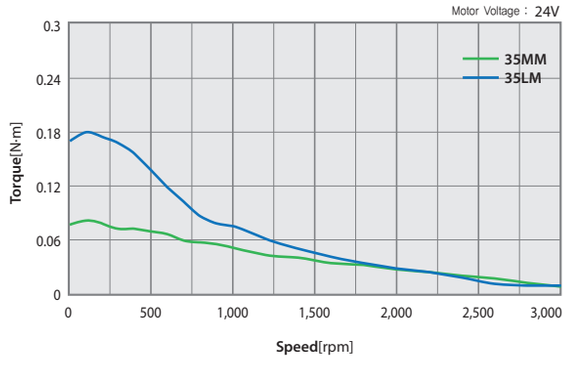
Ezi-SERVO-HS-□-20 series



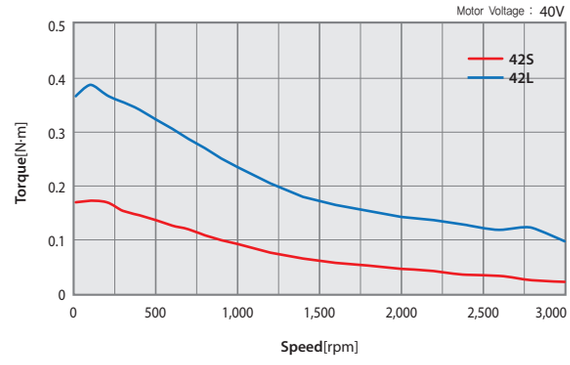
Ezi-SERVO-HS-□-28 series



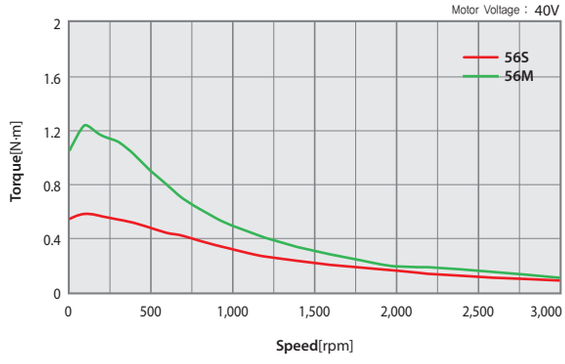
Ezi-SERVO-HS-□-35 series



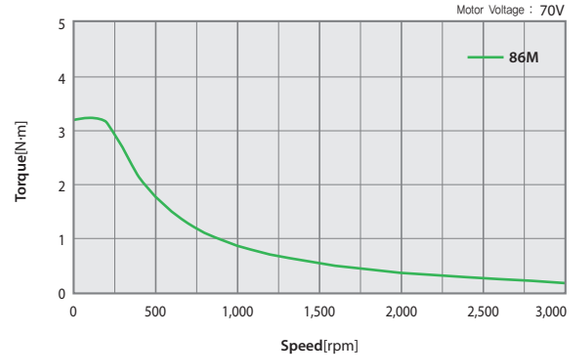
Ezi-SERVO-HS-□-42 series



Ezi-SERVO-HS-□-56 series



Ezi-SERVO-HS-□-86 series

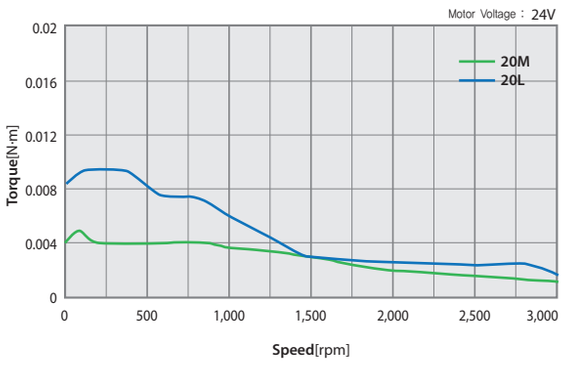


※ □ is the drive type.

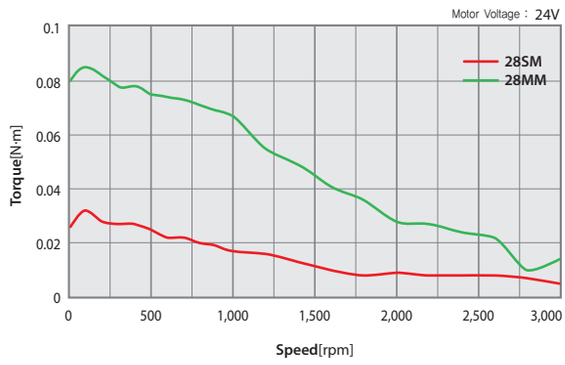
Torque Characteristics of Motor

Applicable Model			
Ezi-SERVO-HS-EC-MI	Ezi-SERVO-HS-EC-4X	Ezi-SERVO-HS-PE-MI	Ezi-SERVO-HS-PE-MI

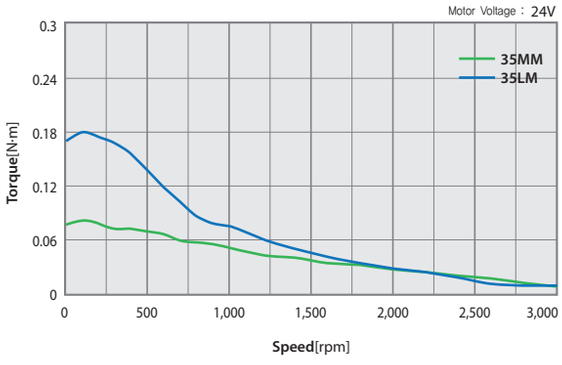
Ezi-SERVO-HS-□-20 series



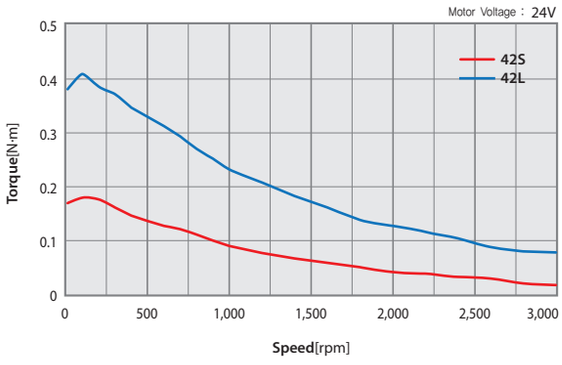
Ezi-SERVO-HS-□-28 series



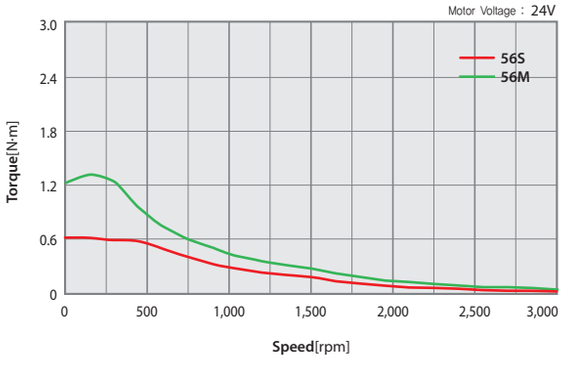
Ezi-SERVO-HS-□-35 series



Ezi-SERVO-HS-□-42 series

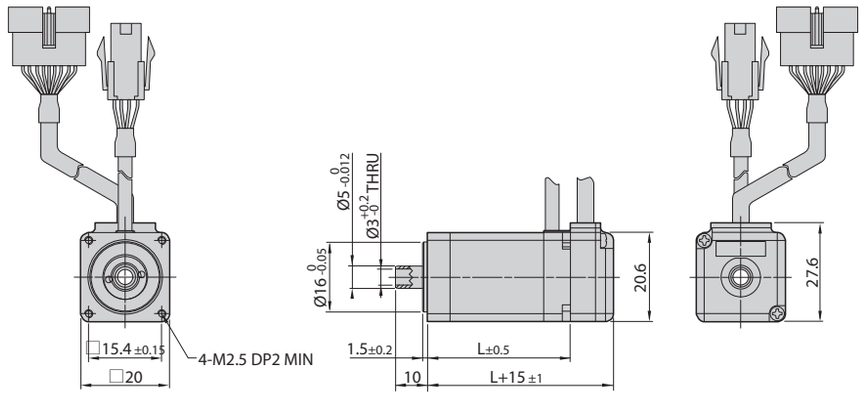


Ezi-SERVO-HS-□-56 series



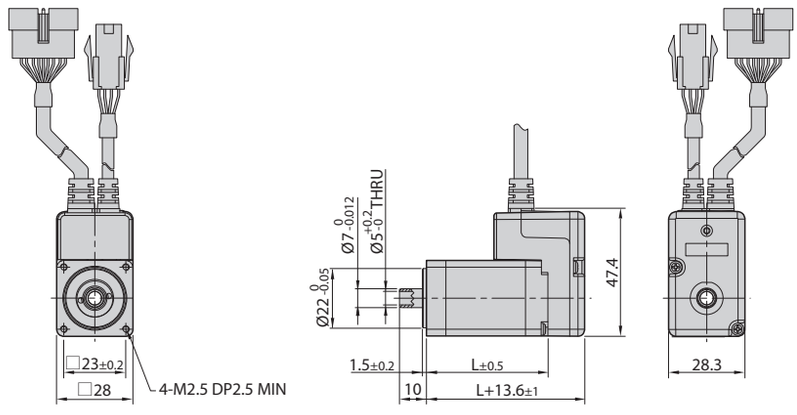
※ □ is the drive type.
※ The 56 series is applied only to Ezi-SERVO-HS-EC-MI, Ezi-SERVO-HS-EC-4X, Ezi-SERVO-HS-PE-MI.

Dimensions of Motor [mm]



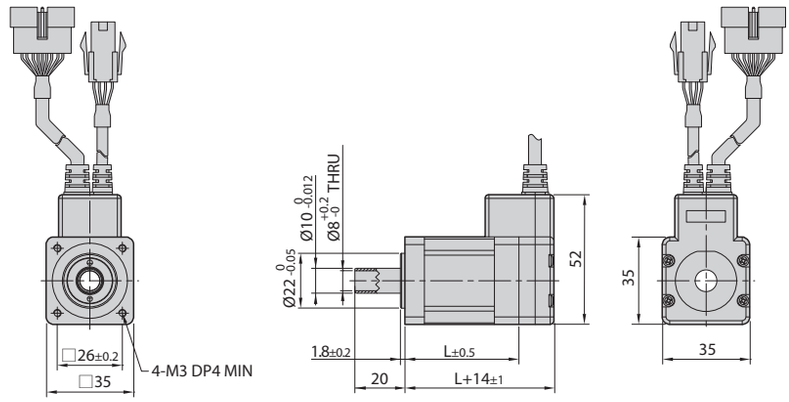
20mm

Model name	Length(L)
HSE-20M	27.2
HSE-20L	38.1



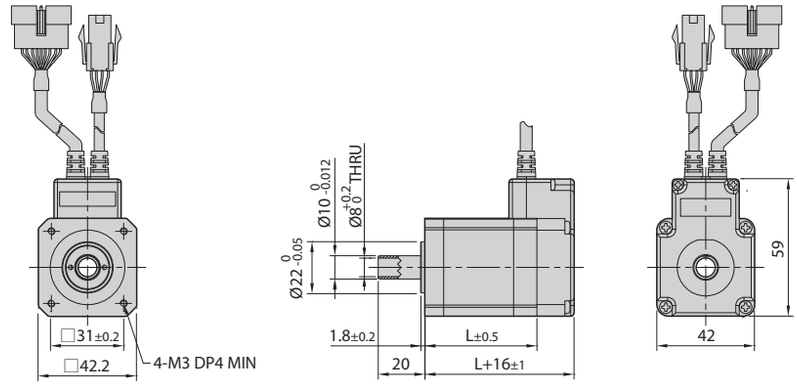
28mm

Model name	Length(L)
HSE-28SM	33.35
HSE-28MM	45



35mm

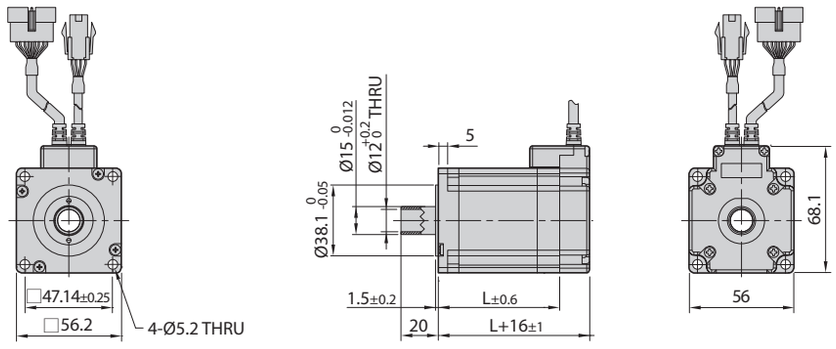
Model name	Length(L)
HSE-35MM	33.6
HSE-35LM	45.6



42mm

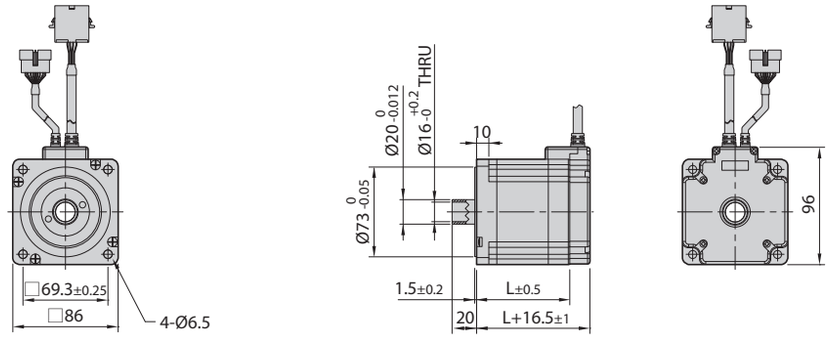
Model name	Length(L)
HSE-42S	34.1
HSE-42L	48.1

● Dimensions of Motor [mm]



56mm

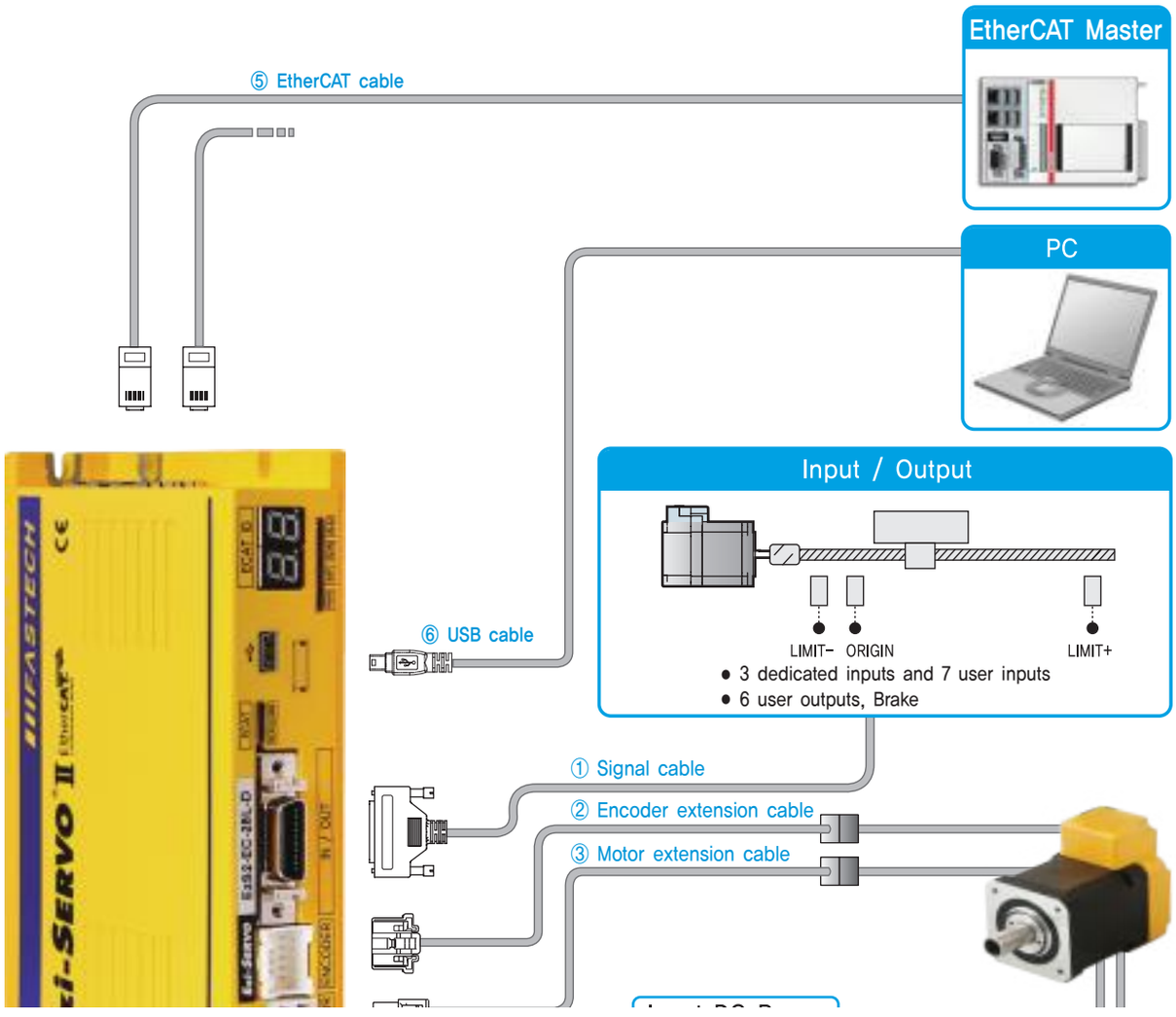
Model name	Length(L)
HSE-56S	45
HSE-56M	65



86mm

Model name	Length(L)
HSE-86M	76

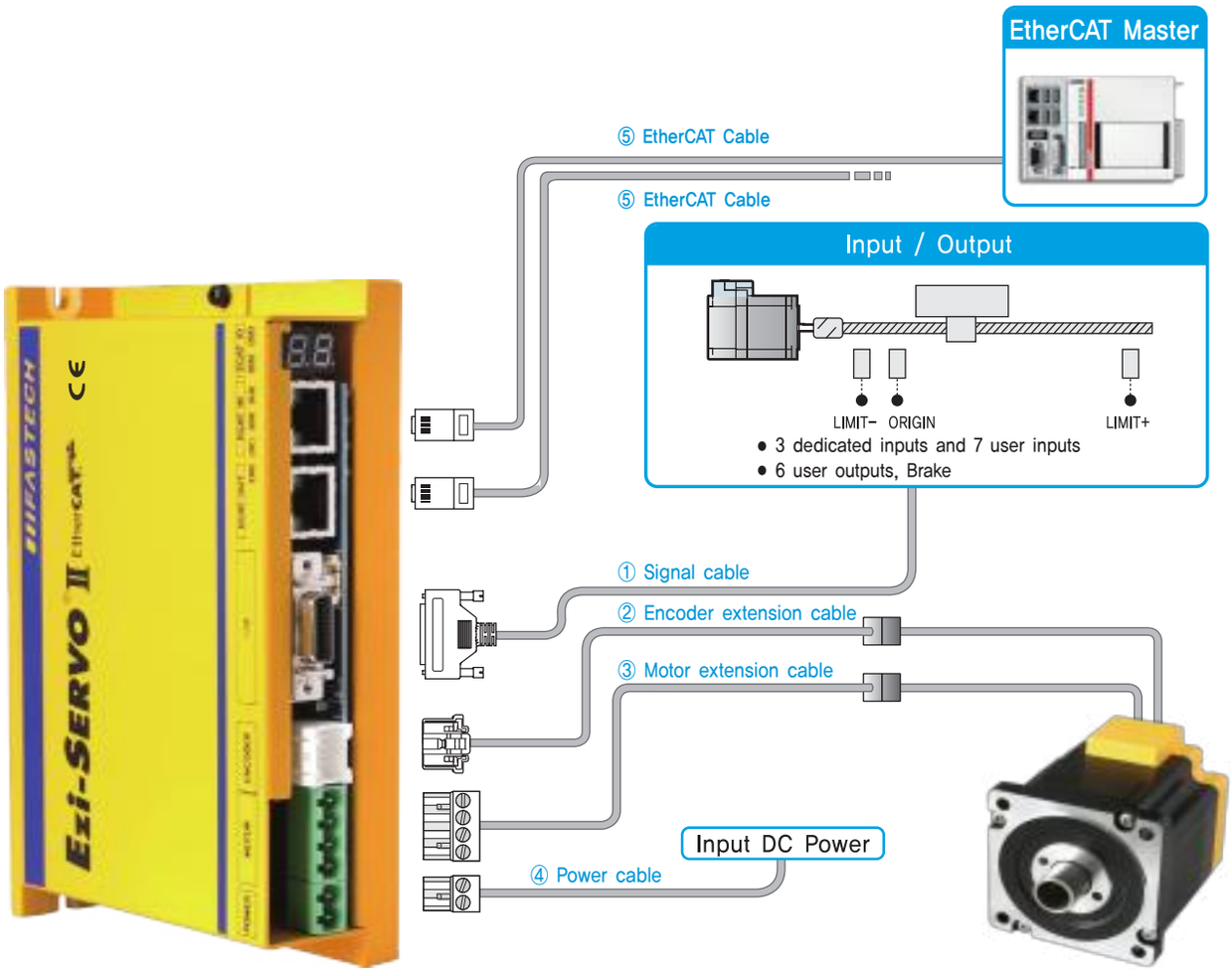
System Configuration [EtherCAT (Ezi-SERVO II EtherCAT)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet(100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT catalog for optional cables, functions and operation.

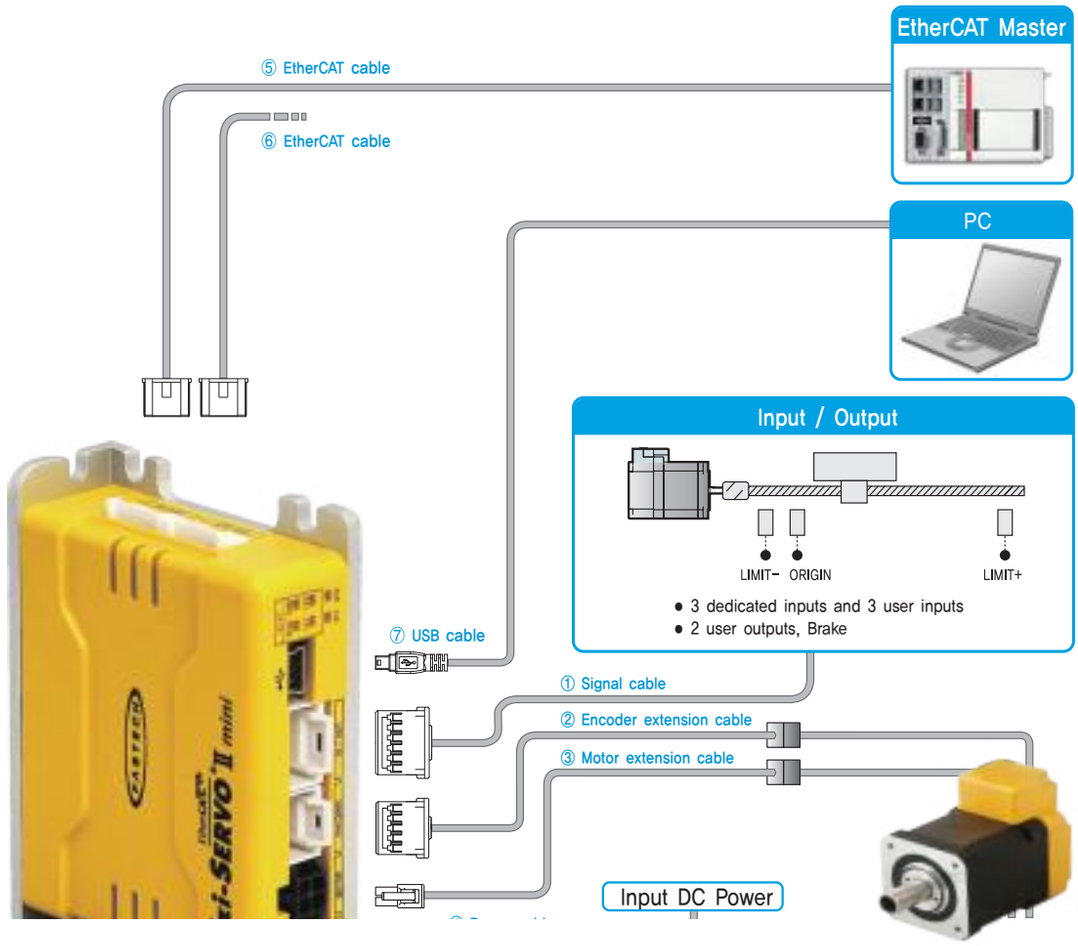
● System Configuration [EtherCAT (Ezi-SERVO II EtherCAT 86mm)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet(100Mbps Full-Duplex) based fieldbus.
  Ezi-SERVO II EtherCAT is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented.
  Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT catalog for optional cables, functions and operation.

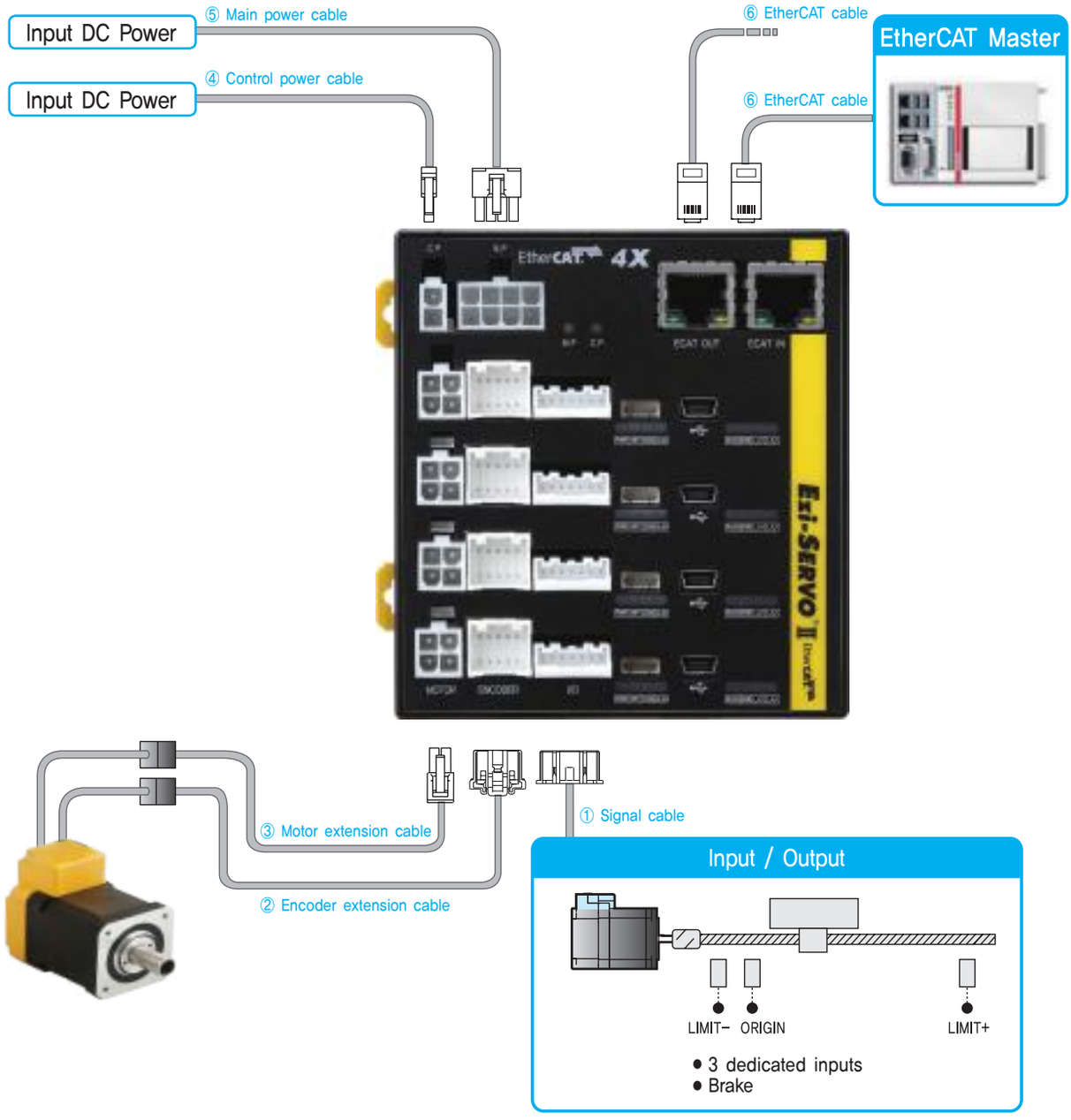
● System Configuration [EtherCAT (Ezi-SERVO II EtherCAT MINI)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT MINI is stepping motor control system using EtherCAT, high speed Ethernet(100Mbps full-duplex) based fieldbus. Ezi-SERVO II EtherCAT MINI is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT MINI catalog for optional cables, functions and operation.

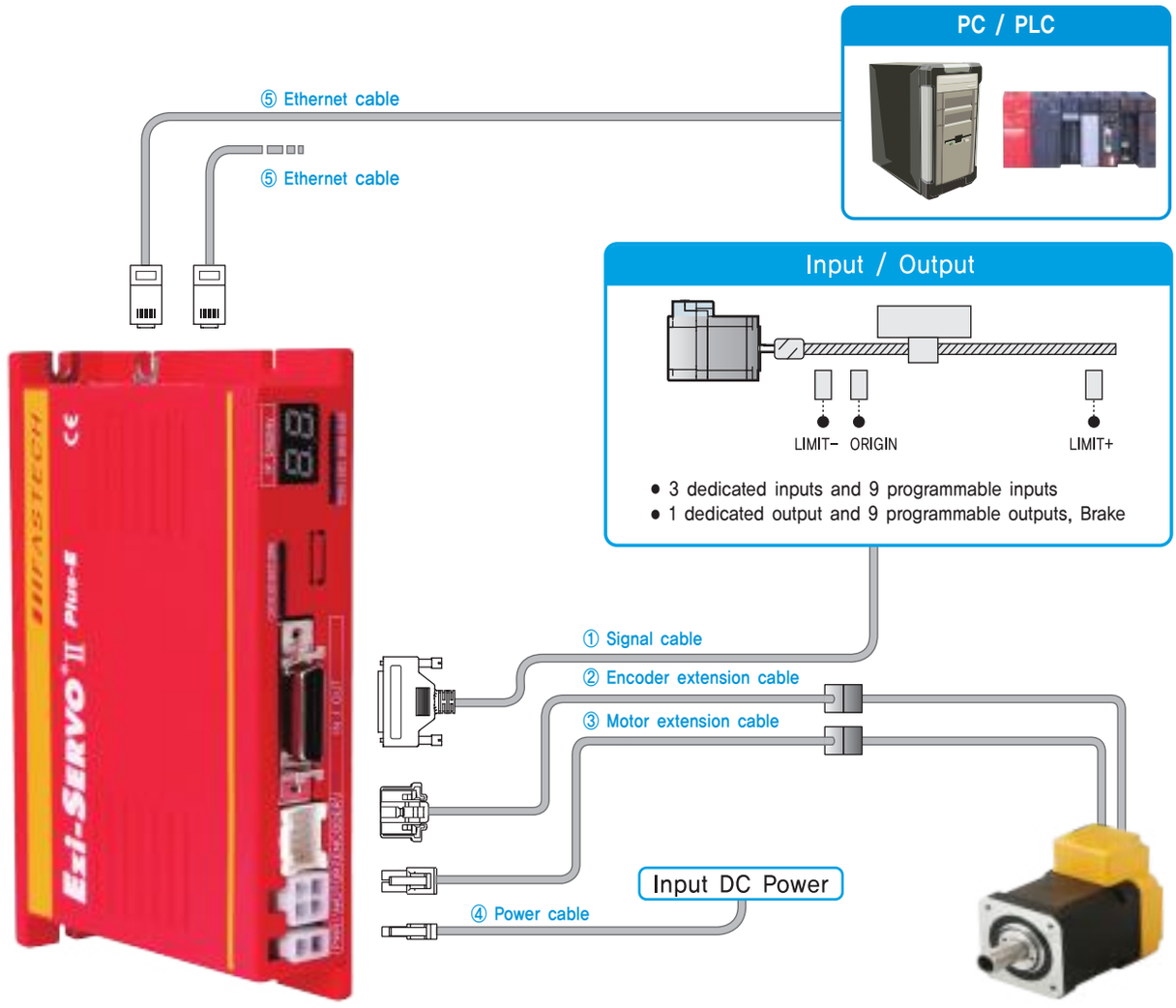
● System Configuration [EtherCAT 4X (Ezi-SERVO II EtherCAT 4X)]



Type	Signal Cable	Encoder Cable	Motor Cable	Control Power Cable	Main Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	2m	100m

- Ezi-SERVO II EtherCAT 4X is 4-axis stepping motor control system using EtherCAT, high speed Ethernet(100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT 4X is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT 4X catalog for optional cables, functions and operation.

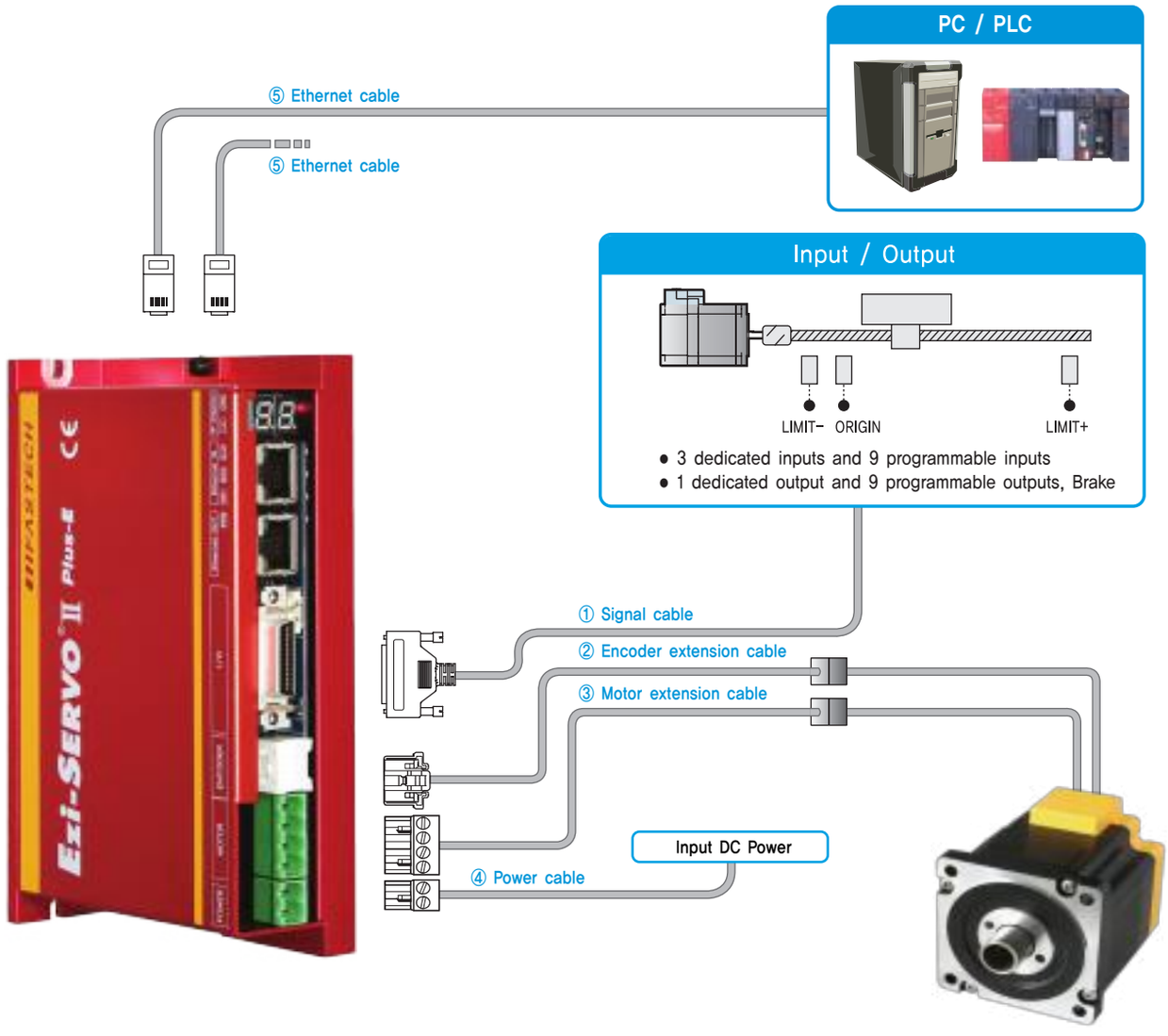
System Configuration [Ethernet (Ezi-SERVO II Plus-E)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E catalog for optional cables, functions and operation.

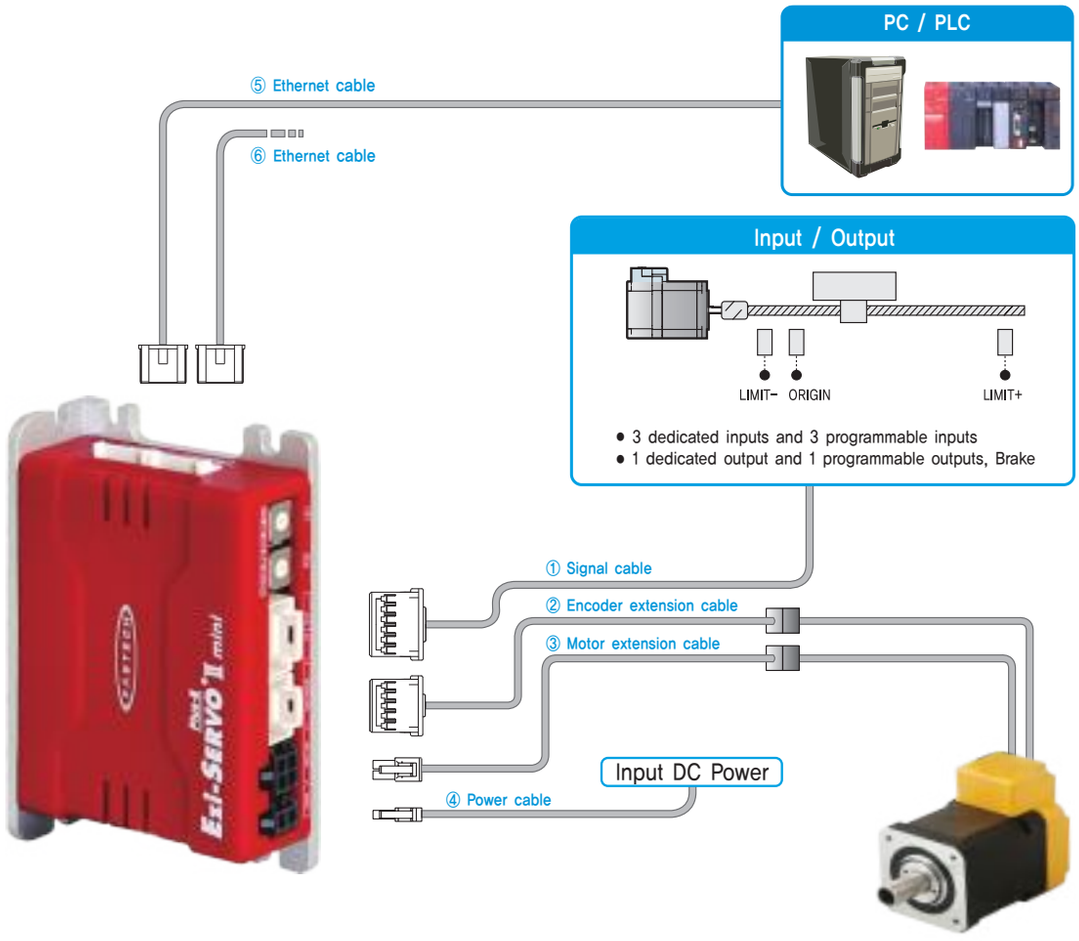
● System Configuration [Ethernet (Ezi-SERVO II Plus-E 86mm)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E catalog for optional cables, functions and operation.

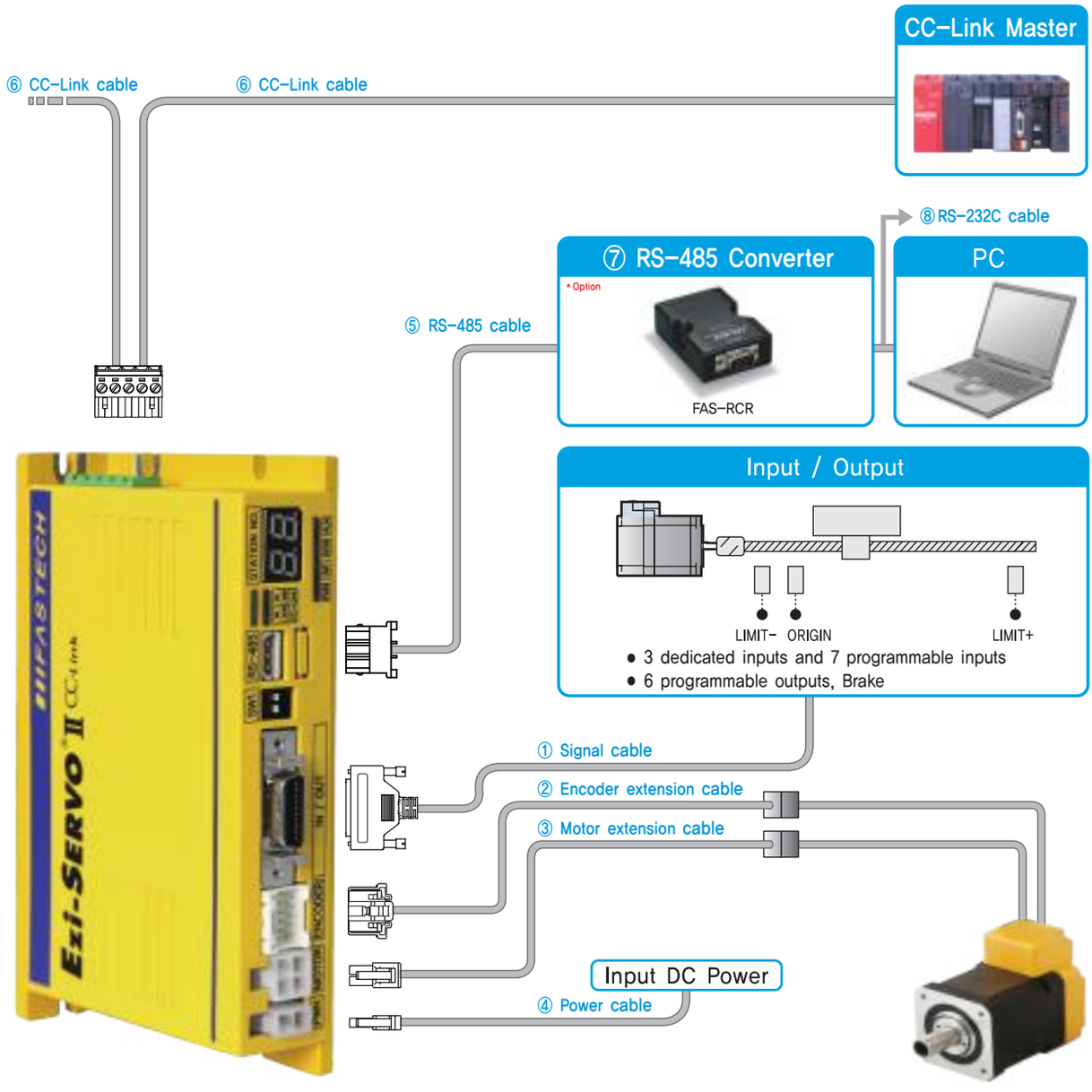
● System Configuration [Ethernet (Ezi-SERVO II Plus-E MINI)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E MINI drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication, and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E MINI catalog for optional cables, functions and operation.

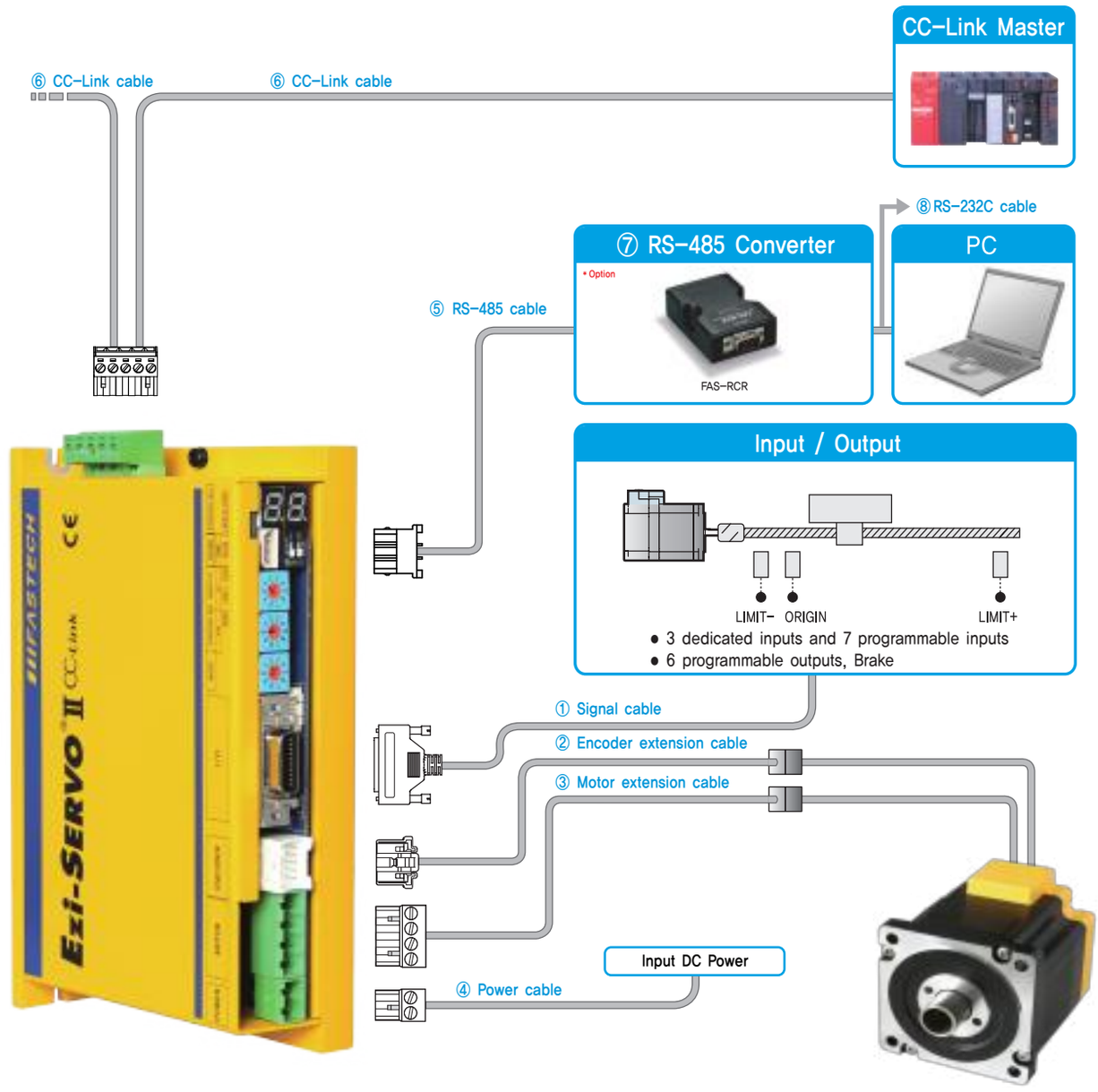
● System Configuration [CC-Link (Ezi-SERVO II CC-Link)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

- Ezi-SERVO II CC-Link is a drive supporting CC-Link , a high speed fieldbus(max. 10Mbps). Ezi-SERVO II CC-Link is a Remote Device module supporting CC-Link network. Multi-function control is possible by occupying 1 station and 2 stations in CC-Link, and motion and monitoring functions are processed by device commands.
- Please refer to the Ezi-SERVO II CC-Link catalog for optional cables, functions and operation.

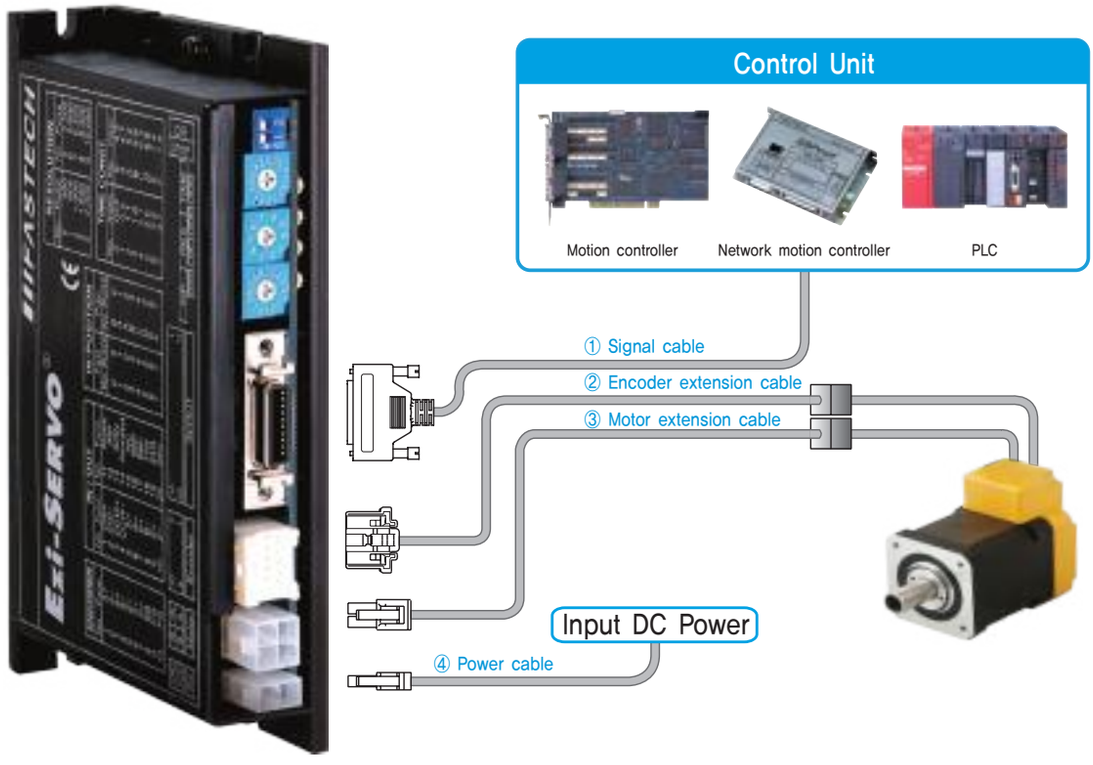
● System Configuration [CC-Link (Ezi-SERVO II CC-Link 86mm)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

- Ezi-SERVO II CC-Link is a drive supporting CC-Link , a high speed fieldbus(max. 10Mbps). Ezi-SERVO II CC-Link is a Remote Device module supporting CC-Link network. Multi-function control is possible by occupying 1 station and 2 stations in CC-Link, and motion and monitoring functions are processed by device commands.
- Please refer to the Ezi-SERVO II CC-Link catalog for optional cables, functions and operation.

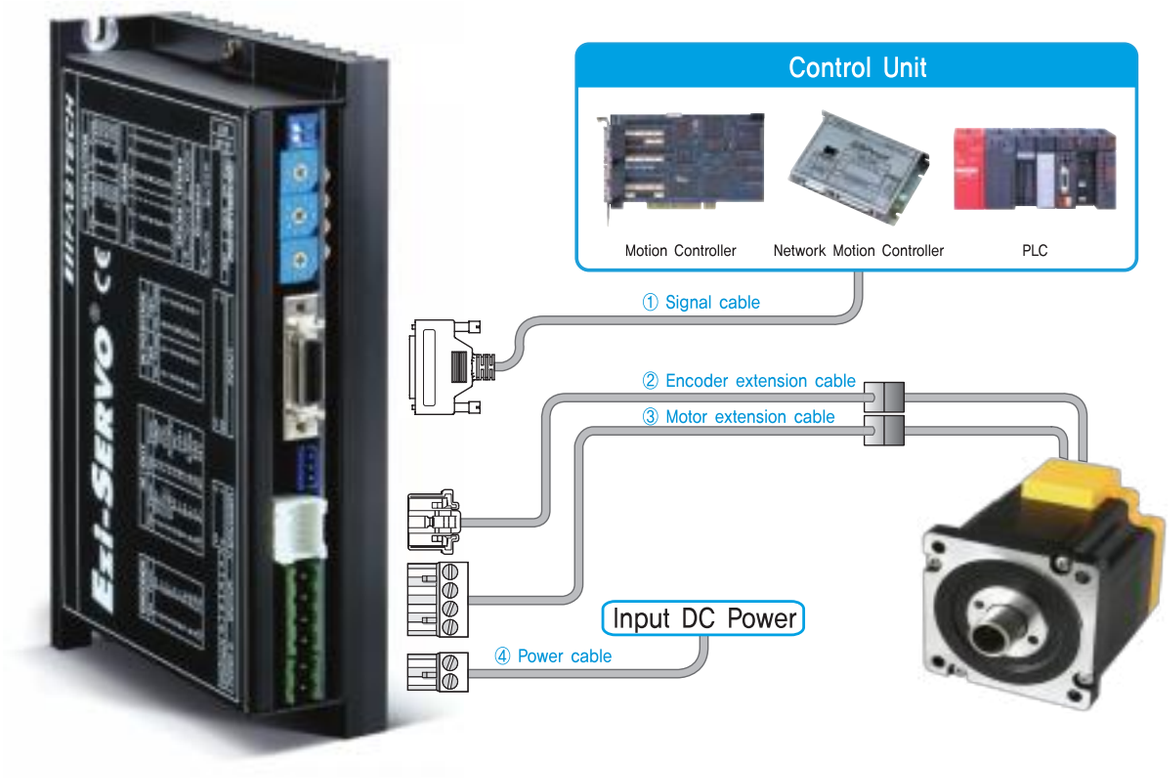
● System Configuration [Pulse Input Drive (Ezi-SERVO ST)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

- Ezi-SERVO ST is a pulse input type drive. It is controlled by using of Motion controller, standalone controller or PLC (with positioning module).
- Please refer to the Ezi-SERVO ST catalog for optional cables, functions and operation.

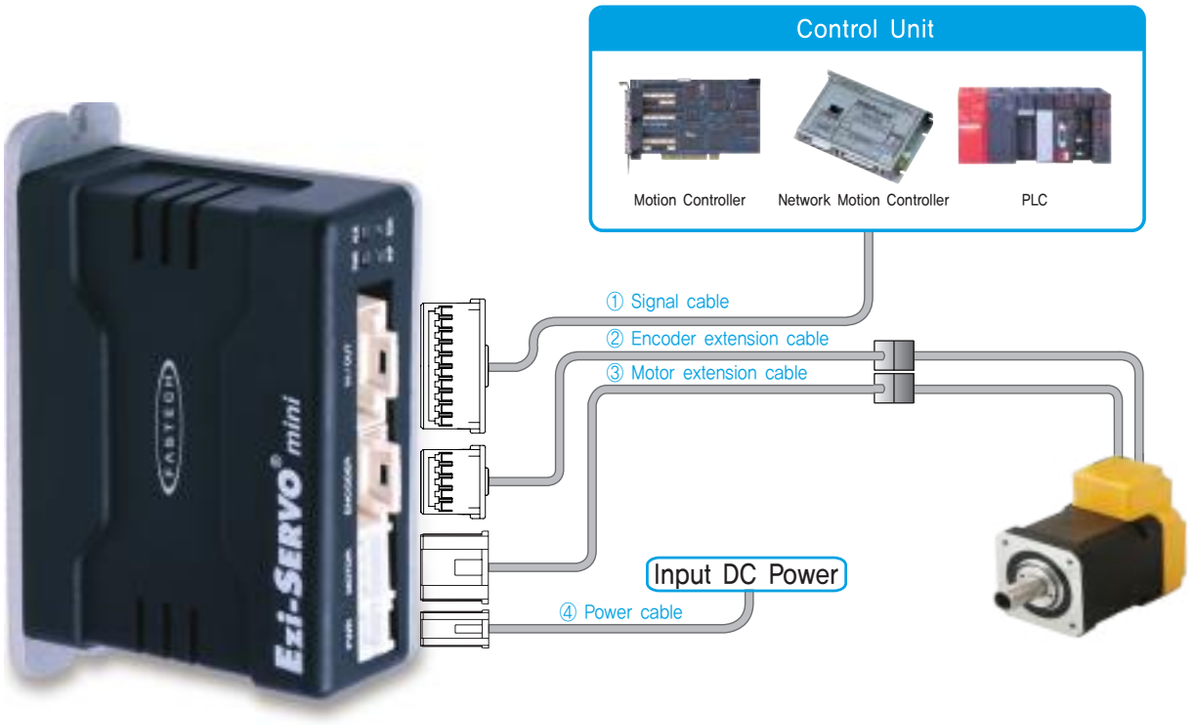
System Configuration [Pulse Input Drive (Ezi-SERVO ST 86mm)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

- Ezi-SERVO ST is a pulse input type drive. It is controlled by using of Motion controller, standalone controller or PLC (with positioning module).
- Please refer to the Ezi-SERVO ST catalog for optional cables, functions and operation.

● System Configuration [Pulse Input Mini Drive (Ezi-SERVO MINI)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

- Ezi-SERVO MINI is a pulse input type drive. It is controlled by using of Motion controller, standalone controller or PLC (with positioning module).
- Please refer to the Ezi-SERVO MINI catalog for optional cables, functions and operation.

FASTECH_
Product Information

Ezi-SERVO®

S-SERVO®II

- ST
- MINI
- 2X
- 3X

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®


S-SERVO
S-SERVO

S-SERVO® II
ST MINI 2X 3X

Stepping Motor Control System Without Step Out_ S-SERVO II ST, MINI, 2X, 3X

- No step-out
- Accurate positioning by high resolution controls
- High energy efficiency and less heat generation
- Torque improvement by run current control

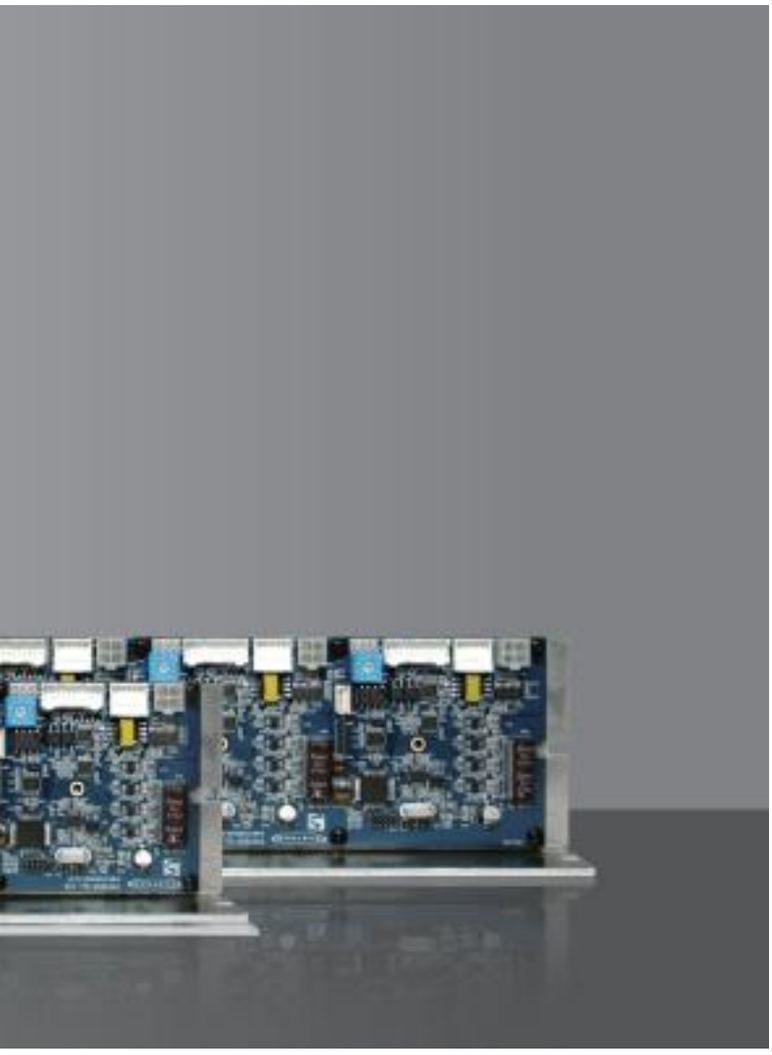


FASTECH

Fast, Accurate, Smooth Motion

S-SERVO® II

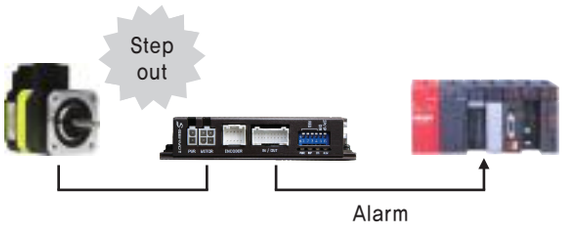
Stepping motor control system without step out



1 No Step Out

(Alarm will be generated when step out)

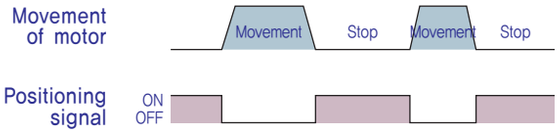
Because of mounted encoder constantly monitor the current position, step out cannot be occurred. If step out occurred by external force of overloads, alarm signal will be sent to upper controller. Thus, upper controller can recognize step out of step motor.



2 Perfect Positioning Completion Check

(Positioning completion signal will be generated)

When motor stops at the goal position, encoder detect it and send positioning completion signal to upper controller. Therefore S-SERVO II resolve the problem of unclear positioning of current Open Loop System.



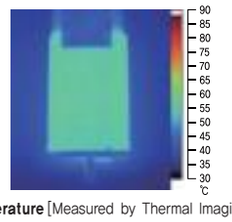
3 High Position Accuracy

S-SERVO II controls position by using high precision of encoder. Regardless of motor type (2 Phase or 5 Phase), S-SERVO II position precision is only related to mounted encoder resolution so high precision of positioning is possible unlike open loop micro step motor and driver which adapts 2 Phase or 5 Phase motor.

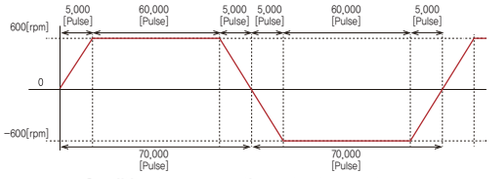
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

S-SERVO II automatically controls motor current according to load. S-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]



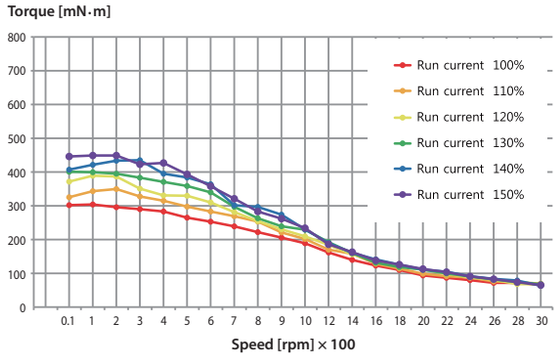
Example of the Motor Current Control according to load

5 Torque Improvement

(Motor Current Setting)

S-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased.

S-SERVO II can improve the torque in the low speed range by about 30%.

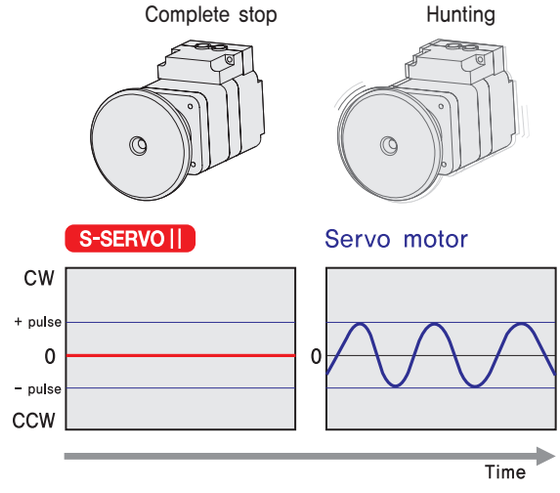


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = S-SERVO II-ST-42L
Motor Voltage = 24VDC
Input Voltage = 24VDC

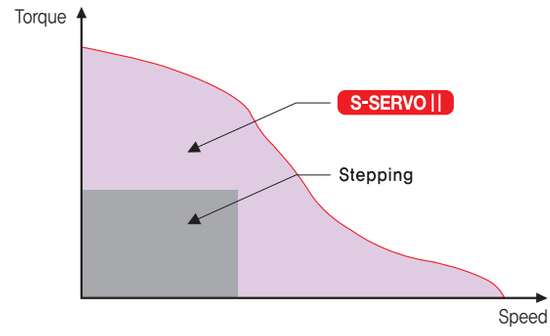
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using S-SERVO II Motion Control System. S-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



7 High Torque

Compared with common step motors and drives, S-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that S-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, S-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



8 Variety of Protection Functions

Drive and equipment can be protected by the alarm (11 kinds) of such as motor connection error, encoder connection error etc.

9 Variety of Position Command Unit

According to the purpose of usage, S-SERVO II offer 16 stage (500~50,000P/R) of position command unit.

● S-SERVO II ST Part Numbering

S-SERVO II-ST-56L-A-BK-PN05-□

Product Name

Drive Series

ST : Stand Alone
MI : MINI Type
2X : 2 axis
3X : 3 axis

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

※ S-SERVO II 2X, S-SERVO II 3X product needs 2 or 3 sets of motors for one drive. Combination of drive and motors can be diversifed so please contact with sales division or distributor of FASTECH before purchasing product.

● Standard Combination

◆ S-SERVO II ST series

Unit Part Number	Motor Model Number	Drive Model Number
S-SERVO II-ST-20M-F	SM-20M-F	SV2-PD-20M-F
S-SERVO II-ST-20L-F	SM-20L-F	SV2-PD-20L-F
S-SERVO II-ST-28S-F	SM-28S-F	SV2-PD-28S-F
S-SERVO II-ST-28S-D	SM-28S-D	SV2-PD-28S-D
S-SERVO II-ST-28SM-D	SM-28SM-D	SV2-PD-28S-D
S-SERVO II-ST-28M-F	SM-28M-F	SV2-PD-28M-F
S-SERVO II-ST-28M-D	SM-28M-D	SV2-PD-28M-D
S-SERVO II-ST-28MM-D	SM-28MM-D	SV2-PD-28M-D
S-SERVO II-ST-28L-F	SM-28L-F	SV2-PD-28L-F
S-SERVO II-ST-28L-D	SM-28L-D	SV2-PD-28L-D
S-SERVO II-ST-28LM-D	SM-28LM-D	SV2-PD-28L-D
S-SERVO II-ST-35M-F	SM-35M-F	SV2-PD-35M-F
S-SERVO II-ST-35M-D	SM-35M-D	SV2-PD-35M-D
S-SERVO II-ST-35MM-D	SM-35MM-D	SV2-PD-35M-D
S-SERVO II-ST-35L-F	SM-35L-F	SV2-PD-35L-F
S-SERVO II-ST-35L-D	SM-35L-D	SV2-PD-35L-D
S-SERVO II-ST-35LM-D	SM-35LM-D	SV2-PD-35L-D
S-SERVO II-ST-42S-A	SM-42S-A	SV2-PD-42S-A
S-SERVO II-ST-42S-F	SM-42S-F	SV2-PD-42S-F
S-SERVO II-ST-42M-A	SM-42M-A	SV2-PD-42 M-A
S-SERVO II-ST-42M-F	SM-42M-F	SV2-PD-42M-F
S-SERVO II-ST-42L-A	SM-42L-A	SV2-PD-42L-A
S-SERVO II-ST-42L-F	SM-42L-F	SV2-PD-42L-F
S-SERVO II-ST-42XL-A	SM-42XL-A	SV2-PD-42XL-A
S-SERVO II-ST-42XL-F	SM-42XL-F	SV2-PD-42XL-F
S-SERVO II-ST-56S-A	SM-56S-A	SV2-PD-56S-A
S-SERVO II-ST-56S-F	SM-56S-F	SV2-PD-56S-F
S-SERVO II-ST-56M-A	SM-56M-A	SV2-PD-56M-A
S-SERVO II-ST-56M-F	SM-56M-F	SV2-PD-56M-F
S-SERVO II-ST-56L-A	SM-56L-A	SV2-PD-56L-A
S-SERVO II-ST-56L-F	SM-56L-F	SV2-PD-56L-F
S-SERVO II-ST-60S-A	SM-60S-A	SV2-PD-60S-A
S-SERVO II-ST-60S-F	SM-60S-F	SV2-PD-60S-F
S-SERVO II-ST-60M-A	SM-60M-A	SV2-PD-60M-A
S-SERVO II-ST-60M-F	SM-60M-F	SV2-PD-60M-F
S-SERVO II-ST-60L-A	SM-60L-A	SV2-PD-60L-A
S-SERVO II-ST-60L-F	SM-60L-F	SV2-PD-60L-F

* When places an order for Stopper type 28, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex: S-SERVO II-ST-28LM-D, S-SERVO II-ST-35LM-D)

● Standard Combination

◆ S-SERVO II MINI series

Unit Part Number	Motor Model Number	Drive Model Number
S-SERVO II-MI-20M-F	SM-20M-F	SV2-PD-MI-20M-F
S-SERVO II-MI-20L-F	SM-20L-F	SV2-PD-MI-20L-F
S-SERVO II-MI-28S-F	SM-28S-F	SV2-PD-MI-28S-F
S-SERVO II-MI-28S-D	SM-28S-D	SV2-PD-MI-28S-D
S-SERVO II-MI-28SM-D	SM-28SM-D	SV2-PD-MI-28S-D
S-SERVO II-MI-28M-F	SM-28M-F	SV2-PD-MI-28M-F
S-SERVO II-MI-28M-D	SM-28M-D	SV2-PD-MI-28M-D
S-SERVO II-MI-28MM-D	SM-28MM-D	SV2-PD-MI-28M-D
S-SERVO II-MI-28L-F	SM-28L-F	SV2-PD-MI-28L-F
S-SERVO II-MI-28L-D	SM-28L-D	SV2-PD-MI-28L-D
S-SERVO II-MI-28LM-D	SM-28LM-D	SV2-PD-MI-28L-D
S-SERVO II-MI-35M-F	SM-35M-F	SV2-PD-MI-35M-F
S-SERVO II-MI-35M-D	SM-35M-D	SV2-PD-MI-35M-D
S-SERVO II-MI-35MM-D	SM-35MM-D	SV2-PD-MI-35M-D
S-SERVO II-MI-35L-F	SM-35L-F	SV2-PD-MI-35L-F
S-SERVO II-MI-35L-D	SM-35L-D	SV2-PD-MI-35L-D
S-SERVO II-MI-35LM-D	SM-35LM-D	SV2-PD-MI-35L-D
S-SERVO II-MI-42S-A	SM-42S-A	SV2-PD-MI-42S-A
S-SERVO II-MI-42S-F	SM-42S-F	SV2-PD-MI-42S-F
S-SERVO II-MI-42M-A	SM-42M-A	SV2-PD-MI-42M-A
S-SERVO II-MI-42M-F	SM-42M-F	SV2-PD-MI-42M-F
S-SERVO II-MI-42L-A	SM-42L-A	SV2-PD-MI-42L-A
S-SERVO II-MI-42L-F	SM-42L-F	SV2-PD-MI-42L-F
S-SERVO II-MI-42XL-A	SM-42XL-A	SV2-PD-MI-42XL-A
S-SERVO II-MI-42XL-F	SM-42XL-F	SV2-PD-MI-42XL-F

* When places an order for Stopper type 28, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex: S-SERVO II-MI-28LM-D, S-SERVO II-MI-35LM-D)

◆ S-SERVO II 2X series

Unit Part Number	Motor Model Number	Drive Model Number
S-SERVO II-2X	SM-20M-F	SV2-PD-2X
	SM-20L-F	
	SM-28S-F	
	SM-28S-D	
	SM-28SM-D	
	SM-28M-F	
	SM-28M-D	
	SM-28MM-D	
	SM-28L-F	
	SM-28L-D	
	SM-28LM-D	
	SM-35M-F	
	SM-35M-D	
	SM-35MM-D	
	SM-35L-F	
	SM-35L-D	
	SM-35LM-D	
	SM-42S-A	
	SM-42S-F	
	SM-42M-A	
	SM-42M-F	
	SM-42L-A	
	SM-42L-F	
	SM-42XL-A	
	SM-42XL-F	
	SM-56S-A	
	SM-56S-F	
	SM-56M-A	
	SM-56M-F	
	SM-56L-A	
	SM-56L-F	
	SM-60S-A	
	SM-60S-F	
	SM-60M-A	
	SM-60M-F	
	SM-60L-A	
	SM-60L-F	

* When places an order for Stopper type 28, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex: S-SERVO II-2X-28LM-D, S-SERVO II-2X-35LM-D)

● Standard Combination

◆ S-SERVO II 3X series

Unit Part Number	Motor Model Number	Drive Model Number
S-SERVO II-3X	SM-20M-F	SV2-PD-3X
	SM-20L-F	
	SM-28S-F	
	SM-28S-D	
	SM-28SM-D	
	SM-28M-F	
	SM-28M-D	
	SM-28MM-D	
	SM-28L-F	
	SM-28L-D	
	SM-28LM-D	
	SM-35M-F	
	SM-35M-D	
	SM-35MM-D	
	SM-35L-F	
	SM-35LM-D	
	SM-35L-D	
	SM-42S-A	
	SM-42S-F	
	SM-42M-A	
	SM-42M-F	
	SM-42L-A	
	SM-42L-F	
	SM-42XL-A	
	SM-42XL-F	
	SM-56S-A	
	SM-56S-F	
	SM-56M-A	
	SM-56M-F	
	SM-56L-A	
	SM-56L-F	
	SM-60S-A	
	SM-60S-F	
	SM-60M-A	
	SM-60M-F	
	SM-60L-A	
	SM-60L-F	

* When places an order for Stopper type 28, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex: S-SERVO II-3X-28LM-D, S-SERVO II-3X-35LM-D)

● Combination with Brake

◆ S-SERVO II ST series

Unit Part Number	Motor Model Number	Drive Model Number
S-SERVO II-ST-42S-A-BK	SM-42S-A-BK	SV2-PD-42S-A
S-SERVO II-ST-42S-F-BK	SM-42S-F-BK	SV2-PD-42S-F
S-SERVO II-ST-42M-A-BK	SM-42M-A-BK	SV2-PD-42M-A
S-SERVO II-ST-42M-F-BK	SM-42M-F-BK	SV2-PD-42M-F
S-SERVO II-ST-42L-A-BK	SM-42L-A-BK	SV2-PD-42L-A
S-SERVO II-ST-42L-F-BK	SM-42L-F-BK	SV2-PD-42L-F
S-SERVO II-ST-42XL-A-BK	SM-42XL-A-BK	SV2-PD-42XL-A
S-SERVO II-ST-42XL-F-BK	SM-42XL-F-BK	SV2-PD-42XL-F
S-SERVO II-ST-56S-A-BK	SM-56S-A-BK	SV2-PD-56S-A
S-SERVO II-ST-56S-F-BK	SM-56S-F-BK	SV2-PD-56S-F
S-SERVO II-ST-56M-A-BK	SM-56M-A-BK	SV2-PD-56M-A
S-SERVO II-ST-56M-F-BK	SM-56M-F-BK	SV2-PD-56M-F
S-SERVO II-ST-56L-A-BK	SM-56L-A-BK	SV2-PD-56L-A
S-SERVO II-ST-56L-F-BK	SM-56L-F-BK	SV2-PD-56L-F
S-SERVO II-ST-60S-A-BK	SM-60S-A-BK	SV2-PD-60S-A
S-SERVO II-ST-60S-F-BK	SM-60S-F-BK	SV2-PD-60S-F
S-SERVO II-ST-60M-A-BK	SM-60M-A-BK	SV2-PD-60M-A
S-SERVO II-ST-60M-F-BK	SM-60M-F-BK	SV2-PD-60M-F
S-SERVO II-ST-60L-A-BK	SM-60L-A-BK	SV2-PD-60L-A
S-SERVO II-ST-60L-F-BK	SM-60L-F-BK	SV2-PD-60L-F

◆ S-SERVO II MINI series

Unit Part Number	Motor Model Number	Drive Model Number
S-SERVO II-MI-42S-A-BK	SM-42S-A-BK	SV2-PD-MI-42S-A
S-SERVO II-MI-42S-F-BK	SM-42S-F-BK	SV2-PD-MI-42S-F
S-SERVO II-MI-42M-A-BK	SM-42M-A-BK	SV2-PD-MI-42M-A
S-SERVO II-MI-42M-F-BK	SM-42M-F-BK	SV2-PD-MI-42M-F
S-SERVO II-MI-42L-A-BK	SM-42L-A-BK	SV2-PD-MI-42L-A
S-SERVO II-MI-42L-F-BK	SM-42L-F-BK	SV2-PD-MI-42L-F
S-SERVO II-MI-42XL-A-BK	SM-42XL-A-BK	SV2-PD-MI-42XL-A
S-SERVO II-MI-42XL-F-BK	SM-42XL-F-BK	SV2-PD-MI-42XL-F

● Combination with Gearbox

◆ S-SERVO II ST series

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
S-SERVO II-ST-42S-A-PN3	SM-42S-A-PN3	SV2-PD-42S	1:3
S-SERVO II-ST-42S-F-PN3	SM-42S-F-PN3		
S-SERVO II-ST-42S-A-PN5	SM-42S-A-PN5		1:5
S-SERVO II-ST-42S-F-PN5	SM-42S-F-PN5		
S-SERVO II-ST-42S-A-PN8	SM-42S-A-PN8		1:8
S-SERVO II-ST-42S-F-PN8	SM-42S-F-PN8		
S-SERVO II-ST-42S-A-PN10	SM-42S-A-PN10		1:10
S-SERVO II-ST-42S-F-PN10	SM-42S-F-PN10		
S-SERVO II-ST-42S-A-PN15	SM-42S-A-PN15		1:15
S-SERVO II-ST-42S-F-PN15	SM-42S-F-PN15		
S-SERVO II-ST-42S-A-PN25	SM-42S-A-PN25		1:25
S-SERVO II-ST-42S-F-PN25	SM-42S-F-PN25		
S-SERVO II-ST-42S-A-PN40	SM-42S-A-PN40		1:40
S-SERVO II-ST-42S-F-PN40	SM-42S-F-PN40		
S-SERVO II-ST-42S-A-PN50	SM-42S-A-PN50		1:50
S-SERVO II-ST-42S-F-PN50	SM-42S-F-PN50		
S-SERVO II-ST-42M-A-PN3	SM-42M-A-PN3	SV2-PD-42M	1:3
S-SERVO II-ST-42M-F-PN3	SM-42M-F-PN3		
S-SERVO II-ST-42M-A-PN5	SM-42M-A-PN5		1:5
S-SERVO II-ST-42M-F-PN5	SM-42M-F-PN5		
S-SERVO II-ST-42M-A-PN8	SM-42M-A-PN8		1:8
S-SERVO II-ST-42M-F-PN8	SM-42M-F-PN8		
S-SERVO II-ST-42M-A-PN10	SM-42M-A-PN10		1:10
S-SERVO II-ST-42M-F-PN10	SM-42M-F-PN10		
S-SERVO II-ST-42M-A-PN15	SM-42M-A-PN15		1:15
S-SERVO II-ST-42M-F-PN15	SM-42M-F-PN15		
S-SERVO II-ST-42M-A-PN25	SM-42M-A-PN25		1:25
S-SERVO II-ST-42M-F-PN25	SM-42M-F-PN25		
S-SERVO II-ST-42M-A-PN40	SM-42M-A-PN40		1:40
S-SERVO II-ST-42M-F-PN40	SM-42M-F-PN40		
S-SERVO II-ST-42M-A-PN50	SM-42M-A-PN50		1:50
S-SERVO II-ST-42M-F-PN50	SM-42M-F-PN50		
S-SERVO II-ST-42L-A-PN3	SM-42L-A-PN3	SV2-PD-42L	1:3
S-SERVO II-ST-42L-F-PN3	SM-42L-F-PN3		
S-SERVO II-ST-42L-A-PN5	SM-42L-A-PN5		1:5
S-SERVO II-ST-42L-F-PN5	SM-42L-F-PN5		
S-SERVO II-ST-42L-A-PN8	SM-42L-A-PN8		1:8
S-SERVO II-ST-42L-F-PN8	SM-42L-F-PN8		
S-SERVO II-ST-42L-A-PN10	SM-42L-A-PN10		1:10
S-SERVO II-ST-42L-F-PN10	SM-42L-F-PN10		
S-SERVO II-ST-42L-A-PN15	SM-42L-A-PN15		1:15
S-SERVO II-ST-42L-F-PN15	SM-42L-F-PN15		
S-SERVO II-ST-42L-A-PN25	SM-42L-A-PN25		1:25
S-SERVO II-ST-42L-F-PN25	SM-42L-F-PN25		
S-SERVO II-ST-42L-A-PN40	SM-42L-A-PN40		1:40
S-SERVO II-ST-42L-F-PN40	SM-42L-F-PN40		
S-SERVO II-ST-42L-A-PN50	SM-42L-A-PN50		1:50
S-SERVO II-ST-42L-F-PN50	SM-42L-F-PN50		
S-SERVO II-ST-42XL-A-PN3	SM-42XL-A-PN3	SV2-PD-42XL	1:3
S-SERVO II-ST-42XL-F-PN3	SM-42XL-F-PN3		
S-SERVO II-ST-42XL-A-PN5	SM-42XL-A-PN5		1:5
S-SERVO II-ST-42XL-F-PN5	SM-42XL-F-PN5		
S-SERVO II-ST-42XL-A-PN8	SM-42XL-A-PN8		1:8
S-SERVO II-ST-42XL-F-PN8	SM-42XL-F-PN8		
S-SERVO II-ST-42XL-A-PN10	SM-42XL-A-PN10		1:10
S-SERVO II-ST-42XL-F-PN10	SM-42XL-F-PN10		
S-SERVO II-ST-42XL-A-PN15	SM-42XL-A-PN15		1:15
S-SERVO II-ST-42XL-F-PN15	SM-42XL-F-PN15		
S-SERVO II-ST-42XL-A-PN25	SM-42XL-A-PN25		1:25
S-SERVO II-ST-42XL-F-PN25	SM-42XL-F-PN25		
S-SERVO II-ST-42XL-A-PN40	SM-42XL-A-PN40		1:40
S-SERVO II-ST-42XL-F-PN40	SM-42XL-F-PN40		
S-SERVO II-ST-42XL-A-PN50	SM-42XL-A-PN50		1:50
S-SERVO II-ST-42XL-F-PN50	SM-42XL-F-PN50		

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
S-SERVO II-ST-56S-A-PN3	SM-56S-A-PN3	SV2-PD-56S	1:3
S-SERVO II-ST-56S-F-PN3	SM-56S-F-PN3		
S-SERVO II-ST-56S-A-PN5	SM-56S-A-PN5		1:5
S-SERVO II-ST-56S-F-PN5	SM-56S-F-PN5		
S-SERVO II-ST-56S-A-PN8	SM-56S-A-PN8		1:8
S-SERVO II-ST-56S-F-PN8	SM-56S-F-PN8		
S-SERVO II-ST-56S-A-PN10	SM-56S-A-PN10		1:10
S-SERVO II-ST-56S-F-PN10	SM-56S-F-PN10		
S-SERVO II-ST-56S-A-PN15	SM-56S-A-PN15		1:15
S-SERVO II-ST-56S-F-PN15	SM-56S-F-PN15		
S-SERVO II-ST-56S-A-PN25	SM-56S-A-PN25		1:25
S-SERVO II-ST-56S-F-PN25	SM-56S-F-PN25		
S-SERVO II-ST-56S-A-PN40	SM-56S-A-PN40		1:40
S-SERVO II-ST-56S-F-PN40	SM-56S-F-PN40		
S-SERVO II-ST-56S-A-PN50	SM-56S-A-PN50		1:50
S-SERVO II-ST-56S-F-PN50	SM-56S-F-PN50		
S-SERVO II-ST-56M-A-PN3	SM-56M-A-PN3	SV2-PD-56M	1:3
S-SERVO II-ST-56M-F-PN3	SM-56M-F-PN3		
S-SERVO II-ST-56M-A-PN5	SM-56M-A-PN5		1:5
S-SERVO II-ST-56M-F-PN5	SM-56M-F-PN5		
S-SERVO II-ST-56M-A-PN8	SM-56M-A-PN8		1:8
S-SERVO II-ST-56M-F-PN8	SM-56M-F-PN8		
S-SERVO II-ST-56M-A-PN10	SM-56M-A-PN10		1:10
S-SERVO II-ST-56M-F-PN10	SM-56M-F-PN10		
S-SERVO II-ST-56M-A-PN15	SM-56M-A-PN15		1:15
S-SERVO II-ST-56M-F-PN15	SM-56M-F-PN15		
S-SERVO II-ST-56M-A-PN25	SM-56M-A-PN25		1:25
S-SERVO II-ST-56M-F-PN25	SM-56M-F-PN25		
S-SERVO II-ST-56M-A-PN40	SM-56M-A-PN40		1:40
S-SERVO II-ST-56M-F-PN40	SM-56M-F-PN40		
S-SERVO II-ST-56M-A-PN50	SM-56M-A-PN50		1:50
S-SERVO II-ST-56M-F-PN50	SM-56M-F-PN50		
S-SERVO II-ST-56L-A-PN3	SM-56L-A-PN3	SV2-PD-56L	1:3
S-SERVO II-ST-56L-F-PN3	SM-56L-F-PN3		
S-SERVO II-ST-56L-A-PN5	SM-56L-A-PN5		1:5
S-SERVO II-ST-56L-F-PN5	SM-56L-F-PN5		
S-SERVO II-ST-56L-A-PN8	SM-56L-A-PN8		1:8
S-SERVO II-ST-56L-F-PN8	SM-56L-F-PN8		
S-SERVO II-ST-56L-A-PN10	SM-56L-A-PN10		1:10
S-SERVO II-ST-56L-F-PN10	SM-56L-F-PN10		
S-SERVO II-ST-56L-A-PN15	SM-56L-A-PN15		1:15
S-SERVO II-ST-56L-F-PN15	SM-56L-F-PN15		
S-SERVO II-ST-56L-A-PN25	SM-56L-A-PN25		1:25
S-SERVO II-ST-56L-F-PN25	SM-56L-F-PN25		
S-SERVO II-ST-56L-A-PN40	SM-56L-A-PN40		1:40
S-SERVO II-ST-56L-F-PN40	SM-56L-F-PN40		
S-SERVO II-ST-56L-A-PN50	SM-56L-A-PN50		1:50
S-SERVO II-ST-56L-F-PN50	SM-56L-F-PN50		
S-SERVO II-ST-60S-A-PN3	SM-60S-A-PN3	SV2-PD-60S	1:3
S-SERVO II-ST-60S-F-PN3	SM-60S-F-PN3		
S-SERVO II-ST-60S-A-PN5	SM-60S-A-PN5		1:5
S-SERVO II-ST-60S-F-PN5	SM-60S-F-PN5		
S-SERVO II-ST-60S-A-PN8	SM-60S-A-PN8		1:8
S-SERVO II-ST-60S-F-PN8	SM-60S-F-PN8		
S-SERVO II-ST-60S-A-PN10	SM-60S-A-PN10		1:10
S-SERVO II-ST-60S-F-PN10	SM-60S-F-PN10		
S-SERVO II-ST-60S-A-PN15	SM-60S-A-PN15		1:15
S-SERVO II-ST-60S-F-PN15	SM-60S-F-PN15		
S-SERVO II-ST-60S-A-PN25	SM-60S-A-PN25		1:25
S-SERVO II-ST-60S-F-PN25	SM-60S-F-PN25		
S-SERVO II-ST-60S-A-PN40	SM-60S-A-PN40		1:40
S-SERVO II-ST-60S-F-PN40	SM-60S-F-PN40		
S-SERVO II-ST-60S-A-PN50	SM-60S-A-PN50		1:50
S-SERVO II-ST-60S-F-PN50	SM-60S-F-PN50		

● Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
S-SERVO II-ST-60M-A-PN3	SM-60M-A-PN3	SV2-PD-60M	1:3
S-SERVO II-ST-60M-F-PN3	SM-60M-F-PN3		
S-SERVO II-ST-60M-A-PN5	SM-60M-A-PN5		1:5
S-SERVO II-ST-60M-F-PN5	SM-60M-F-PN5		
S-SERVO II-ST-60M-A-PN8	SM-60M-A-PN8		1:8
S-SERVO II-ST-60M-F-PN8	SM-60M-F-PN8		
S-SERVO II-ST-60M-A-PN10	SM-60M-A-PN10		1:10
S-SERVO II-ST-60M-F-PN10	SM-60M-F-PN10		
S-SERVO II-ST-60M-A-PN15	SM-60M-A-PN15		1:15
S-SERVO II-ST-60M-F-PN15	SM-60M-F-PN15		
S-SERVO II-ST-60M-A-PN25	SM-60M-A-PN25		1:25
S-SERVO II-ST-60M-F-PN25	SM-60M-F-PN25		
S-SERVO II-ST-60M-A-PN40	SM-60M-A-PN40		1:40
S-SERVO II-ST-60M-F-PN40	SM-60M-F-PN40		
S-SERVO II-ST-60M-A-PN50	SM-60M-A-PN50		1:50
S-SERVO II-ST-60M-F-PN50	SM-60M-F-PN50		
S-SERVO II-ST-60L-A-PN3	SM-60L-A-PN3	SV2-PD-60L	1:3
S-SERVO II-ST-60L-F-PN3	SM-60L-F-PN3		
S-SERVO II-ST-60L-A-PN5	SM-60L-A-PN5		1:5
S-SERVO II-ST-60L-F-PN5	SM-60L-F-PN5		
S-SERVO II-ST-60L-A-PN8	SM-60L-A-PN8		1:8
S-SERVO II-ST-60L-F-PN8	SM-60L-F-PN8		
S-SERVO II-ST-60L-A-PN10	SM-60L-A-PN10		1:10
S-SERVO II-ST-60L-F-PN10	SM-60L-F-PN10		
S-SERVO II-ST-60L-A-PN15	SM-60L-A-PN15		1:15
S-SERVO II-ST-60L-F-PN15	SM-60L-F-PN15		
S-SERVO II-ST-60L-A-PN25	SM-60L-A-PN25		1:25
S-SERVO II-ST-60L-F-PN25	SM-60L-F-PN25		
S-SERVO II-ST-60L-A-PN40	SM-60L-A-PN40		1:40
S-SERVO II-ST-60L-F-PN40	SM-60L-F-PN40		
S-SERVO II-ST-60L-A-PN50	SM-60L-A-PN50		1:50
S-SERVO II-ST-60L-F-PN50	SM-60L-F-PN50		

◆ S-SERVO II MINI series

Unit Part Number	Motor Model Number	Drive Model Number	Reduction gear ratio
S-SERVO II-MI-42S-A-PN3	SM-42S-A-PN3	SV2-PD-MI-42S	1:3
S-SERVO II-MI-42S-F-PN3	SM-42S-F-PN3		
S-SERVO II-MI-42S-A-PN5	SM-42S-A-PN5		1:5
S-SERVO II-MI-42S-F-PN5	SM-42S-F-PN5		
S-SERVO II-MI-42S-A-PN8	SM-42S-A-PN8		1:8
S-SERVO II-MI-42S-F-PN8	SM-42S-F-PN8		
S-SERVO II-MI-42S-A-PN10	SM-42S-A-PN10		1:10
S-SERVO II-MI-42S-F-PN10	SM-42S-F-PN10		
S-SERVO II-MI-42S-A-PN15	SM-42S-A-PN15		1:15
S-SERVO II-MI-42S-F-PN15	SM-42S-F-PN15		
S-SERVO II-MI-42S-A-PN25	SM-42S-A-PN25		1:25
S-SERVO II-MI-42S-F-PN25	SM-42S-F-PN25		
S-SERVO II-MI-42S-A-PN40	SM-42S-A-PN40		1:40
S-SERVO II-MI-42S-F-PN40	SM-42S-F-PN40		
S-SERVO II-MI-42S-A-PN50	SM-42S-A-PN50		1:50
S-SERVO II-MI-42S-F-PN50	SM-42S-F-PN50		
S-SERVO II-MI-42M-A-PN3	SM-42M-A-PN3	SV2-PD-MI-42M	1:3
S-SERVO II-MI-42M-F-PN3	SM-42M-F-PN3		
S-SERVO II-MI-42M-A-PN5	SM-42M-A-PN5		1:5
S-SERVO II-MI-42M-F-PN5	SM-42M-F-PN5		
S-SERVO II-MI-42M-A-PN8	SM-42M-A-PN8		1:8
S-SERVO II-MI-42M-F-PN8	SM-42M-F-PN8		
S-SERVO II-MI-42M-A-PN10	SM-42M-A-PN10		1:10
S-SERVO II-MI-42M-F-PN10	SM-42M-F-PN10		
S-SERVO II-MI-42M-A-PN15	SM-42M-A-PN15		1:15
S-SERVO II-MI-42M-F-PN15	SM-42M-F-PN15		
S-SERVO II-MI-42M-A-PN25	SM-42M-A-PN25		1:25
S-SERVO II-MI-42M-F-PN25	SM-42M-F-PN25		
S-SERVO II-MI-42M-A-PN40	SM-42M-A-PN40		1:40
S-SERVO II-MI-42M-F-PN40	SM-42M-F-PN40		
S-SERVO II-MI-42M-A-PN50	SM-42M-A-PN50		1:50
S-SERVO II-MI-42M-F-PN50	SM-42M-F-PN50		
S-SERVO II-MI-42L-A-PN3	SM-42L-A-PN3	SV2-PD-MI-42L	1:3
S-SERVO II-MI-42L-F-PN3	SM-42L-F-PN3		
S-SERVO II-MI-42L-A-PN5	SM-42L-A-PN5		1:5
S-SERVO II-MI-42L-F-PN5	SM-42L-F-PN5		
S-SERVO II-MI-42L-A-PN8	SM-42L-A-PN8		1:8
S-SERVO II-MI-42L-F-PN8	SM-42L-F-PN8		
S-SERVO II-MI-42L-A-PN10	SM-42L-A-PN10		1:10
S-SERVO II-MI-42L-F-PN10	SM-42L-F-PN10		
S-SERVO II-MI-42L-A-PN15	SM-42L-A-PN15		1:15
S-SERVO II-MI-42L-F-PN15	SM-42L-F-PN15		
S-SERVO II-MI-42L-A-PN25	SM-42L-A-PN25		1:25
S-SERVO II-MI-42L-F-PN25	SM-42L-F-PN25		
S-SERVO II-MI-42L-A-PN40	SM-42L-A-PN40		1:40
S-SERVO II-MI-42L-F-PN40	SM-42L-F-PN40		
S-SERVO II-MI-42L-A-PN50	SM-42L-A-PN50		1:50
S-SERVO II-MI-42L-F-PN50	SM-42L-F-PN50		
S-SERVO II-MI-42XL-A-PN3	SM-42XL-A-PN3	SV2-PD-MI-42XL	1:3
S-SERVO II-MI-42XL-F-PN3	SM-42XL-F-PN3		
S-SERVO II-MI-42XL-A-PN5	SM-42XL-A-PN5		1:5
S-SERVO II-MI-42XL-F-PN5	SM-42XL-F-PN5		
S-SERVO II-MI-42XL-A-PN8	SM-42XL-A-PN8		1:8
S-SERVO II-MI-42XL-F-PN8	SM-42XL-F-PN8		
S-SERVO II-MI-42XL-A-PN10	SM-42XL-A-PN10		1:10
S-SERVO II-MI-42XL-F-PN10	SM-42XL-F-PN10		
S-SERVO II-MI-42XL-A-PN15	SM-42XL-A-PN15		1:15
S-SERVO II-MI-42XL-F-PN15	SM-42XL-F-PN15		
S-SERVO II-MI-42XL-A-PN25	SM-42XL-A-PN25		1:25
S-SERVO II-MI-42XL-F-PN25	SM-42XL-F-PN25		
S-SERVO II-MI-42XL-A-PN40	SM-42XL-A-PN40		1:40
S-SERVO II-MI-42XL-F-PN40	SM-42XL-F-PN40		
S-SERVO II-MI-42XL-A-PN50	SM-42XL-A-PN50		1:50
S-SERVO II-MI-42XL-F-PN50	SM-42XL-F-PN50		

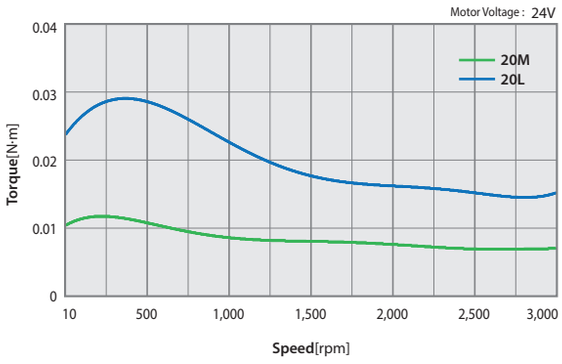
Specifications of Motor

MODEL			SM-20 series		SM-28 series			SM-35 series	
		UNIT	20M	20L	28S	28M	28L	35M	35L
DRIVE METHOD		–	BI-POLAR						
NUMBER OF PHASES		–	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.6	0.6	0.67	0.67	0.67	0.8	1.0
HOLDING TORQUE		N·m	0.018	0.037	0.069	0.098	0.118	0.078	0.137
ROTOR INERTIA		g·cm^2	3.0	3.3	9.0	13	18	10	14
WEIGHTS		g	92	105	146	203	227	152	210
LENGTH(L)		mm	33	38	32	45	50	26	36
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22
	8mm		30	30	38	38	38	26	26
	13mm		–	–	53	53	53	33	33
	18mm		–	–	–	–	–	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight						
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)						
INSULATION CLASS		–	CLASS B(130℃)						
OPERATING TEMPERATURE		℃	0 to 55						

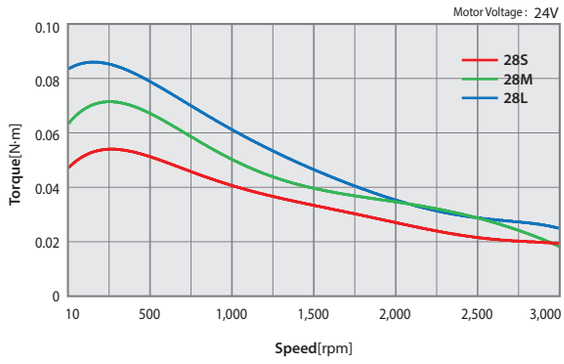
MODEL			SM-42 series				SM-56 series			SM-60 series		
		UNIT	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR									
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	1.3	1.68	1.68	1.2	2.8	2.8	2.8	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.216	0.353	0.431	0.650	0.539	1.00	1.72	0.88	1.28	2.40
ROTOR INERTIA		g·cm^2	35	54	68	114	120	300	480	240	490	690
WEIGHTS		g	278	341	416	566	506	742	1075	700	864	1418
LENGTH(L)		mm	33	39	47	60	41	56	76	47	56	85
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	22	22	22	22	52	52	52	70	70	70
	8mm		26	26	26	26	65	65	65	87	87	87
	13mm		33	33	33	33	85	85	85	114	114	114
	18mm		46	46	46	46	123	123	123	165	165	165
PERMISSIBLE THRUST LOAD		N	Lower than motor weight									
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)									
INSULATION CLASS		–	CLASS B(130℃)									
OPERATING TEMPERATURE		℃	0 to 55									

Torque Characteristics of Motor

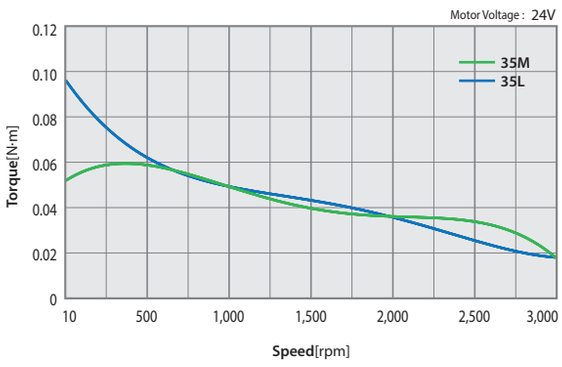
S-SERVO II-ST/MI/2X/3X-20 series



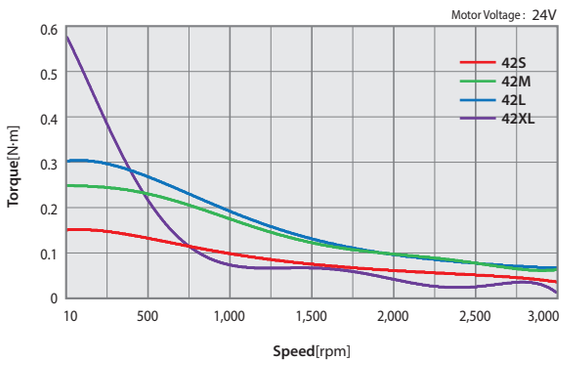
S-SERVO II-ST/MI/2X/3X-28 series



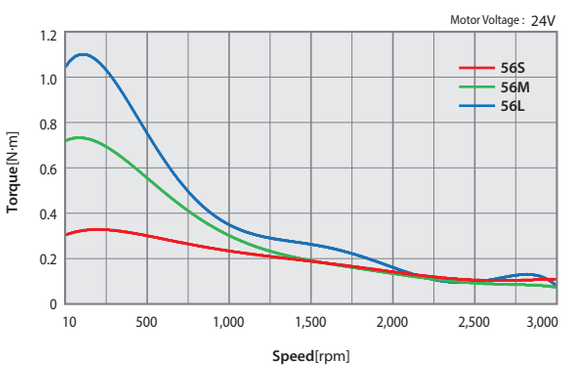
S-SERVO II-ST/MI/2X/3X-35 series



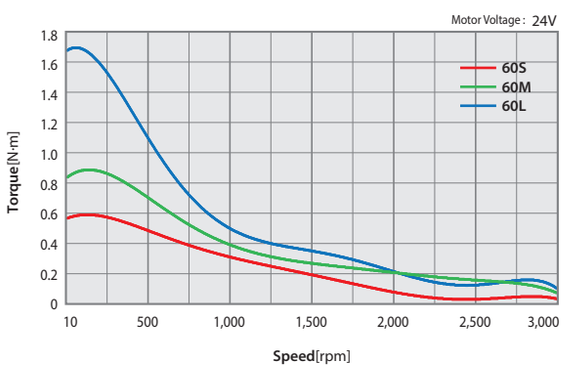
S-SERVO II-ST/MI/2X/3X-42 series



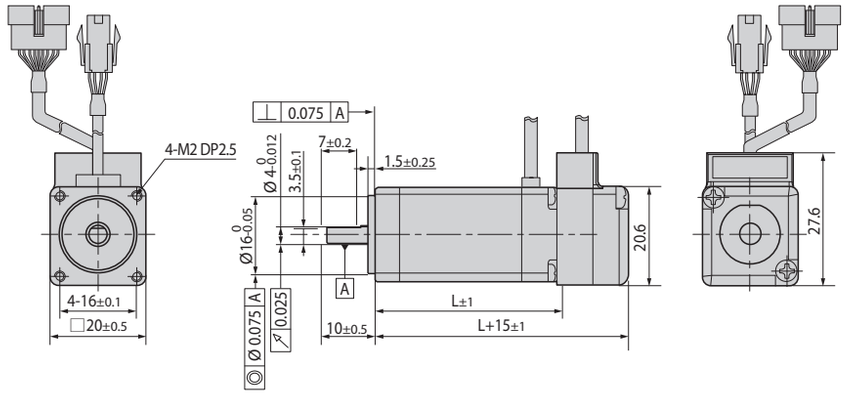
S-SERVO II-ST/2X/3X-56 series



S-SERVO II-ST/2X/3X-60 series

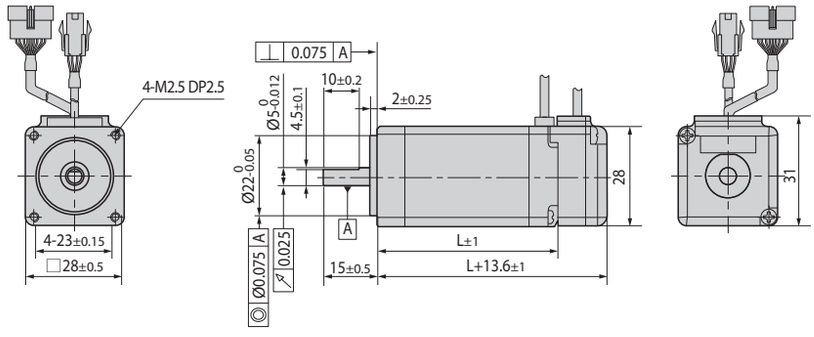


● Dimensions of Motor [mm]



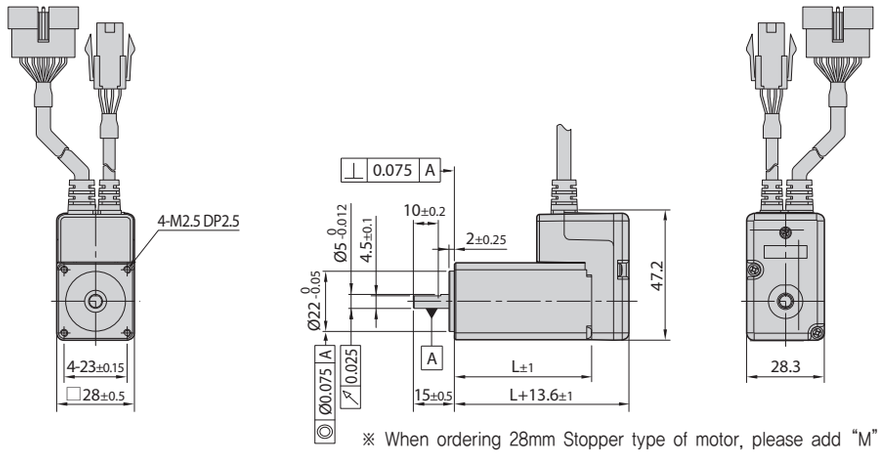
20mm

Model name	Length(L)
SM-20M	33
SM-20L	38



28mm

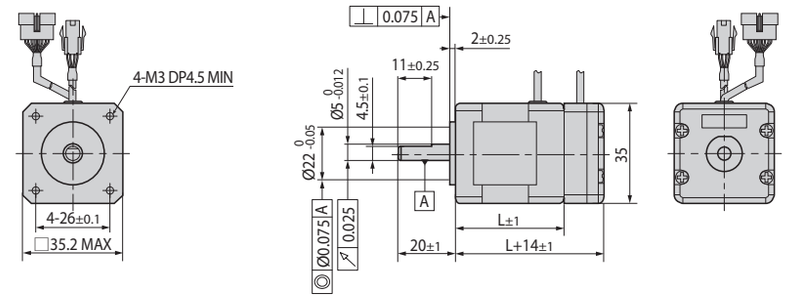
Model name	Length(L)
SM-28S	32
SM-28M	45
SM-28L	50



28mm *(Stopper type)*

Model name	Length(L)
SM-28SM	32
SM-28MM	45
SM-28LM	50

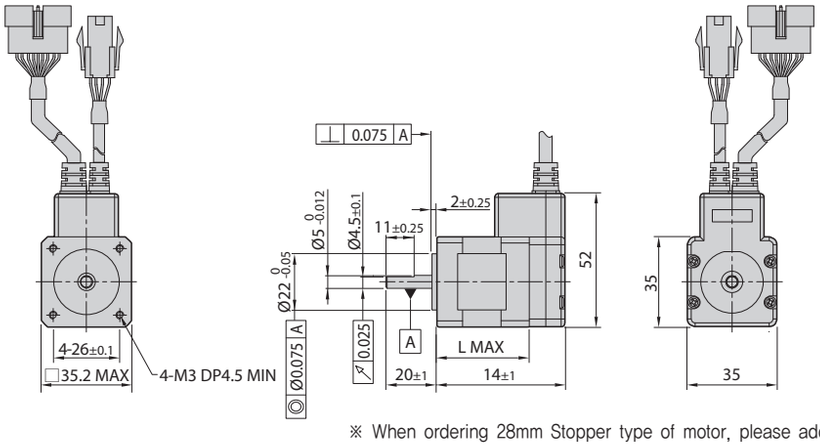
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
SM-35M	26
SM-35L	36

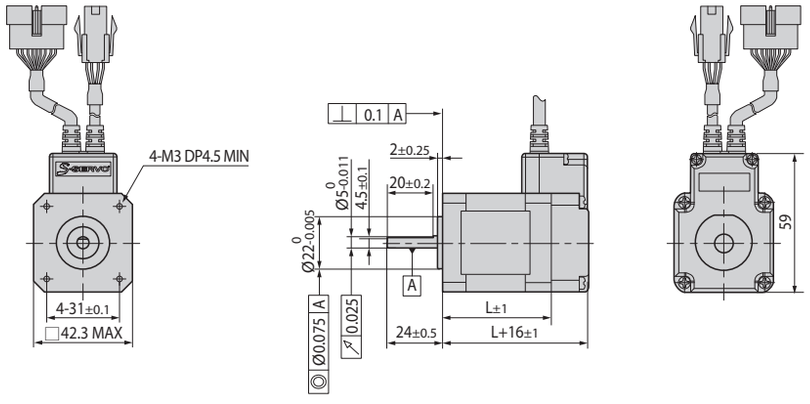
● Dimensions of Motor [mm]



35mm (Stopper type)

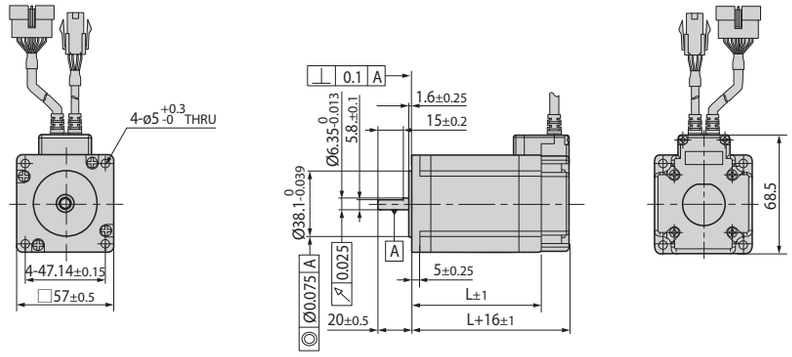
Model name	Length(L)
SM-35MM	26
SM-35LM	36

※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



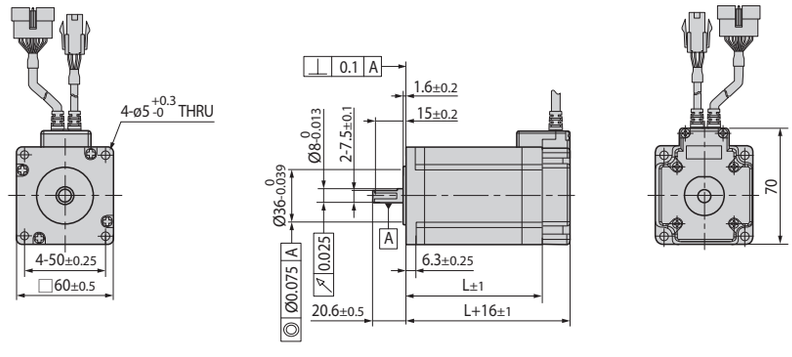
42mm

Model name	Length(L)
SM-42S	33
SM-42M	39
SM-42L	47
SM-42XL	60



56mm

Model name	Length(L)
SM-56S	41
SM-56M	56
SM-56L	76



60mm

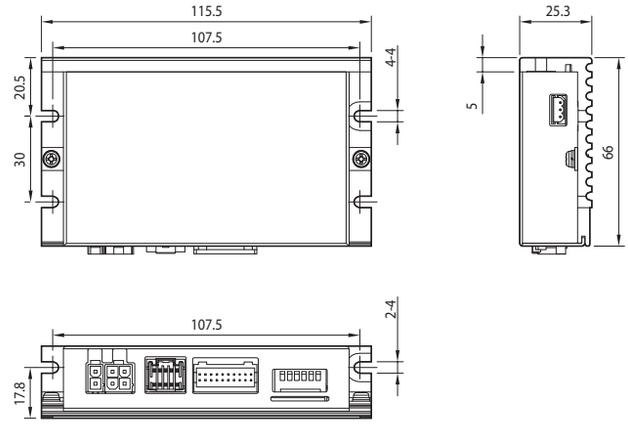
Model name	Length(L)
SM-60S	47
SM-60M	56
SM-60L	85

Specifications of Drive [S-SERVOII ST]

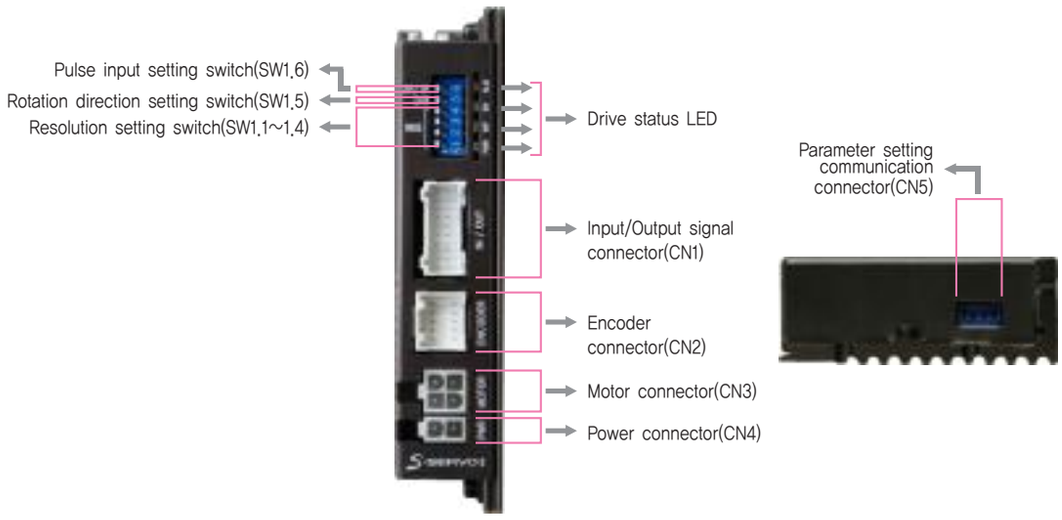
Motor Model		SM-20 series	SM-28 series	SM-35 series	SM-42 series	SM-56 series	SM-60 series
Driver Model		SV2-PD-20 series	SV2-PD-28 series	SV2-PD-35 series	SV2-PD-42 series	SV2-PD-56 series	SV2-PD-60 series
Input Voltage		24VDC ±10%					
Control Method		Closed loop control with 32bit MCU					
Current Consumption		Max 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function *2	Rotation Speed	0~3,000 [rpm] *1					
	Resolution [ppr] *4	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by DIP Switch) *6					
	Maximum Frequency	500kHz (Duty 50%)					
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error					
	LED Display	Power status, In-Position status, Enable status, Alarm status					
	RUN Current *5	50%~150% (Selectable by parameter) RUN current is current value which flows onto the motor during operation (rotation) of the motor and it is set based on rated current of the motor. * Default: 100%					
	STOP Current	20%~100% (Selectable by parameter) When motor stop operation, 0.1 second after motor current will be set to STOP current value. STOP current value is a percentage of the rated current of motor. * Default: 50%					
	Pulse Input Method	1 Pulse / 2 Pulse (Selectable by DIP Switch) * Default: 2 Pulse					
	Rotational Direction	CW/CCW (Selectable by DIP Switch) * Default: CW					
	Speed/Position Control Command	Pulse Train Input					
I/O Signal *3	Input Signals	Position Command Pulse, Enable, Alarm Reset (Photocoupler Input)					
	Output Signals	In-Position, Alarm (Photocoupler Output), Brake					

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.
*2 : Please refer to 「Settings and Operating」 to obtain detailed function information.
*3 : Please refer to 「Control Input/Output Explanation」 to obtain detailed Input/Output signal information.
*4 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.
*5 : For more detail information of RUN Current, please refer to the [Parameter Setting GUI] .
*6 : Please refer to the manual for detail information.

Dimensions of Drive [mm] [S-SERVOII ST]



● Settings and Operation [S-SERVOII ST]



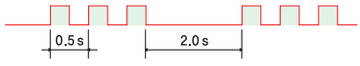
1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Light on when Position Deviation located within preset value*1 from target position, after Position Command Pulse Input is completed
EN	Orange	Motor Enable Status	Enable: Lights On, Disable: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

*1 : Default = 0
Can be selected by parameter setting GUI

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state
4	Over Load Error	The motor is continuously operated more than 5 second under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF more than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state



Alarm LED flash
(Ex, Position tracking error)

2. Resolution Setting Switch(SW1.1~SW1.4)

The Number of pulse per revolution.

Position				Pulse/Revolution	Position				Pulse/Revolution
1	2	3	4		1	2	3	4	
ON	ON	ON	ON	500	OFF	ON	ON	ON	6,400
ON	ON	ON	OFF	1,000	OFF	ON	ON	OFF	8,000
ON	ON	OFF	ON	1,600	OFF	ON	OFF	ON	10,000
ON	ON	OFF	OFF	2,000	OFF	ON	OFF	OFF	20,000
ON	OFF	ON	ON	3,200	OFF	OFF	ON	ON	25,000
ON	OFF	ON	OFF	3,600	OFF	OFF	ON	OFF	36,000
ON	OFF	OFF	ON	4,000	OFF	OFF	OFF	ON	40,000
ON	OFF	OFF	OFF	5,000	OFF	OFF	OFF	OFF	50,000*1

* Please refer to the manual for detail information.
*1 : In case of products with an encoder resolution of 16,000, the corresponding pulse/rotation is 16,000.

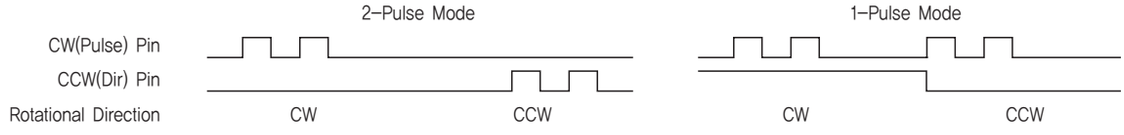
3. Rotational Direction Setting Switch(SW1.5)

Indication	Switch Name	Functions
DIR	Switching Rotational Direction	Based on CW(+Dir signal) input to driver. ON: CCW(−Direction) OFF: CW(+Direction) ※ Default: CW mode



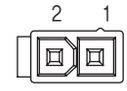
4. Pulse Input Setting Switch(SW1.6)

Indication	Switch Name	Functions
2P/1P	Selecting pulse input mode	Selectable 1−Pulse input mode or 2−Pulse input mode as Pulse input signal. ON: 1−Pulse mode OFF: 2−Pulse mode ※ Default: 2−Pulse mode



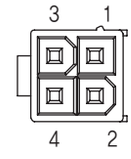
5. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



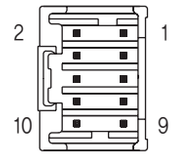
6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



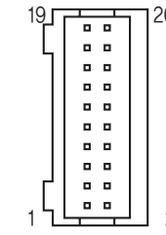
7. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



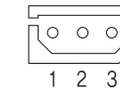
8. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	A−	Output
2	A+	Output
3	B−	Output
4	B+	Output
5	Z−	Output
6	Z+	Output
7	BRAKE−	Output
8	BRAKE+	Output
9	EXT_GND	Input
10	EXT_24VDC	Input
11	Alarm Reset	Input
12	Enable	Input
13	Alarm	Output
14	In−Position	Output
15	O.C Input	Input
16	S−GND	Output
17	CW−(Pulse−)	Input
18	CW+(Pulse+)	Input
19	CCW−(Dir−)	Input
20	CCW+(Dir+)	Input

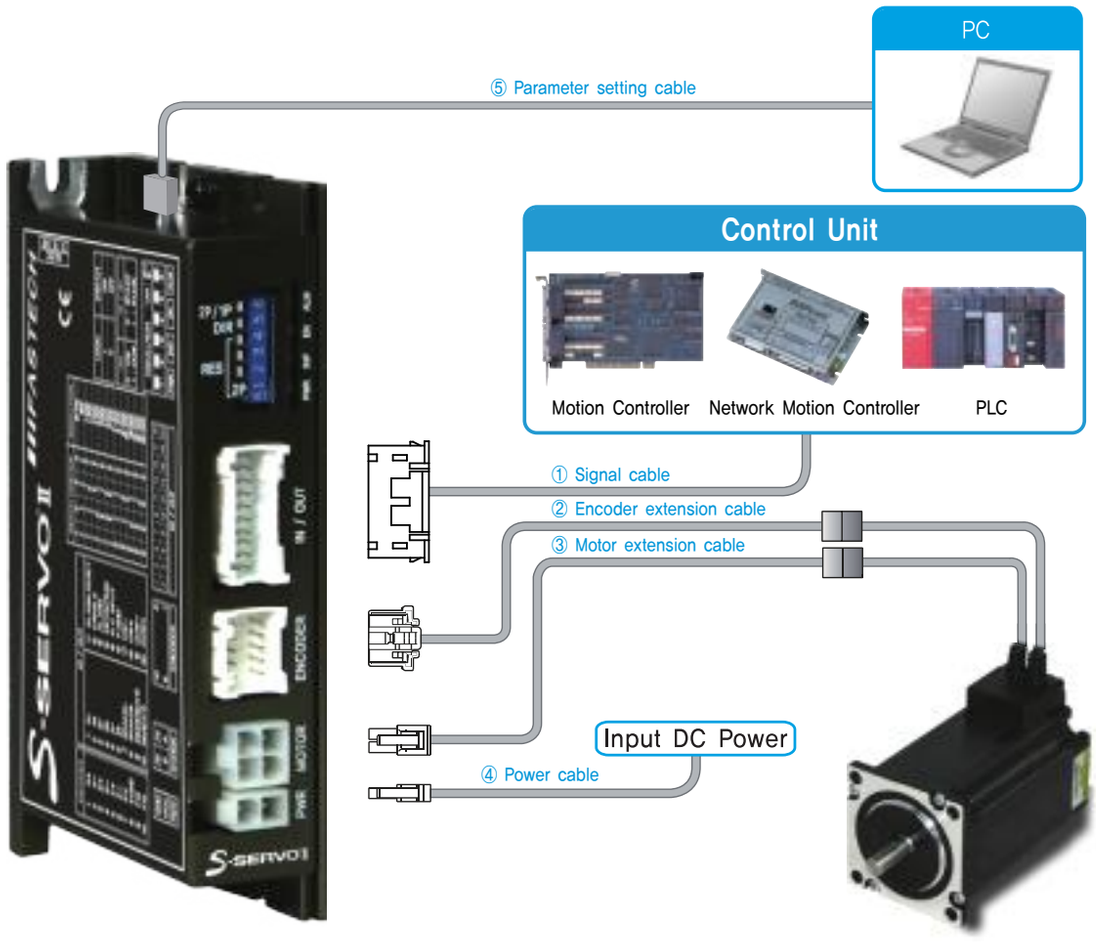


9. Parameter Setting Communication Connector(CN5)

NO.	Function	I/O
1	Tx	Output
2	Rx	Input
3	GND	-----



● System Configuration [S-SERVOII ST]



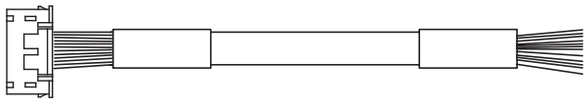
Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Parameter Setting Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	3m

1. Options

① Signal Cable

Item	Length [m]	Remark
CSS2-S-□□□F	□□□	Normal Cable
CSS2-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

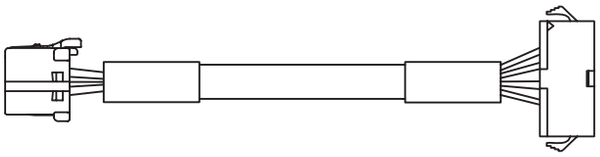


Manufacturer : JST
Housing : PADP-20V-1-S
Terminal : SPH-002T-P0.5L

② Encoder Extension Cable

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.



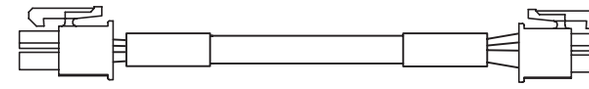
Manufacturer : MOLEX
Housing : 51353-1000
Terminal : 56134-9000

JST : Manufacturer
SMP-09V-NC : Housing
SHF-001T-0.8BS : Terminal

③ Motor Extension Cable

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.



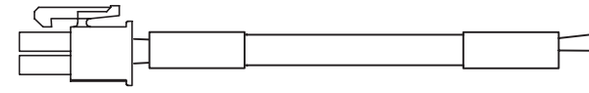
Manufacturer : MOLEX
Housing : 5557-04R
Terminal : 5556T

MOLEX : Manufacturer
5557-04R : Housing
5556T : Terminal

④ Power Cable

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

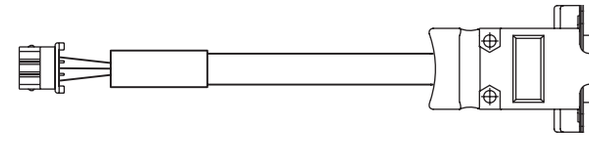


Manufacturer : MOLEX
Housing : 5557-02R
Terminal : 5556T

⑤ Parameter Setting Cable

Item	Length [m]	Remark
CBTS-C-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 3m length.



Manufacturer : MOLEX
Housing : 5264-03
Terminal : 5263

AMPHENOL : Manufacturer
L177SDE09S : Connector
17E-1657-09 : Backshell

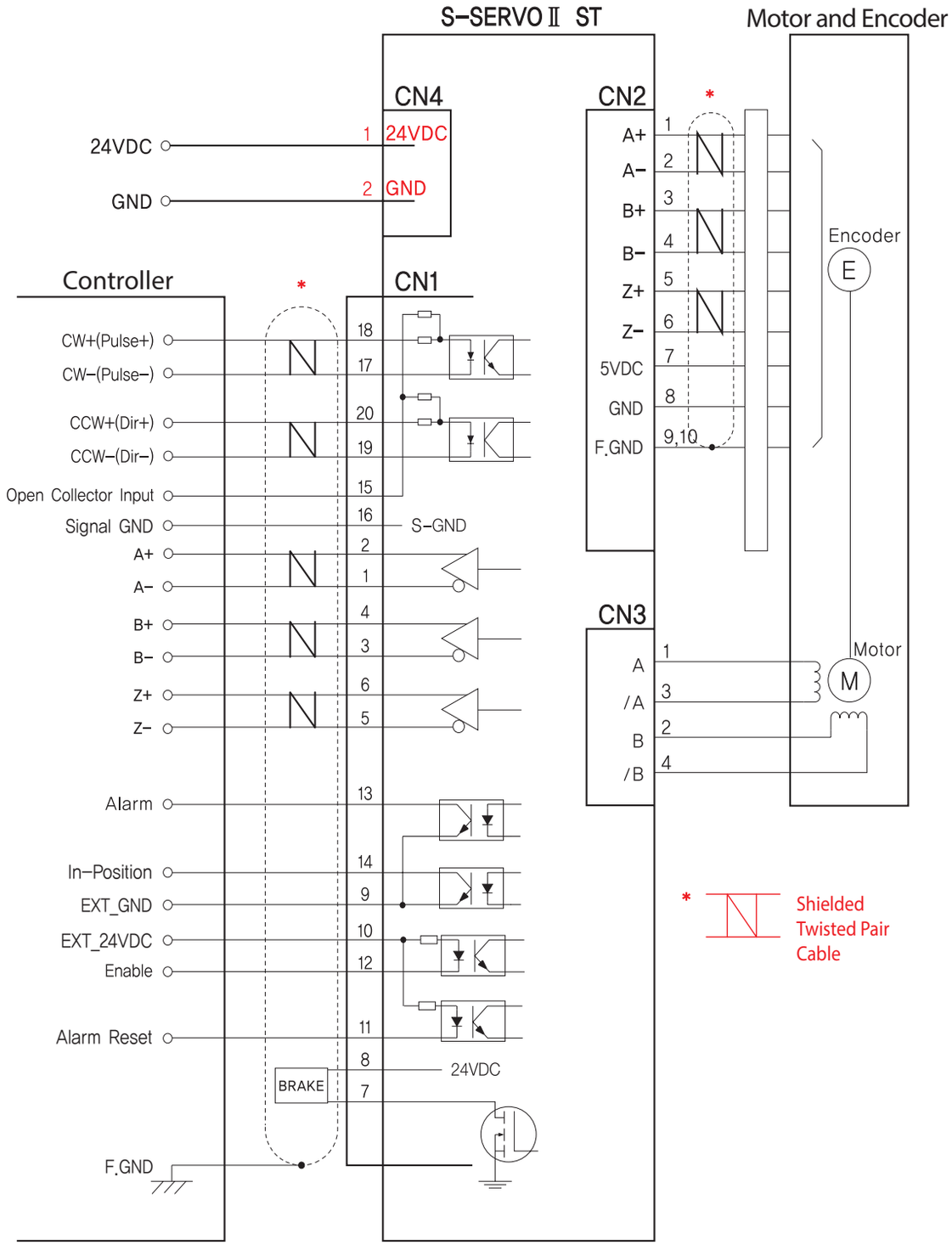
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
I/O (CN1)		Housing Terminal	PADP-20V-1-S SPH-002T-P0.5L	JST
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [S-SERVOII ST]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

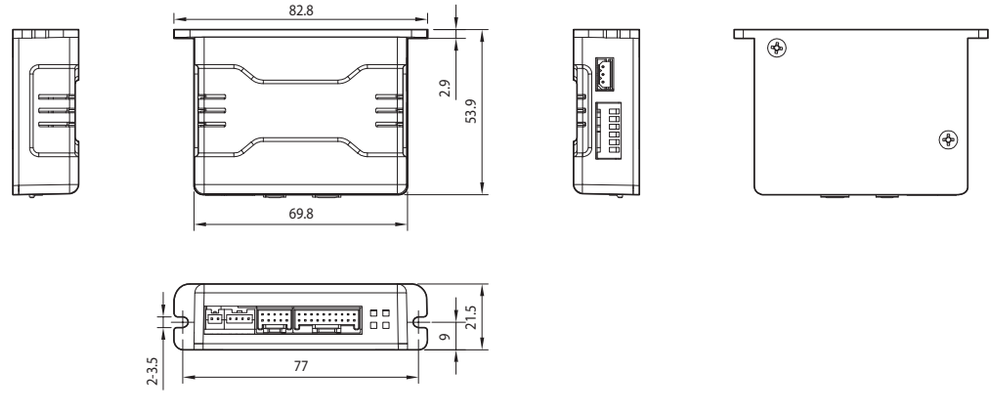
Careful connection will be required to protect the drive from any damages.

Specifications of Drive [S-SERVOII MINI]

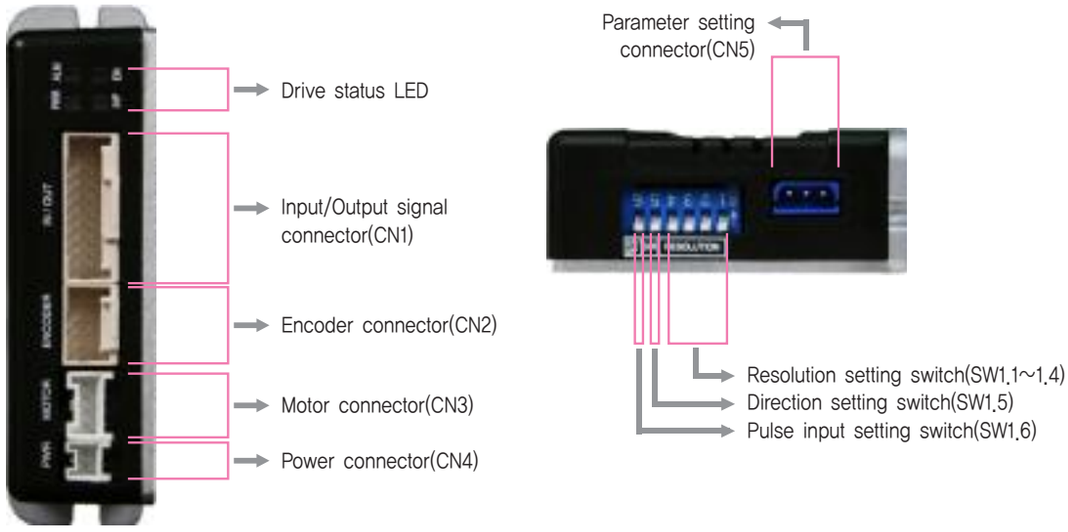
Motor Model		SM-20 series	SM-28 series	SM-35 series	SM-42 series
Driver Model		SV2-PD-MI-20 series	SV2-PD-MI-28 series	SV2-PD-MI-35 series	SV2-PD-MI-42 series
Input Voltage		24VDC ±10%			
Control Method		Closed loop control with 32bit MCU			
Current Consumption		Max 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function *2	Rotation Speed	0~3,000 [rpm] *1			
	Resolution [ppr] *4	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by DIP Switch) *6			
	Maximum Frequency	500kHz (Duty 50%)			
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error			
	LED Display	Power status, In-Position status, Enable status, Alarm status			
	RUN Current *5	50%~150% (Selectable by parameter) RUN current is current value which flows onto the motor during operation (rotation) of the motor and it is set based on rated current of the motor. * Default: 100%			
	STOP Current	20%~100% (Selectable by parameter) When motor stop operation, 0.1 second after motor current will be set to STOP current value. STOP current value is a percentage of the rated current of motor. * Default: 50%			
	Pulse Input Method	1 Pulse / 2 Pulse (Selectable by DIP Switch) * Default: 2 Pulse			
	Rotational Direction	CW/CCW (Selectable by DIP Switch) * Default: CW			
	Speed/Position Control Command	Pulse Train Input			
I/O Signal *3	Input Signals	Position Command Pulse, Enable, Alarm Reset (Photocoupler Input)			
	Output Signals	In-Position, Alarm (Photocoupler Output), Brake			

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.
*2 : Please refer to 「Settings and Operating」 to obtain detailed function information.
*3 : Please refer to 「Control Input/Output Explanation」 to obtain detailed Input/Output signal information.
*4 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.
*5 : For more detail information of RUN Current, please refer to the [Parameter Setting GUI] .
*6 : Please refer to the manual for detail information.

Dimensions of Drive [mm] [S-SERVOII MINI]



● Settings and Operation [S-SERVOII MINI]



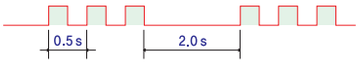
1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Light on when Position Deviation located within preset value*1 from target position, after Position Command Pulse Input is completed
EN	Orange	Motor Enable Status	Enable: Lights On, Disable: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

*1 : Default = 0
Can be selected by parameter setting GUI

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state
4	Over Load Error	The motor is continuously operated more than 5 second under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF more than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state



Alarm LED flash
(Ex, Position tracking error)

2. Resolution Setting Switch(SW1.1~SW1.4)

The Number of pulse per revolution.

Position				Pulse/Revolution	Position				Pulse/Revolution
1	2	3	4		1	2	3	4	
ON	ON	ON	ON	500	OFF	ON	ON	ON	6,400
ON	ON	ON	OFF	1,000	OFF	ON	ON	OFF	8,000
ON	ON	OFF	ON	1,600	OFF	ON	OFF	ON	10,000
ON	ON	OFF	OFF	2,000	OFF	ON	OFF	OFF	20,000
ON	OFF	ON	ON	3,200	OFF	OFF	ON	ON	25,000
ON	OFF	ON	OFF	3,600	OFF	OFF	ON	OFF	36,000
ON	OFF	OFF	ON	4,000	OFF	OFF	OFF	ON	40,000
ON	OFF	OFF	OFF	5,000	OFF	OFF	OFF	OFF	50,000*1

* Please refer to the manual for detail information.
*1 : In case of products with an encoder resolution of 16,000, the corresponding pulse/rotation is 16,000.

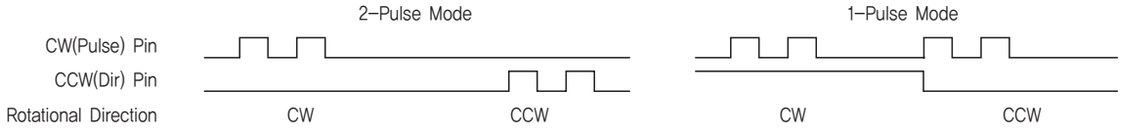
3. Rotational Direction Setting Switch(SW1.5)

Indication	Switch Name	Functions
DIR	Switching Rotational Direction	Based on CW(+Dir signal) input to driver. ON: CCW(−Direction) OFF: CW(+Direction) ※ Default: CW mode



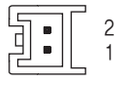
4. Pulse Input Setting Switch(SW1.6)

Indication	Switch Name	Functions
1P/2P	Selecting pulse input mode	Selectable 1−Pulse input mode or 2−Pulse input mode as Pulse input signal. ON: 1−Pulse mode OFF: 2−Pulse mode ※ Default: 2−Pulse mode



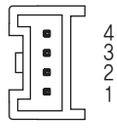
5. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



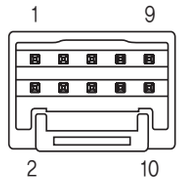
6. Motor Connector(CN3)

NO.	Function	I/O
1	B Phase	Output
2	/B Phase	Output
3	/A Phase	Output
4	A Phase	Output



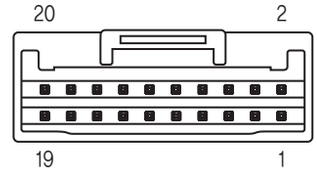
7. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



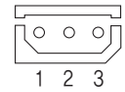
8. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	CW+(Pulse+)	Input
2	CW−(Pulse−)	Input
3	CCW+(Dir+)	Input
4	CCW−(Dir−)	Input
5	A+	Output
6	A−	Output
7	B+	Output
8	B−	Output
9	Z+	Output
10	Z−	Output
11	Alarm	Output
12	In−Position	Output
13	Enable	Input
14	Alarm Reset	Input
15	O.C Input	Input
16	BRAKE+	Output
17	BRAKE−	Output
18	S−GND	Output
19	EXT_GND	Input
20	EXT_24VDC	Input

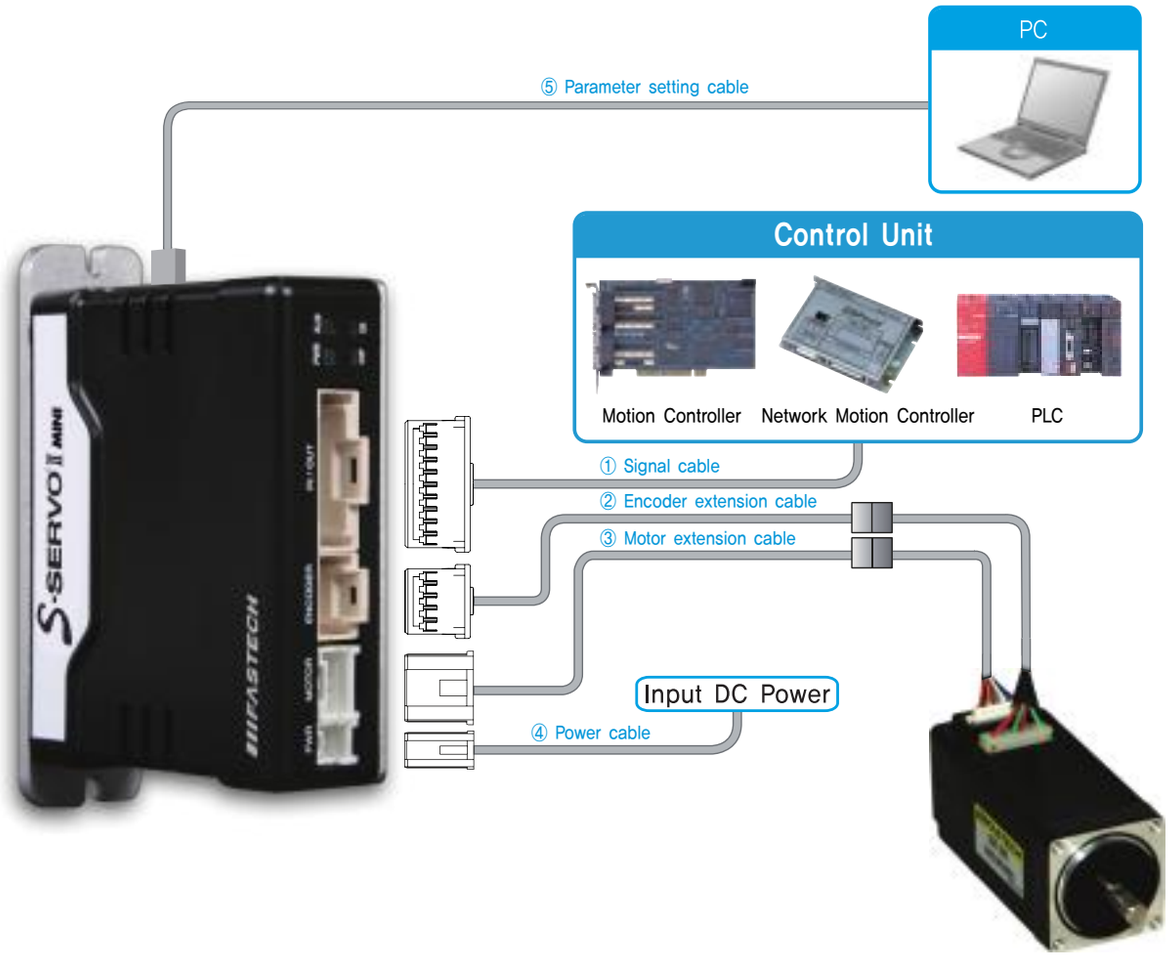


9. Parameter Setting Communication Connector(CN5)

NO.	Function	I/O
1	Tx	Output
2	Rx	Input
3	GND	----



● System Configuration [S-SERVOII MINI]



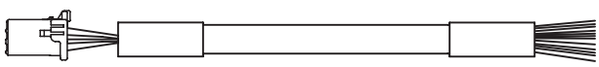
Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Parameter Setting Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	3m

1. Options

① Signal Cable

Item	Length [m]	Remark
CSM3-S-□□□F	□□□	Normal Cable
CSM3-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

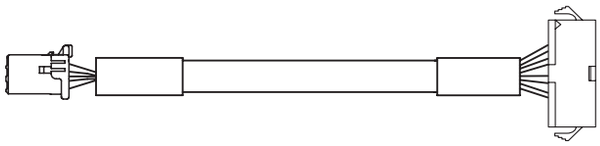


Manufacturer : MOLEX
Housing : 501646-2000
Terminal : 501648-1000

② Encoder Extension Cable

Item	Length [m]	Remark
CSVI-E-□□□F	□□□	Normal Cable
CSVI-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.



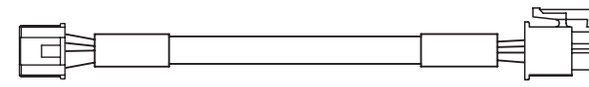
Manufacturer : MOLEX
Housing : 501646-1000
Terminal : 501648-1000

JST : Manufacturer
SMP-09V-NC : Housing
SHF-001T-0.8BS : Terminal

③ Motor Extension Cable

Item	Length [m]	Remark
CMNB-M-□□□F	□□□	Normal Cable
CMNB-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.



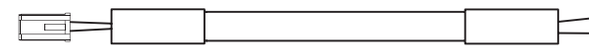
Manufacturer : JST
Housing : PAP-04V-S
Terminal : SPHD-001T-P0.5

MOLEX : Manufacturer
5557-04R : Housing
5556T : Terminal

④ Power Cable

Item	Length [m]	Remark
CMNB-P-□□□F	□□□	Normal Cable
CMNB-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

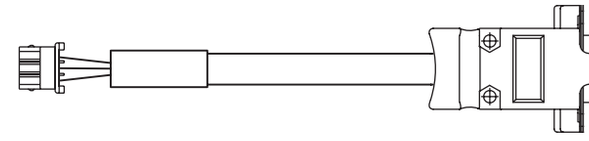


Manufacturer : JST
Housing : PAP-02V-S
Terminal : SPHD-001T-P0.5

⑤ Parameter Setting Cable

Item	Length [m]	Remark
CBTS-C-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 3m length.



Manufacturer : MOLEX
Housing : 5264-03
Terminal : 5263

AMPHENOL : Manufacturer
L177SDE09S : Connector
17E-1657-09 : Backshell

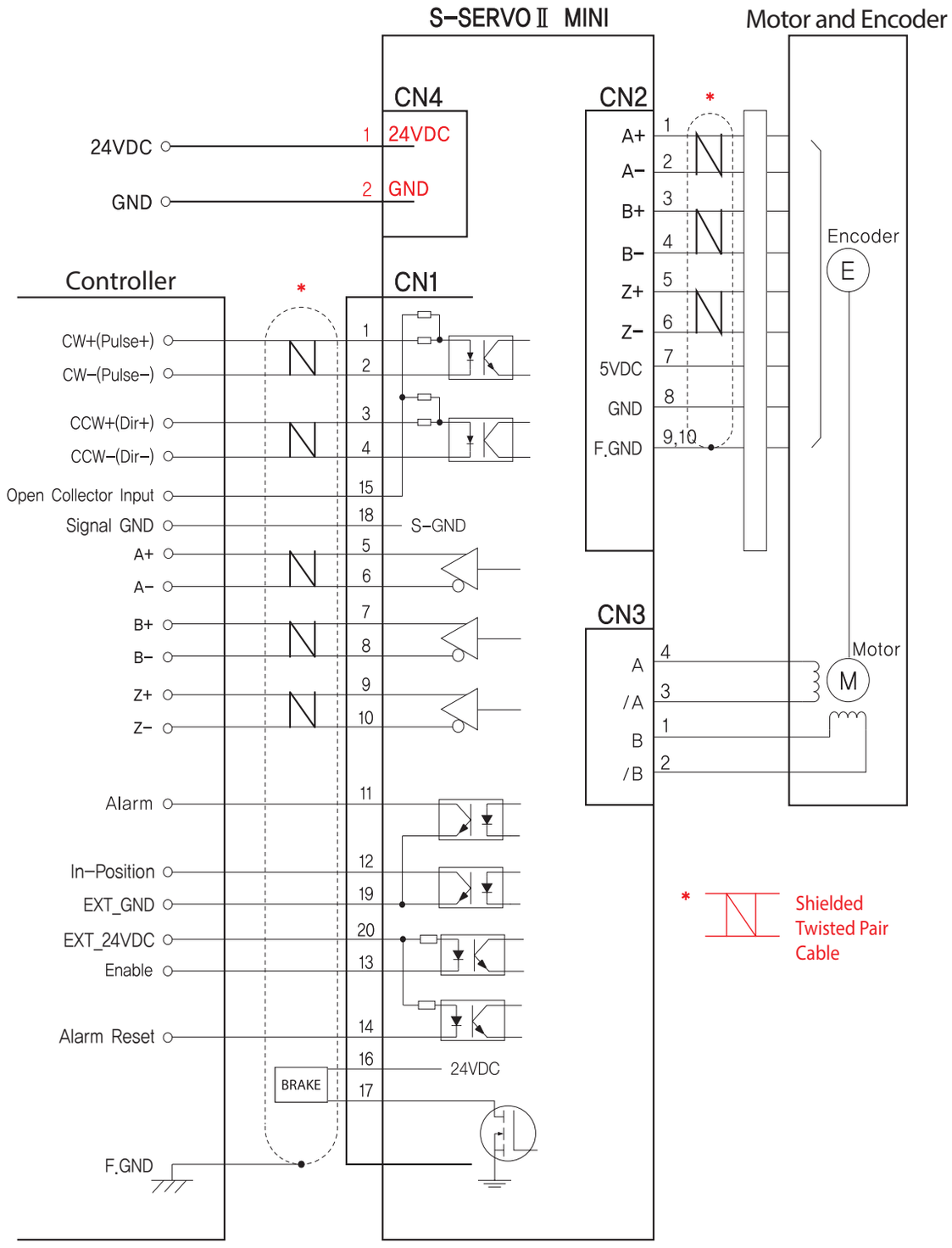
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
I/O (CN1)		Housing Terminal	501646-2000 501648-1000	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	501646-1000 501648-1000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Motor	Drive Side (CN3)	Housing Terminal	PAP-04V-S SPHD-001T-P0.5	JST
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Power (CN4)		Housing Terminal	PAP-02V-S SPHD-004T-P0.5	JST

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [S-SERVOII MINI]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

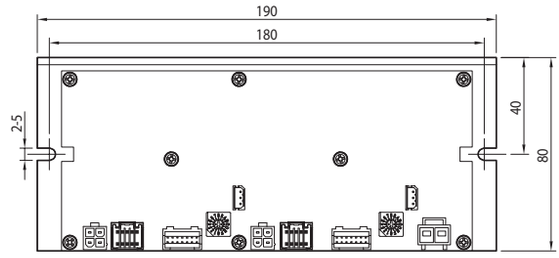
Careful connection will be required to protect the drive from any damages.

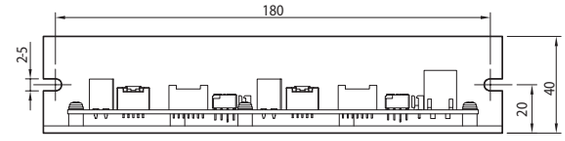
Specifications of Drive [S-SERVOII 2X]

Driver Model		S-SERVO II-2X
Input Voltage		24VDC ±10%
Control Method		Closed loop control with 32bit MCU
Current Consumption		Max 1A (Except motor current)
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function *2	Rotation Speed	0~3,000 [rpm] *1
	Resolution [ppr] *4	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by DIP Switch) *6
	Maximum Frequency	500kHz (Duty 50%)
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error
	LED Display	Power status, In-Position status, Enable status, Alarm status
	RUN Current *5	50%~150% (Selectable by parameter) RUN current is current value which flows onto the motor during operation (rotation) of the motor and it is set based on rated current of the motor. * Default: 100%
	STOP Current	20%~100% (Selectable by parameter) When motor stop operation, 0.1 second after motor current will be set to STOP current value. STOP current value is a percentage of the rated current of motor. * Default: 50%
	Pulse Input Method	1 Pulse / 2 Pulse (Selectable by DIP Switch) * Default: 2 Pulse
	Rotational Direction	CW/CCW (Selectable by DIP Switch) * Default: CW
	Speed/Position Control Command	Pulse Train Input
I/O Signal *3	Input Signals	Position Command Pulse, Enable, Alarm Reset (Photocoupler Input)
	Output Signals	In-Position, Alarm (Photocoupler Output), Brake

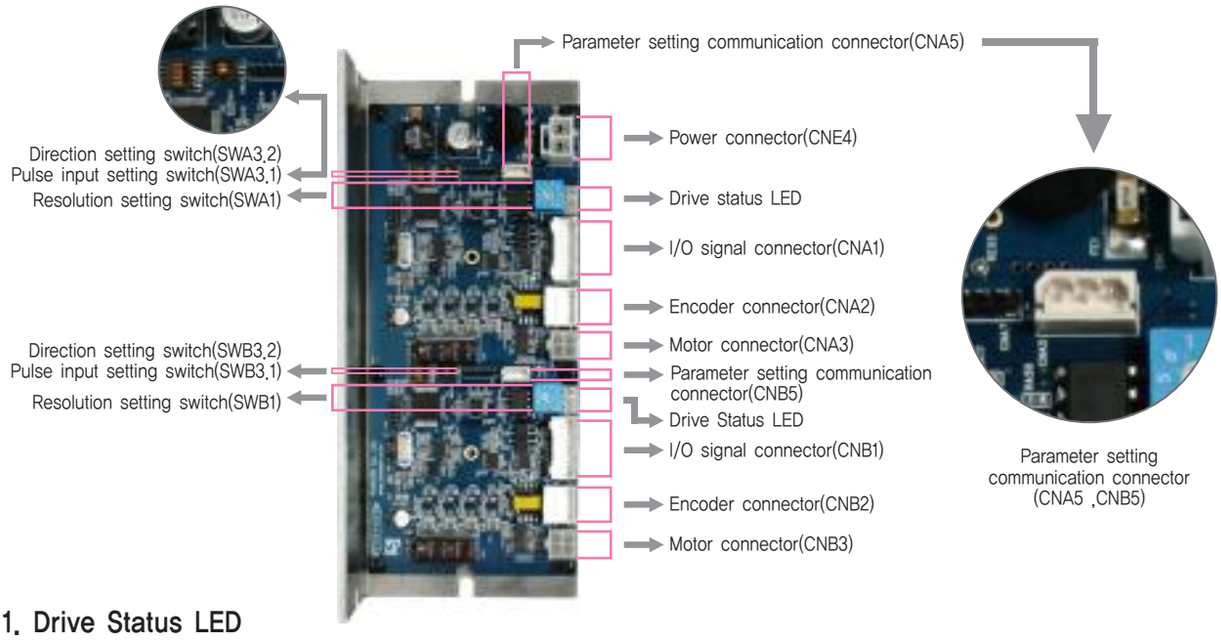
*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.
*2 : Please refer to 「Settings and Operating」 to obtain detailed function information.
*3 : Please refer to 「Control Input/Output Explanation」 to obtain detailed Input/Output signal information.
*4 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.
*5 : For more detail information of RUN Current, please refer to the [Parameter Setting GUI].
*6 : Please refer to the manual for detail information.

Dimensions of Drive [mm] [S-SERVOII 2X]





● Settings and Operation [S-SERVOII 2X]



Parameter setting communication connector (CNA5 ,CNB5)

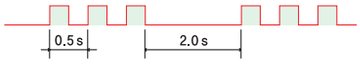
1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Light on when Position Deviation located within preset value*1 from target position, after Position Command Pulse Input is completed
EN	Orange	Motor Enable Status	Enable: Lights On, Disable: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

*1 : Default = 0
Can be selected by parameter setting GUI

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state
4	Over Load Error	The motor is continuously operated more than 5 second under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF more than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state



Alarm LED flash
(Ex, Position tracking error)

2. Resolution Setting Switch(SWA1, SWB1)

The Number of pulse per revolution.

Position	Pulse/Revolution	Position	Pulse/Revolution
0	500	8	6,400
1	1,000	9	8,000
2	1,600	A	10,000
3	2,000	B	20,000
4	3,200	C	25,000
5	3,600	D	36,000
6	4,000	E	40,000
7	5,000	F	50,000*1



* Please refer to the manual for detail information.
*1 : In case of products with an encoder resolution of 16,000, the corresponding pulse/rotation is 16,000.

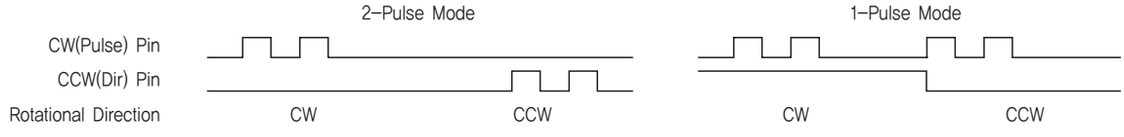
3. Rotational Direction Setting Switch(SWA3.2, SWB3.2)

Indication	Switch Name	Functions
DIR	Switching Rotational Direction	Based on CW(+Dir signal) input to driver. ON: CCW(−Direction) OFF: CW(+Direction) ※ Default: CW mode



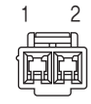
4. Pulse Input Setting Switch(SWA3.1, SWB3.1)

Indication	Switch Name	Functions
1P/2P	Selecting pulse input mode	Selectable 1−Pulse input mode or 2−Pulse input mode as Pulse input signal. ON: 1−Pulse mode OFF: 2−Pulse mode ※ Default: 2−Pulse mode



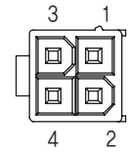
5. Power Connector(CNE4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



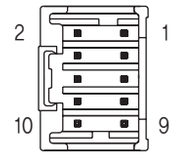
6. Motor Connector(CNA3, CNB3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



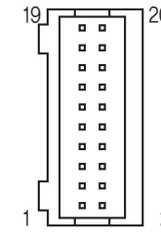
7. Encoder Connector(CNA2, CNB2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



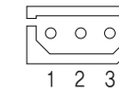
8. Input/Output Signal Connector(CNA1, CNB1)

NO.	Function	I/O
1	A−	Output
2	A+	Output
3	B−	Output
4	B+	Output
5	Z−	Output
6	Z+	Output
7	BRAKE−	Output
8	BRAKE+	Output
9	EXT_GND	Input
10	EXT_24VDC	Input
11	Alarm Reset	Input
12	Enable	Input
13	Alarm	Output
14	In−Position	Output
15	O.C Input	Input
16	S−GND	Output
17	CW−(Pulse−)	Input
18	CW+(Pulse+)	Input
19	CCW−(Dir−)	Input
20	CCW+(Dir+)	Input

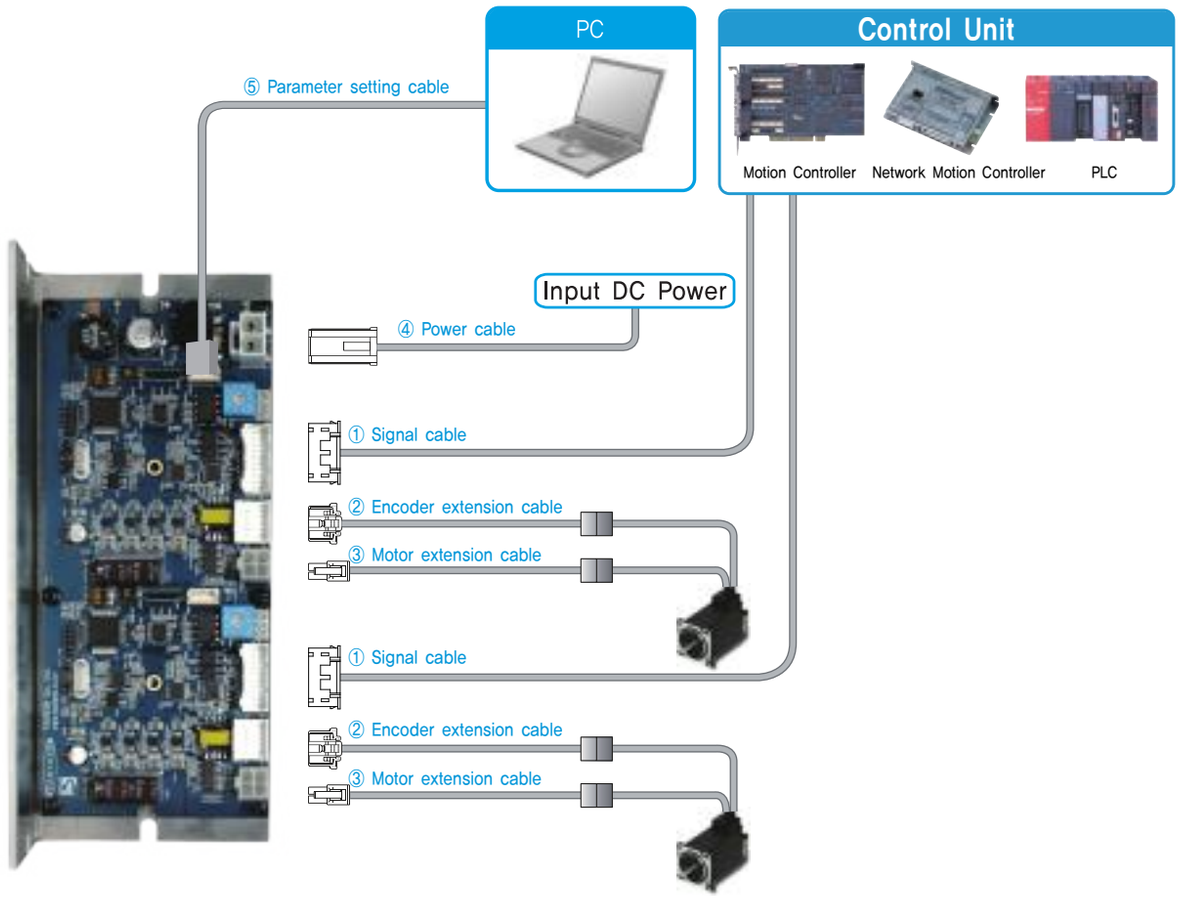


9. Parameter Setting Communication Connector(CNA5, CNB5)

NO.	Function	I/O
1	Tx	Output
2	Rx	Input
3	GND	-----



● System Configuration [S-SERVOII 2X]



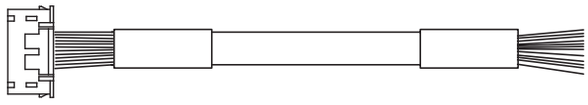
Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Parameter Setting Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	3m

1. Options

① Signal Cable

Item	Length [m]	Remark
CSS2-S-□□□F	□□□	Normal Cable
CSS2-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

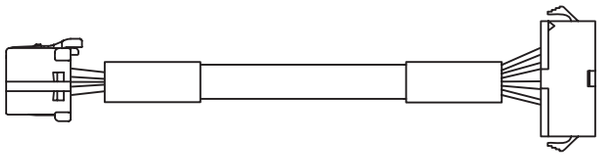


Manufacturer : JST
Housing : PADP-20V-1-S
Terminal : SPH-002T-P0.5L

② Encoder Extension Cable

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.



Manufacturer : MOLEX
Housing : 51353-1000
Terminal : 56134-9000

JST : Manufacturer
SMP-09V-NC : Housing
SHF-001T-0.8BS : Terminal

③ Motor Extension Cable

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.



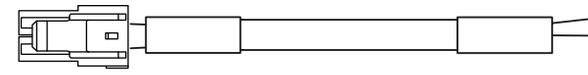
Manufacturer : MOLEX
Housing : 5557-04R
Terminal : 5556T

MOLEX : Manufacturer
5557-04R : Housing
5556T : Terminal

④ Power Cable

Item	Length [m]	Remark
CSVX-P-□□□F	□□□	Normal Cable
CSVX-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

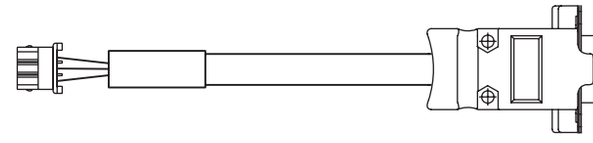


Manufacturer : JST
Housing : VLP-02V
Terminal : SVF-61T-P2.0

⑤ Parameter Setting Cable

Item	Length [m]	Remark
CBTS-C-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 3m length.



Manufacturer : MOLEX
Housing : 5264-03
Terminal : 5263

AMPHENOL : Manufacturer
L177SDE09S : Connector
17E-1657-09 : Backshell

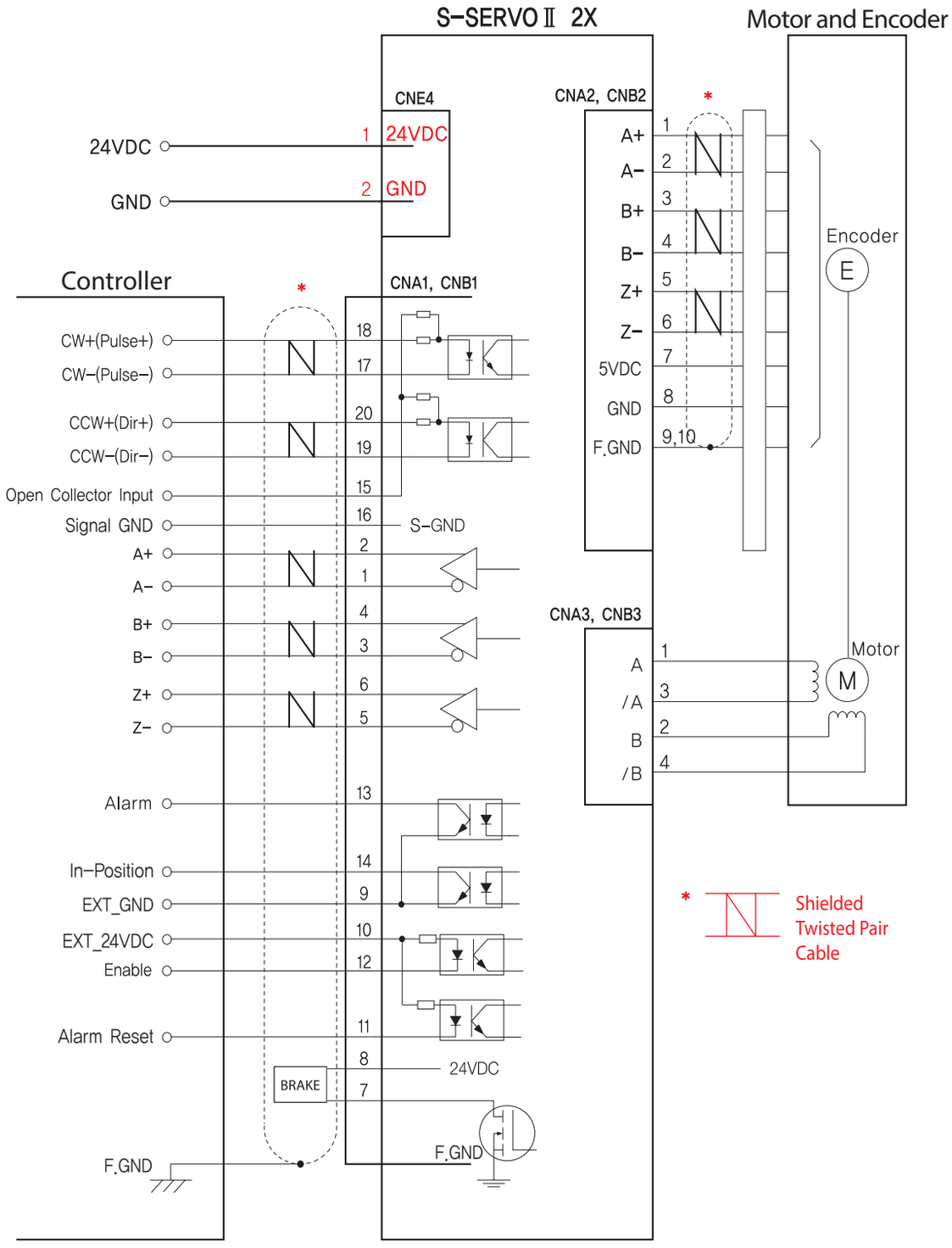
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
I/O (CNA1, CNB1)		Housing Terminal	PADP-20V-1-S SPH-002T-P0.5L	JST
Encoder	Drive Side (CNA2, CNB2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Motor	Drive Side (CNA3, CNB3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Power (CNE4)		Housing Terminal	VLP-02V SVF-61T-P2.0	JST

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [S-SERVOII 2X]



※ Except common usage of power ofr S-SERVO II 2X, 3X, external wiring diagram for each drive of motor, encoder and I/O are all same.

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

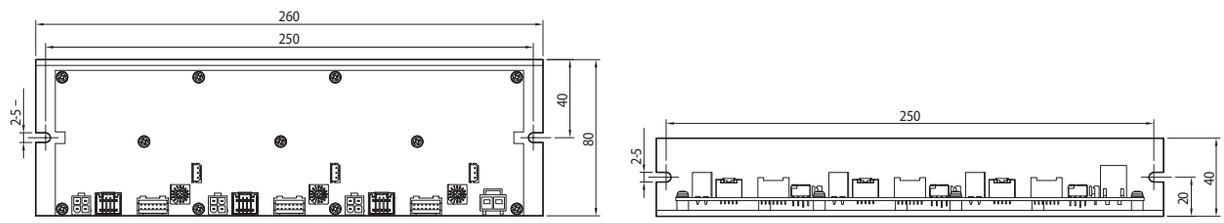
Careful connection will be required to protect the drive from any damages.

Specifications of Drive [S-SERVOII 3X]

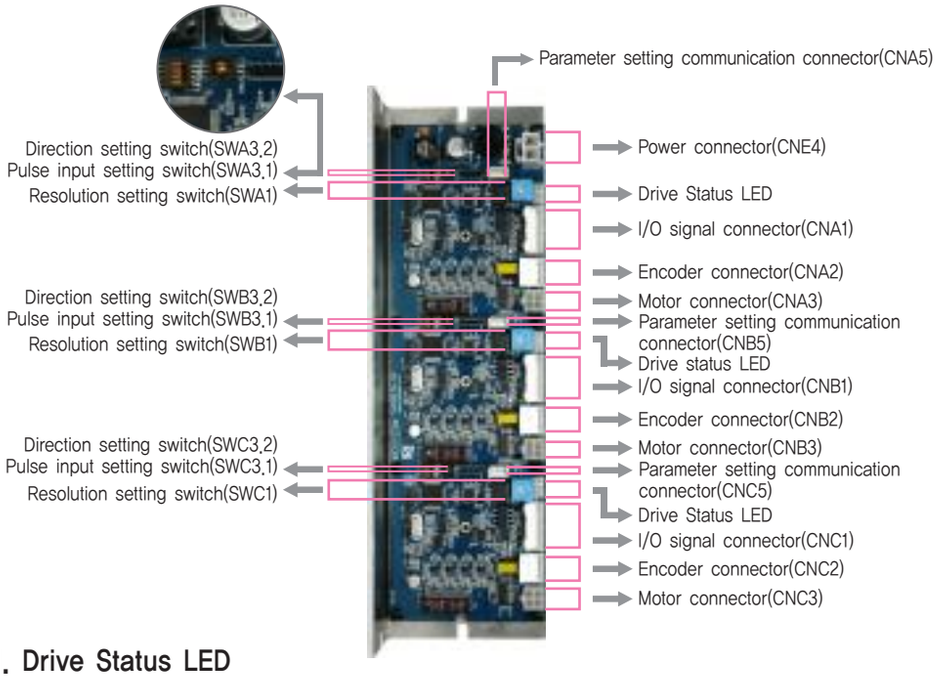
Driver Model		S-SERVO II-3X
Input Voltage		24VDC ±10%
Control Method		Closed loop control with 32bit MCU
Current Consumption		Max 1.5A (Except motor current)
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function *2	Rotation Speed	0~3,000 [rpm] *1
	Resolution [ppr] *4	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by DIP Switch) *6
	Maximum Frequency	500kHz (Duty 50%)
	Protection Functions	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error
	LED Display	Power status, In-Position status, Enable status, Alarm status
	RUN Current *5	50%~150% (Selectable by parameter) RUN current is current value which flows onto the motor during operation (rotation) of the motor and it is set based on rated current of the motor. * Default: 100%
	STOP Current	20%~100% (Selectable by parameter) When motor stop operation, 0.1 second after motor current will be set to STOP current value. STOP current value is a percentage of the rated current of motor. * Default: 50%
	Pulse Input Method	1 Pulse / 2 Pulse (Selectable by DIP Switch) * Default: 2 Pulse
	Rotational Direction	CW/CCW (Selectable by DIP Switch) * Default: CW
	Speed/Position Control Command	Pulse Train Input
I/O Signal *3	Input Signals	Position Command Pulse, Enable, Alarm Reset (Photocoupler Input)
	Output Signals	In-Position, Alarm (Photocoupler Output), Brake

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.
*2 : Please refer to 「Settings and Operating」 to obtain detailed function information.
*3 : Please refer to 「Control Input/Output Explanation」 to obtain detailed Input/Output signal information.
*4 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.
*5 : For more detail information of RUN Current, please refer to the [Parameter Setting GUI].
*6 : Please refer to the manual for detail information.

Dimensions of Drive [mm] [S-SERVOII 3X]



● Settings and Operation [S-SERVOII 3X]





Parameter setting communication connector (CNA5, CNB5, CNC5)

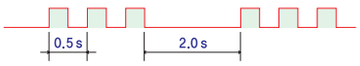
1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Light on when Position Deviation located within preset value*1 from target position, after Position Commando Pulse Input is completed
EN	Orange	Motor Enable Status	Enable: Lights On, Disable: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

*1 : Default = 0
Can be selected by parameter setting GUI

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state
4	Over Load Error	The motor is continuously operated more than 5 second under a load exceeding the max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF more than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 180° in motor stop state



Alarm LED flash
(Ex, Position tracking error)

2. Resolution Setting Switch(SWA1, SWB1, SWC1)

The Number of pulse per revolution.

Position	Pulse/Revolution	Position	Pulse/Revolution
0	500	8	6,400
1	1,000	9	8,000
2	1,600	A	10,000
3	2,000	B	20,000
4	3,200	C	25,000
5	3,600	D	36,000
6	4,000	E	40,000
7	5,000	F	50,000*1



* Please refer to the manual for detail information.
*1 : In case of products with an encoder resolution of 16,000, the corresponding pulse/rotation is 16,000.

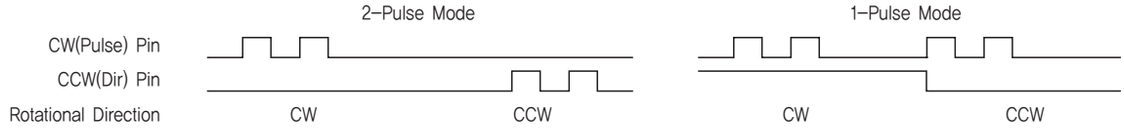
3. Rotational Direction Setting Switch(SWA3.2, SWB3.2, SWC3.2)

Indication	Switch Name	Functions
DIR	Switching Rotational Direction	Based on CW(+Dir signal) input to driver. ON: CCW(−Direction) OFF: CW(+Direction) ※ Default: CW mode



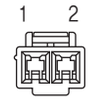
4. Pulse Input Setting Switch(SWA3.1, SWB3.1, SWC3.1)

Indication	Switch Name	Functions
1P/2P	Selecting pulse input mode	Selectable 1−Pulse input mode or 2−Pulse input mode as Pulse input signal. ON: 1−Pulse mode OFF: 2−Pulse mode ※ Default: 2−Pulse mode



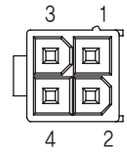
5. Power Connector(CNE4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



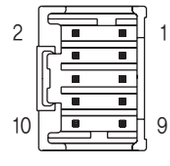
6. Motor Connector(CNA3, CNB3, CNC3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



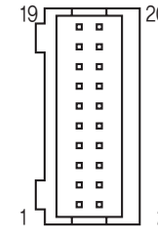
7. Encoder Connector(CNA2, CNB2, CNC2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



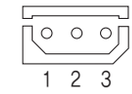
8. Input/Output Signal Connector(CNA1, CNB1, CNC1)

NO.	Function	I/O
1	A−	Output
2	A+	Output
3	B−	Output
4	B+	Output
5	Z−	Output
6	Z+	Output
7	BRAKE−	Output
8	BRAKE+	Output
9	EXT_GND	Input
10	EXT_24VDC	Input
11	Alarm Reset	Input
12	Enable	Input
13	Alarm	Output
14	In−Position	Output
15	O.C Input	Input
16	S−GND	Output
17	CW−(Pulse−)	Input
18	CW+(Pulse+)	Input
19	CCW−(Dir−)	Input
20	CCW+(Dir+)	Input

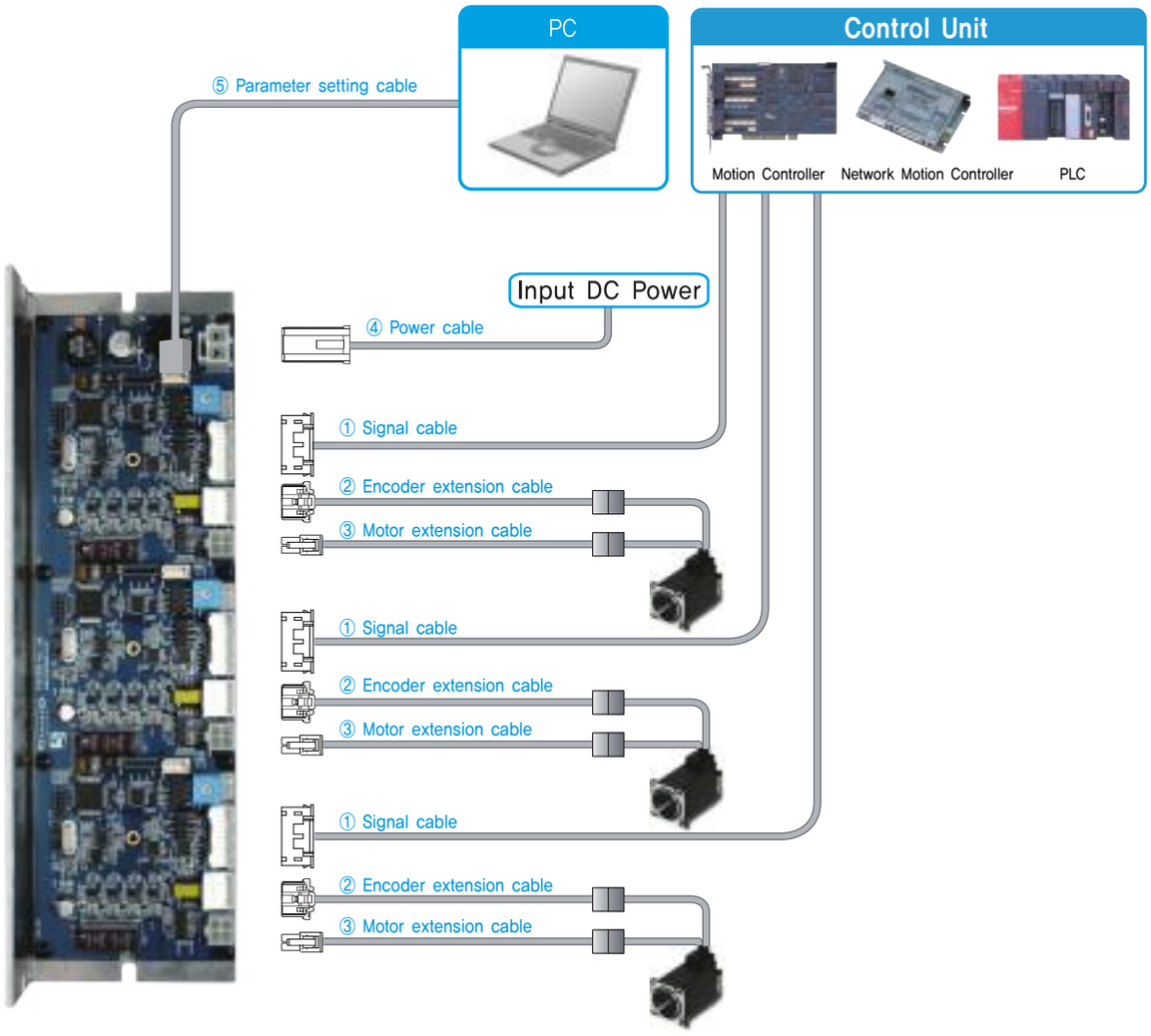


9. Parameter Setting Communication Connector(CNA5, CNB5, CNC5)

NO.	Function	I/O
1	Tx	Output
2	Rx	Input
3	GND	-----



System Configuration [S-SERVOII 3X]



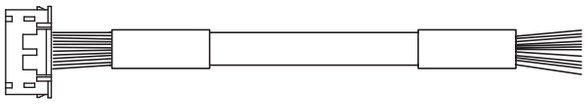
Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Parameter Setting Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	3m

1. Options

① Signal Cable

Item	Length [m]	Remark
CSS2-S-□□□F	□□□	Normal Cable
CSS2-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

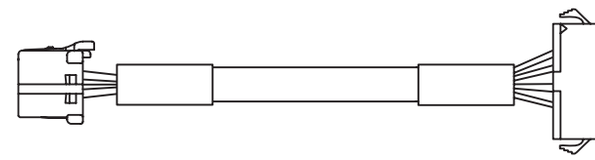


Manufacturer : JST
Housing : PADP-20V-1-S
Terminal : SPH-002T-P0.5L

② Encoder Extension Cable

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.



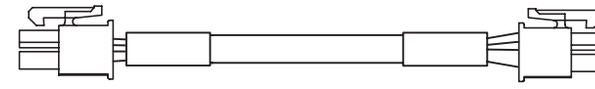
Manufacturer : MOLEX
Housing : 51353-1000
Terminal : 56134-9000

JST : Manufacturer
SMP-09V-NC : Housing
SHF-001T-0.8BS : Terminal

③ Motor Extension Cable

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.



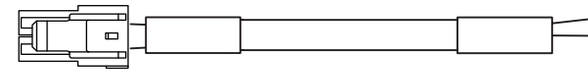
Manufacturer : MOLEX
Housing : 5557-04R
Terminal : 5556T

MOLEX : Manufacturer
5557-04R : Housing
5556T : Terminal

④ Power Cable

Item	Length [m]	Remark
CSVX-P-□□□F	□□□	Normal Cable
CSVX-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

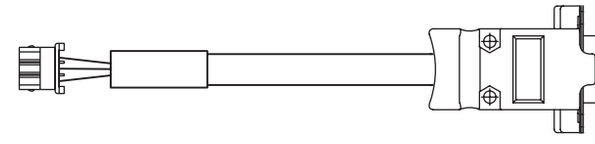


Manufacturer : JST
Housing : VLP-02V
Terminal : SVF-61T-P2.0

⑤ Parameter Setting Cable

Item	Length [m]	Remark
CBTS-C-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 3m length.



Manufacturer : MOLEX
Housing : 5264-03
Terminal : 5263

AMPHENOL : Manufacturer
L177SDE09S : Connector
17E-1657-09 : Backshell

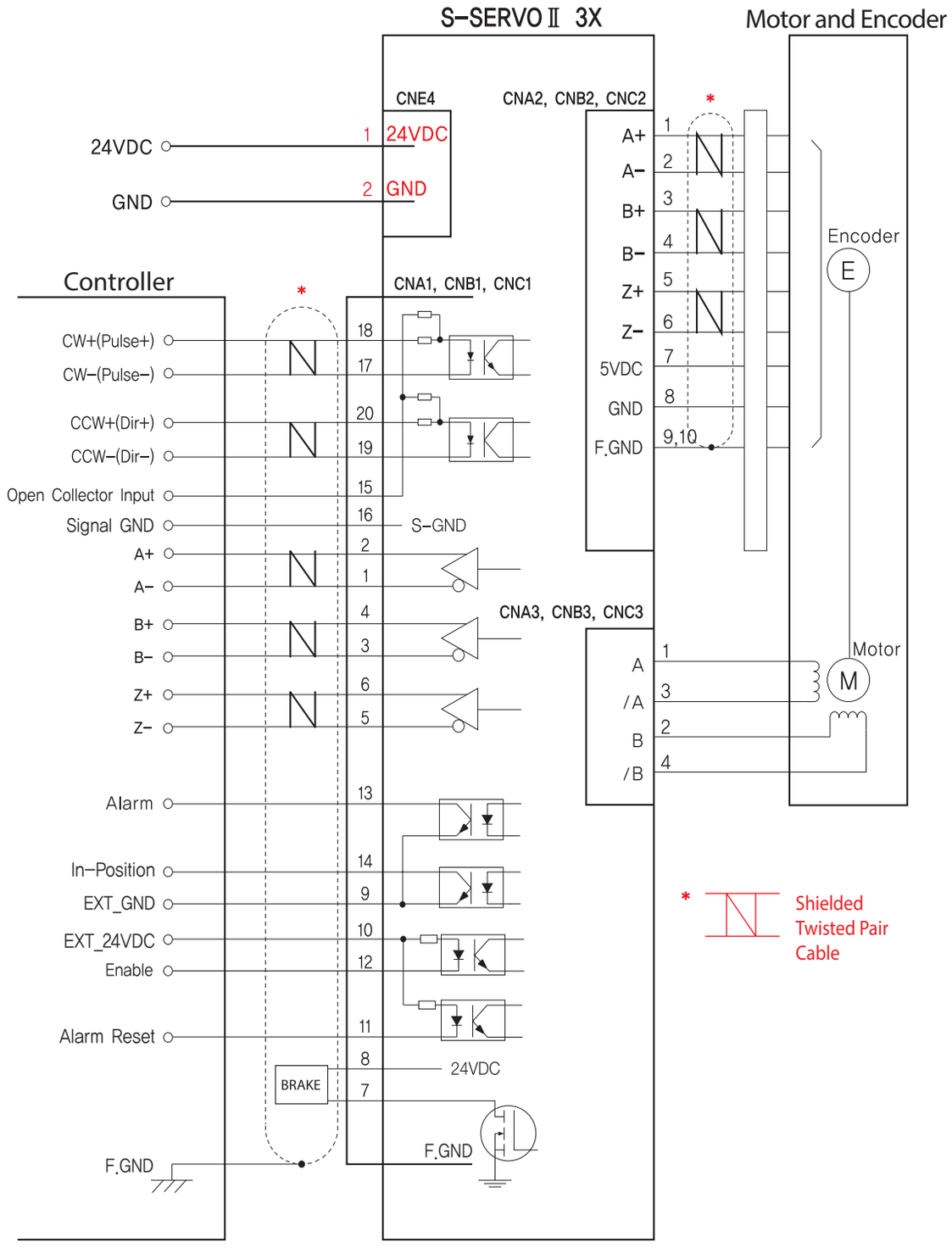
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
I/O (CNA1, CNB1, CNC1)		Housing Terminal	PADP-20V-1-S SPH-002T-P0.5L	JST
Encoder	Drive Side (CNA2, CNB2, CNC2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Motor	Drive Side (CNA3, CNB3, CNC3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Power (CNE4)		Housing Terminal	VLP-02V SVF-61T-P2.0	JST

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [S-SERVOII 3X]



※ Except common usage of power ofr S-SERVO II 2X, 3X, external wiring diagram for each drive of motor, encoder and I/O are all same.

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

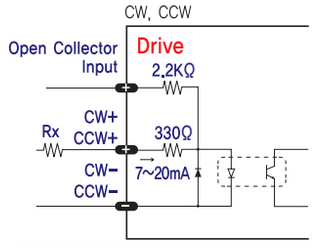
Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

Control Signal Input/Output Description

1 Input Signal

Input signals of the drive are all photocoupler protected. The signal shows the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.

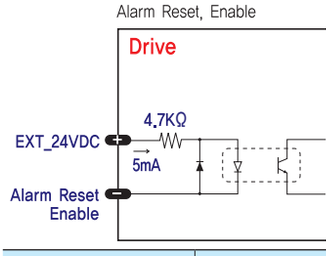


Functions	Pin Number	
	S-SERVO II ST	S-SERVO II MINI
Open Collector Input	15	15
CW+	18	1
CW−	17	2
CCW+	20	3
CCW−	19	4

※ S-SERVO II 2X and 3X's pin number is the same as S-SERVO II ST.

◆ CW, CCW Input

This signal can be used to receive a positioning pulse command from a user host motion controller. The user can select 1-pulse input mode or 2-pulse input mode.
The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor Rx is not used and connect to the driver directly. When the level of input signal is more than 5V, Rx resistor is required. If the resistor is absent, the drive will be damaged. If the input signal level is 12V, Rx value is 680ohm and 24V, Please use Open Collector Input.



Functions	Pin Number	
	S-SERVO II ST	S-SERVO II MINI
EXT_24VDC	10	20
Alarm Reset	11	14
Enable	12	13

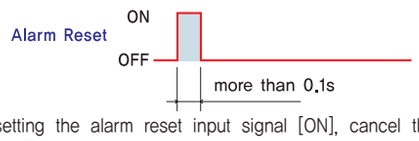
※ S-SERVO II 2X and 3X's pin number is the same as S-SERVO II ST.

◆ Enable Input

This input can be used only to adjust the position by manually moving the motor shaft from the load-side. By setting the signal [ON], the driver cuts off the power supply to the motor. Then, one can manually adjust output position. When setting the signal back to [OFF], the driver resumes the power to the motor and recovers the holding torque. When driving a motor, one needs to set the signal [OFF].

◆ Alarm Reset Input

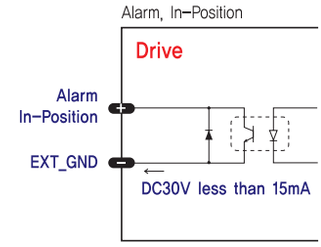
When a protection mode has been activated, a signal to this alarm reset input cancels the Alarm output.



※ By setting the alarm reset input signal [ON], cancel the Alarm output. Before cancel the Alarm output, have to remove the source of alarm.

2 Output Signal

Output signals from the driver are photocoupler protected: Alarm, In-Position. The signal indicates the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.



Functions	Pin Number	
	S-SERVO II ST	S-SERVO II MINI
Alarm	13	11
In-Position	14	12
EXT_GND	9	19

※ S-SERVO II 2X and 3X's pin number is the same as S-SERVO II ST.

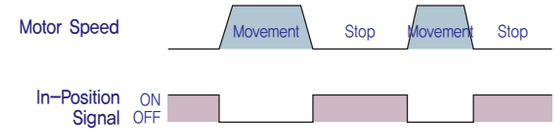
◆ Alarm Output

The Alarm output indicates [ON] when the driver is in abnormal operation. If a protection mode has been activated, it goes [OFF]. A host controller needs to detect this signal and stop sending a motor driving command. When the driver detects an abnormal operation such as overload or over current of the motor, it sets the Alarm output to [OFF], flashes the Alarm LED, disconnect the power to a motor and stops the motor simultaneously.

[Caution] Only at the Alarm output port, the photocoupler isolation is in reverse. When the driver is in normal operation the Alarm output is [ON].

◆ In-Position Output

In-Position signal is [ON] when positioning is completed. This signal is [ON] when the motor position error is within the value set by the switch SW4.



● Parameter Setting GUI [User Interface]

S-SERVO II driver utilizes various parameters for operation.
Some parameters need to be adjusted once users feel inconvenience to use or in order to maximize efficiency.
S-SERVO II provides parameter modification program for convenience of product usage for users.

The screen shot as below is computer program (GUI) which used for operation process. Users can change and set the parameters of drive for Enable Level, Alarm Reset Level, In-Position Level, Alarm Output Level. Users can use S-SERVO II according to its own system.

Please connect parameter setting GUI when S-SERVO II is Disable state.
For safety reason, S-SERVO II can not be connected to setting GUI when it is Enable state.



※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.

FASTECH_
Product Information

Ezi-SERVO®

S-SERVO® II

Ezi-STEP®

- ST
- MINI
- Plus-R
- Plus-R MINI
- BT
- ALL
- EtherCAT
- EtherCAT MINI
- EtherCAT 4X
- Plus-E
- Plus-E MINI
- CC-Link

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

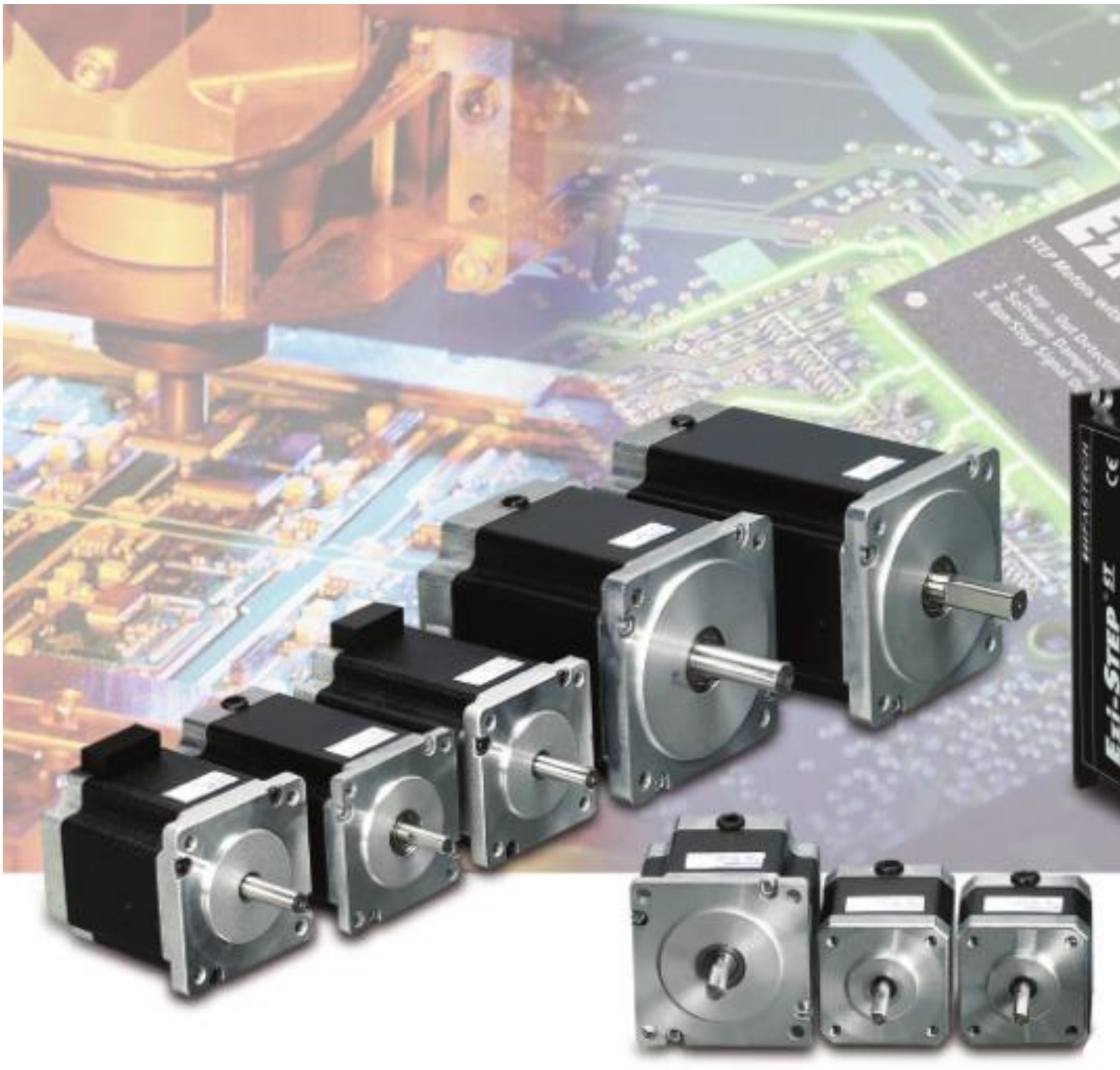
Ezi-SPEED®


Ezi-STEP
Bipolar Step Drive
STOP CURRENT
RESOLUTION
Ezi-STEP
Bipolar Step Drive
MiniPower
MPD-BXL

Ezi-STEP ST

Micro Stepping System_ Ezi-STEP ST

- Micro Stepping
- Software Damping
- Run/Stop Signal Output



FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® ST

Micro Stepping System



Ezi-STEP Characteristics

Ezi-STEP ST is a micro stepping system that incorporates a motor and MCU (Micro Controller Unit) equipped drive that is integrated seamlessly together as a system. This makes it possible to incorporate many functions compared with a conventional stepping motors and drives, such as sensorless detection of loss of synchronization, smooth control over the whole velocity range, higher torque operation and no vibration at the low speed range.

Ezi-STEP ST's on-board high-performance digital signal processor and proprietary algorithms allow the Ezi-STEP ST to operate a high speeds with unmatched precision. The unique position estimation algorithm instantaneously detects out-of-synchronization based on the rotor position of the stepping motor, which is not an easy task in a conventional stepping motor and drives.

Utilizing a software damping and filtering algorithms, high speed operation is realized by the exciting angle control of a step-angle. The resolution of Ezi-STEP ST can be selected from basic 1.8° up to 0.0072° (1/250). In addition, Ezi-STEP ST generates various signals including sensorless stall detection, alarm and running signal. Ezi-STEP ST is an economical ideal drive for vision systems, nanotech, packaging, semiconductor, pick and place, automation, laboratory testing, wood working and wherever smooth, quiet, precise, high torque operation is a requirement.

1 Microstep and Filtering

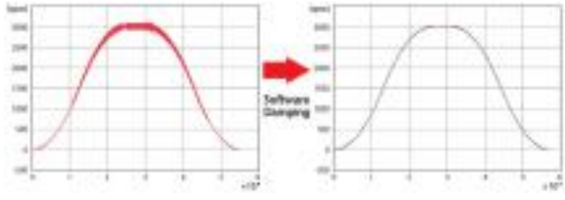
High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP adjusts PWM control signal in every 25 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

2 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

3 Drive Output Signal Monitoring

Ezi-STEP provides loss of step, run/stop, over-current, over-heat, over-voltage, power and motor connection alarms that can be monitored by the controller and visible by a motor-mounted flashing LED indicator.

4 Improvement of High-Speed Driving

Depending on the speed of a stepping motor, Ezi-STEP automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation. Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

Applicable model : Ezi-STEP-MPB-42 Series
Ezi-STEP-MPB-56 Series
Ezi-STEP-MPB-60 Series
Ezi-STEP-HPB-86 Series

Ezi-STEP ST Part Numbering

Ezi-STEP-MPB-56L-BK-□

- Product Name
- Drive Series
  - MPB : Mini Power
  - HPB : High Power
- Motor Flange Size
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- Motor Length
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- Brake
  - Blank : Without Brake
  - BK : Brake
- User Code

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-MPB-42S	BM-42S	EzStep-MPB-42S
Ezi-STEP-MPB-42M	BM-42M	EzStep-MPB-42M
Ezi-STEP-MPB-42L	BM-42L	EzStep-MPB-42L
Ezi-STEP-MPB-42XL	BM-42XL	EzStep-MPB-42XL
Ezi-STEP-MPB-56S	BM-56S	EzStep-MPB-56S
Ezi-STEP-MPB-56M	BM-56M	EzStep-MPB-56M
Ezi-STEP-MPB-56L	BM-56L	EzStep-MPB-56L
Ezi-STEP-MPB-60S	BM-60S	EzStep-MPB-60S
Ezi-STEP-MPB-60M	BM-60M	EzStep-MPB-60M
Ezi-STEP-MPB-60L	BM-60L	EzStep-MPB-60L
Ezi-STEP-HPB-86M	BM-86M	EzStep-HPB-86M
Ezi-STEP-HPB-86L	BM-86L	EzStep-HPB-86L
Ezi-STEP-HPB-86XL	BM-86XL	EzStep-HPB-86XL

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-MPB-42S-BK	BM-42S-BK	EzStep-MPB-42S
Ezi-STEP-MPB-42M-BK	BM-42M-BK	EzStep-MPB-42M
Ezi-STEP-MPB-42L-BK	BM-42L-BK	EzStep-MPB-42L
Ezi-STEP-MPB-42XL-BK	BM-42XL-BK	EzStep-MPB-42XL
Ezi-STEP-MPB-56S-BK	BM-56S-BK	EzStep-MPB-56S
Ezi-STEP-MPB-56M-BK	BM-56M-BK	EzStep-MPB-56M
Ezi-STEP-MPB-56L-BK	BM-56L-BK	EzStep-MPB-56L
Ezi-STEP-MPB-60S-BK	BM-60S-BK	EzStep-MPB-60S
Ezi-STEP-MPB-60M-BK	BM-60M-BK	EzStep-MPB-60M
Ezi-STEP-MPB-60L-BK	BM-60L-BK	EzStep-MPB-60L
Ezi-STEP-HPB-86M-BK	BM-86M-BK	EzStep-HPB-86M
Ezi-STEP-HPB-86L-BK	BM-86L-BK	EzStep-HPB-86L
Ezi-STEP-HPB-86XL-BK	BM-86XL-BK	EzStep-HPB-86XL

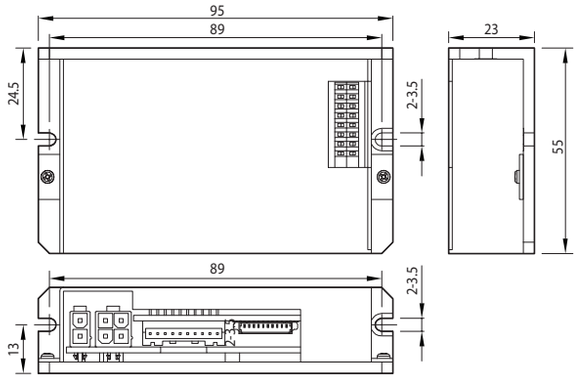
Specifications of Drive

Motor Model		BM-42 series	BM-56 series	BM-60 series	BM-86 series
Driver Model		EzStep-MPB-42 series	EzStep-MPB-56 series	EzStep-MPB-60 series	EzStep-HPB-86 series
Input Voltage		24VDC ±10%			40~70VDC
Control Method		Bipolar PWM drive with 32bit MCU			
Current Consumption		Max 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000 [rpm] *1			
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable with DIP Switch) * Default: 10,000			
	Maximum Frequency	500kHz (Duty 50%)			
	Protection Functions	Over Current Error, Over Speed Error, Step Out Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Motor Voltage Error, System Error, ROM Error			
	LED Display	Power Status(Green), Alarm Status(Red), CW Rotation(Yellow), CCW Rotation(Orange)			
	STOP Current	10%~100% (Selectable with DIP Switch) Be setted to set value of STOP Current after 0.1 second after motor stop. * Default: 50%			
	Pulse Input Method	1 Pulse / 2 Pulse (Selectable with DIP Switch) 1 Pulse: Pulse/Direction, 2 Pulse: CW/CCW * Default: 2 Pulse			
	Rotational Direction	CW/CCW (Selectable with DIP Switch) Used when changing the direction of motor rotate. * Default: CW			
	Speed/Position Control Command	Pulse Train Input (Photocoupler Input)			
I/O Signal	Input Signals	Motor Free / Alarm Reset (Photocoupler Input)			
	Output Signals	Alarm, Run/Stop (Photocoupler Output)			

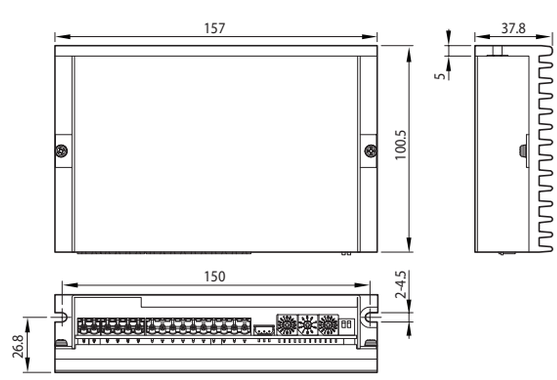
*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]

◆ Ezi-STEP-MPB Drive



◆ Ezi-STEP-HPB Drive



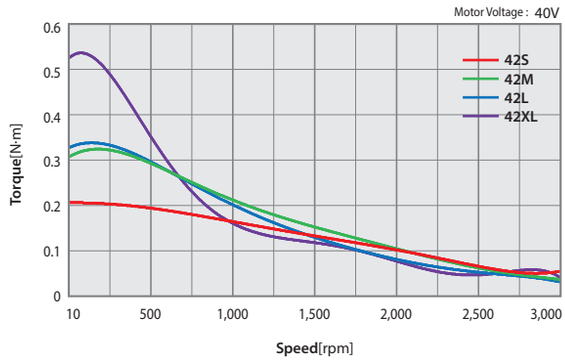
● Specifications of Motor

MODEL			BM-42 series				BM-56 series		
		UNIT	42S	42M	42L	42XL	56S	56M	56L
DRIVE METHOD		-	BI-POLAR						
NUMBER OF PHASES		-	2	2	2	2	2	2	2
CURRENT per PHASE		A	1.2	1.2	1.2	1.2	3.0	3.0	3.0
HOLDING TORQUE		N·m	0.32	0.44	0.5	0.65	0.64	1.0	1.5
ROTOR INERTIA		$g \cdot cm^2$	35	54	77	114	180	280	520
WEIGHTS		g	238	303	374	508	548	726	1159
LENGTH(L)		mm	34	40	48	60	46	55	80
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	22	22	22	22	52	52	52
	8mm		26	26	26	26	65	65	65
	13mm		33	33	33	33	85	85	85
	18mm		46	46	46	46	123	123	123
PERMISSIBLE THRUST LOAD		N	Lower than motor weight						
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)						
INSULATION CLASS		-	CLASS B(130℃)						
OPERATING TEMPERATURE		℃	0 to 55						

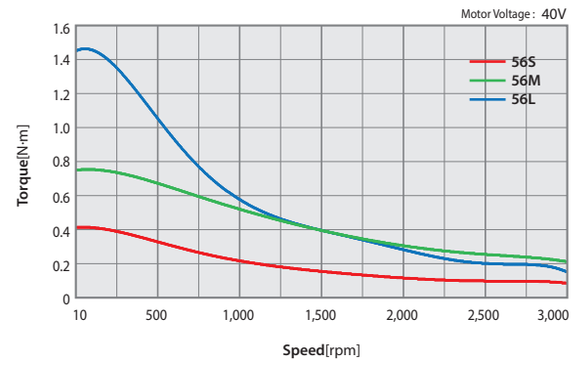
MODEL			BM-60 series			BM-86 series		
		UNIT	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		-	BI-POLAR					
NUMBER OF PHASES		-	2	2	2	2	2	2
CURRENT per PHASE		A	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		$g \cdot cm^2$	240	490	690	1800	3600	5400
WEIGHTS		g	616	793	1349	2275	3808	5330
LENGTH(L)		mm	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	70	70	70	270	270	270
	8mm		87	87	87	300	300	300
	13mm		114	114	114	350	350	350
	18mm		165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		-	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

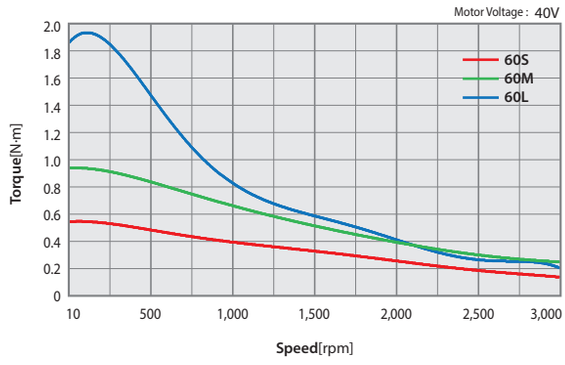
Ezi-STEP-MPB-42 series



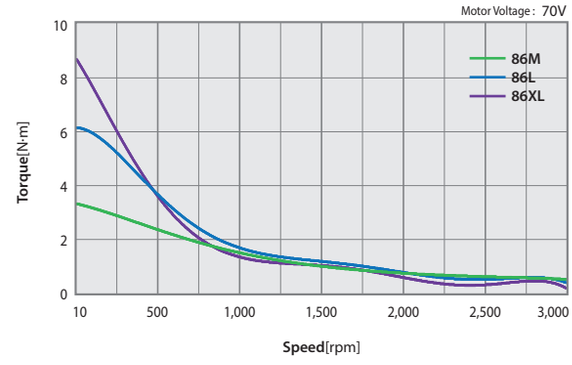
Ezi-STEP-MPB-56 series



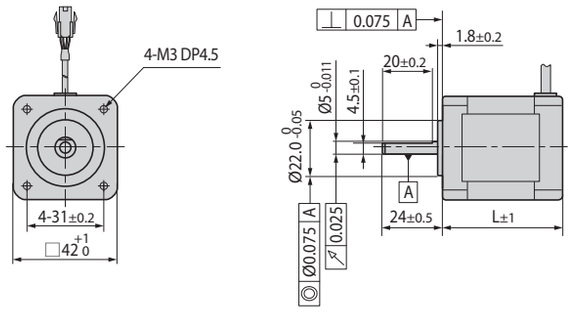
Ezi-STEP-MPB-60 series



Ezi-STEP-HPB-86 series

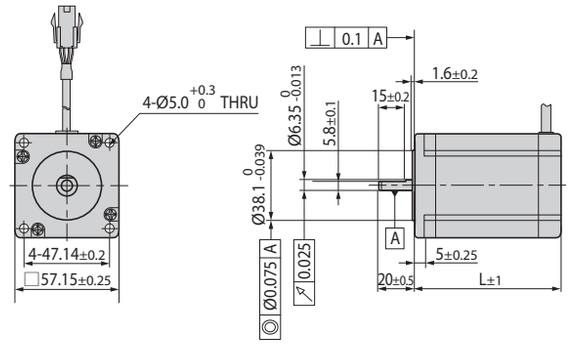


● Dimensions of Motor [mm]



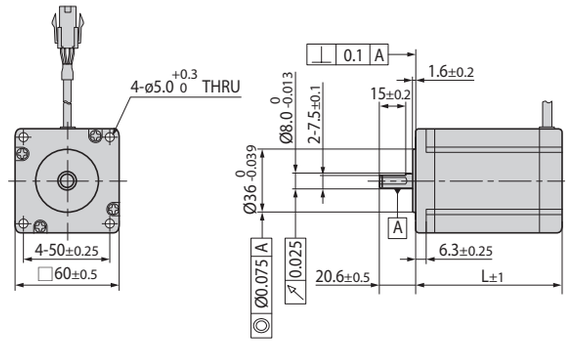
42mm

Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



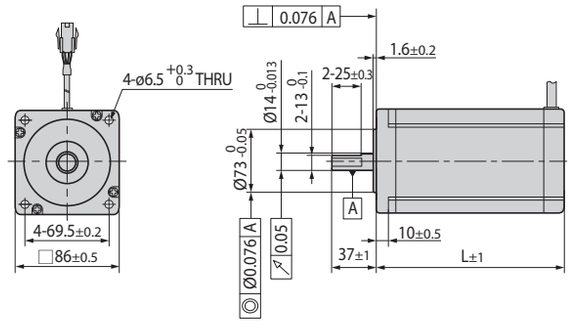
56mm

Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80



60mm

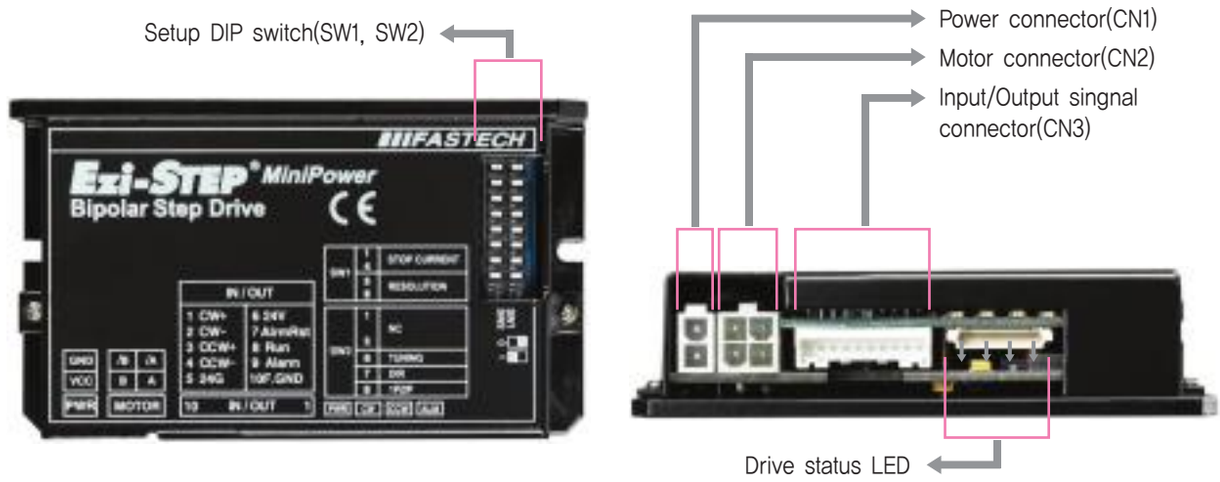
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85



86mm

Model name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

● Settings and Operation [Ezi-STEP-MPB series]



1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	Lights when power is ON Flashs when motor is Free status
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)
CW	Yellow	Motor Rotation Direction	Lights when motor rotate CW direction
CCW	Orange	Motor Rotation Direction	Lights when motor rotate CCW direction

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds the limit value*1
2	Over Speed Error	Motor speed exceeded 3,000 [rpm]
3	Step Out Error	Abnormally motor do not followed pulsed input
5	Over Temperature Error	Internal temperature of a motor drive exceeded 85℃
6	Over Regenerative Voltage Error	Back EMF more than 70V
7	Motor Connect Error	Power is ON without connection of motor cable to drive
9	Motor Voltage Error	Motor voltage is below 36V
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in Parameter storage Device(ROM)



Alarm LED flash
(Ex, Step Out Error)

*1 : Limit value depends on motor model (Refer to the Manual)

2. Stop Current Setting Switch(SW1.1~SW1.4)

Stop Current means the motor current value automatically set in 0.1 sec after motor stops. This is to prevent the overheart of a motor when the motor is under long time idling. The un itof the selection value is a percentage.

Switch Position				STOP Current (%)	Switch Position				STOP Current (%)
4	3	2	1		4	3	2	1	
ON	ON	ON	ON	10	OFF	ON	ON	ON	90
ON	ON	ON	OFF	20	OFF	ON	ON	OFF	100
ON	ON	OFF	ON	30	OFF	ON	OFF	ON	10
ON	ON	OFF	OFF	40	OFF	ON	OFF	OFF	10
ON	OFF	ON	ON	50*1	OFF	OFF	ON	ON	10
ON	OFF	ON	OFF	60	OFF	OFF	ON	OFF	10
ON	OFF	OFF	ON	70	OFF	OFF	OFF	ON	10
ON	OFF	OFF	OFF	80	OFF	OFF	OFF	OFF	10

*1 : Default : 50%

3. Resolution Setting Switch(SW1.5~1.8)

The Number of pulse per revolution.

Switch Position				Pulse/ Revolution	Switch Position				Pulse/ Revolution
8	7	6	5		8	7	6	5	
ON	ON	ON	ON	500	OFF	ON	ON	ON	6,400
ON	ON	ON	OFF	1,000	OFF	ON	ON	OFF	8,000
ON	ON	OFF	ON	1,600	OFF	ON	OFF	ON	10,000*1
ON	ON	OFF	OFF	2,000	OFF	ON	OFF	OFF	20,000
ON	OFF	ON	ON	3,200	OFF	OFF	ON	ON	25,000
ON	OFF	ON	OFF	3,600	OFF	OFF	ON	OFF	36,000
ON	OFF	OFF	ON	4,000	OFF	OFF	OFF	ON	40,000
ON	OFF	OFF	OFF	5,000	OFF	OFF	OFF	OFF	50,000

*1 : Default : 10,000

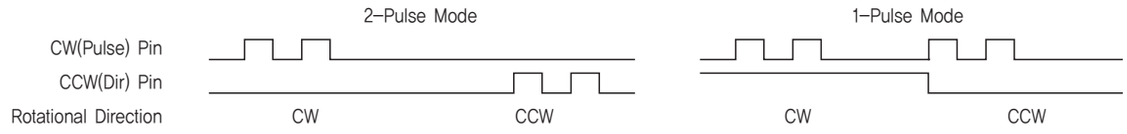
4. Rotational Direction Setting Switch(SW2.7)

Indication	Switch Name	Functions
DIR	Rotational Direction Select Switch	Based on CW(+Dir signal) input to driver. ON: CCW(−Direction) OFF: CW(+Direction) ※ Default: CW mode



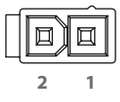
5. Pulse Input Setting Switch(SW2.8)

Indication	Switch Name	Functions
1P/2P	Pulse input mode Select Switch	Selectable 1−Pulse input mode or 2−Pulse input mode as Pulse input signal. ON: 1−Pulse mode OFF: 2−Pulse mode ※ Default: 2−Pulse mode



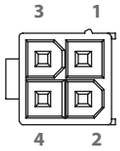
6. Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



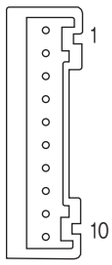
7. Motor Connector(CN2)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output

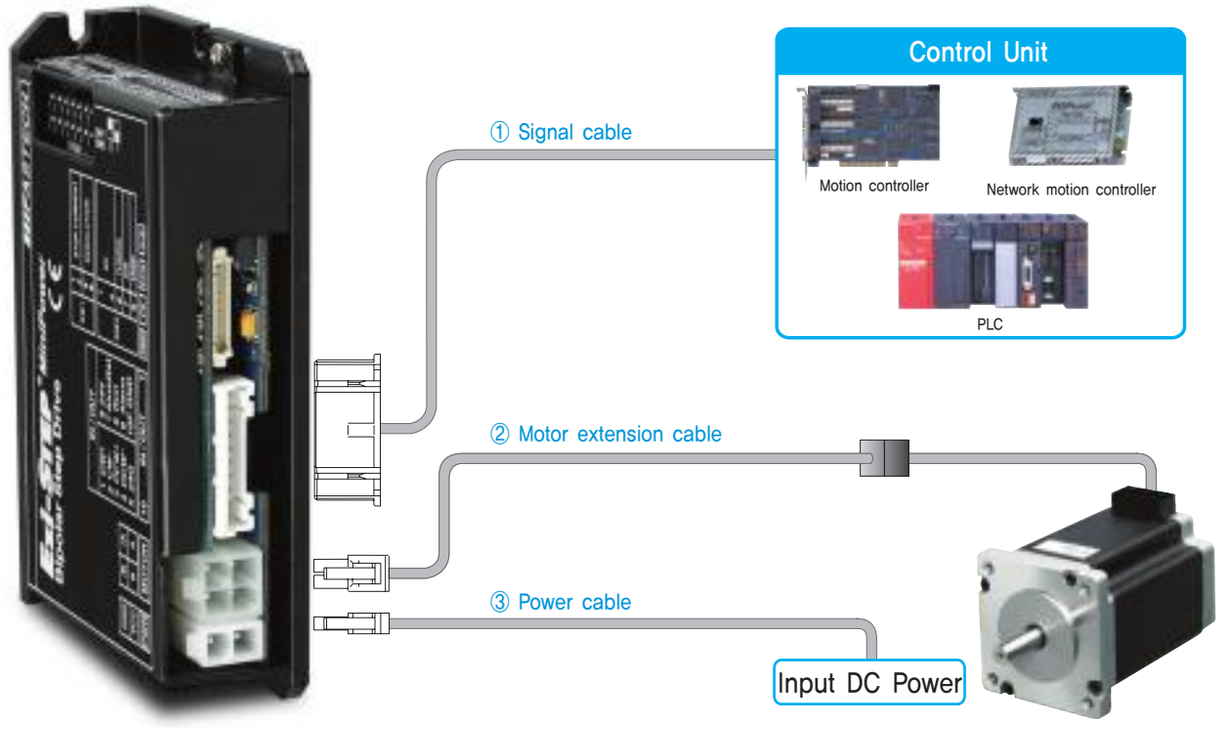


8. Signal Connector(CN3)

NO.	Function	I/O
1	CW+(Pulse+)	Input
2	CW−(Pulse−)	Input
3	CCW+(Dir+)	Input
4	CCW−(Dir−)	Input
5	EXT_GND	Input
6	EXT_24VDC	Input
7	Alarm Reset	Input
8	Run/Stop	Output
9	Alarm	Output
10	F.GND	----



● System Configuration [Ezi-STEP-MPB series]



Type	Signal Cable	Motor Cable	Power Cable
Length supplied	–	30cm	–
Max. Length	20m	20m	2m

1. Options

① Signal Cable

Available to connect between Input/Output Control System and Ezi-STEP MPB.

Item	Length [m]	Remark
CMNB-S-□□□F	□□□	Normal Cable
CMNB-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Motor Extension Cable

Available to extended connection between motor and Ezi-STEP MPB.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Power Cable

Available to connect between Power and Ezi-STEP MPB.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

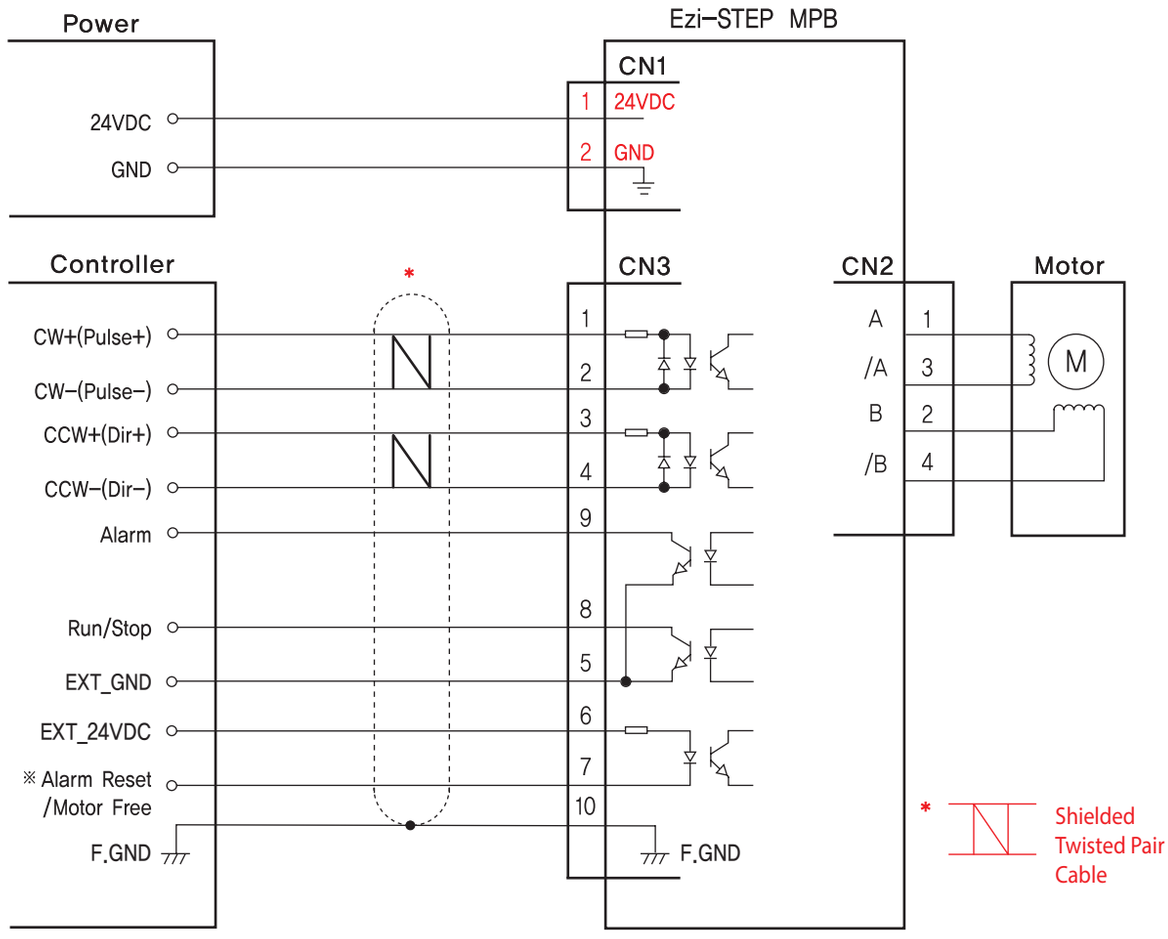
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive side (CN2)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor side	Housing Terminal	5557-04R 5556T	
Signal (CN3)		Housing Terminal	PAP-10V-S SPHD-002T-P0.5	JST

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [Ezi-STEP-MPB series]



※ Alarm Reset signal line is also used for Motor Free signal.
(For details, please refer to Control Signal Input/Output Description)

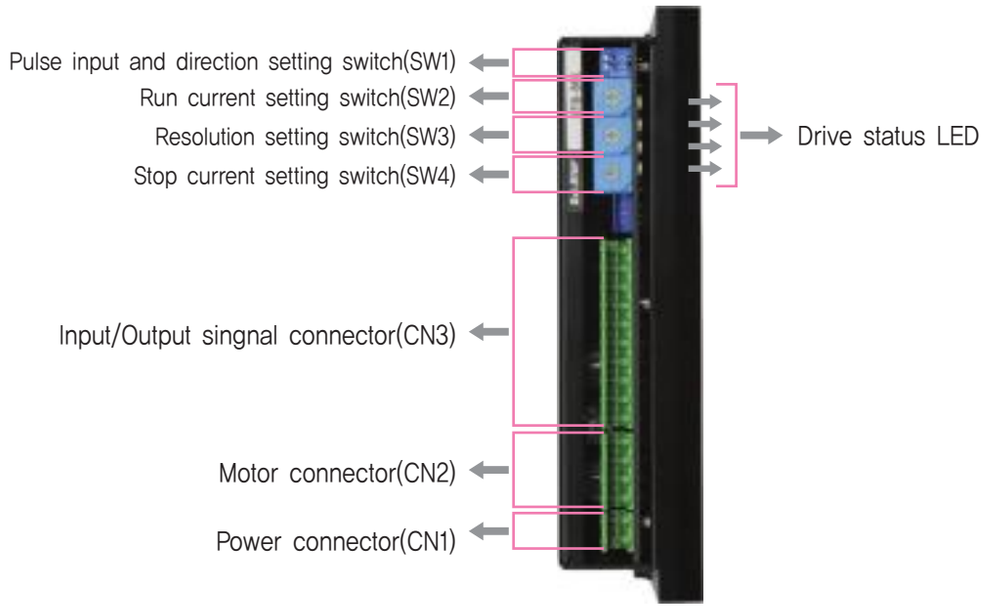
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● Settings and Operation [Ezi-STEP-HPB series]



1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
POW	Green	Power input indication	Lights when power is ON Flashs when motor is Free status
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)
CW	Yellow	Motor Rotation Direction	Lights when motor rotate CW direction
CCW	Orange	Motor Rotation Direction	Lights when motor rotate CCW direction

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds the limit value*1
2	Over Speed Error	Motor speed exceeded 3,000 [rpm]
3	Step Out Error	Abnormally motor do not followed pulsed input
5	Over Temperature Error	Internal temperature of a motor drive exceeded 85℃
6	Over Regenerative Voltage Error	Back EMF more than 90V
7	Motor Connect Error	Power is ON without connection of motor cable to drive
9	Motor Voltage Error	Motor voltage is below 36V
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in Parameter storage Device(ROM)

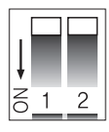
*1 : Limit value depends on motor model (Refer to the Manual)

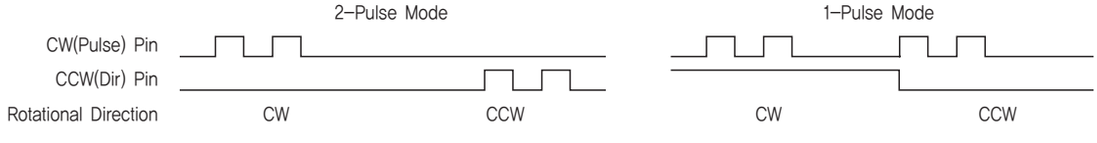


Alarm LED flash
(Ex, Step Out Error)

2. Pulse Input Setting Switch(SW1.1)

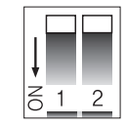
Indication	Switch Name	Functions
2P/1P	Pulse input mode Select Switch	Selectable 1-Pulse input mode or 2-Pulse input mode as Pulse input signal. ON: 1-Pulse mode OFF: 2-Pulse mode ※ Default: 2-Pulse mode





3. Rotational Direction Setting Switch(SW1,2)

Indication	Switch Name	Functions
DIR	Rotational Direction Select Switch	Based on CW(+Dir signal) input to driver. ON: CCW(−Direction) OFF: CW(+Direction) ※ Default: CW mode



Direction setting switch: ON

CCW Dir.





Direction setting switch: OFF

CW Dir.

4. Run Current Setting Switch(SW2)

SW2 do not used in Ezi-STEP HPB

5. Resolution Setting Switch(SW3)

The Number of pulse per revolution.

Position	Pulse/Revolution	Position	Pulse/Revolution
0	500	8	6,400
1	1,000	9	8,000
2	1,600	A	10,000*1
3	2,000	B	20,000
4	3,200	C	25,000
5	3,600	D	36,000
6	4,000	E	40,000
7	5,000	F	50,000

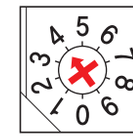


*1 : Default : 10,000

6. Stop Current Setting Switch(SW4)

Stop Current means the motor current value automatically set in 0.1 sec after motor stops. This is to prevent the overheart of a motor when the motor is uder long time idling. The unit of the selection value is a percentage.

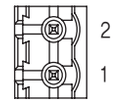
Position	STOP Current (%)	Position	STOP Current (%)
0	10	5	60
1	20	6	70
2	30	7	80
3	40	8	90
4	50*1	9	100



*1 : Default : 50%

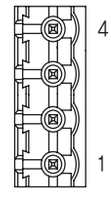
7. Power Connector(CN1)

NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input



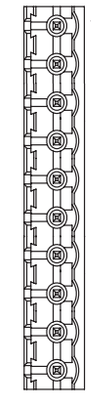
8. Motor Connector(CN2)

NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output

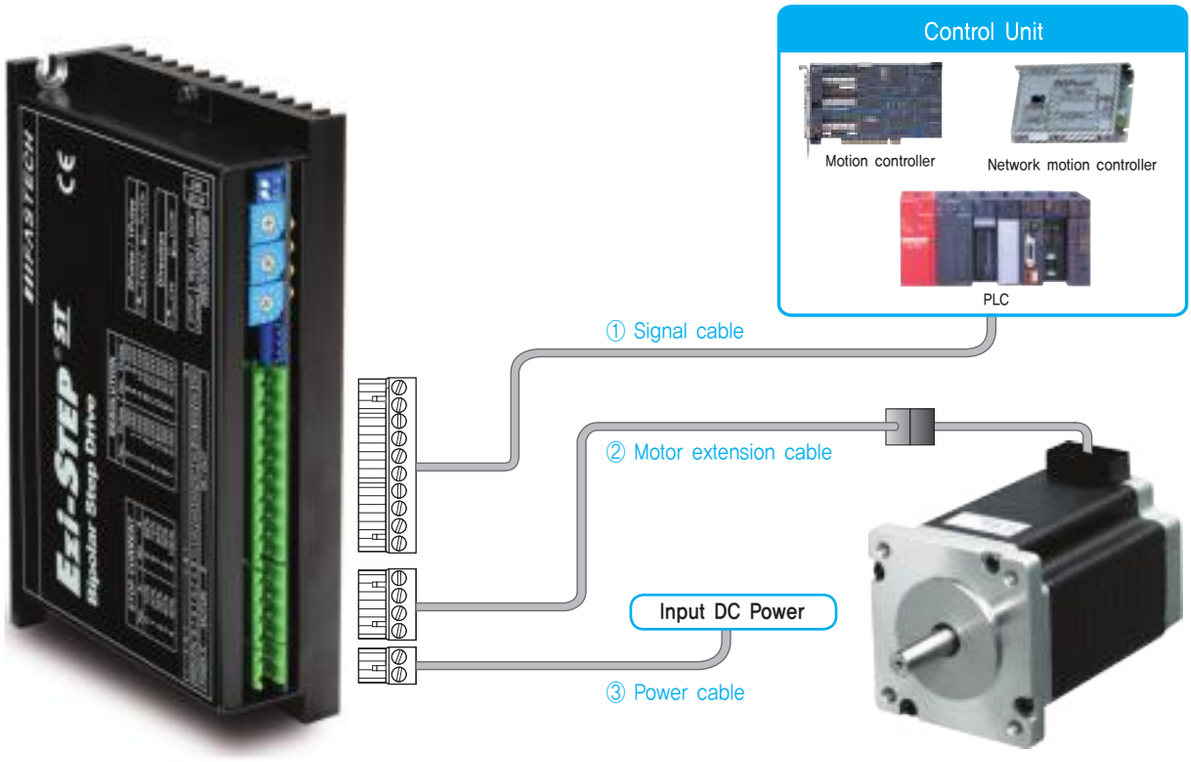


9. Signal Connector(CN3)

NO.	Function	I/O
1	F.GND	----
2	EXT_GND	Input
3	Alarm	Output
4	Run/Stop	Output
5	Alarm Reset	Input
6	EXT_24VDC	Input
7	CCW−(Dir−)	Input
8	CCW+(Dir+)	Input
9	CW−(Pulse−)	Input
10	CW+(Pulse+)	Input



● System Configuration [Ezi-STEP-HPB Series]



Type	Signal Cable	Motor Cable	Power Cable
Length supplied	–	30cm	–
Max. Length	20m	20m	2m

1. Options

① Signal Cable

Available to connect between Input/Output Control System and Ezi-STEP HPB.

Item	Length [m]	Remark
CHPB-S-□□□F	□□□	Normal Cable
CHPB-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Motor Extension Cable

Available to extended connection between motor and Ezi-STEP HPB.

Item	Length [m]	Remark
CHPB-M-□□□F	□□□	Normal Cable
CHPB-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Power Cable

Available to connect between Power and Ezi-STEP HPB.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

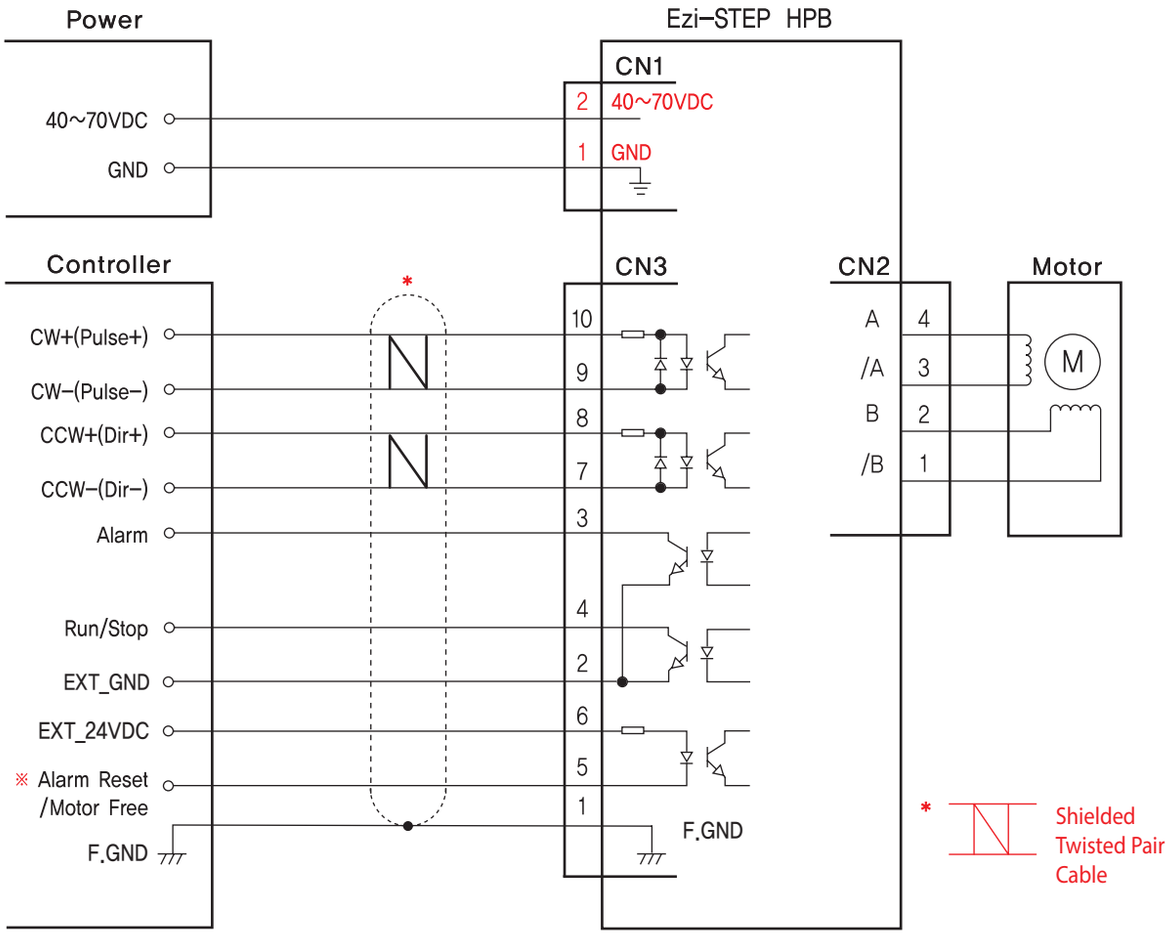
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN2)	Terminal Block	AK950-4	PTR
	Motor Side	Housing Terminal	3191-4R1 1381T	MOLEX
Signal (CN3)		Terminal Block	AK950-10	PTR

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [Ezi-STEP-HPB Series]



※ Alarm Reset signal line is also used for Motor Free signal.
(For details, please refer to Control Signal Input/Output Description)

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

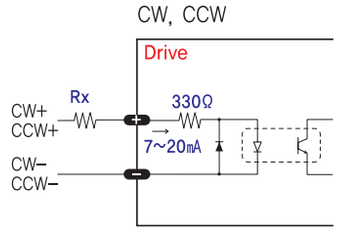
Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

Control Signal Input/Output Description

1 Input Signal

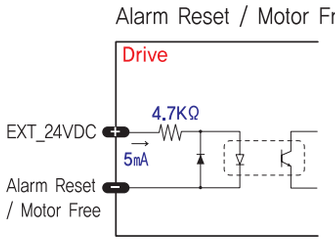
Input signals of the drive are all photocoupler protected. The signal shows the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.



Pin No.		Function
MPB	HPB	
1	10	CW+
2	9	CW-
3	8	CCW+
4	7	CCW-

◆ CW, CCW Input

This signal can be used to receive a positioning pulse command from a user host motion controller. The user can select 1-pulse input mode or 2-pulse input mode. The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor Rx is not used and connect to the driver directly. When the level of input signal is more than 5V, Rx resistor is required. If the resistor is absent, the drive will be damaged. If the input signal level is 12V, Rx value is 680ohm and 24V, Rx value is 1.8Kohm.



Pin No.		Function
MPB	HPB	
7	5	Alarm Reset
6	6	EXT_24VDC

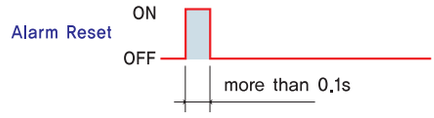
Alarm Reset signal line is also used for Motor Free signal.

◆ Motor Free Input

This input can be used only to adjust the position by manually moving the motor shaft from the load-side. By setting the signal [ON], the drive cuts off the power supply to the motor. Then, one can manually adjust output position. When setting the signal back to [OFF], the drive resumes the power supply to the motor and recovers the holding torque. When driving a motor, one needs to set the signal [OFF]. In normal operations set the signal [OFF] or disconnect a wire to the signal. It operates reversely compare to Normal mode, when you set Inverse mode.

◆ Alarm Reset Input

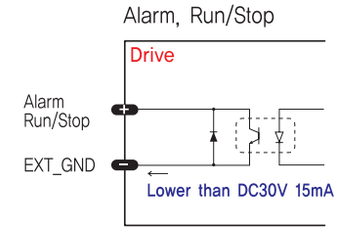
When a protection mode has been activated, a signal to this Alarm Reset input cancels the Alarm output. By setting the alarm reset input signal [ON], cancel Alarm output. Before cancel the Alarm output, have to remove the source of alarm.



[Caution] If Alarm Reset input signal still remains [ON], motor will be Free state. Keep in mind to change [ON]→[OFF] state.

2 Output Signal

As the output signal from the drive, there are the photocoupler outputs (Alarm, Run/Stop). The signal status operate as [ON : conduction], [OFF : Non-conduction] of photocoupler not as the voltage level of signal.



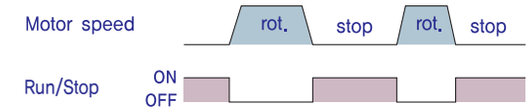
Pin No.		Function
MPB	HPB	
9	3	Alarm
8	4	Run/Stop
5	2	EXT_GND

◆ Alarm Output

The Alarm output indicates [OFF] when the drive is in a normal operation. If a protection mode has been activated, it goes [ON]. A host controller meeds to detect this signal and stop sending a motor driving command.
When the drive detects an abnormal operation such as overload of overcurrent of a motor, it sets the Alarm output to [ON], flash the Alarm LED, disconnects the power to a motor and stops the motor, simultaneously.
It operates reversely compare to Normal mode, when you set Inverse mode.

◆ Run/Stop Output

Run/Stop Output state is [ON] when motor positioning is completed. It operates reversely compare to Normal mode, when you set inverse mode.




Ezi-STEP® mini
PWR
MOTOR
ENCODER
IN / OUT
CW
CCW
PWR
ALM

Ezi-STEP MINI

Micro Stepping System_ Ezi-STEP MINI

- Micro Stepping
- Software Damping
- Run/Stop Signal Output



FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® MINI

Micro Stepping System





Ezi-STEP MINI Characteristics

Ezi-STEP MINI is a micro stepping system that incorporates a motor and MCU (Micro Controller Unit) equipped drive that is integrated seamlessly together as a system. This makes it possible to incorporate many functions compared with a conventional stepping motors and drives, such as sensorless detection of loss of synchronization, smooth control over the whole velocity range, higher torque operation and no vibration at the low speed range.

Ezi-STEP MINI's on-board high-performance digital signal processor and proprietary algorithms allow the Ezi-STEP MINI to operate a high speeds with unmatched precision. The unique position estimation algorithm instantaneously detects out-of-synchronization based on the rotor position of the stepping motor, which is not an easy task in a conventional stepping motor and drives.

Utilizing a software damping and filtering algorithms, high speed operation is realized by the exciting angle control of a step-angle.

The resolution of Ezi-STEP MINI can be selected from basic 1.8° up to 0.0072° (1/250). In addition, Ezi-STEP MINI generates various signals including sensorless stall detection, alarm and running signal. Ezi-STEP MINI is an economical ideal drive for vision systems, nanotech, packaging, semiconductor, pick and place, automation, laboratory testing, wood working and wherever smooth, quiet, precise, high torque operation is a requirement.

1 Microstep and Filtering

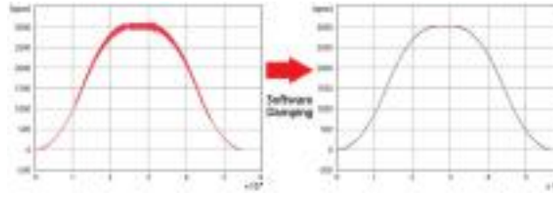
High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP adjusts PWM control signal in every 25 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

2 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

3 Drive Output Signal Monitoring

Ezi-STEP MINI provides loss of step, run/stop, over-current, over-heat, over-voltage, power and motor connection alarms that can be monitored by the controller and visible by a motor-mounted flashing LED indicator.

● Ezi-STEP MINI Part Numbering

Ezi-STEP-MI-42M-BK-□

- Product Name
- Drive Series
  - MI : Mini Type
- Motor Flange Size
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
- Motor Length
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- Brake
  - Blank : Without Brake
  - BK : Brake
- User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-MI-20M	BM-20M	EzStep-MI-20M
Ezi-STEP-MI-20L	BM-20L	EzStep-MI-20L
Ezi-STEP-MI-28S	BM-28S	EzStep-MI-28S
Ezi-STEP-MI-28M	BM-28M	EzStep-MI-28M
Ezi-STEP-MI-28L	BM-28L	EzStep-MI-28L
Ezi-STEP-MI-42S	BM-42S	EzStep-MI-42S
Ezi-STEP-MI-42M	BM-42M	EzStep-MI-42M
Ezi-STEP-MI-42L	BM-42L	EzStep-MI-42L
Ezi-STEP-MI-42XL	BM-42XL	EzStep-MI-42XL

● Combination with Brake

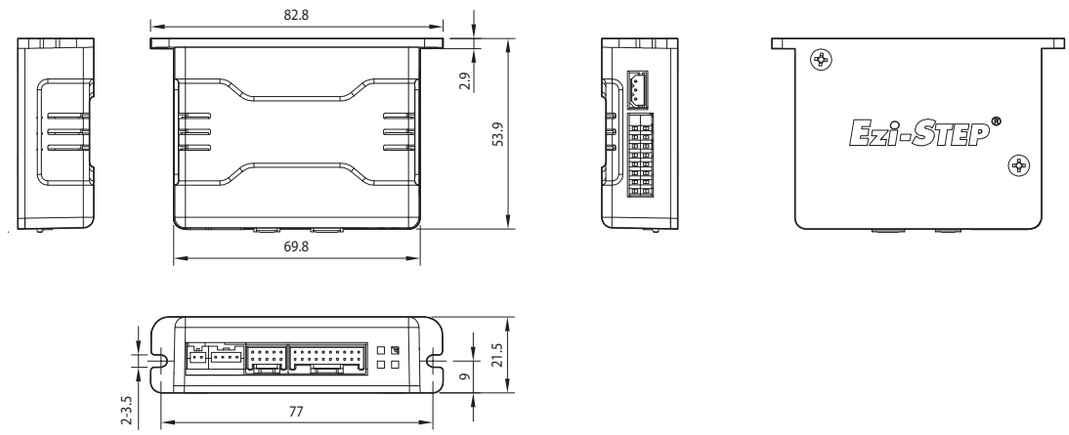
Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-MI-42S-BK	BM-42S-BK	EzStep-MI-42S
Ezi-STEP-MI-42M-BK	BM-42M-BK	EzStep-MI-42M
Ezi-STEP-MI-42L-BK	BM-42L-BK	EzStep-MI-42L
Ezi-STEP-MI-42XL-BK	BM-42XL-BK	EzStep-MI-42XL

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series
Driver Model		EzStep-MI-20 series	EzStep-MI-28 series	EzStep-MI-42 series
Input Voltage		24VDC ±10%		
Control Method		Bipolar PWM drive with 32bit MCU		
Current Consumption		Max 500mA (Except motor current)		
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.	0.5g		
Function	Rotation Speed	0~3,000 [rpm] *1		
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 * Default: 10,000		
	Maximum Frequency	500kHz (Duty 50%)		
	Protection Functions	Over Current Error, Over Speed Error, Step Out Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Motor Voltage Error, System Error, ROM Error		
	LED Display	Power Status(Green), Alarm Status(Red), CW Rotation(Yellow), CCW Rotation(Orange)		
	STOP Current	10%~100% (Selectable with DIP Switch) Be setted to set value of STOP Current after 0.1 second after motor stop. * Default: 50%		
	Pulse Input Method	1 Pulse / 2 Pulse (Selectable with DIP Switch) * Default: 2 Pulse		
	Rotational Direction	CW/CCW (Selectable with DIP Switch) * Default: CW		
	Speed/Position Control Command	Pulse Train Input (Photocoupler Input)		
I/O Signal	Input Signals	Alarm Reset / Motor Free (Photocoupler Input)		
	Output Signals	Alarm, Run/Stop (Photocoupler Output)		

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]

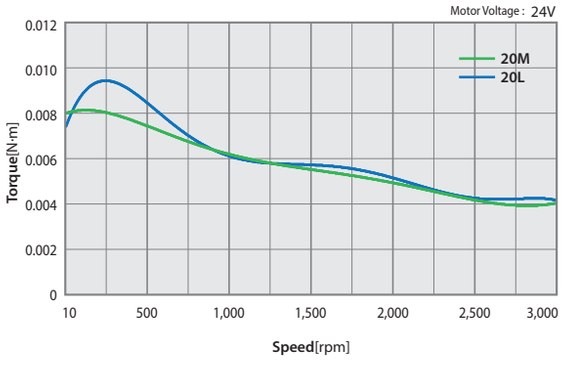


Specifications of Motor

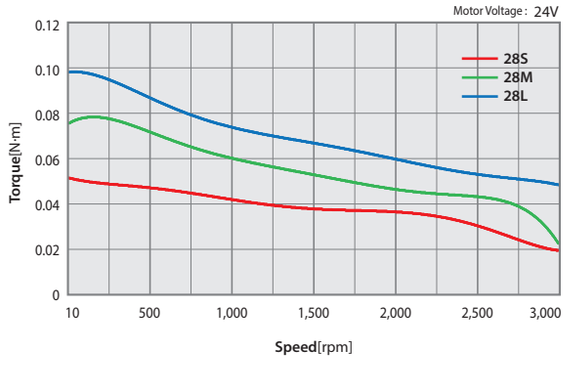
MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		-	BI-POLAR								
NUMBER OF PHASES		-	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		$g \cdot cm^2$	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26
	13mm		-	-	53	53	53	33	33	33	33
	18mm		-	-	-	-	-	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		-	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

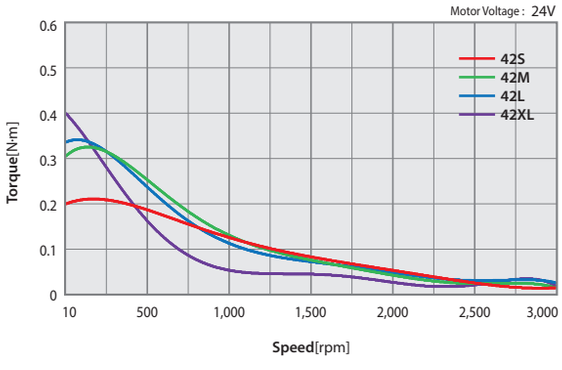
Ezi-STEP-MI-20 series



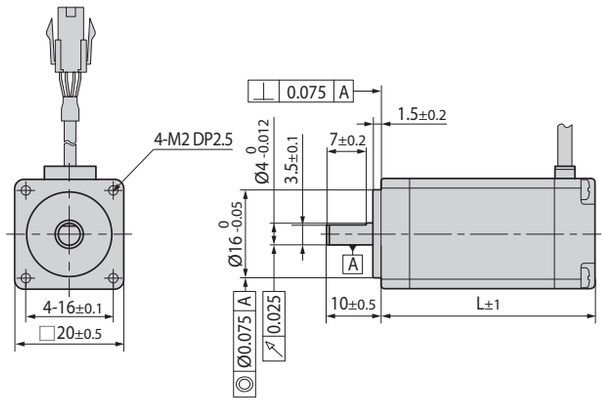
Ezi-STEP-MI-28 series



Ezi-STEP-MI-42 series

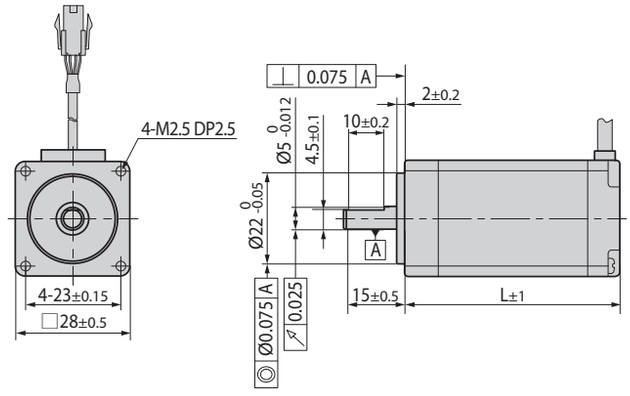


Dimensions of Motor [mm]



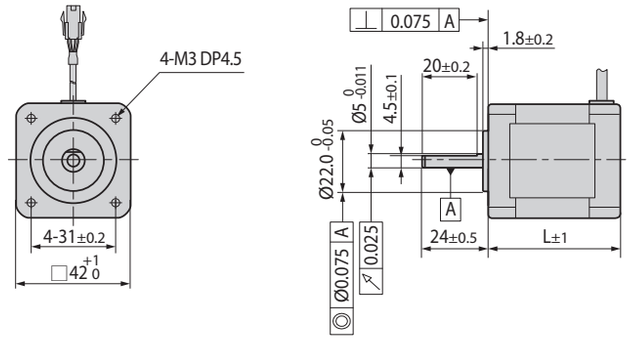
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



28mm

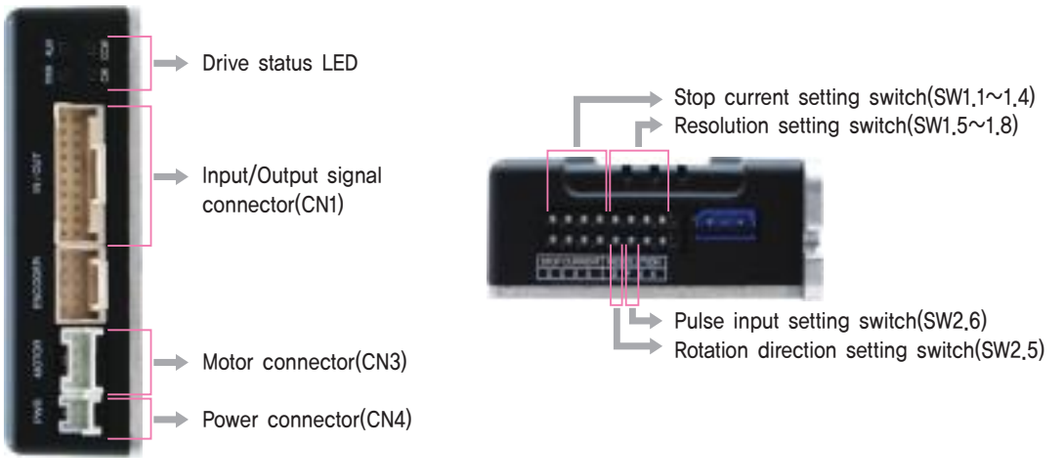
Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60

● Settings and Operation

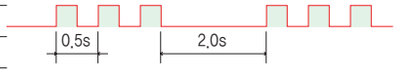


1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power Input Indication	Lights when power is ON Flashes when motor is Free status
ALM	Red	Alarm Indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the flash times)
CW	Yellow	Motor Rotation Direction	Lights when motor rotate CW direction
CCW	Orange	Motor Rotation Direction	Lights when motor rotate CCW direction

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds the limit value*1
2	Over Speed Error	Motor speed exceeded 3,000 [rpm]
3	Step Out Error	Abnormally motor do not followed pulsed input
5	Over Temperature Error	Internal temperature of a motor drive exceeded 85℃
6	Over Regenerative Voltage Error	Back EMF more than 50V
7	Motor Connect Error	Power is ON without connection of motor cable to drive
9	Motor Voltage Error	Motor voltage is below 20V
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in Parameter storage Device(ROM)



Alarm LED flash
(Ex, Step Out Error)

*1 : Limit value depends on motor model (Refer to the Manual)

2. Stop Current Setting Switch(SW1.1~1.4)

Stop Current means the motor current value automatically set in 0.1 sec after motor stops. This is to prevent the overheat of a motor when the motor is under long time idling. The unit of the selection value is a percentage.

Switch Position				STOP Current (%)	Switch Position				STOP Current (%)
4	3	2	1		4	3	2	1	
ON	ON	ON	ON	10	OFF	ON	ON	ON	90
ON	ON	ON	OFF	20	OFF	ON	ON	OFF	100
ON	ON	OFF	ON	30	OFF	ON	OFF	ON	10
ON	ON	OFF	OFF	40	OFF	ON	OFF	OFF	10
ON	OFF	ON	ON	50*1	OFF	OFF	ON	ON	10
ON	OFF	ON	OFF	60	OFF	OFF	ON	OFF	10
ON	OFF	OFF	ON	70	OFF	OFF	OFF	ON	10
ON	OFF	OFF	OFF	80	OFF	OFF	OFF	OFF	10

*1 : Default : 50%

3. Resolution Setting Switch(SW1.5~1.8)

The Number of pulse per revolution.

Switch Position				Pulse/ Revolution	Switch Position				Pulse/ Revolution
8	7	6	5		8	7	6	5	
ON	ON	ON	ON	500	OFF	ON	ON	ON	6,400
ON	ON	ON	OFF	1,000	OFF	ON	ON	OFF	8,000
ON	ON	OFF	ON	1,600	OFF	ON	OFF	ON	10,000*1
ON	ON	OFF	OFF	2,000	OFF	ON	OFF	OFF	20,000
ON	OFF	ON	ON	3,200	OFF	OFF	ON	ON	25,000
ON	OFF	ON	OFF	3,600	OFF	OFF	ON	OFF	36,000
ON	OFF	OFF	ON	4,000	OFF	OFF	OFF	ON	40,000
ON	OFF	OFF	OFF	5,000	OFF	OFF	OFF	OFF	50,000

*1 : Default: 10,000

4. Rotational Direction Setting Switch(SW2.5)

Indication	Switch Name	Functions
D	Rotational Direction Select Switch	Based on CW(+Dir signal) input to driver. ON: CCW(−Direction) OFF: CW(+Direction) ※ Default: CW mode

Direction setting switch: ON

CCW Dir.



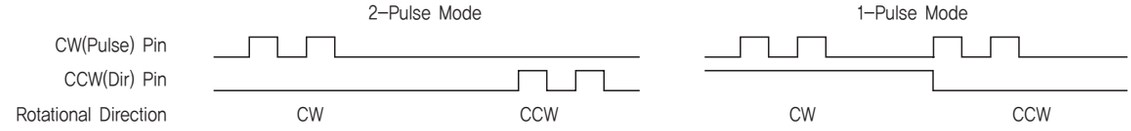


Direction setting switch: OFF

CW Dir.

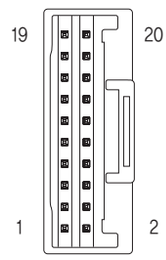
5. Pulse Input Setting Switch(SW2.6)

Indication	Switch Name	Functions
P	Pulse input mode Select Switch	Selectable 1−Pulse input mode or 2−Pulse input mode as Pulse input signal. ON: 1−Pulse mode OFF: 2−Pulse mode ※ Default: 2−Pulse mode



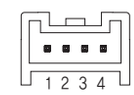
6. Signal Connector(CN1)

NO.	Function	I/O
1	CW+(Pulse+)	Input
2	CW−(Pulse−)	Input
3	CCW+(Dir+)	Input
4	CCW−(Dir−)	Input
11	Alarm	Output
12	Run/Stop	Output
14	Alarm Reset	Input
19	EXT_GND	Input
20	EXT_24VDC	Input



7. Motor Connector(CN3)

NO.	Function	I/O
1	B Phase	Output
2	/B Phase	Output
3	/A Phase	Output
4	A Phase	Output

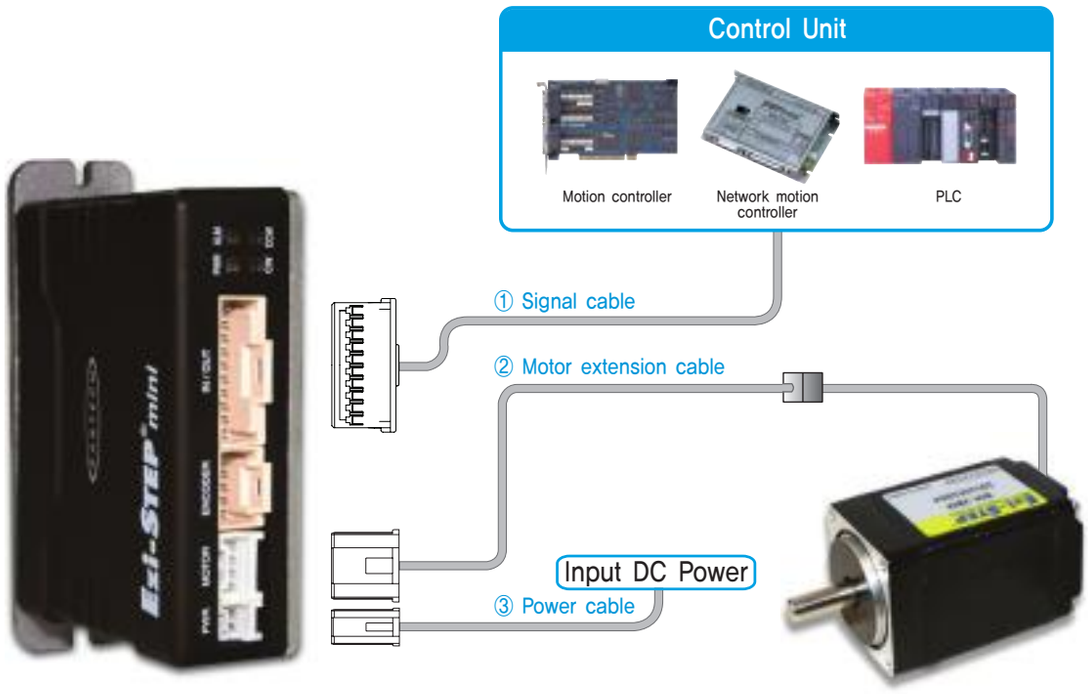


8. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



System Configuration



Type	Signal Cable	Motor Cable	Power Cable
Length supplied	–	30cm	–
Max. Length	20m	20m	2m

1. Options

① Signal Cable

Available to connect between Input/Output Control System and Ezi-STEP MINI.

Item	Length [m]	Remark
CSVI-S-□□□F	□□□	Normal Cable
CSVI-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Motor Extension Cable

Available to extended connection between motor and Ezi-STEP MINI.

Item	Length [m]	Remark
CMNB-M-□□□F	□□□	Normal Cable
CMNB-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Power Cable

Available to connect between Power and Ezi-STEP MINI.

Item	Length [m]	Remark
CMNB-P-□□□F	□□□	Normal Cable
CMNB-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

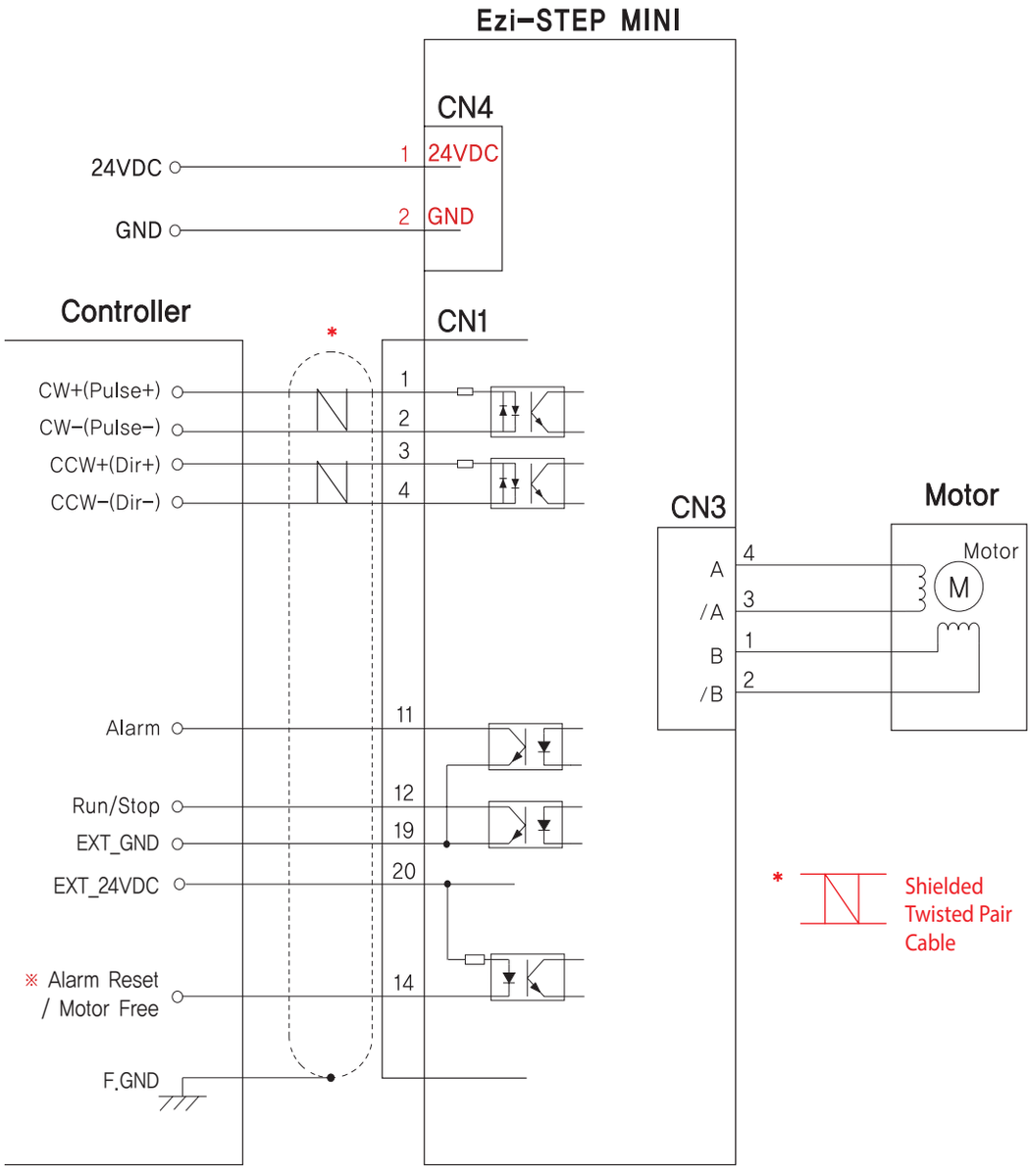
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	PAP-02V-S SPHD-001T-P0.5	JST
Motor	Drive Side (CN3)	Housing Terminal	PAP-04V-S SPHD-001T-P0.5	JST
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Signal (CN1)		Housing Terminal	501646-2000 501648-1000(AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ Alarm Reset signal line is also used for Motor Free signal.
(For details, please refer to Control Signal Input/Output Description)

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

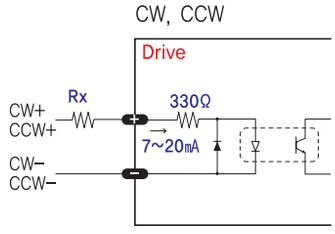
Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

Control Signal Input/Output Description

1 Input Signal

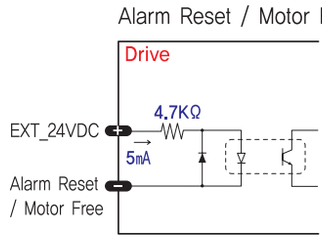
Input signals of the drive are all photocoupler protected. The signal shows the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.



Pin No.	Function
1	CW+
2	CW-
3	CCW+
4	CCW-

◆ CW, CCW Input

This signal can be used to receive a positioning pulse command from a user host motion controller. The user can select 1-pulse input mode or 2-pulse input mode. The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor Rx is not used and connect to the driver directly. When the level of input signal is more than 5V, Rx resistor is required. If the resistor is absent, the drive will be damaged. If the input signal level is 12V, Rx value is 680ohm and 24V, Rx value is 1.8Kohm.



Pin No.	Function
14	Alarm Reset/ Motor Free
20	EXT_24VDC

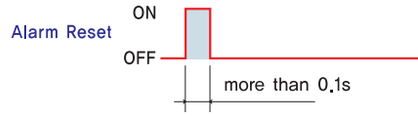
Alarm Reset signal line is also used for Motor Free signal.

◆ Motor Free Input

This input can be used only to adjust the position by manually moving the motor shaft from the load-side. By setting the signal [ON], the drive cuts off the power supply to the motor. Then, one can manually adjust output position. When setting the signal back to [OFF], the drive resumes the power supply to the motor and recovers the holding torque. When driving a motor, one needs to set the signal [OFF]. In normal operations set the signal [OFF] or disconnect a wire to the signal.

◆ Alarm Reset Input

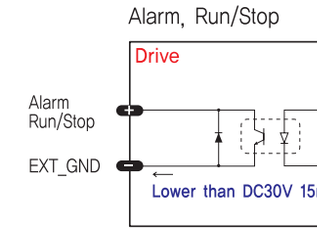
When a protection mode has been activated, a signal to this Alarm Reset input cancels the Alarm output. By setting the alarm reset input signal [ON], cancel Alarm output. Before cancel the Alarm output, have to remove the source of alarm.



[Caution] If Alarm Reset input signal still remains [ON], motor will be Free state. Keep in mind to change [ON]→[OFF] state.

2 Output Signal

As the output signal from the drive, there are the photocoupler outputs (Alarm, Run/Stop). The signal status operate as [ON : conduction], [OFF : Non-conduction] of photocoupler not as the voltage level of signal.



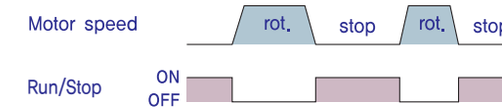
Pin No.	Function
11	Alarm
12	Run/Stop
19	EXT_GND

◆ Alarm Output

The Alarm output indicates [OFF] when the drive is in a normal operation. If a protection mode has been activated, it goes [ON]. A host controller meeds to detect this signal and stop sending a motor driving command.
When the drive detects an abnormal operation such as overload of overcurrent of a motor, it sets the Alarm output to [ON], flash the Alarm LED, disconnects the power to a motor and stops the motor, simultaneously.

◆ Run/Stop Output

Run/Stop Output state is [ON] when motor positioning is completed. It operates reversely compare to Normal mode, when you set inverse mode.

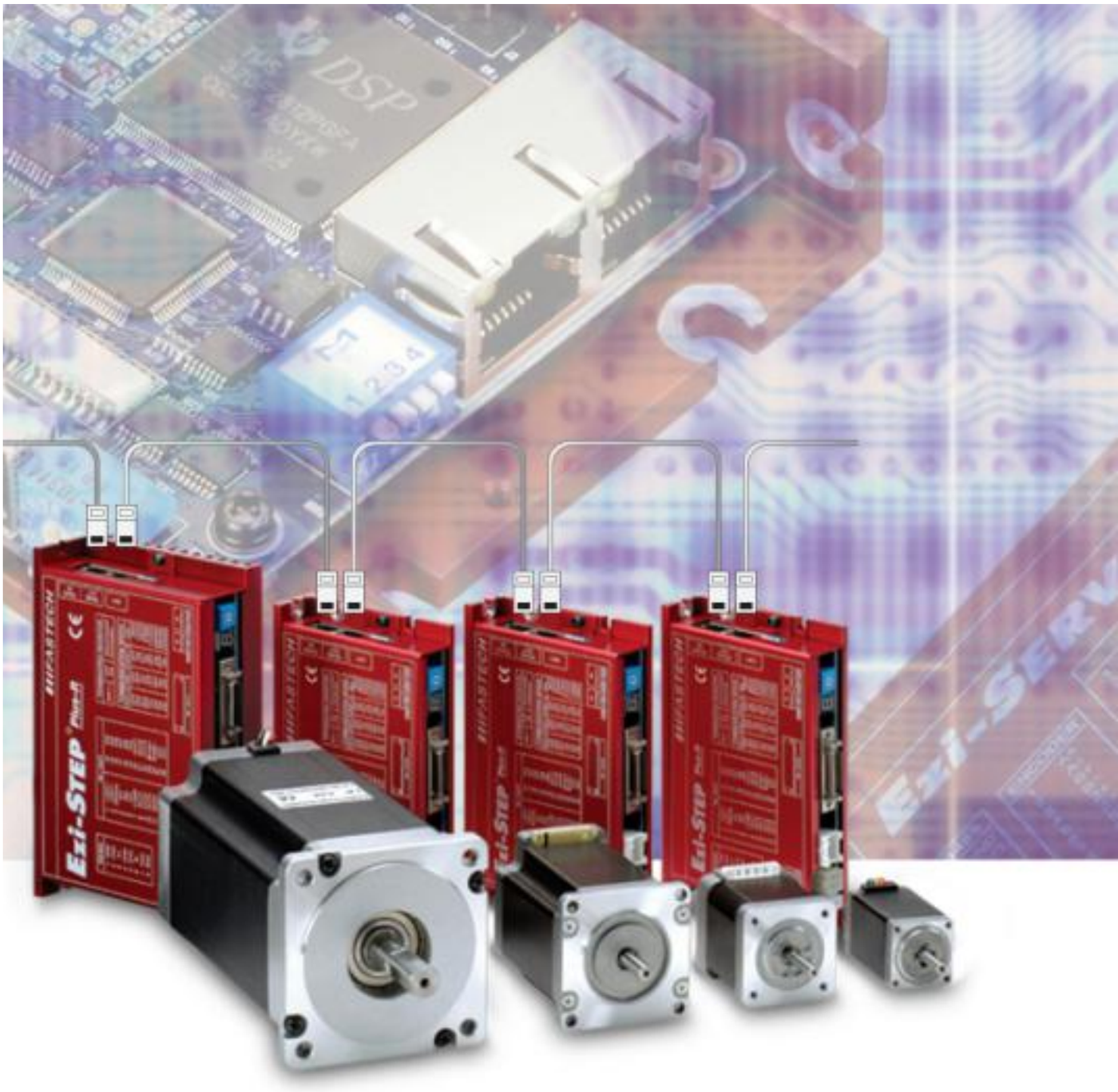



Ezi-STEP® Plus-R
FASTECH
EZT-NDR-56L
Ezi-STEP
PWR
MOTOR
ENCODER
RS485
IN / OUT
TERMINATING RESISTOR
COMMUNICATION SPEED
SW1
RS485 OUT
RS485 IN

Ezi-STEP Plus-R

Micro Stepping System_ Ezi-STEP Plus-R

- Embedded Controller
- Position Table
- Micro Stepping
- Software Damping
- Run/Stop Signal Output



FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® Plus-R

Micro Stepping System



2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PLC.
The PLC can monitor the origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PLC.

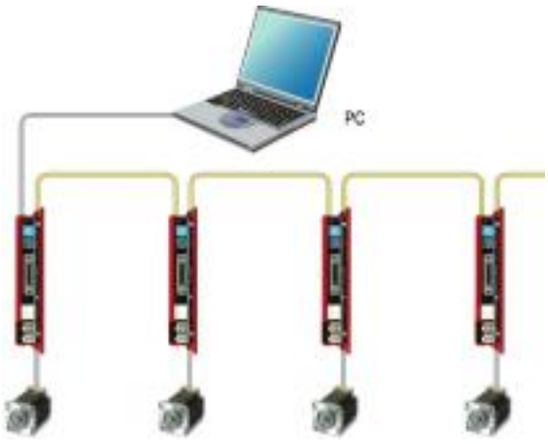


3 Microstep and Filtering

High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP adjusts PWM control signal in every 25 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 7/8/10.



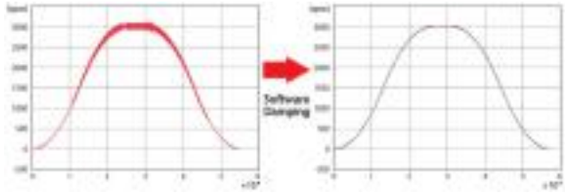
4 Drive Output Signal Monitoring

Ezi-STEP provides loss of step, run/stop, over-current, over-heat, over-voltage, power and motor connection alarms that can be monitored by the controller and visible by a motor-mounted flashing LED indicator.

5 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

6 Improvement of High-Speed Driving

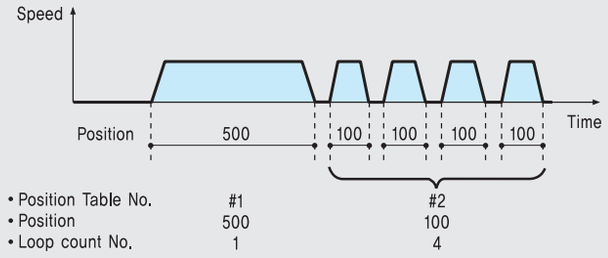
Depending on the speed of a stepping motor, Ezi-STEP automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation. Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

Applicable model : Ezi-STEP-PR-42 Series
Ezi-STEP-PR-56 Series
Ezi-STEP-PR-60 Series

Features of Motion Controller

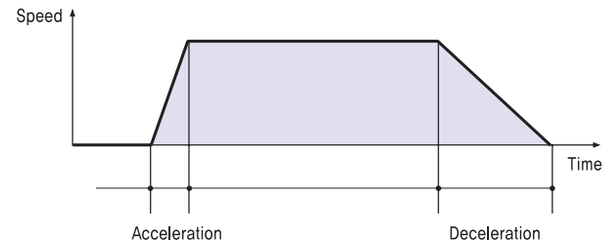
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



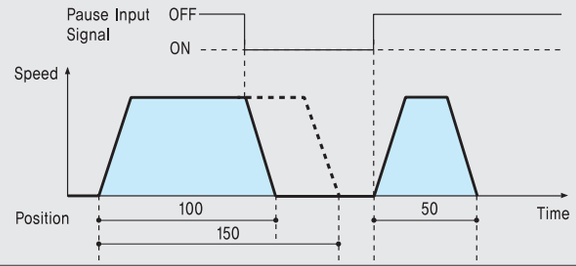
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



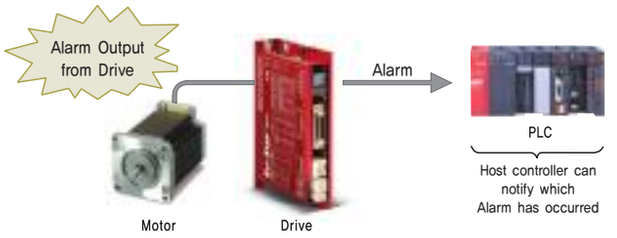
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



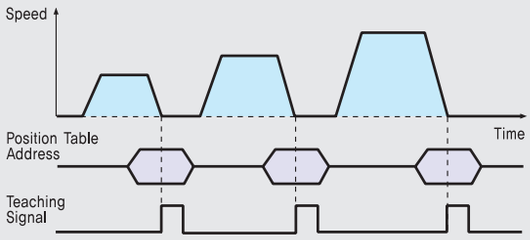
4. Alarm

The number of LED flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

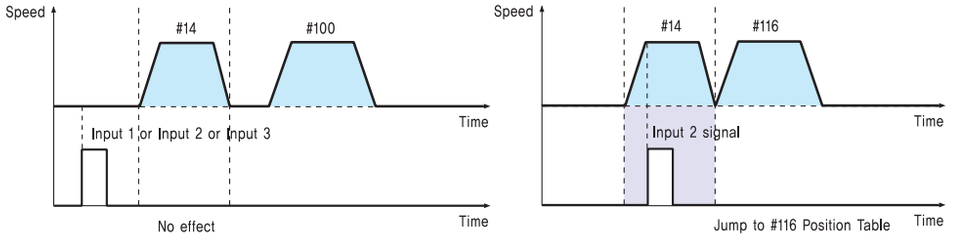


6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	



Ezi-STEP Plus-R Part Numbering

Ezi-STEP-PR-42S-BK-□

- Product Name
- Drive Series
  - PR : Plus RS-485
- Motor Flange Size
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- Motor Length
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- Brake
  - Blank : Without Brake
  - BK : Brake
- User Code

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-PR-20M	BM-20M	EzT-NDR-20M
Ezi-STEP-PR-20L	BM-20L	EzT-NDR-20L
Ezi-STEP-PR-28S	BM-28S	EzT-NDR-28S
Ezi-STEP-PR-28M	BM-28M	EzT-NDR-28M
Ezi-STEP-PR-28L	BM-28L	EzT-NDR-28L
Ezi-STEP-PR-42S	BM-42S	EzT-NDR-42S
Ezi-STEP-PR-42M	BM-42M	EzT-NDR-42M
Ezi-STEP-PR-42L	BM-42L	EzT-NDR-42L
Ezi-STEP-PR-42XL	BM-42XL	EzT-NDR-42XL
Ezi-STEP-PR-56S	BM-56S	EzT-NDR-56S
Ezi-STEP-PR-56M	BM-56M	EzT-NDR-56M
Ezi-STEP-PR-56L	BM-56L	EzT-NDR-56L
Ezi-STEP-PR-60S	BM-60S	EzT-NDR-60S
Ezi-STEP-PR-60M	BM-60M	EzT-NDR-60M
Ezi-STEP-PR-60L	BM-60L	EzT-NDR-60L
Ezi-STEP-PR-86M	BM-86M	EzT-NDR-86M
Ezi-STEP-PR-86L	BM-86L	EzT-NDR-86L
Ezi-STEP-PR-86XL	BM-86XL	EzT-NDR-86XL

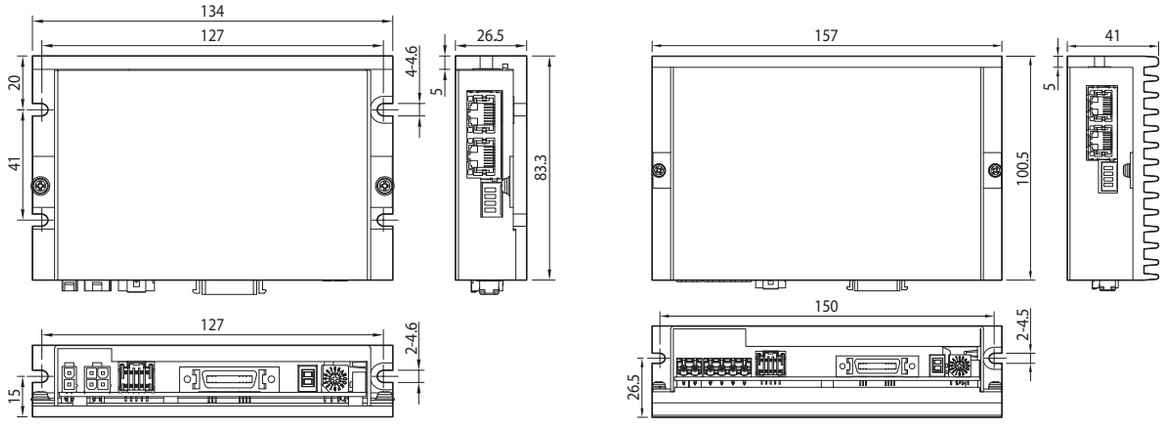
Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-PR-42S-BK	BM-42S-BK	EzT-NDR-42S
Ezi-STEP-PR-42M-BK	BM-42M-BK	EzT-NDR-42M
Ezi-STEP-PR-42L-BK	BM-42L-BK	EzT-NDR-42L
Ezi-STEP-PR-42XL-BK	BM-42XL-BK	EzT-NDR-42XL
Ezi-STEP-PR-56S-BK	BM-56S-BK	EzT-NDR-56S
Ezi-STEP-PR-56M-BK	BM-56M-BK	EzT-NDR-56M
Ezi-STEP-PR-56L-BK	BM-56L-BK	EzT-NDR-56L
Ezi-STEP-PR-60S-BK	BM-60S-BK	EzT-NDR-60S
Ezi-STEP-PR-60M-BK	BM-60M-BK	EzT-NDR-60M
Ezi-STEP-PR-60L-BK	BM-60L-BK	EzT-NDR-60L
Ezi-STEP-PR-86M-BK	BM-86M-BK	EzT-NDR-86M
Ezi-STEP-PR-86L-BK	BM-86L-BK	EzT-NDR-86L
Ezi-STEP-PR-86XL-BK	BM-86XL-BK	EzT-NDR-86XL

● Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series	BM-86 series
Driver Model		EzT-NDR-20 series	EzT-NDR-28 series	EzT-NDR-42 series	EzT-NDR-56 series	EzT-NDR-60 series	EzT-NDR-86 series
Input Voltage		24VDC ±10%					40~70VDC
Control Method		Bipolar PWM drive with 32bit MCU					
Multi Axis Drive		Maximum 16 axis through Daisy-Chain					
Position Table		256 motion command steps (Continuous, Wait, Loop, Jump and External start etc.)					
Current Consumption		Max 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000 [rpm]					
	Resolution[ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter) * Default: 10,000					
	Protection Functions	Over Current Error, Over Speed Error, Step Out Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Motor Voltage Error, System Error, ROM Error					
	LED Display	Power(Green), Alarm(Red), CW Rotation(Yellow), CCW Rotation(Orange)					
	STOP Current	10%~100% (Selectable by parameter) Current after 0.1 second after motor stop. * Default: 50%					
	Rotational Direction	CW/CCW (Selectable by parameter) Used when changing the direction of motor rotate. * Default: CW					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 9 programmable inputs (Photocoupler)					
	Output Signals	1 dedicated output (Compare Out), 9 programmable outputs (Photocoupler), Brake					
Communication Interface		RS-485 serial communication Communication speed: 9,600~921,600 [bps]					
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm]					
Return to Origin		Origin Sensor, ±Limit sensor, Z phase (By external encoder)					
GUI		User Interface Program within Windows					
Software		Motion Library (DLL) for Windows 7/8/10					

● Dimensions of Drive [mm]



※ 86mm motor drive (EzT-NDR-86 series)

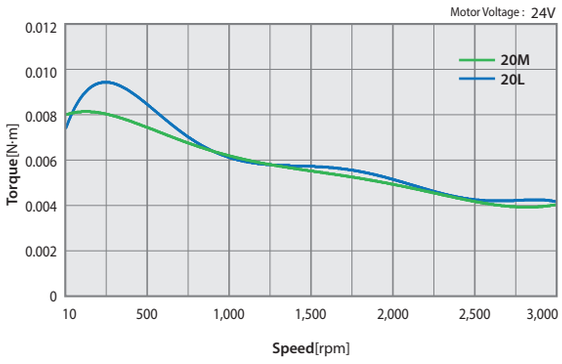
● Specifications of Motor

MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

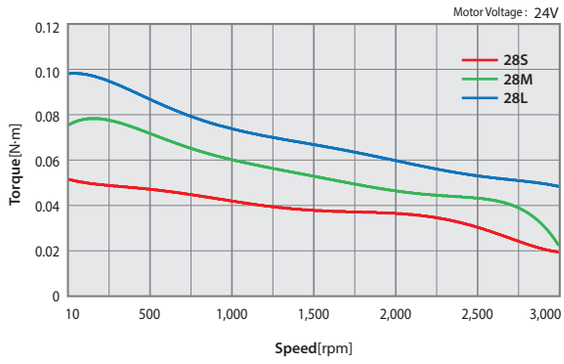
MODEL			BM-56 series			BM-60 series			BM-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	548	726	1159	616	793	1349	2275	3808	5330
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70	270	270	270
	8mm		65	65	65	87	87	87	300	300	300
	13mm		85	85	85	114	114	114	350	350	350
	18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

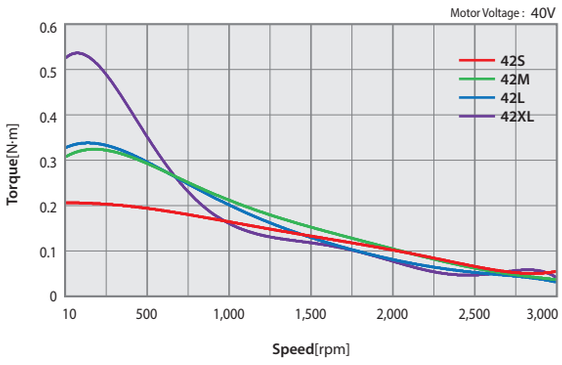
Ezi-STEP-PR-20 series



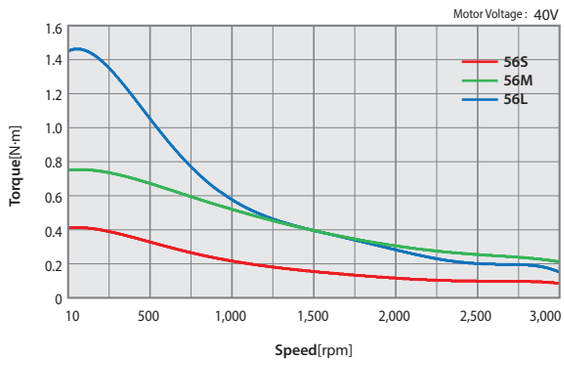
Ezi-STEP-PR-28 series



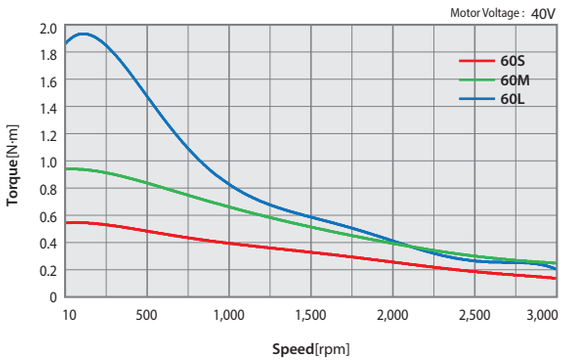
Ezi-STEP-PR-42 series



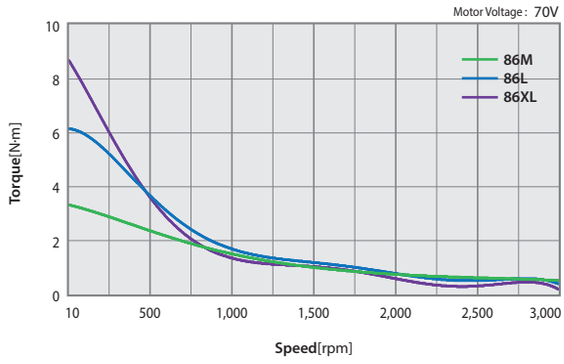
Ezi-STEP-PR-56 series



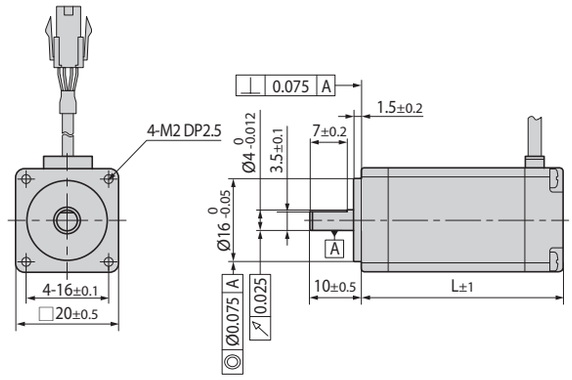
Ezi-STEP-PR-60 series



Ezi-STEP-PR-86 series

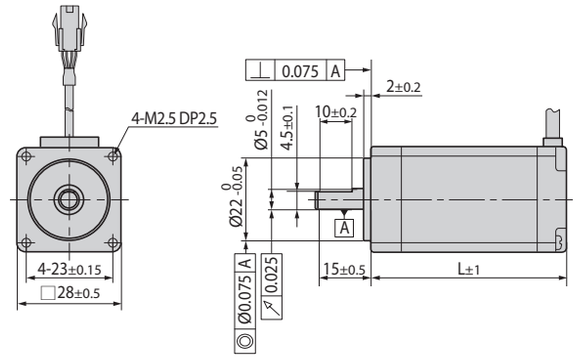


Dimensions of Motor [mm]



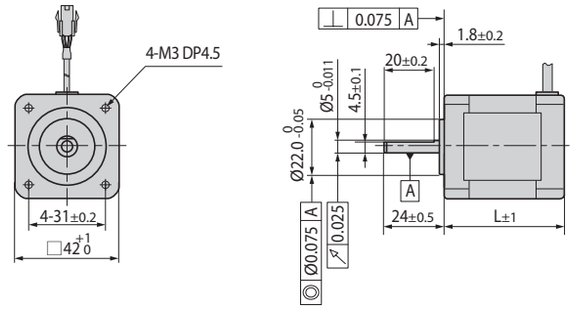
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



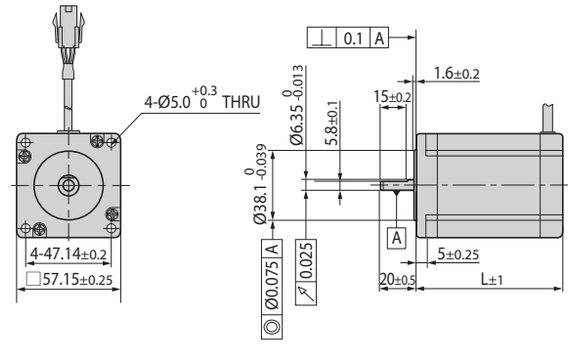
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

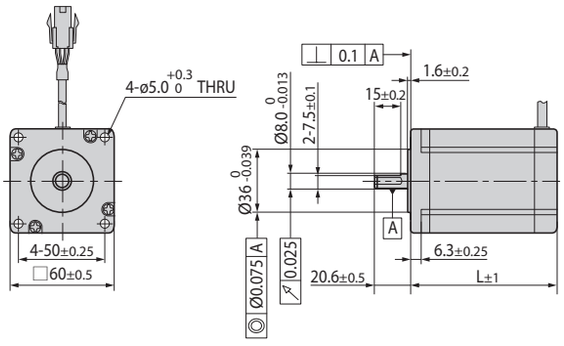
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

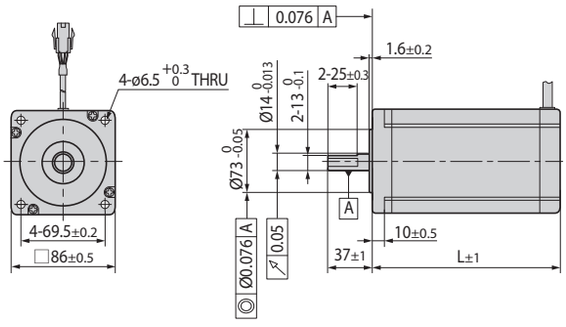
Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

● Dimensions of Motor [mm]



60mm

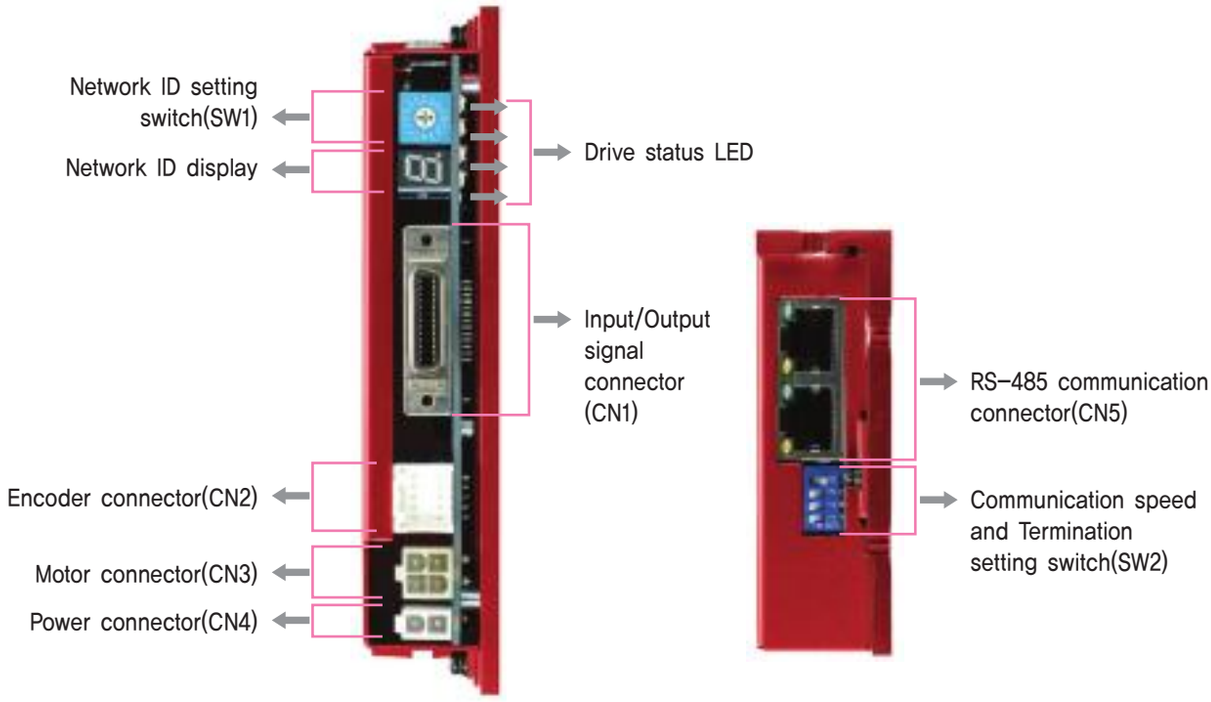
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85



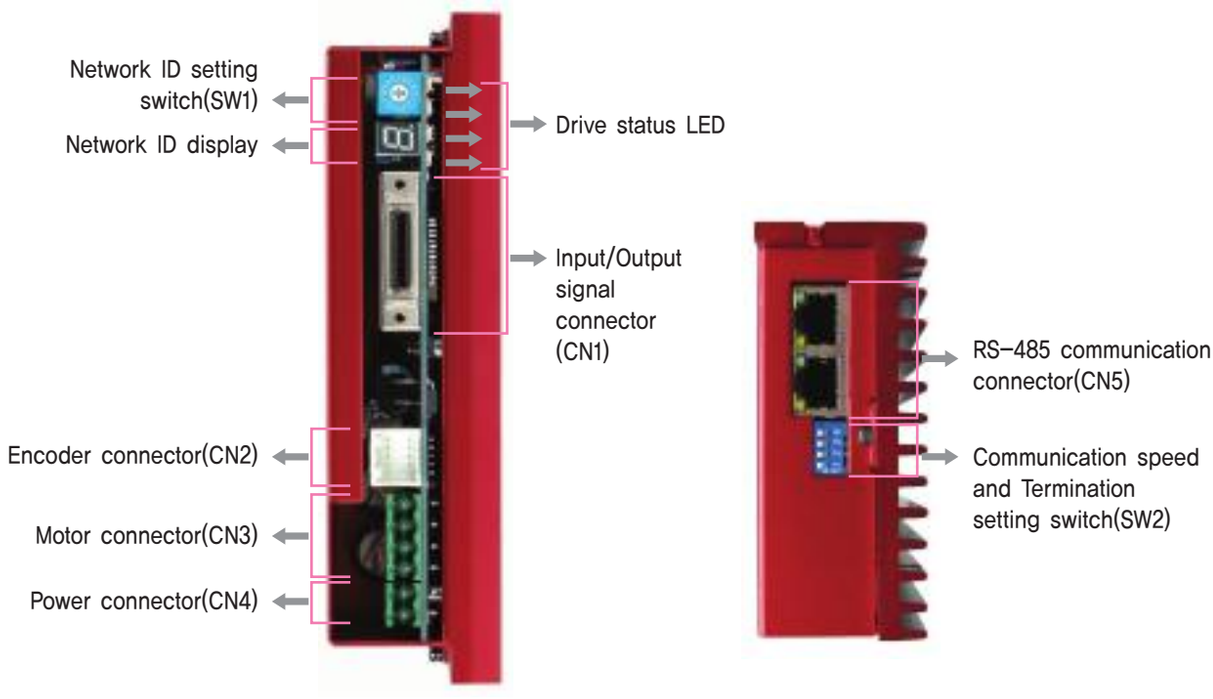
86mm

Model name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

● Settings and Operation



◆ 86mm Motor Drive(EzT-NDR-86 series)

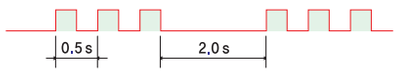


1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	Lights when power is ON Flashs when motor is Free status
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)
CW	Yellow	Motor Rotation Direction	Lights when motor rotate CW direction
CCW	Orange	Motor Rotation Direction	Lights when motor rotate CCW direction

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds the limit value *1
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
3	Step Out Error	Abnormally motor do not followed pulsed input
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF more high limit value *2
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
9	Motor Voltage Error	Motor voltage is out of limited value *3
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in parameter storage device(ROM)



Alarm LED Flash (Ex, Step Out Error)

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*3 : Motor limit voltage value depends on motor model. (Refer to the Manual)

2. Network ID Setting Switch(SW1)

Position	ID Number	Position	ID Number
0	0	8	8
1	1	9	9
2	2	A	10
3	3	B	11
4	4	C	12
5	5	D	13
6	6	E	14
7	7	F	15

※ Maximum 16 axis can be connected in one network.



3. Communication Speed and Termination Setting Switch(SW2)

Termination Setting Switch(SW2.1)

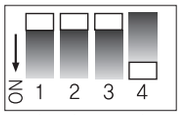
The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive install at the end of the network.

Speed Setting Switch(SW2.2~2.4)

SW2.2~SW2.4 used for setting speed as follows.

SW2.1	SW2.2	SW2.3	SW2.4	Baud Rate [bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

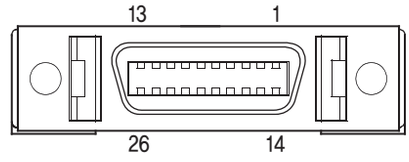
*1 : Default setting value



Speed setting switch
Termination setting switch

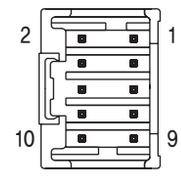
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In6	Input
6	Digital In7	Input
7	Compare Out	Output
8	Digital Out1	Output
9	Digital Out2	Output
10	Digital Out3	Output
11	Digital Out4	Output
12	Digital Out5	Output
13	Digital Out6	Output
14	Digital In2	Input
15	Digital In3	Input
16	Digital In4	Input
17	Digital In5	Input
18	Digital In8	Input
19	Digital In9	Input
20	Digital Out7	Output
21	Digital Out8	Output
22	Digital Out9	Output
23	BRAKE+	Output
24	BRAKE−	Output
25	EXT_GND	Input
26	EXT_24VDC	Input



5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----



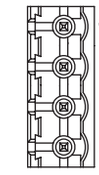
※ Used for monitoring the external encoder signal.

6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output



※ Only for 86mm motor drive.

7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



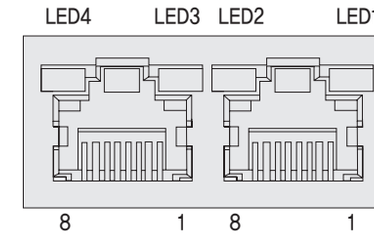
NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input



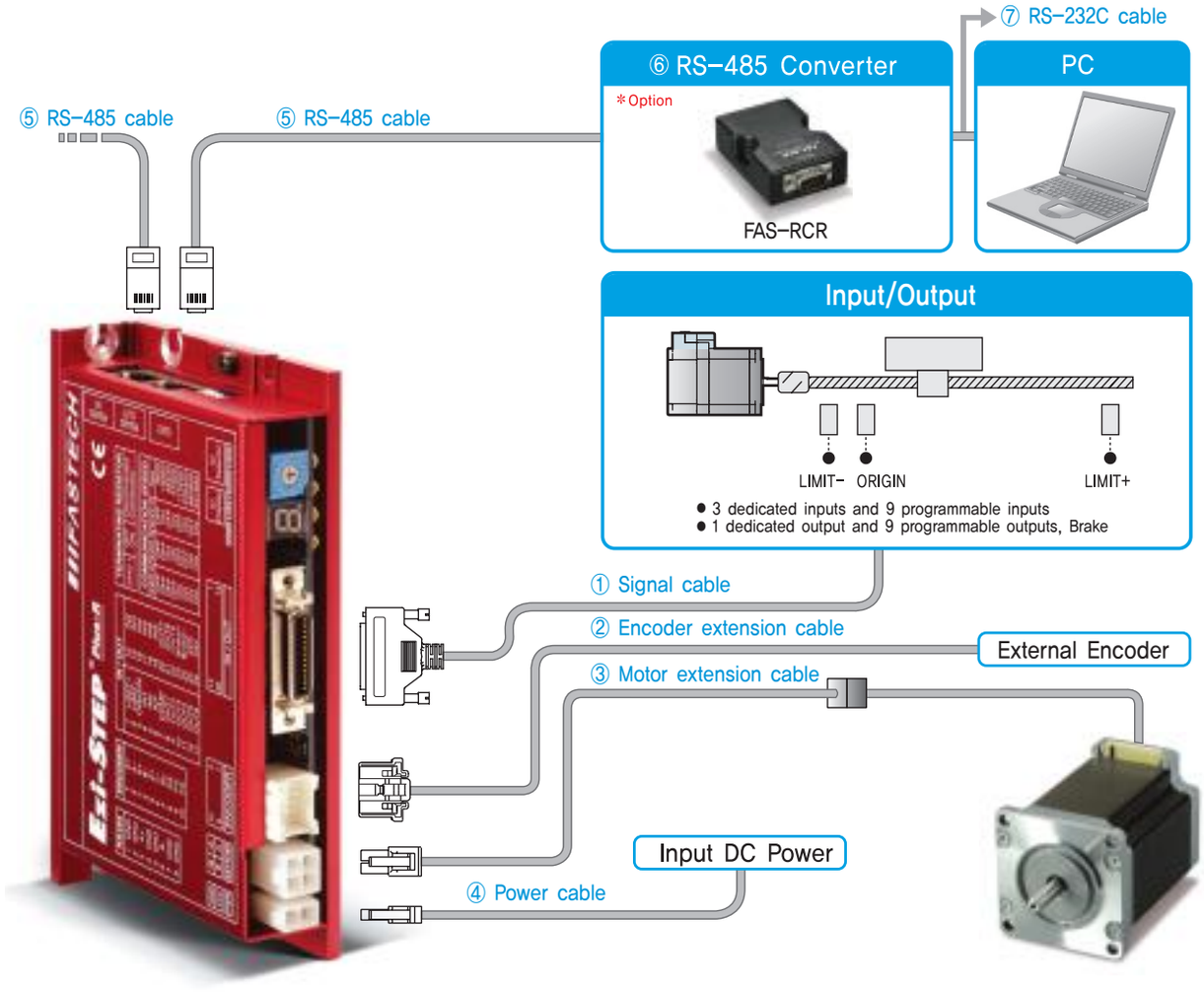
※ Only for 86mm motor drive.

8. RS-485 Communication Connector(CN5)

NO.	Function	NO.	Function
1	GND	6	Data−
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Drive status
5	GND	LED 2, 4	Communication status



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	RS-485 Cable
Length supplied	–	–	30cm	–	–
Max. Length	20m	20m	20m	2m	30m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CVSR-S-□□□F	□□□	Normal Cable
CVSR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CTPR-E-□□□F	□□□	Normal Cable
CTPR-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable

Available to connect between the drives of Ezi-STEP Plus-R or with FAS-RCR.

Item	Length [m]	Remark
CGNR-R-0R6F	0.6	Normal Cable
CGNR-R-001F	1	
CGNR-R-1R5F	1.5	
CGNR-R-002F	2	
CGNR-R-003F	3	
CGNR-R-005F	5	

⑥ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑦ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F	2	Normal Cable
CGNR-C-003F	3	
CGNR-C-005F	5	

⑧ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-STEP Plus-R.



⑨ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CIFD-S-□□□F	□□□	Normal Cable
CIFD-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

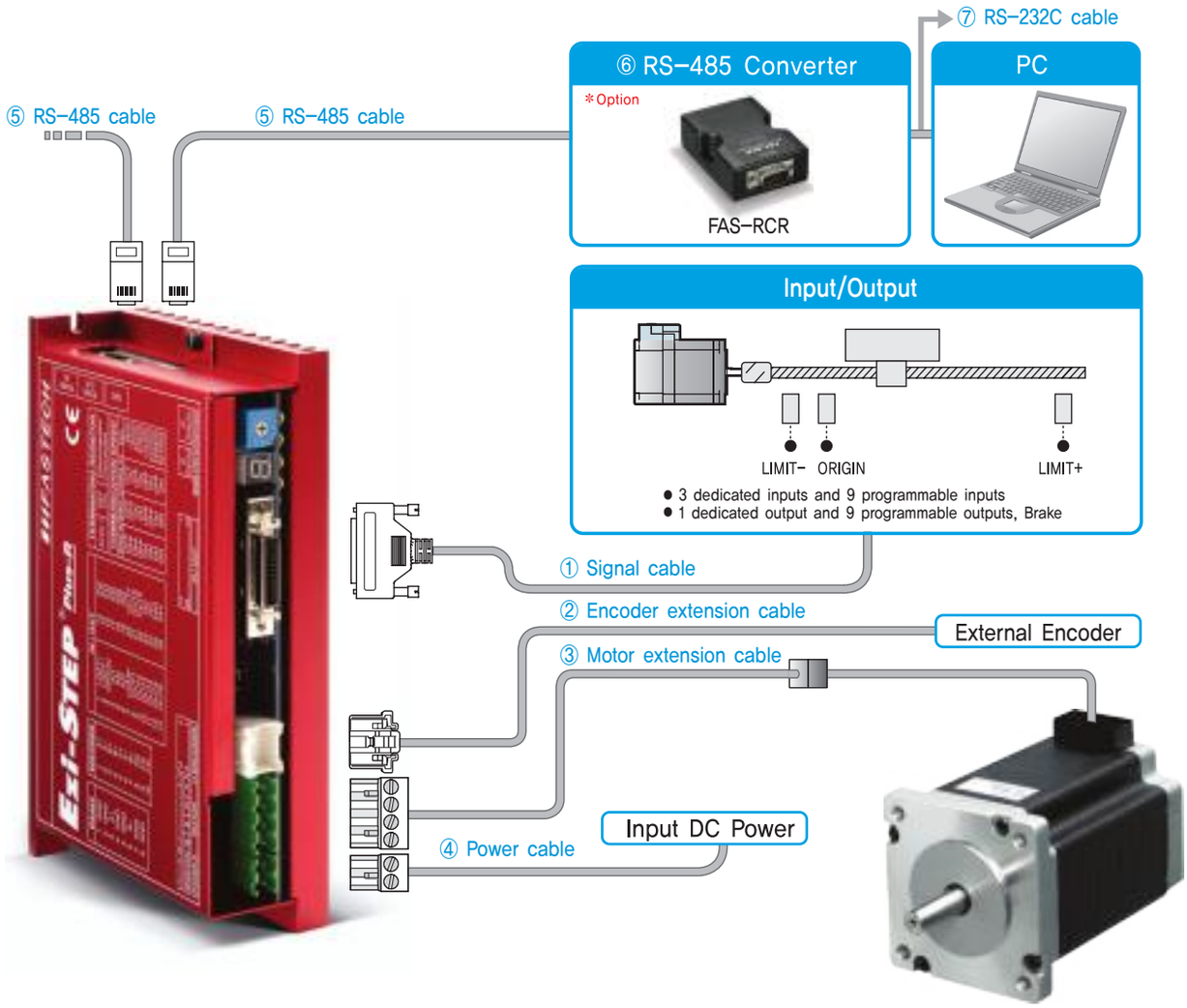
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacture
Power (CN4)		Housing Terminal	5557-05R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Connector Backshell	10126-3000PE 10326-52F0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	RS-485 Cable
Length supplied	–	–	30cm	–	–
Max. Length	20m	20m	20m	2m	30m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CVSR-S-□□□F	□□□	Normal Cable
CVSR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CTPR-E-□□□F	□□□	Normal Cable
CTPR-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CSVP-M-□□□F	□□□	Normal Cable
CSVP-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable

Available to connect between the drives of Ezi-STEP Plus-R or with FAS-RCR.

Item	Length [m]	Remark
CGNR-R-0R6F	0.6	Normal Cable
CGNR-R-001F	1	
CGNR-R-1R5F	1.5	
CGNR-R-002F	2	
CGNR-R-003F	3	
CGNR-R-005F	5	

⑥ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑦ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F	2	Normal Cable
CGNR-C-003F	3	
CGNR-C-005F	5	

⑧ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-STEP Plus-R.



⑨ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-STEP Plus-R.

Item	Length [m]	Remark
CIFD-S-□□□F	□□□	Normal Cable
CIFD-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

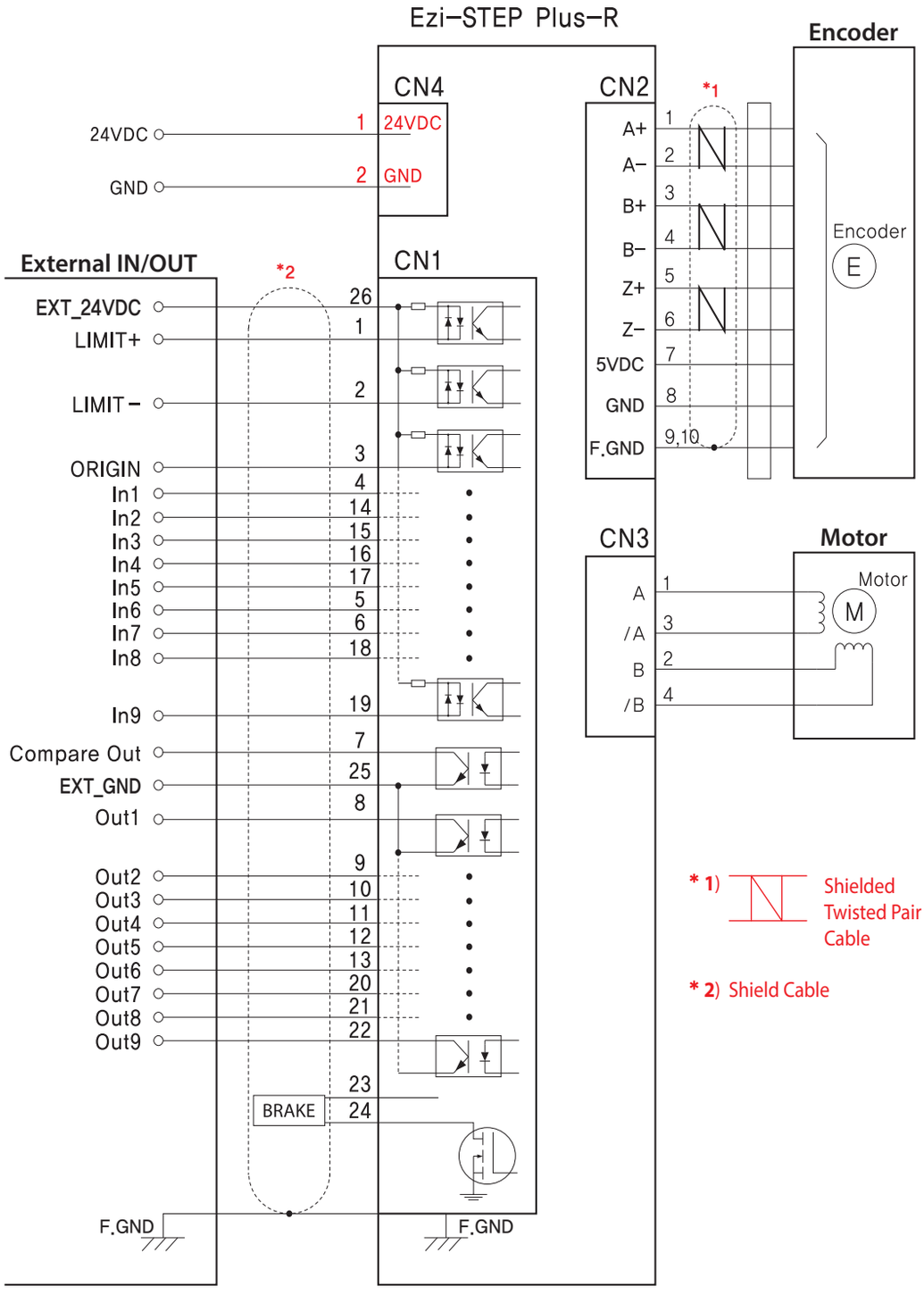
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacture
Power (CN4)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing Terminal	3191-4R1 1381T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Connector Backshell	10126-3000PE 10326-52F0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



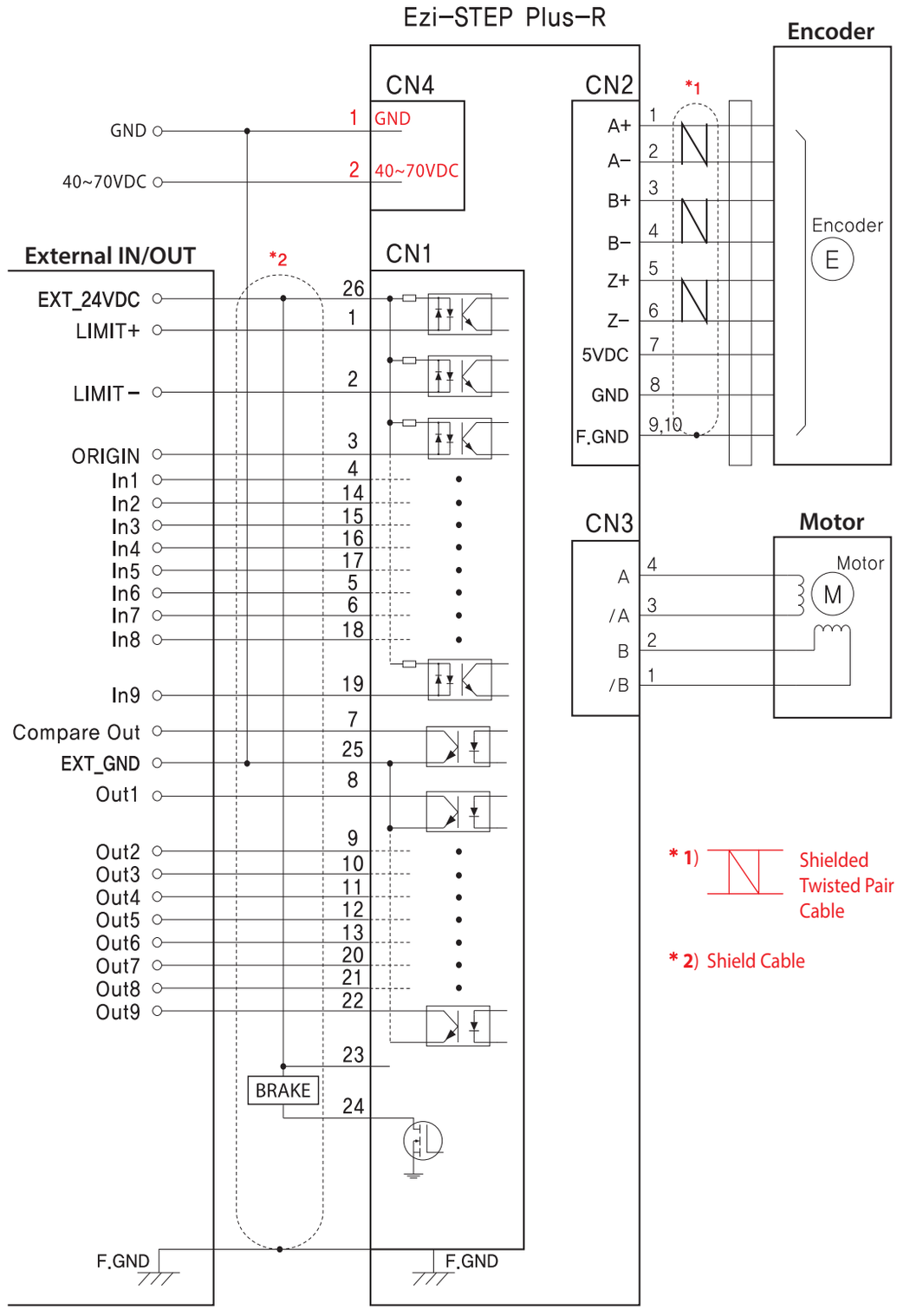
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● External Wiring Diagram [86mm Motor Drive]



*1) Shielded Twisted Pair Cable

*2) Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● GUI(Graphic User Interface) Screenshot



◆ Controller Lists and Motion Test

This screen display the controller list that connected to system. You can make a single move, jog and origin command and also the motor status is displayed.



◆ Parameter List

All of the parameters are displayed and modified on this screen.



◆ Motion Repeat and Monitor Status

Target position, speed, delay time and repeat count are selected for repeat motion test. Motion library(DLL) is also displayed on screen.



◆ I/O Monitoring and Setting

You can select various digital input and output signals of controller.



◆ Position Table

You can edit the position table and execute it. The position table data can be saved and loaded from Flash ROM and Windows file.

※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.


PWR
MOTOR
ENCODER
IN / OUT
ID
ID SET
Plus-R
Ezi-STEP® mini
FASTECH

Ezi-STEP Plus-R MINI

Micro Stepping System_ Ezi-STEP Plus-R MINI

- Embedded Controller
- Position Table
- Micro Stepping
- Software Damping
- Run/Stop Signal Output



FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® Plus-R MINI

Micro Stepping System



2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PLC.
The PLC can monitor the origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 64 positioning points can be set from PLC.



3 Microstep and Filtering

High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP adjusts PWM control signal in every 25 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

A maximum of 16 axis can be operated from a PC through RS-485 communications. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 7/8/10.



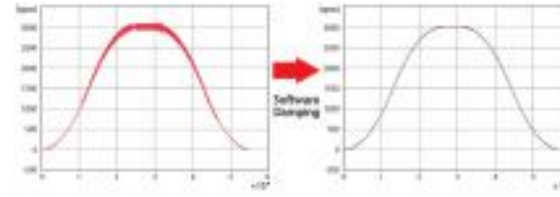
4 Drive Output Signal Monitoring

Ezi-STEP provides loss of step, run/stop, over-current, over-heat, over-voltage, power and motor connection alarms that can be monitored by the controller and visible by a motor-mounted flashing 7-Segment indicator.

5 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



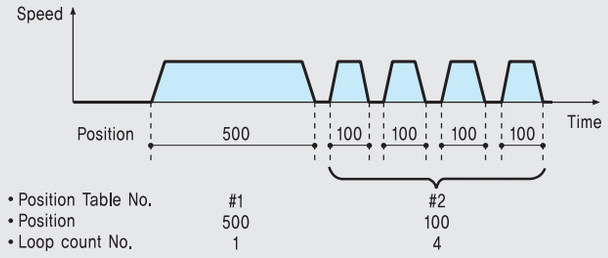
Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

Features of Motion Controller

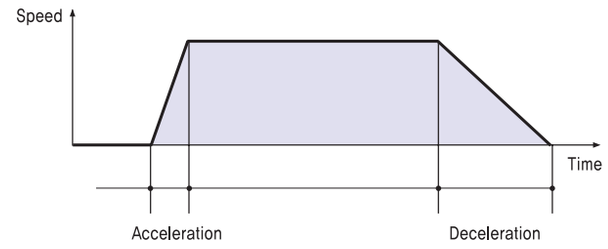
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



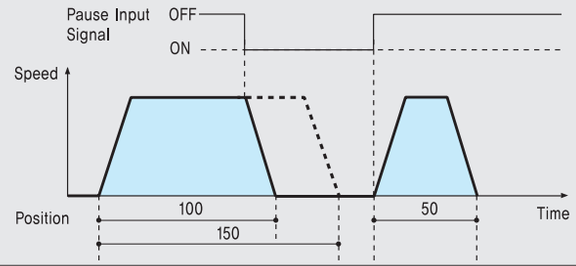
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



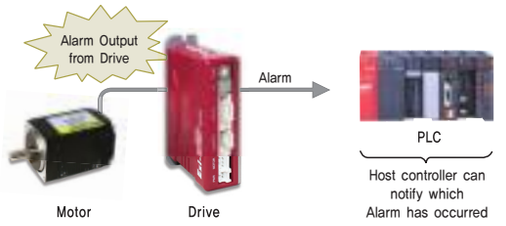
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



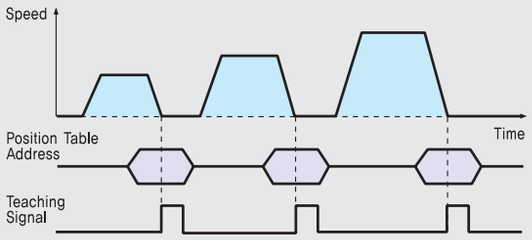
4. Alarm

The number of 7-Segment flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

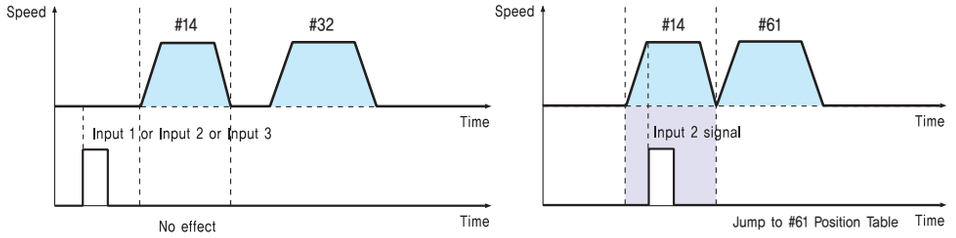


6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		32		60	61	62	



Ezi-STEP Plus-R MINI Part Numbering

Ezi-STEP-PR-MI-42M-BK-□

- Product Name
- Drive Series
  - PR : Plus RS-485
  - MI : Mini Type
- Motor Flange Size
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
- Motor Length
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- Brake
  - Blank : Without Brake
  - BK : Brake
- User Code

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-PR-MI-20M	BM-20M	EzT-NDR-MI-20M
Ezi-STEP-PR-MI-20L	BM-20L	EzT-NDR-MI-20L
Ezi-STEP-PR-MI-28S	BM-28S	EzT-NDR-MI-28S
Ezi-STEP-PR-MI-28M	BM-28M	EzT-NDR-MI-28M
Ezi-STEP-PR-MI-28L	BM-28L	EzT-NDR-MI-28L
Ezi-STEP-PR-MI-42S	BM-42S	EzT-NDR-MI-42S
Ezi-STEP-PR-MI-42M	BM-42M	EzT-NDR-MI-42M
Ezi-STEP-PR-MI-42L	BM-42L	EzT-NDR-MI-42L
Ezi-STEP-PR-MI-42XL	BM-42XL	EzT-NDR-MI-42XL

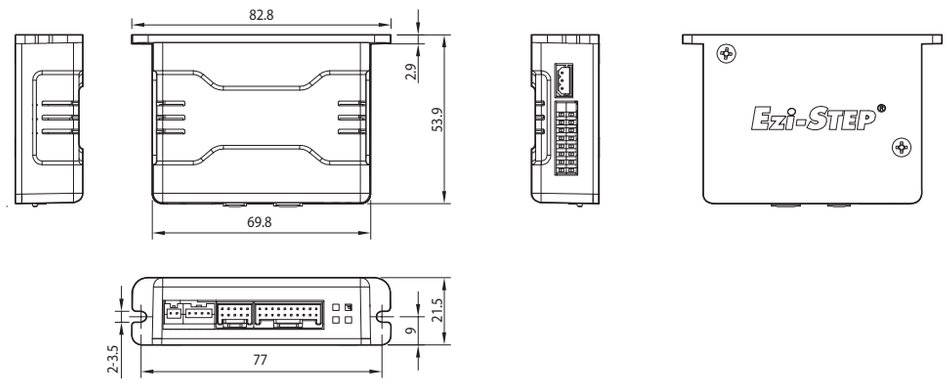
Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-PR-MI-42S-BK	BM-42S-BK	EzT-NDR-MI-42S
Ezi-STEP-PR-MI-42M-BK	BM-42M-BK	EzT-NDR-MI-42M
Ezi-STEP-PR-MI-42L-BK	BM-42L-BK	EzT-NDR-MI-42L
Ezi-STEP-PR-MI-42XL-BK	BM-42XL-BK	EzT-NDR-MI-42XL

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series
Driver Model		EzT-NDR-MI-20 series	EzT-NDR-MI-28 series	EzT-NDR-MI-42 series
Input Voltage		24VDC ±10%		
Control Method		Bipolar PWM drive with 32bit MCU		
Multi Axis Drive		Maximum 16 axis through Daisy-Chain		
Position Table		64 motion command steps (Continuous, Wait, Loop, Jump and External start etc.)		
Current Consumption		Max 500mA (Except motor current)		
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.	0.5g		
Function	Rotation Speed	0~3,000 [rpm]		
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter) * Default: 10,000		
	Protection Functions	Over Current Error, Over Speed Error, Step Out Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Motor Voltage Error, System Error, ROM Error		
	7-Segment	Network ID, Status monitor		
	STOP Current	20%~100% (Selectable by parameter) Current after 0.1 second after motor stop. * Default: 50%		
	Rotational Direction	CW/CCW (Selectable by parameter) Used when changing the direction of motor rotate. * Default: CW		
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler)		
	Output Signals	1 dedicated output (Compare Out), 1 programmable output (Photocoupler), Brake		
Communication Interface		RS-485 serial communication Communication speed: 9,600~921,600 [bps]		
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm]		
Return to Origin		Origin Sensor, ±Limit sensor, Z phase (By external encoder)		
GUI		User Interface Program within Windows		
Software		Motion Library (DLL) for Windows 7/8/10		

Dimensions of Drive [mm]

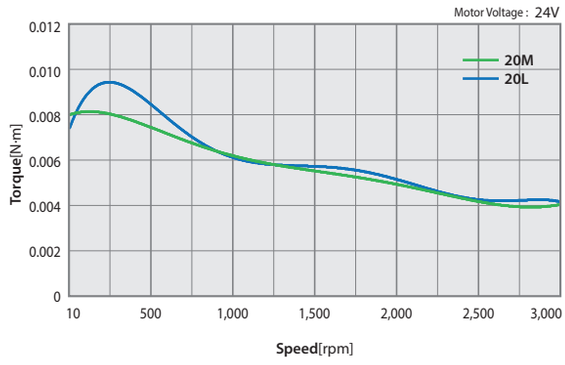


Specifications of Motor

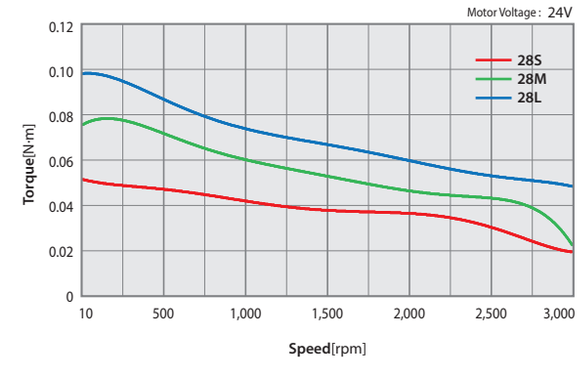
MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

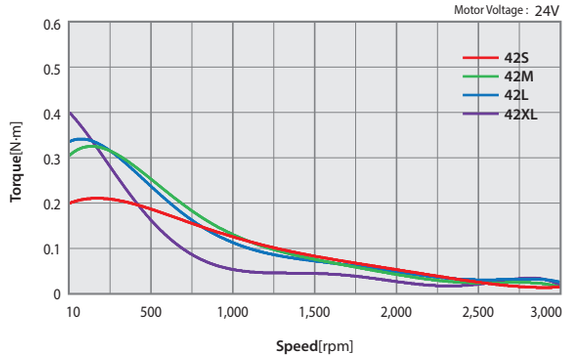
Ezi-STEP-PR-MI-20 series



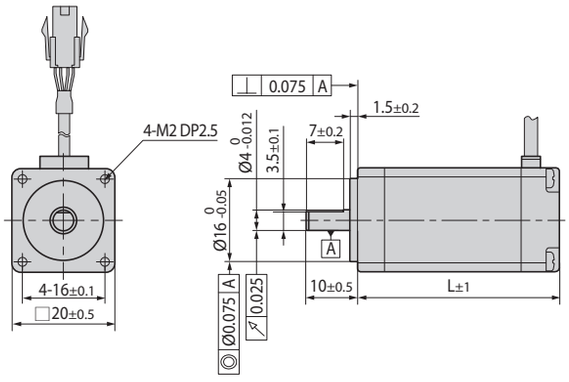
Ezi-STEP-PR-MI-28 series



Ezi-STEP-PR-MI-42 series

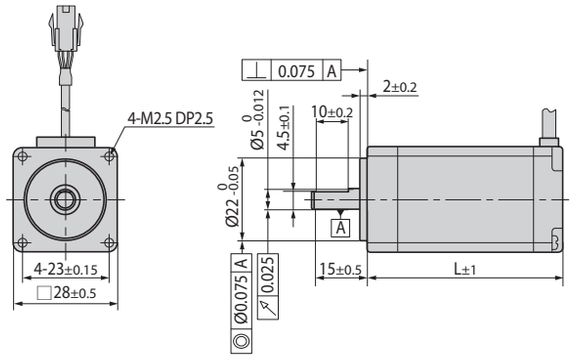


● Dimensions of Motor [mm]



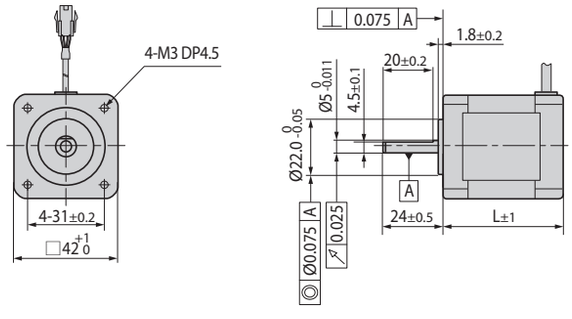
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



28mm

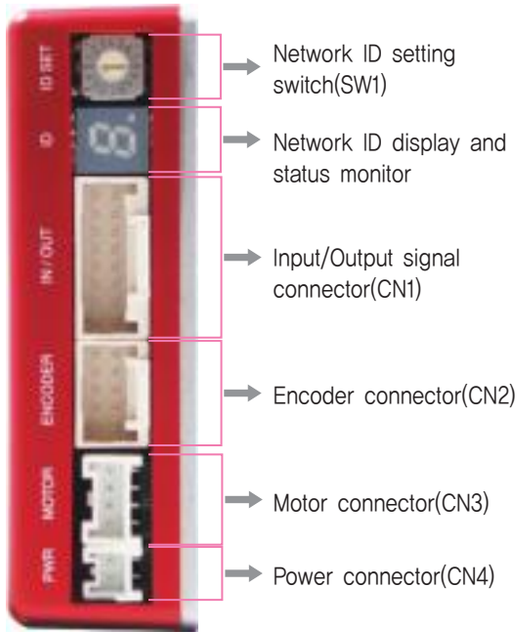
Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50

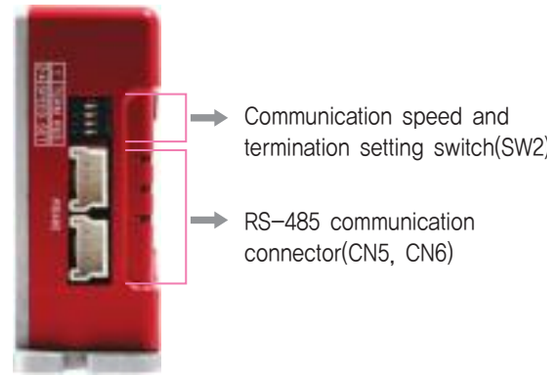


42mm

Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60

Settings and Operation

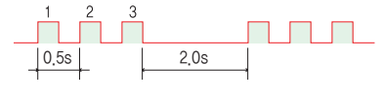




1. Protection functions and 7-Segment flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds the limit value*1
2	Over Speed Error	Motor speed exceeded 3,000 [rpm]
3	Step Out Error	Abnormally motor do not followed pulsed input
5	Over Temperature Error	Internal temperature of a motor drive exceeded 85℃
6	Over Regenerative Voltage Error	Back EMF more than 50V
7	Motor Connect Error	Power is ON without connection of motor cable to drive
9	Motor Voltage Error	Motor voltage is below 20V
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in Parameter storage Device(ROM)

*1 : Limit value depends on motor model (Refer to the Manual)



7-Segment flash
(Ex, Step Out Error)

2. Network ID Setting Switch(SW1)

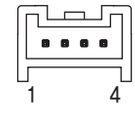
Position	ID Number	Position	ID Number
0	0	8	8
1	1	9	9
2	2	A	10
3	3	B	11
4	4	C	12
5	5	D	13
6	6	E	14
7	7	F	15



※ Maximum 16 axis can be connected in one network.

3. Motor Connector(CN3)

NO.	Function	I/O
1	B Phase	Output
2	/B Phase	Output
3	/A Phase	Output
4	A Phase	Output



4. Communication Speed and Termination Setting Switch(SW2)

Termination Setting Switch(SW2.1)

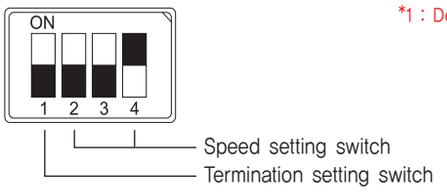
The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive install at the end of the network.

Speed Setting Switch(SW2.2~2.4)

SW2.2~SW2.4 used for setting speed as follows.

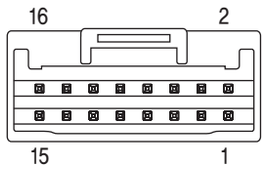
SW2.1	SW2.2	SW2.3	SW2.4	Baud Rate [bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

*1 : Default setting value



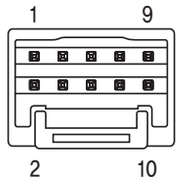
5. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE–	Output
5	LIMIT+	Input
6	LIMIT–	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital In4	Input
12	Digital In5	Input
13	Digital In6	Input
14	Digital In7	Input
15	Compare Out	Output
16	Digital Out1	Output



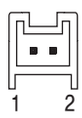
6. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A–	Input
3	B+	Input
4	B–	Input
5	Z+	Input
6	Z–	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



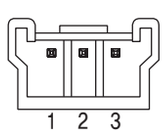
7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

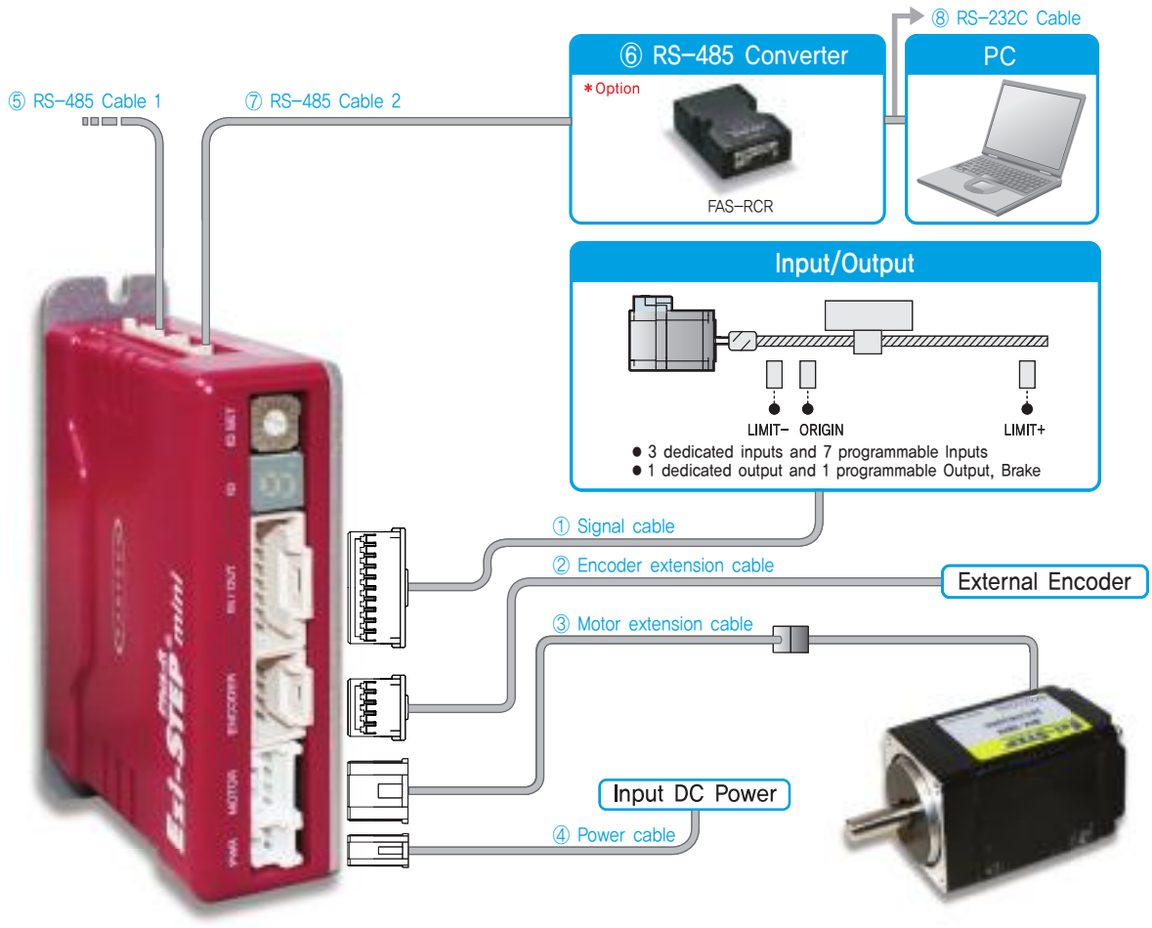


8. RS-485 Communication Connector(CN5, CN6)

NO.	Function
1	Data+
2	Data–
3	GND



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	RS-485 Cable
Length supplied	–	–	30cm	–	–
Max. Length	20m	20m	20m	2m	30m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP Plus-R MINI.

Item	Length [m]	Remark
CSVA-S-□□□F	□□□	Normal Cable
CSVA-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP Plus-R MINI.

Item	Length [m]	Remark
CSVI-E-□□□F	□□□	Normal Cable
CSVI-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP Plus-R MINI.

Item	Length [m]	Remark
CMNB-M-□□□F	□□□	Normal Cable
CMNB-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP Plus-R MINI.

Item	Length [m]	Remark
CMNB-P-□□□F	□□□	Normal Cable
CMNB-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable 1

Common cable to connect Ezi-SERVO-ALL-42/56, Ezi-STEP-ALL-42/56, Ezi-MOTIONLINK Plus-R and Ezi-SERVO Plus-R MINI thru by Network.

Item	Length [m]	Remark
CGNB-R-0R6F	0.6	Normal Cable
CGNB-R-001F	1	
CGNB-R-1R5F	1.5	
CGNB-R-002F	2	
CGNB-R-003F	3	
CGNB-R-005F	5	

⑥ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑦ RS-485 Cable 2

RCR to Ezi-SERVO-ALL-42/56, FAS-RCR to Ezi-STEP-ALL-42/56, FAS-RCR to Ezi-SERVO Plus-R MINI, FAS-RCR to Ezi-MOTIONLINK Plus-R.

Item	Length [m]	Remark
CGNA-R-0R6F	0.6	Normal Cable
CGNA-R-001F	1	
CGNA-R-1R5F	1.5	
CGNA-R-002F	2	
CGNA-R-003F	3	
CGNA-R-005F	5	

⑧ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F	2	Normal Cable
CGNR-C-003F	3	
CGNR-C-005F	5	

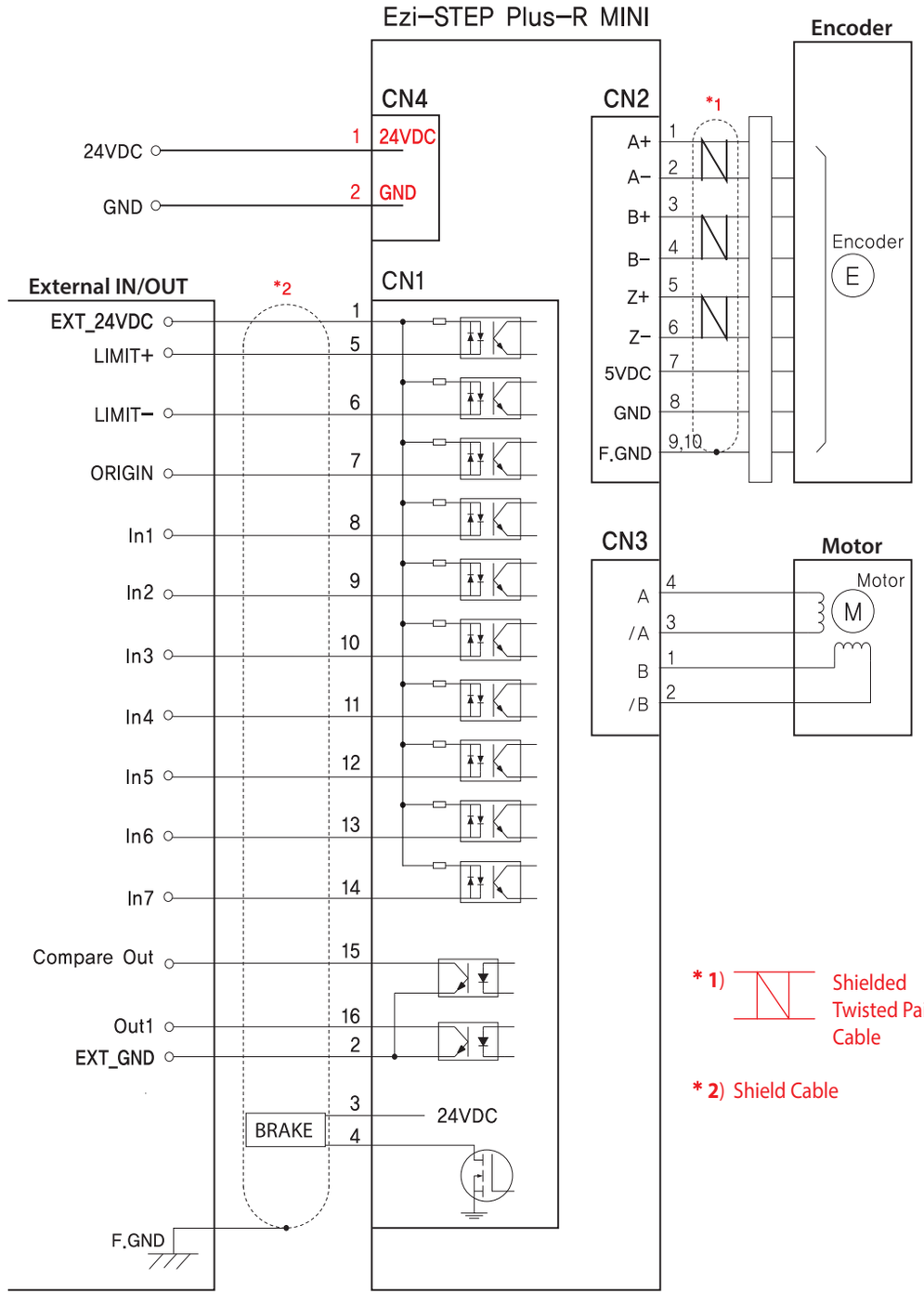
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
RS-485 Communication (CN5, CN6)		Housing Terminal	35507-0300 50212-8100	MOLEX
Power (CN4)		Housing Terminal	PAP-02V-S SPHD-001T-P0.5	JST
Motor	Drive Side (CN3)	Housing Terminal	PAP-04V-S SPHD-001T-P0.5	JST
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	501646-1000 501648-1000(AWG 26~28)	MOLEX
Signal (CN1)		Housing Terminal	501646-1600 501648-1000(AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● GUI(Graphic User Interface) Screenshot



◆ Controller Lists and Motion Test

This screen display the controller list that connected to system. You can make a single move, jog and origin command and also the motor status is displayed.



◆ Parameter List

All of the parameters are displayed and modified on this screen.



◆ Motion Repeat and Monitor Status

Target position, speed, delay time and repeat count are selected for repeat motion test. Motion library(DLL) is also displayed on screen.



◆ I/O Monitoring and Setting

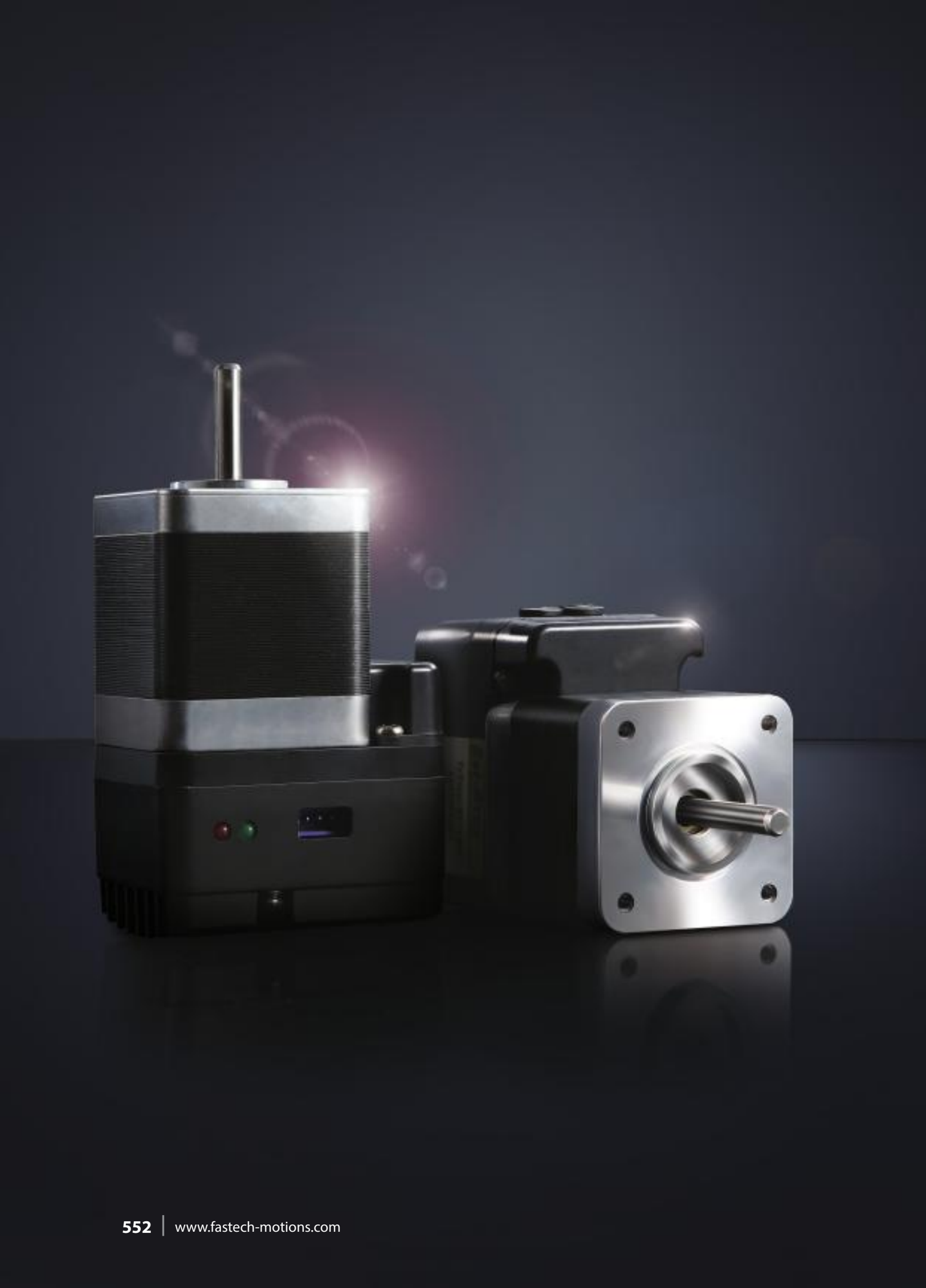
You can select various digital input and output signals of controller.



◆ Position Table

You can edit the position table and execute it. The position table data can be saved and loaded from Flash ROM and Windows file.

※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.



Ezi-STEP BT

Micro Stepping System_ Ezi-STEP BT

- Micro Stepping with Integrated Drive
- Software Damping
- Run/Stop Signal Output

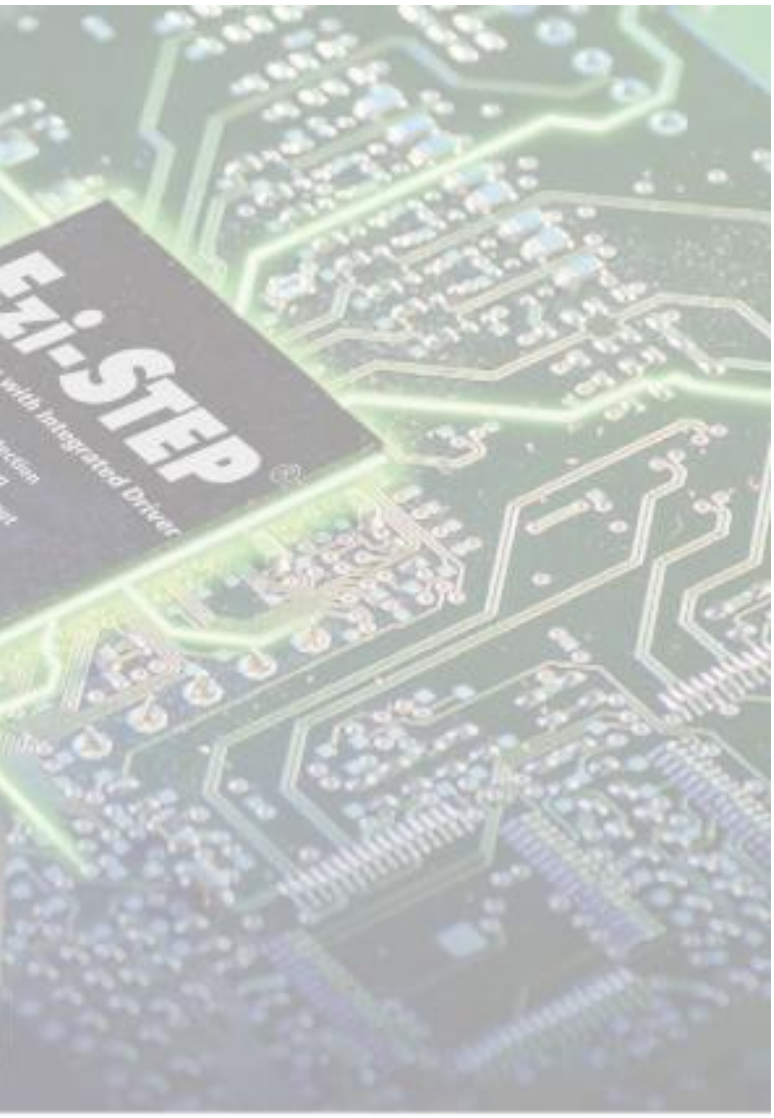


FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® BT

Micro Stepping System



Ezi-STEP BT Characteristics

Ezi-STEP BT is a micro stepping system that incorporates a motor and MCU (Micro Controller Unit) equipped drive that is integrated seamlessly together as a system. This makes it possible to incorporate many functions compared with a conventional stepping motors and drives, such as sensorless detection of loss of synchronization, smooth control over the whole velocity range, higher torque operation and no vibration at the low speed range.
Ezi-STEP BT's on-board high-performance digital signal processor and proprietary algorithms allow the Ezi-STEP BT to operate a high speeds with unmatched precision. The unique position estimation algorithm instantaneously detects out-of-synchronization based on the rotor position of the stepping motor, which is not an easy task in a conventional stepping motor and drives.
Utilizing a software damping and filtering algorithms, high speed operation is realized by the exciting angle control of a step-angle. The resolution of Ezi-STEP BT can be selected from basic 1.8° up to 0.0072° (1/250). In addition, Ezi-STEP BT generates various signals including sensorless stall detection, alarm and running signal. Ezi-STEP BT is an economical ideal drive for vision systems, nanotech, packaging, semiconductor, pick and place, automation, laboratory testing, wood working and wherever smooth, quiet, precise, high torque operation is a requirement.



1 Microstep and Filtering

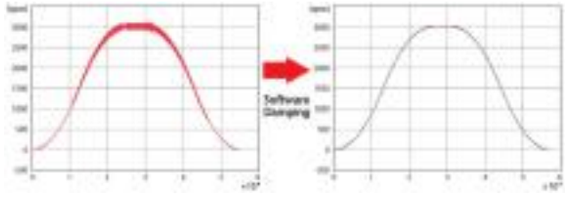
High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP adjusts PWM control signal in every 25 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

2 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

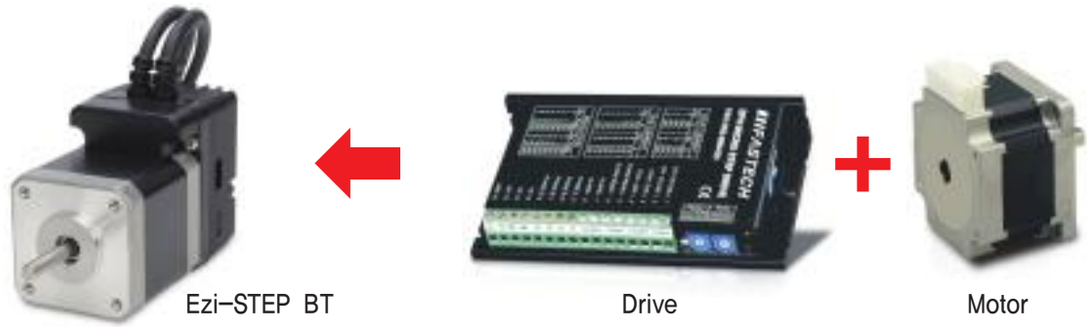
3 Drive Output Signal Monitoring

Ezi-STEP provides loss of step, run/stop, over-current, over-heat, over-voltage, power and motor connection alarms that can be monitored by the controller and visible by a motor-mounted flashing LED indicator.

4 Improvement of High-Speed Driving

Depending on the speed of a stepping motor, Ezi-STEP automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation. Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

● Simple and Compact all-in-one Motor integrated with Drive



Ezi-STEP BT Drive Motor

Saving installation space and ease of wiring by integrating drive circuits on the back side of a stepping motor.

Ezi-STEP BT Part Numbering

Ezi-STEP-BT-42S-BK-□

- Product Name
- Drive Series
  - BT : Built In
- Motor Flange Size
  - 42 : 42mm
  - 56 : 56mm
  - 86 : 86mm
- Motor Length
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- Brake
  - Blank : Without Brake
  - BK : Brake
- User Code

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-BT-42S	Motor & Drive Integrated	
Ezi-STEP-BT-42M		
Ezi-STEP-BT-42L		
Ezi-STEP-BT-42XL		
Ezi-STEP-BT-56S		
Ezi-STEP-BT-56M		
Ezi-STEP-BT-56L		
Ezi-STEP-BT-86M		
Ezi-STEP-BT-86L		
Ezi-STEP-BT-86XL		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-BT-42S-BK	Motor & Drive Integrated	
Ezi-STEP-BT-42M-BK		
Ezi-STEP-BT-42L-BK		
Ezi-STEP-BT-42XL-BK		
Ezi-STEP-BT-56S-BK		
Ezi-STEP-BT-56M-BK		
Ezi-STEP-BT-56L-BK		
Ezi-STEP-BT-86M-BK		
Ezi-STEP-BT-86L-BK		
Ezi-STEP-BT-86XL-BK		

Specifications of Drive

Motor Model		BT-42 series	BT-56 series	BT-86 series
Input Voltage		24VDC ±10%		40~70VDC
Control Method		Bipolar PWM drive with 32bit MCU		
Current Consumption		Max 500mA (Except motor current)		
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.	0.5g		
Function	Rotation Speed	0~3,000 [rpm] *1		
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter) * Default: 10,000		
	Maximum Frequency	500kHz (Duty 50%)		
	Protection Functions	Over Current Error, Over Speed Error, Step Out Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Motor Voltage Error, System Error, ROM Error		
	LED Display	Power status(Green), Alarm status(Red)		
	STOP Current	20%~100% (Selectable by parameter) Be setted to set value of STOP Current after 0.1 second after motor stop. * Default: 50%		
	Pulse Input Method	1 Pulse / 2 Pulse (Selectable by parameter) 1 Pulse: Pulse/Direction, 2 Pulse: CW/CCW * Default: 2 Pulse		
	Rotational Direction	CW/CCW (Selectable by parameter) Used when changing the direction of motor rotate. * Default: CW		
	Speed/Position Control Command	Pulse Train Input (Photocoupler Input)		
I/O Signal	Input Signals	Motor Free / Alarm Reset (Photocoupler Input)		
	Output Signals	Alarm, Run/Stop (Photocoupler Output)		

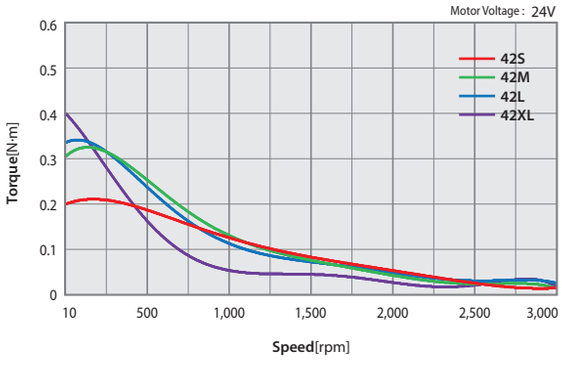
*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

Specifications of Motor

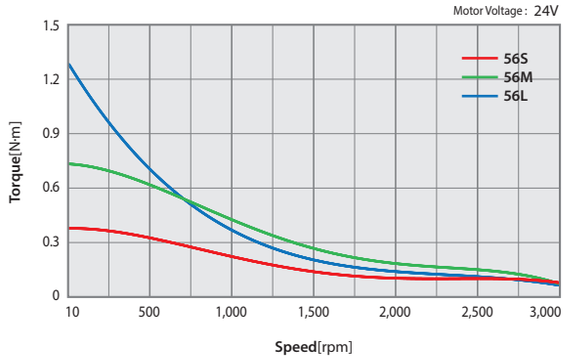
MODEL		UNIT	Ezi-STEP-BT-42 series				Ezi-STEP-BT-56 series			Ezi-STEP-BT-86 series		
			42S	42M	42L	42XL	56S	56M	56L	86M	86L	86XL
DRIVE METHOD		-	BI-POLAR									
NUMBER OF PHASES		-	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	1.2	1.2	1.2	1.2	3.0	3.0	3.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.32	0.44	0.5	0.65	0.64	1.0	1.5	4.5	8.5	12
ROTOR INERTIA		$g \cdot cm^2$	35	54	77	114	180	280	520	1800	3600	5400
WEIGHTS		g	309	373	480	570	614	773	1261	2566	4127	5617
LENGTH(L)		mm	34	40	48	60	46	55	80	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	22	22	22	22	52	52	52	270	270	270
	8mm		26	26	26	26	65	65	65	300	300	300
	13mm		33	33	33	33	85	85	85	350	350	350
	18mm		46	46	46	46	123	123	123	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight									
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)									
INSULATION CLASS		-	CLASS B(130℃)									
OPERATING TEMPERATURE		℃	0 to 55									

Torque Characteristics of Motor

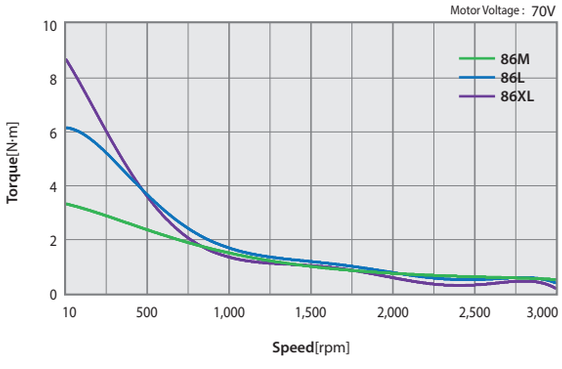
Ezi-STEP-BT-42 series



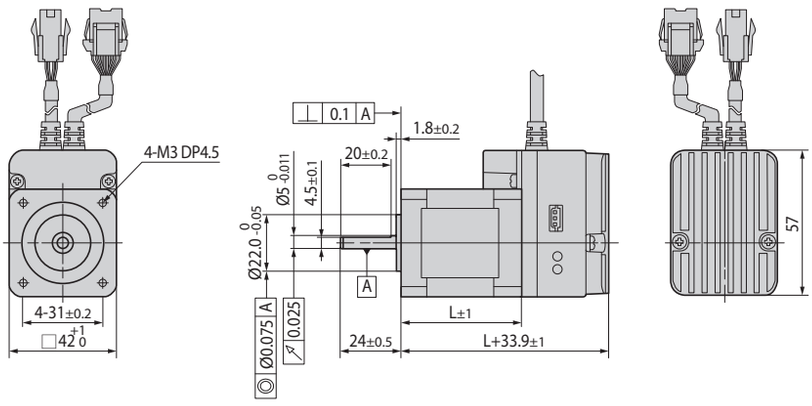
Ezi-STEP-BT-56 series



Ezi-STEP-BT-86 series

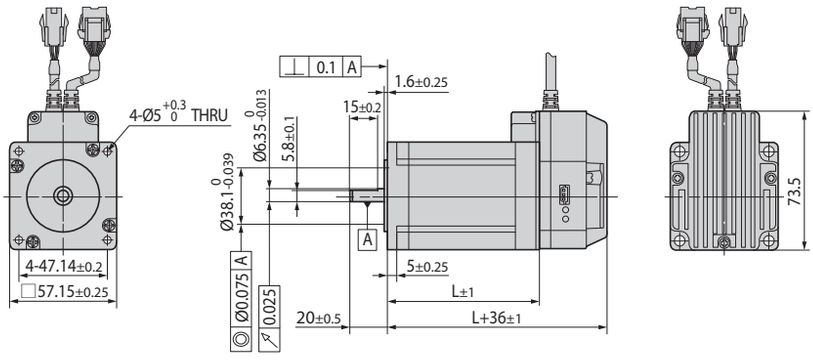


Dimensions of Motor [mm]



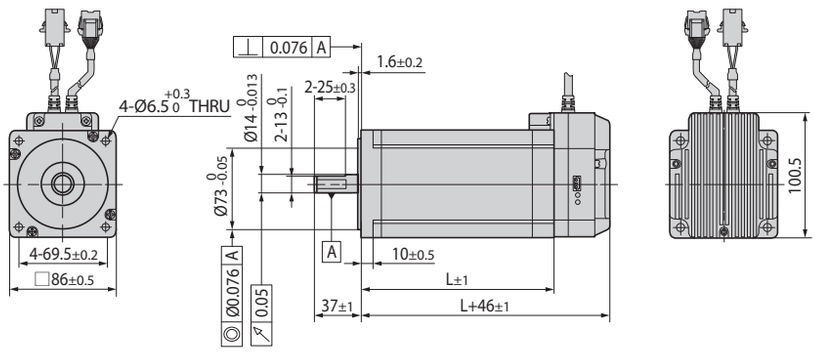
42mm

Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60



56mm

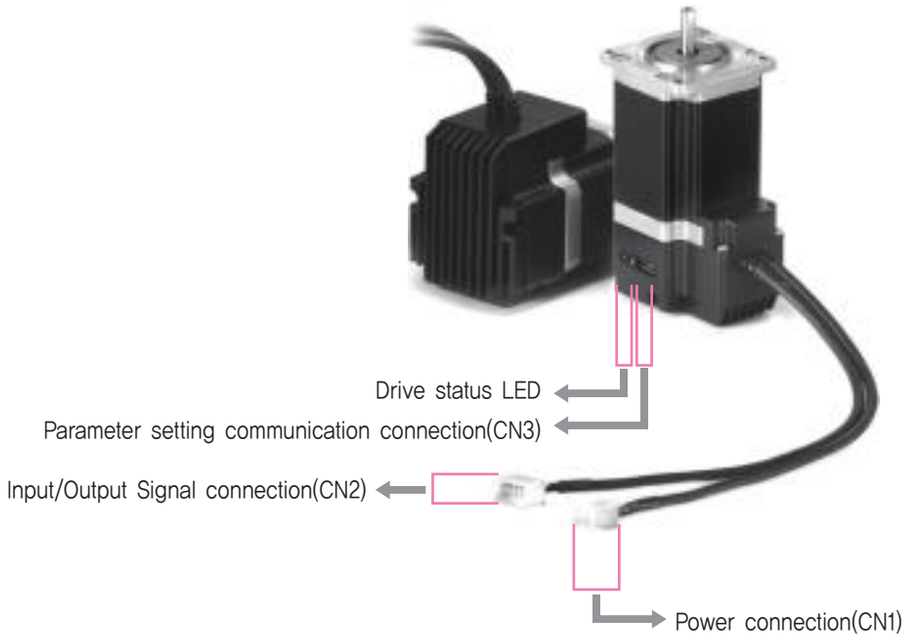
Model name	Length(L)
56S	46
56M	55
56L	80



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

● Settings and Operation



1. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	Lights when power is ON Flashs when motor is Free status.
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds the limit value *1
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
3	Step Out Error	Abnormally motor do not followed pulsed input
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regeneratived Voltage Error	Back-EMF more high limit value BT-42/56 series: 50V, BT-86 series: 90V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
9	Motor Voltage Erroe	Motor voltage is out of limited value BT-42/56 series: 20V, BT-86 series: 36V
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in parameter storage device(ROM)

*1 : Limit value depends on motor model (Refer to the Manual)



Alarm LED flash (Ex, Step Out Error)

2. Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input
3	F.GND	Input
4	NC	----

※ BT-42, BT-56 series.



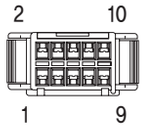
NO.	Function	I/O
1	40~70VDC	Input
2	GND	Input

※ BT-86 series.



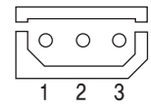
3. Input/Output Signal Connector(CN2)

NO.	Function	I/O
1	CW+(Pulse+)	Input
2	CW-(Pulse-)	Input
3	CCW+(Dir+)	Input
4	CCW-(Dir-)	Input
5	Alarm	Output
6	EXT_GND	Input
7	EXT_24VDC	Input
8	Alarm Reset	Input
9	Run/Stop	Output
10	F.GND	----

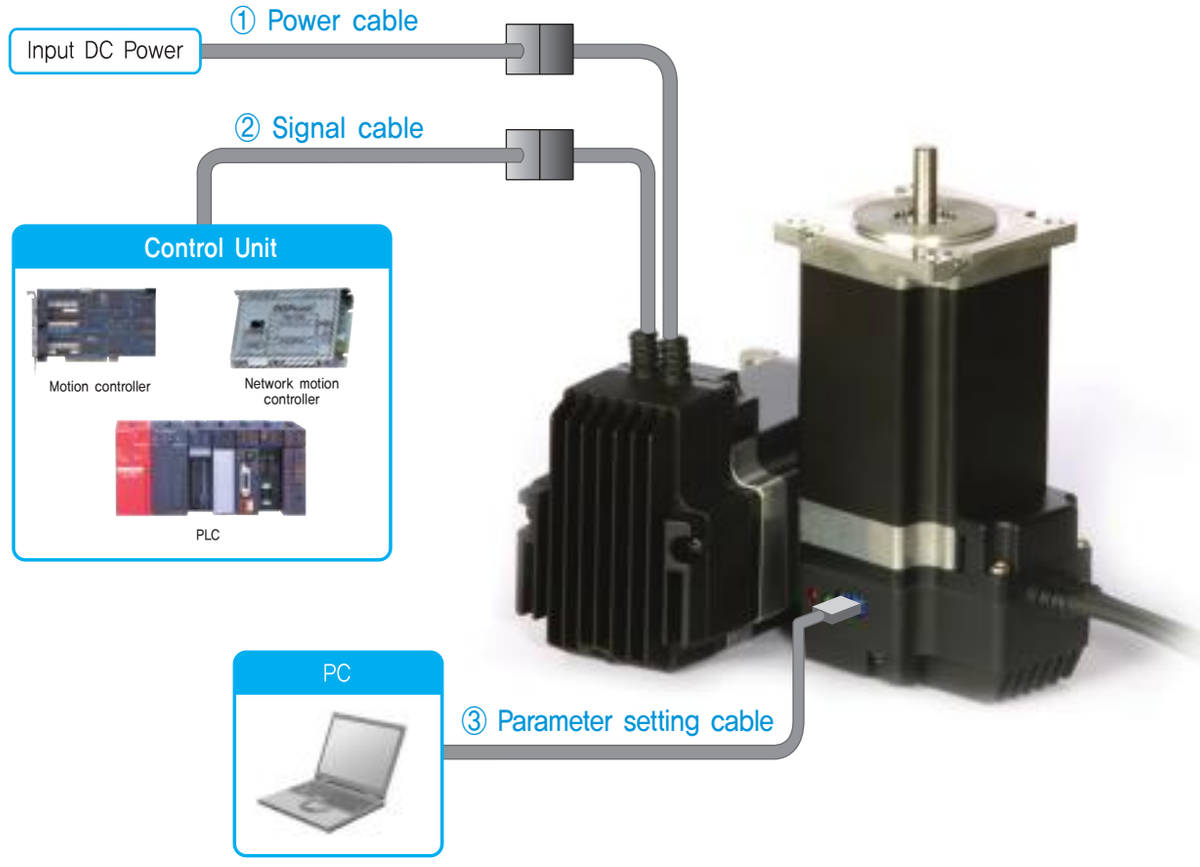


4. Parameter Setting Connector(CN3)

NO.	Function	I/O
1	Tx	Output
2	Rx	Input
3	GND	----



System Configuration



Type	Power Cable	Signal Cable	Parameter Setting Cable
Length supplied	30m	30cm	–
Max. Length	2m	20m	3m

1. Options

① Power Cable

Available to connect between Power and Ezi-STEP BT.

Item	Length [m]	Remark
CBTS-P-□□□F *1 CBTS-P-□□□M *1	□□□ □□□	Normal Cable Robot Cable
CBTL-P-□□□F *2 CBTL-P-□□□M *2	□□□ □□□	Normal Cable Robot Cable

*1 : Ezi-STEP-BT-42/56 series

*2 : Ezi-STEP-BT-86 series

□ is for Cable Length. The unit is 1m and Max. 2m length.

② Signal Cable

Available to connect between Input/Output Control System and Ezi-STEP BT.

Item	Length [m]	Remark
CBTS-S-□□□F CBTS-S-□□□M	□□□ □□□	Normal Cable Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Parameter Setting Cable

Available to connect between PC and Ezi-STEP BT.
This is used for change setting value of Resolution and Stop Current etc.

Item	Length [m]	Remark
CBTS-C-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 3m length.

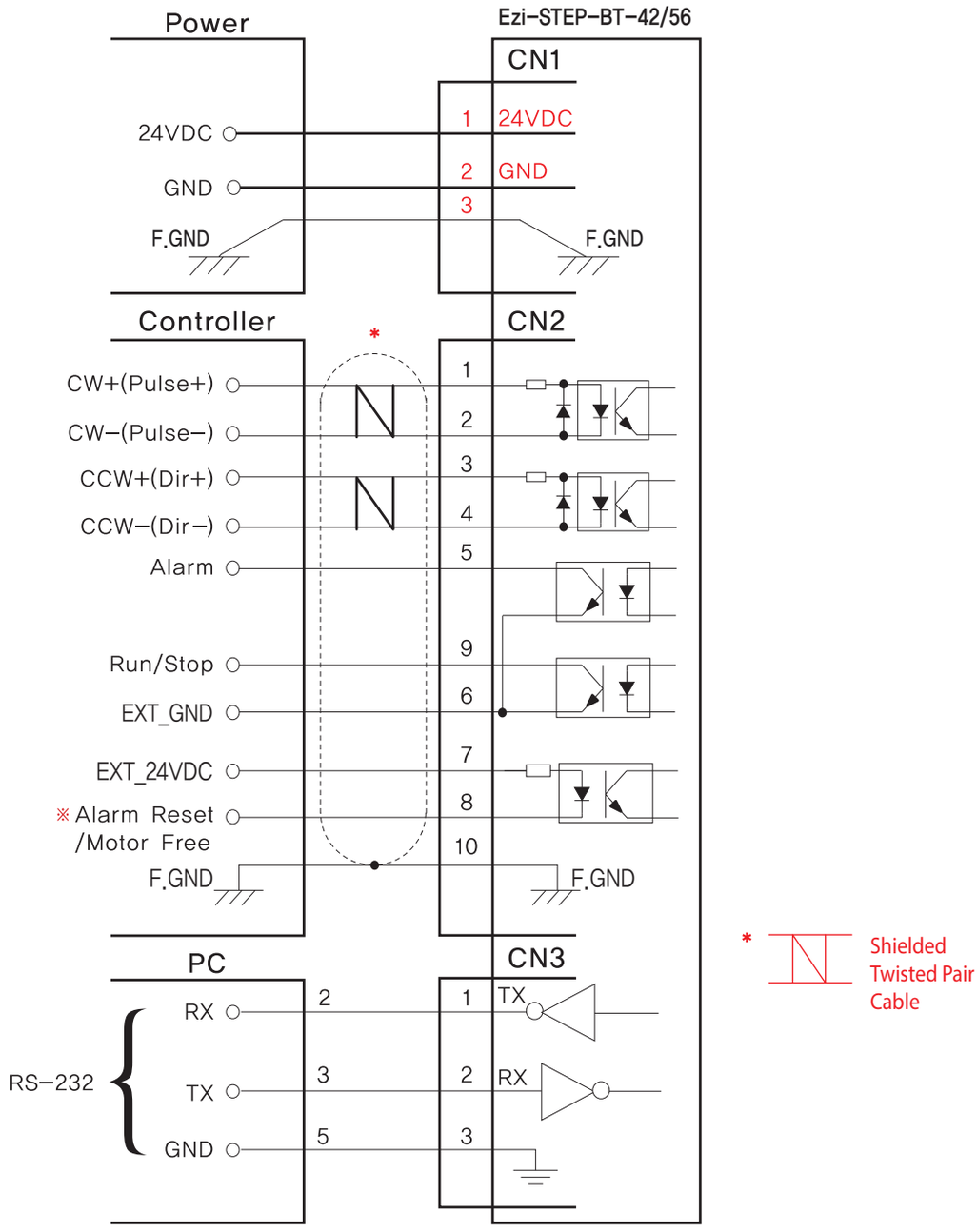
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN1)	BT-42/56 series	Housing Terminal	5557-04R 5556T	MOLEX
	BT-86 series	Housing Terminal	3191-2R 1381T	MOLEX
Signal (CN2)		Housing Terminal	XADRP-10V SXA-001T-P0.6	JST
Parameter Setting	Drive Side (CN3)	Housing Terminal	5264-03 5263	MOLEX
	PC Side	D-SUB Connector Terminal	717SD-ESD9S 7E-1675-09	AMPHENOL

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

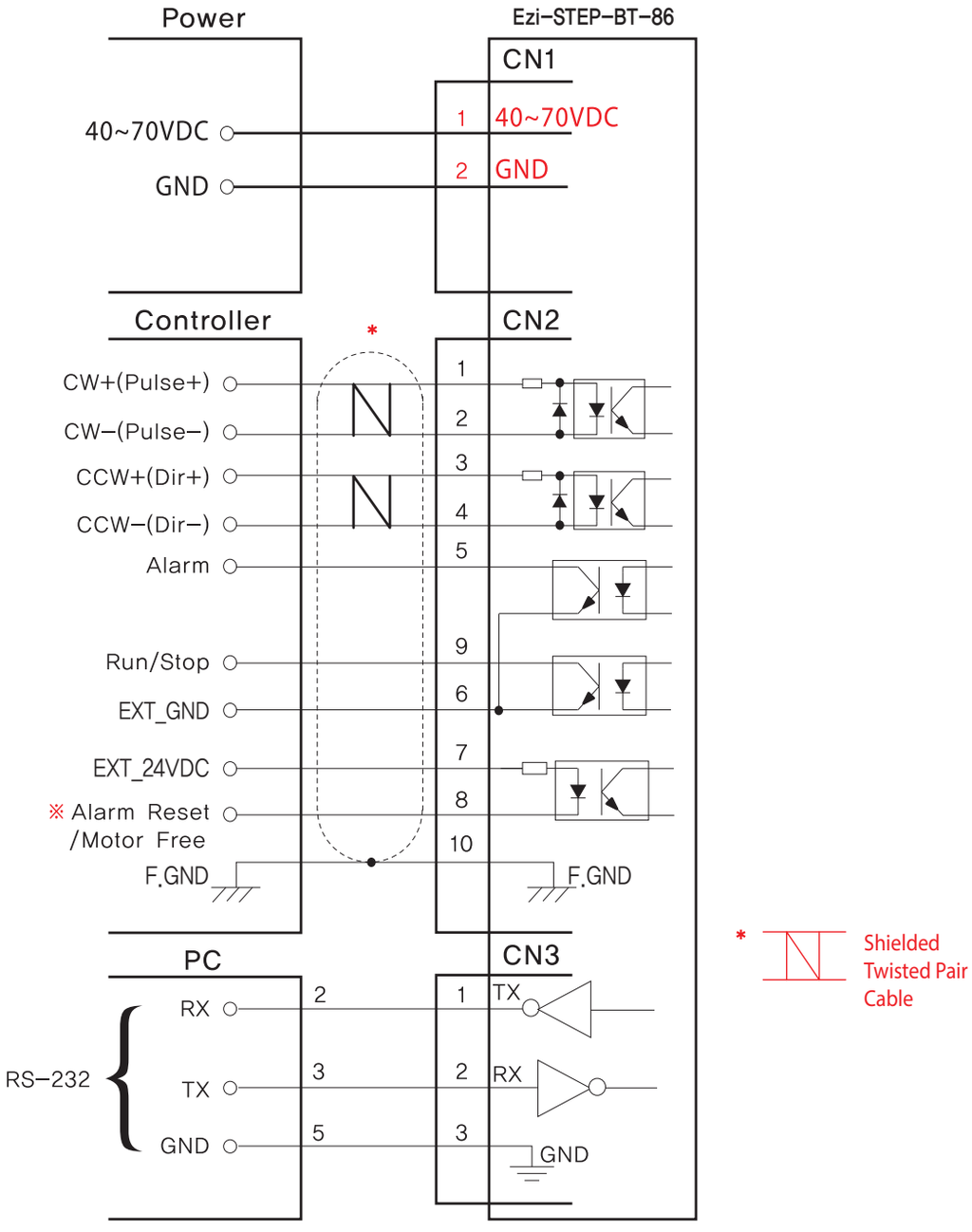
● External Wiring Diagram [Ezi-STEP-BT-42/56 series]



※ Alarm Reset signal line is also used for Motor Free signal.
(For details, please refer to Control Signal Input/Output Description)

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● External Wiring Diagram [Ezi-STEP-BT-86 series]



※ Alarm Reset signal line is also used for Motor Free signal.
(For details, please refer to Control Signal Input/Output Description)

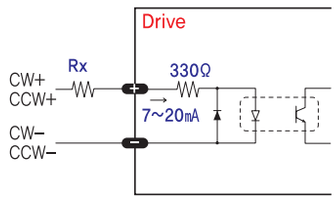
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

●Control Signal Input/Output Description

1 Input Signal

Input signals of the drive are all photocoupler protected. The signal shows the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.

CW, CCW

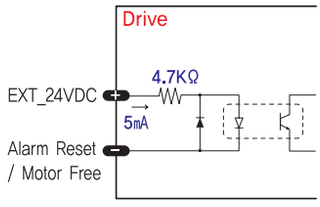


Pin No.	Function
1	CW+
2	CW-
3	CCW+
4	CCW-

◆ CW, CCW Input

This signal can be used to receive a positioning pulse command from a user host motion controller. The user can select 1-pulse input mode or 2-pulse input mode (refer to switch No.1, SW1). The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor Rx is not used and connect to the driver directly. When the level of input signal is more than 5V, Rx resistor is required. If the resistor is absent, the drive will be damaged. If the input signal level is 12V, Rx value is 680ohm and 24V, Rx value is 1.8Kohm.

Alarm Reset / Motor Free



Pin No.	Function
8	Alarm Reset
7	EXT_24VDC

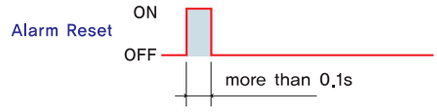
Alarm Reset signal line is also used for Motor Free signal.

◆ Motor Free Input

This input can be used only to adjust the position by manually moving the motor shaft from the load-side. By setting the signal [ON], the drive cuts off the power supply to the motor. Then, one can manually adjust output position. When setting the signal back to [OFF], the drive resumes the power supply to the motor and recovers the holding torque. When driving a motor, one needs to set the signal [OFF]. In normal operations set the signal [OFF] or disconnect a wire to the signal.

◆ Alarm Reset Input

When a protection mode has been activated, a signal to this Alarm Reset input cancels the Alarm output. By setting the alarm reset input signal [ON], cancel Alarm output. Before cancel the Alarm output, have to remove the source of alarm.

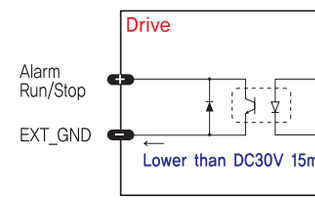


[Caution] If Alarm Reset input signal still remains [ON], motor will be Free state. Keep in mind to change [ON]→[OFF] state.

2 Output Signal

As the output signal from the drive, there are the photocoupler outputs (Alarm, Run/Stop). The signal status operate as [ON : conduction], [OFF : Non-conduction] of photocoupler not as the voltage level of signal.

Alarm, Run/Stop



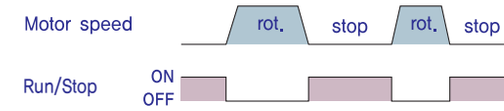
Pin No.	Function
5	Alarm
9	Run/Stop
6	EXT_GND

◆ Alarm Output

The Alarm output indicates [OFF] when the drive is in a normal operation. If a protection mode has been activated, it goes [ON]. A host controller meeds to detect this signal and stop sending a motor driving command.
When the drive detects an abnormal operation such as overload of overcurrent of a motor, it sets the Alarm output to [ON], flash the Alarm LED, disconnects the power to a motor and stops the motor, simultaneously.

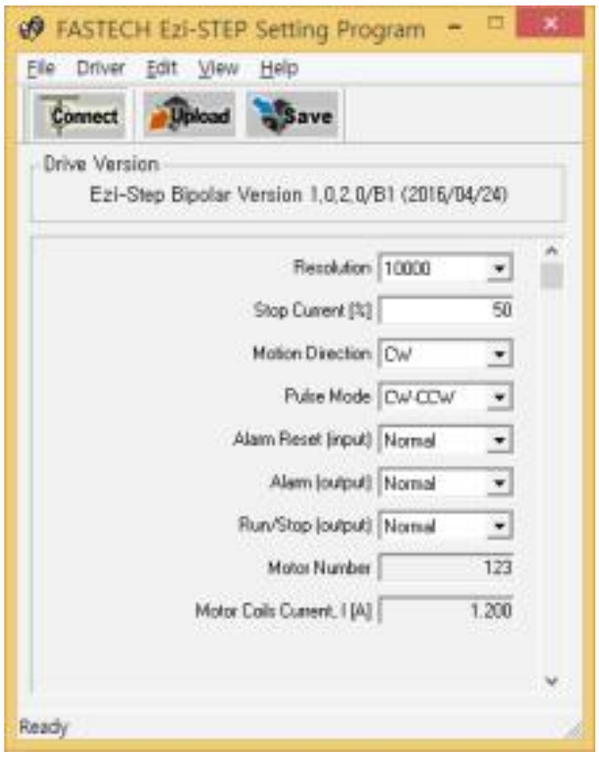
◆ Run/Stop Output

Run/Stop Output state is [ON] when motor positioning is completed. It operates reversely compare to Normal mode, when you set inverse mode.



● Parameter Setting GUI [User Interface]

Ezi-STEP BT drive utilizes various parameters for operation and some parameters can be changed upon the needs of the user. Ezi-STEP BT provides Drive Setting Program for more convenient use. The screen shot in right side is the sample of Drive Setting Program which is used for drive setting and parameter change. User can change and set the parameter such as Resolution, Stop Current, level of Alarm Reset, Alarm, Motion Direction and so on. By using this drive setting program, user can find the optimal condition to Ezi-STEP BT to fit with the user's own system. Please be noticed that connection for drive setting program shall be done when the Ezi-STEP BT is disable staus for safety reason.



※ Parameter setting program can be downloaded from website. (www.fastech-motions.com)
※ Parameter setting program can support Windows 7/8/10.
※ Parameter setting program(GUI) can be updated without notice to improve the performance and convenience of user.


ON
Exi-STEP®

Ezi-STEP ALL

Micro Stepping System_ Ezi-STEP ALL

- Motor + Drive + Controller + Network
- Embedded Controller
- Micro Stepping
- Software Damping
- Run/Stop Signal Output



FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® ALL

Micro Stepping System



2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PLC.
The PLC can monitor the origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 64 positioning points can be set from PLC.



3 Microstep and Filtering

High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP adjusts PWM control signal in every 25 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

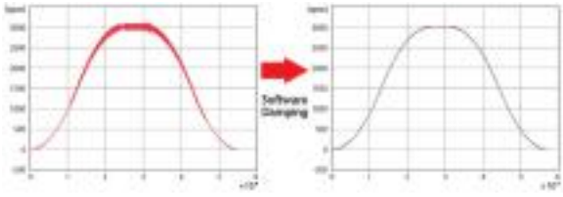
A maximum of 16 axis can be operated from a PC through RS-485 communications. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 7/8/10.



4 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



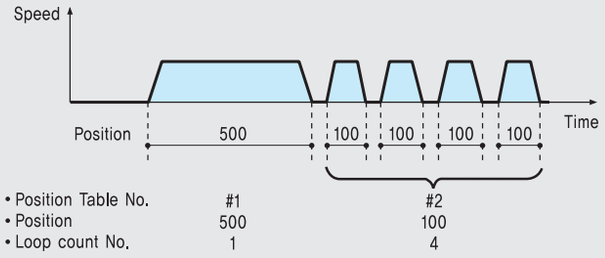
Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

Features of Motion Controller

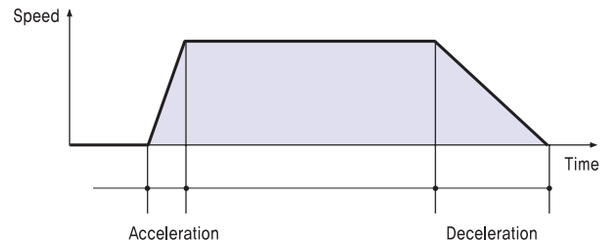
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



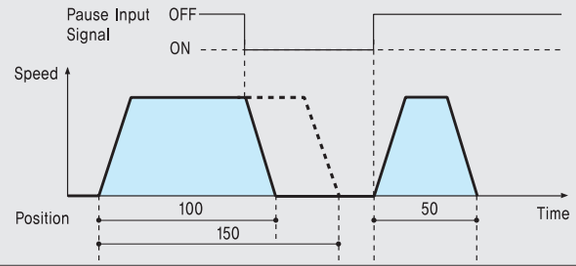
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



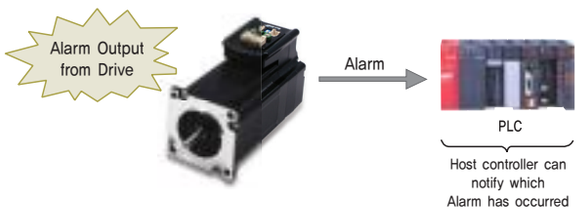
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



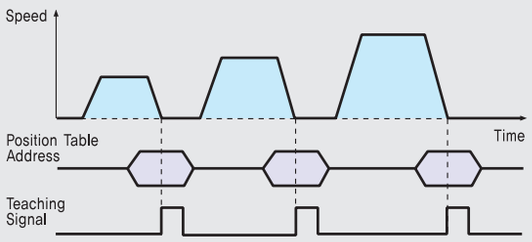
4. Alarm

The number of 7-Segment flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

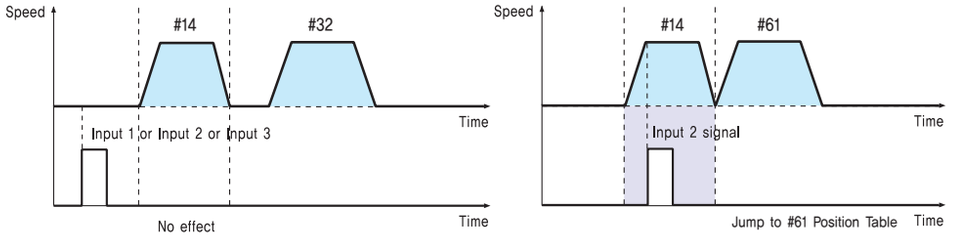


6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		32		60	61	62	



Ezi-STEP ALL Part Numbering

Ezi-STEP-ALL-42S-BK-□

- Product Name
- Drive Series
  - ALL : All Type
- Motor Flange Size
  - 42 : 42mm
  - 56 : 56mm
- Motor Length
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- Brake
  - Blank : Without Brake
  - BK : Brake
- User Code

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-ALL-42S	Motor & Drive Integrated	
Ezi-STEP-ALL-42M		
Ezi-STEP-ALL-42L		
Ezi-STEP-ALL-42XL		
Ezi-STEP-ALL-56S		
Ezi-STEP-ALL-56M		
Ezi-STEP-ALL-56L		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-ALL-42S-BK	Motor & Drive Integrated	
Ezi-STEP-ALL-42M-BK		
Ezi-STEP-ALL-42L-BK		
Ezi-STEP-ALL-42XL-BK		
Ezi-STEP-ALL-56S-BK		
Ezi-STEP-ALL-56M-BK		
Ezi-STEP-ALL-56L-BK		

Specifications of Drive

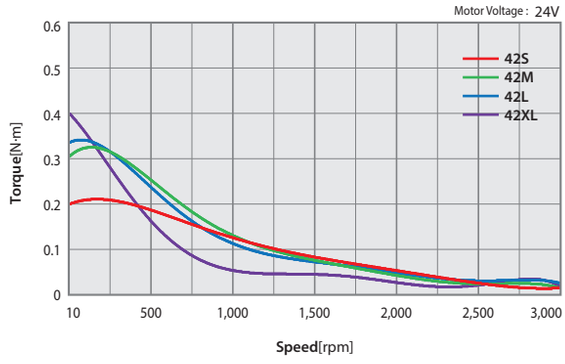
Input Voltage		24VDC ±10%
Control Method		Bipolar PWM drive with 32bit MCU
Multi Axis Drive		Maximum 16 axis through Daisy-Chain
Position Table		64 motion command steps (Continuous, Wait, Loop, Jump and External start etc.)
Current Consumption		Max 500mA (Except motor current)
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Rotation Speed	0~3,000 [rpm]
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter) * Default: 10,000
	Protection Functions	Over Current Error, Over Speed Error, Step Out Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Motor Voltage Error, System Error, ROM Error
	7-Segment	Power, Alarm, Communication ID
	STOP Current	10%~100% (Selectable by parameter) Be setted to set value of STOP current after 0.1 second after motor stop. * Default: 50%
	Rotational Direction	CW/CCW (Selectable by parameter) Used when changing the direction of motor rotate. * Default: CW
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler)
	Output Signals	1 dedicated output (Compare Out), 1 programmable output (Photocoupler), Brake
Communication Interface		RS-485 serial communication Communication speed: 9,600~921,600[bps]
Position Control		· Incremental mode / Absolute mode Data Range: -137,217,728 ~ 134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm]
Return to Origin		Origin Sensor, ±Limit sensor
GUI		User Interface Program within Windows
Software		Motion Library (DLL) for Windows 7/8/10

Specifications of Motor

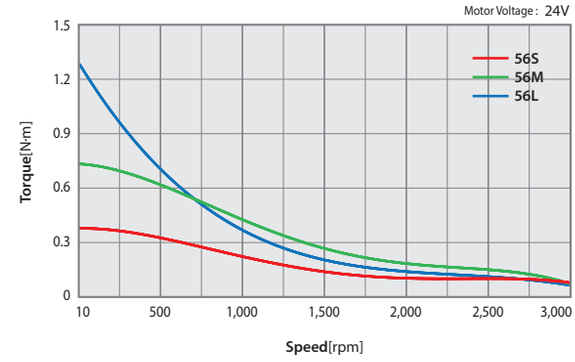
MODEL			Ezi-STEP-ALL-42 series				Ezi-STEP-ALL-56 series		
		UNIT	42S	42M	42L	42XL	56S	56M	56L
DRIVE METHOD		-	BI-POLAR						
NUMBER OF PHASES		-	2	2	2	2	2	2	2
CURRENT per PHASE		A	1.2	1.2	1.2	1.2	3.0	3.0	3.0
HOLDING TORQUE		N·m	0.32	0.44	0.5	0.65	0.64	1.0	1.5
ROTOR INERTIA		g·cm^2	35	54	77	114	180	280	520
WEIGHTS		g	340	405	480	601	643	802	1290
LENGTH(L)		mm	34	40	48	60	46	55	80
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	22	22	22	22	52	52	52
	8mm		26	26	26	26	65	65	65
	13mm		33	33	33	33	85	85	85
	18mm		46	46	46	46	123	123	123
PERMISSIBLE THRUST LOAD		N	Lower than motor weight						
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)						
INSULATION CLASS		-	CLASS B(130℃)						
OPERATING TEMPERATURE		℃	0 to 55						

Torque Characteristics of Motor

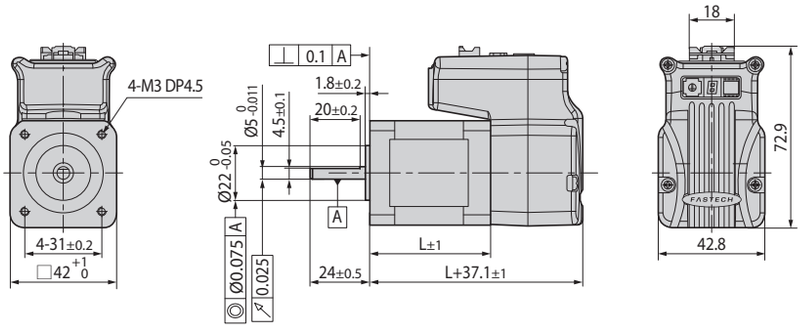
Ezi-STEP-ALL-42 series



Ezi-STEP-ALL-56 series

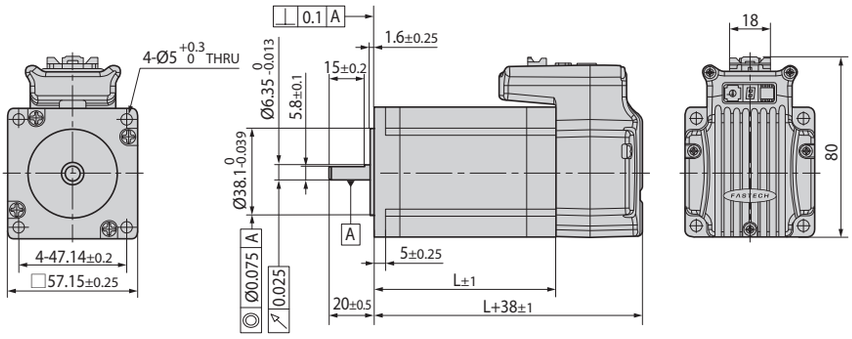


● Dimensions of Motor [mm]



42mm

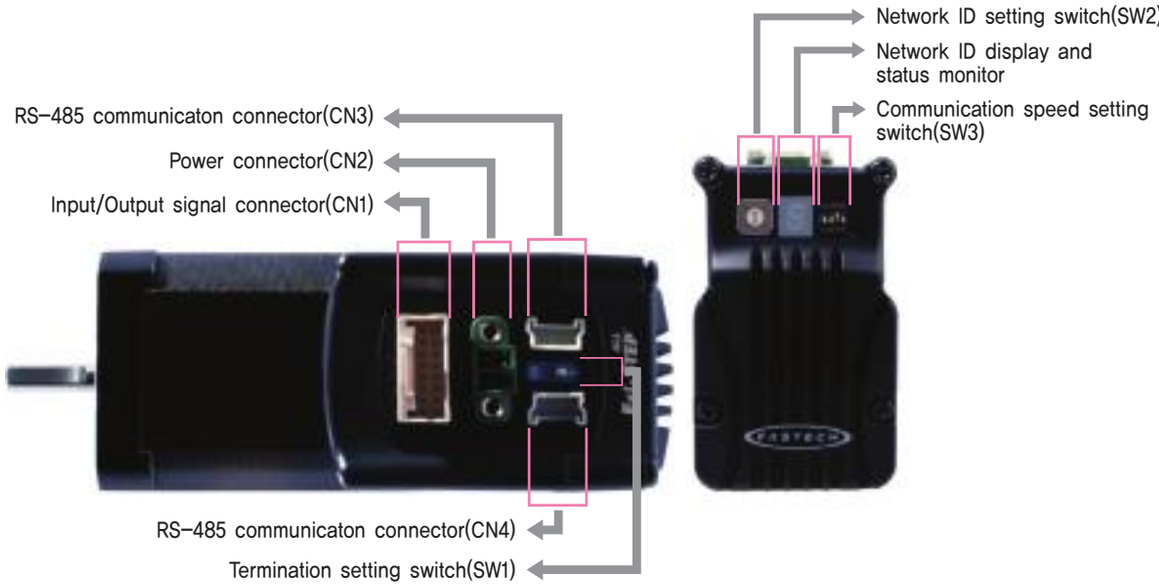
Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60



56mm

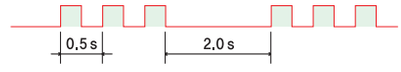
Model name	Length(L)
56S	46
56M	55
56L	80

● Settings and Operation



◆ Protection functions and 7-Segment flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
3	Step Out Error	Abnormally motor do not followed pulse input
5	Over Temperature Error	Internal temperature of a motor drive exceeded 85℃
6	Over Regenerative Voltage Error	Back EMF more than 50V
7	Motor Connect Error	Power is ON without connection of motor cable to drive
9	Motor Voltage Error	Motor voltage is below 20V
11	System Error	Error occurs in drive system
12	ROM Error	Error occurs in parameter storage device(ROM)



7-Segment flash(Ex, Step Out Error)

1. Termination Setting Switch(SW1)

The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive install at the end of the network

2. Network ID Setting Switch(SW2)

Position	ID Number	Position	ID Number
0	0	8	8
1	1	9	9
2	2	A	10
3	3	B	11
4	4	C	12
5	5	D	13
6	6	E	14
7	7	F	15



※Maximum 16 axis can be connected in one network.

3. Communication Speed Setting Switch(SW3)

The purpose of this is to setting the communication speed

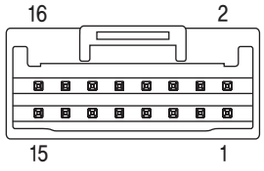
SW3.1	SW3.2	SW3.3	Baud Rate [bps]
OFF	OFF	OFF	9,600
ON	OFF	OFF	19,200
OFF	ON	OFF	38,400
ON	ON	OFF	57,600
OFF	OFF	ON	115,200*1
ON	OFF	ON	230,400
OFF	ON	ON	460,800
ON	ON	ON	921,600

※ Possible to use common PCI Bus type RS-485 communication board for High speed communi-cation. (Please contact with Distributor)
*1 : Default setting value
*2 : SW3.4 is not available to use



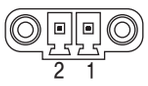
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE−	Output
5	LIMIT+	Input
6	LIMIT−	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital In4	Input
12	Digital In5	Input
13	Digital In6	Input
14	Digital In7	Input
15	Compare Out	Output
16	Digital Out1	Output



5. Power Connector(CN2)

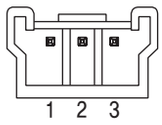
NO.	Function	I/O
1	24VDC	Input
2	GND	Input



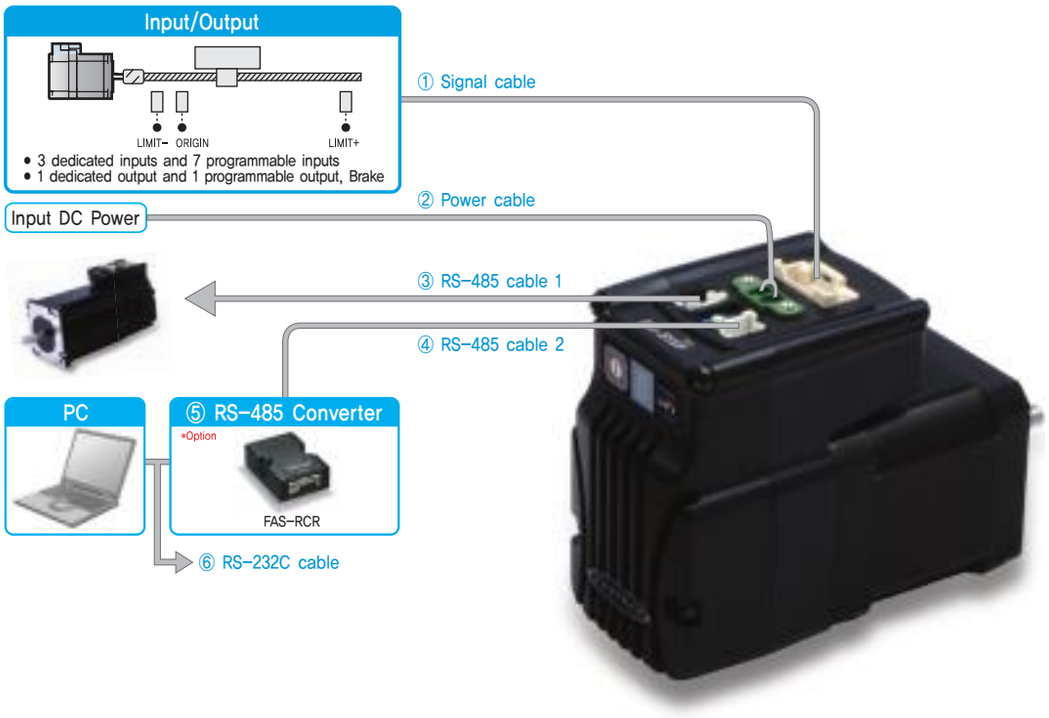
6. RS-485 Communication Connector(CN3, CN4)

RS-485 Communication port to connect with Host controller

NO.	Function
1	Data+
2	Data−
3	GND



System Configuration



Type	Signal Cable	Power	RS-485 Cable
Length supplied	–	–	–
Max. Length	20m	2m	30m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP-ALL-42/56.

Item	Length [m]	Remark
CSVA-S-□□□F	□□□	Normal Cable
CSVA-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-STEP-ALL-42/56.

Item	Length [m]	Remark
CSVA-P-□□□F	□□□	Normal Cable
CSVA-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

③ RS-485 Cable 1

Common cable to connect Ezi-SERVO-ALL-42/56, Ezi-STEP-ALL-42/56, Ezi-MOTIONLINK Plus-R and Ezi-SERVO Plus-R MINI thru by Network.

Item	Length [m]	Remark
CGNB-R-0R6F	0.6	Normal Cable
CGNB-R-001F	1	
CGNB-R-1R5F	1.5	
CGNB-R-002F	2	
CGNB-R-003F	3	
CGNB-R-005F	5	

④ RS-485 Cable 2

RCR to Ezi-SERVO-ALL-42/56, FAS-RCR to Ezi-STEP-ALL-42/56, FAS-RCR to Ezi-SERVO Plus-R MINI, FAS-RCR to Ezi-MOTIONLINK Plus-R.

Item	Length [m]	Remark
CGNA-R-0R6F	0.6	Normal Cable
CGNA-R-001F	1	
CGNA-R-1R5F	1.5	
CGNA-R-002F	2	
CGNA-R-003F	3	
CGNA-R-005F	5	

⑤ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑥ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F	2	Normal Cable
CGNR-C-003F	3	
CGNR-C-005F	5	

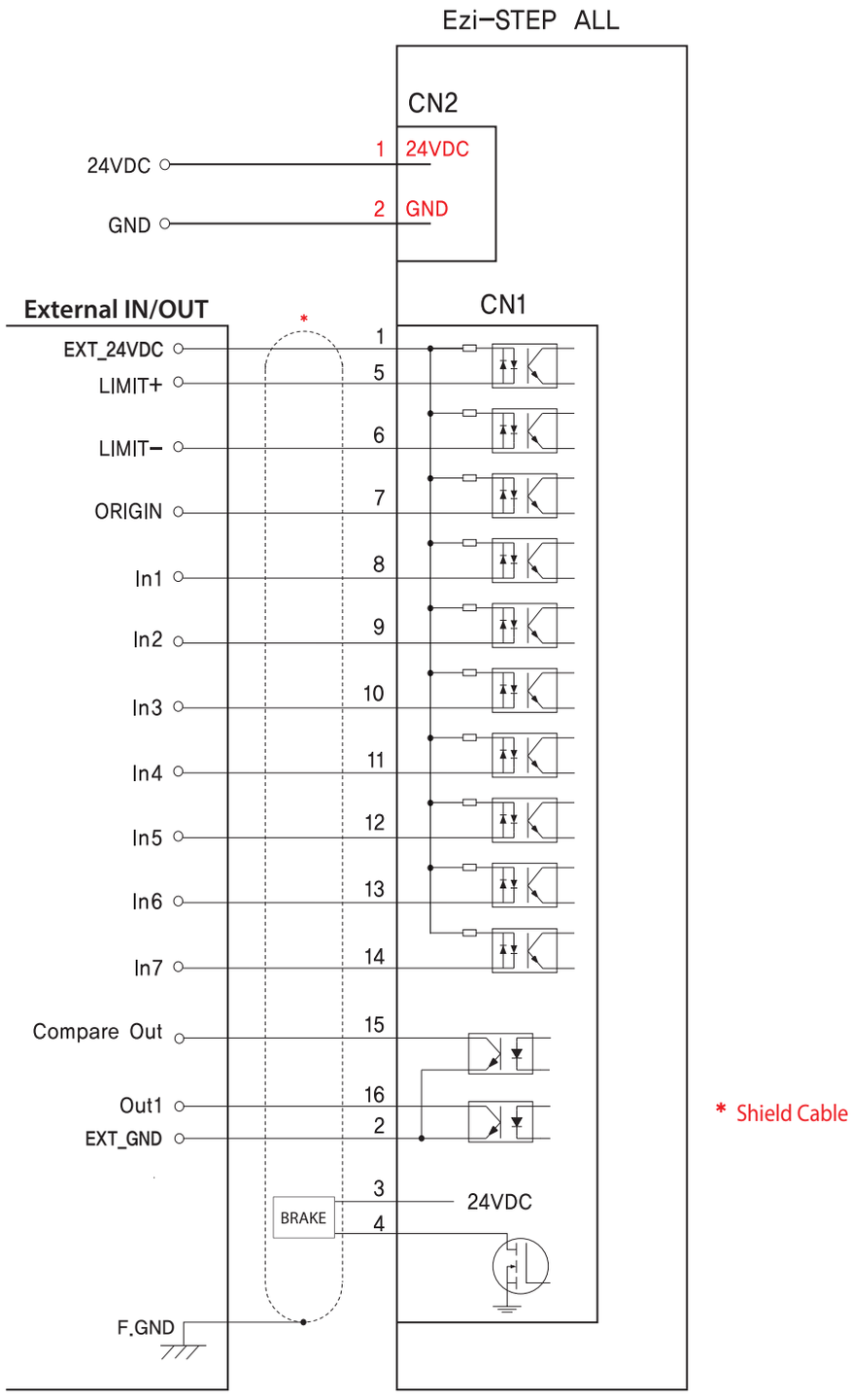
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Signal (CN1)	Housing Terminal	501646-1600 501648-1000 (AWG 26~28)	MOLEX
Power (CN2)	Terminal Block	MC421-38102	DECA
RS-485 Communication (CN3, CN4)	Housing Terminal	35507-0300 50212-8100	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● GUI(Graphic User Interface) Screenshot



◆ Controller Lists and Motion Test

This screen display the controller list that connected to system. You can make a single move, jog and origin command and also the motor status is displayed.



◆ Parameter List

All of the parameters are displayed and modified on this screen.



◆ Motion Repeat and Monitor Status

Target position, speed, delay time and repeat count are selected for repeat motion test. Motion library(DLL) is also displayed on screen.



◆ I/O Monitoring and Setting

You can select various digital input and output signals of controller.



◆ Position Table

You can edit the position table and execute it. The position table data can be saved and loaded from Flash ROM and Windows file.

※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.


Ezi-STEP II
EtherCAT
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
ECAT
ECAT ID



Ezi-STEP II EtherCAT

- CiA 402 Drive Profile Support
- Micro Stepping
- Software Damping
- Torque Improvement



FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® II EtherCAT®

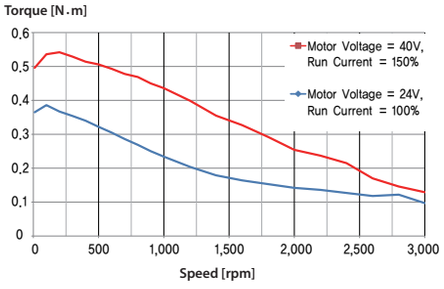
Micro Stepping System



2 Torque Improvement

Motor Voltage Increasing and Motor Current Setting

Ezi-STEP II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

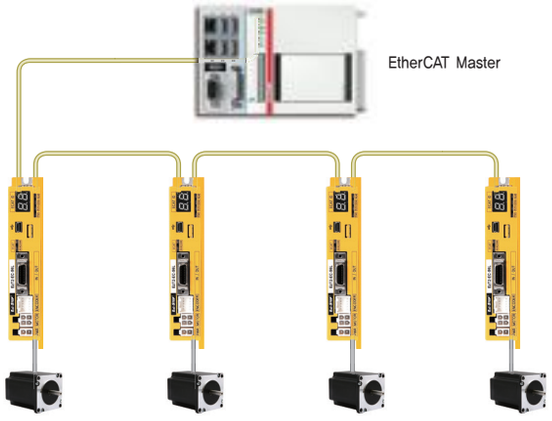


※ The torque at high speed is improved about 30%

Measured Condition : Drive = Ezi-STEP II-EC-42L
Motor Voltage = 40VDC
Input Voltage = 24VDC

1 EtherCAT Based Motion Control

Ezi-STEP II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-STEP II EtherCAT is EtherCAT slave module which support CAN application layer over EtherCAT (CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode



3 Microstep and Filtering

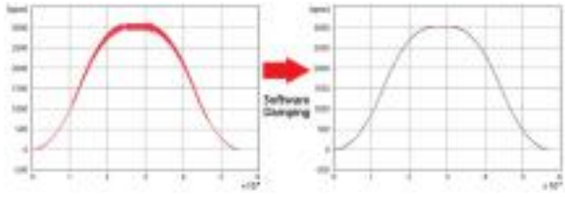
High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

4 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration. This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

5 Improvement of High-Speed Driving

Depending on the speed of a stepping motor, Ezi-STEP II automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation. Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

Applicable model : Ezi-STEP II-EC-42 Series
Ezi-STEP II-EC-56 Series
Ezi-STEP II-EC-60 Series

Ezi-STEP II EtherCAT Part Numbering

Ezi-STEP II-EC-42S-BK-□

- **Product Name**
- **Drive Series**
  - EC : EtherCAT
- **Motor Flange Size**
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Brake**
  - Blank : Without Brake
  - BK : Brake
- **User Code**

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II-EC-20M	BM-20M	EzT2-EC-20M
Ezi-STEP II-EC-20L	BM-20L	EzT2-EC-20L
Ezi-STEP II-EC-28S	BM-28S	EzT2-EC-28S
Ezi-STEP II-EC-28M	BM-28M	EzT2-EC-28M
Ezi-STEP II-EC-28L	BM-28L	EzT2-EC-28L
Ezi-STEP II-EC-42S	BM-42S	EzT2-EC-42S
Ezi-STEP II-EC-42M	BM-42M	EzT2-EC-42M
Ezi-STEP II-EC-42L	BM-42L	EzT2-EC-42L
Ezi-STEP II-EC-42XL	BM-42XL	EzT2-EC-42XL
Ezi-STEP II-EC-56S	BM-56S	EzT2-EC-56S
Ezi-STEP II-EC-56M	BM-56M	EzT2-EC-56M
Ezi-STEP II-EC-56L	BM-56L	EzT2-EC-56L
Ezi-STEP II-EC-60S	BM-60S	EzT2-EC-60S
Ezi-STEP II-EC-60M	BM-60M	EzT2-EC-60M
Ezi-STEP II-EC-60L	BM-60L	EzT2-EC-60L
Ezi-STEP II-EC-86M	BM-86M	EzT2-EC-86M
Ezi-STEP II-EC-86L	BM-86L	EzT2-EC-86L
Ezi-STEP II-EC-86XL	BM-86XL	EzT2-EC-86XL

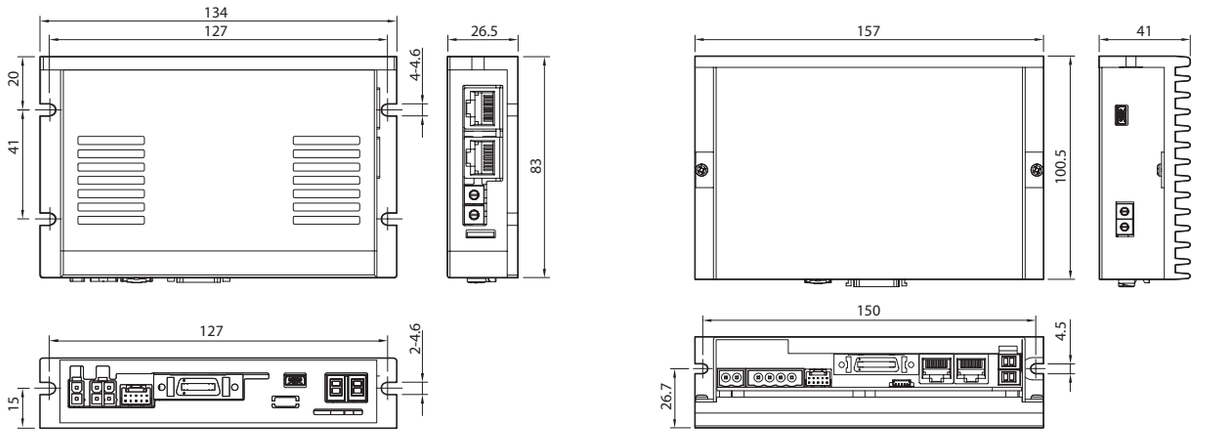
Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II-EC-42S-BK	BM-42S-BK	EzT2-EC-42S
Ezi-STEP II-EC-42M-BK	BM-42M-BK	EzT2-EC-42M
Ezi-STEP II-EC-42L-BK	BM-42L-BK	EzT2-EC-42L
Ezi-STEP II-EC-42XL-BK	BM-42XL-BK	EzT2-EC-42XL
Ezi-STEP II-EC-56S-BK	BM-56S-BK	EzT2-EC-56S
Ezi-STEP II-EC-56M-BK	BM-56M-BK	EzT2-EC-56M
Ezi-STEP II-EC-56L-BK	BM-56L-BK	EzT2-EC-56L
Ezi-STEP II-EC-60S-BK	BM-60S-BK	EzT2-EC-60S
Ezi-STEP II-EC-60M-BK	BM-60M-BK	EzT2-EC-60M
Ezi-STEP II-EC-60L-BK	BM-60L-BK	EzT2-EC-60L
Ezi-STEP II-EC-86M-BK	BM-86M-BK	EzT2-EC-86M
Ezi-STEP II-EC-86L-BK	BM-86L-BK	EzT2-EC-86L
Ezi-STEP II-EC-86XL-BK	BM-86XL-BK	EzT2-EC-86XL

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series	BM-86 series
Driver Model		EzT2-EC-20 series	EzT2-EC-28 series	EzT2-EC-42 series	EzT2-EC-56 series	EzT2-EC-60 series	EzT2-EC-86 series
Input Voltage		24VDC ±10%					40~70VDC
Control Method		Bipolar PWM drive with 32bit MCU					
Current Consumption		Max 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000 [rpm]					
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable with Parameter) * Default: 10,000					
	Protection Functions	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error					
	LED Display	Power Status, Alarm Status, Run Status, STEP On Status					
EtherCAT	Supported Protocol	CoE (CiA402 Drive Profile), FoE (Firmware Download)					
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode					
	Synchronization	Free Run, SM Event, DC SYNC Event					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 user inputs					
	Output Signals	6 user outputs (Photocoupler), Brake					

Dimensions of Drive [mm]



※ 86mm motor drive (EzT2-EC-86 series)

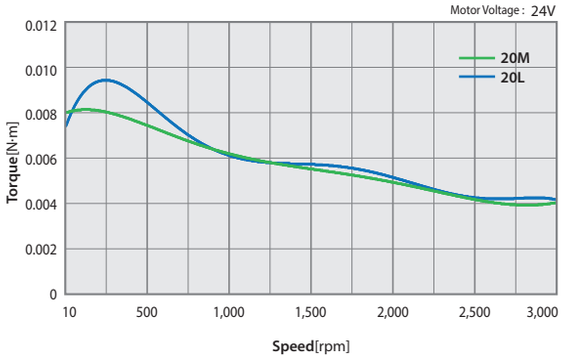
● Specifications of Motor

MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

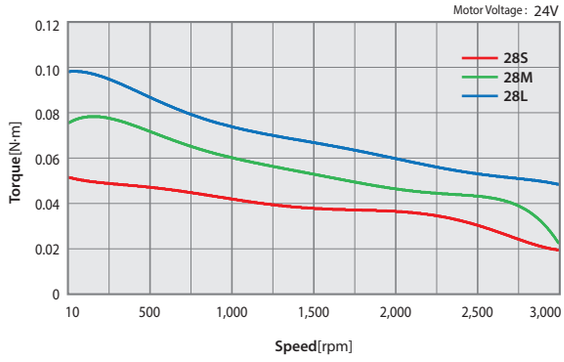
MODEL			BM-56 series			BM-60 series			BM-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	548	726	1159	616	793	1349	2275	3808	5330
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70	270	270	270
	8mm		65	65	65	87	87	87	300	300	300
	13mm		85	85	85	114	114	114	350	350	350
	18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

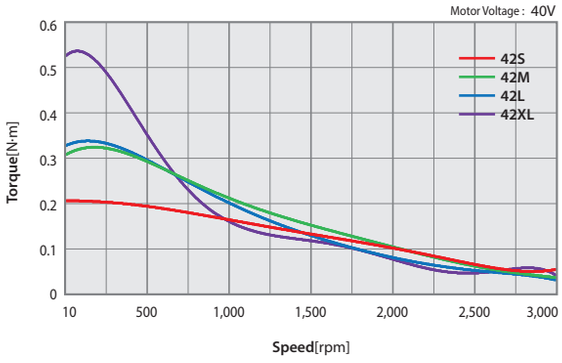
Ezi-STEP II-EC-20 series



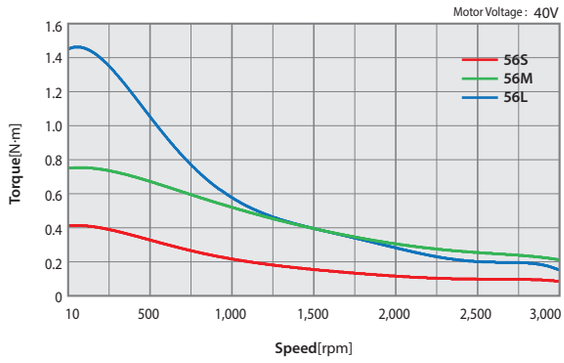
Ezi-STEP II-EC-28 series



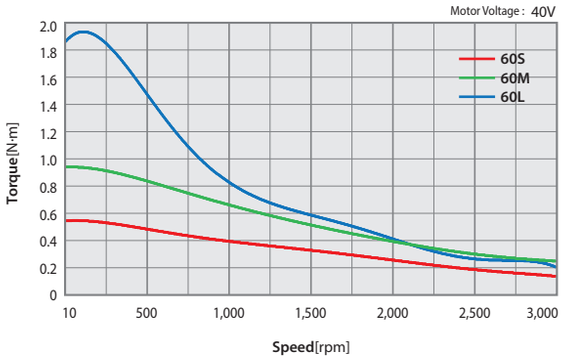
Ezi-STEP II-EC-42 series



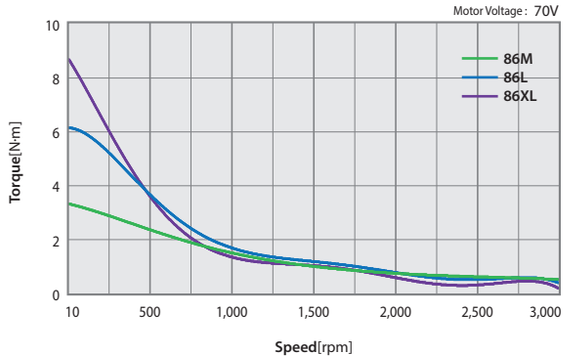
Ezi-STEP II-EC-56 series



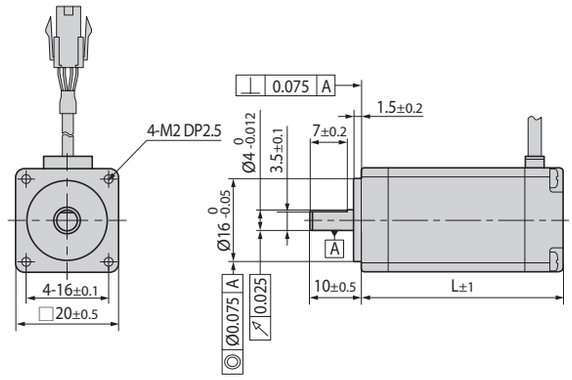
Ezi-STEP II-EC-60 series



Ezi-STEP II-EC-86 series

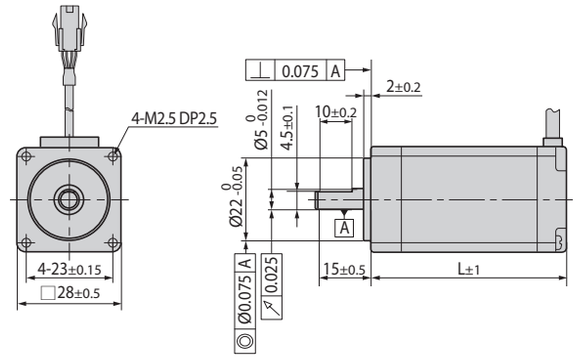


Dimensions of Motor [mm]



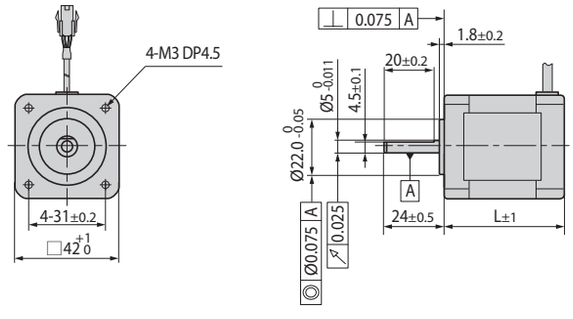
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



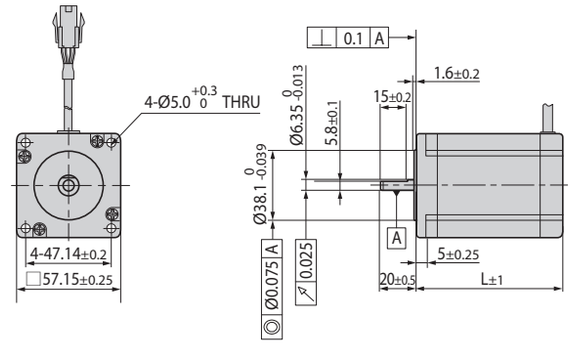
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

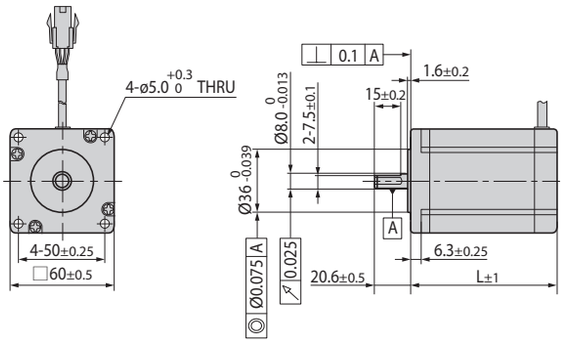
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

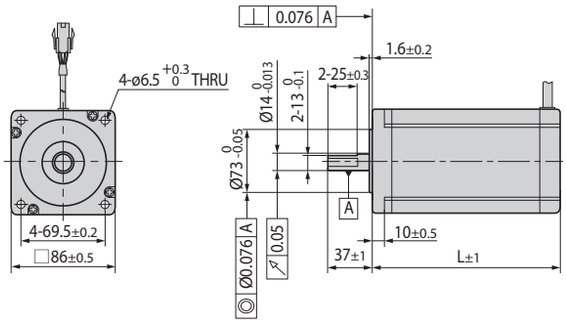
Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

● Dimensions of Motor [mm]



60mm

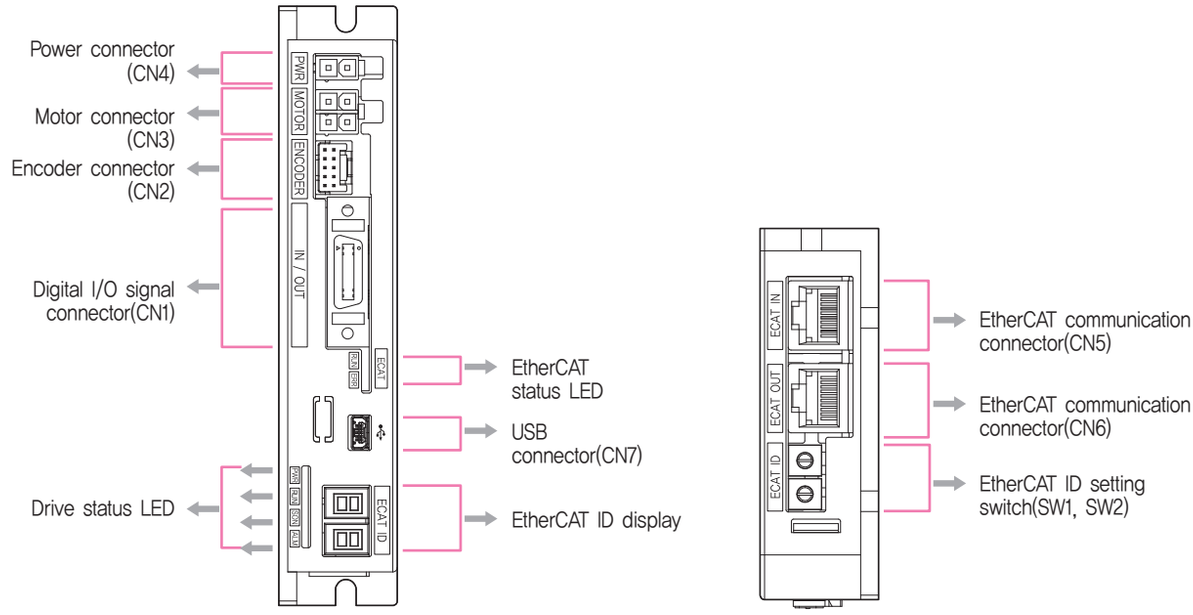
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85



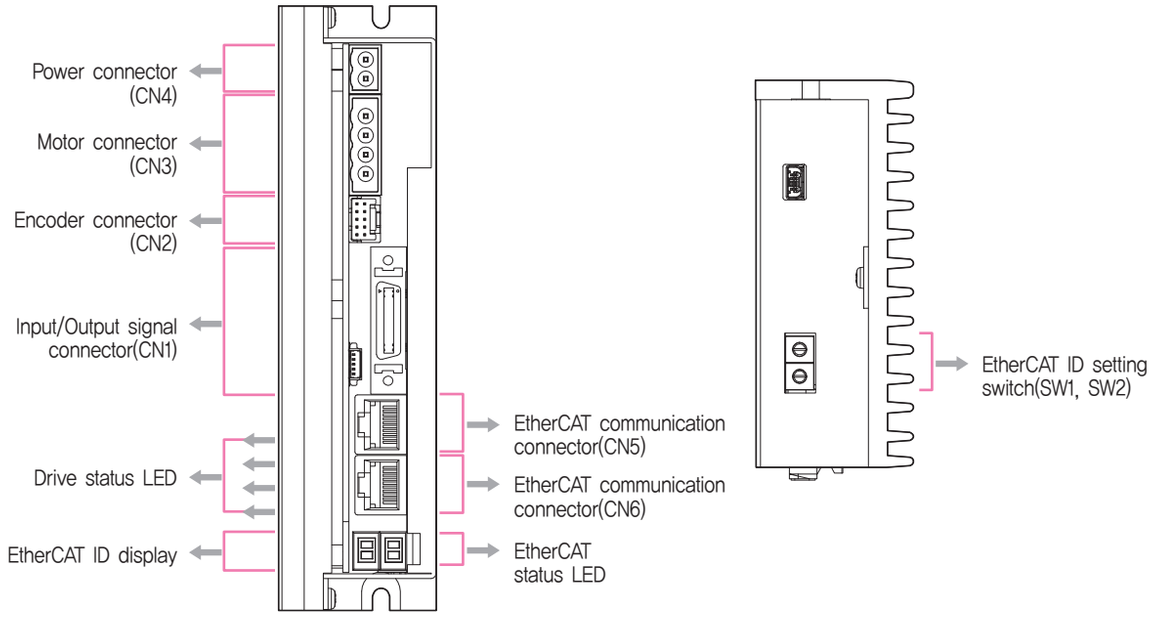
86mm

Model name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

● Settings and Operation

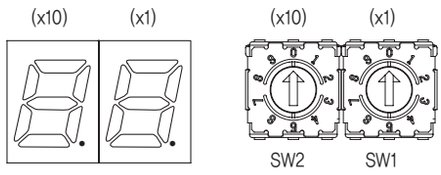


◆ 86mm Motor Drive (EzT2-EC-86 series)



1. EtherCAT ID Display and Setting Switch(SW1, SW2)

There are two Rotary Switches to set value of EtherCAT ID (ECAT Device ID). Switch on the right side indicates the ones' place(×1) and Switch on the left side indicates the tens' place(×10).



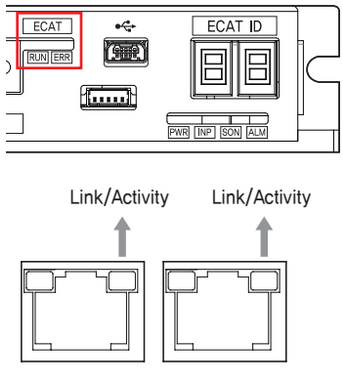
2. EtherCAT Status LED

LED indicates communication status of EtherCAT. Link/Activity LED exists on each port of EtherCAT.

Name	Color	Status	Explanation
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

Name	Color	Status	Explanation
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

Name	Color	Status	Explanation
Link/ Activity	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation



3. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
RUN	Yellow	Motor running indication	LED is turned ON while motor is rotating
SON	Orange	STEP On / Off indication	STEP On: Lights On, STEP Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

Times	Error Code *3	Protection	Conditions
1	E-001	Over Current Error	The current through power devices in drive exceeds the limit value *1
2	E-002	Over Speed Error	Motor speed exceed 3,000 [rpm]
5	E-005	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF more high limit value *2
7	E-007	Motor Connect Error	The drive does STEP ON without connection of the motor cable to drive.
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)

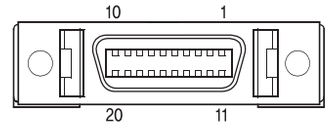
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*3 : When an alarm occurs, error code is displayed on the 7-segment instead of EtherCAT ID.
※ Please refer to uer Manual for the details of protection functions.



Alarm LED Flash
(Ex, Over Speed Error)

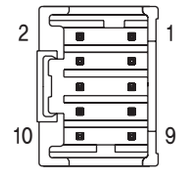
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In2	Input
6	Digital In3	Input
7	Digital In4	Input
8	Digital In5	Input
9	Digital In6	Input
10	Digital In7	Input
11	Digital Out1	Output
12	Digital Out2	Output
13	Digital Out3	Output
14	Digital Out4	Output
15	Digital Out5	Output
16	Digital Out6	Output
17	BRAKE+	Output
18	BRAKE−	Output
19	EXT_GND	Input
20	EXT_24VDC	Input



5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----

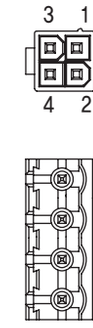


6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output

NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output

※ 86mm motor drive.

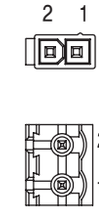


7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

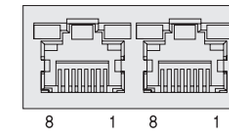
NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input

※ 86mm motor drive.



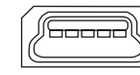
8. EtherCAT Communication Connector(CN5, CN6)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connection hood	F.GND
5	-----		

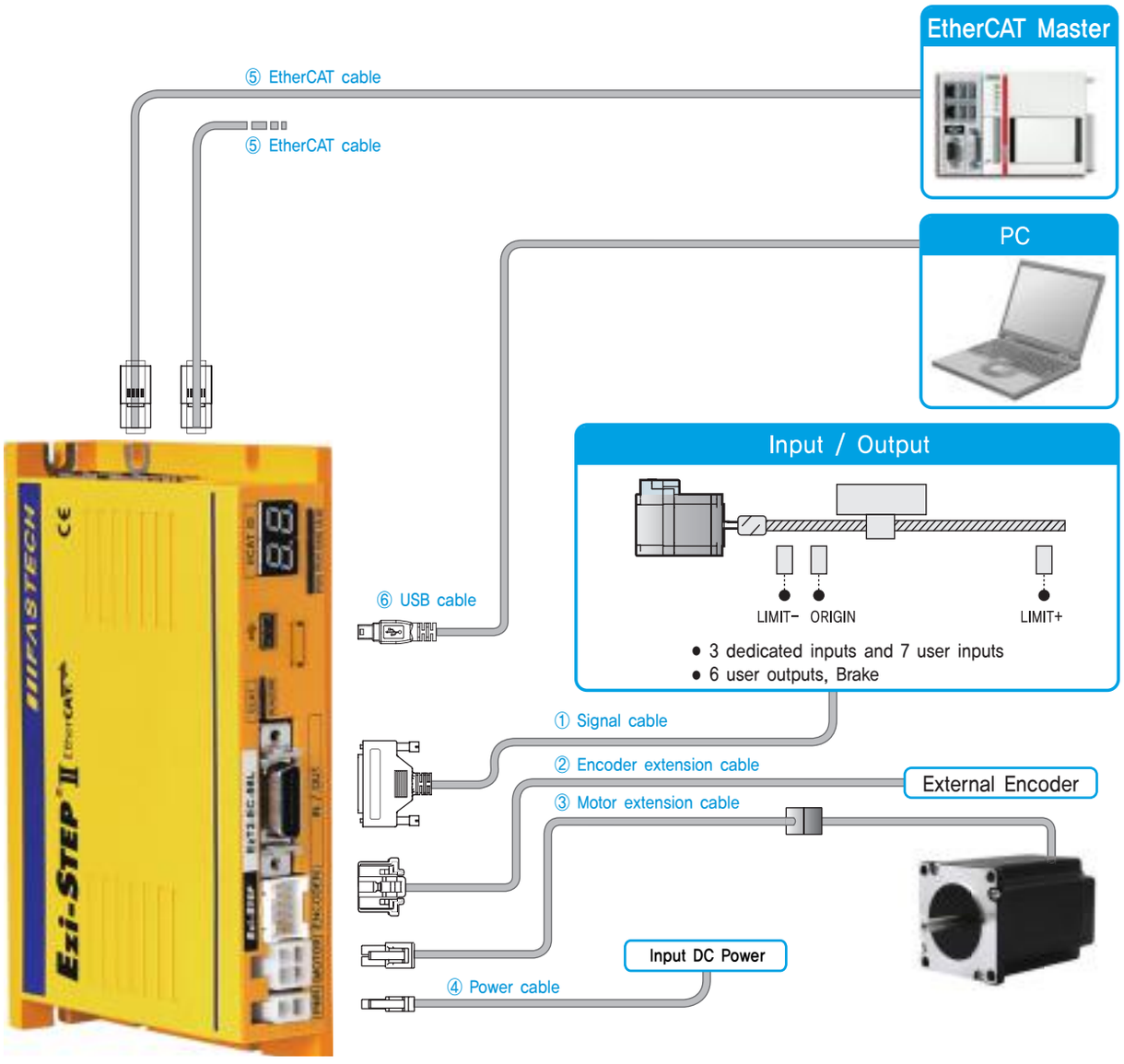


9. USB Connector(CN7)

NO.	Function
1	V_{BUS}
2	D−
3	D+
4	---
5	GND



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable	USB Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	5m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CTPR-E-□□□F	□□□	Normal Cable
CTPR-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to connect between motor and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ USB Cable

The USB cable is a cable for connecting Ezi-STEP II EtherCAT to PC through USB communication.

* The USB cable is NOT supplied.
  Use a cable with USB 2.0 Mini Type B connectors.

⑦ TB-Plus(Interface Board)

Available to connect more conveniently between Input/ Output signal and Ezi-STEP II EtherCAT.



⑧ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

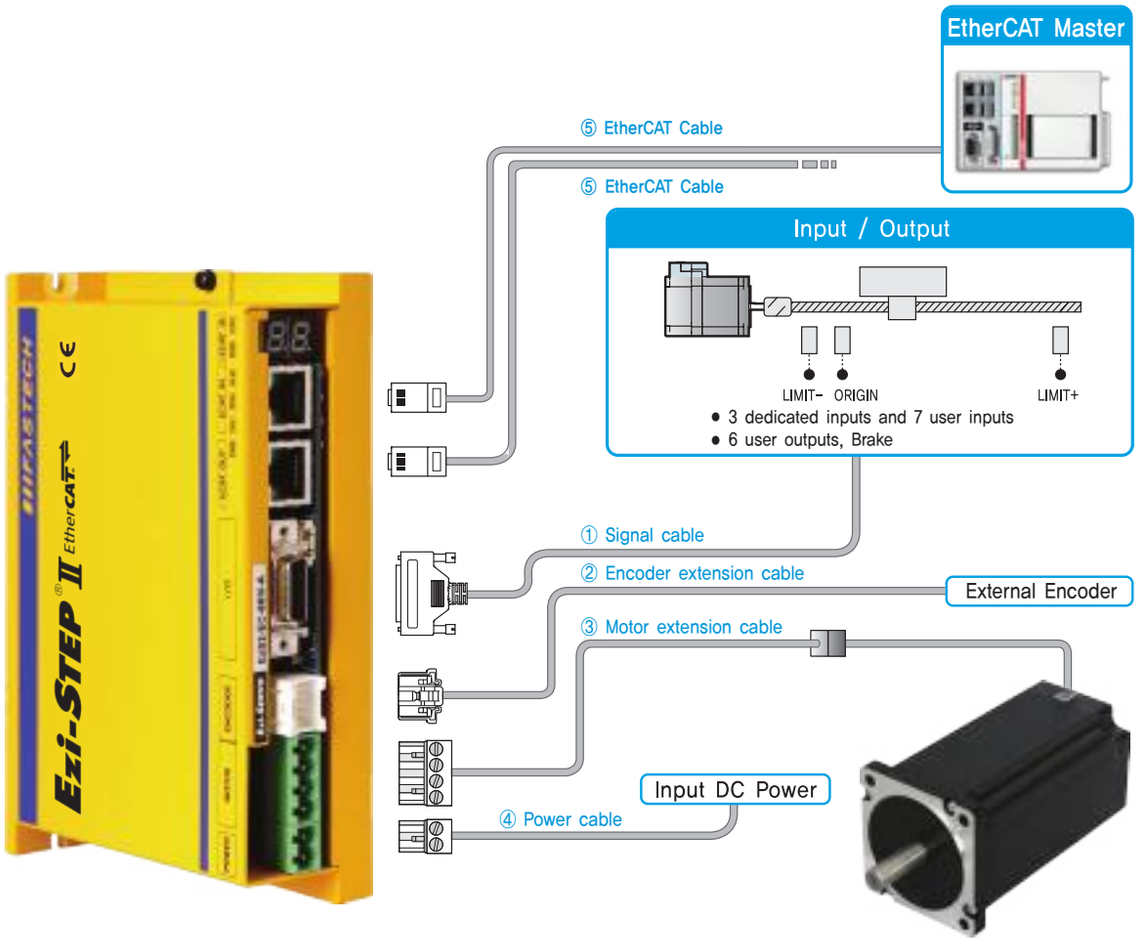
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/ Output signal and Ezi-STEP II EtherCAT.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

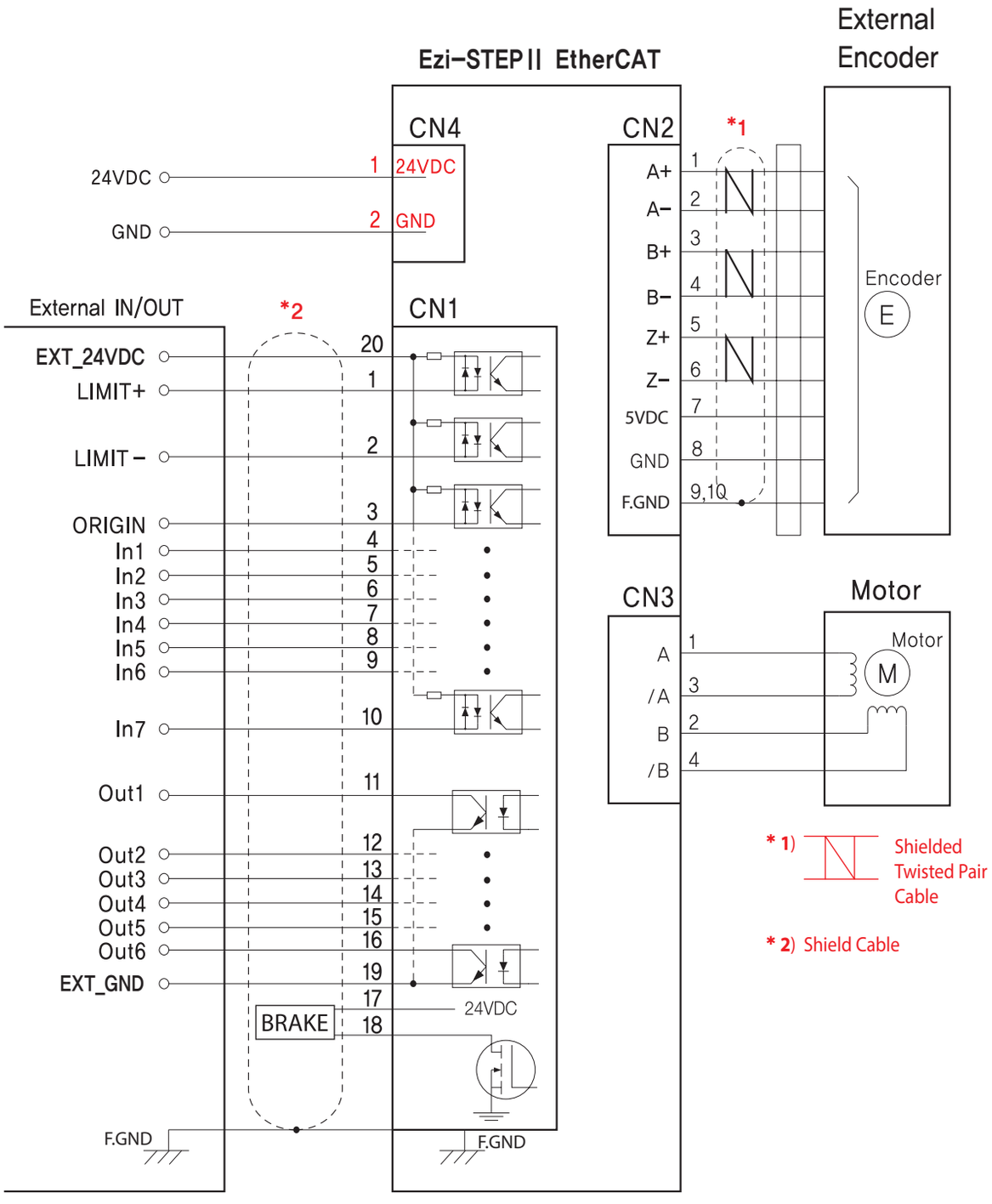
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
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Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



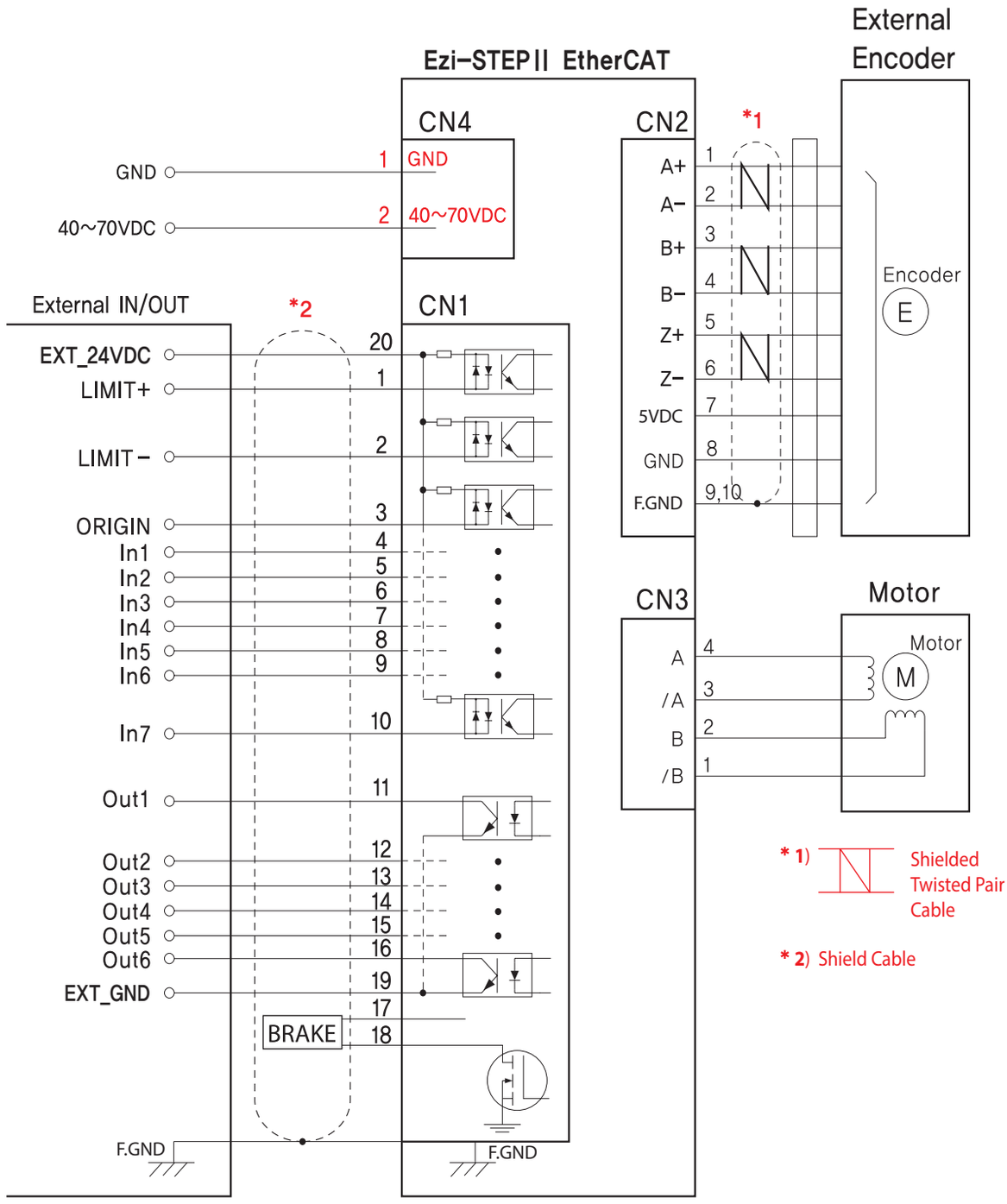
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● External Wiring Diagram [86mm Motor Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EtherCAT
Ezi-STEP II mini
FASTECH



Ezi-STEP II EtherCAT MINI

- CiA 402 Drive Profile Support
- Micro Stepping
- Software Damping
- Miniaturized Compact Size

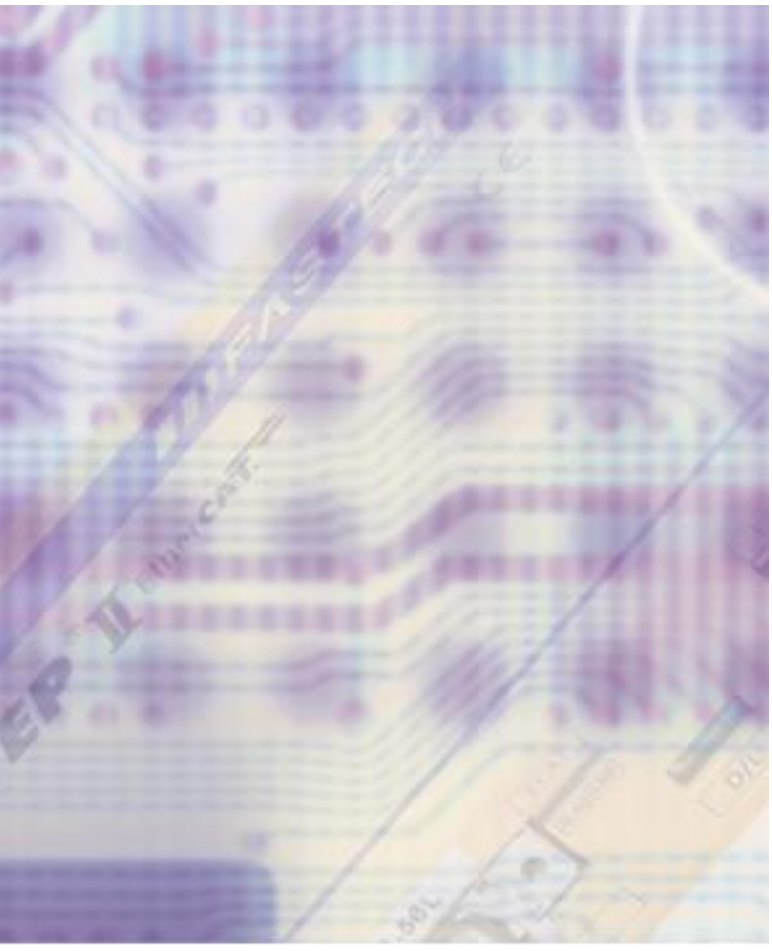


FASTECH

Fast, Accurate, Smooth Motion

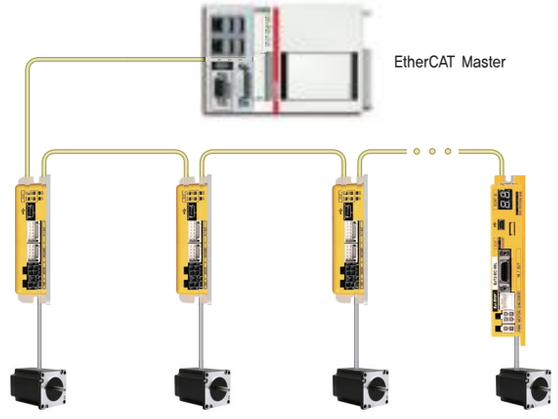
Ezi-STEP® II EtherCAT® MINI

Micro Stepping System



1 EtherCAT Based Motion Control

Ezi-STEP II EtherCAT MINI is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-STEP II EtherCAT MINI is EtherCAT slave module which support CAN application layer over EtherCAT (CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode



2 Microstep and Filtering

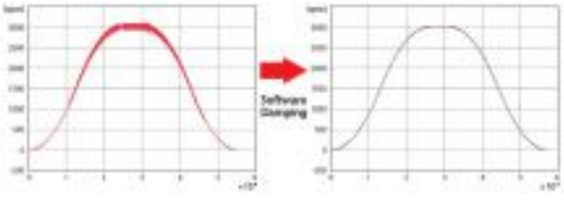
High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

3 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration. This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

● Ezi-STEP II EtherCAT MINI Part Numbering

Ezi-STEP II -EC-MI-42S-BK-□

Product Name

Drive Series
EC : EtherCAT
MI : Mini Type

Motor Flange Size
20 : 20mm
28 : 28mm
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length
S : Small
M : Medium
L : Large
XL : Extra Large

Brake
Blank : Without Brake
BK : Brake

User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -EC-MI-20M	BM-20M	EzT2-EC-MI-20M
Ezi-STEP II -EC-MI-20L	BM-20L	EzT2-EC-MI-20L
Ezi-STEP II -EC-MI-28S	BM-28S	EzT2-EC-MI-28S
Ezi-STEP II -EC-MI-28M	BM-28M	EzT2-EC-MI-28M
Ezi-STEP II -EC-MI-28L	BM-28L	EzT2-EC-MI-28L
Ezi-STEP II -EC-MI-42S	BM-42S	EzT2-EC-MI-42S
Ezi-STEP II -EC-MI-42M	BM-42M	EzT2-EC-MI-42M
Ezi-STEP II -EC-MI-42L	BM-42L	EzT2-EC-MI-42L
Ezi-STEP II -EC-MI-42XL	BM-42XL	EzT2-EC-MI-42XL
Ezi-STEP II -EC-MI-56S	BM-56S	EzT2-EC-MI-56S
Ezi-STEP II -EC-MI-56M	BM-56M	EzT2-EC-MI-56M
Ezi-STEP II -EC-MI-56L	BM-56L	EzT2-EC-MI-56L
Ezi-STEP II -EC-MI-60S	BM-60S	EzT2-EC-MI-60S
Ezi-STEP II -EC-MI-60M	BM-60M	EzT2-EC-MI-60M
Ezi-STEP II -EC-MI-60L	BM-60L	EzT2-EC-MI-60L

● Combination with Brake

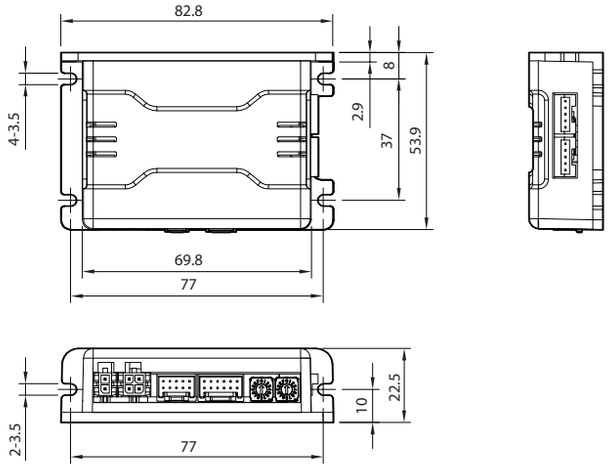
Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -EC-MI-42S-BK	BM-42S-BK	EzT2-EC-MI-42S
Ezi-STEP II -EC-MI-42M-BK	BM-42M-BK	EzT2-EC-MI-42M
Ezi-STEP II -EC-MI-42L-BK	BM-42L-BK	EzT2-EC-MI-42L
Ezi-STEP II -EC-MI-42XL-BK	BM-42XL-BK	EzT2-EC-MI-42XL
Ezi-STEP II -EC-MI-56S-BK	BM-56S-BK	EzT2-EC-MI-56S
Ezi-STEP II -EC-MI-56M-BK	BM-56M-BK	EzT2-EC-MI-56M
Ezi-STEP II -EC-MI-56L-BK	BM-56L-BK	EzT2-EC-MI-56L
Ezi-STEP II -EC-MI-60S-BK	BM-60S-BK	EzT2-EC-MI-60S
Ezi-STEP II -EC-MI-60M-BK	BM-60M-BK	EzT2-EC-MI-60M
Ezi-STEP II -EC-MI-60L-BK	BM-60L-BK	EzT2-EC-MI-60L

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series
Driver Model		EzT2-EC-MI-20 series	EzT2-EC-MI-28 series	EzT2-EC-MI-42 series	EzT2-EC-MI-56 series	EzT2-EC-MI-60 series
Input Voltage		24VDC ±10%				
Control Method		Bipolar PWM drive with 32bit MCU				
Current Consumption		Max 500mA (Except motor current)				
Operating Condition	Ambient Temperature	· In Use: 0~50℃ *1 · In Storage: -20~70℃				
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)				
	Vib. Resist.	0.5g				
Function	Rotation Speed	0~3,000 [rpm]				
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable with Parameter) * Default: 10,000				
	Protection Functions	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error				
EtherCAT	Supported Protocol	CoE (CiA402 Drive Profile), FoE (Firmware Download)				
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode				
	Synchronization	Free Run, SM Event, DC SYNC Event				
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 user inputs (Photocoupler Input)				
	Output Signals	2 user outputs (Photocoupler Output), Brake				

*1 : EzT2-EC-MI-56, 60 Series are needed to be mounted on an external heat sink or a structure capable of dissipating heat.

Dimensions of Drive [mm]



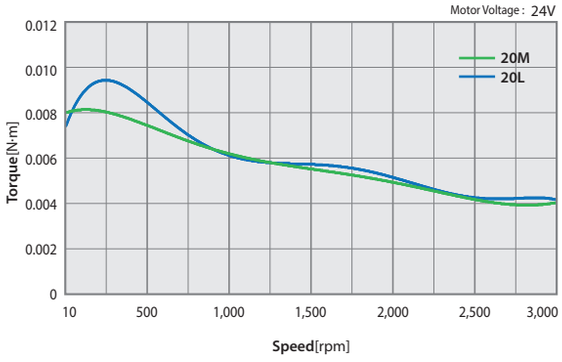
● Specifications of Motor

MODEL		BM-20 series		BM-28 series			BM-42 series			
	UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD	–	BI-POLAR								
NUMBER OF PHASES	–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE	A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE	N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA	g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS	g	53	78	115	174	202	238	303	374	508
LENGTH(L)	mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT) 3mm	N	18	18	30	30	30	22	22	22	22
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT) 8mm	N	30	30	38	38	38	26	26	26	26
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT) 13mm	N	–	–	53	53	53	33	33	33	33
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT) 18mm	N	–	–	–	–	–	46	46	46	46
PERMISSIBLE THRUST LOAD	N	Lower than motor weight								
INSULATION RESISTANCE	Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS	–	CLASS B(130℃)								
OPERATING TEMPERATURE	℃	0 to 55								

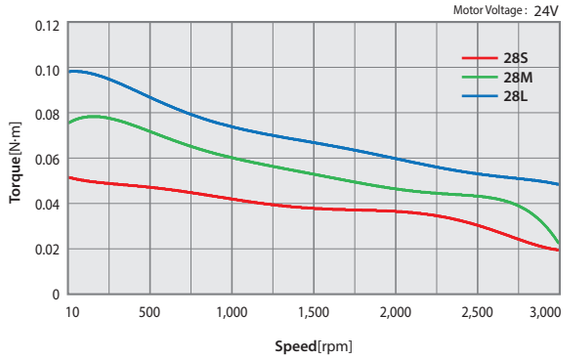
MODEL		BM-56 series			BM-60 series		
	UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD	–	BI-POLAR					
NUMBER OF PHASES	–	2	2	2	2	2	2
CURRENT per PHASE	A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE	N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA	g·cm^2	180	280	520	240	490	690
WEIGHTS	g	548	726	1159	616	793	1349
LENGTH(L)	mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT) 3mm	N	52	52	52	70	70	70
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT) 8mm	N	65	65	65	87	87	87
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT) 13mm	N	85	85	85	114	114	114
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT) 18mm	N	123	123	123	165	165	165
PERMISSIBLE THRUST LOAD	N	Lower than motor weight					
INSULATION RESISTANCE	Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS	–	CLASS B(130℃)					
OPERATING TEMPERATURE	℃	0 to 55					

Torque Characteristics of Motor

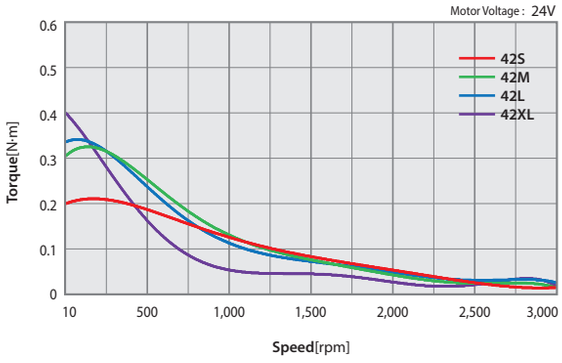
Ezi-STEP II-EC-MI-20 series



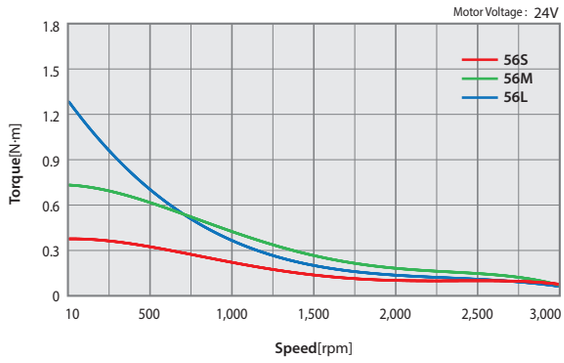
Ezi-STEP II-EC-MI-28 series



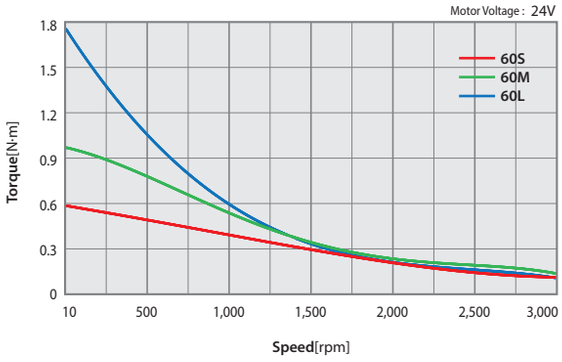
Ezi-STEP II-EC-MI-42 series



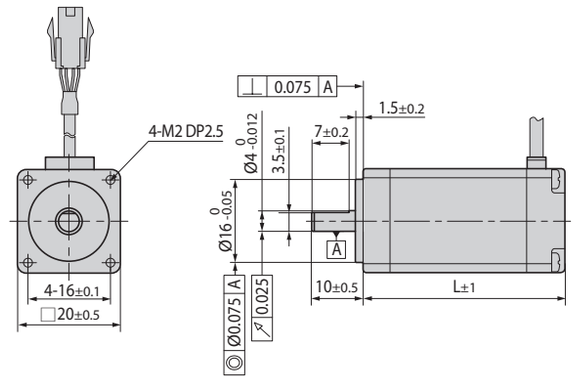
Ezi-STEP II-EC-MI-56 series



Ezi-STEP II-EC-MI-60 series

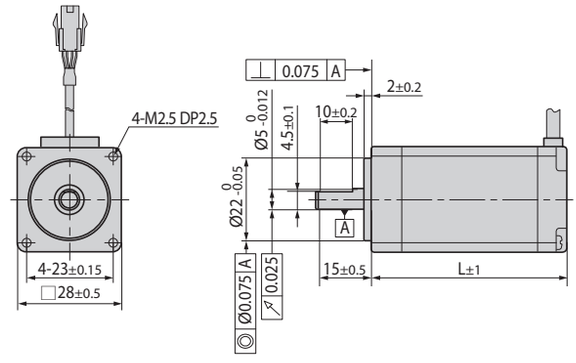


Dimensions of Motor [mm]



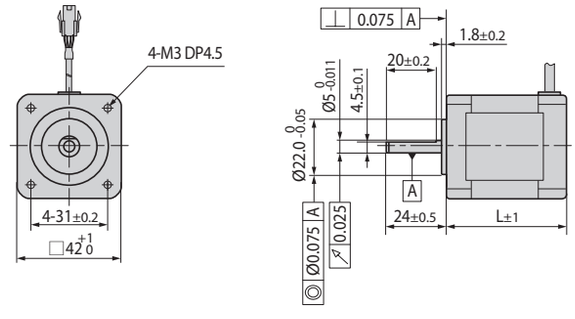
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



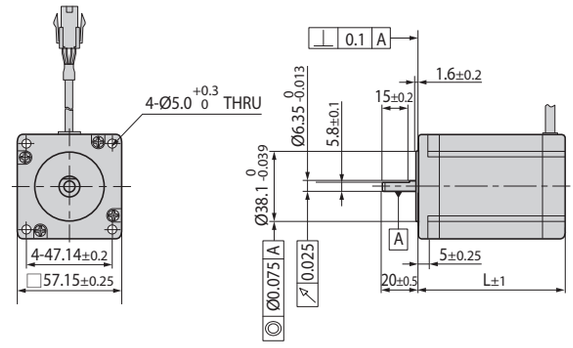
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

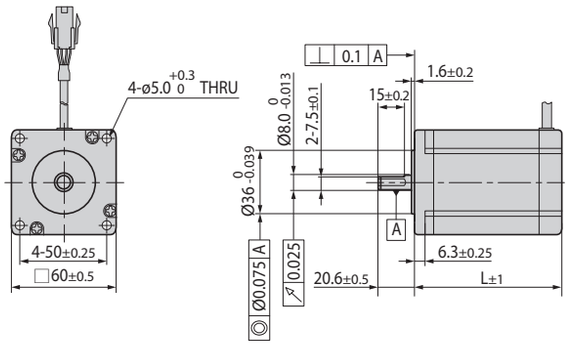
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

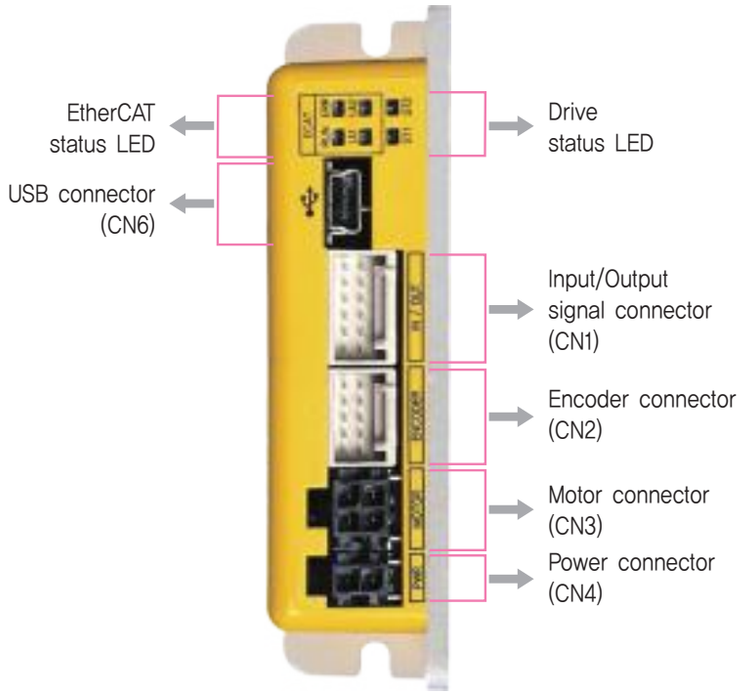
● Dimensions of Motor [mm]

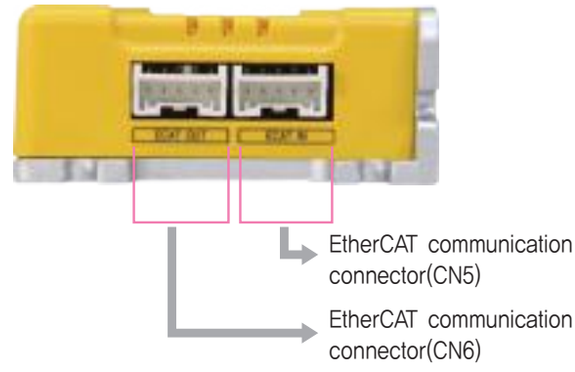


60mm

Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85

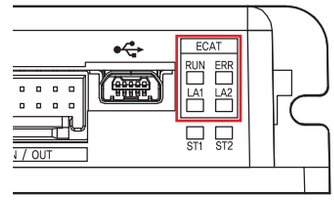
Settings and Operation





1. EtherCAT Status LED

Name	Color	Status	Explanation
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP



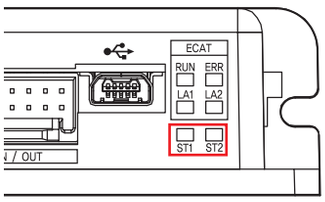
Name	Color	Status	Explanation
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

Name	Color	Status	Explanation
LA1/ LA2	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

2. Drive Status LED

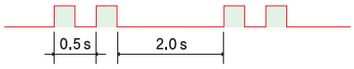
In the case of Ezi-STEP II EtherCAT MINI series products, LED can be checked by LED color, lighting, On/Off and blinking.

Status	LED	Description
Disable	ST1 : ST2 :	ST1 light flashing, ST2 light off
Enable	ST1 : ST2 :	ST1 light on, ST2 light off
In motion	ST1 : ST2 :	ST1 light on, ST2 light on
Alarm	ST1 : ST2 :	ST2 light flashing repeatedly as many as alarm number



◆ Protection functions and LED flash times

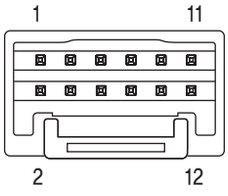
Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The drive does STEP ON without connection of the motor cable to drive.
12	ROM Error	Error occurs in parameter storage device(ROM)



Alarm LED Flash
(Ex, Over Speed Error)

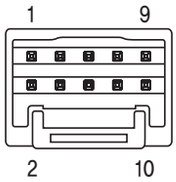
3. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE-	Output
5	LIMIT+	Input
6	LIMIT-	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital Out1	Output
12	Digital Out2	Output



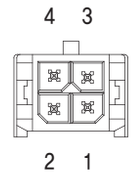
4. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----



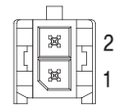
5. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



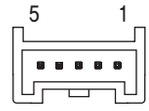
6. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



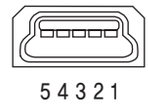
7. EtherCAT Communication Connector(CN5, CN6)

NO.	Function
1	TD+
2	TD–
3	RD+
4	RD–
5	F.GND

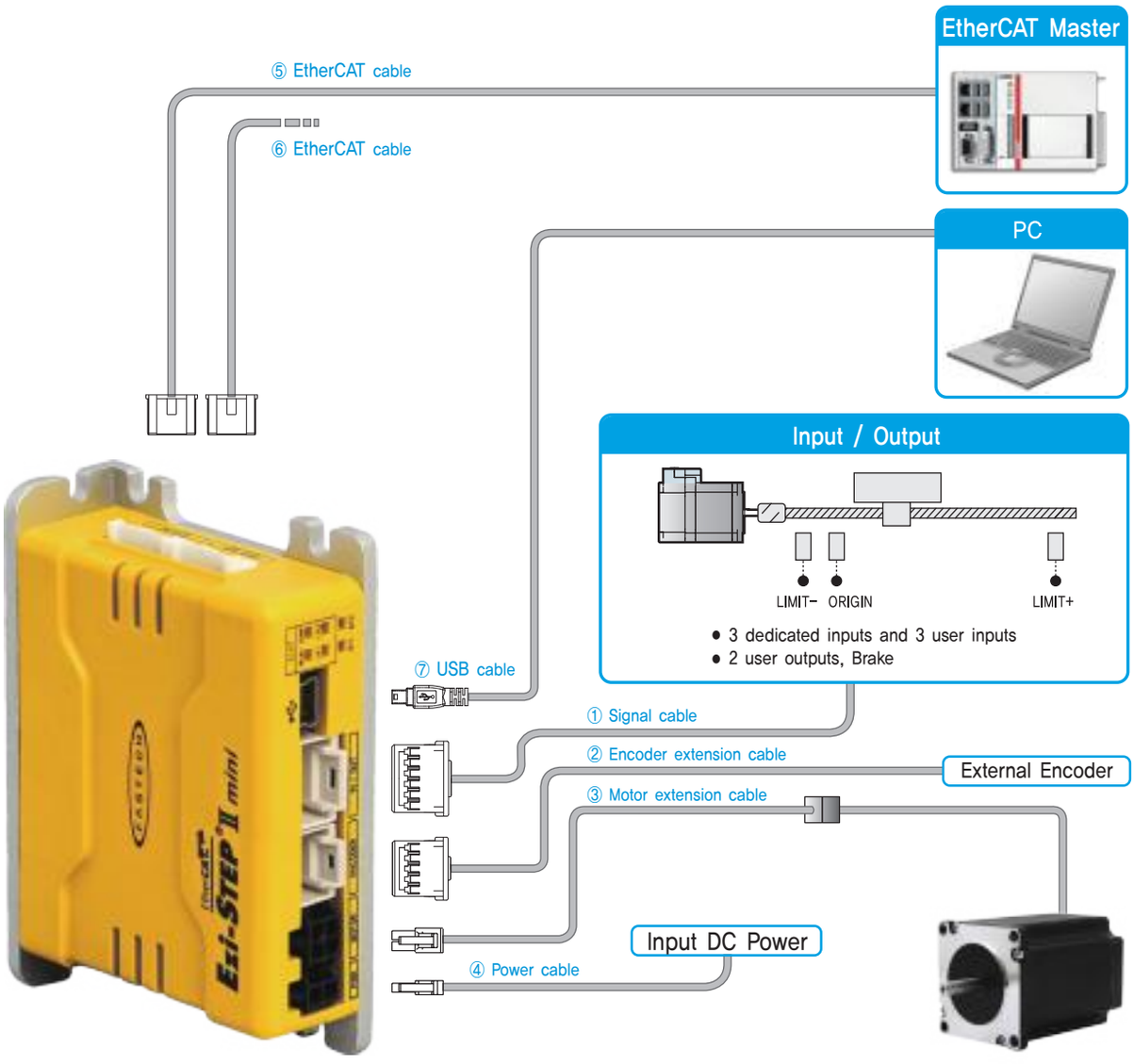


8. USB Connector(CN7)

NO.	Function
1	V_{BUS}
2	D–
3	D+
4	---
5	GND



System Configuration



Type	Signal Cable	Motor Cable	Power Cable	EtherCAT Cable	USB Cable
Length supplied	–	30cm	–	–	–
Max. Length	20m	20m	2m	100m	5m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II EtherCAT MINI.

Item	Length [m]	Remark
CSNR-S-□□□F	□□□	Normal Cable
CSNR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II EtherCAT MINI.

Item	Length [m]	Remark
CTPM-E-□□□F	□□□	Normal Cable
CTPM-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP II EtherCAT MINI.

Item	Length [m]	Remark
CSMI-M-□□□F	□□□	Normal Cable
CSMI-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II EtherCAT MINI.

Item	Length [m]	Remark
CSMI-P-□□□F	□□□	Normal Cable
CSMI-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNE-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-STEP II EtherCAT MINI to the controller, Ezi-STEP II EtherCAT, and Ezi-STEP II EtherCAT ALL R type with a network.
This cable is composed of a 5-pin connector (Ezi-STEP II EtherCAT MINI side) and an RJ45 connector.

⑥ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNI-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-STEP II EtherCAT MINI to Ezi-STEP II EtherCAT MINI with the network.

⑦ USB Cable

The USB cable is a cable for connecting Ezi-STEP II EtherCAT MINI to PC through USB communication.

* The USB cable is NOT supplied.
Use a cable with USB 2.0 Mini Type B connectors.

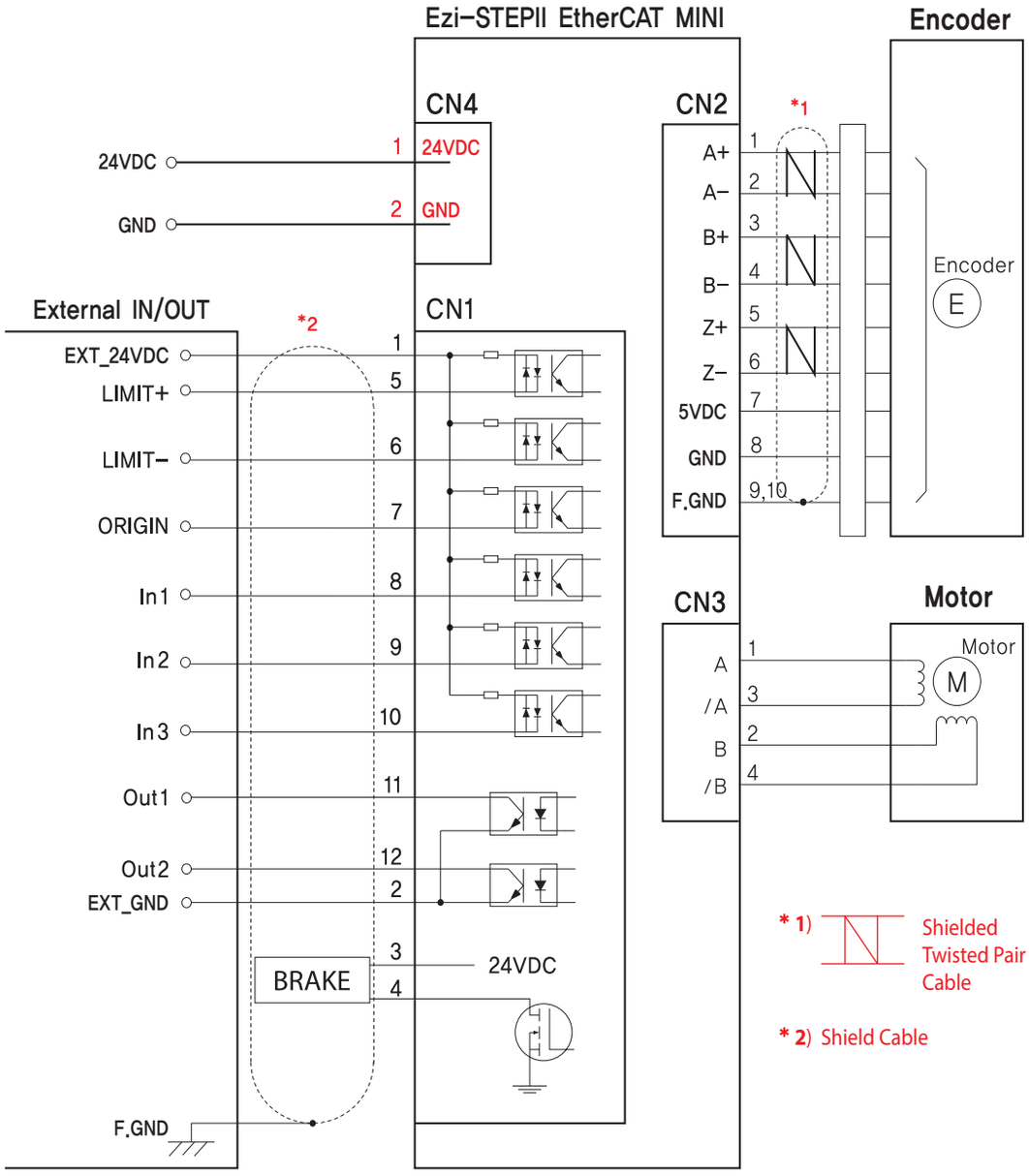
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
EtherCAT Communication (CN5, CN6)		Housing Terminal	PAP-05V-S SPHD-001T-P0.5	JST
Power (CN4)		Housing Terminal	43025-0200 43030-0001	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	43025-0400 43030-0001	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	501646-1000 501648-1000(AWG 26~28)	MOLEX
Signal (CN1)		Housing Terminal	501646-1200 501648-1000(AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



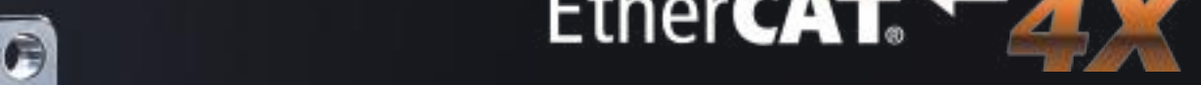
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EtherCAT 4X
ECAT OUT
ECAT IN
Ezi-STEP II
MOTOR
ENCODER
I/O



Ezi-STEP II EtherCAT 4X

- CiA 402 Drive Profile Support
- Micro Stepping
- Software Damping
- Compact 4-Axis Stepping Motor Drive
- Save Space / Reduce Wiring (Reduce Cost)



FASTECH

Fast, Accurate, Smooth Motion

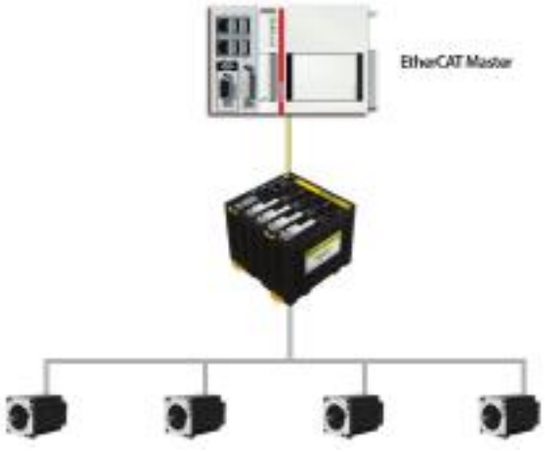
Ezi-STEP® II EtherCAT 4X

Micro Stepping System



1 EtherCAT Based Motion Control

Ezi-STEP II EtherCAT 4X is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-STEP II EtherCAT 4X is EtherCAT slave module which support CAN application layer over EtherCAT (CoE). CiA 402 Drive Profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



2 Microstep and Filtering

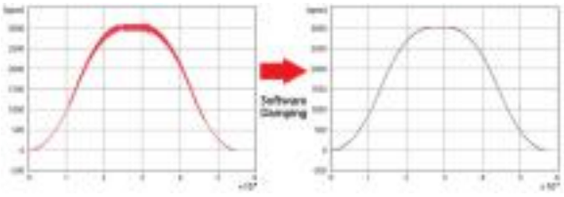
High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

3 Software Damping

Vibration suppression and high-speed operation

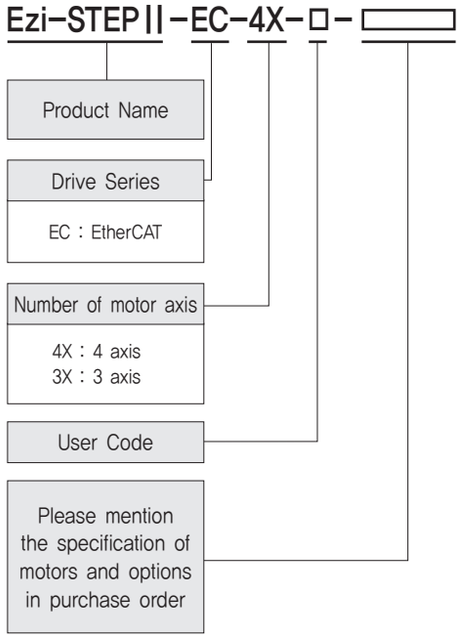
Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration. This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

● Ezi-STEP II EtherCAT 4X Part Numbering



● Combination with Standard Motor / Brake

Ezi-STEP II EtherCAT 4X can use up to 4 motors in one drive. Available motors include Standard Motor, Motor with Brake. Different Motor Number can be used for each axis. Refer to the Motor Model Number below.

Motor Model Number
BM-20M
BM-20L
BM-28S
BM-28M
BM-28L
BM-42S
BM-42M
BM-42L
BM-42XL
BM-56S
BM-56M
BM-56L
BM-60S
BM-60M
BM-60L

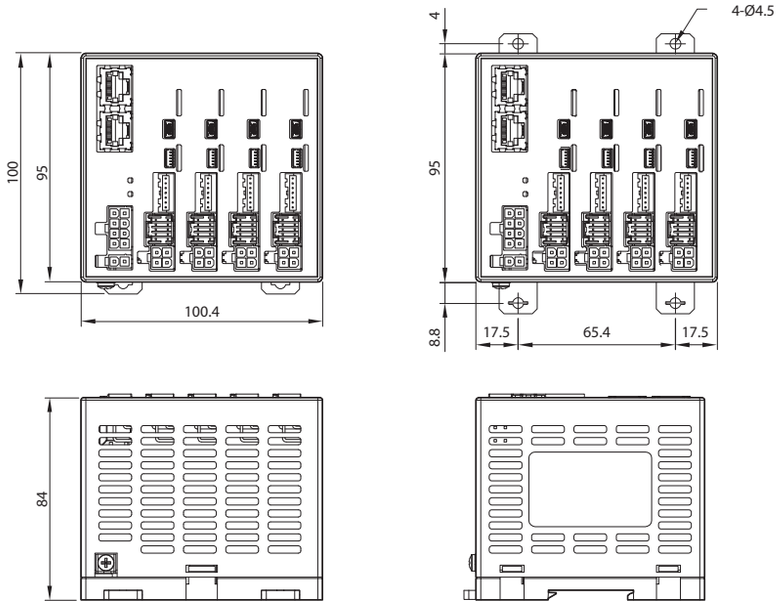
Motor Model Number with Brake
BM-42S-BK
BM-42M-BK
BM-42L-BK
BM-42XL-BK
BM-56S-BK
BM-56M-BK
BM-56L-BK
BM-60S-BK
BM-60M-BK
BM-60L-BK

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series
Driver Model		EzT2-EC-4X, 3X series				
Input Voltage		24VDC ±10%				
Control Method		Bipolar PWM drive with 32bit MCU				
Current Consumption		Max 500mA/axis (Except motor current)				
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃				
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)				
	Vib. Resist.	0.5g				
Function	Rotation Speed	0~3,000 [rpm] *1				
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable with Parameter) * Default: 10,000				
	Protection Functions	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error				
	LED Display	Power Status, Alarm Status, Run Status, STEP On Status				
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)				
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode				
	Synchronization	Free Run, SM Event, DC SYNC Event				
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN)				
	Output Signals	Brake				

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]



※ Can be installed on DIN Rail. (35mm)
※ Outer dimension of 3X drive is the same as 4X.

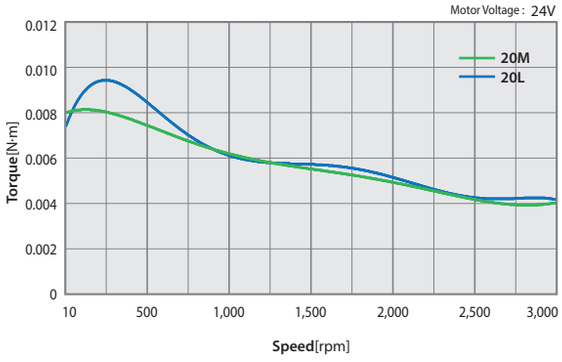
Specifications of Motor

MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

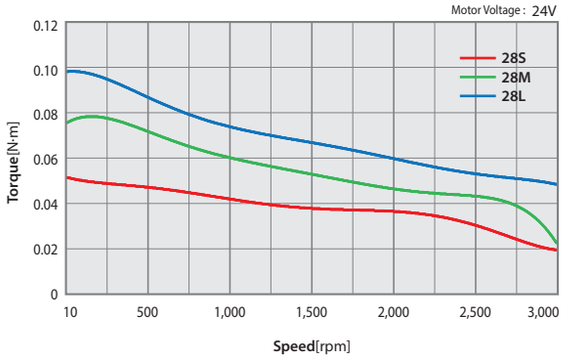
MODEL			BM-56 series			BM-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690
WEIGHTS		g	548	726	1159	616	793	1349
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70
	8mm		65	65	65	87	87	87
	13mm		85	85	85	114	114	114
	18mm		123	123	123	165	165	165
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

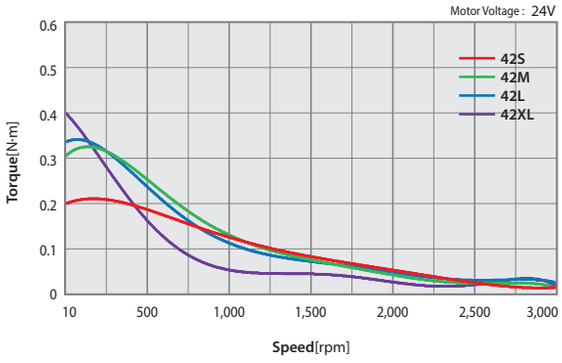
Ezi-STEP II-EC-4X-20 series



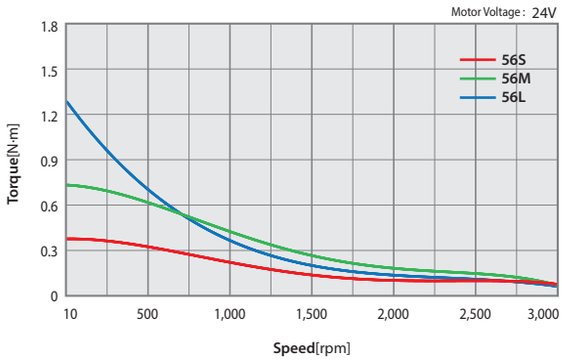
Ezi-STEP II-EC-4X-28 series



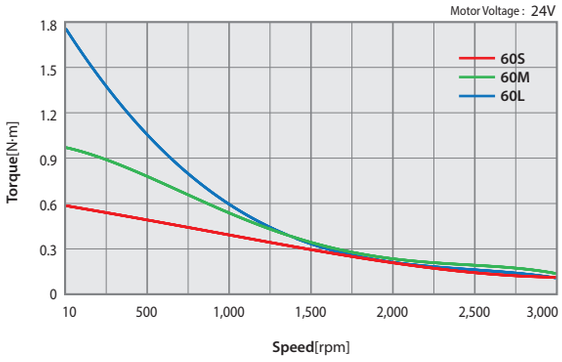
Ezi-STEP II-EC-4X-42 series



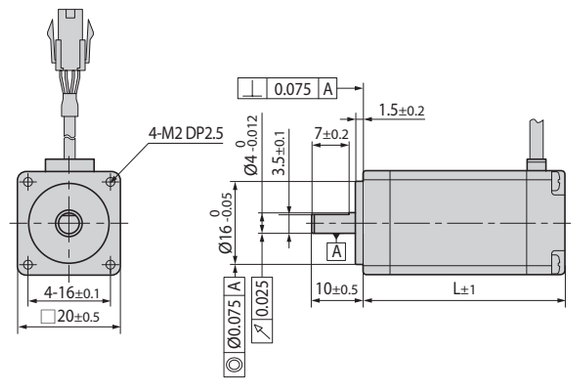
Ezi-STEP II-EC-4X-56 series



Ezi-STEP II-EC-4X-60 series

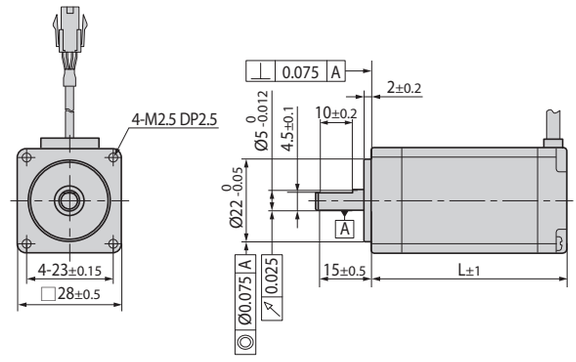


Dimensions of Motor [mm]



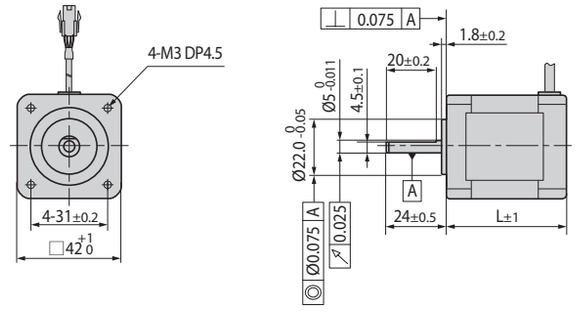
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



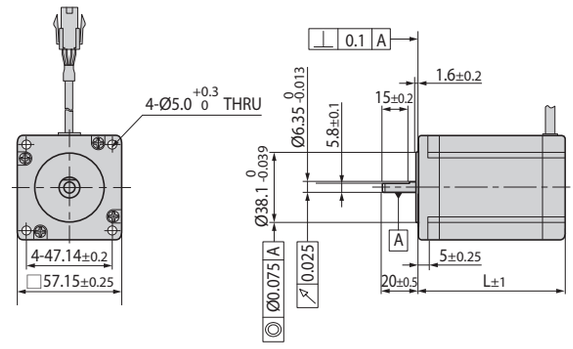
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

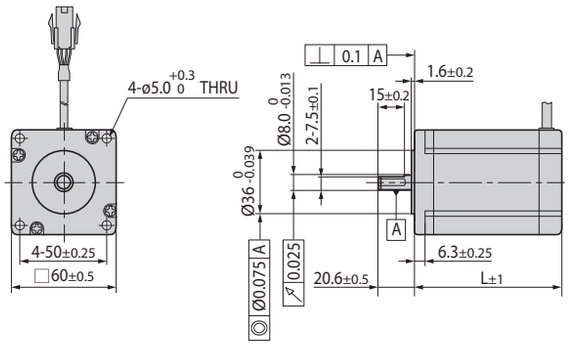
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

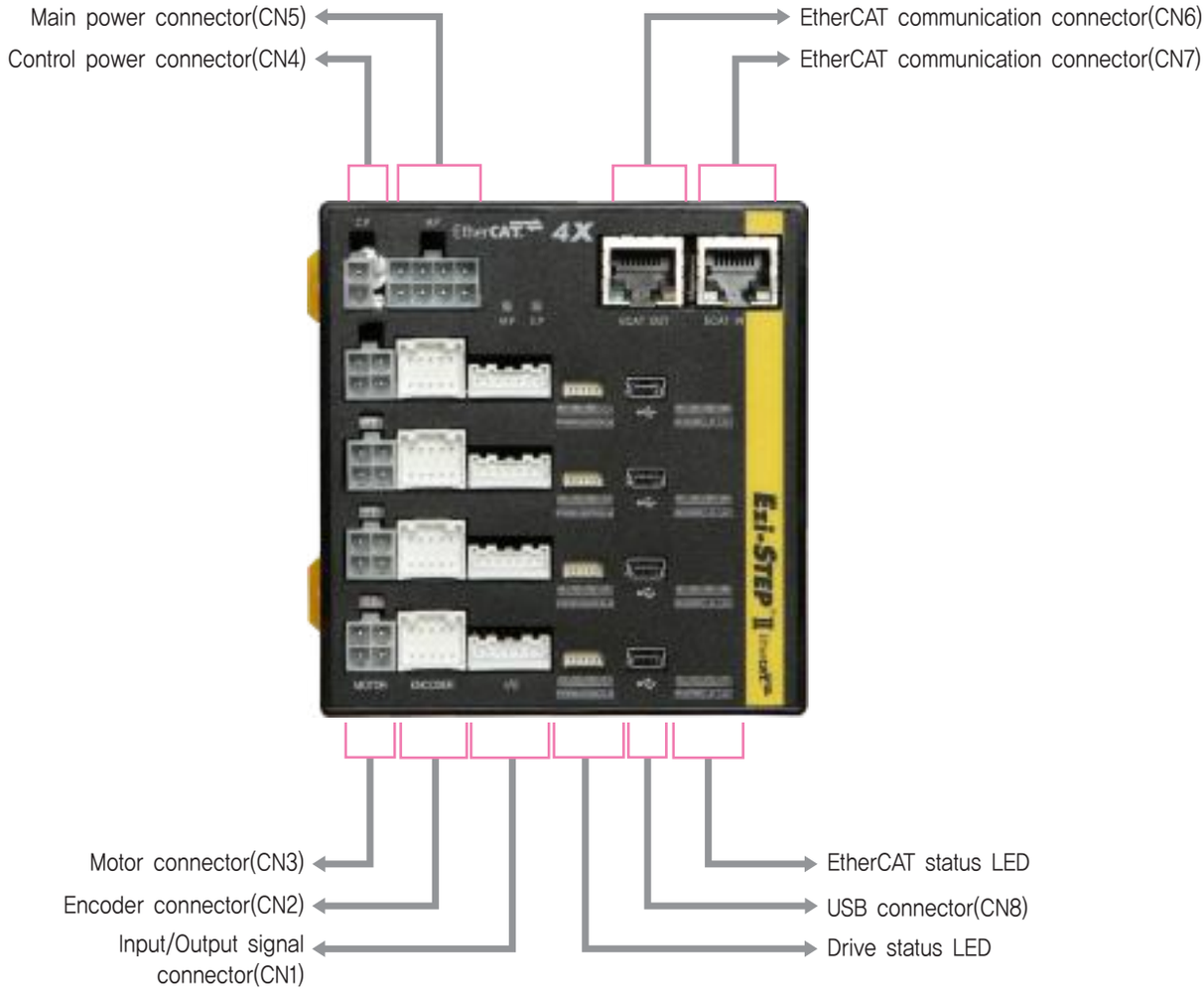
● Dimensions of Motor [mm]

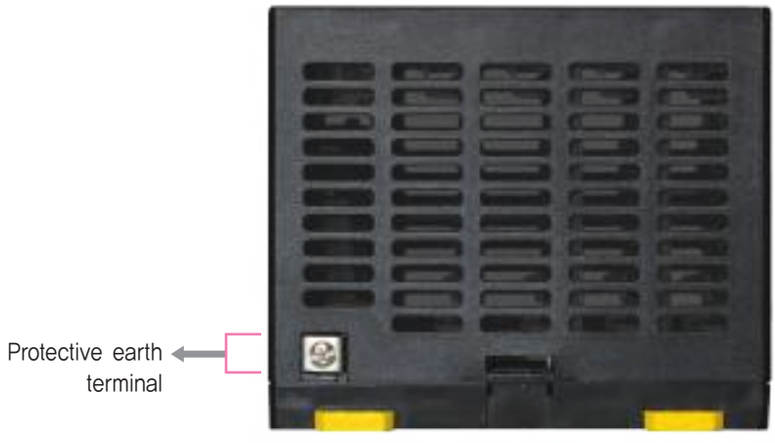


60mm

Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85

Settings and Operation



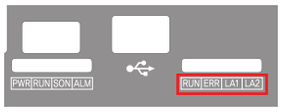


※ Basic configuration of 3X drive is the same as 4X and only difference is number of axis.

1. EtherCAT Status LED

LED indicates communication status of EtherCAT.

Name	Indication	Color	Status	Explanation
Run	RUN	Green	OFF	State INIT or Power OFF
			Blinking	State PRE-OPERATIONAL
			Single Flash	State SAFE-OPERATIONAL
			ON	State OPERATIONAL
			Flickering	State BOOTSTRAP



Name	Indication	Color	Status	Explanation
Error	ERR	Red	OFF	No Error or Power OFF
			Blinking	Invalid Configuration
			Single Flash	Local Error
			Double Flash	Watchdog Time Out

Name	Indication	Color	Status	Explanation
Link/ Activity	LA1 LA2	Green	OFF	Link not Established
			ON	Link Established
			Flickering	Link Established and in Operation

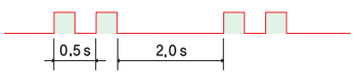
2. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
RUN	Yellow	Motor running indication	LED is turned ON while motor is rotating
SON	Orange	STEP On / Off indication	STEP On: Lights On, STEP Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)



◆ Protection functions and LED flash times

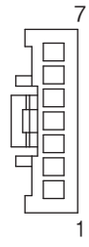
Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The drive does STEP ON without connection of the motor cable to drive.
9	Motor Power Error	The input voltage of the motor power is too low or disconnected
12	ROM Error	Error occurs in parameter storage device(ROM)



Alarm LED Flash
(Ex, Over Speed Error)

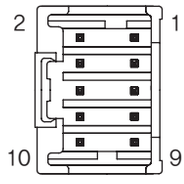
3. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	LIMIT+	Input
4	LIMIT−	Input
5	ORIGIN	Input
6	BRAKE+	Output
7	BRAKE−	Output



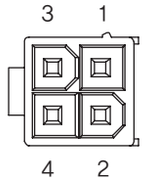
4. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----



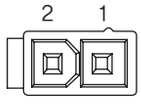
5. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



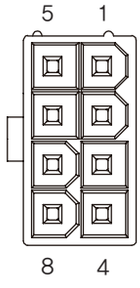
6. Control Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



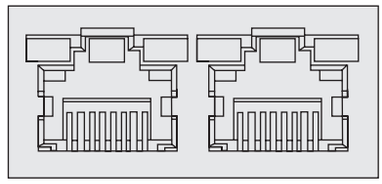
7. Main Power Connector(CN5)

NO.	Function	I/O
1	24VDC	Input
2	24VDC	Input
3	24VDC	Input
4	F.GND	----
5	GND	Input
6	GND	Input
7	GND	Input
8	F.GND	----



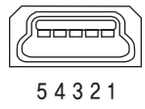
8. EtherCAT Communication Connector(CN6, CN7)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connection hood	F.GND
5	----		

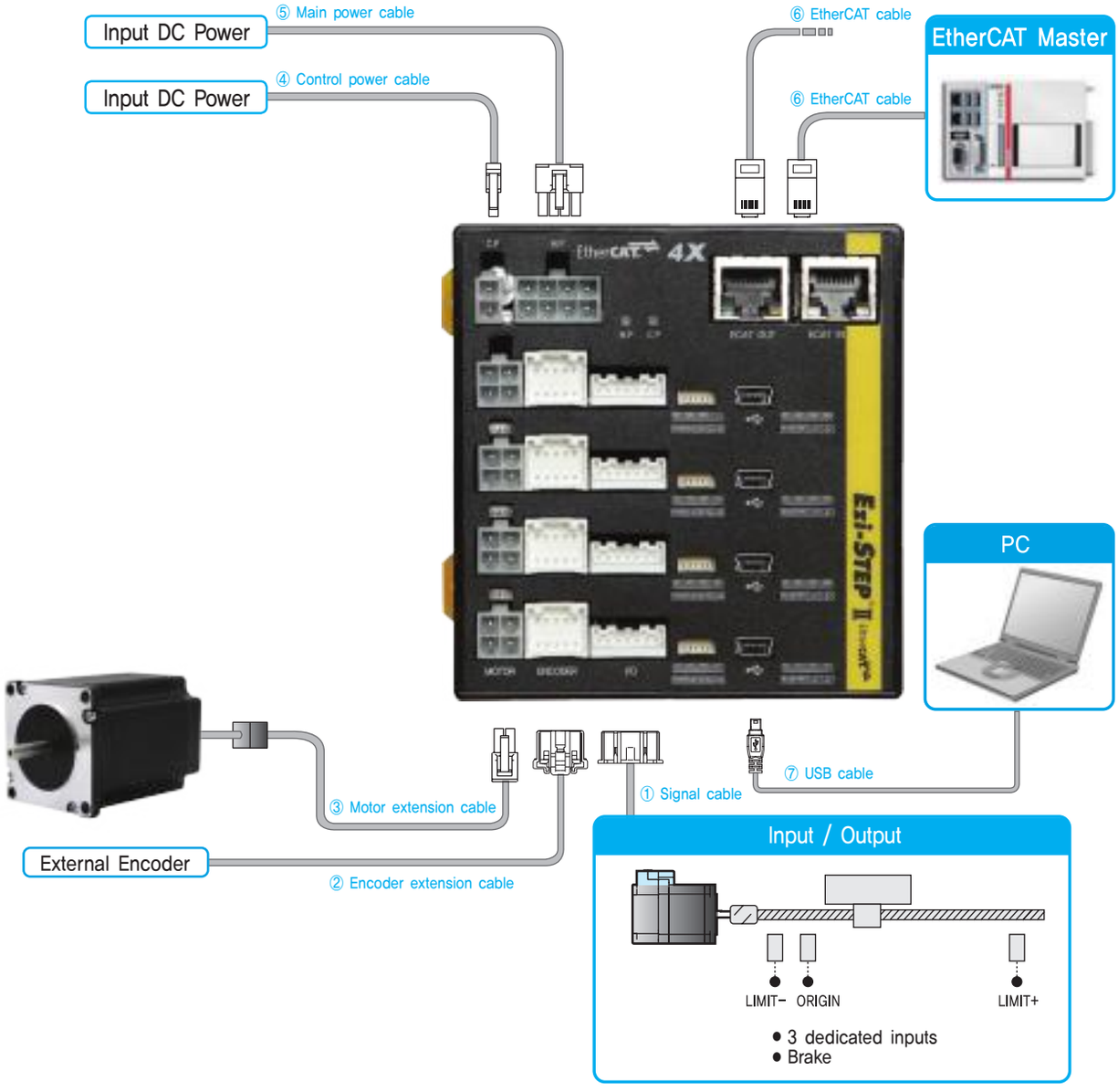


9. USB Connector(CN8)

NO.	Function
1	V_{BUS}
2	D−
3	D+
4	---
5	GND



System Configuration



Type	Signal Cable	Motor Cable	Control Power Cable	Main Power Cable	EtherCAT Cable	USB Cable
Length supplied	–	30cm	–	–	–	–
Max. Length	20m	20m	2m	2m	100m	5m

※ Basic configuration of 3X drive is the same as 4X and only difference is number of axis.

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CECM-S-□□□F	□□□	Normal Cable
CECM-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CTPR-E-□□□F	□□□	Normal Cable
CTPR-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Control Power Cable

Available to connect between Power and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Main Power Cable

Available to connect between Main Power and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CECM-P-□□□F	□□□	Normal Cable
CECM-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑥ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑦ USB Cable

The USB cable is a cable for connecting Ezi-STEP II EtherCAT 4X to PC through USB communication.

* The USB cable is NOT supplied.
  Use a cable with USB 2.0 Mini Type B connectors.

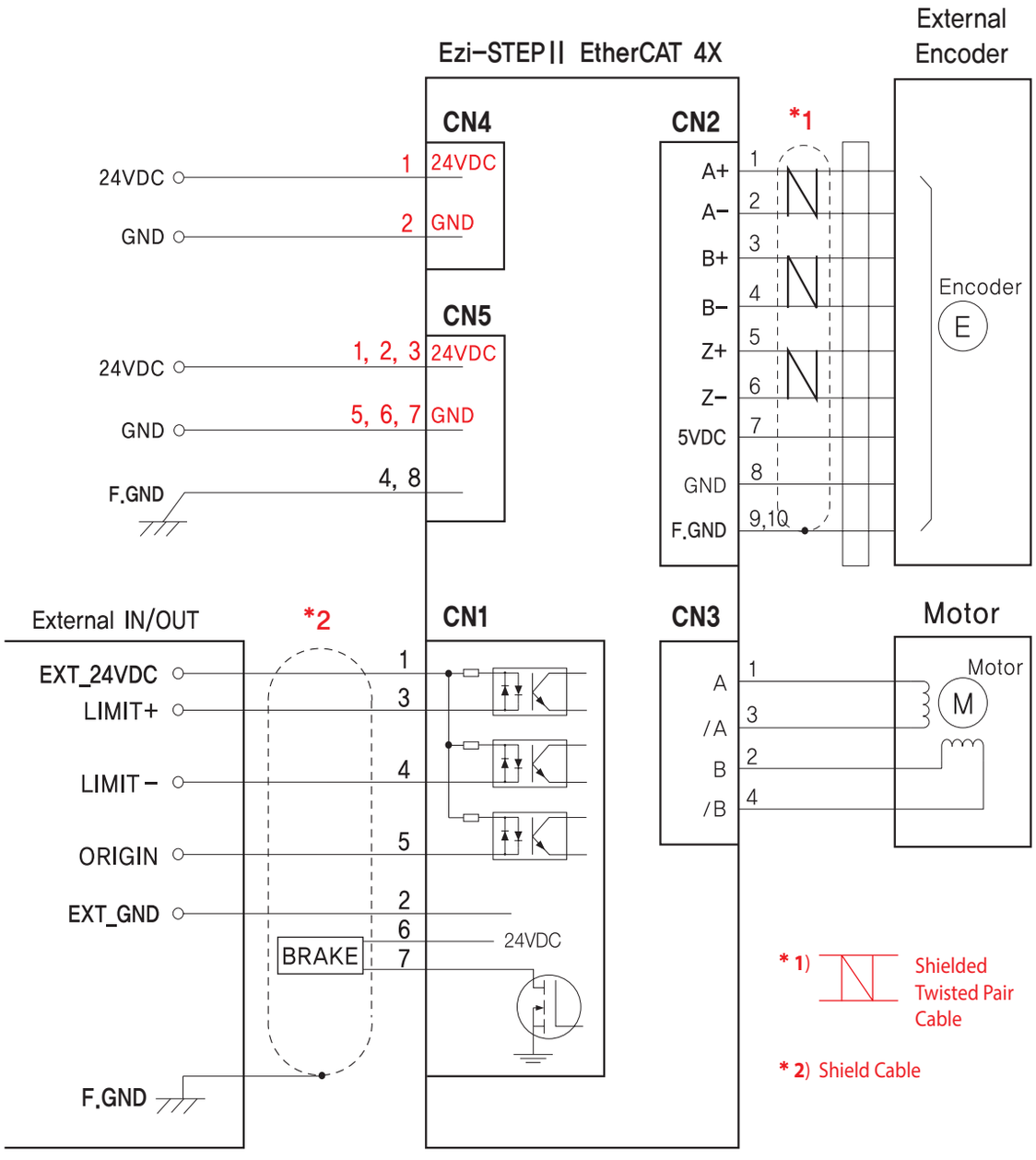
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Main Power (CN5)		Housing Terminal	5557-08R 5556T	MOLEX
Control Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Housing Terminal	PAP-07V-S SPHD-001T-P0.5	JST

※ Above Connector is the most suitable product for the drive applied. Another equivalent Connector can be used.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


PWR
MOTOR
ENCODER
IN / OUT
Exi-STEP II Plus-E

Ezi-STEP II Plus-E

Ezi-STEP II Plus-E

- Embedded Controller
- Ethernet Interface
- Position Table
- Micro Stepping
- Software Damping
- Torque Improvement



FASTECH

Fast, Accurate, Smooth Motion

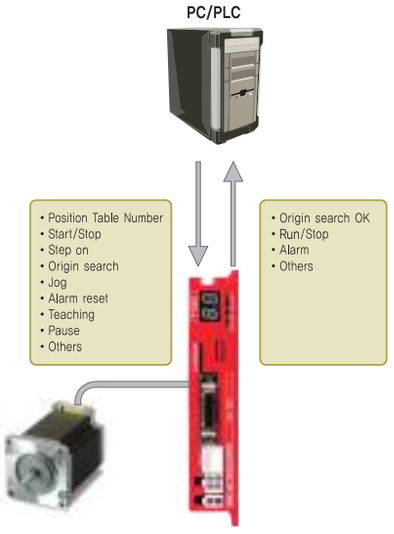
Ezi-STEP® II Plus-E

Micro Stepping System



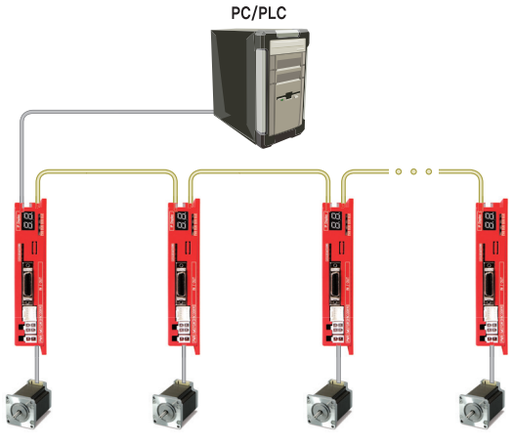
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC/PLC.
The PC/PLC can monitor the origin search complete, moving/stop, step ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC/PLC.



1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC/PLC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 7/8/10.



3 Microstep and Filtering

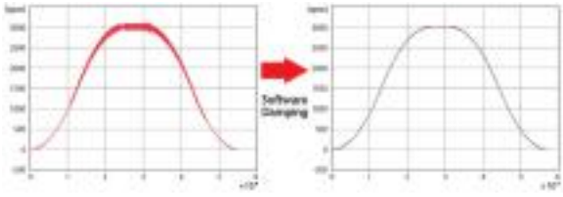
High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

4 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

5 Improvement of High-Speed Driving

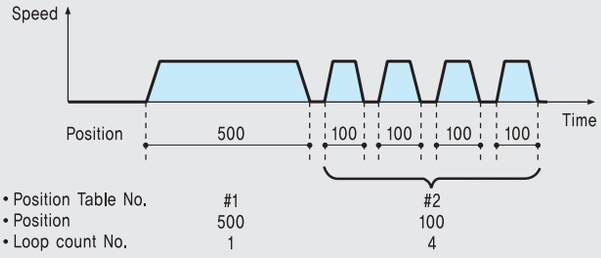
Depending on the speed of a stepping motor, Ezi-STEP II automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation. Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

Applicable model : Ezi-STEP II-PE-42 Series
Ezi-STEP II-PE-56 Series
Ezi-STEP II-PE-60 Series

Features of Motion Controller

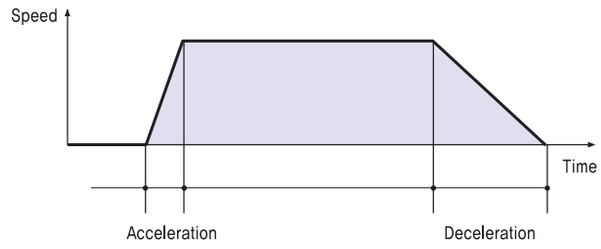
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



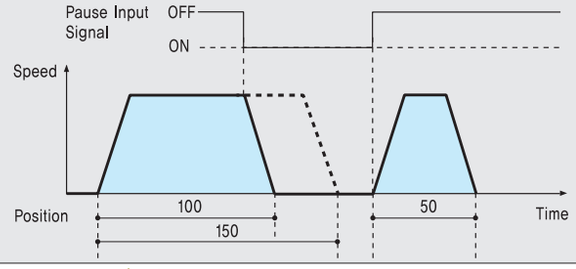
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



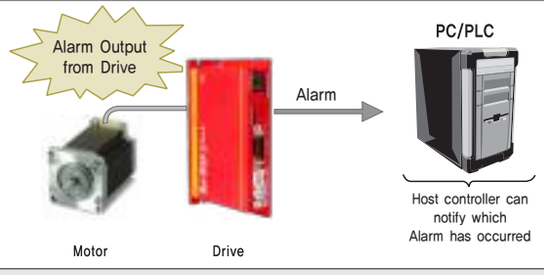
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



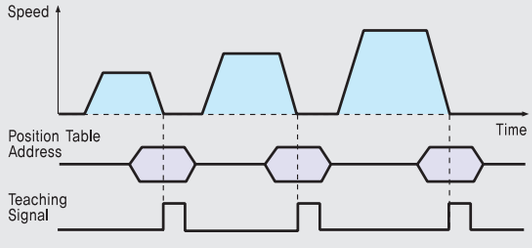
4. Alarm

The number of LED flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

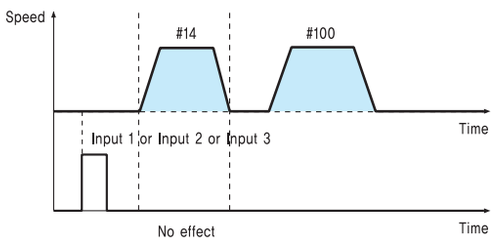


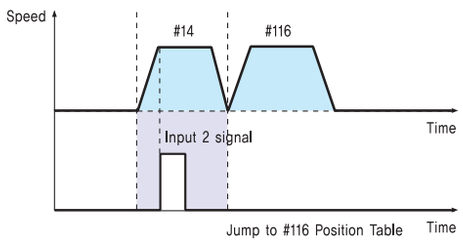
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





● Ezi-STEP II Plus-E Part Numbering

Ezi-STEP II -PE-42S-BK-□

- **Product Name**
- **Drive Series**
  - PE : Plus Ethernet
- **Motor Flange Size**
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Brake**
  - Blank : Without Brake
  - BK : Brake
- **User Code**

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -PE-20M	BM-20M	EzT2-PE-20M
Ezi-STEP II -PE-20L	BM-20L	EzT2-PE-20L
Ezi-STEP II -PE-28S	BM-28S	EzT2-PE-28S
Ezi-STEP II -PE-28M	BM-28M	EzT2-PE-28M
Ezi-STEP II -PE-28L	BM-28L	EzT2-PE-28L
Ezi-STEP II -PE-42S	BM-42S	EzT2-PE-42S
Ezi-STEP II -PE-42M	BM-42M	EzT2-PE-42M
Ezi-STEP II -PE-42L	BM-42L	EzT2-PE-42L
Ezi-STEP II -PE-42XL	BM-42XL	EzT2-PE-42XL
Ezi-STEP II -PE-56S	BM-56S	EzT2-PE-56S
Ezi-STEP II -PE-56M	BM-56M	EzT2-PE-56M
Ezi-STEP II -PE-56L	BM-56L	EzT2-PE-56L
Ezi-STEP II -PE-60S	BM-60S	EzT2-PE-60S
Ezi-STEP II -PE-60M	BM-60M	EzT2-PE-60M
Ezi-STEP II -PE-60L	BM-60L	EzT2-PE-60L
Ezi-STEP II -PE-86M	BM-86M	EzT2-PE-86M
Ezi-STEP II -PE-86L	BM-86L	EzT2-PE-86L
Ezi-STEP II -PE-86XL	BM-86XL	EzT2-PE-86XL

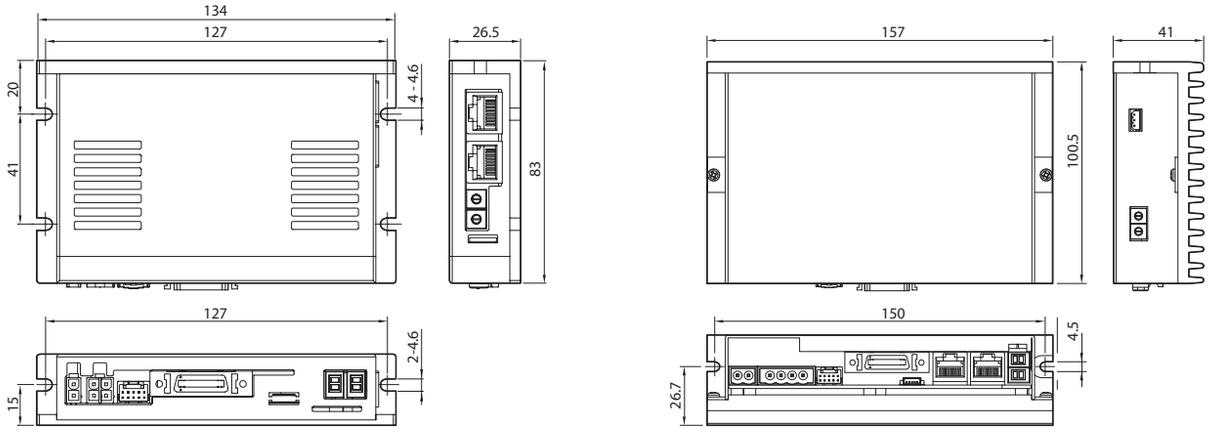
● Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -PE-42S-BK	BM-42S-BK	EzT2-PE-42S
Ezi-STEP II -PE-42M-BK	BM-42M-BK	EzT2-PE-42M
Ezi-STEP II -PE-42L-BK	BM-42L-BK	EzT2-PE-42L
Ezi-STEP II -PE-42XL-BK	BM-42XL-BK	EzT2-PE-42XL
Ezi-STEP II -PE-56S-BK	BM-56S-BK	EzT2-PE-56S
Ezi-STEP II -PE-56M-BK	BM-56M-BK	EzT2-PE-56M
Ezi-STEP II -PE-56L-BK	BM-56L-BK	EzT2-PE-56L
Ezi-STEP II -PE-60S-BK	BM-60S-BK	EzT2-PE-60S
Ezi-STEP II -PE-60M-BK	BM-60M-BK	EzT2-PE-60M
Ezi-STEP II -PE-60L-BK	BM-60L-BK	EzT2-PE-60L
Ezi-STEP II -PE-86M-BK	BM-86M-BK	EzT2-PE-86M
Ezi-STEP II -PE-86L-BK	BM-86L-BK	EzT2-PE-86L
Ezi-STEP II -PE-86XL-BK	BM-86XL-BK	EzT2-PE-86XL

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series	BM-86 series
Driver Model		EzT2-PE-20 series	EzT2-PE-28 series	EzT2-PE-42 series	EzT2-PE-56 series	EzT2-PE-60 series	EzT2-PE-86 series
Input Voltage		24VDC ±10%					40~70VDC
Control Method		Bipolar PWM drive with 32bit MCU					
Multi Axis Drive		Maximum 254 axis operating (Selectable IP: 1~254)					
Position Table		256 motion command steps (Speed, External start, Jump, Loop, Wait and PT finish etc.)					
Current Consumption		Max 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000 [rpm]					
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable with Parameter) * Default: 10,000					
	Protection Functions	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error					
	LED Display	Power Status, RUN Status, STEP ON Status, Alarm Status					
	Rotational Direction	CW/CCW (Selectable by parameter)					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 9 programmable inputs (Photocoupler)					
	Output Signals	1 dedicated output (Compare Out), 9 programmable outputs (Photocoupler), Brake					
Communication Interface		Ethernet communication, Dual port Ethernet switch embeded, Communication speed: 10/100 Base - T/TX Full-Duplex					
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 [rpm]					
Return to Origin		Origin Sensor, ±Limit sensor, Z phase (By external encoder)					
GUI		User Interface Program within Windows					
Library		Motion Library (DLL) for windows 7/8/10					

Dimensions of Drive [mm]



※ 86mm motor drive (EzT2-PE-86 series)

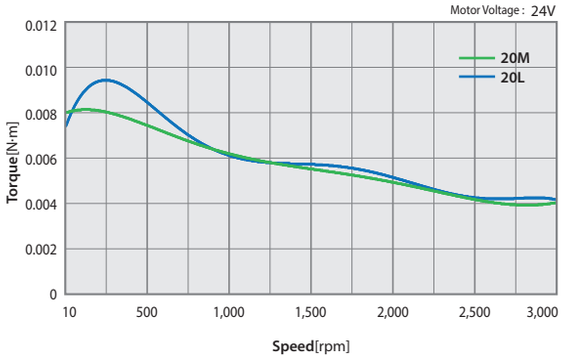
● Specifications of Motor

MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

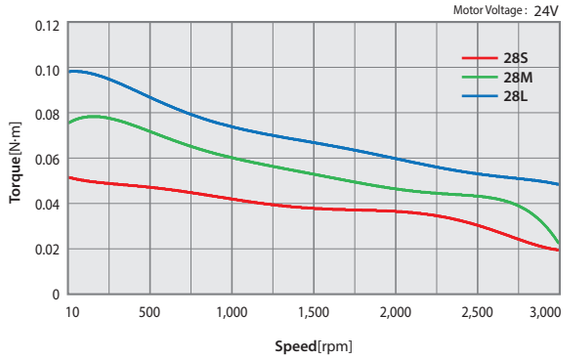
MODEL			BM-56 series			BM-60 series			BM-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	548	726	1159	616	793	1349	2275	3808	5330
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70	270	270	270
	8mm		65	65	65	87	87	87	300	300	300
	13mm		85	85	85	114	114	114	350	350	350
	18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

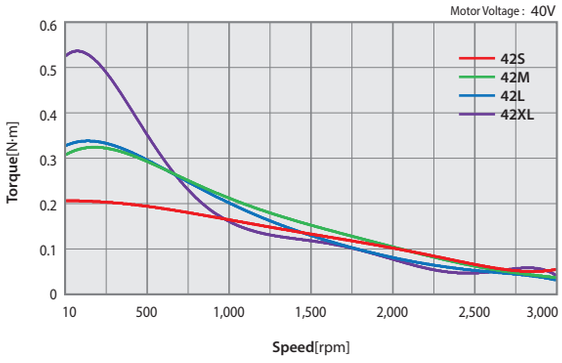
Ezi-STEP II-PE-20 series



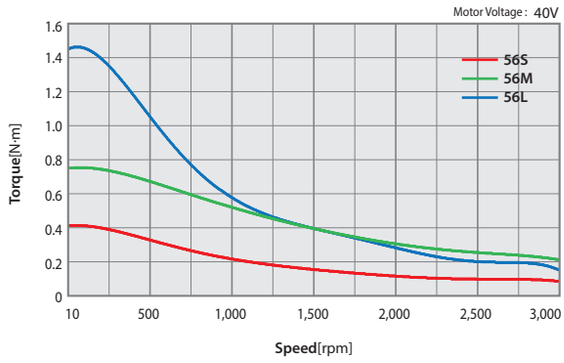
Ezi-STEP II-PE-28 series



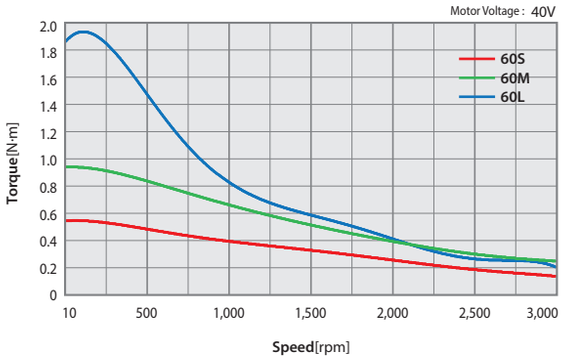
Ezi-STEP II-PE-42 series



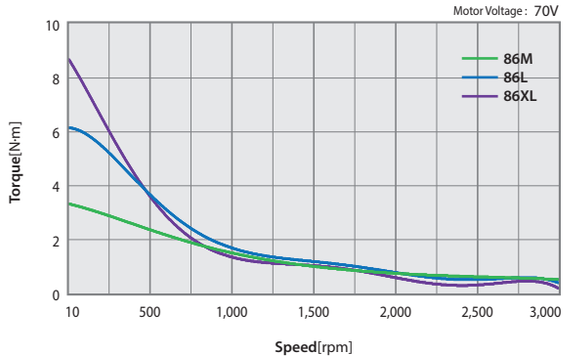
Ezi-STEP II-PE-56 series



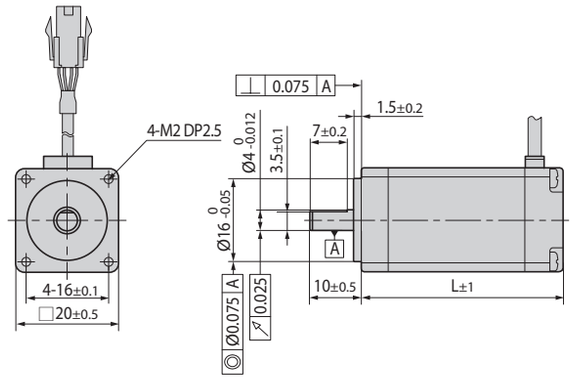
Ezi-STEP II-PE-60 series



Ezi-STEP II-PE-86 series

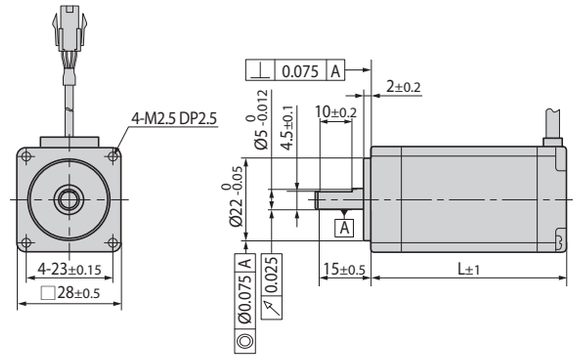


● Dimensions of Motor [mm]



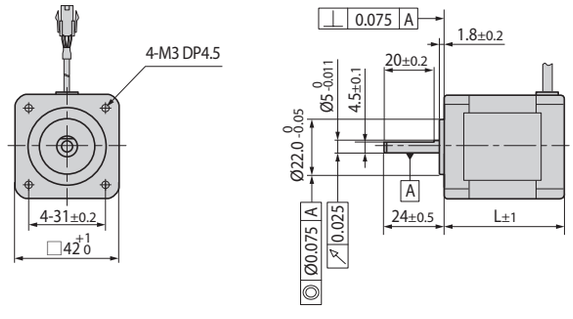
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



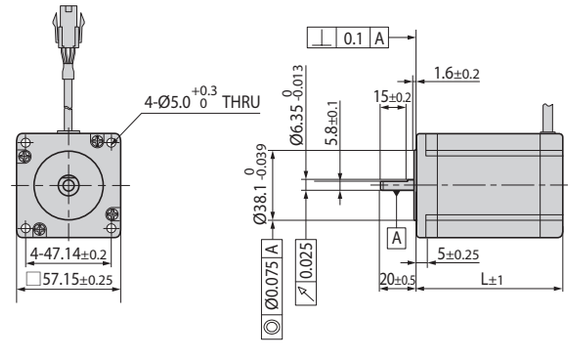
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

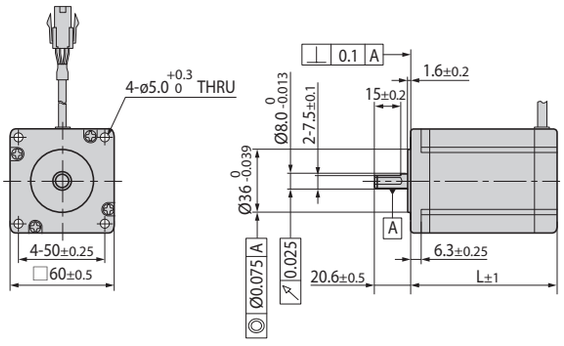
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

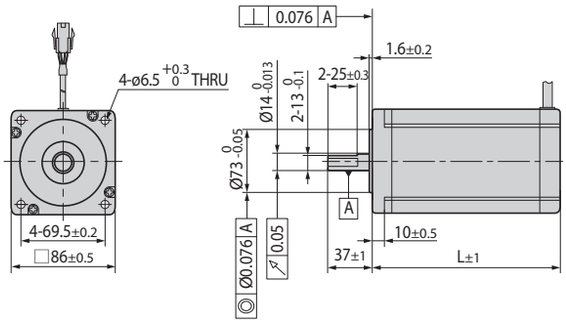
Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

● Dimensions of Motor [mm]



60mm

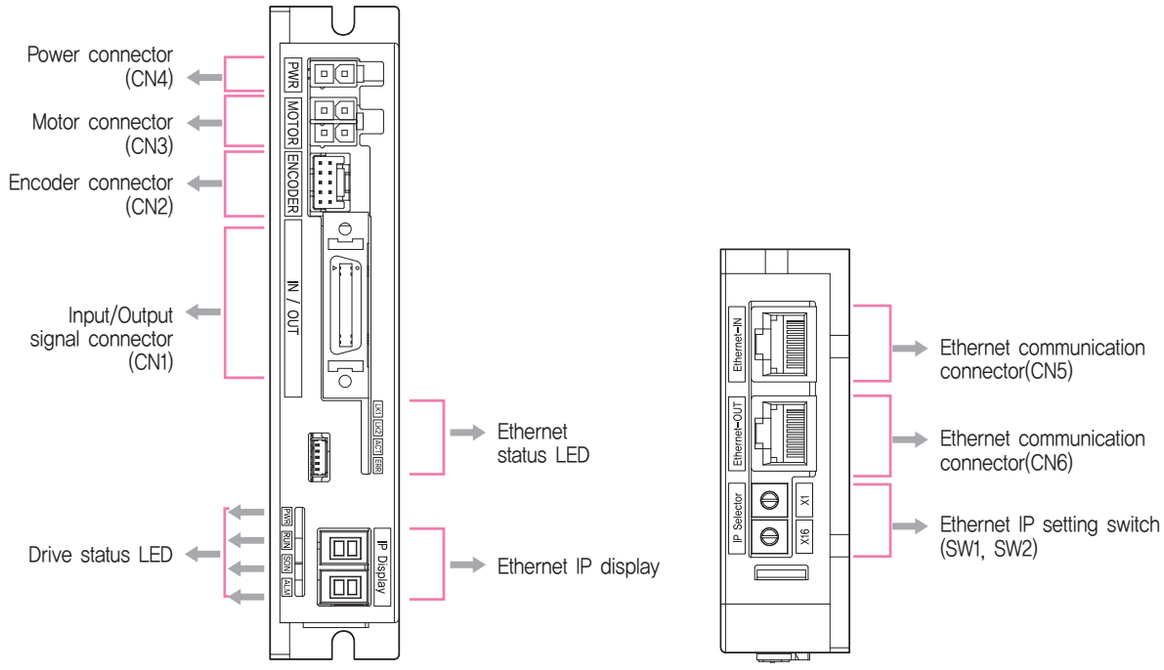
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85



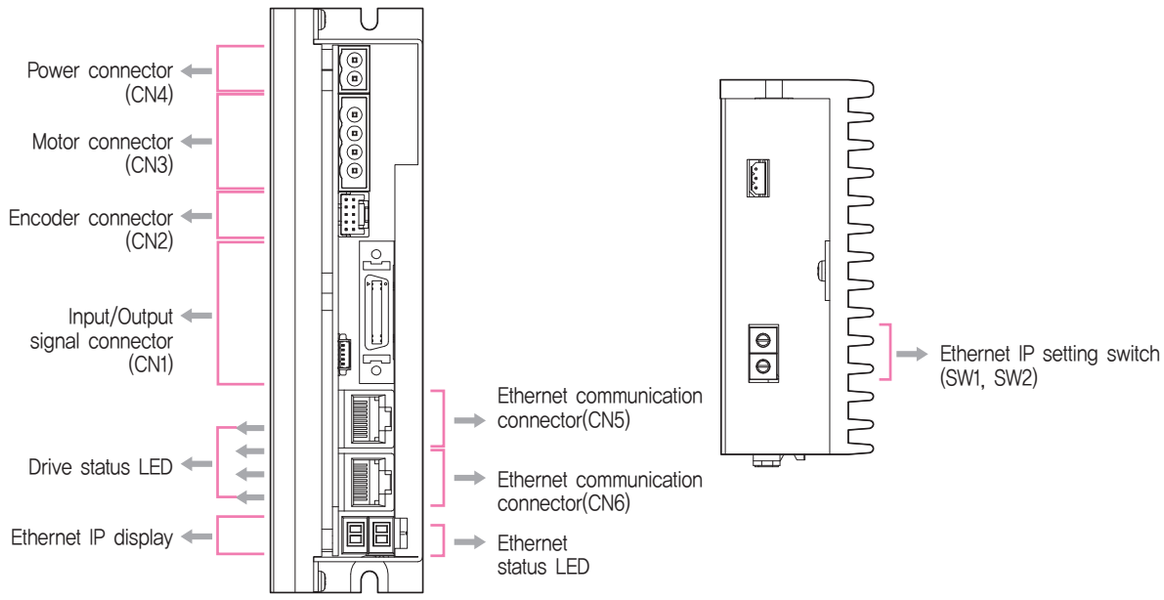
86mm

Model name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

Settings and Operation

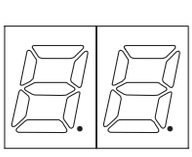


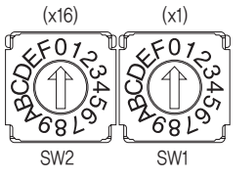
◆ 86mm Motor Drive (EzT2-PE-86 Series)



1. Ethernet IP Display and Setting Switch(SW1, SW2)

It can be set the value of the fourth digit of Ethernet IP through the setting switch. Set the product's IP not to overlap with the connected products. The first, second and third values of IP can be set through the GUI. Please refer to the manual for details. When the switch is set to 255 (FF), IP is automatically set, ignoring the setting. (DHCP function)
The fourth digit of the Ethernet IP is displayed in 7-Segment.





Ex) In case of SW1 : **7** and SW2 : **5**
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

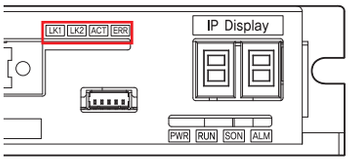
2. Ethernet Status LED

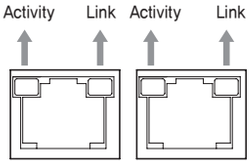
LED indicates communication status of Ethernet. Link/Activity LED exists on each port of Ethernet.

Name	Color	Status	Explanation
Error	Red	OFF	No Error status
		ON	Local Error

Name	Color	Status	Explanation
LK1 / LK2	Green	OFF	Link deactivated
		ON	Link activated

Name	Color	Status	Explanation
Activity	Yellow	OFF	No operating
		Flickering	Operating





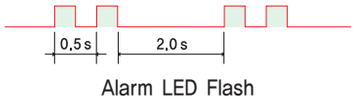
3. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power input indication	LED is turned ON when power is applied
RUN	Yellow	Motor running indication	LED is turned ON while motor is rotating
SON	Orange	Step On / Off indication	Step On : Lights On, Step Off : Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

Times	Error Code *3	Protection	Conditions
1	E-001	Over Current Error	The current through power devices in drive exceeds the limit value *1
2	E-002	Over Speed Error	Motor speed exceed 3,000 [rpm]
5	E-005	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF more high limit value *2
7	E-007	Motor Connect Error	The drive does STEP ON without connection of the motor cable to drive.
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)

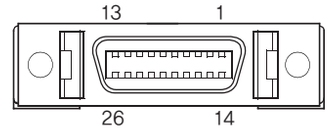
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*3 : When an alarm occurs, error code is displayed on the 7-segment instead of Ethernet IP.
※ Please refer to uer Manual for the details of protection functions.



Alarm LED Flash
(Ex, Over Speed Error)

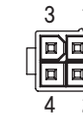
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In6	Input
6	Digital In7	Input
7	Compare Out1	Output
8	Digital Out1	Output
9	Digital Out2	Output
10	Digital Out3	Output
11	Digital Out4	Output
12	Digital Out5	Output
13	Digital Out6	Output
14	Digital In2	Input
15	Digital In3	Input
16	Digital In4	Input
17	Digital In5	Input
18	Digital In8	Input
19	Digital In9	Input
20	Digital Out7	Output
21	Digital Out8	Output
22	Digital Out9	Output
23	BRAKE+	Output
24	BRAKE−	Output
25	EXT_GND	Input
26	EXT_24VDC	Input

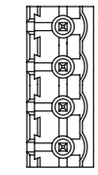


6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output



※ Only for 86mm motor drive.

7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



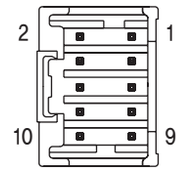
NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input



※ Only for 86mm motor drive.

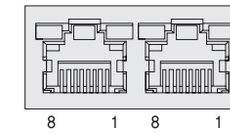
5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	5VDC	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----

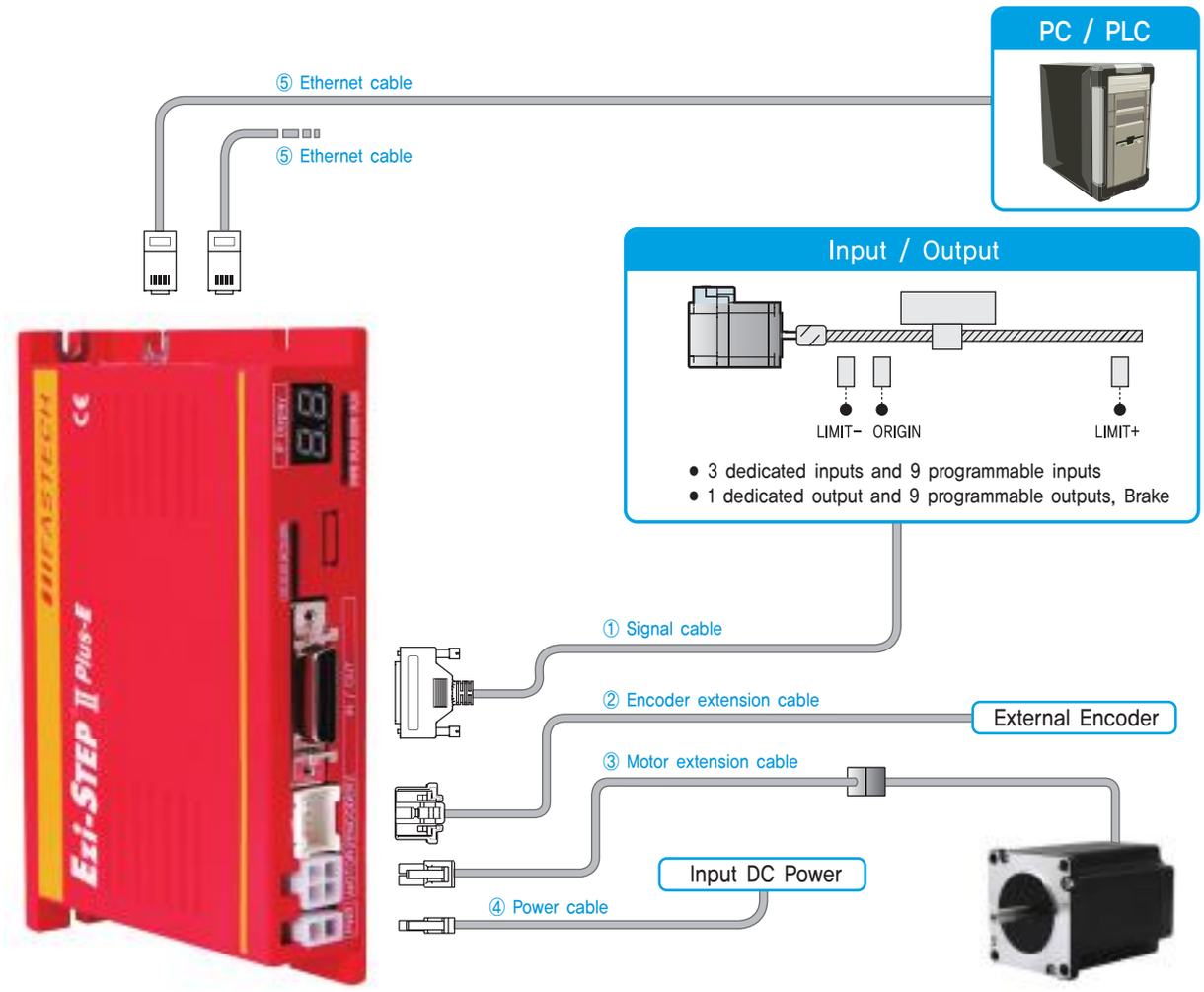


8. Ethernet Communication Connector(CN5, CN6)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	----	Connection hood	F.GND
5	----		



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	–	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CSVR-S-□□□F	□□□	Normal Cable
CSVR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CTPR-E-□□□F	□□□	Normal Cable
CTPR-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to connect between motor and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Ethernet Cable

STP(Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/ Output signal and Ezi-STEP II Plus-E.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CIFD-S-□□□F	□□□	Normal Cable
CIFD-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

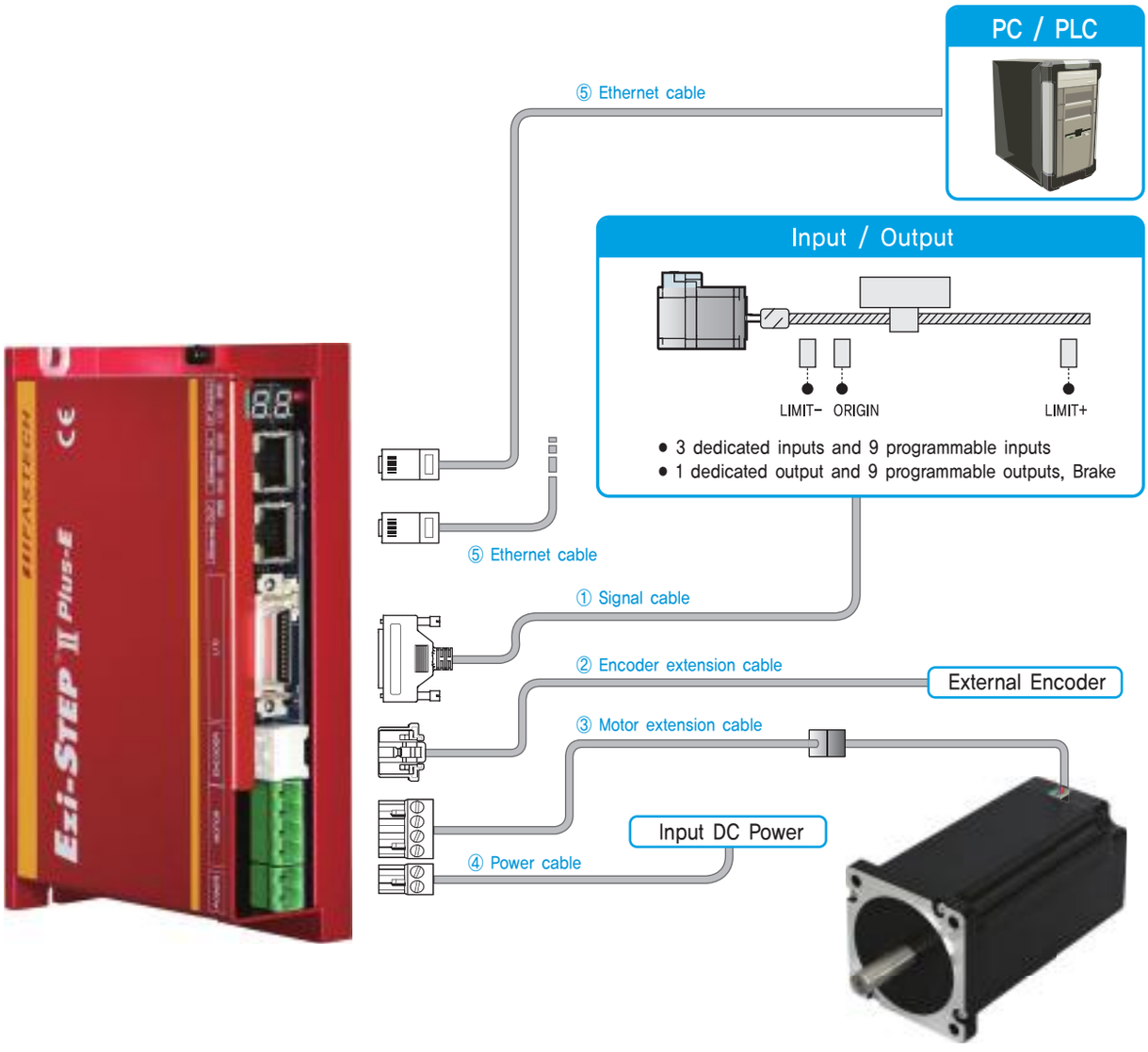
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Connector Backshell	10126-3000PE 10326-52F0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	–	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CSVR-S-□□□F	□□□	Normal Cable
CSVR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CTPR-E-□□□F	□□□	Normal Cable
CTPR-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to connect between motor and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CSVP-M-□□□F	□□□	Normal Cable
CSVP-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Ethernet Cable

STP(Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/ Output signal and Ezi-STEP II Plus-E.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-STEP II Plus-E.

Item	Length [m]	Remark
CIFD-S-□□□F	□□□	Normal Cable
CIFD-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

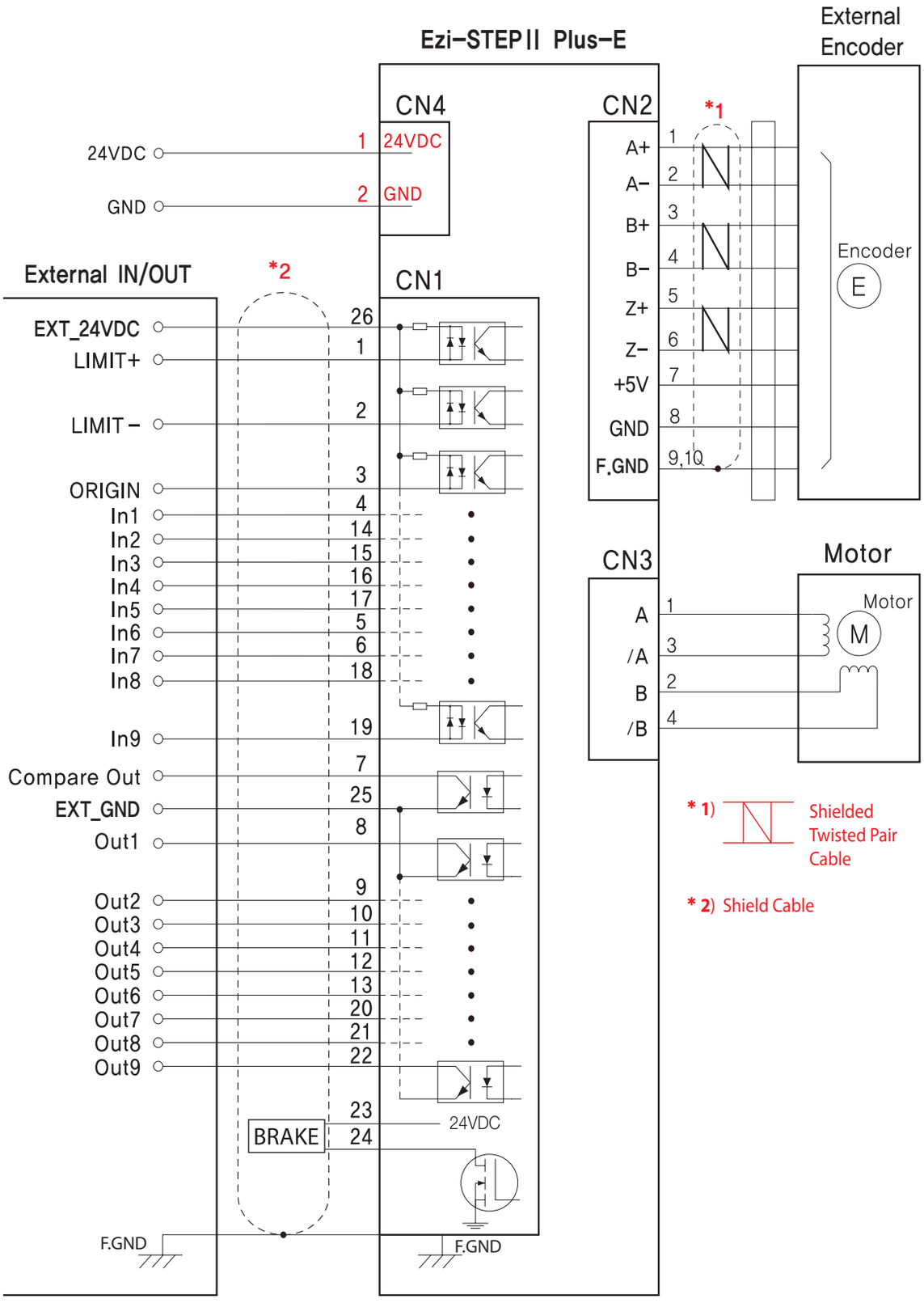
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing Terminal	3191-4R1 1381T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Connector Backshell	10126-3000PE 10326-52F0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



* 1) Shielded Twisted Pair Cable

* 2) Shield Cable

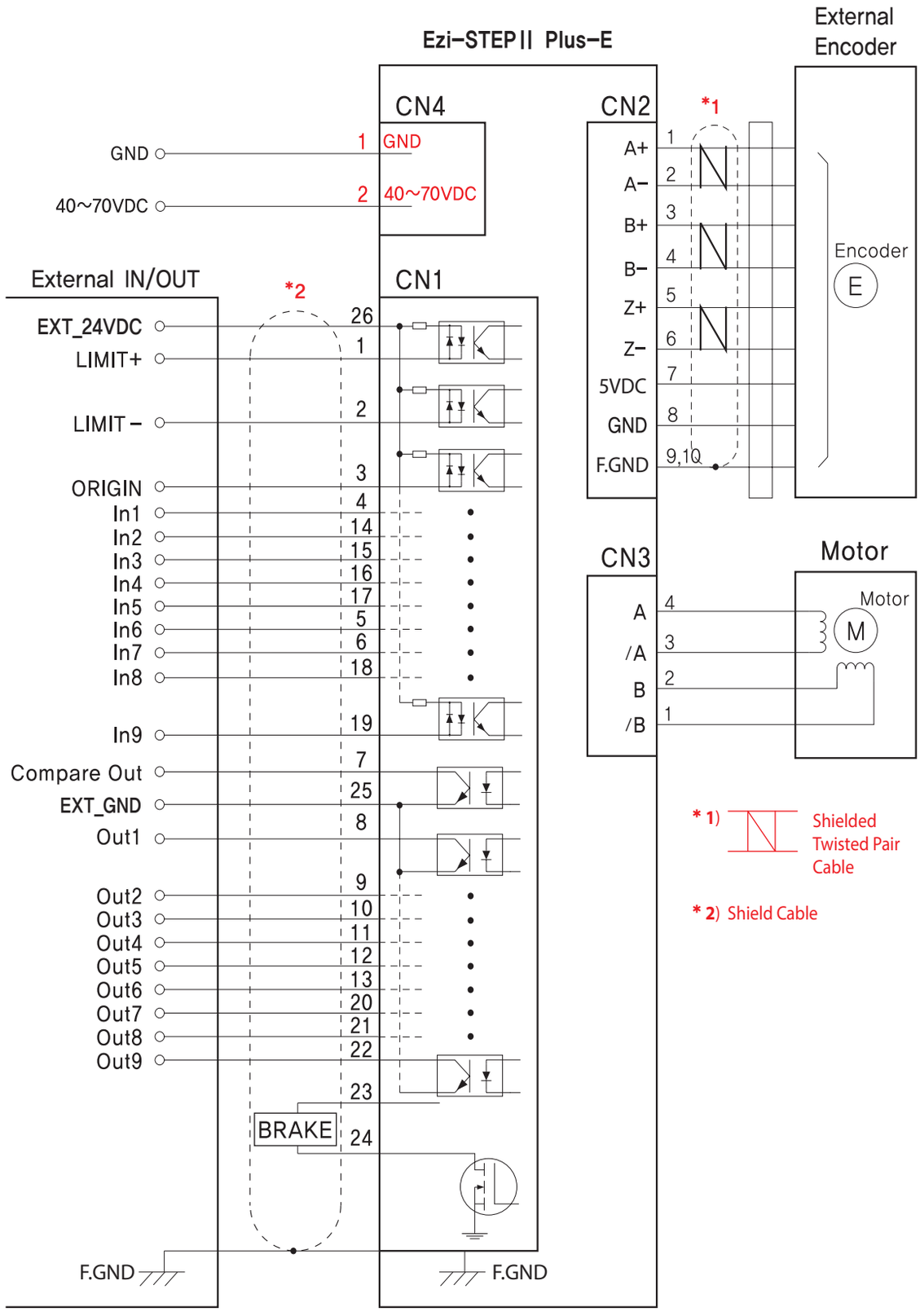
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● External Wiring Diagram [86mm Motor Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


Ezi-STEP II mini
FASTECH

Ezi-STEP II Plus-E MINI

Ezi-STEP II Plus-E MINI

- Embedded Controller
- Ethernet Interface
- Position Table
- Micro Stepping
- Software Damping
- Miniaturized Compact Size



FASTECH

Fast, Accurate, Smooth Motion

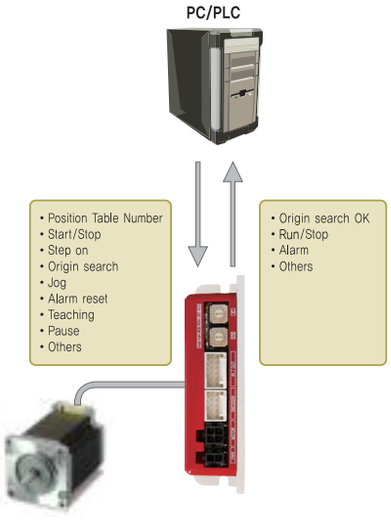
Ezi-STEP® II Plus-E MINI

Micro Stepping System



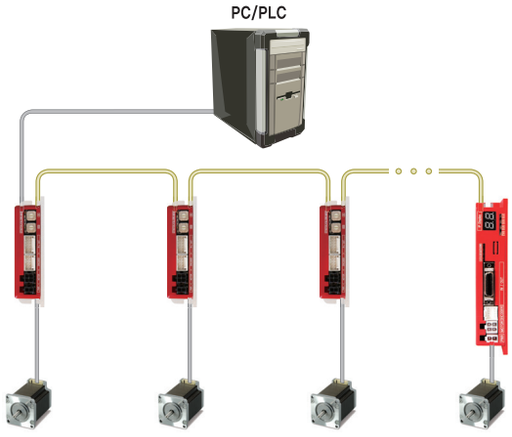
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC/PLC.
The PC/PLC can monitor the origin search complete, moving/stop, step ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC/PLC.



1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC/PLC through Ethernet communications. And daisy-chain connection is available through internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 7/8/10.



3 Microstep and Filtering

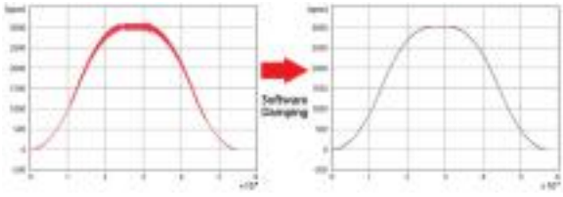
High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

4 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



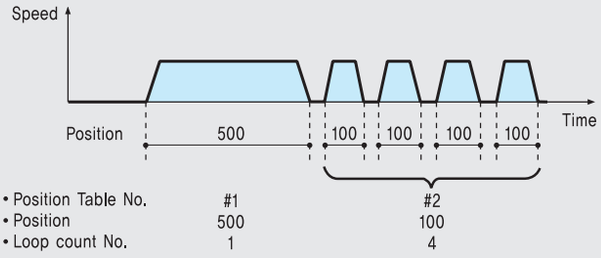
Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

Features of Motion Controller

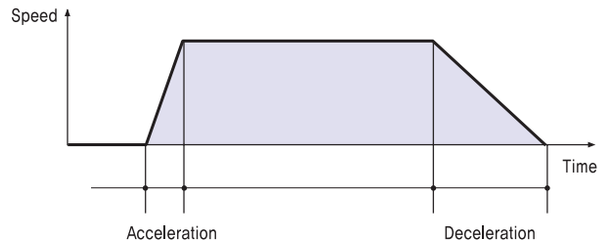
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



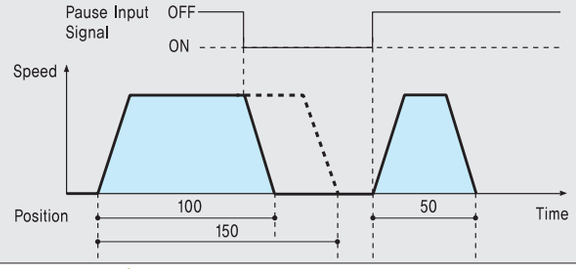
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



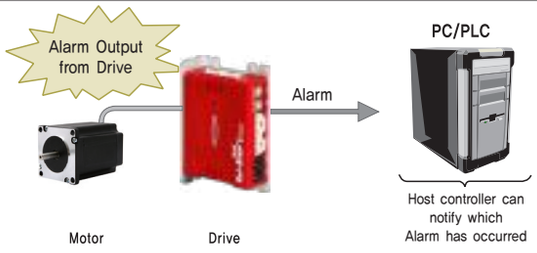
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



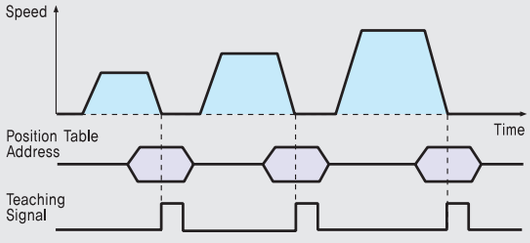
4. Alarm

The number of LED flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

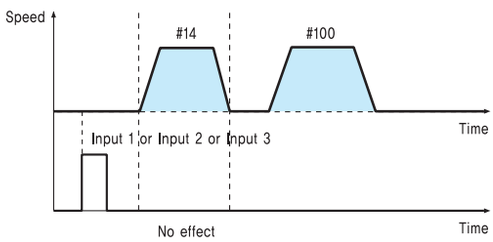


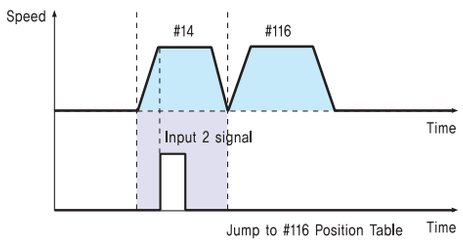
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signals during movement, the next jump Position Table number can be select.

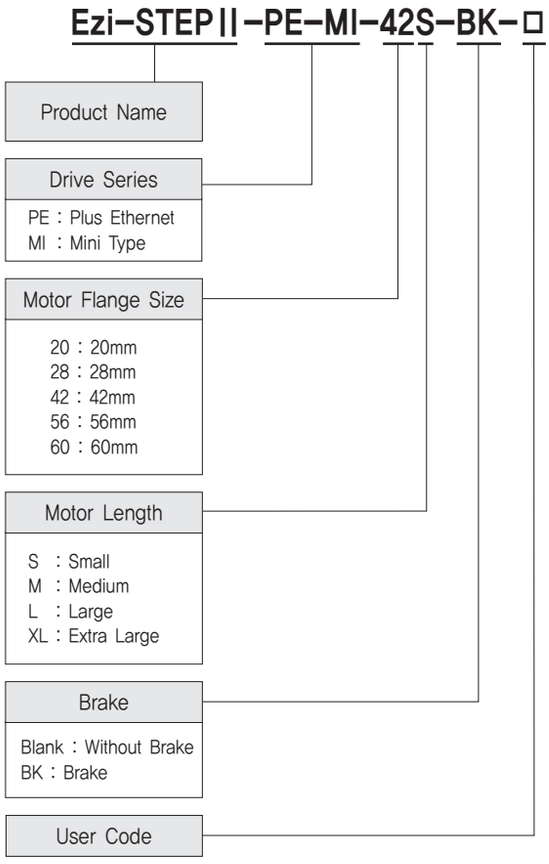
◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





● Ezi-STEP II Plus-E MINI Part Numbering



● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -PE-MI-20M	BM-20M	EzT2-PE-MI-20M
Ezi-STEP II -PE-MI-20L	BM-20L	EzT2-PE-MI-20L
Ezi-STEP II -PE-MI-28S	BM-28S	EzT2-PE-MI-28S
Ezi-STEP II -PE-MI-28M	BM-28M	EzT2-PE-MI-28M
Ezi-STEP II -PE-MI-28L	BM-28L	EzT2-PE-MI-28L
Ezi-STEP II -PE-MI-42S	BM-42S	EzT2-PE-MI-42S
Ezi-STEP II -PE-MI-42M	BM-42M	EzT2-PE-MI-42M
Ezi-STEP II -PE-MI-42L	BM-42L	EzT2-PE-MI-42L
Ezi-STEP II -PE-MI-42XL	BM-42XL	EzT2-PE-MI-42XL
Ezi-STEP II -PE-MI-56S	BM-56S	EzT2-PE-MI-56S
Ezi-STEP II -PE-MI-56M	BM-56M	EzT2-PE-MI-56M
Ezi-STEP II -PE-MI-56L	BM-56L	EzT2-PE-MI-56L
Ezi-STEP II -PE-MI-60S	BM-60S	EzT2-PE-MI-60S
Ezi-STEP II -PE-MI-60M	BM-60M	EzT2-PE-MI-60M
Ezi-STEP II -PE-MI-60L	BM-60L	EzT2-PE-MI-60L

● Combination with Brake

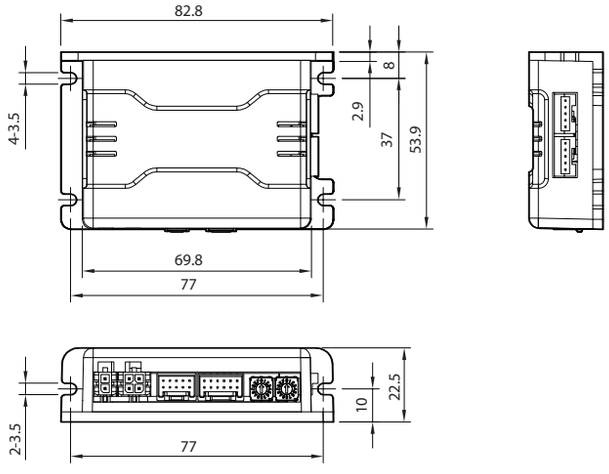
Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -PE-MI-42S-BK	BM-42S-BK	EzT2-PE-MI-42S
Ezi-STEP II -PE-MI-42M-BK	BM-42M-BK	EzT2-PE-MI-42M
Ezi-STEP II -PE-MI-42L-BK	BM-42L-BK	EzT2-PE-MI-42L
Ezi-STEP II -PE-MI-42XL-BK	BM-42XL-BK	EzT2-PE-MI-42XL
Ezi-STEP II -PE-MI-56S-BK	BM-56S-BK	EzT2-PE-MI-56S
Ezi-STEP II -PE-MI-56M-BK	BM-56M-BK	EzT2-PE-MI-56M
Ezi-STEP II -PE-MI-56L-BK	BM-56L-BK	EzT2-PE-MI-56L
Ezi-STEP II -PE-MI-60S-BK	BM-60S-BK	EzT2-PE-MI-60S
Ezi-STEP II -PE-MI-60M-BK	BM-60M-BK	EzT2-PE-MI-60M
Ezi-STEP II -PE-MI-60L-BK	BM-60L-BK	EzT2-PE-MI-60L

● Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series
Driver Model		EzT2-PE-MI-20 series	EzT2-PE-MI-28 series	EzT2-PE-MI-42 series	EzT2-PE-MI-56 series	EzT2-PE-MI-60 series
Input Voltage		24VDC ±10%				
Control Method		Bipolar PWM drive with 32bit MCU				
Multi Axis Drive		Maximum 254 axis operating (Selectable IP: 1~254)				
Position Table		256 motion command steps (Speed, External start, Jump, Loop, Wait and PT finish etc.)				
Current Consumption		Max 500mA (Except motor current)				
Operating Condition	Ambient Temperature	· In Use: 0~50℃ *1 · In Storage: -20~70℃				
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)				
	Vib. Resist.	0.5g				
Function	Rotation Speed	0~3,000 [rpm]				
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable with Parameter) * Default: 10,000				
	Protection Functions	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error				
	LED Display	Power Status, RUN Status, STEP ON Status, Alarm Status				
	Rotational Direction	CW/CCW (Selectable by parameter)				
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler Input)				
	Output Signals	1 dedicated output (Compare Out), 1 programmable output (Photocoupler Output), Brake				
Communication Interface		Ethernet communication, Dual port Ethernet switch embeded, Communication speed: 10/100 Base - T/TX Full-Duplex				
Position Control		· Incremental mode / Absolute mode Data Range: -2,147,483,648~+2,147,483,647 [pulse] · Operating speed: Max. 3,000 [rpm]				
Return to Origin		Origin Sensor, ±Limit sensor, Z phase (By external encoder)				
GUI		User Interface Program within Windows				
Library		Motion Library (DLL) for windows 7/8/10				

*1 : EzT2-PE-MI-56, 60 Series are needed to be mounted on an external heat sink or a structure capable of dissipating heat.

● Dimensions of Drive [mm]



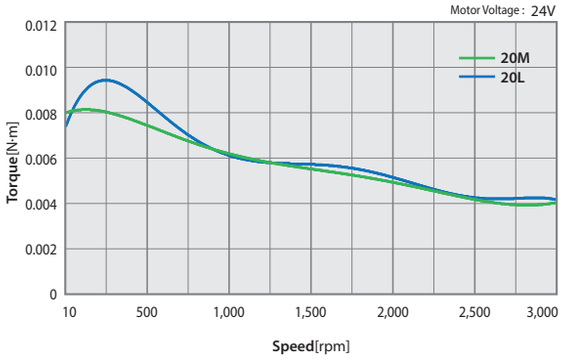
● Specifications of Motor

MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

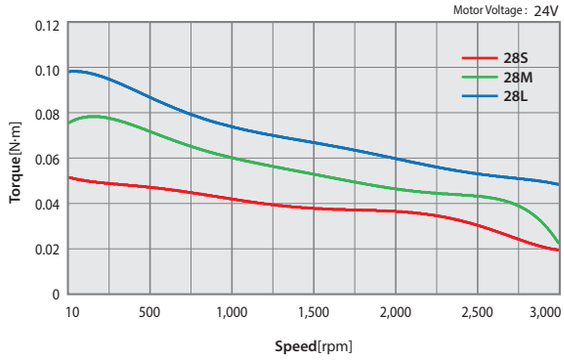
MODEL			BM-56 series			BM-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690
WEIGHTS		g	548	726	1159	616	793	1349
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70
	8mm		65	65	65	87	87	87
	13mm		85	85	85	114	114	114
	18mm		123	123	123	165	165	165
PERMISSIBLE THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

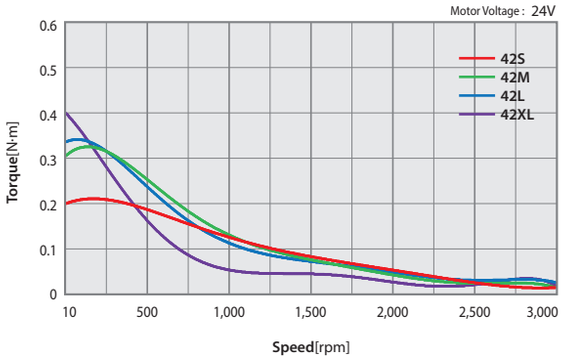
Ezi-STEP II-PE-MI-20 series



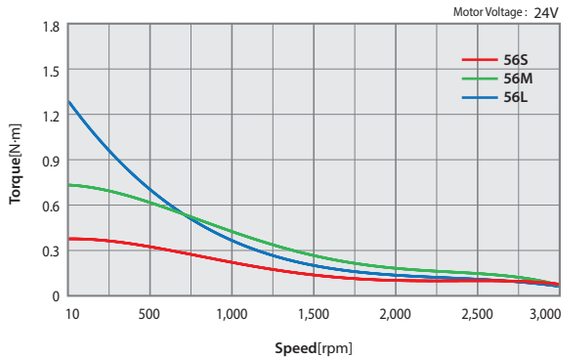
Ezi-STEP II-PE-MI-28 series



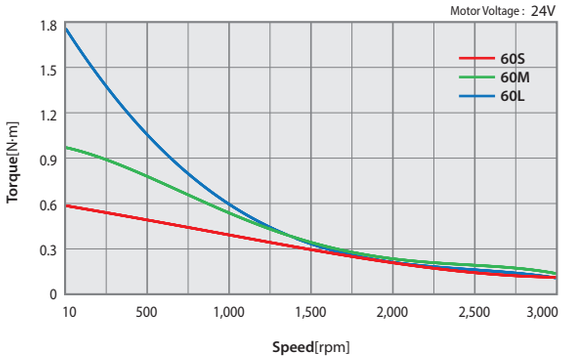
Ezi-STEP II-PE-MI-42 series



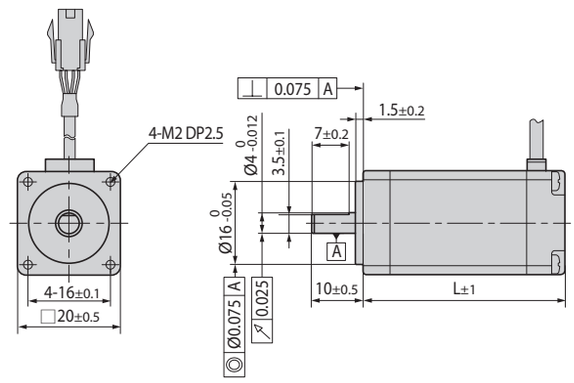
Ezi-STEP II-PE-MI-56 series



Ezi-STEP II-PE-MI-60 series

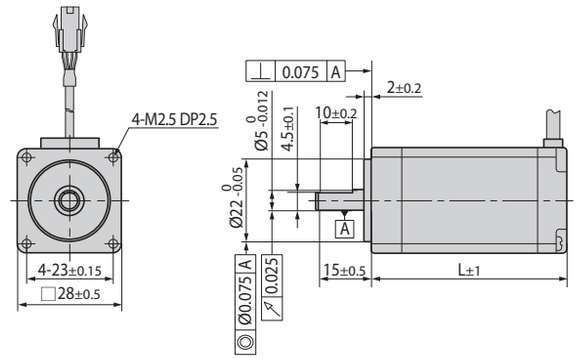


● Dimensions of Motor [mm]



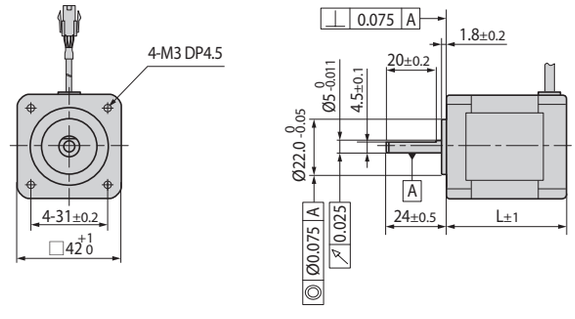
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



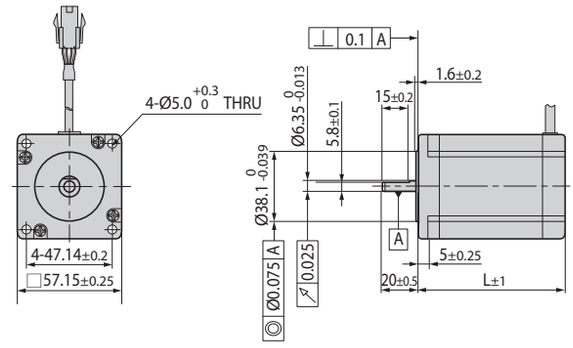
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

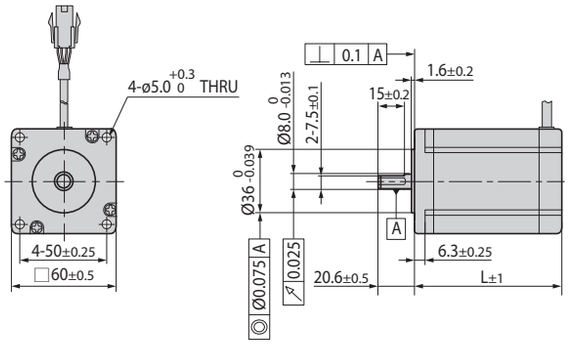
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

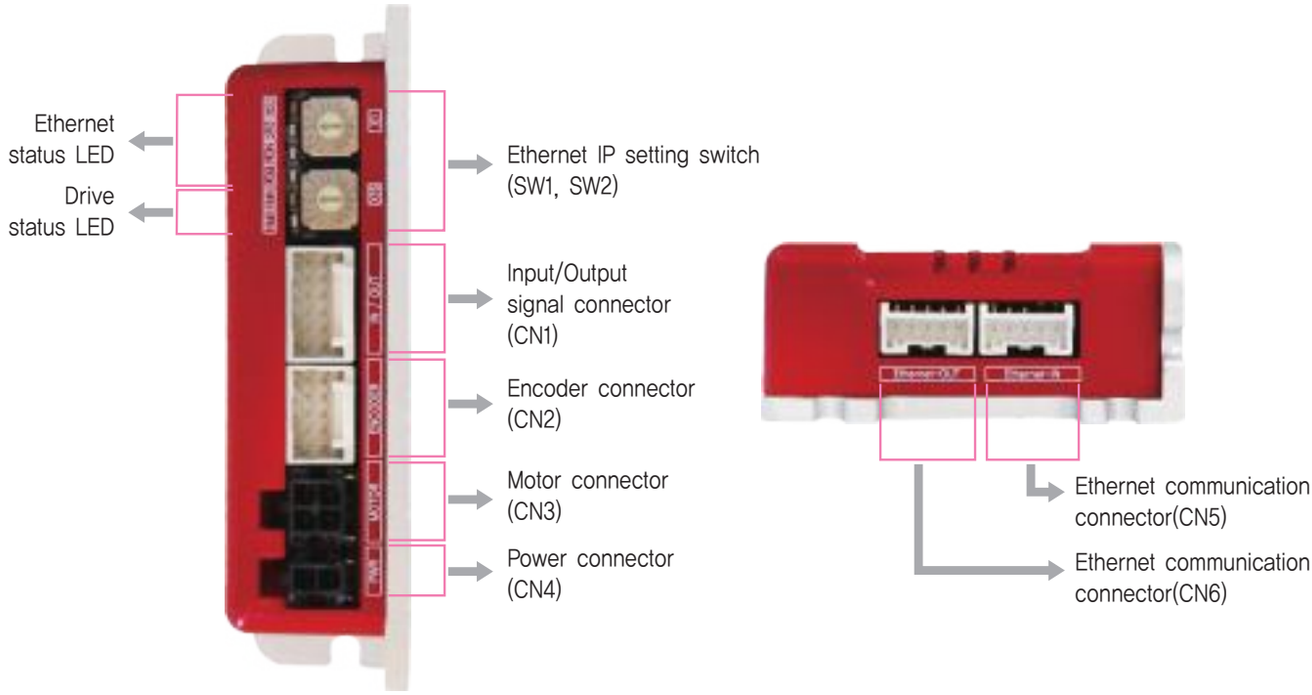
● Dimensions of Motor [mm]



60mm

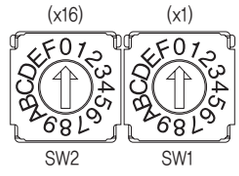
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85

Settings and Operation



1. Ethernet IP Setting Switch(SW1, SW2)

It can be set the value of the fourth digit of Ethernet IP through the setting switch. Set the product's IP not to overlap with the connected products. The first, second and third values of IP can be set through the GUI. Please refer to the manual for details. When the switch is set to 255 (FF), IP is automatically set, ignoring the setting. (DHCP function)



Ex) In case of SW1 : **7** and SW2 : **5**
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

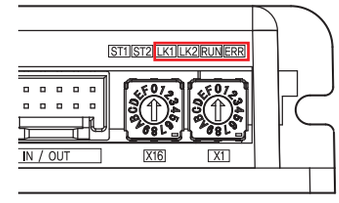
2. Ethernet Status LED

LED indicates communication status of Ethernet.

Name	Color	Status	Explanation
ERR	Red	OFF	No Error status
		ON	Local Error

Name	Color	Status	Explanation
LK1/ LK2	Green	OFF	Link deactivated
		ON	Link activated

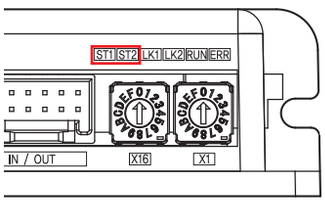
Name	Color	Status	Explanation
RUN	Orange	Blinking	Normally operating



3. Drive Status LED

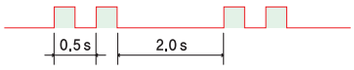
In the case of Ezi-STEP II Plus-E MINI series products, LED can be checked by LED color, lighting, On/Off and blinking.

Status	LED	Description
Disable	ST1 : ▬ ▬ ▬ ▬ ST2 :	ST1 light flashing, ST2 light off
Enable	ST1 : ▬▬▬▬ ST2 :	ST1 light on, ST2 light off
In motion	ST1 : ▬▬▬▬ ST2 : ▬▬▬▬	ST1 light on, ST2 light on
Alarm	ST1 : ST2 : ▬ ▬ ▬ ▬	ST2 light flashing repeatedly as many as alarm number



◆ Protection functions and LED flash times

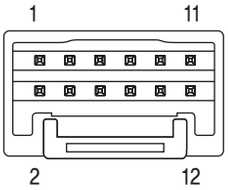
Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The drive does STEP ON without connection of the motor cable to drive.
12	ROM Error	Error occurs in parameter storage device(ROM)



Alarm LED Flash
(Ex, Over Speed Error)

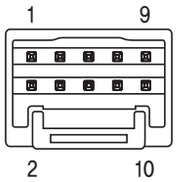
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE-	Output
5	LIMIT+	Input
6	LIMIT-	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Compare Out	Output
12	Digital Out1	Output



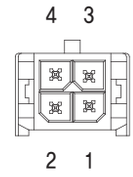
5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----



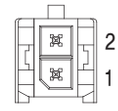
6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



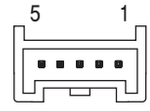
7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

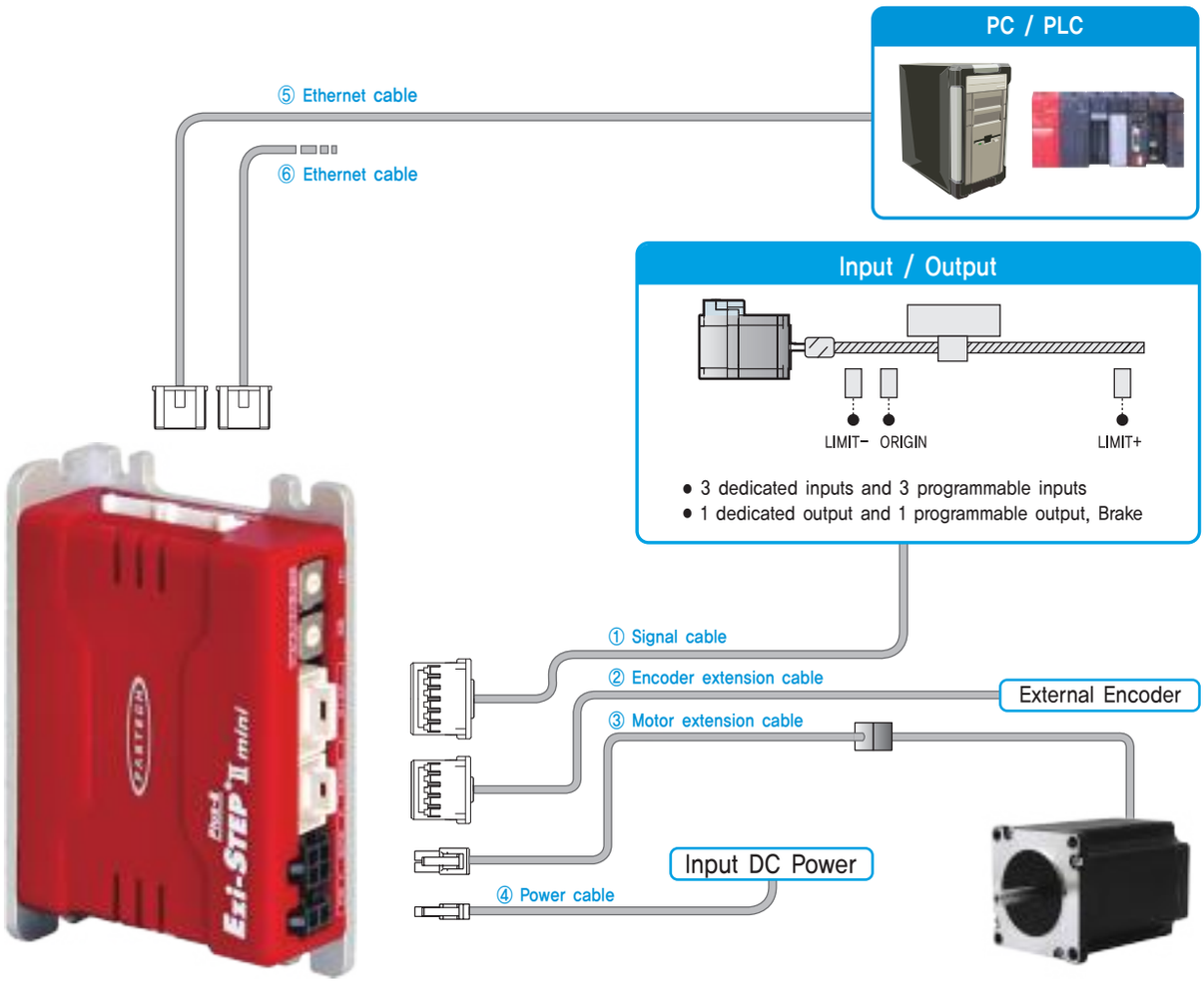


8. Ethernet Communication Connector(CN5, CN6)

NO.	Function
1	TD+
2	TD−
3	RD+
4	RD−
5	F.GND



System Configuration



Type	Signal Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	–	–
Max. Length	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II Plus-E MINI.

Item	Length [m]	Remark
CSER-S-□□□F	□□□	Normal Cable
CSER-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II Plus-E MINI.

Item	Length [m]	Remark
CTPM-E-□□□F	□□□	Normal Cable
CTPM-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP II Plus-E MINI.

Item	Length [m]	Remark
CSMI-M-□□□F	□□□	Normal Cable
CSMI-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II Plus-E MINI.

Item	Length [m]	Remark
CSMI-P-□□□F	□□□	Normal Cable
CSMI-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Ethernet Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNE-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-STEP II Plus-E MINI to the controller, Ezi-STEP II Plus-E, and Ezi-STEP II Plus-E ALL R type with a network.
This cable is composed of a 5-pin connector (Ezi-STEP II Plus-E MINI side) and an RJ45 connector.

⑥ Ethernet Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNI-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-STEP II Plus-E MINI to Ezi-STEP II Plus-E MINI with the network.

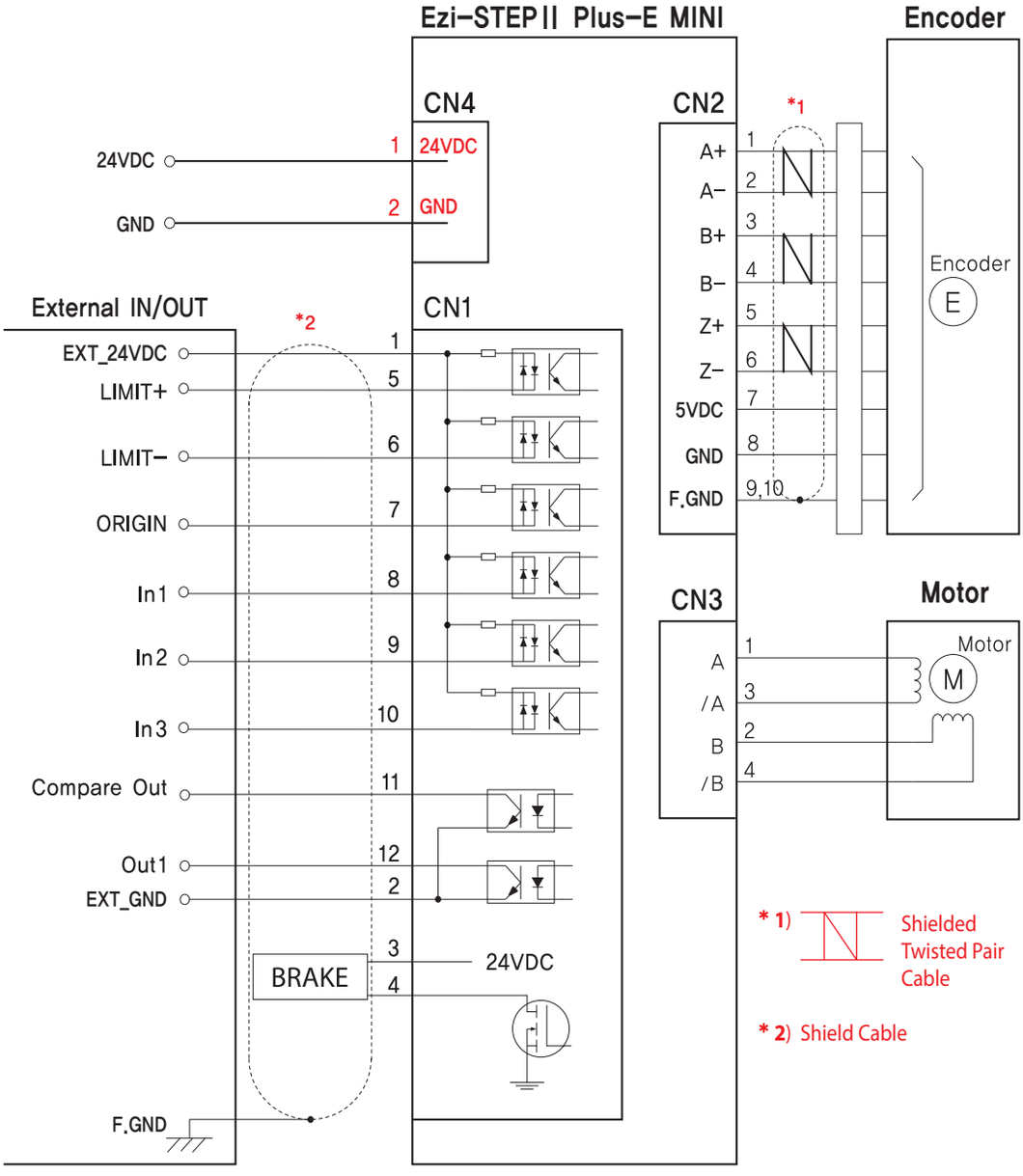
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Ethernet Communication (CN5, CN6)		Housing Terminal	PAP-05V-S SPHD-001T-P0.5	JST
Power (CN4)		Housing Terminal	43025-0200 43030-0001	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	43025-0400 43030-0001	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	501646-1000 501648-1000(AWG 26~28)	MOLEX
Signal (CN1)		Housing Terminal	501646-1200 501648-1000(AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


Ezi-STEP II
CC-Link
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
SW1
RS-485
STATION NO.

Ezi-STEP II CC-Link

Ezi-STEP II CC-Link

- Embedded Controller
- Position Table
- Micro Stepping
- Software Damping
- Torque Improvement

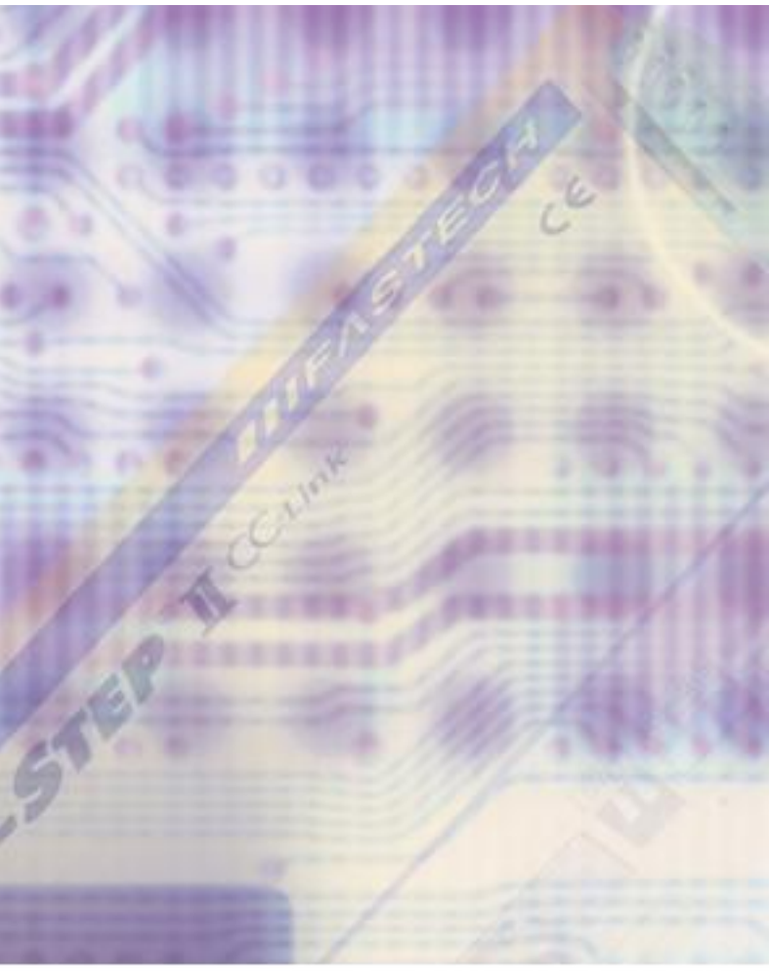


FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® II CC-Link

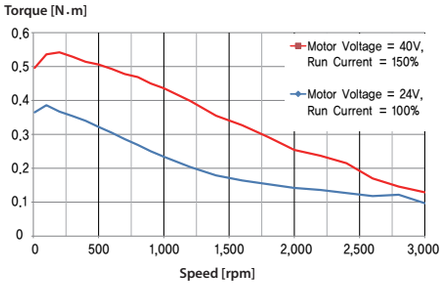
Micro Stepping System



2 Torque Improvement

Motor Voltage Increasing and Motor Current Setting

Ezi-STEP II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

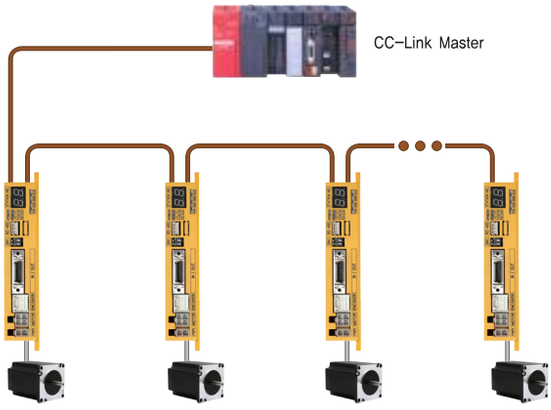


※ The torque at high speed is improved about 30%

Measured Condition : Drive = Ezi-STEP II-CL-42L
Motor Voltage = 40VDC
Input Voltage = 24VDC

1 CC-Link Based Motion Control

Ezi-STEP II CC-Link is a stepping motor control system that supports CC-Link with high speed fieldbus (max. 10Mbps).
Ezi-STEP II CC-Link is a remote device module supporting CC-Link network. Multi-function control is possible by occupying 1 station and 2 station in CC-Link, and motion and monitoring functions are processed by device commands.



3 Microstep and Filtering

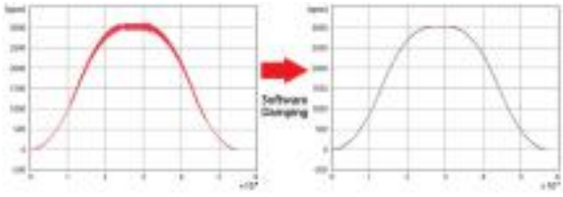
High precision Microstep function and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

4 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF Software Damping ON

※ This is real measured speed that using 100,000 [pulse/rev] encoder.

5 Improvement of High-Speed Driving

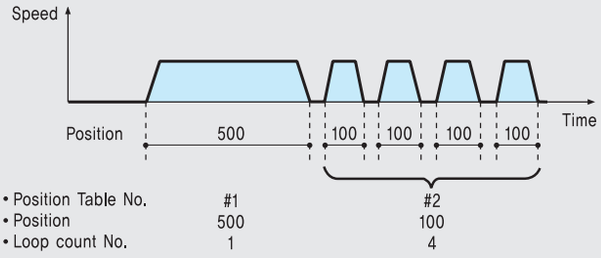
Depending on the speed of a stepping motor, Ezi-STEP II automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation. Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

Applicable model : Ezi-STEP II-CL-42 Series
Ezi-STEP II-CL-56 Series
Ezi-STEP II-CL-60 Series

Features of Motion Controller

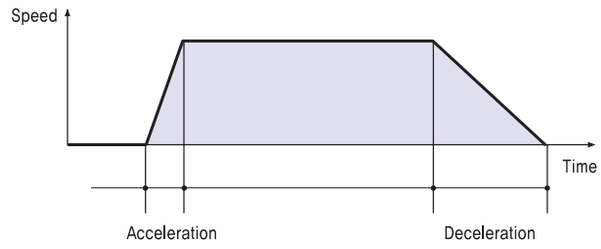
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



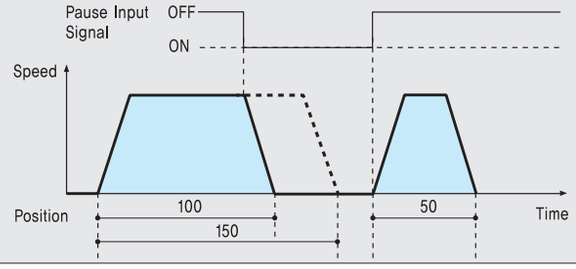
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



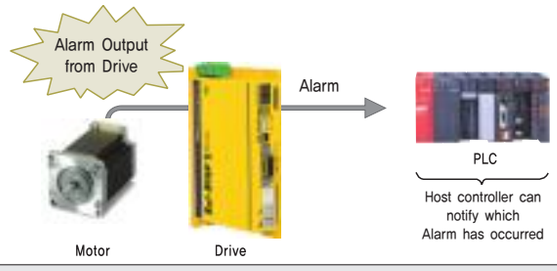
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



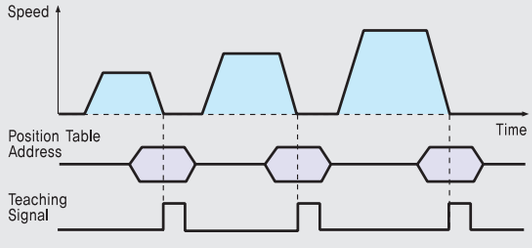
4. Alarm

The number of LED flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

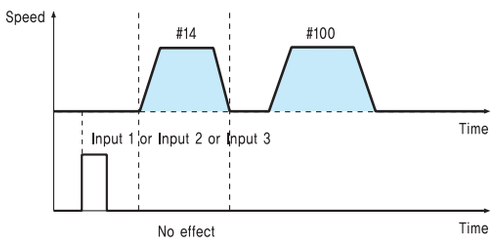


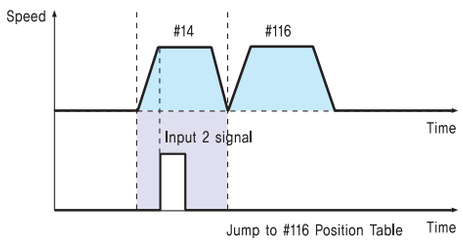
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





● Ezi-STEP II CC-Link Part Numbering

Ezi-STEP II -CL-42S-BK-□

- **Product Name**
- **Drive Series**
  - CL : CC-Link
- **Motor Flange Size**
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Brake**
  - Blank : Without Brake
  - BK : Brake
- **User Code**

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -CL-20M	BM-20M	EzT2-CL-20M
Ezi-STEP II -CL-20L	BM-20L	EzT2-CL-20L
Ezi-STEP II -CL-28S	BM-28S	EzT2-CL-28S
Ezi-STEP II -CL-28M	BM-28M	EzT2-CL-28M
Ezi-STEP II -CL-28L	BM-28L	EzT2-CL-28L
Ezi-STEP II -CL-42S	BM-42S	EzT2-CL-42S
Ezi-STEP II -CL-42M	BM-42M	EzT2-CL-42M
Ezi-STEP II -CL-42L	BM-42L	EzT2-CL-42L
Ezi-STEP II -CL-42XL	BM-42XL	EzT2-EC-42XL
Ezi-STEP II -CL-56S	BM-56S	EzT2-CL-56S
Ezi-STEP II -CL-56M	BM-56M	EzT2-CL-56M
Ezi-STEP II -CL-56L	BM-56L	EzT2-CL-56L
Ezi-STEP II -CL-60S	BM-60S	EzT2-CL-60S
Ezi-STEP II -CL-60M	BM-60M	EzT2-CL-60M
Ezi-STEP II -CL-60L	BM-60L	EzT2-CL-60L
Ezi-STEP II -CL-86M	BM-86M	EzT2-CL-86M
Ezi-STEP II -CL-86L	BM-86L	EzT2-CL-86L
Ezi-STEP II -CL-86XL	BM-86XL	EzT2-CL-86XL

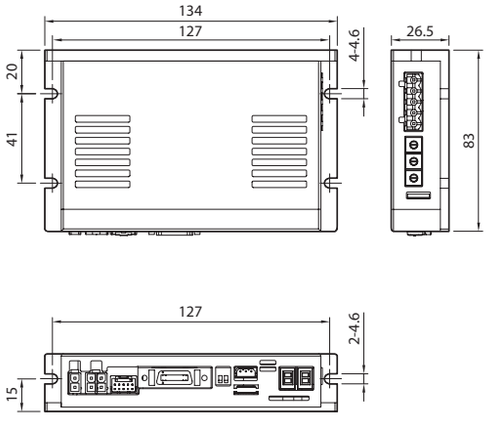
● Combination with Brake

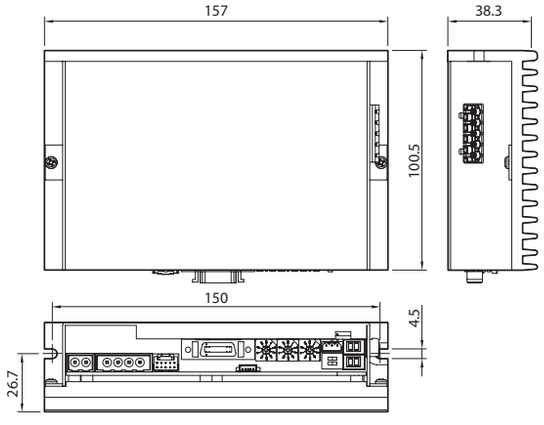
Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -CL-42S-BK	BM-42S-BK	EzT2-CL-42S
Ezi-STEP II -CL-42M-BK	BM-42M-BK	EzT2-CL-42M
Ezi-STEP II -CL-42L-BK	BM-42L-BK	EzT2-CL-42L
Ezi-STEP II -CL-42XL-BK	BM-42XL-BK	EzT2-CL-42XL
Ezi-STEP II -CL-56S-BK	BM-56S-BK	EzT2-CL-56S
Ezi-STEP II -CL-56M-BK	BM-56M-BK	EzT2-CL-56M
Ezi-STEP II -CL-56L-BK	BM-56L-BK	EzT2-CL-56L
Ezi-STEP II -CL-60S-BK	BM-60S-BK	EzT2-CL-60S
Ezi-STEP II -CL-60M-BK	BM-60M-BK	EzT2-CL-60M
Ezi-STEP II -CL-60L-BK	BM-60L-BK	EzT2-CL-60L
Ezi-STEP II -CL-86M-BK	BM-86M-BK	EzT2-CL-86M
Ezi-STEP II -CL-86L-BK	BM-86L-BK	EzT2-CL-86L
Ezi-STEP II -CL-86XL-BK	BM-86XL-BK	EzT2-CL-86XL

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series	BM-86 series
Driver Model		EzT2-CL-20 series	EzT2-CL-28 series	EzT2-CL-42 series	EzT2-CL-56 series	EzT2-CL-60 series	EzT2-CL-86 series
Input Voltage		24VDC ±10%					40~70VDC
Control Method		Bipolar PWM drive with 32bit MCU					
Current Consumption		Max 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000 [rpm]					
	Resolution [ppr]	500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable with Parameter) * Default: 10,000					
	Protection Functions	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error					
	LED Display	Power Status, Alarm Status, Run Status, STEP On Status					
CC-Link	Station Type	Remote Device Station					
	Number of Occupied Station	1 station, 2 station					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler)					
	Output Signals	6 programmable outputs (Photocoupler), Brake					

Dimensions of Drive [mm]





※ 86mm motor drive (EzT2-CL-86 series)

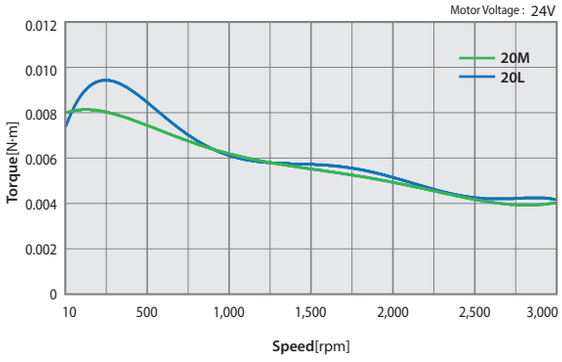
● Specifications of Motor

MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	18	18	30	30	30	22	22	22	22
	8mm		30	30	38	38	38	26	26	26	26
	13mm		–	–	53	53	53	33	33	33	33
	18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

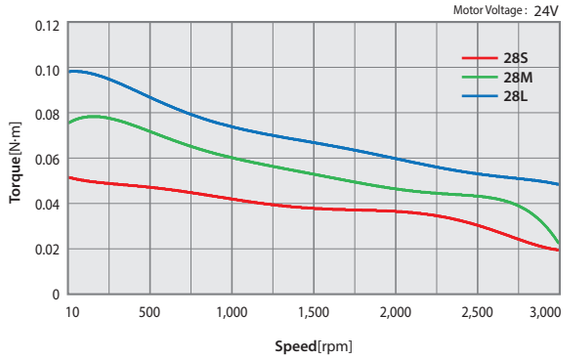
MODEL			BM-56 series			BM-60 series			BM-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	548	726	1159	616	793	1349	2275	3808	5330
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	52	52	52	70	70	70	270	270	270
	8mm		65	65	65	87	87	87	300	300	300
	13mm		85	85	85	114	114	114	350	350	350
	18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

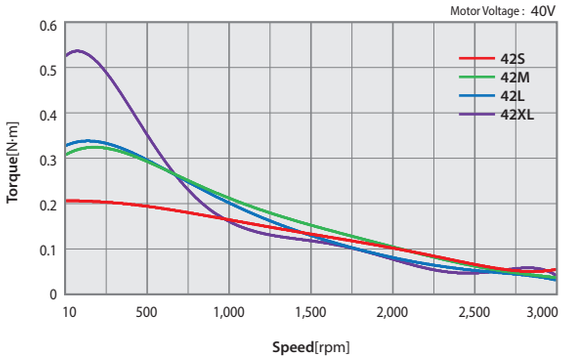
Ezi-STEP II-CL-20 series



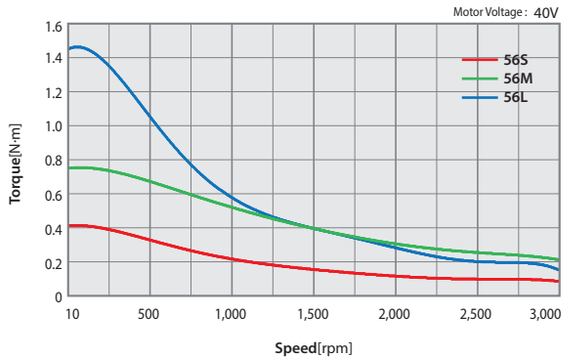
Ezi-STEP II-CL-28 series



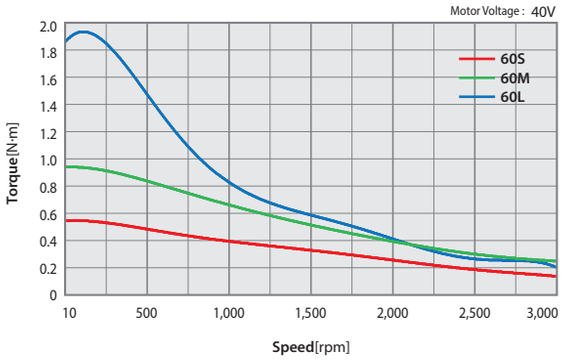
Ezi-STEP II-CL-42 series



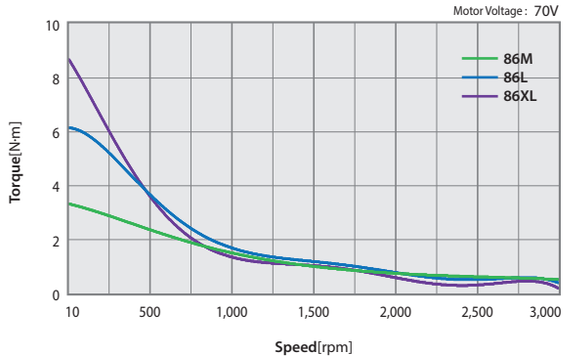
Ezi-STEP II-CL-56 series



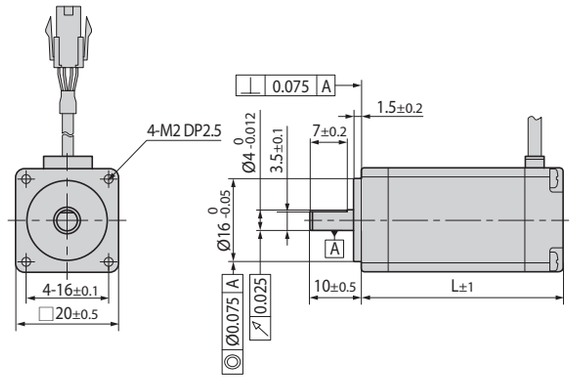
Ezi-STEP II-CL-60 series



Ezi-STEP II-CL-86 series

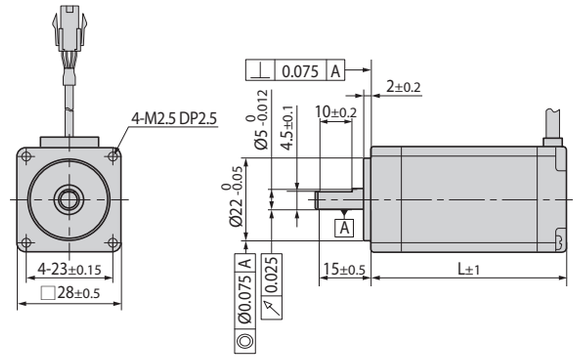


● Dimensions of Motor [mm]



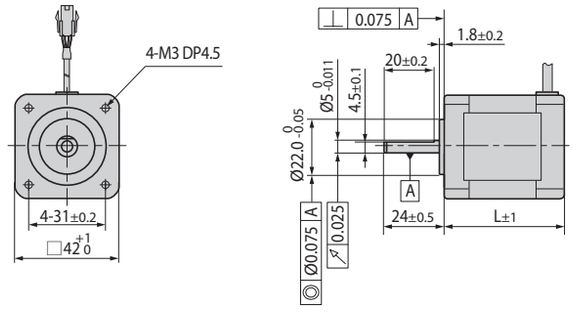
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



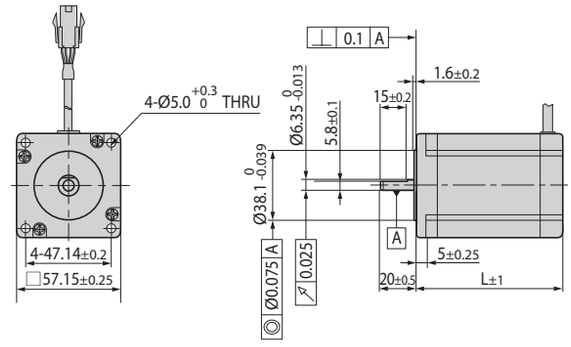
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

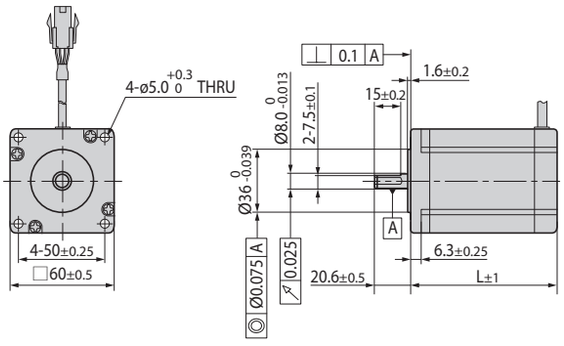
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

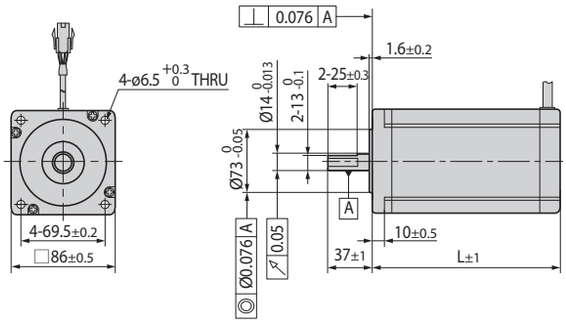
Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

● Dimensions of Motor [mm]



60mm

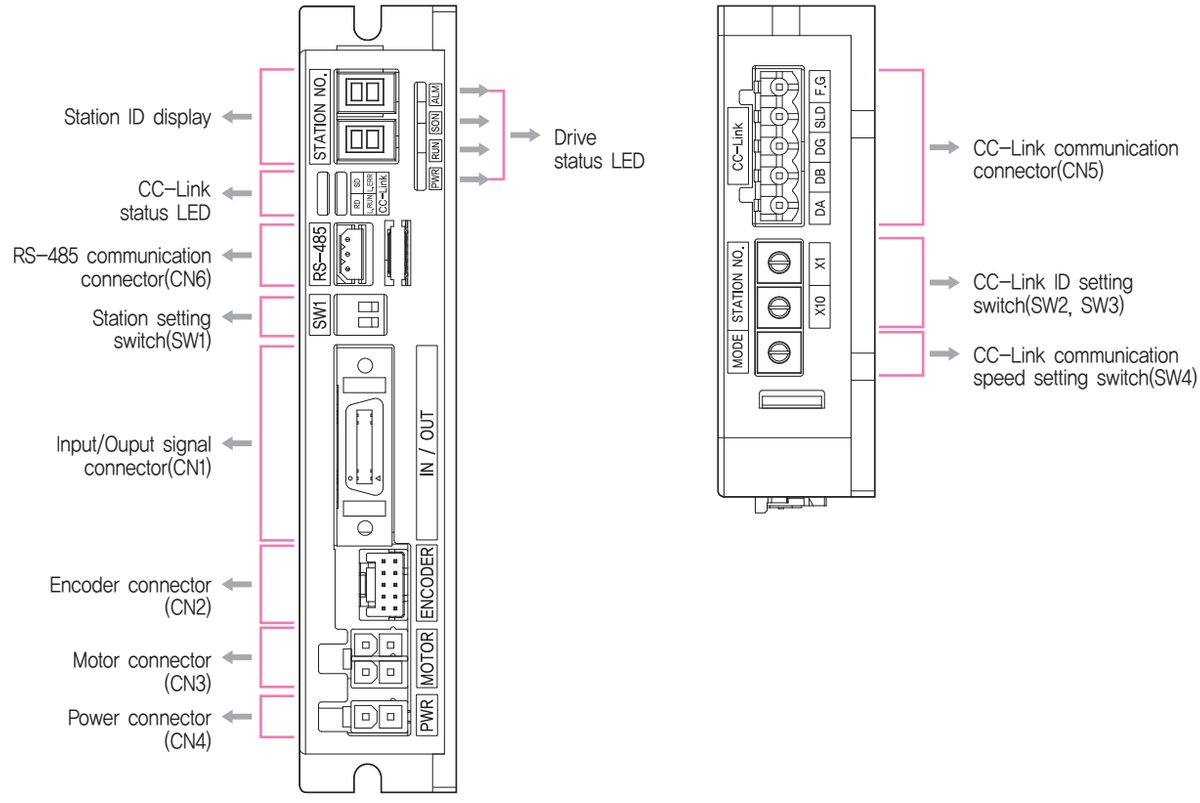
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85



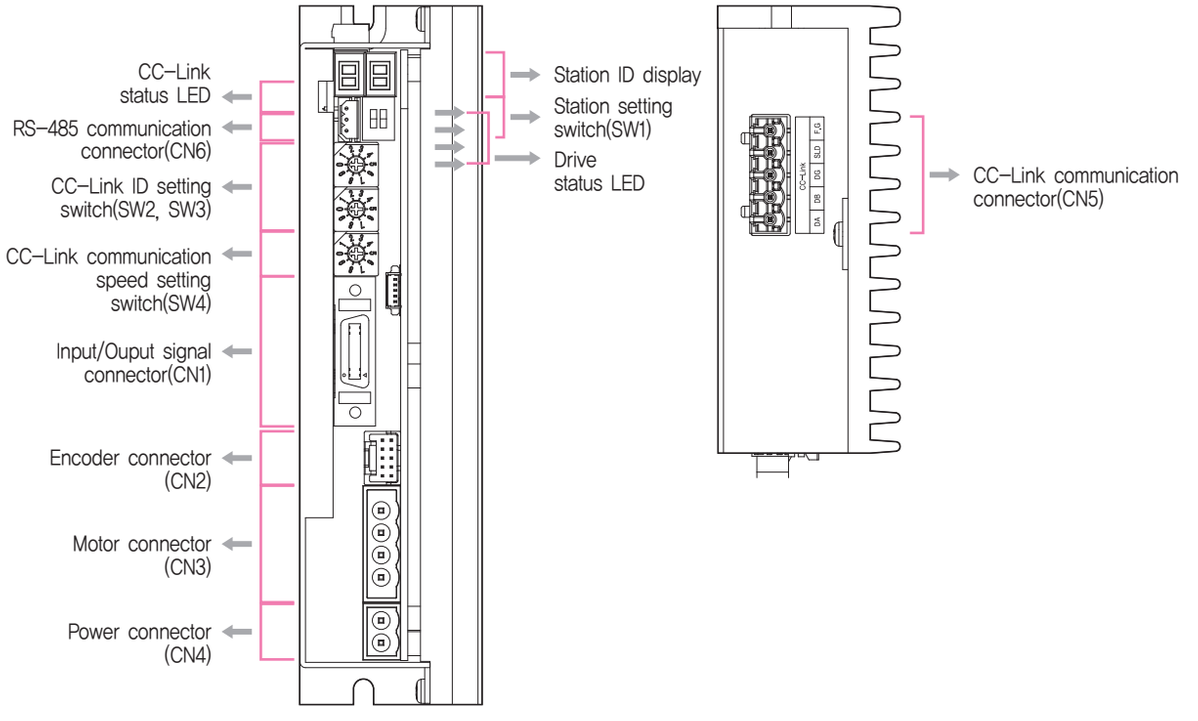
86mm

Model name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

● Settings and Operation

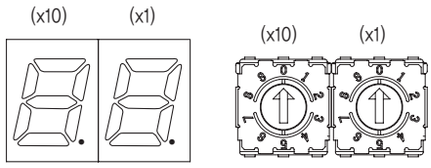


◆ 86mm Motor Drive(EzT2-CL-86 series)



1. CC-Link Station Display and Setting Switch(SW2, SW3)

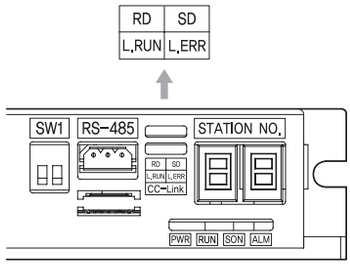
There are two Rotary switch to set value of CC-Link station No. Switch on the right side(X1) indicates the one's(1) digit and Switch on the left side(X10) indicates ten's(10) digit.



※ Default setting is '00'

2. CC-Link Status LED

Name	Color	Status	Function	Explanation
L.RUN	Green	Off	Power Off	Checking the power status.
			No network connection	Checking the status of the network cable and Master controller.
		On	Normal operation	CC-Link network connection is normal status.
L.ERR	Red	Off	Normal operation	No error occurred
		On	Critical error	Communication process fails.
		Flashing	Communication error	Error occurred in the CC-Link network. Check the 7-segment display information and process it.
		Random flashing	CRC error, Network cable error	There is a contact error of the network connector or noise in the cable line. To Check the terminating resistor attachment status, network wiring and the grounding status of the frame.
RD	Orange	Off	No Data receiving	
		On	Data receiving	
SD	Yellow	Off	No Data transmission	
		On	Data transmitting	



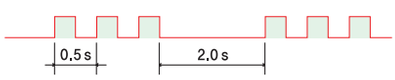
3. Drive Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Green	Power Input Indication	LED is turned ON when power is applied
RUN	Yellow	Motor running indication	LED is turned ON while motor is rotating
SON	Orange	STEP On / Off indication	STEP On: Lights On, STEP Off: Lights Off
ALM	Red	Alarm indication	Flash when protection function is activated

◆ Protection functions and LED flash times

Times	Error Code *3	Protection	Conditions
1	E-□01	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	E-□02	Over Speed Error	Motor speed exceeds 3,000 [rpm]
5	E-□05	Over Temperature Error	Temperature of inside of drive exceed 85℃
6	E-□06	Over Regeneratived Voltage Error	Back-EMF is higher than limit value *2
7	E-□07	Motor Connect Error	The drive does STEP ON without connection of the motor cable to drive.
12	E-□0C	ROM Error	Error occurs in parameter storage device(ROM)

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMP depends on motor model. (Refer to the Manual)
*3 : When an alarm occurs, error code is displayed on the 7-segment instead of CC-Link ID.
※ Please refer to the Manual for the details of protection functions.
※ □ is the CC-Link error code.



Alarm LED flash
(Ex, Over Speed Error)

◆ CC-Link network status 7-segment display information

Error Code	Description
E-0□□.	Normal CC-Link network status
E-1□□.	CC-Link station number switch setting is incorrect
E-2□□.	CC-Link mode switch setting is incorrect
E-3□□.	CC-Link station number switch setting is changed
E-4□□.	CC-Link mode switch setting is changed
E-5□□.	CRC error occurs in CC-Link communication
E-6□□.	Timeout occurs during communication with master
E-7□□.	Communication with master is disconnected
E-8□□.	CC-Link Processor Error 1
E-9□□.	CC-Link Processor Error 2
E-A□□.	Data link error
E-B□□.	Remote I/O error
E-C□□.	Remote register error

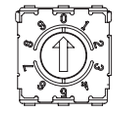
※□□ is the drive error code.

4. CC-Link Communication Speed Setting Switch(SW4)

This is a switch to set communication speed of CC-Link. (The case of the product is marked with 'MODE'.)

MODE	CC-Link Baud Rate
0	156 kbps*1
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps
5	NONE
6	NONE
7	NONE
8	NONE
9	NONE

MODE



*1 : Defaule = 156kbps

5. CC-Link Station Setting Switch(SW1)

Ezi-STEPII CC-Link provides various functions depending on the station occupancy. Select the station occupancy with Dip-switch(SW1).

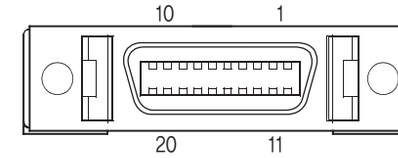
SW1.1	SW1.2	Occupation
OFF	OFF	1 station occupation*1
ON	OFF	2 station occupation



*1 : Defaule = '1 station occupation'

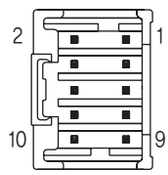
6. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	LIMIT+	Input
2	LIMIT-	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In2	Input
6	Digital In3	Input
7	Digital In4	Input
8	Digital In5	Input
9	Digital In6	Input
10	Digital In7	Input
11	Digital Out1	Output
12	Digital Out2	Output
13	Digital Out3	Output
14	Digital Out4	Output
15	Digital Out5	Output
16	Digital Out6	Output
17	BRAKE+	Output
18	BRAKE-	Output
19	EXT_GND	Input
20	EXT_24VDC	Input



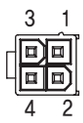
7. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A–	Input
3	B+	Input
4	B–	Input
5	Z+	Input
6	Z–	Input
7	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----

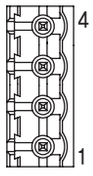


8. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output



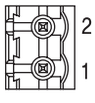
※ 86mm motor drive.

9. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



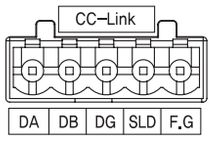
NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input



※ 86mm motor drive.

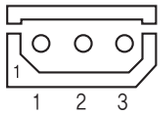
10. CC-Link Communication Connector(CN5)

NO.	Function
1	DA
2	DB
3	DG
4	SLD
5	F.GND

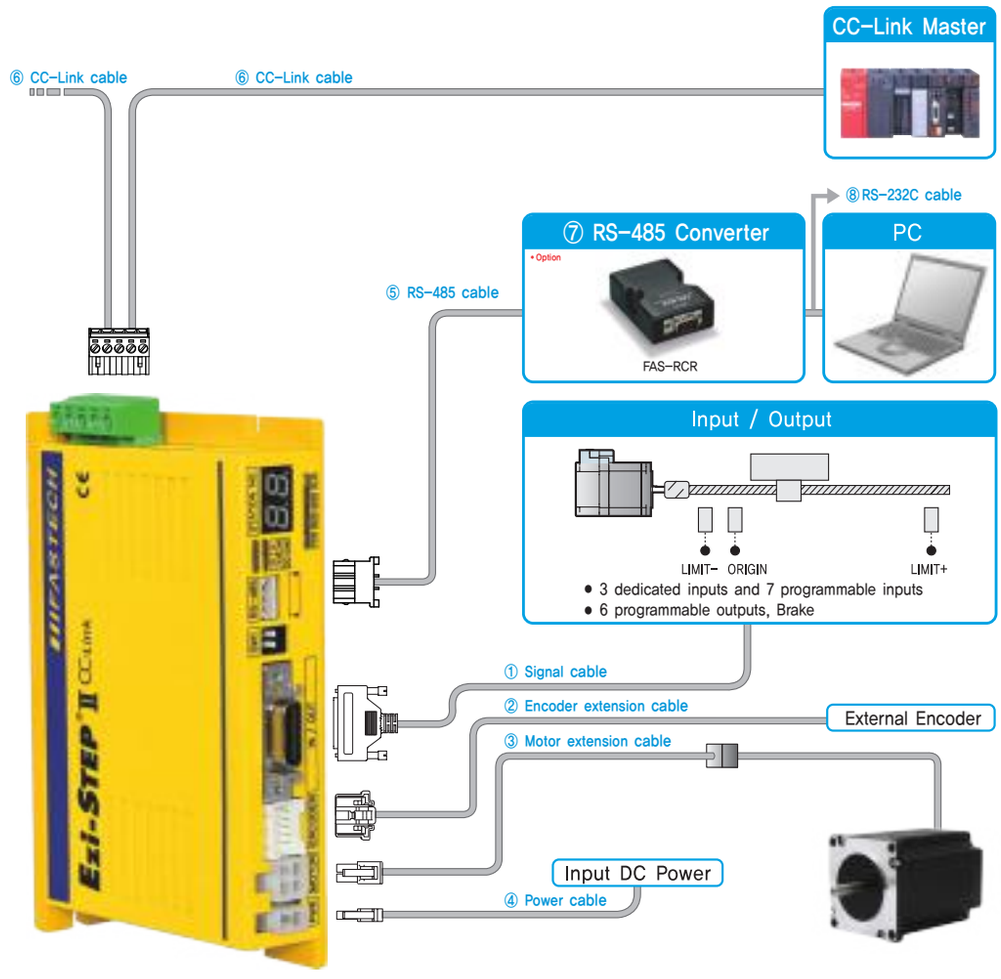


11. RS-485 Communication Connector(CN6)

NO.	Function
1	Data+
2	Data–
3	GND



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Length supplied	–	–	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between External Encoder and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CTPR-E-□□□F	□□□	Normal Cable
CTPR-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable

Ezi-STEP II CC-Link RS-485 network.

Item	Length [m]	Remark
CGNR-RT-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑥ CC-Link Network Cable

It is a cable to connect Ezi-STEP II CC-Link to CC-Link network.

* This cable is not provided and it is recommended to use the cable specified by CC-Link Association.

⑦ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑧ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F CGNR-C-003F CGNR-C-005F	2 3 5	Normal Cable

⑨ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-STEP II CC-Link.



⑩ Interface Cable

Available to Connect between TB-Plus Interface Board and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

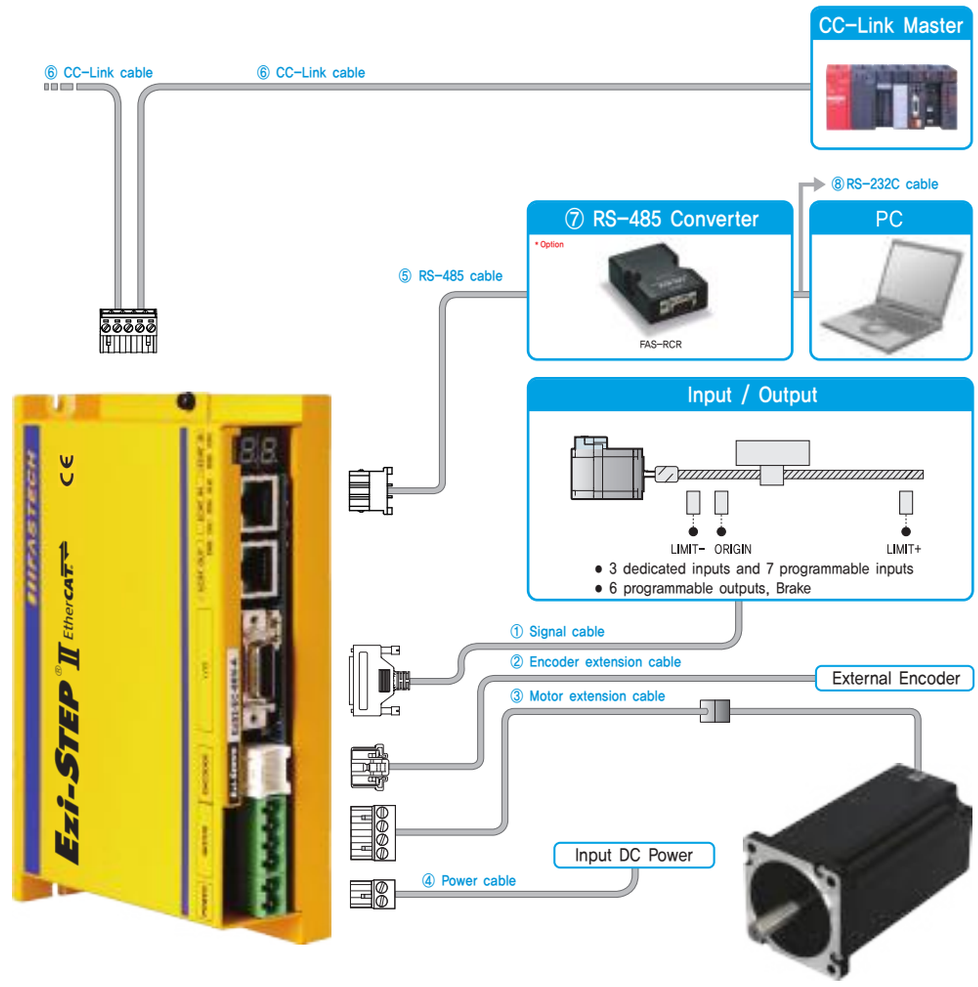
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M
CC-Link Communication (CN5)		Terminal Block	AK950-5	PTR
RS-485 Communication (CN6)		Housing Terminal	5264-03 5263PBT	MOLEX

※ Above Connector is the most suitable product for the drive applied. Another equivalent Connector can be used.

● System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Standard Length	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CSVP-M-□□□F	□□□	Normal Cable
CSVP-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ RS-485 Cable

Ezi-STEP II CC-Link RS-485 network.

Item	Length [m]	Remark
CGNR-RT-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑥ CC-Link Network Cable

It is a cable to connect Ezi-STEP II CC-Link to CC-Link network.

* This cable is not provided and it is recommended to use the cable specified by CC-Link Association.

⑦ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑧ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-C-002F CGNR-C-003F CGNR-C-005F	2 3 5	Normal Cable

⑨ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-STEP II CC-Link.



⑩ Interface Cable

Available to Connect between TB-Plus Interface Board and Ezi-STEP II CC-Link.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

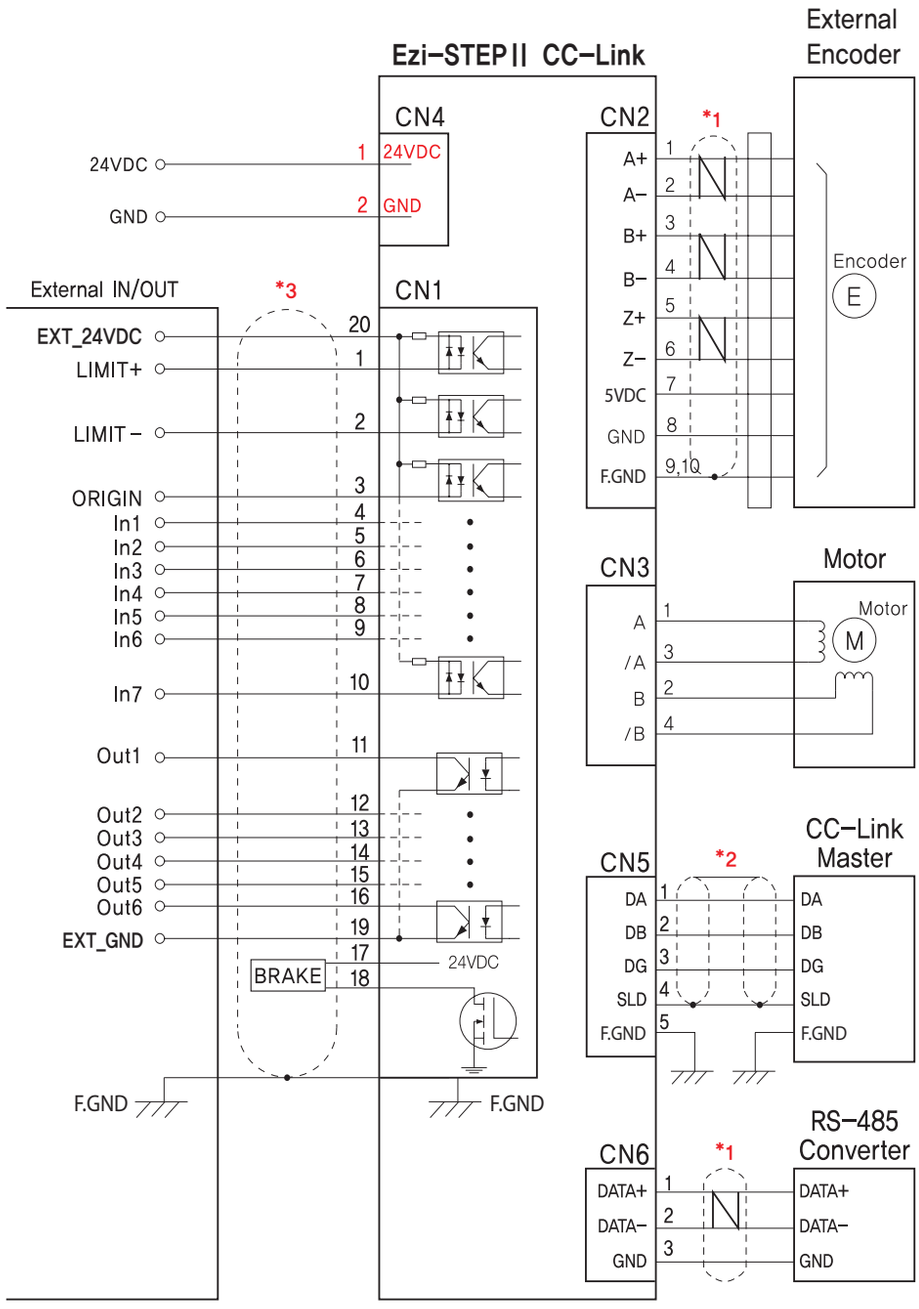
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing Terminal	3191-4R1 1381T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M
CC-Link Communication (CN5)		Terminal Block	AK950-5	PTR
RS-485 Communication (CN6)		Housing Terminal	5264-03 5263PBT	MOLEX

※ Above Connector is the most suitable product for the drive applied. Another equivalent Connector can be used.

External Wiring Diagram



* 1) Shielded Twisted Pair Cable

* 2) CC-Link Cable

* 3) Shield Cable

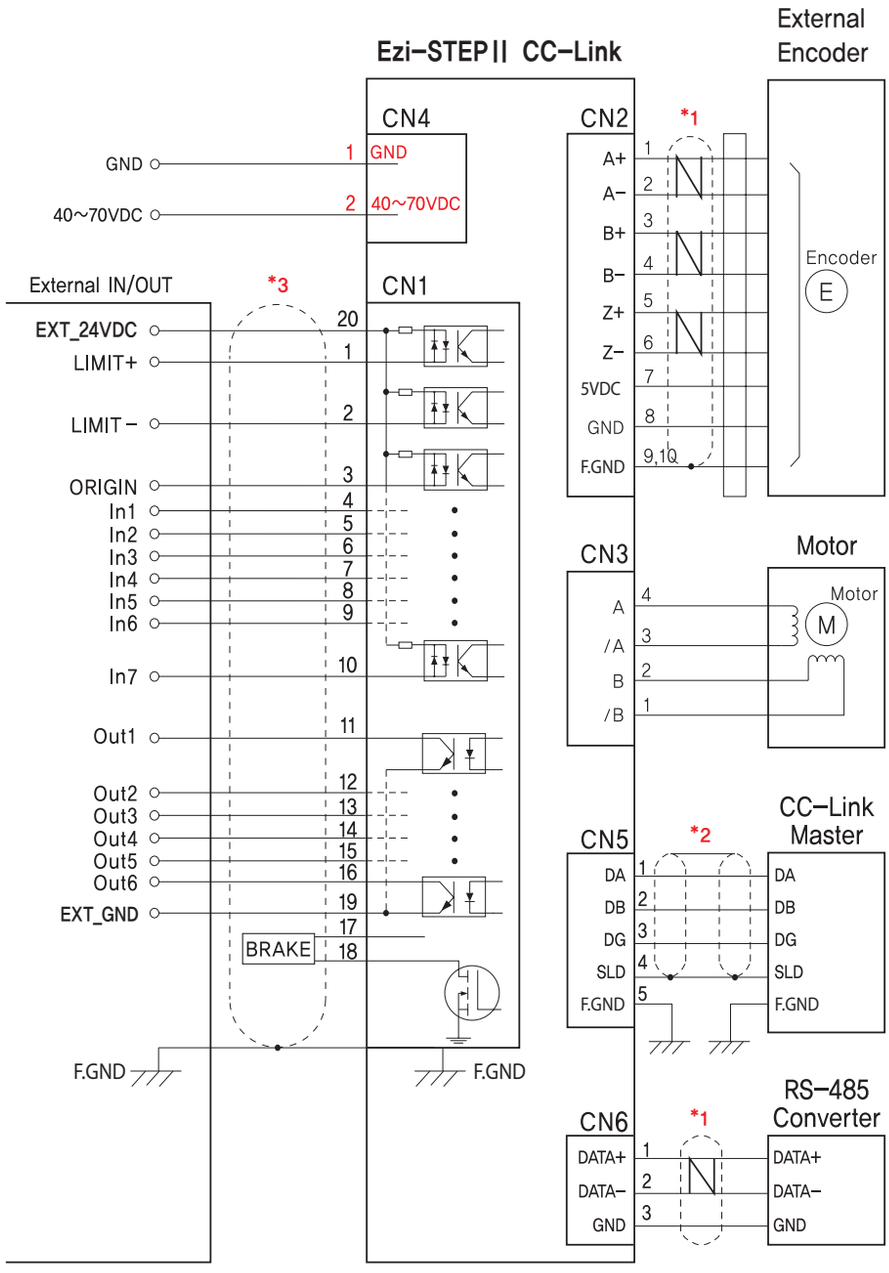
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● External Wiring Diagram [86mm Motor Drive]



* 1) Shielded Twisted Pair Cable

* 2) CC-Link Cable

* 3) Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

FASTECH_

Product Information

Ezi-SERVO®

S-SERVO® II

Ezi-STEP®

OPTION

Brake
Gearbox

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®



OPTION Brake

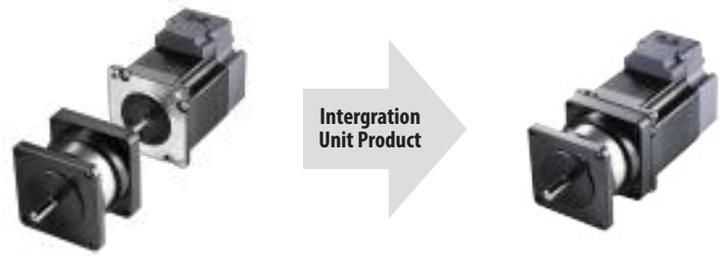
Overall Table of ***Brake***

Name of Product	Motor Brake Size			
	42mm	56mm	60mm	86mm
Ezi-SERVO ST / Plus-R	■	■	■	■
Ezi-SERVO MINI / Plus-R MINI	■			
Ezi-SERVO II EtherCAT	■	■	■	■
Ezi-SERVO II EtherCAT MINI	■	■	■	
Ezi-SERVO II EtherCAT 4X	■	■	■	
Ezi-SERVO II EtherCAT ALL	■	■	■	■
Ezi-SERVO II Plus-E	■	■	■	■
Ezi-SERVO II Plus-E MINI	■	■	■	
Ezi-SERVO II Plus-E ALL	■	■	■	■
Ezi-SERVO II CC-Link	■	■	■	■
Ezi-SERVO II BT	■	■	■	
Ezi-SERVO ALL	■	■	■	
S-SERVO II ST / 2X / 3X	■	■	■	
S-SERVO II MINI	■			
Ezi-STEP ST / Plus-R	■	■	■	■
Ezi-STEP MINI / Plus-R MINI	■			
Ezi-STEP BT	■	■		■
Ezi-STEP ALL	■	■		
Ezi-STEP II EtherCAT	■	■	■	
Ezi-STEP II EtherCAT MINI	■	■	■	
Ezi-STEP II EtherCAT 4X	■	■	■	
Ezi-STEP II Plus-E	■	■	■	■
Ezi-STEP II Plus-E MINI	■	■	■	
Ezi-STEP II CC-Link	■	■	■	

Features

Characteristic

Ezi-SERVO BK series, FASTECH's new unit product, maximizes User's operational convenience with integration between Ezi-SERVO series of stepping motor and non-excitation electromagnetic brake that has big friction of brake torque and rapid brake timing.



Advantage

◆ Apply non-excitation electromagnetic brake

Different from excitation type of brake that only generates braking-power by electromagnetic-power when power supplies at brake and loses brake power when power cut-off, Ezi-SERVO BK series adopts non-excitation electromagnetic brake that immediately generate friction of brake torque by inner spring's binding post-tensioning force once power cut off. So Ezi-SERVO BK series enables complete stopping of stepping motor and can forestall risks with brake's mechanical braking-power under emergency situation as like sudden blackout in machine operation.

◆ Automatic Braking during power cutoff or blackout

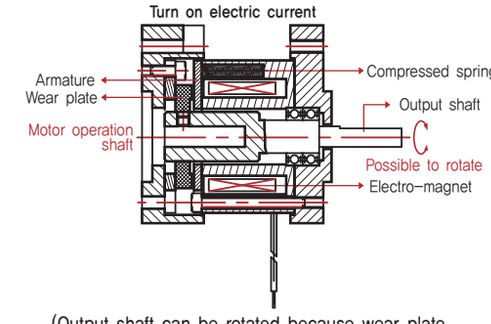
Ezi-SERVO BK series, Unit product, integrated between high performance of non-excitation electromagnetic brake and step motor that enables immediate braking to keep holding point and prevent falling under power cut off or blackout during operation so customer can be flexible in responding to sudden situation.

◆ Long Durability

Brake integrated into Ezi-SERVO BK series applies long durability of brake wear plate(Brake Lining) so it guarantees high durability and long life cycle.

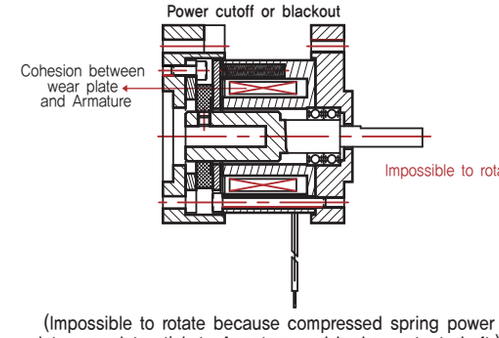
◆ Rapid Brake Timing

Ezi-SERVO BK series, non-excitation electromagneic brake, enables rapid braking because loaded spring closed brake can quicken rising of brake torque.



(Output shaft can be rotated because wear plate can be separate from Armature by electromagnetic force)

POWER OFF



(Impossible to rotate because compressed spring power let wear plate stick to Armature and brakes output shaft.)

● Allowable Overhung Load and Allowable Thrust Load of BK series

Motor Size	Allowable Overhung Load [N] Based on Center of Shaft				Allowable Thrust Load [N]
	3	8	13	18	
42mm	22	26	33	46	Must be lower than Unit's weight
56mm	52	65	85	123	
60mm	70	87	114	165	
86mm	270	300	350	400	

1. Drive Specification and Size

Please refer to the individual catalogue to check drive specification and size.

2. System Configuration and Setting/Operation

Please refer to the individual catalogue to check series' system configuration, Name and Function.

3. External Wiring Diagram

Please refer to the individual catalogue to check series' external wiring diagram.

● Part Numbering

◆ In Case of Ezi-SERVO series

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-□-□-□-BK	EzM-□-□-BK	Not Changed

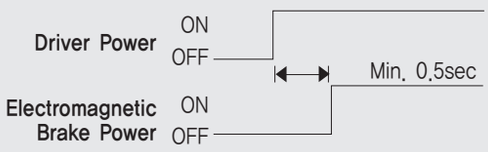
※ It can be added BK at the end of model name of each series. (The name of drive model is not changed.)

ex) The Part numbering method for in case of brake is adopted on 42mm of Ezi-SERVO ST series.

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ST-42S-A-BK	EzM-42S-A-BK	EzS-PD-42S-A

● Electromagnetic Brake Operation Timing Chart

Please release electromagnetic brake at least 0.5 sec later power input to the drive. If not, work can be falling



- Please use Cable at least thicker than AWG24(0.2m^2) when connect electromagnetic brake and power.
- Electromagnetic Brake is non-polar so there is no polarity in Brake Cable
- Over input voltage can induce high temperature of electro-magnetic brake and motor so it can be main reason of failure
- Reversely too low input voltage will cause non-operation of electromagnetic brake.

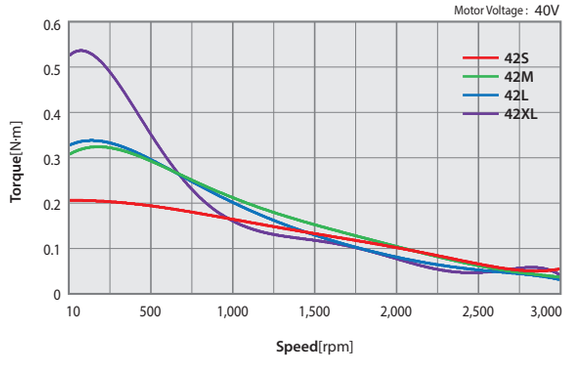
● Specifications of Brake [42mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO Plus-R
Ezi-SERVO Plus-R MINI	Ezi-SERVO ALL	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI
Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI
Ezi-SERVO II Plus-E ALL	Ezi-SERVO II CC-Link	Ezi-STEP MPB	Ezi-STEP MINI
Ezi-STEP BT	Ezi-STEP Plus-R	Ezi-STEP Plus-R MINI	Ezi-STEP ALL
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E
Ezi-STEP II Plus-E MINI	Ezi-STEP II CC-Link	S-SERVO II ST	S-SERVO II MINI
S-SERVO II 2X	S-SERVO II 3X		

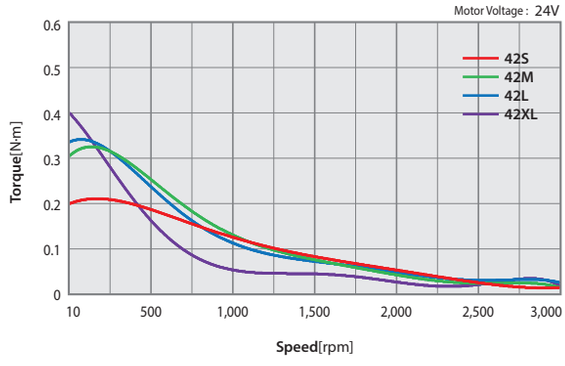
Model	Unit	42			
		42S	42M	42L	42XL
Electromagnetic Brake	Form	Non-Excitation Type			
Input Voltage	V	24VDC			
Rated Current	A	0.2			
Power Consumption	W	5			
Friction Torque	N·m	0.2			

※ Electromagnetic brake will not be using for braking but for holding position when power-off.

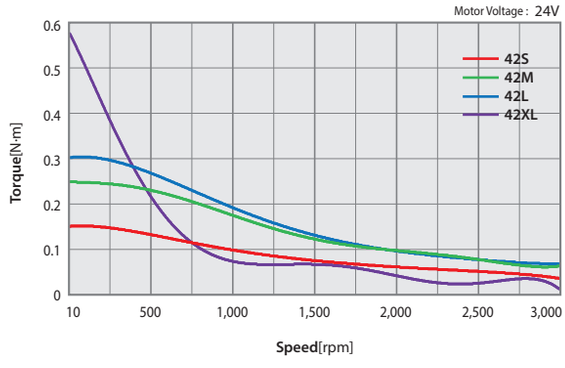
● Torque Charcteristics of Motor with Brake [42mm]



Applicable Model	
Ezi-SERVO ST	Ezi-SERVO Plus-R
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E
Ezi-SERVO II CC-Link	Ezi-STEP MPB
Ezi-STEP Plus-R	Ezi-STEP II EtherCAT
Ezi-STEP II Plus-E	Ezi-STEP II CC-Link



Applicable Model	
Ezi-SERVO MINI	Ezi-SERVO II BT
Ezi-SERVO Plus-R MINI	Ezi-SERVO ALL
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI
Ezi-SERVO II Plus-E ALL	Ezi-STEP MINI
Ezi-STEP BT	Ezi-STEP Plus-R MINI
Ezi-STEP ALL	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E MINI



Applicable Model	
S-SERVO II ST	S-SERVO II 2X
S-SERVO II 3X	S-SERVO II MINI

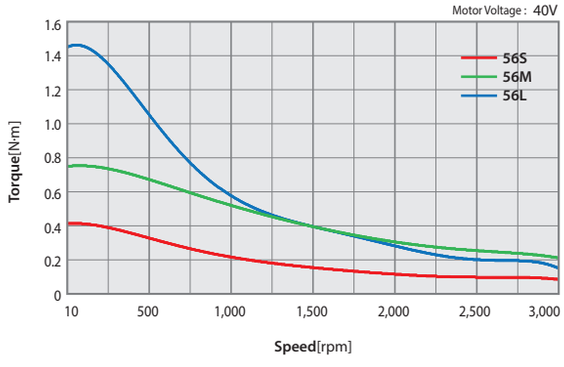
● Specifications of Brake [56mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II BT	Ezi-SERVO Plus-R	Ezi-SERVO ALL
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	Ezi-SERVO II CC-Link
Ezi-STEP MPB	Ezi-STEP BT	Ezi-STEP Plus-R	Ezi-STEP ALL
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E
Ezi-STEP II Plus-E MINI	Ezi-STEP II CC-Link	S-SERVO II ST	S-SERVO II 2X
S-SERVO II 3X			

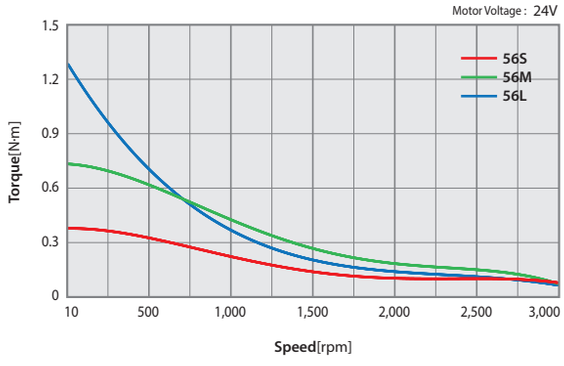
Model	Unit	56		
		56S	56M	56L
Electromagnetic Brake	Form	Non-Excitation Type		
Input Voltage	V	24VDC ±10%		
Rated Current	A	0.27		
Power Consumption	W	6.6		
Friction Torque	N·m	0.7		

※ Electromagnetic brake will not be using for braking but for holding position when power-off.

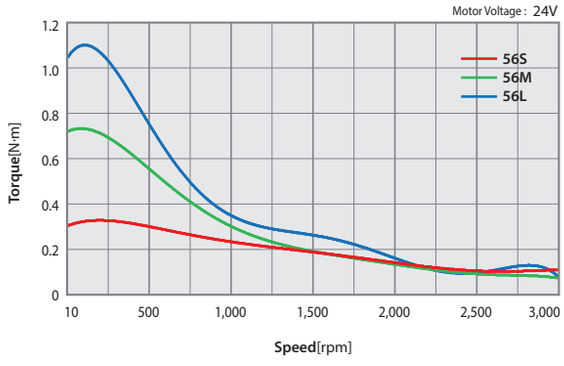
● Torque Charcteristics of Motor with Brake [56mm]



Applicable Model	
Ezi-SERVO ST	Ezi-SERVO Plus-R
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E
Ezi-SERVO II CC-Link	Ezi-STEP MPB
Ezi-STEP Plus-R	Ezi-STEP II EtherCAT
Ezi-STEP II Plus-E	Ezi-STEP II CC-Link



Applicable Model	
Ezi-SERVO II BT	Ezi-SERVO ALL
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI
Ezi-SERVO II Plus-E ALL	Ezi-STEP BT
Ezi-STEP ALL	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E MINI



Applicable Model	
S-SERVO II ST	S-SERVO II 2X
S-SERVO II 3X	

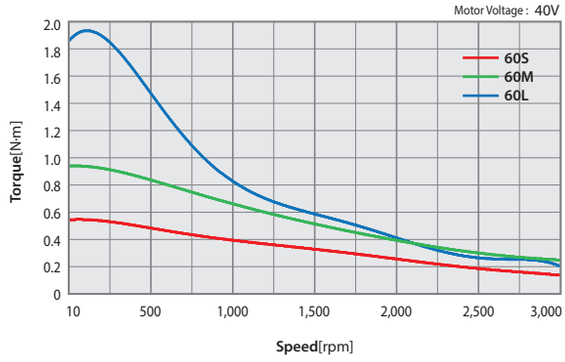
● Specifications of Brake [60mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II BT	Ezi-SERVO ALL
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	Ezi-SERVO II CC-Link
Ezi-STEP MPB	Ezi-STEP Plus-R	Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MIMI
Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E	Ezi-STEP II Plus-E MINI	Ezi-STEP II CC-Link
S-SERVO II ST	S-SERVO II 2X	S-SERVO II 3X	

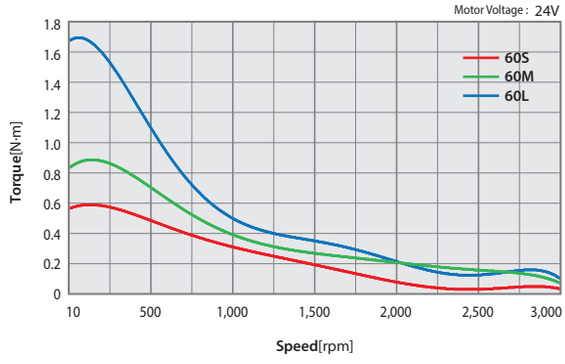
Model	Unit	60		
		60S	60M	60L
Electromagnetic Brake	Form	Non-Excitation Type		
Input Voltage	V	24VDC		
Rated Current	A	0.27		
Power Consumption	W	6.6		
Friction Torque	N·m	0.7		

※ Electromagnetic brake will not be using for braking but for holding position when power-off.

● Torque Charcteristics of Motor with Brake [60mm]



Applicable Model	
Ezi-SERVO ST	Ezi-SERVO Plus-R
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E
Ezi-SERVO II CC-Link	Ezi-STEP MPB
Ezi-STEP Plus-R	Ezi-SERVO ALL
Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E
Ezi-STEP II CC-Link	



Applicable Model	
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI
Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL
S-SERVO II ST	S-SERVO II 2X
S-SERVO II 3X	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	

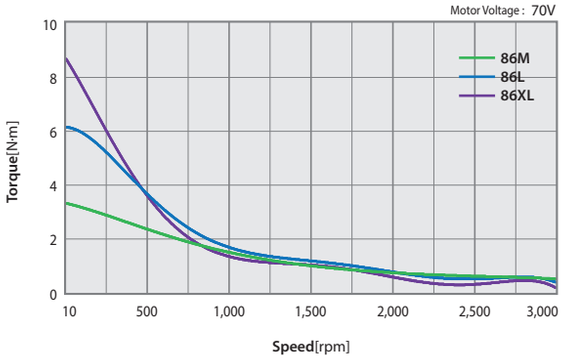
● Specifications of Brake [86mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E ALL	Ezi-SERVO II CC-Link	Ezi-STEP HPB
Ezi-STEP BT	Ezi-STEP Plus-R	Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E
Ezi-STEP II CC-Link			

Model	Unit	86		
		86M	86L	86XL
Electromagnetic Brake	Form	Non-Excitation Type		
Input Voltage	V	24VDC		
Rated Current	A	0.54		
Power Consumption	W	13.0		
Friction Torque	N·m	4.0		

※ Electromagnetic brake will not be using for braking but for holding position when power-off.

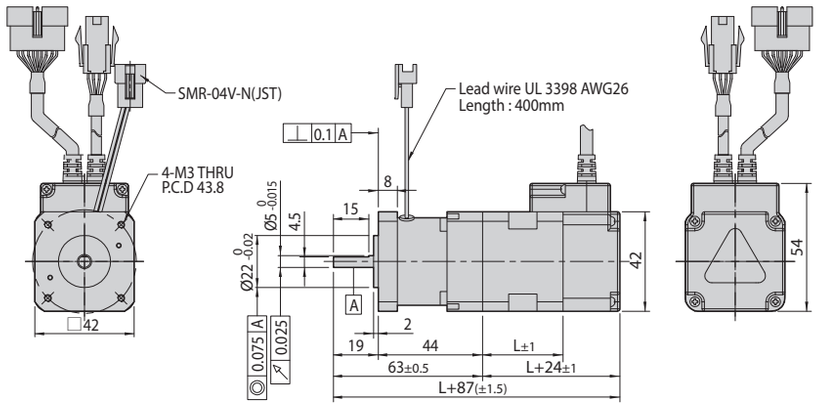
● Torque Charcteristics of Motor with Brake [86mm]



Applicable Model	
Ezi-SERVO ST	Ezi-SERVO Plus-R
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E ALL
Ezi-SERVO II CC-Link	Ezi-STEP HPB
Ezi-STEP BT	Ezi-STEP Plus-R
Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E
Ezi-STEP II CC-Link	

● Dimensions of Motor with Brake [42mm]

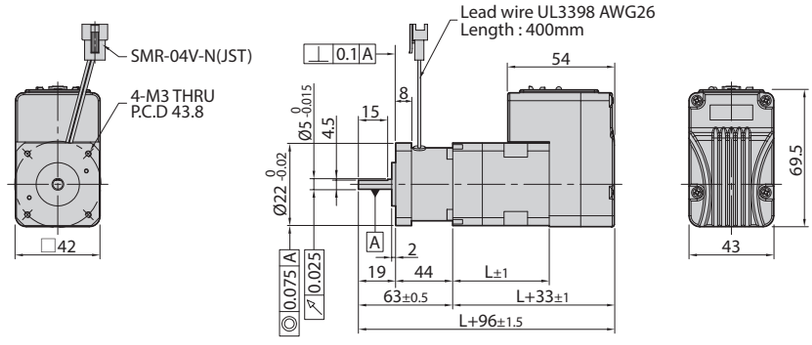
Applicable Model			
Ezi-SERVO ST	Ezi-SERVO MINI	Ezi-SERVO Plus-R	Ezi-SERVO Plus-R MINI



42mm

Model Name	Length(L)	Weight(kg)
EzM-42S	34	0.56
EzM-42M	40	0.62
EzM-42L	48	0.69
EzM-42XL	60	0.83

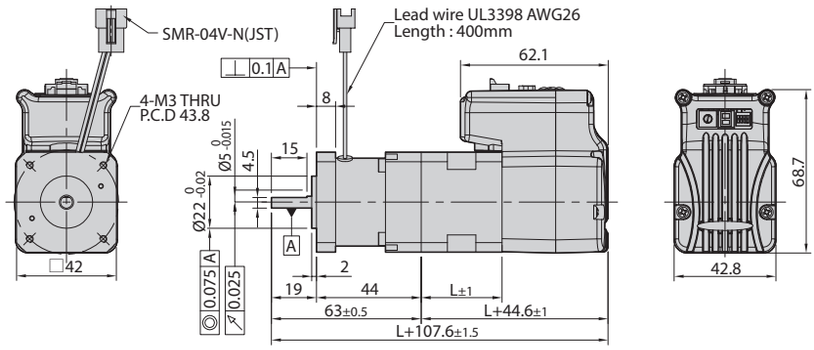
Applicable Model			
Ezi-SERVO II BT			



42mm

Model Name	Length(L)	Weight(kg)
42S	34	0.68
42M	40	0.77
42L	48	0.84
42XL	60	0.95

Applicable Model			
Ezi-SERVO ALL			

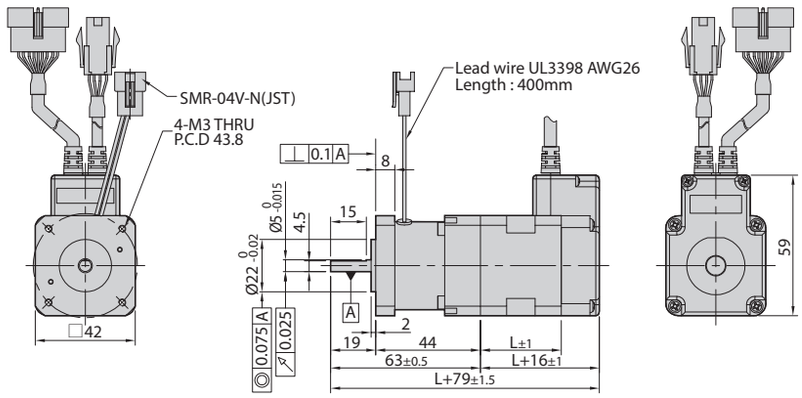


42mm

Model Name	Length(L)	Weight(kg)
42S	34	0.67
42M	40	0.77
42L	48	0.84
42XL	60	0.95

● Dimensions of Motor with Brake [42mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link		

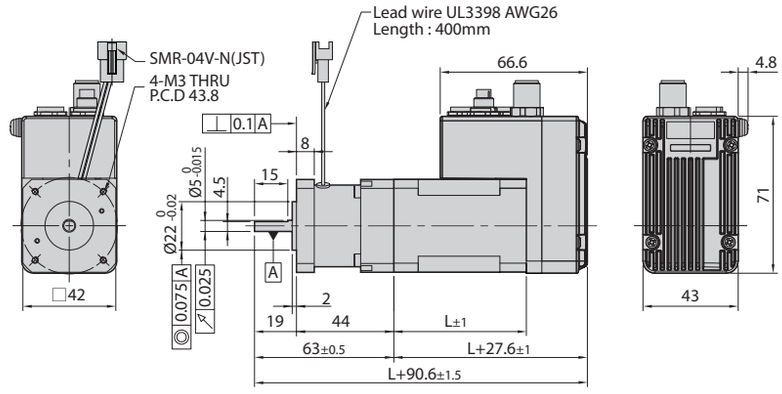


42mm

Model Name	Length(L)	Weight(kg)
EzM2-42S	34	0.55
EzM2-42M	40	0.62
EzM2-42L	48	0.69
EzM2-42XL	60	0.82

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

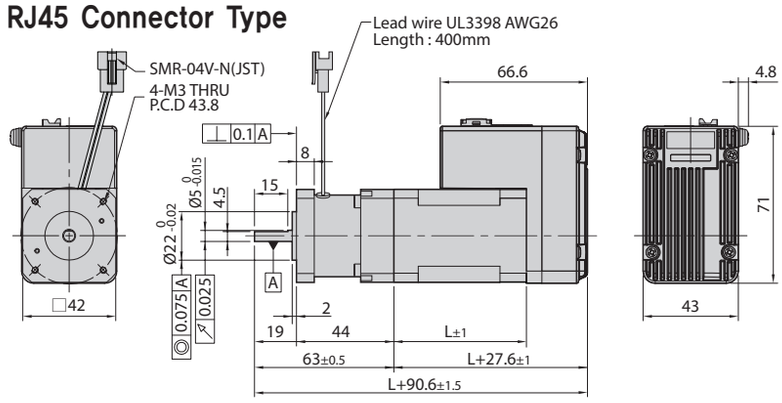
◆ M Connector Type



42mm

Model Name	Length(L)	Weight(kg)
42M	40	0.70
42L	48	0.78
42XL	60	0.92

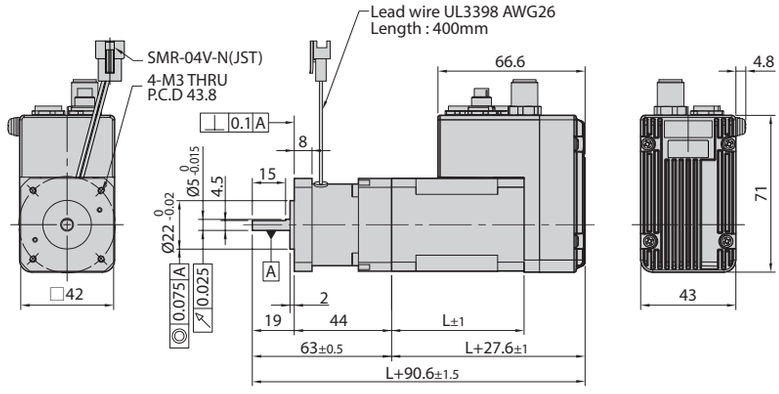
◆ RJ45 Connector Type



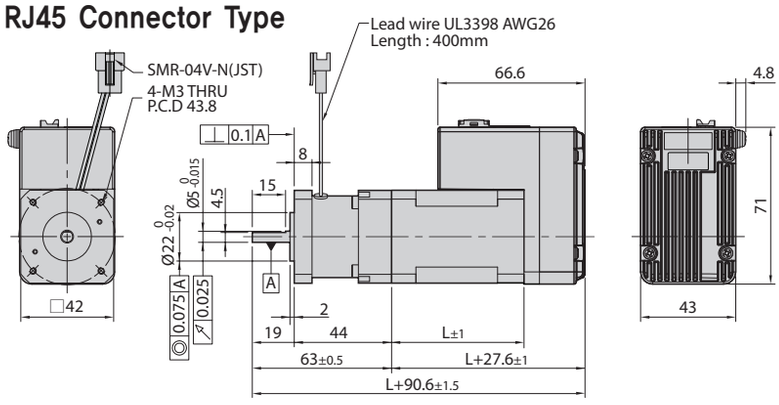
● Dimensions of Motor with Brake [42mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

◆ M Connector Type



◆ RJ45 Connector Type

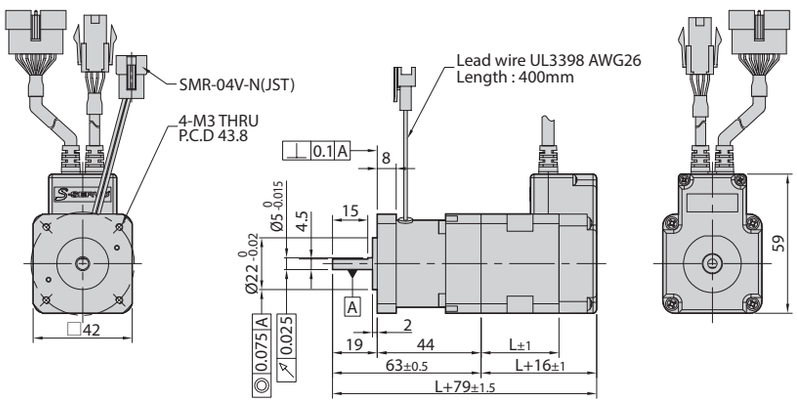


42mm

Model Name	Length(L)	Weight(kg)
42M	40	0.70
42L	48	0.78
42XL	60	0.92

● Dimensions of Motor with Brake [42mm]

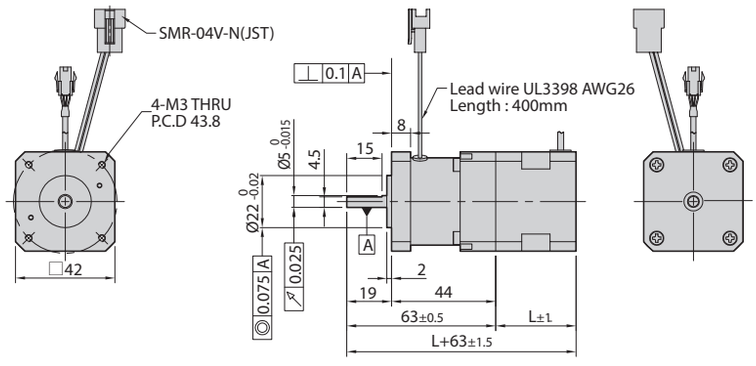
Applicable Model			
S-SERVO II ST	S-SERVO II MINI	S-SERVO II 2X	S-SERVO II 3X



42mm

Model Name	Length(L)	Weight(kg)
SM-42S	33	0.54
SM-42M	39	0.60
SM-42L	47	0.68
SM-42XL	60	0.83

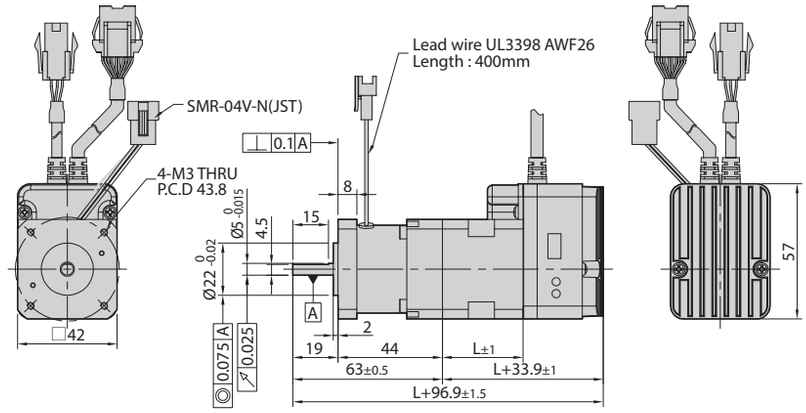
Applicable Model			
Ezi-STEP ST	Ezi-STEP MINI	Ezi-STEP Plus-R	Ezi-STEP Plus-R MINI
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E
Ezi-STEP II Plus-E MINI	Ezi-STEP II CC-Link		



42mm

Model Name	Length(L)	Weight(kg)
BM-42S	34	0.50
BM-42M	40	0.56
BM-42L	48	0.63
BM-42XL	60	0.77

Applicable Model			
Ezi-STEP BT			

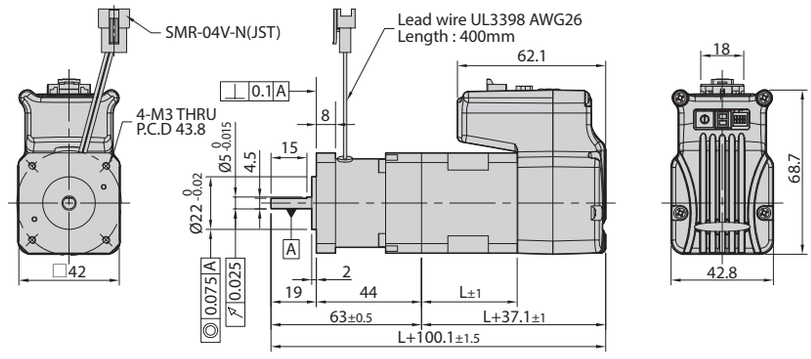


42mm

Model Name	Length(L)	Weight(kg)
42S	34	0.56
42M	40	0.63
42L	48	0.70
42XL	60	0.82

● Dimensions of Motor with Brake [42mm]

Applicable Model			
Ezi-STEP ALL			

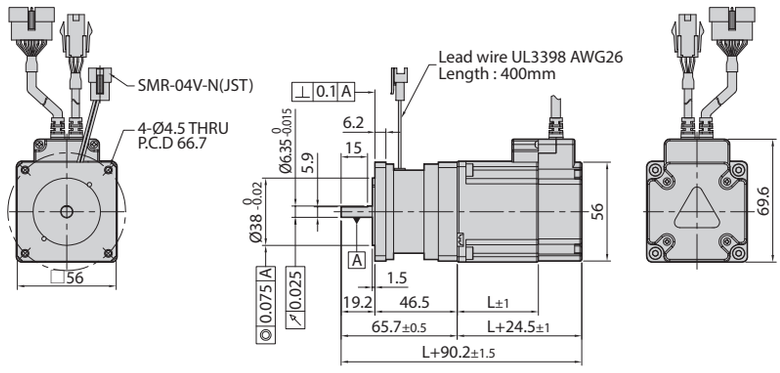


42mm

Model Name	Length(L)	Weight(kg)
42S	34	0.56
42M	40	0.63
42L	48	0.69
42XL	60	0.82

● Dimensions of Motor with Brake [56mm]

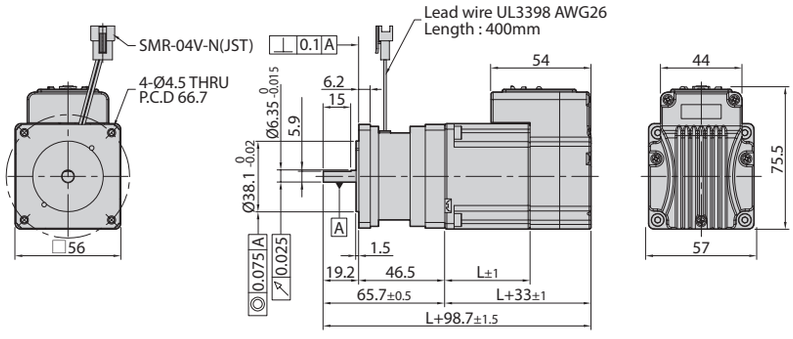
Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R		



56mm

Model Name	Length(L)	Weight(kg)
EzM-56S	46	1,03
EzM-56M	55	1,20
EzM-56L	80	1,65

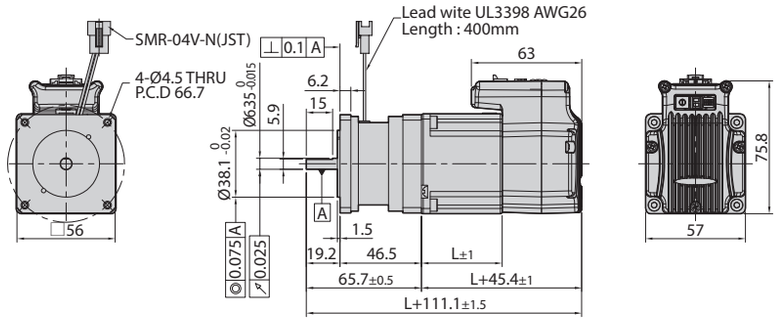
Applicable Model			
Ezi-SERVO II BT			



56mm

Model Name	Length(L)	Weight(kg)
56S	46	1,26
56M	55	1,36
56L	80	1,89

Applicable Model			
Ezi-SERVO ALL			

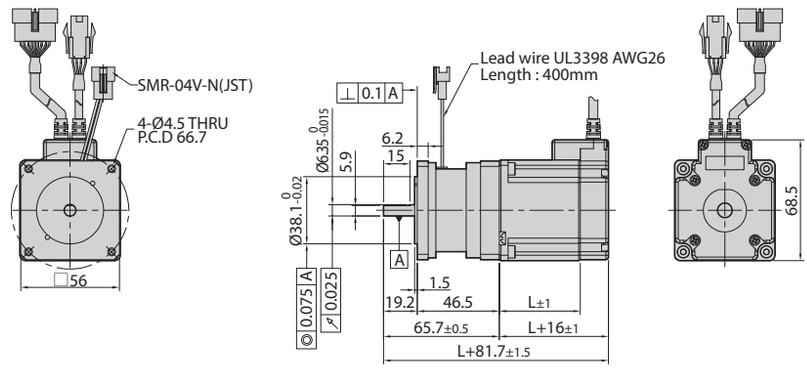


56mm

Model Name	Length(L)	Weight(kg)
56S	46	1,26
56M	55	1,36
56L	80	1,89

● Dimensions of Motor with Brake [56mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link		

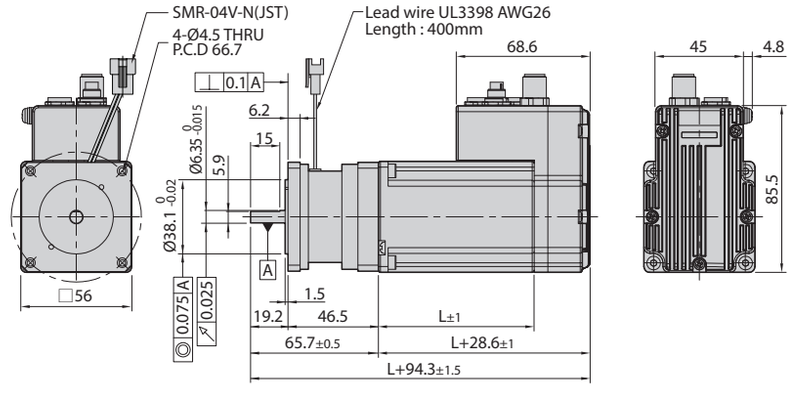


56mm

Model Name	Length(L)	Weight(kg)
EzM2-56S	46	1.03
EzM2-56M	55	1.20
EzM2-56L	80	1.65

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

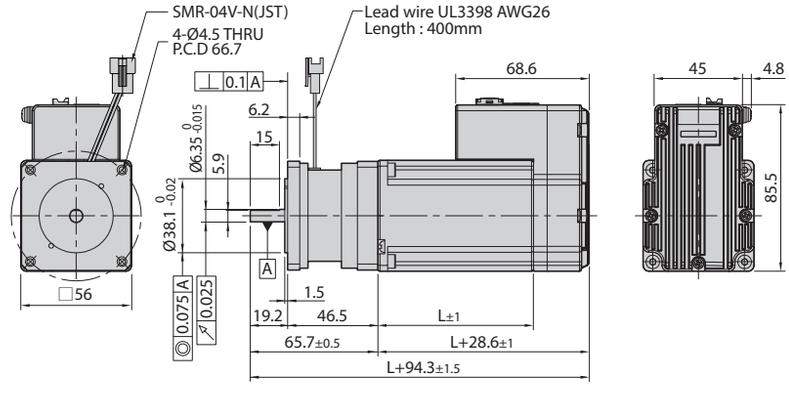
◆ M Connector Type



56mm

Model Name	Length(L)	Weight(kg)
56S	46	1.18
56M	55	1.34
56L	80	1.78

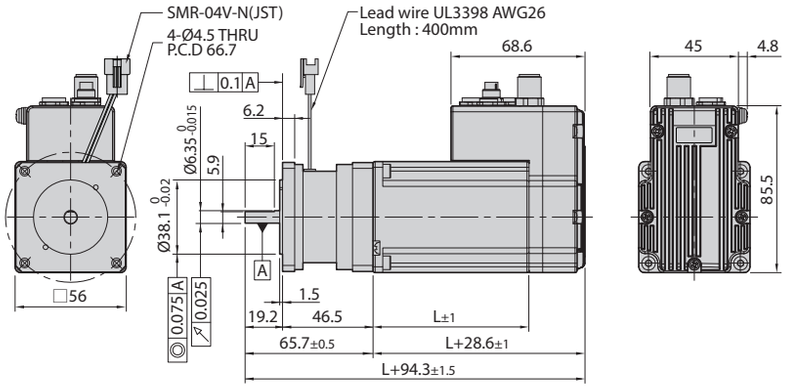
◆ RJ45 Connector Type



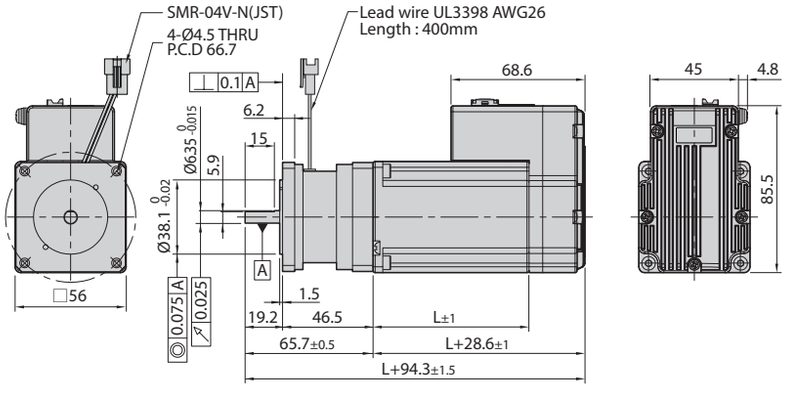
● Dimensions of Motor with Brake [56mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

◆ M Connector Type



◆ RJ45 Connector Type

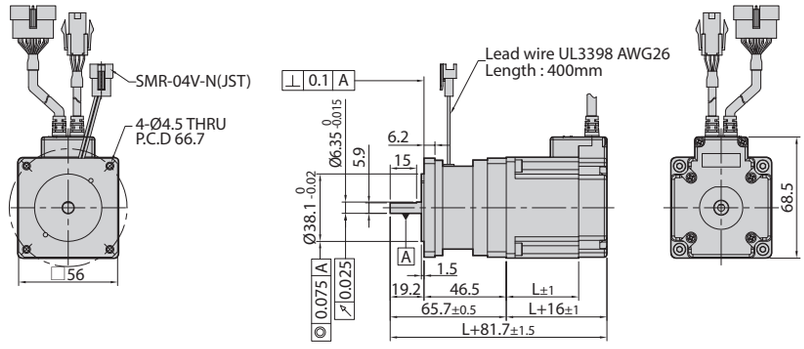


56mm

Model Name	Length(L)	Weight(kg)
56S	46	1.18
56M	55	1.34
56L	80	1.78

● Dimensions of Motor with Brake [56mm]

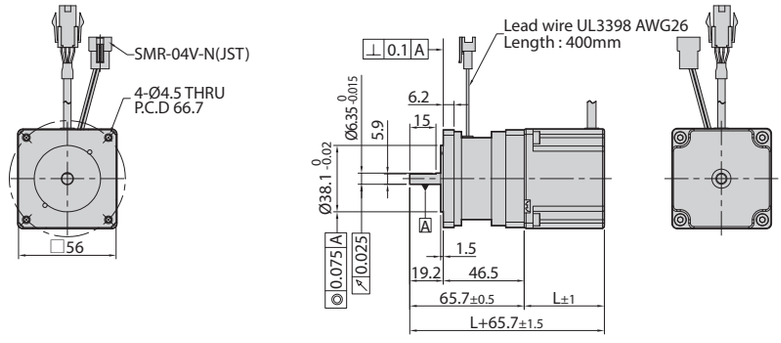
Applicable Model			
S-SERVO II	S-SERVO II 2X	S-SERVO II 3X	



56mm

Model Name	Length(L)	Weight(kg)
SM-56S	41	0.93
SM-56M	56	1.16
SM-56L	76	1.50

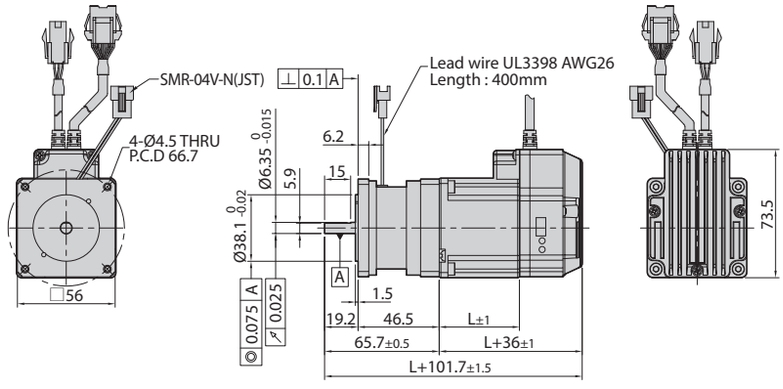
Applicable Model			
Ezi-STEP ST	Ezi-STEP Plus-R	Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E	Ezi-STEP II Plus-E MINI	Ezi-STEP II CC-Link



56mm

Model Name	Length(L)	Weight(kg)
BM-56S	46	0.97
BM-56M	55	1.15
BM-56L	80	1.58

Applicable Model			
Ezi-STEP BT			

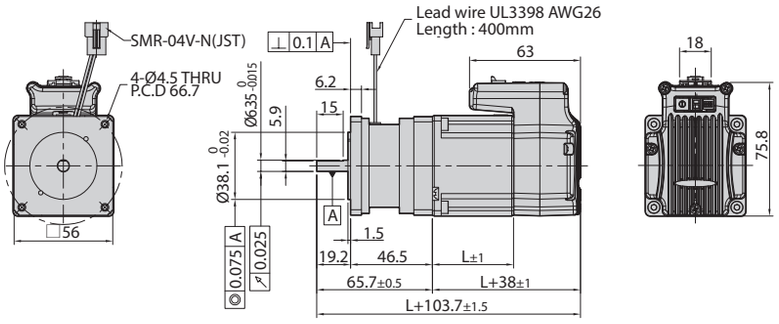


56mm

Model Name	Length(L)	Weight(kg)
56S	46	1.11
56M	55	1.27
56L	80	1.70

● Dimensions of Motor with Brake [56mm]

Applicable Model			
Ezi-STEP ALL			

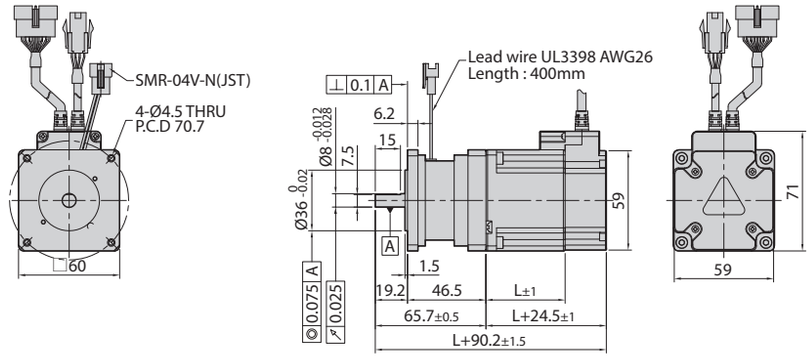


56mm

Model Name	Length(L)	Weight(kg)
56S	46	1,09
56M	55	1,25
56L	80	1,69

● Dimensions of Motor with Brake [60mm]

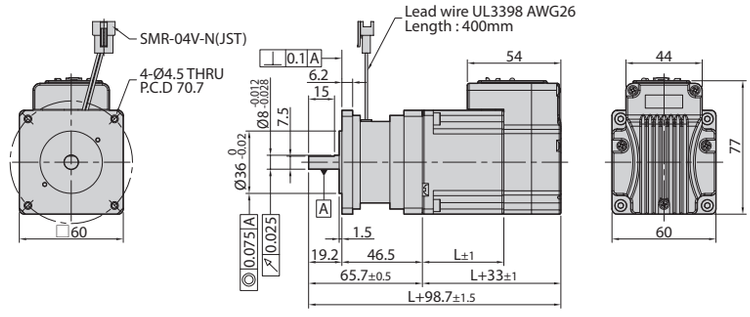
Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R		



60mm

Model Name	Length(L)	Weight(kg)
EzM-60S	47	1.14
EzM-60M	56	1.30
EzM-60L	85	1.86

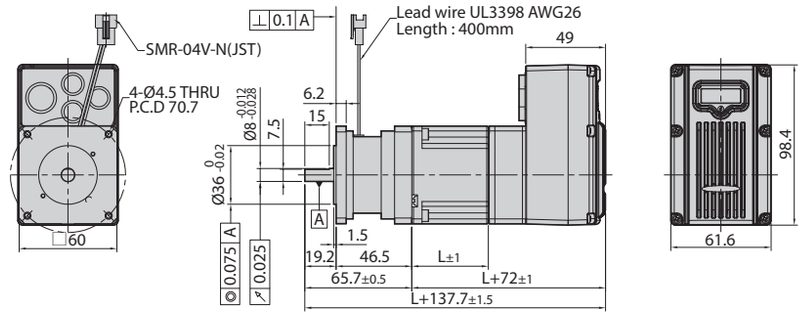
Applicable Model			
Ezi-SERVO II BT			



60mm

Model Name	Length(L)	Weight(kg)
60S	47	1.55
60M	56	1.52
60L	85	2.38

Applicable Model			
Ezi-SERVO ALL			

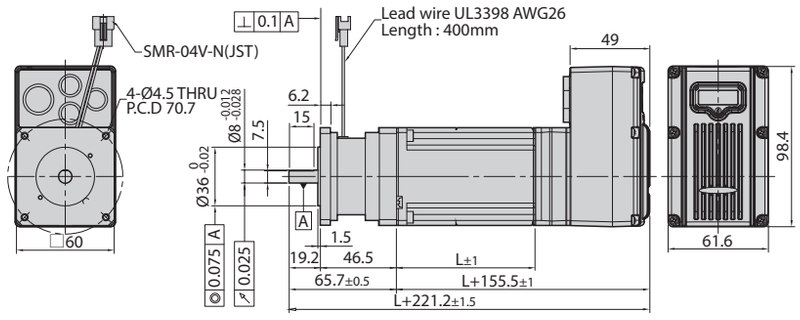


60mm

Model Name	Length(L)	Weight(kg)
60L	85	2.54

● Dimensions of Motor with Brake [60mm]

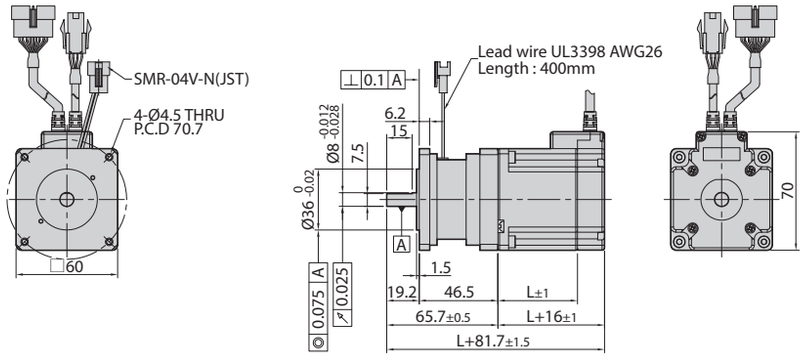
Applicable Model			
Ezi-SERVO ALL ABS			



60mm

Model Name	Length(L)	Weight(kg)
60L-ABS	85	2.54

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link		



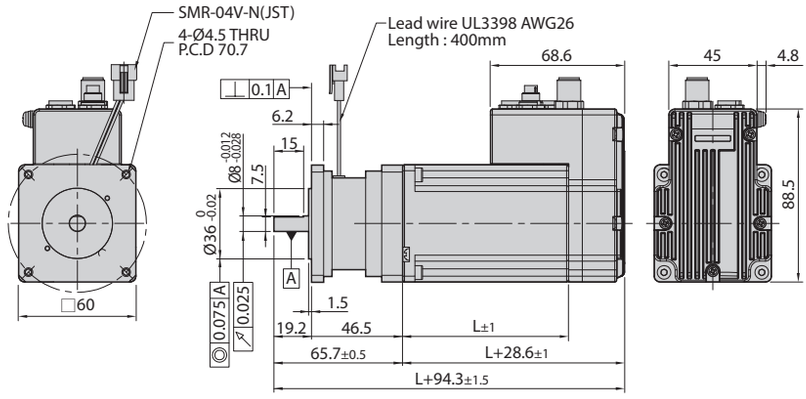
60mm

Model Name	Length(L)	Weight(kg)
EzM2-60S	47	1.11
EzM2-60M	56	1.30
EzM2-60L	85	1.86

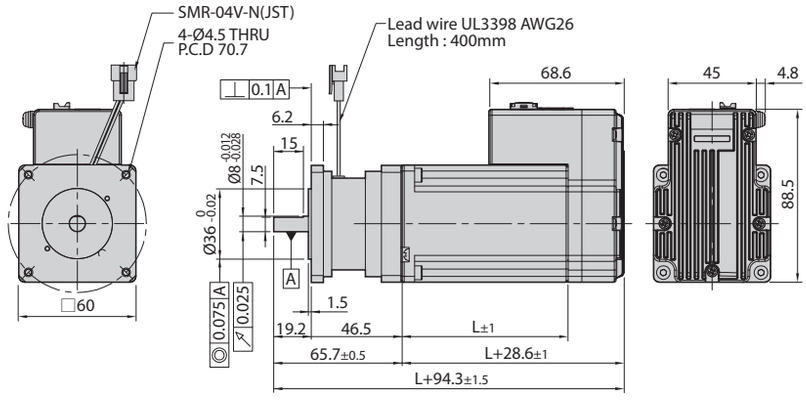
● Dimensions of Motor with Brake [60mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

◆ M Connector Type



◆ RJ45 Connector Type



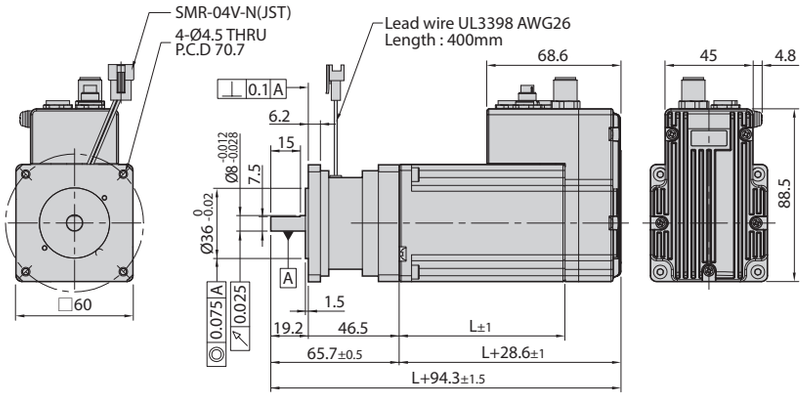
60mm

Model Name	Length(L)	Weight(kg)
60S	47	1.28
60M	56	1.42
60L	85	1.98

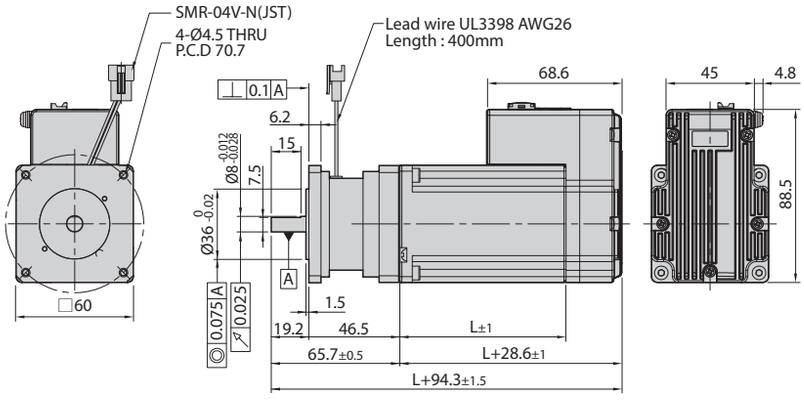
● Dimensions of Motor with Brake [60mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

◆ M Connector Type



◆ RJ45 Connector Type

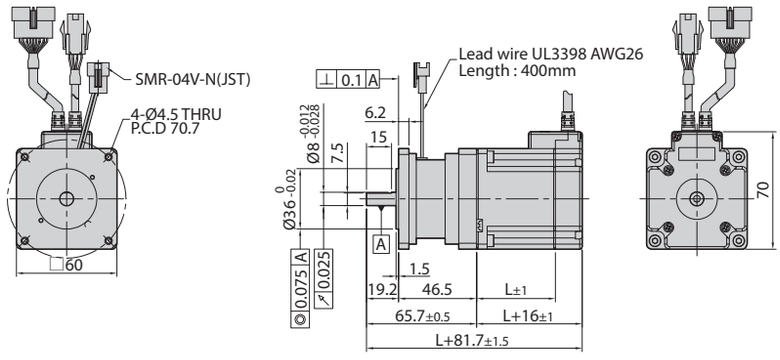


60mm

Model Name	Length(L)	Weight(kg)
60S	47	1,28
60M	56	1,42
60L	85	1,98

● Dimensions of Motor with Brake [60mm]

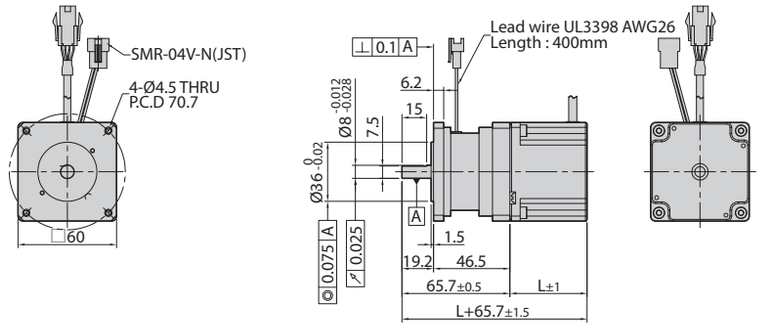
Applicable Model			
S-SERVO II	S-SERVO II 2X	S-SERVO II 3X	



60mm

Model Name	Length(L)	Weight(kg)
SM-60S	47	1.14
SM-60M	56	1.30
SM-60L	85	1.86

Applicable Model			
Ezi-STEP ST	Ezi-STEP Plus-R	Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E	Ezi-STEP II Plus-E MINI	Ezi-STEP II CC-Link

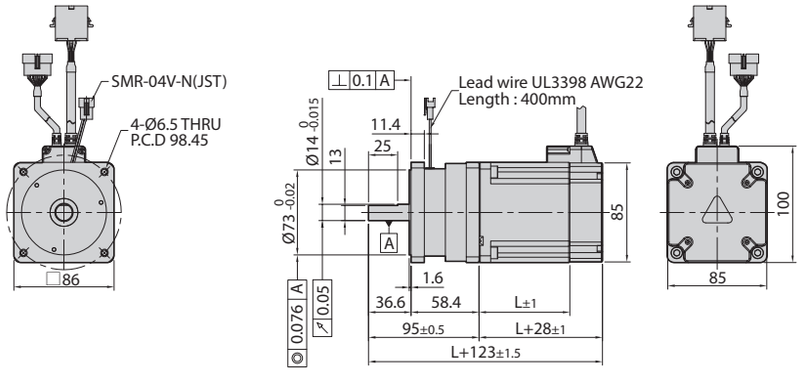


60mm

Model Name	Length(L)	Weight(kg)
BM-60S	47	1.06
BM-60M	56	1.23
BM-60L	85	1.79

● Dimensions of Motor with Brake [86mm]

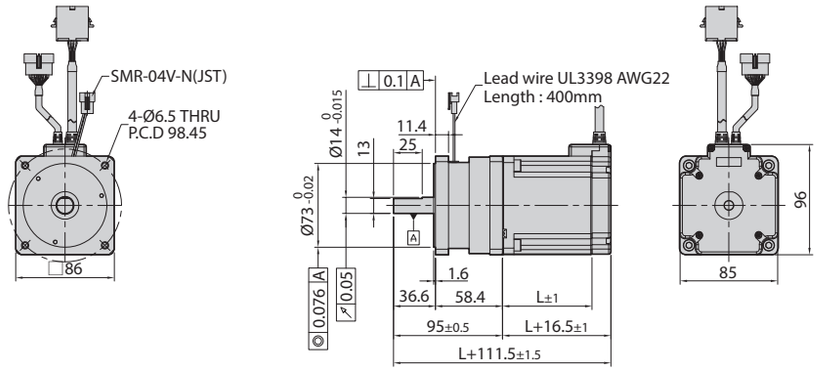
Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R		



86mm

Model Name	Length(L)	Weight(kg)
EzM-86M	78	3.71
EzM-86L	117	5.26
EzM-86XL	155	6.79

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	

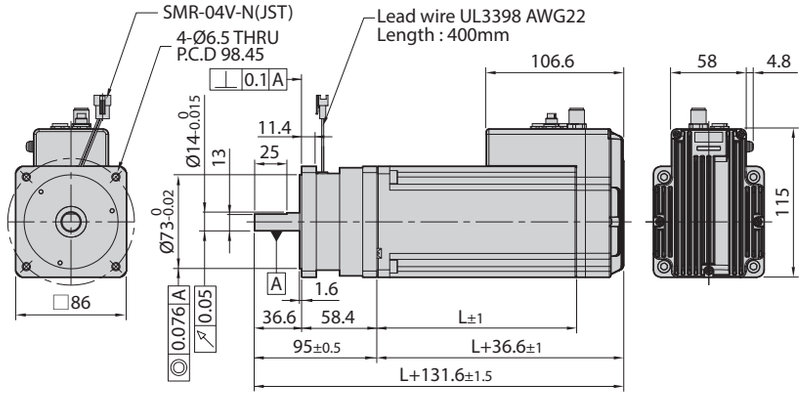


86mm

Model Name	Length(L)	Weight(kg)
EzM2-86M	78	3.66
EzM2-86L	117	5.24
EzM2-86XL	155	6.75

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

◆ M Connector Type



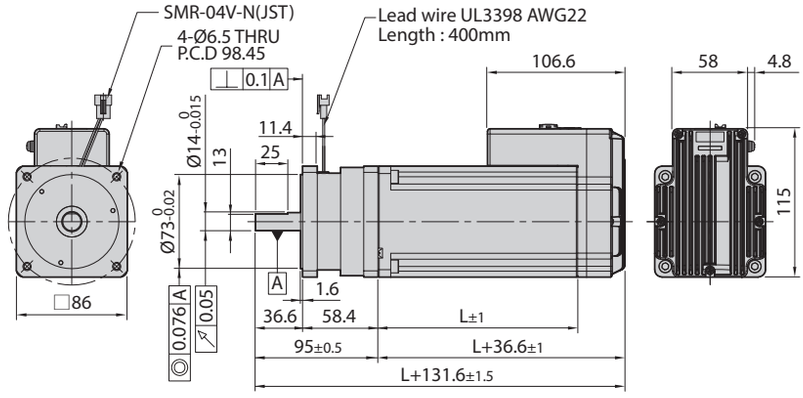
86mm

Model Name	Length(L)	Weight(kg)
86M	78	3.98
86L	117	5.53
86XL	155	7.06

● Dimensions of Motor with Brake [86mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

◆ RJ45 Connector Type

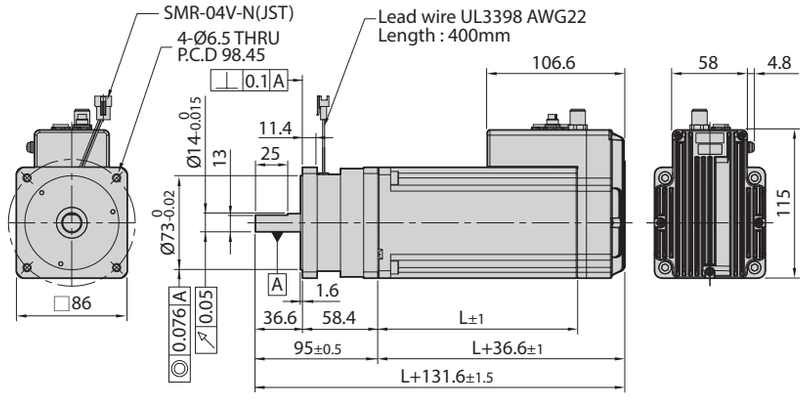


86mm

Model Name	Length(L)	Weight(kg)
86M	78	3.98
86L	117	5.53
86XL	155	7.06

Applicable Model			
Ezi-SERVO II Plus-E ALL			

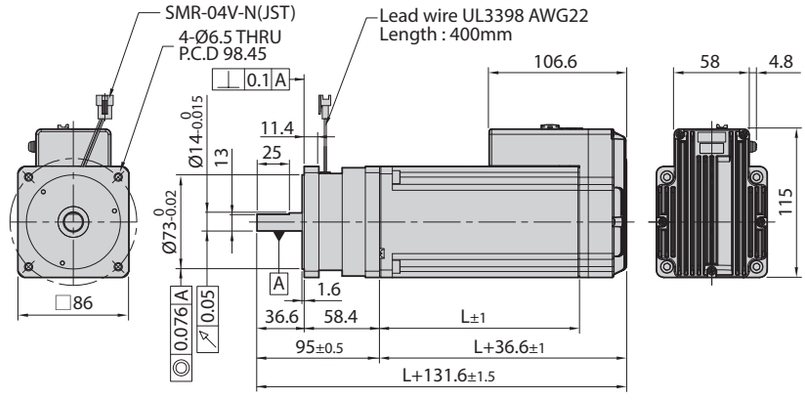
◆ M Connector Type



86mm

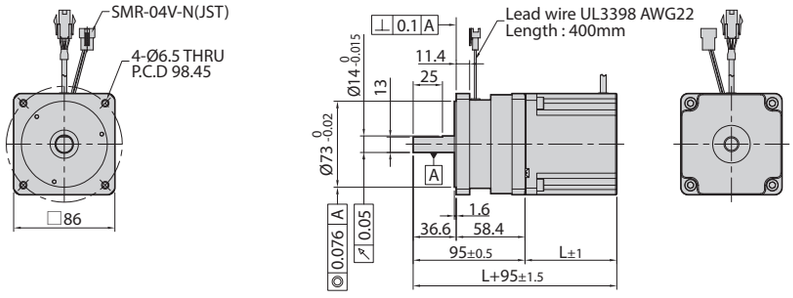
Model Name	Length(L)	Weight(kg)
86M	78	3.98
86L	117	5.53
86XL	155	7.06

◆ RJ45 Connector Type



● Dimensions of Motor with Brake [86mm]

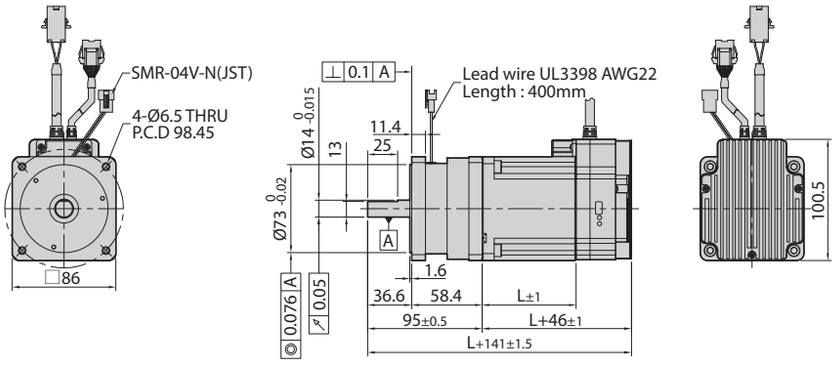
Applicable Model			
Ezi-STEP ST	Ezi-STEP Plus-R	Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E
Ezi-STEP II CC-Link			



86mm

Model Name	Length(L)	Weight(kg)
BM-86M	78	3.58
BM-86L	117	5.11
BM-86XL	155	6.63

Applicable Model			
Ezi-STEP BT			

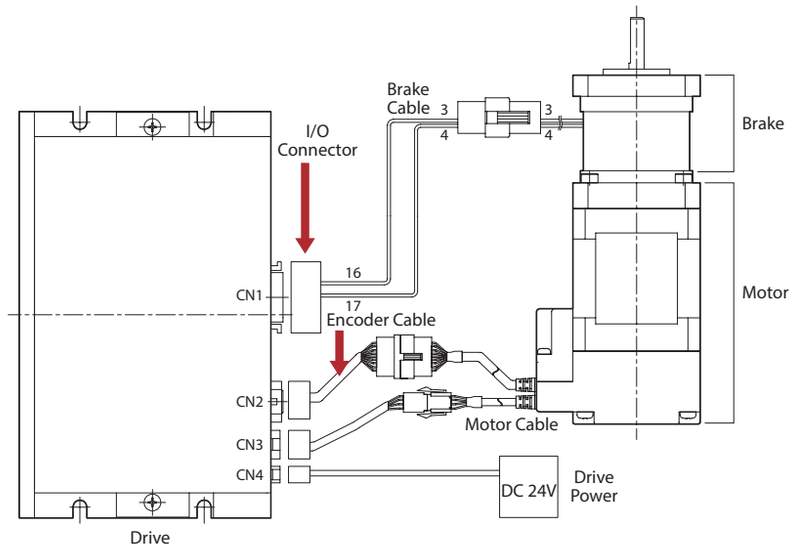


86mm

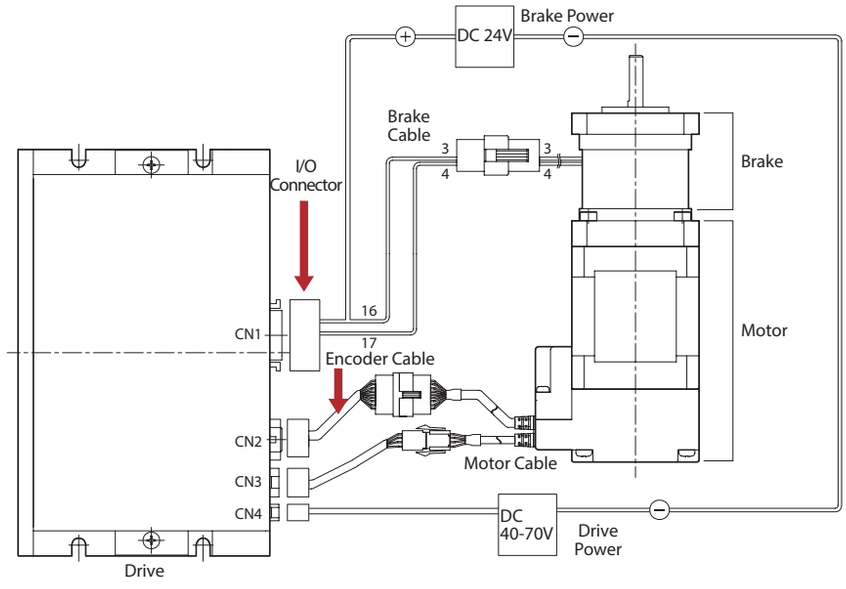
Model Name	Length(L)	Weight(kg)
86M	78	3.75
86L	117	5.25
86XL	155	6.75

● Electrical Brake and Power Connection

Ezi-SERVO ST

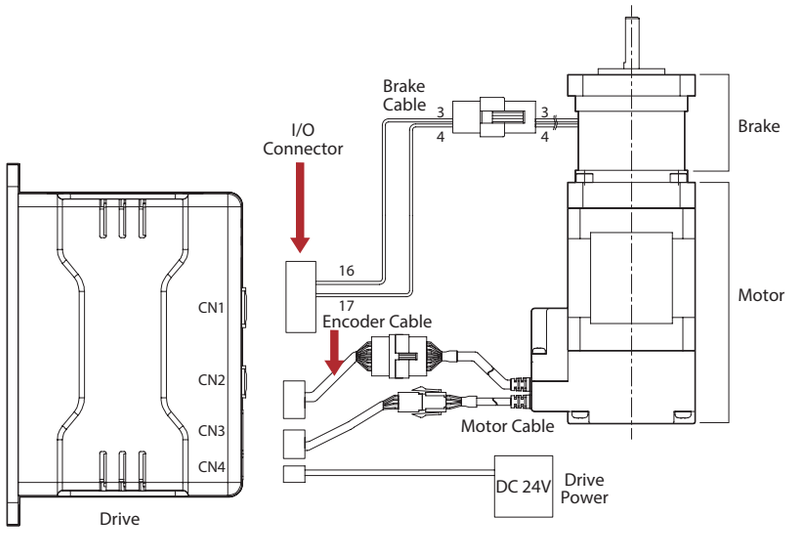


Ezi-SERVO ST_ 86mm

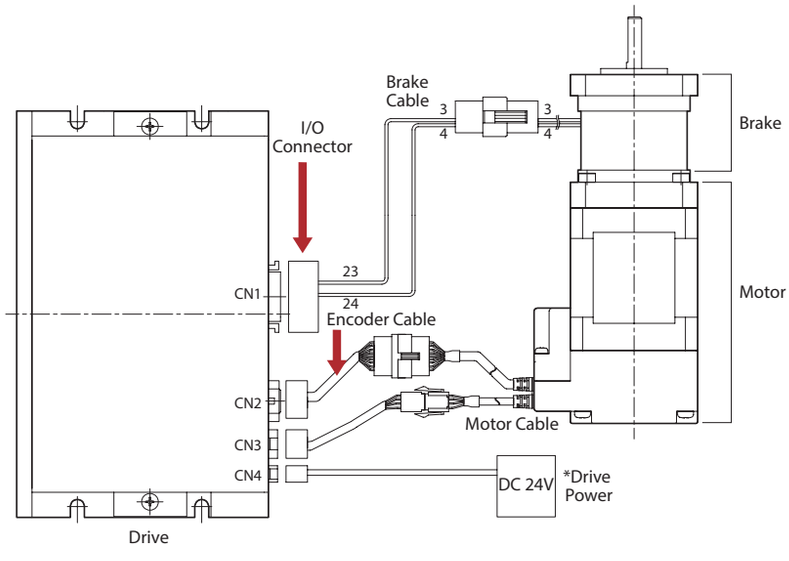


● Electrical Brake and Power Connection

Ezi-SERVO MINI / S-SERVOII MINI



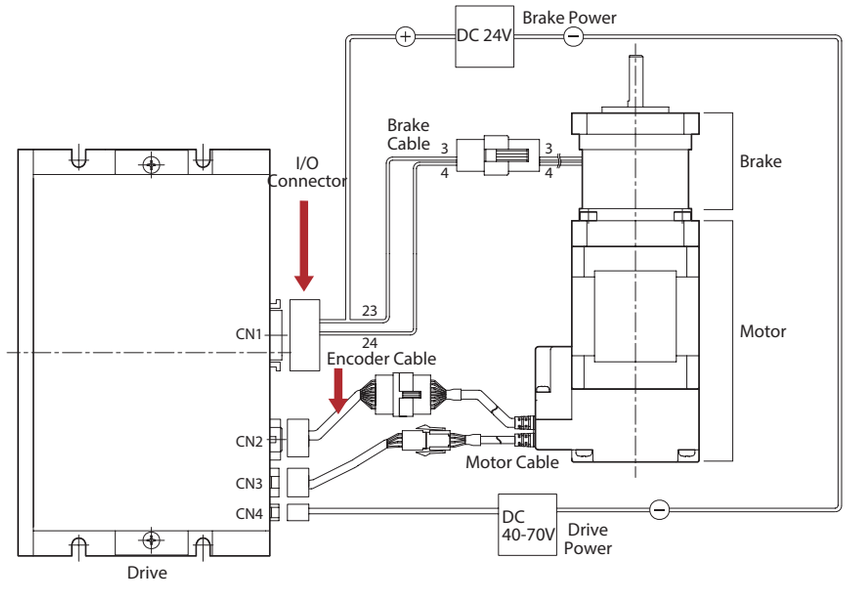
Ezi-SERVO Plus-R / Ezi-SERVOII Plus-E, Ezi-SERVOII Plus-E_ 86mm



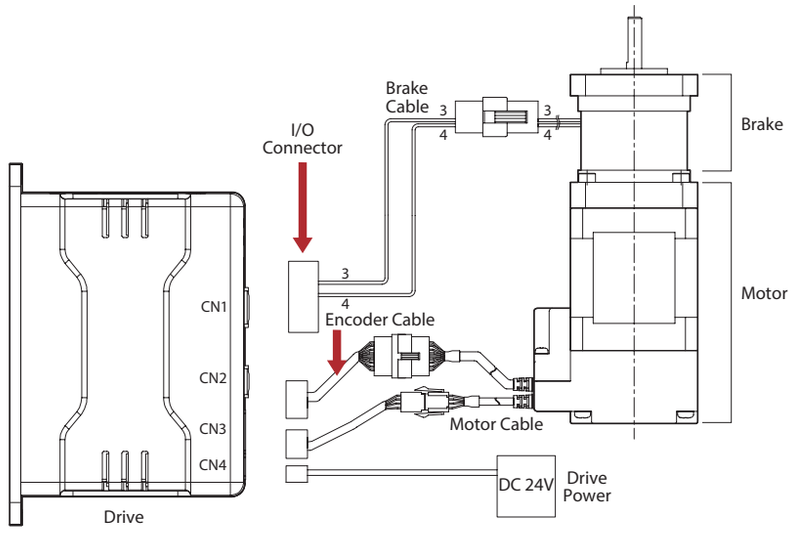
* In case of Ezi-SERVOII Plus-E 86mm, the voltage of power supply is DC40~ 70V.

● Electrical Brake and Power Connection

Ezi-SERVO Plus-R_ 86mm

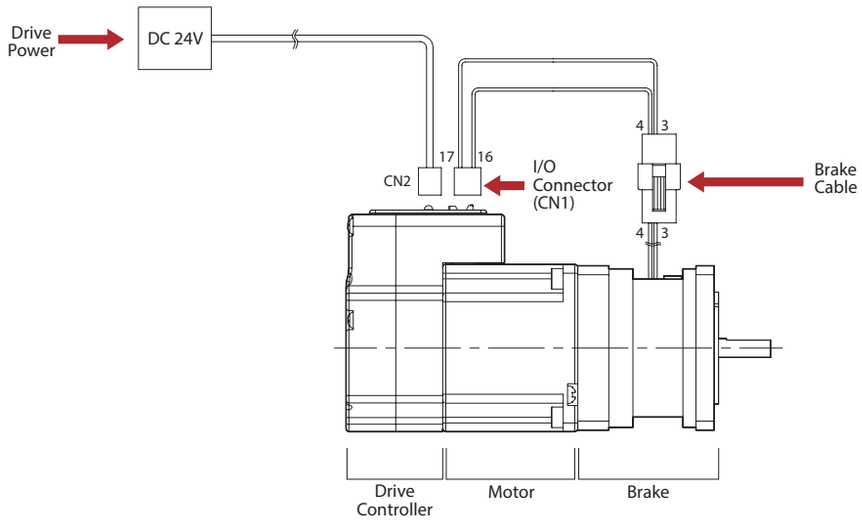


Ezi-SERVO Plus-R MINI

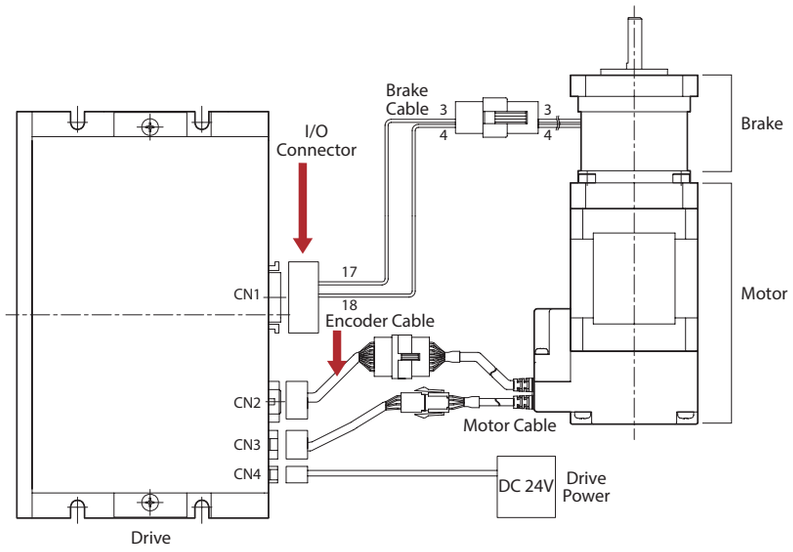


● Electrical Brake and Power Connection

Ezi-SERVO II BT

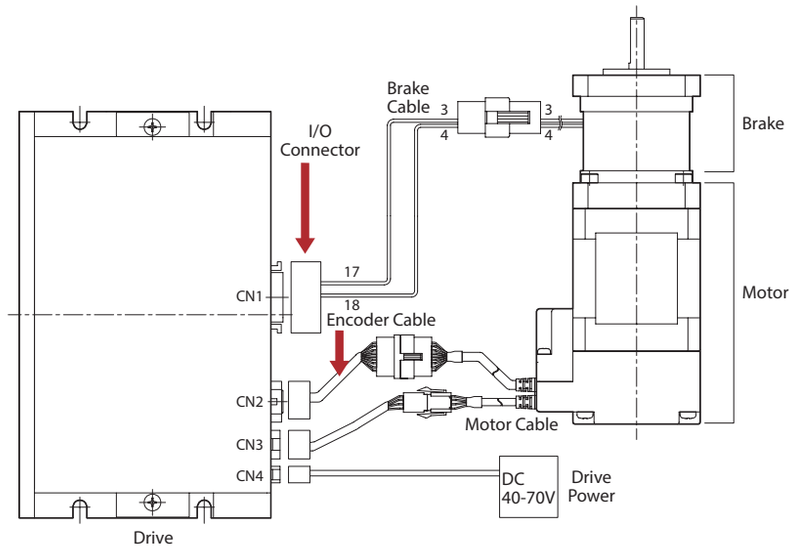


Ezi-SERVO II EtherCAT, Ezi-SERVO II CC-Link

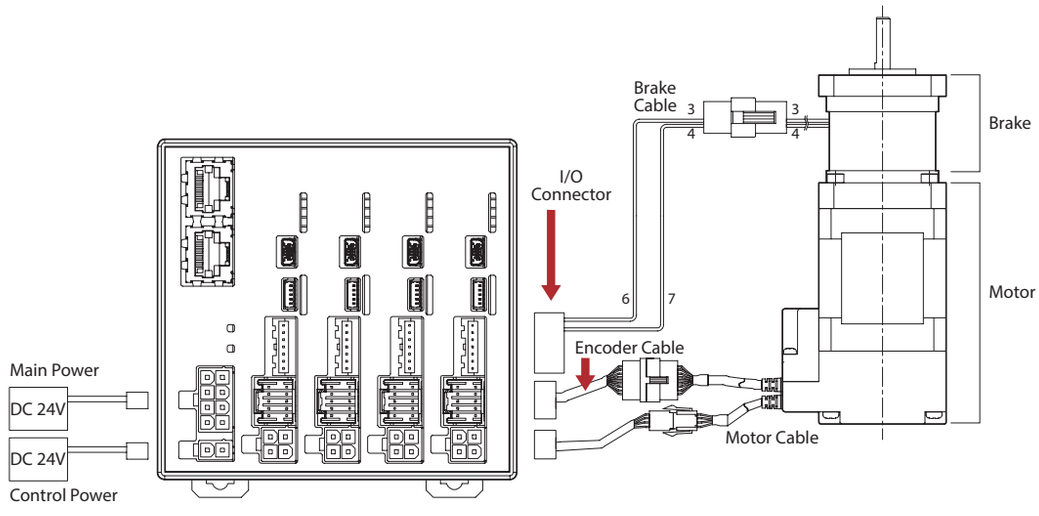


● Electrical Brake and Power Connection

Ezi-SERVO II EtherCAT_ 86mm, Ezi-SERVO II CC-Link_ 86mm

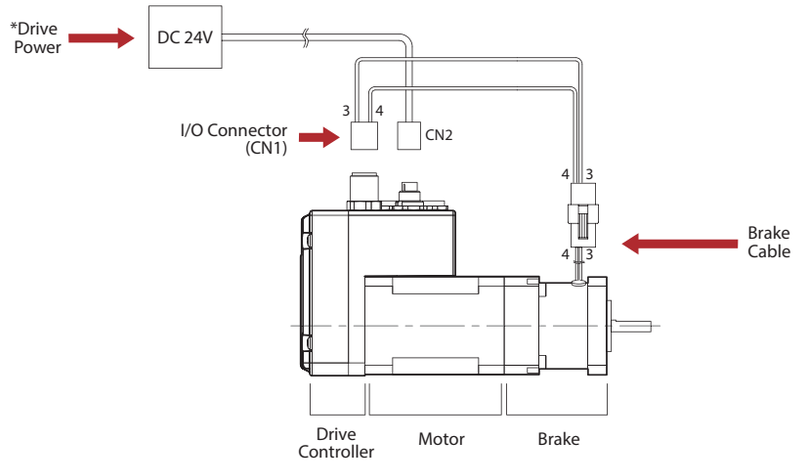


Ezi-SERVO II EtherCAT 4X, 3X



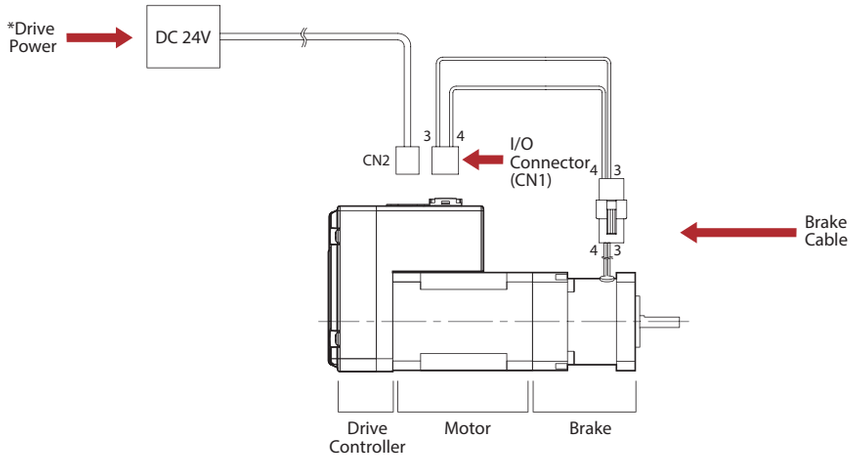
● Electrical Brake and Power Connection

Ezi-SERVO II EtherCAT ALL, Plus-E ALL_ M Type



* In case of 86mm, the voltage of power supply is DC40~ 70V.

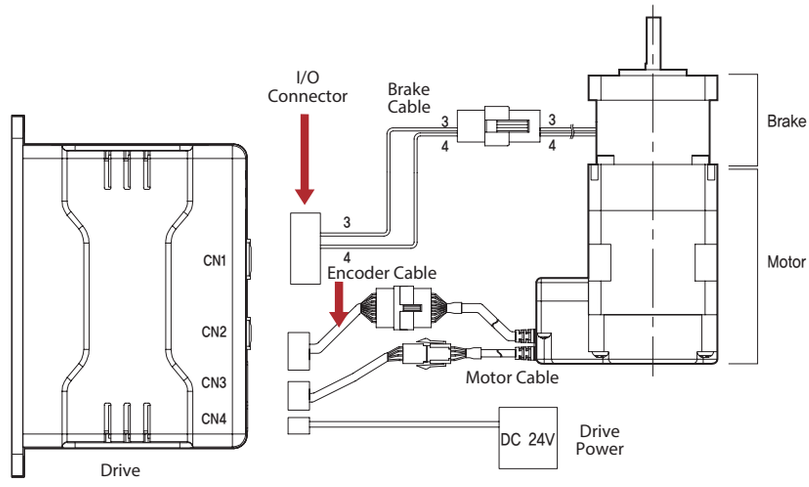
Ezi-SERVO II EtherCAT ALL, Plus-E ALL_ R Type



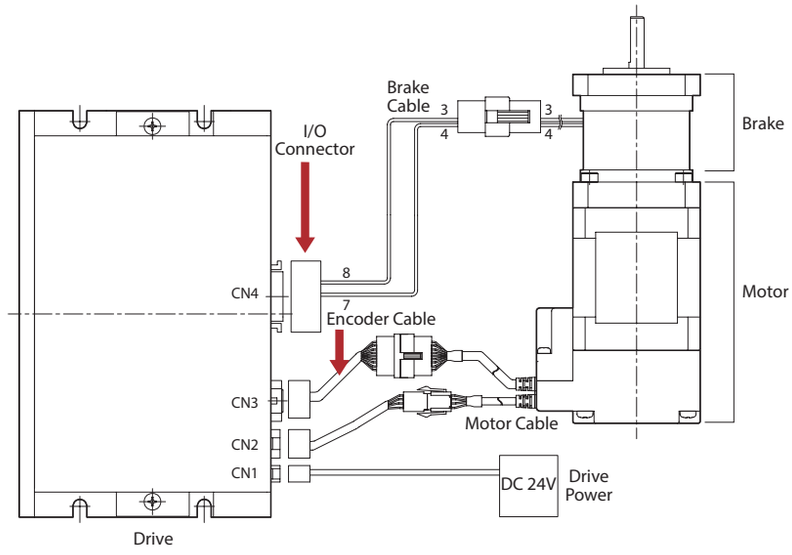
* In case of 86mm, the voltage of power supply is DC40~ 70V.

● Electrical Brake and Power Connection

Ezi-SERVO II EtherCAT MINI, Plus-E MINI

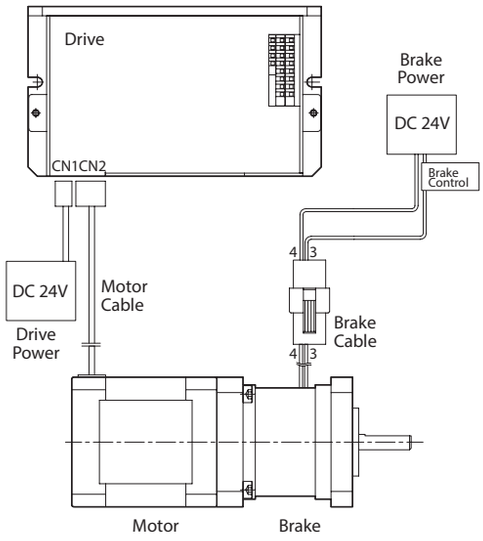


S-SERVOII ST, S-SERVOII 2X, 3X

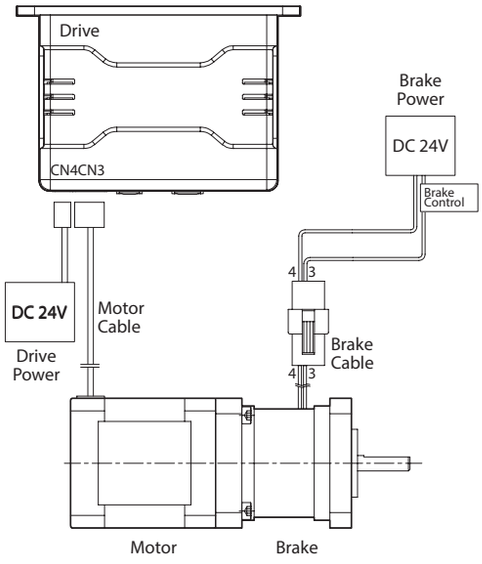


● Electrical Brake and Power Connection

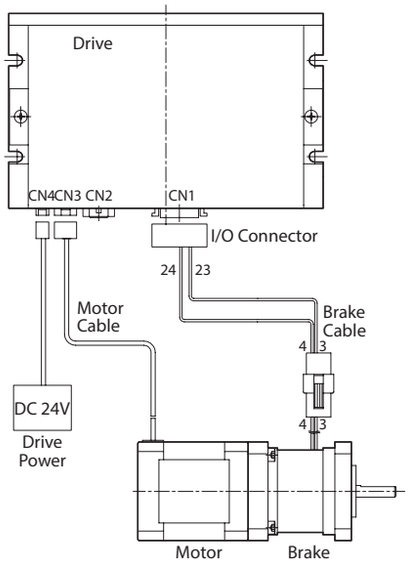
Ezi-STEP ST



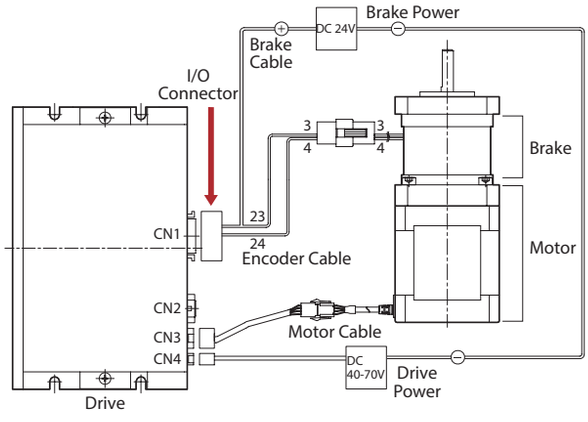
Ezi-STEP MINI



Ezi-STEP Plus-R

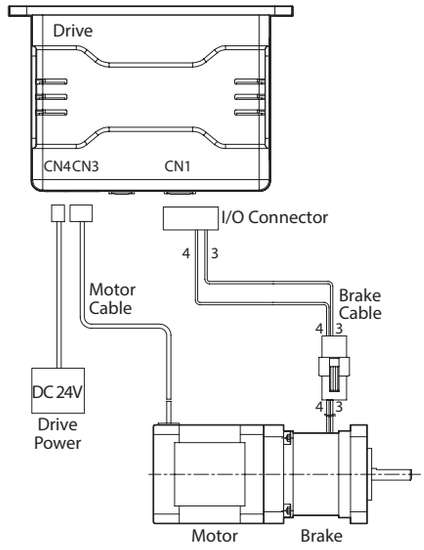


Ezi-STEP Plus-R_ 86mm

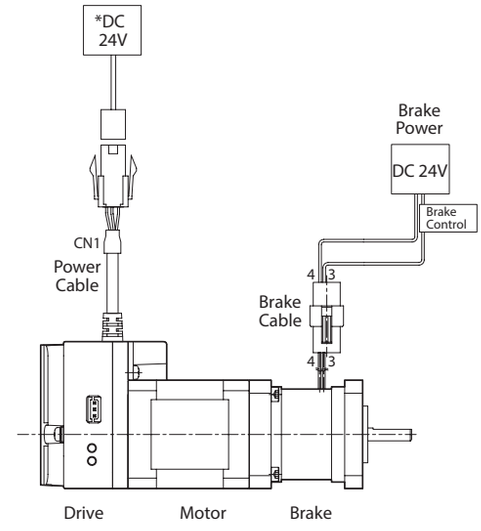


● Electrical Brake and Power Connection

Ezi-STEP Plus-R MINI

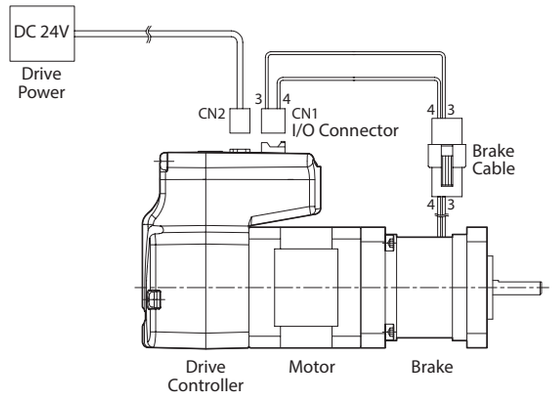


Ezi-STEP BT

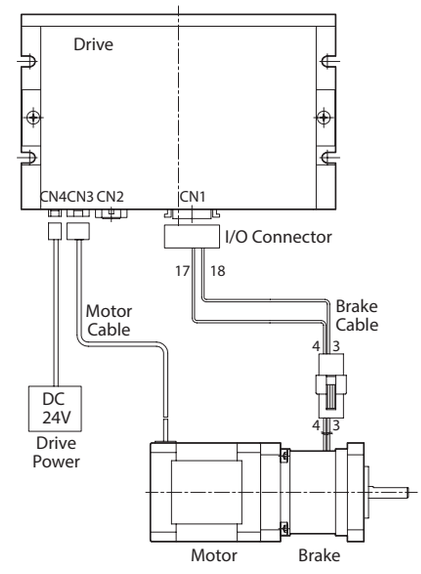


* In case of 86mm, the voltage of power supply is DC40~ 70V.

Ezi-SERVO ALL / Ezi-STEP ALL



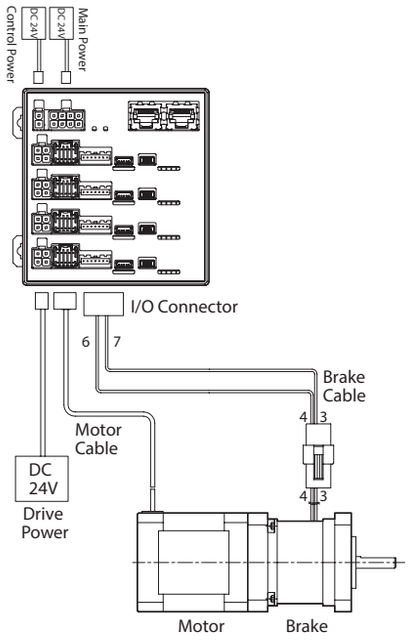
Ezi-STEPII EtherCAT / Ezi-STEPII EtherCAT_ 86mm



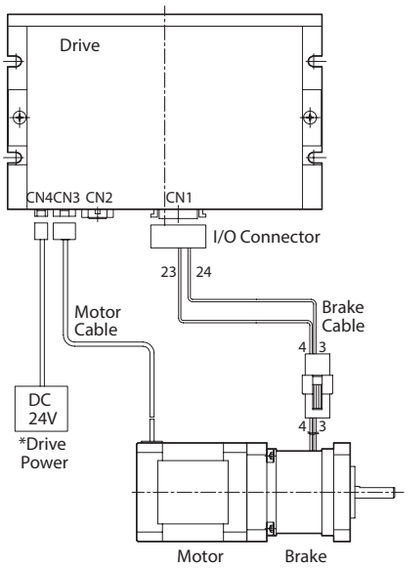
* In case of 86mm, the voltage of power supply is DC40~ 70V.

● Electrical Brake and Power Connection

Ezi-STEPII EtherCAT 4X

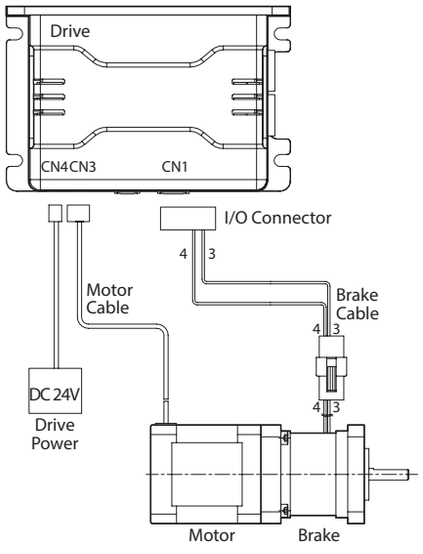


Ezi-STEPII Plus-E / Ezi-STEPII Plus-E_ 86mm

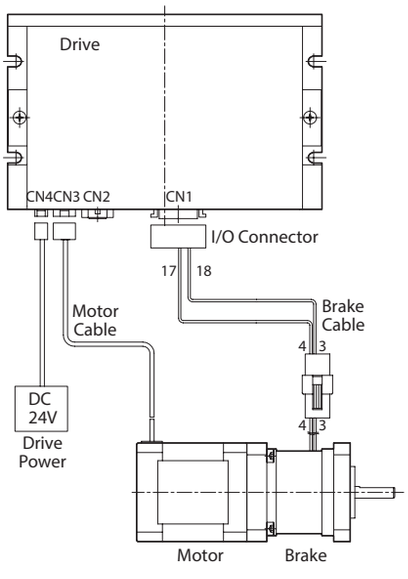


* In case of 86mm, the voltage of power supply is DC40~ 70V.

Ezi-STEPII EtherCAT MINI, Plus-E MINI



Ezi-STEPII CC-Link / Ezi-STEPII CC-Link_ 86mm



* In case of 86mm, the voltage of power supply is DC40~ 70V.



OPTION Gearbox

*Overall Table of **Gearbox***

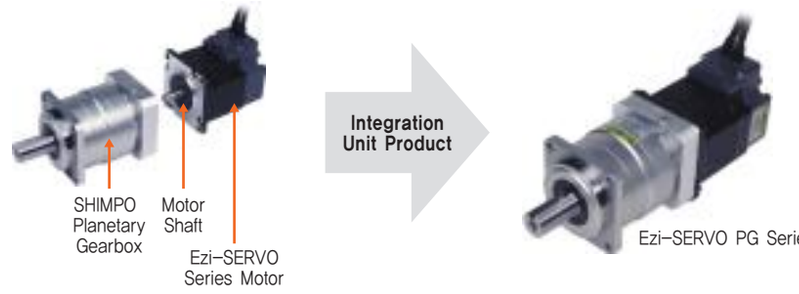
Name of Product	Gearbox frame size			
	42mm	60mm		86mm
	Motor frame size			
	42mm	56mm	60mm	86mm
Ezi-SERVO ST / Plus-R				
Ezi-SERVO MINI / Plus-R MINI				
Ezi-SERVO II EtherCAT				
Ezi-SERVO II EtherCAT MINI				
Ezi-SERVO II EtherCAT 4X				
Ezi-SERVO II EtherCAT ALL				
Ezi-SERVO II Plus-E				
Ezi-SERVO II Plus-E MINI				
Ezi-SERVO II Plus-E ALL				
Ezi-SERVO II CC-Link				
Ezi-SERVO II BT				
Ezi-SERVO ALL				
S-SERVO II ST / 2X / 3X				
S-SERVO II MINI				

Features

Characteristic

◆ Adopt SHIMPO's high accuracy planetary gearbox

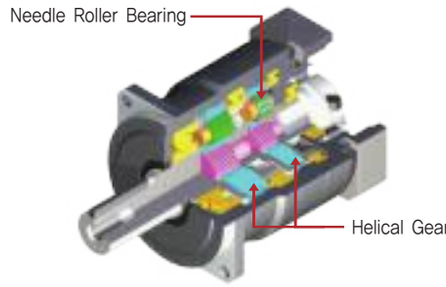
Ezi-SERVO PG series, FASTECH's new Planetary Geared Step Motor unit product maximizes User's operational convenience with integration between Closed Loop System, Ezi-SERVO and Helical Gear structure of SHIMPO's high accuracy planetary gearbox has 3 min less Backlash.



Advantage

◆ Vibration, Low Noise

Ezi-SERVO PG series, a High Precision of Helical Gear structured SHIMPO planetary gearbox developed for low vibration and extremely low noise of operation and both of single and double stage of gearboxes generates backlash less than 3 min so it would be the best solution for high accuracy of positioning.



◆ High Rigidity, High Torque

SHIMPO Planetary Gearbox, combined with Ezi-SERVO PG series, maximized allowable torque with using Needle Roller bearing and machined body to be internal gear so it enables compact design of gearbox and maximized durability.

◆ Long Life & Maintenance Free

Ezi-SERVO PG Series is Maintenance-free product. No risk of grease leakage because of high viscosity of Anti-separation grease and it is maintenance free products because of lack of necessity for grease replacement.

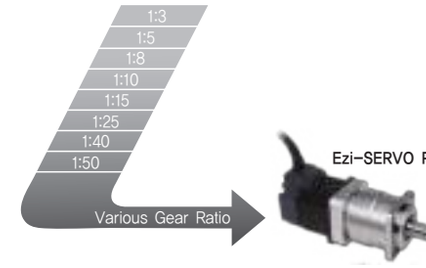


◆ Resonance Minimization

Ezi-SERVO PG series by applying the planetary gearbox, gear ratio corres ponding to the overall operation speed of the stepper motor so low speed that occurs mainly in the resonance of a stepper motor can drive the motor to avoid the band itself and the system is very effective in reducing the vibration.

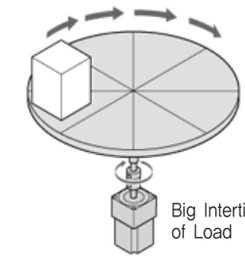
◆ Various Gear Ratio

Ezi-SERVO series, Unit product between a variety of gear ratio of gearbox with closed loop stepper motor, enables to generate various high torque as small capacity of stepper and also can respond under any load with flexibility



◆ Optimized Solution for Big Inertia of Rotation

Allowable load moment of inertia is proportional to the square of the gear ratio, Gearbox united Ezi-SERVO PG series enables fast positioning and smooth operation even under big intertia moment of load.



Ezi-SERVO PG

● Allowable Overhung Load and Allowable Thrust Load of PG series

Motor Size	Gear Ratio	Allowable Overhung Load [N] Based on Center of Shaft	Allowable Thrust Load [N]
42mm	1:03	240	270
	1:05	290	330
	1:08	340	410
	1:10	360	450
	1:15	410	540
	1:25	490	640
	1:40	570	640
	1:50	620	640
56, 60mm	1:03	430	310
	1:05	510	390
	1:08	600	480
	1:10	640	530
	1:15	740	630
	1:25	870	790
	1:40	1000	970
	1:50	1100	1100
86mm	1:03	810	930
	1:05	960	1200
	1:08	1100	1400
	1:10	1200	1600
	1:15	1400	1900
	1:25	1600	2200
	1:40	1900	2200
	1:50	2100	2200

1. Drive Specification and Size

Please refer to the individual catalogue(Ezi-SERVO ST, Ezi-SERVO Plus R, Ezi-SERVOII BT and Ezi-SERVO ALL) to check drive specification and size of Ezi-SERVO ST / Plus-R / BT / ALL of Ezi-SERVO PG Series

2. System Configuration and Setting/Operation

Please refer to the individual catalogue(Ezi-SERVO ST, Ezi-SERVO Plus R, Ezi-SERVOII BT and Ezi-SERVO ALL) to check Series' system configuration, Name and Function of Ezi-SERVO ST / Plus-R / BT / ALL of Ezi-SERVO PG Series.

3. External Wiring Diagram

Please refer to the individual catalogue(Ezi-SERVO ST, Ezi-SERVO Plus R, Ezi-SERVOII BT and Ezi-SERVO ALL) to check Series' external wiring diagram of Ezi-SERVO ST / Plus-R / BT / ALL of Ezi-SERVO PG Series.

● Part Numbering

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-□-□-□-PN□	EzM-□-□-PN□	Not Changed

※ It can be added PN□ at the end of model name of each series.(The name of drive model is not changed)

ex) Numbering method when 1:10 reducer attached on 42mm of Ezi-SERVO ST series.

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ST-42S-A-PN10	EzM-42S-A-PN10	EzS-PD-42S-A

How to Read Specifications

Model	Unit	42S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
① Maximum Holding Torque	N·m	0.57	0.95	1.52	1.90	2.76	4.60	7.36	9
② Rotor Inertia Moment	kg·m^2	35×10^{-7}							
③ Backlash	min	3				5			
④ Angle Transmission Error	min	5				7			
⑤ Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
⑥ Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
⑦ Permissible Torque	N·m	6	9	9	6	6	9	9	9
⑧ Maximum Torque	N·m	12	18	18	12	12	18	18	18
⑨ Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
⑩ Unit Weight	kg	0.89				0.99			

Description of Specification Items

① Maximum Holding Torque — This is the maximum torque that can be exerted through the gearbox when the motor is stopped. (Based on 100% of stop current) Use below the maximum torque of the gearbox.

② Rotor Inertia Moment — It is the value of the moment of inertia of the motor.

③ Backlash — It is the gap between the gear and the gear, and it is the angle at which the gearbox shaft moves without external force when stopped.

④ Angle Transmission Error — This is the transmission characteristic of the gearbox, which means the difference between the theoretical rotation angle and the actual rotation angle of the output shaft.

⑤ Reduction Gear Ratio — It is the value obtained by dividing the number of output rotation by the number of input rotation.

⑥ Resolution(10,000[ppr] Standard) — This is the angle at which the gearbox output shaft moves when the motor is driven by 1 pulse.

⑦ Permissible Torque — This value is a torque value at which the life of the motor becomes 20,000 hours when the input rotation speed is 3,000rpm. It refers to the permissible continuous torque.

⑧ Maximum Torque — This is the maximum torque allowed during acceleration/deceleration.

⑨ Permitted Speed Range — It is the range of rotation speed based on the output shaft of the gearbox.

⑩ Unit Weight — It is the sum of the weight of the gearbox and the motor.

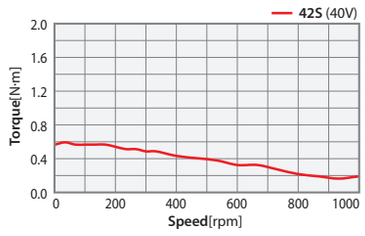
● Specifications of Motor with Gearbox [42S]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link			

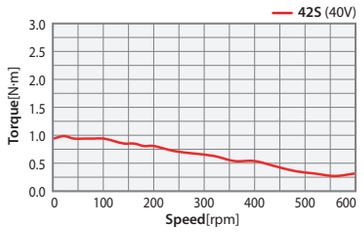
Model	Unit	42S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.57	0.95	1.52	1.90	2.76	4.60	7.36	9
Rotor Inertia Moment	kg·m²	35×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.89				0.99			

● Torque Graph with Gearbox

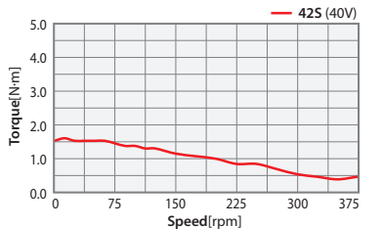
42S-PN3 Series



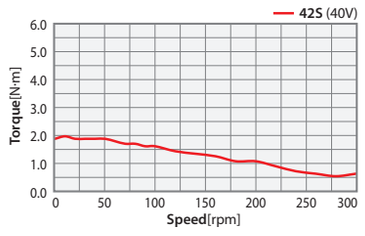
42S-PN5 Series



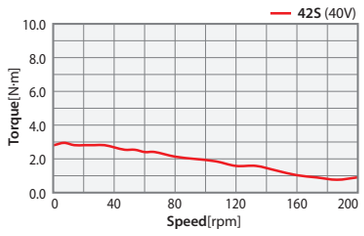
42S-PN8 Series



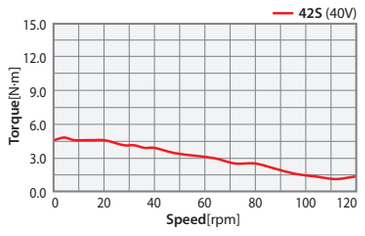
42S-PN10 Series



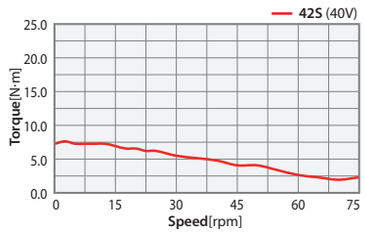
42S-PN15 Series



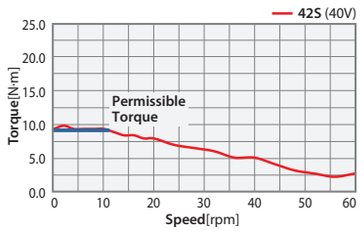
42S-PN25 Series



42S-PN40 Series



42S-PN50 Series



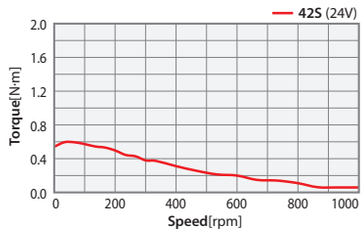
Specifications of Motor with Gearbox [42S]

Applicable Model			
Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO Plus-R MINI	Ezi-SERVO ALL
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

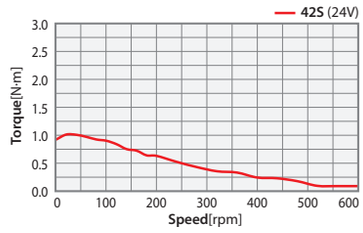
Model	Unit	42S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.55	0.92	1.47	1.84	2.67	4.46	7.13	9
Rotor Inertia Moment	$kg \cdot m^2$	35×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.89				0.99			

Torque Graph with Gearbox

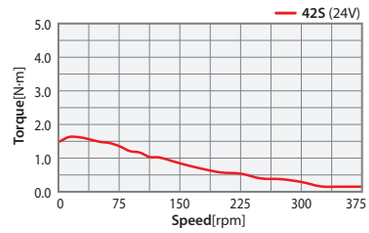
42S-PN3 Series



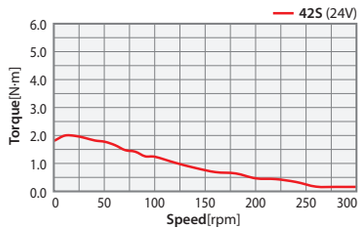
42S-PN5 Series



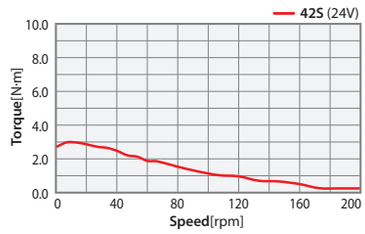
42S-PN8 Series



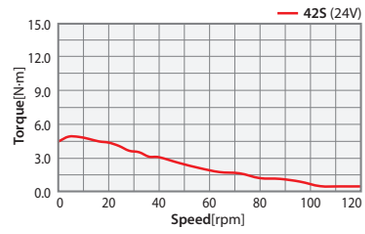
42S-PN10 Series



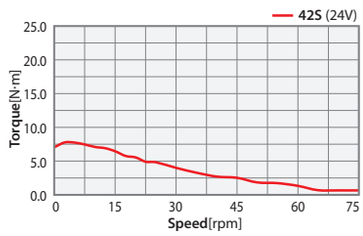
42S-PN15 Series



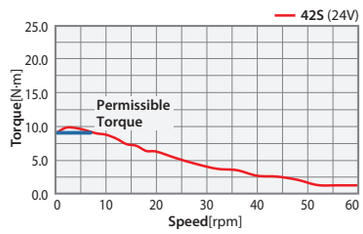
42S-PN25 Series



42S-PN40 Series



42S-PN50 Series



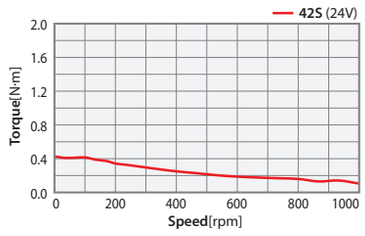
● Specifications of Motor with Gearbox [42S]

Applicable Model			
S-SERVO II ST	S-SERVO II MINI	S-SERVO II 2X	S-SERVO II 3X

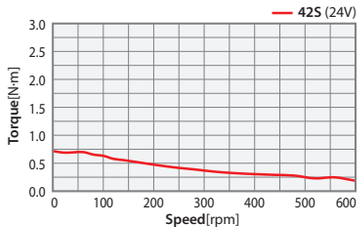
Model	Unit	42S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.43	0.72	1.15	1.44	2.09	3.49	5.59	6.99
Rotor Inertia Moment	kg·m^2	35×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.89				0.99			

● Torque Graph with Gearbox

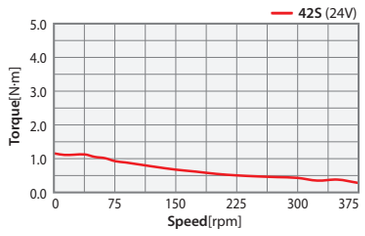
42S-PN3 Series



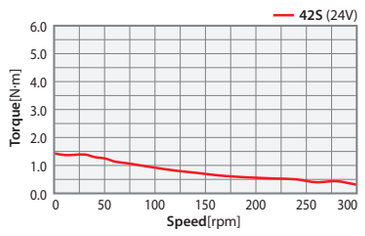
42S-PN5 Series



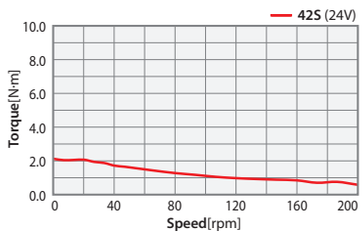
42S-PN8 Series



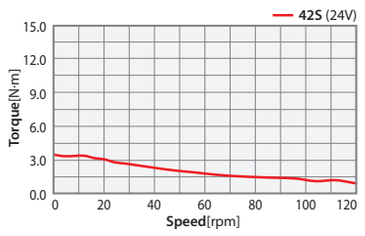
42S-PN10 Series



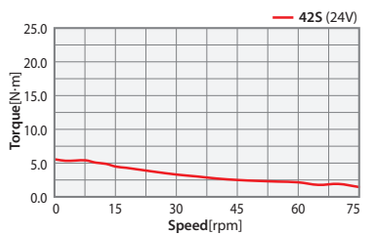
42S-PN15 Series



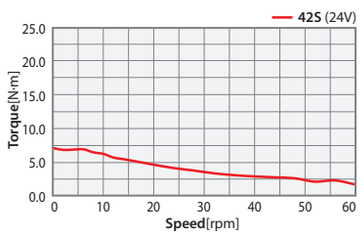
42S-PN25 Series



42S-PN40 Series



42S-PN50 Series



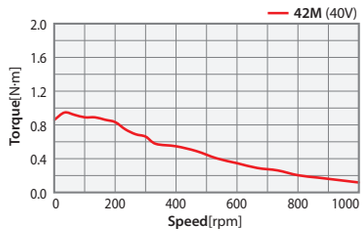
● Specifications of Motor with Gearbox [42M]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link			

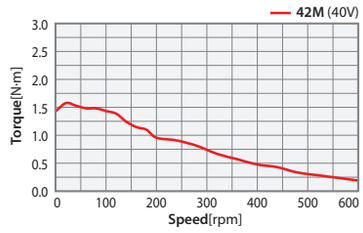
Model	Unit	42M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.85	1.42	2.28	2.85	4.14	6.9	9	9
Rotor Inertia Moment	kg·m^2	54×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.96				1.06			

● Torque Graph with Gearbox

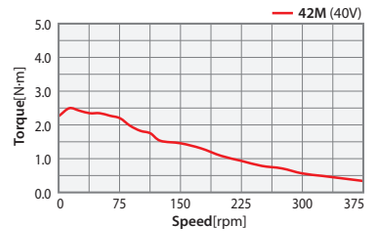
42M-PN3 Series



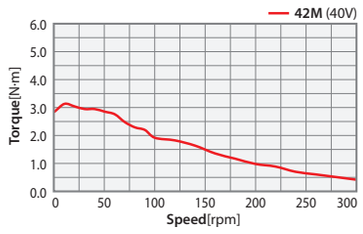
42M-PN5 Series



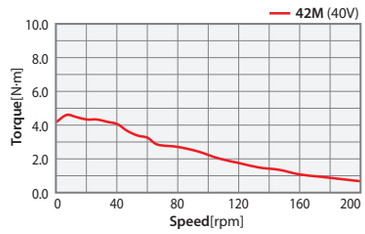
42M-PN8 Series



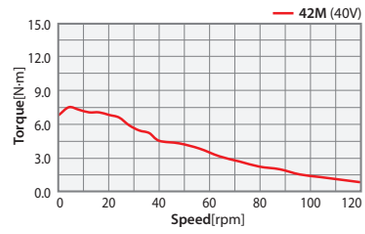
42M-PN10 Series



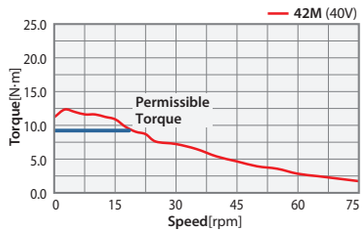
42M-PN15 Series



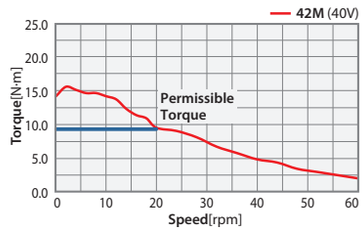
42M-PN25 Series



42M-PN40 Series



42M-PN50 Series



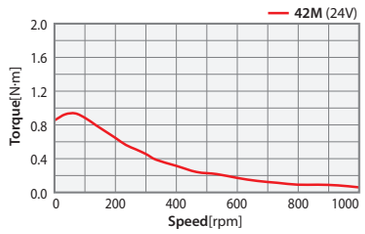
● Specifications of Motor with Gearbox [42M]

Applicable Model			
Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO Plus-R MINI	Ezi-SERVO ALL
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI
Ezi-SERVO II Plus-E ALL			

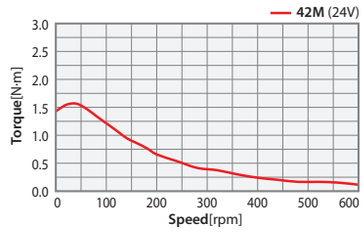
Model	Unit	42M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.85	1.42	2.28	2.85	4.14	6.9	9	9
Rotor Inertia Moment	kg·m^2	54×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.96				1.06			

● Torque Graph with Gearbox

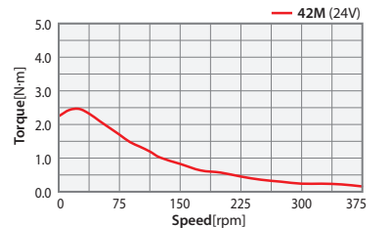
42M-PN3 Series



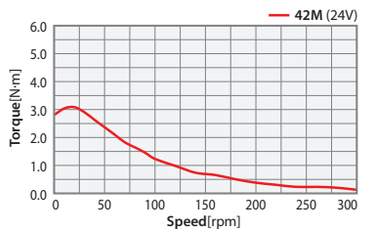
42M-PN5 Series



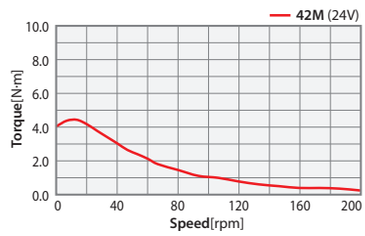
42M-PN8 Series



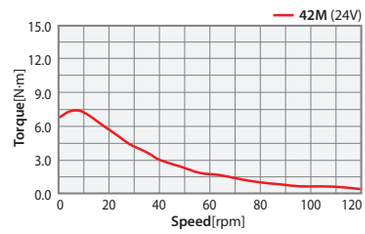
42M-PN10 Series



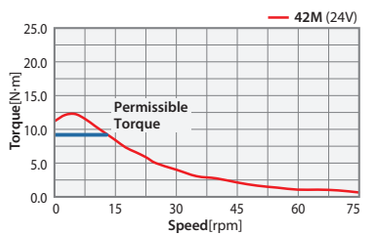
42M-PN15 Series



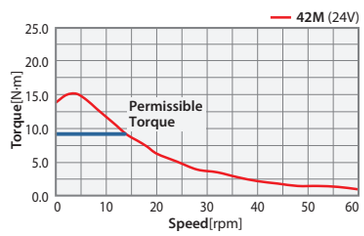
42M-PN25 Series



42M-PN40 Series



42M-PN50 Series



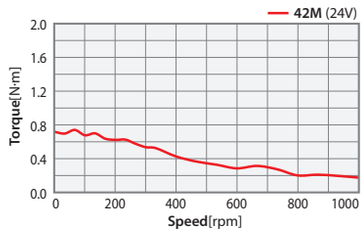
● Specifications of Motor with Gearbox [42M]

Applicable Model			
S-SERVO II ST	S-SERVO II MINI	S-SERVO II 2X	S-SERVO II 3X

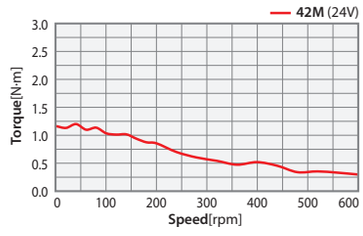
Model	Unit	42M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.7	1.17	1.88	2.35	3.42	5.7	9	9
Rotor Inertia Moment	$kg \cdot m^2$	54×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.1172	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.96				1.06			

● Torque Graph with Gearbox

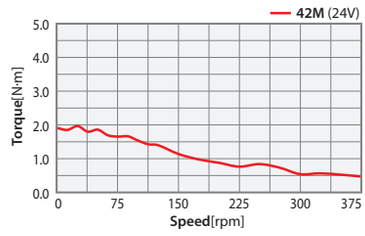
42M-PN3 Series



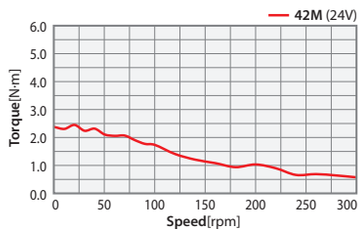
42M-PN5 Series



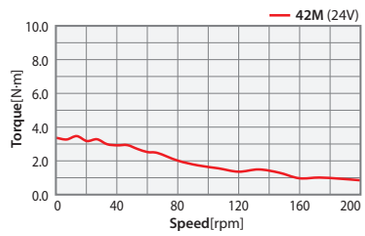
42M-PN8 Series



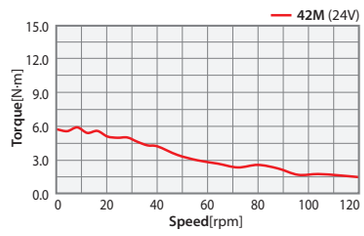
42M-PN10 Series



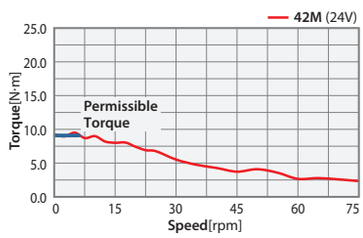
42M-PN15 Series



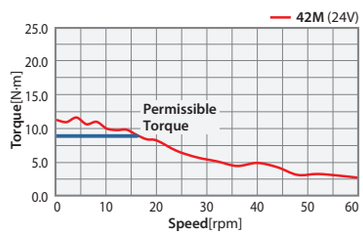
42M-PN25 Series



42M-PN40 Series



42M-PN50 Series



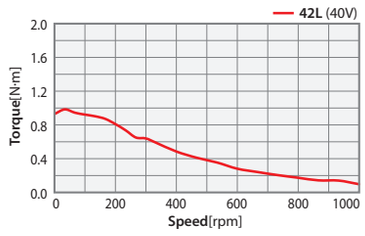
● Specifications of Motor with Gearbox [42L]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link			

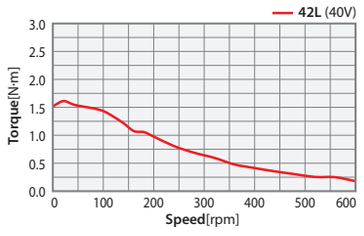
Model	Unit	42L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.92	1.54	2.47	3.09	4.49	7.49	9	9
Rotor Inertia Moment	kg·m^2	77×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.02				1.12			

● Torque Graph with Gearbox

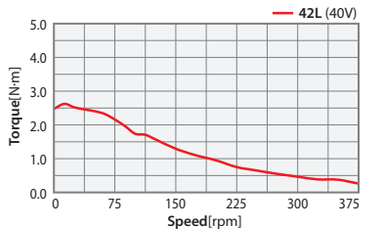
42L-PN3 Series



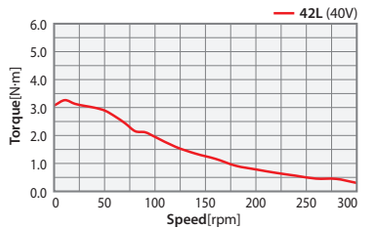
42L-PN5 Series



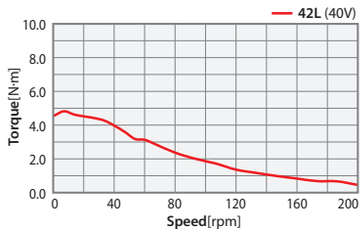
42L-PN8 Series



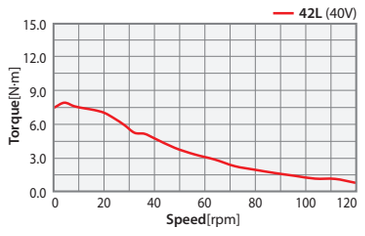
42L-PN10 Series



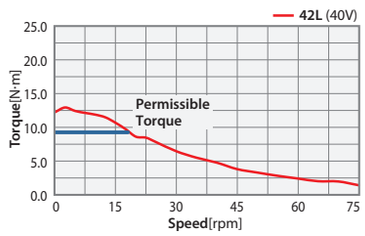
42L-PN15 Series



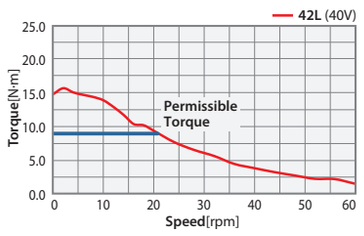
42L-PN25 Series



42L-PN40 Series



42L-PN50 Series



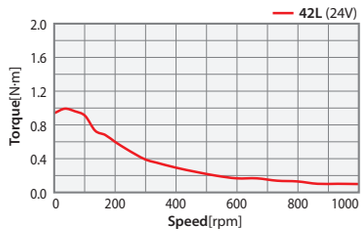
● Specifications of Motor with Gearbox [42L]

Applicable Model			
Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO Plus-R MINI	Ezi-SERVO ALL
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI
Ezi-SERVO II Plus-E ALL			

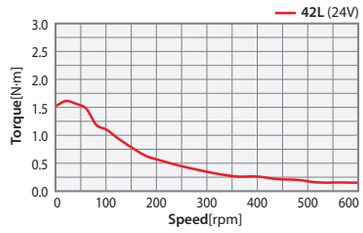
Model	Unit	42L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.93	1.55	2.48	3.1	4.51	7.52	9	9
Rotor Inertia Moment	$kg \cdot m^2$	77×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.02				1.12			

● Torque Graph with Gearbox

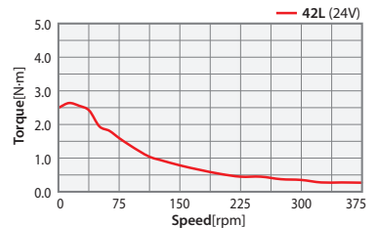
42L-PN3 Series



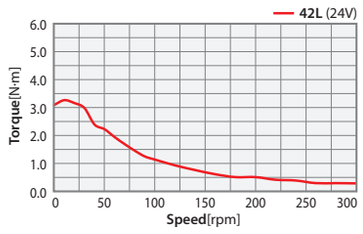
42L-PN5 Series



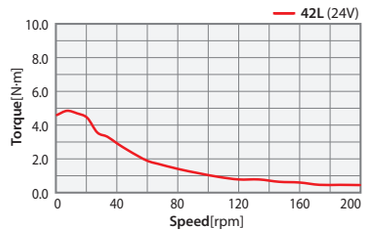
42L-PN8 Series



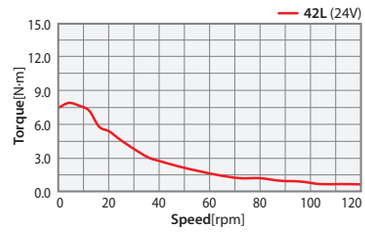
42L-PN10 Series



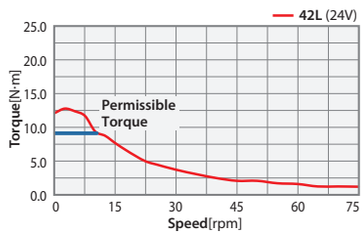
42L-PN15 Series



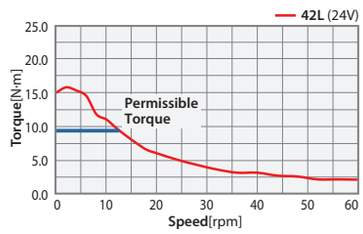
42L-PN25 Series



42L-PN40 Series



42L-PN50 Series



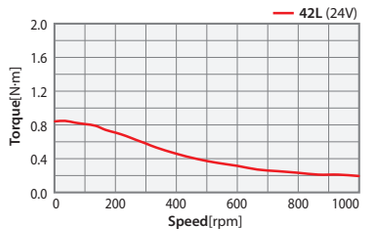
● Specifications of Motor with Gearbox [42L]

Applicable Model			
S-SERVO II ST	S-SERVO II MINI	S-SERVO II 2X	S-SERVO II 3X

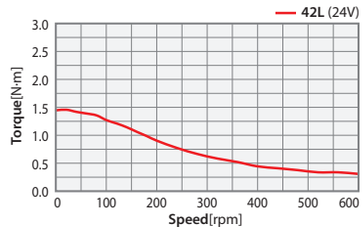
Model	Unit	42L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.86	1.43	2.29	2.86	4.16	6.94	9	9
Rotor Inertia Moment	kg·m^2	68×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.02				1.12			

● Torque Graph with Gearbox

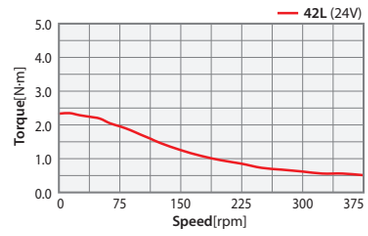
42L-PN3 Series



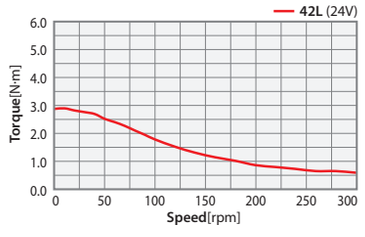
42L-PN5 Series



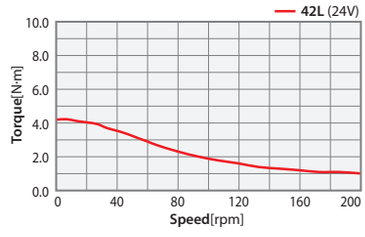
42L-PN8 Series



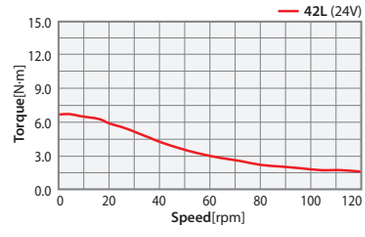
42L-PN10 Series



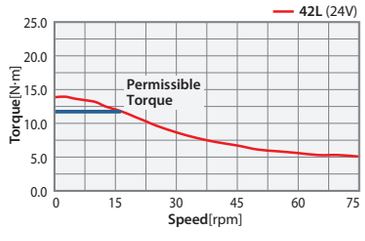
42L-PN15 Series



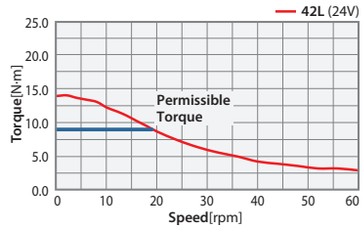
42L-PN25 Series



42L-PN40 Series



42L-PN50 Series



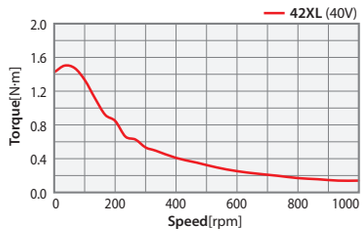
● Specifications of Motor with Gearbox [42XL]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link			

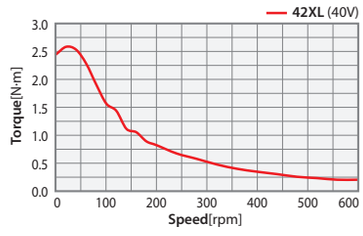
Model	Unit	42XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.45	2.42	3.87	4.84	6	9	9	9
Rotor Inertia Moment	$kg \cdot m^2$	114×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.15				1.25			

● Torque Graph with Gearbox

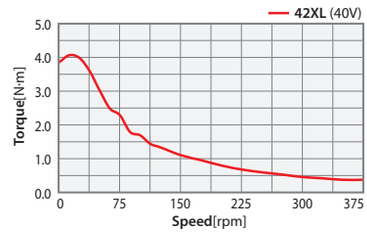
42XL-PN3 Series



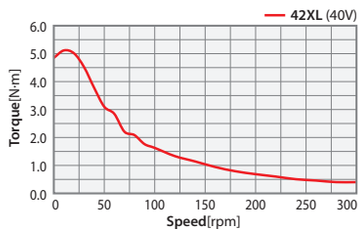
42XL-PN5 Series



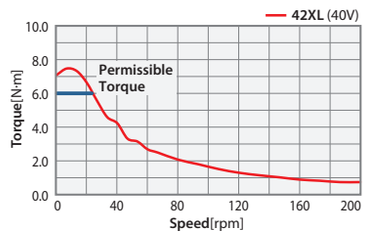
42XL-PN8 Series



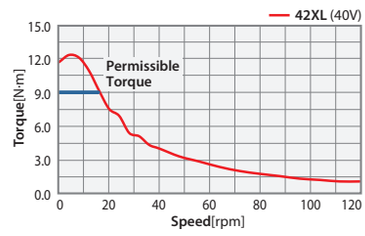
42XL-PN10 Series



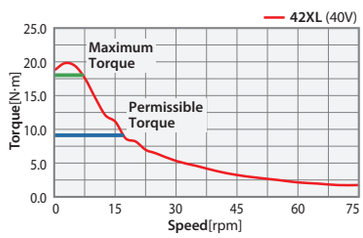
42XL-PN15 Series



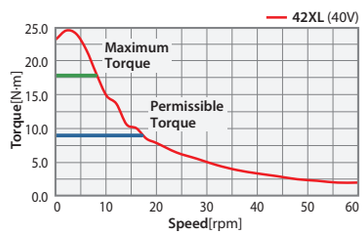
42XL-PN25 Series



42XL-PN40 Series



42XL-PN50 Series



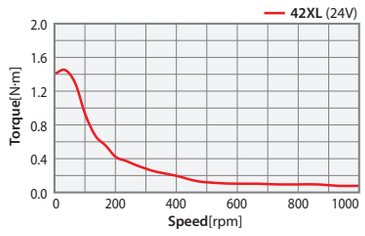
● Specifications of Motor with Gearbox [42XL]

Applicable Model			
Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO Plus-R MINI	Ezi-SERVO ALL
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI
Ezi-SERVO II Plus-E ALL			

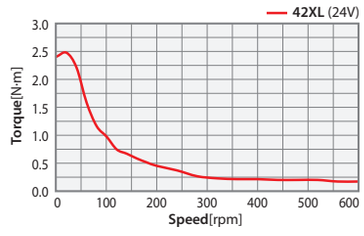
Model	Unit	42XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.42	2.38	3.8	4.76	6	9	9	9
Rotor Inertia Moment	kg·m^2	114×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.15				1.25			

● Torque Graph with Gearbox

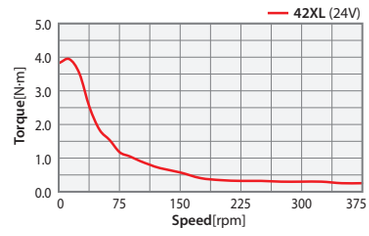
42XL-PN3 Series



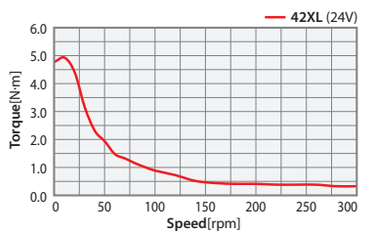
42XL-PN5 Series



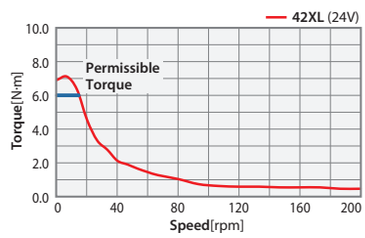
42XL-PN8 Series



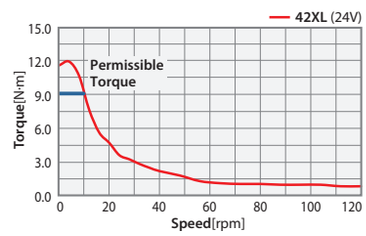
42XL-PN10 Series



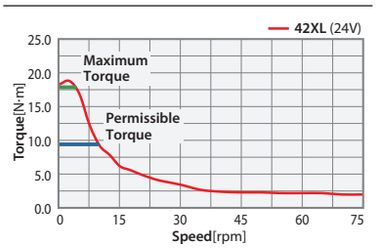
42XL-PN15 Series



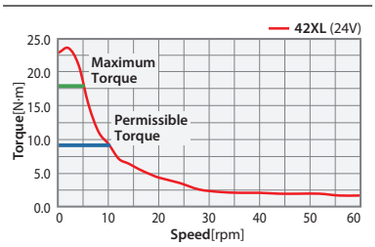
42XL-PN25 Series



42XL-PN40 Series



42XL-PN50 Series



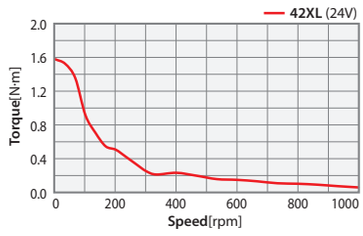
● Specifications of Motor with Gearbox [42XL]

Applicable Model			
S-SERVO II ST	S-SERVO II 2X	S-SERVO II 3X	S-SERVO II MINI

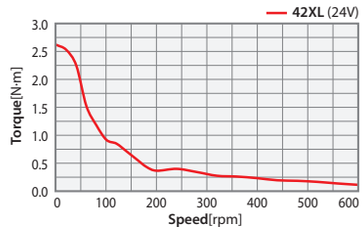
Model	Unit	42XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.55	2.59	4.15	5.18	6	9	9	9
Rotor Inertia Moment	$kg \cdot m^2$	114×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.15				1.25			

● Torque Graph with Gearbox

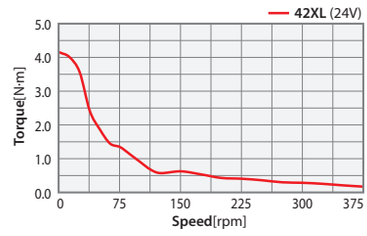
42XL-PN3 Series



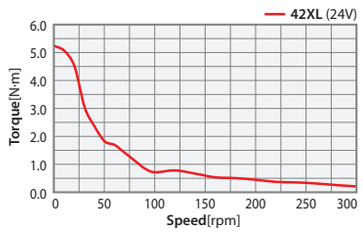
42XL-PN5 Series



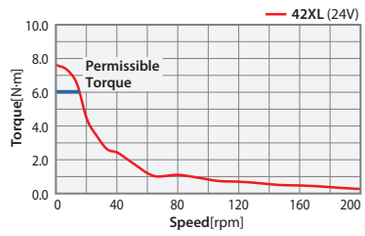
42XL-PN8 Series



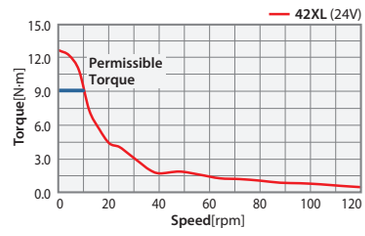
42XL-PN10 Series



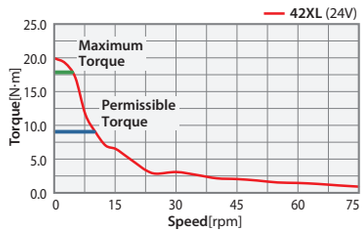
42XL-PN15 Series



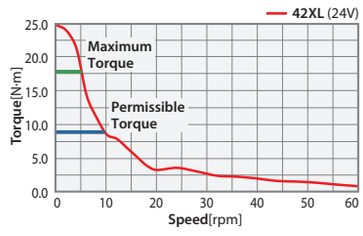
42XL-PN25 Series



42XL-PN40 Series



42XL-PN50 Series



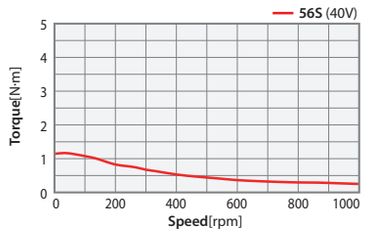
● Specifications of Motor with Gearbox [56S]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link			

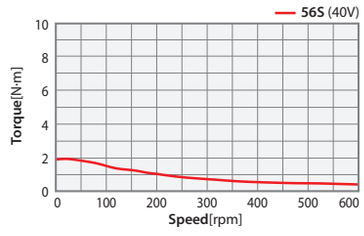
Model	Unit	56S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.1	1.9	3.0	3.8	5.5	9.3	14.9	18.6
Rotor Inertia Moment	$kg \cdot m^2$	180×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.94				2.14			

● Torque Graph with Gearbox

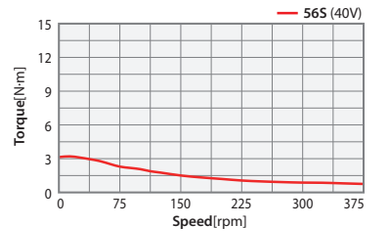
56S-PN3 Series



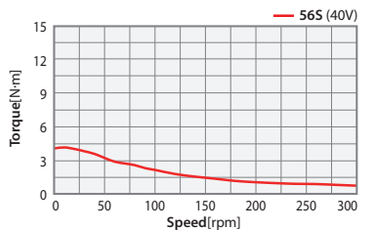
56S-PN5 Series



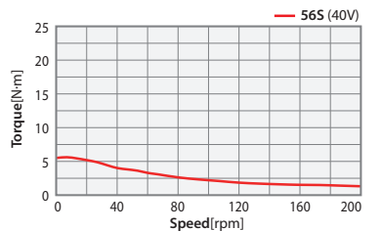
56S-PN8 Series



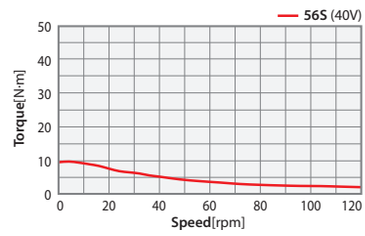
56S-PN10 Series



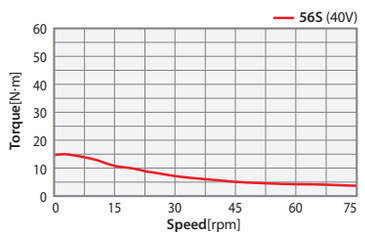
56S-PN15 Series



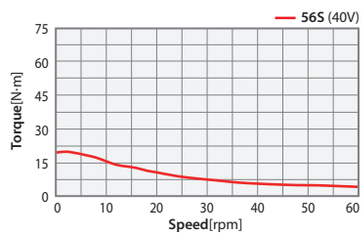
56S-PN25 Series



56S-PN40 Series



56S-PN50 Series



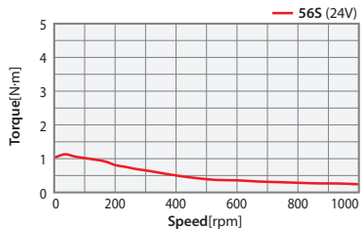
● Specifications of Motor with Gearbox [56S]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO ALL	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	

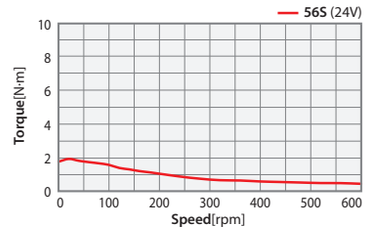
Model	Unit	56S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1	1.7	2.8	3.5	5.1	8.6	13.8	17.2
Rotor Inertia Moment	$kg \cdot m^2$	180×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.9				2.1			

● Torque Graph with Gearbox

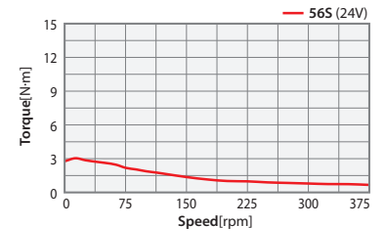
56S-PN3 Series



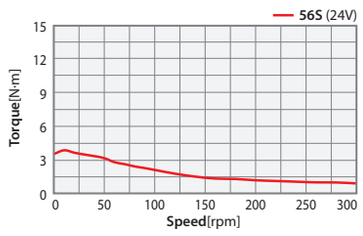
56S-PN5 Series



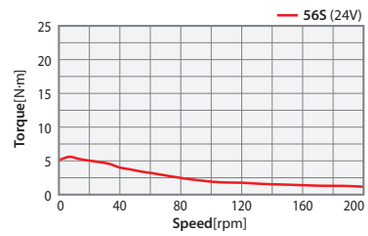
56S-PN8 Series



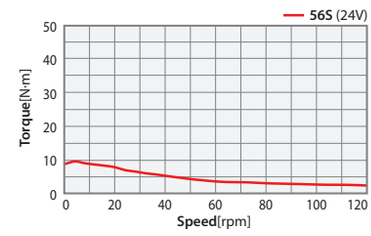
56S-PN10 Series



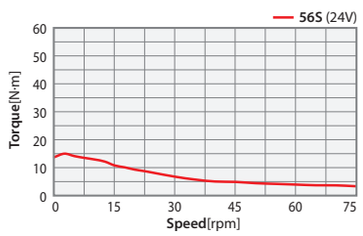
56S-PN15 Series



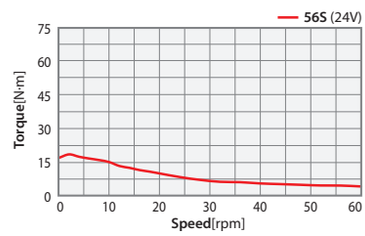
56S-PN25 Series



56S-PN40 Series



56S-PN50 Series



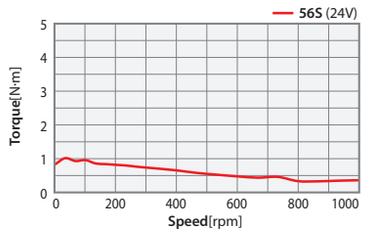
● Specifications of Motor with Gearbox [56S]

Applicable Model			
S-SERVO II ST	S-SERVO II 2X	S-SERVO II 3X	

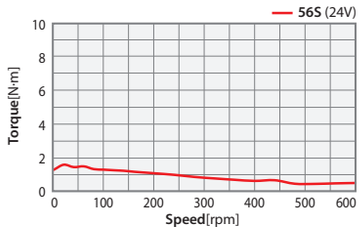
Model	Unit	56S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.8	1.3	2.1	2.7	3.9	6.6	10.6	13.2
Rotor Inertia Moment	kg·m^2	120×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.88				2.08			

● Torque Graph with Gearbox

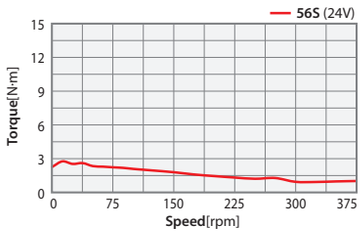
56S-PN3 Series



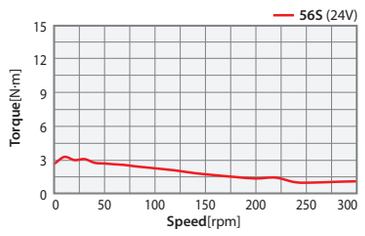
56S-PN5 Series



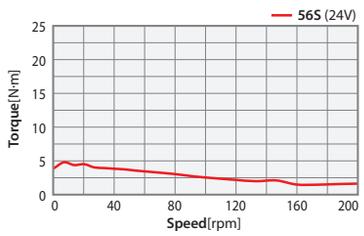
56S-PN8 Series



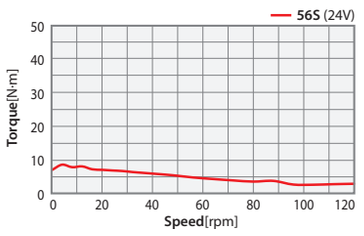
56S-PN10 Series



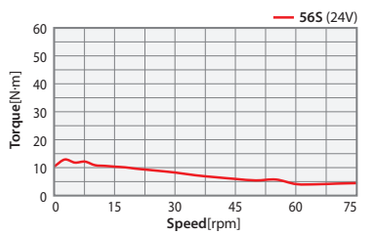
56S-PN15 Series



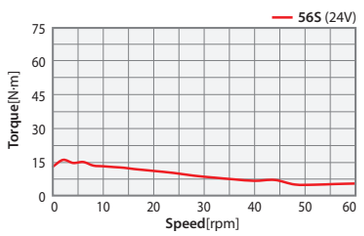
56S-PN25 Series



56S-PN40 Series



56S-PN50 Series



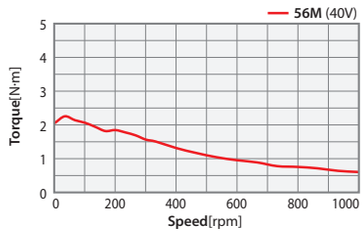
● Specifications of Motor with Gearbox [56M]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link			

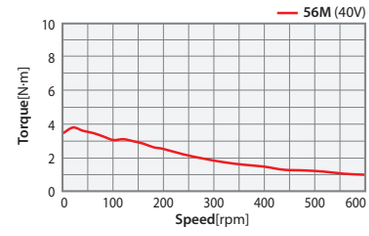
Model	Unit	56M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.0	3.4	5.4	6.8	9.9	16.6	27	27
Rotor Inertia Moment	kg·m^2	280×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.15				2.35			

● Torque Graph with Gearbox

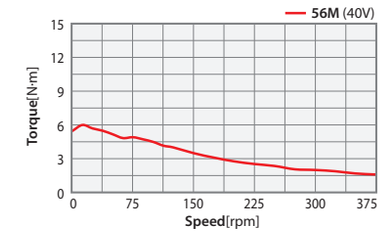
56M-PN3 Series



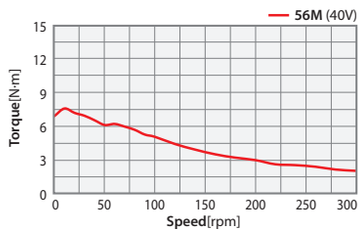
56M-PN5 Series



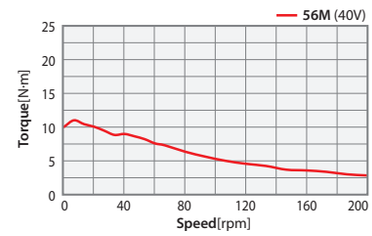
56M-PN8 Series



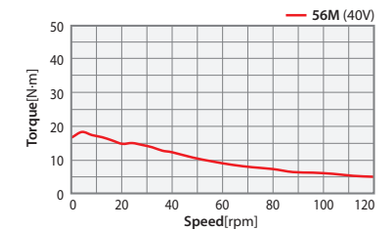
56M-PN10 Series



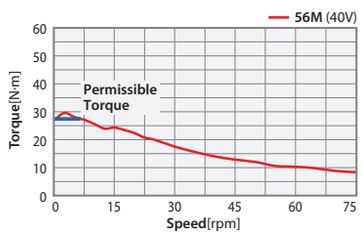
56M-PN15 Series



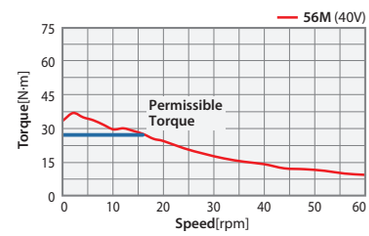
56M-PN25 Series



56M-PN40 Series



56M-PN50 Series



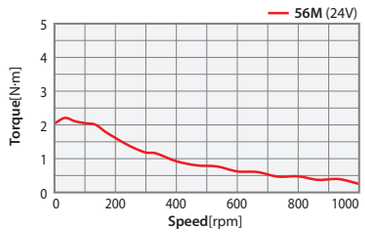
● Specifications of Motor with Gearbox [56M]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO ALL	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	

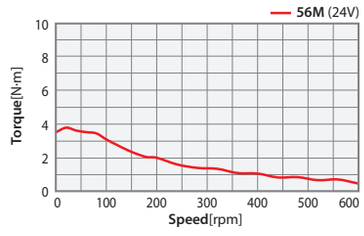
Model	Unit	56M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2	3.4	5.5	6.9	10	16.7	27	27
Rotor Inertia Moment	kg·m^2	280×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:03	1:05	1:08	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.1				2.3			

● Torque Graph with Gearbox

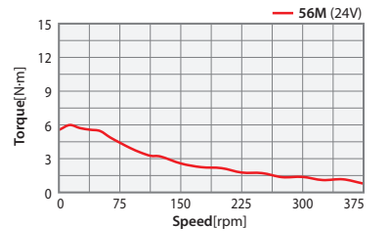
56M-PN3 Series



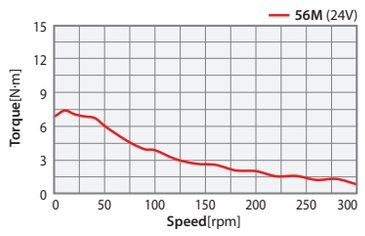
56M-PN5 Series



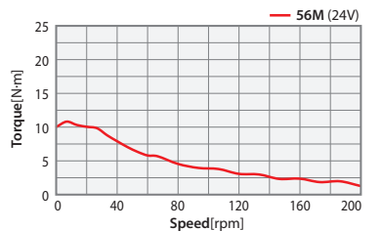
56M-PN8 Series



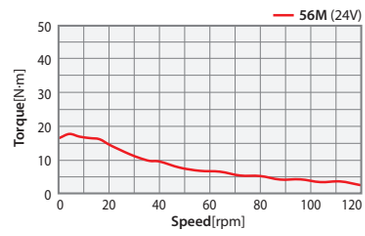
56M-PN10 Series



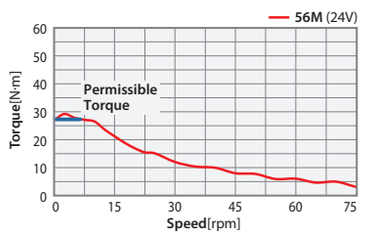
56M-PN15 Series



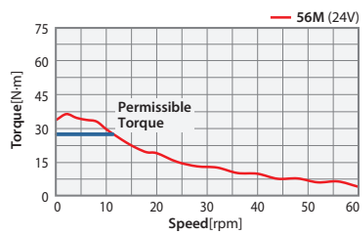
56M-PN25 Series



56M-PN40 Series



56M-PN50 Series



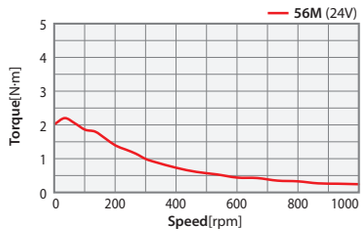
● Specifications of Motor with Gearbox [56M]

Applicable Model			
S-SERVO II ST	S-SERVO II 2X	S-SERVO II 3X	

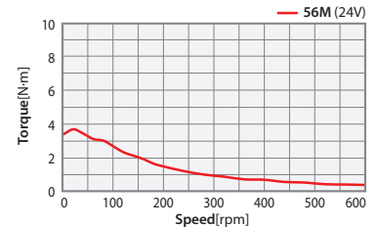
Model	Unit	56M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2	3.3	5.3	6.6	9.7	16.1	25.9	27
Rotor Inertia Moment	kg·m^2	300×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:03	1:05	1:08	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.15				2.35			

● Torque Graph with Gearbox

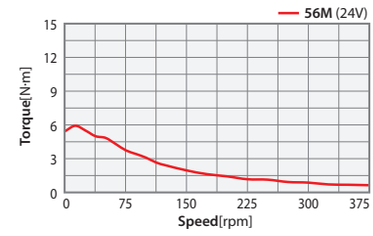
56M-PN3 Series



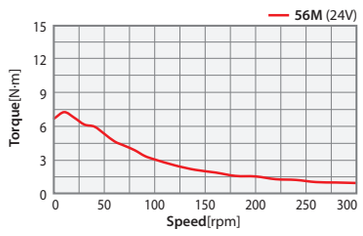
56M-PN5 Series



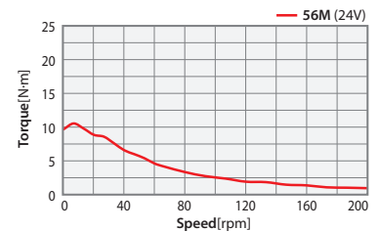
56M-PN8 Series



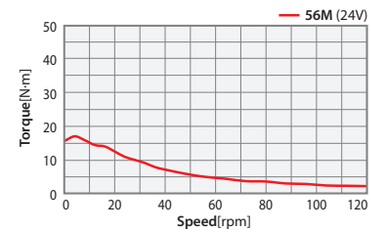
56M-PN10 Series



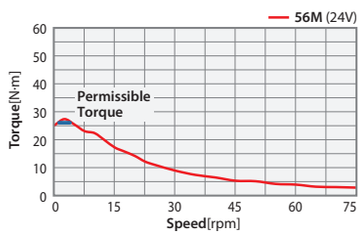
56M-PN15 Series



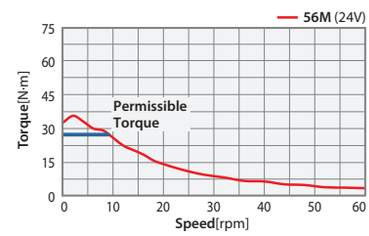
56M-PN25 Series



56M-PN40 Series



56M-PN50 Series



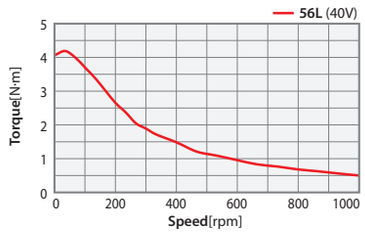
● Specifications of Motor with Gearbox [56L]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link			

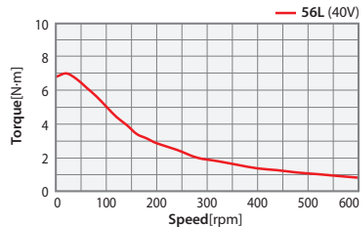
Model	Unit	56L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	4.0	6.8	10.8	13.6	18	27	27	27
Rotor Inertia Moment	kg·m²	520×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.52				2.72			

● Torque Graph with Gearbox

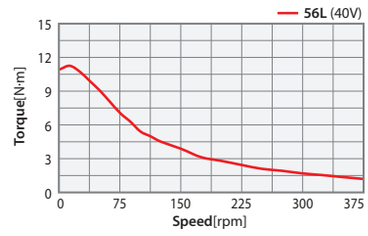
56L-PN3 Series



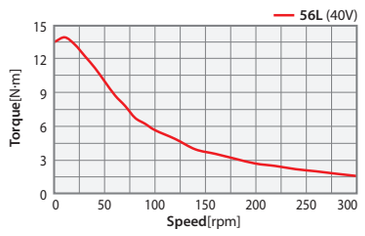
56L-PN5 Series



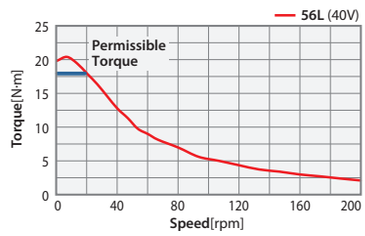
56L-PN8 Series



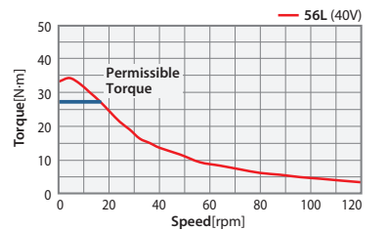
56L-PN10 Series



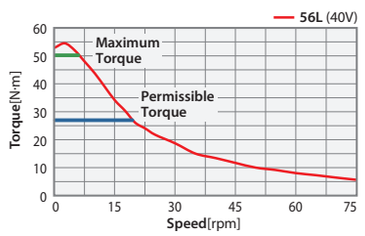
56L-PN15 Series



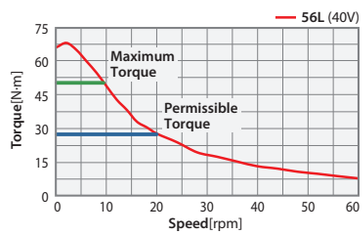
56L-PN25 Series



56L-PN40 Series



56L-PN50 Series



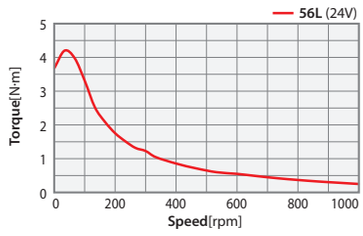
● Specifications of Motor with Gearbox [56L]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO ALL	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	

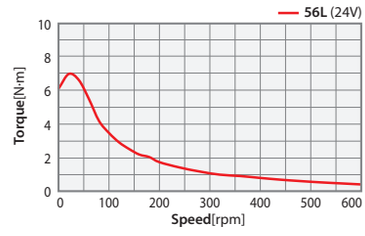
Model	Unit	56L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	3.6	6	9.7	12.1	18	27	27	27
Rotor Inertia Moment	kg·m^2	520×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.55				2.75			

● Torque Graph with Gearbox

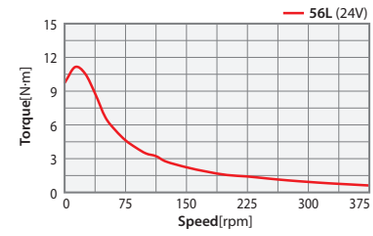
56L-PN3 Series



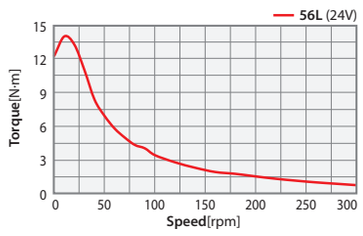
56L-PN5 Series



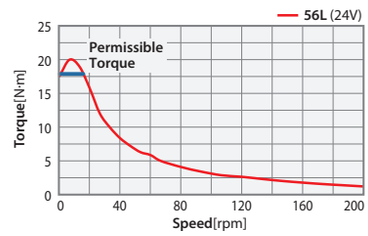
56L-PN8 Series



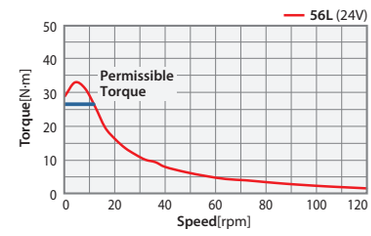
56L-PN10 Series



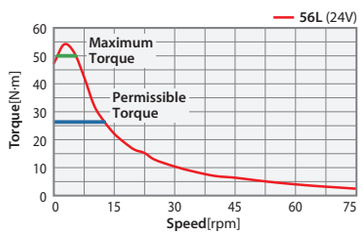
56L-PN15 Series



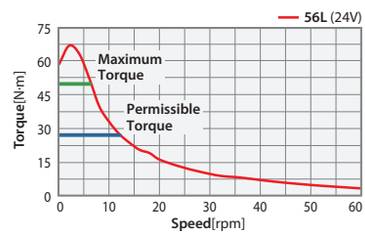
56L-PN25 Series



56L-PN40 Series



56L-PN50 Series



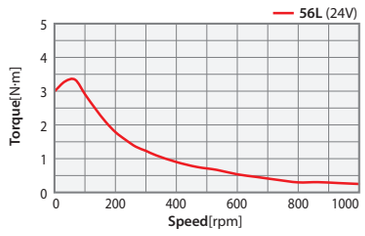
● Specifications of Motor with Gearbox [56L]

Applicable Model			
S-SERVO II ST	S-SERVO II 2X	S-SERVO II 3X	

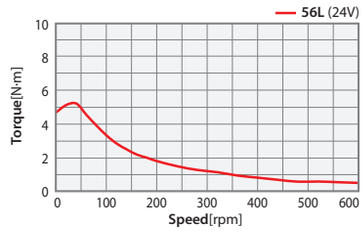
Model	Unit	56L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.9	4.8	7.7	9.6	14	23.4	27	27
Rotor Inertia Moment	kg·m^2	480×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.42				2.42			

● Torque Graph with Gearbox

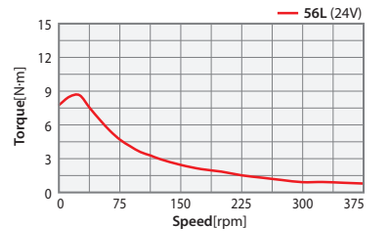
56L-PN3 Series



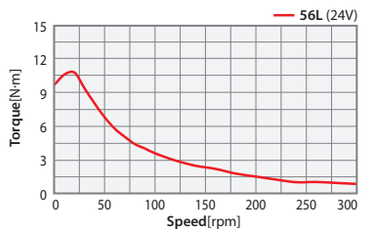
56L-PN5 Series



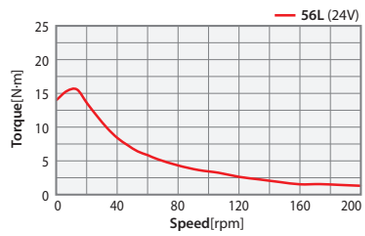
56L-PN8 Series



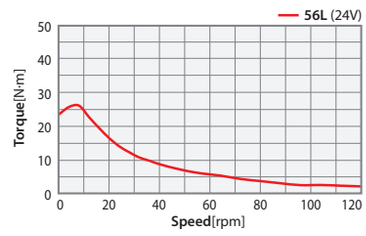
56L-PN10 Series



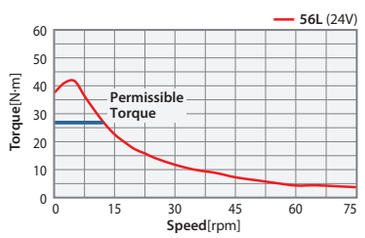
56L-PN15 Series



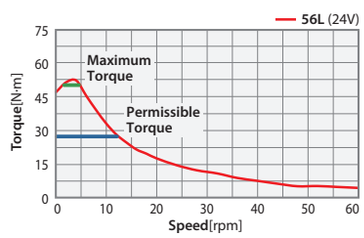
56L-PN25 Series



56L-PN40 Series



56L-PN50 Series



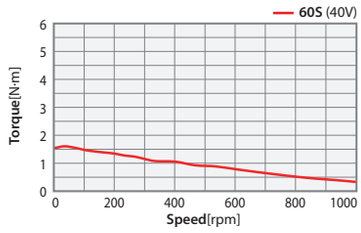
● Specifications of Motor with Gearbox [60S]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO ALL	Ezi-SERVO II Plus-E
Ezi-SERVO II EtherCAT	Ezi-SERVO II CC-Link		

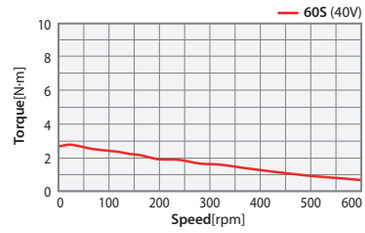
Model	Unit	60S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.5	2.5	4.0	5.1	7.4	12.3	19.8	24.7
Rotor Inertia Moment	$kg \cdot m^2$	240×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2				2.2			

● Torque Graph with Gearbox

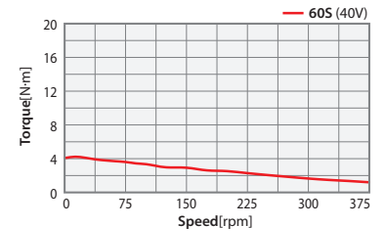
60S-PN3 Series



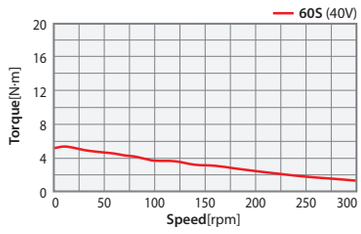
60S-PN5 Series



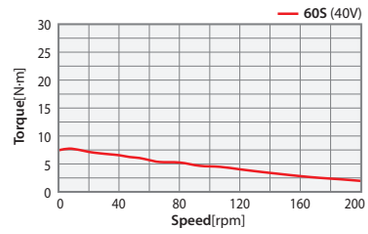
60S-PN8 Series



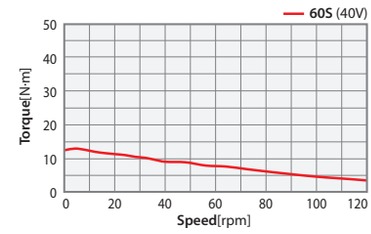
60S-PN10 Series



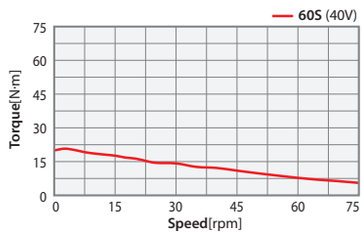
60S-PN15 Series



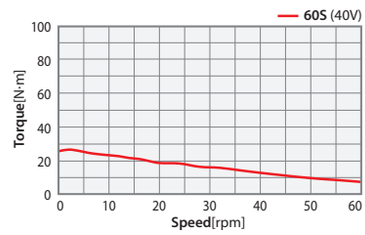
60S-PN25 Series



60S-PN40 Series



60S-PN50 Series



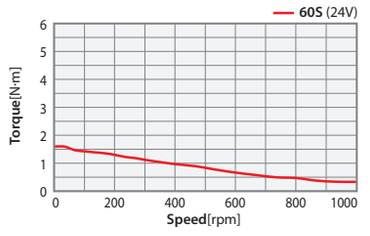
● Specifications of Motor with Gearbox [60S]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL		

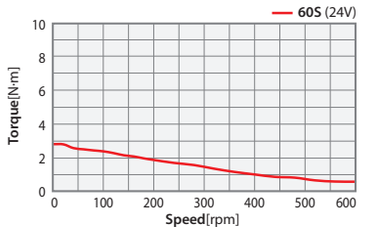
Model	Unit	60S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.6	2.7	4.4	5.5	8	13.4	21.4	26.8
Rotor Inertia Moment	kg·m^2	240×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2				2.2			

● Torque Graph with Gearbox

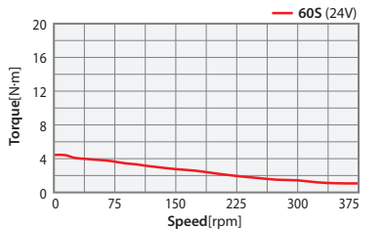
60S-PN3 Series



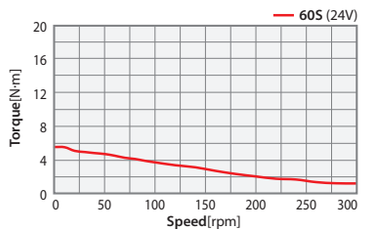
60S-PN5 Series



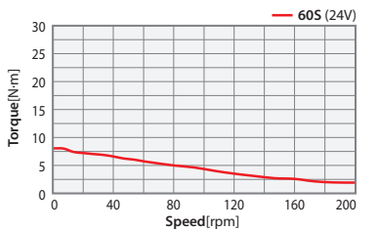
60S-PN8 Series



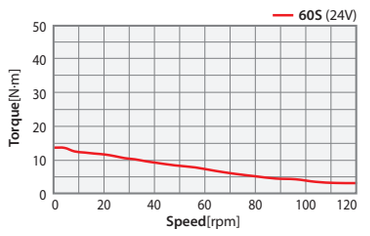
60S-PN10 Series



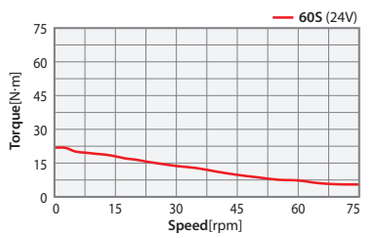
60S-PN15 Series



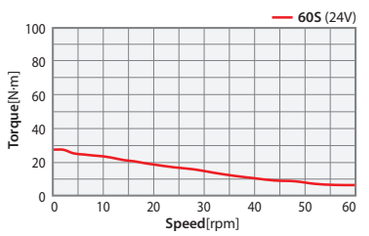
60S-PN25 Series



60S-PN40 Series



60S-PN50 Series



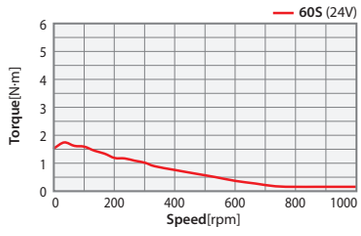
● Specifications of Motor with Gearbox [60S]

Applicable Model			
S-SERVO II ST	S-SERVO II 2X	S-SERVO II 3X	

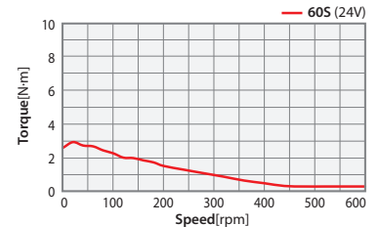
Model	Unit	60S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.5	2.5	4.1	5.1	7.5	12.5	20.1	25.1
Rotor Inertia Moment	kg·m^2	240×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2				2.2			

● Torque Graph with Gearbox

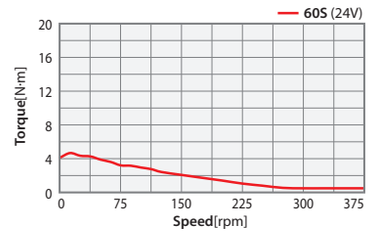
60S-PN3 Series



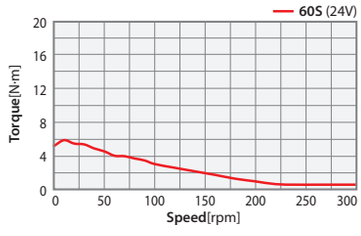
60S-PN5 Series



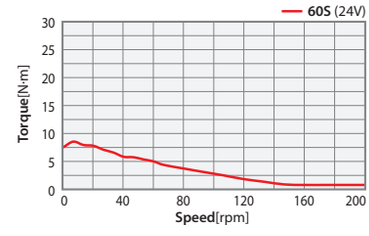
60S-PN8 Series



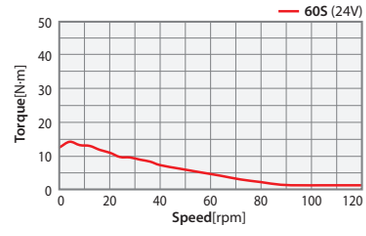
60S-PN10 Series



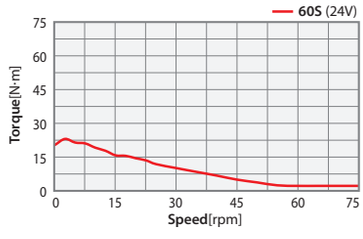
60S-PN15 Series



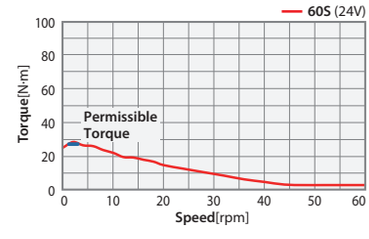
60S-PN25 Series



60S-PN40 Series



60S-PN50 Series



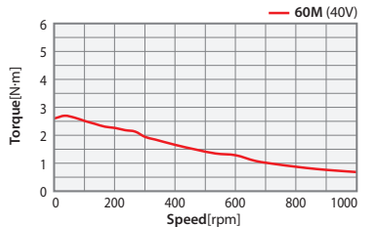
● Specifications of Motor with Gearbox [60M]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO ALL	Ezi-SERVO II Plus-E
Ezi-SERVO II EtherCAT	Ezi-SERVO II CC-Link		

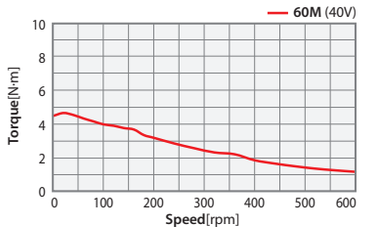
Model	Unit	60M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.6	4.4	7.0	8.8	12.8	21.4	27	27
Rotor Inertia Moment	kg·m^2	490×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.3				2.5			

● Torque Graph with Gearbox

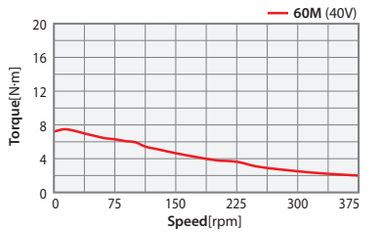
60M-PN3 Series



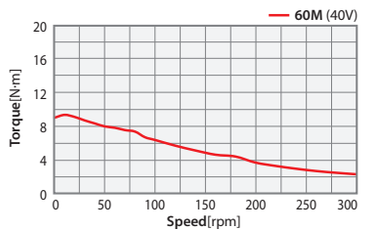
60M-PN5 Series



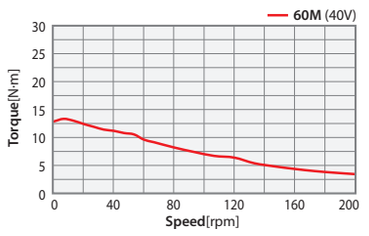
60M-PN8 Series



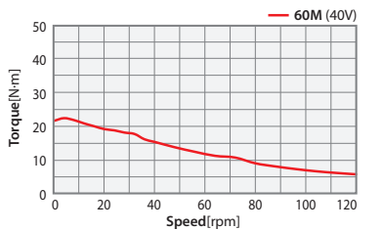
60M-PN10 Series



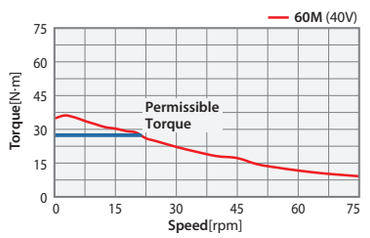
60M-PN15 Series



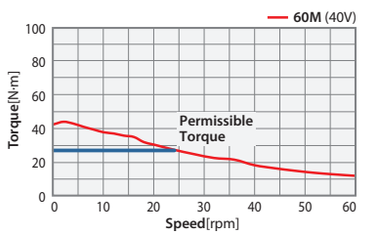
60M-PN25 Series



60M-PN40 Series



60M-PN50 Series



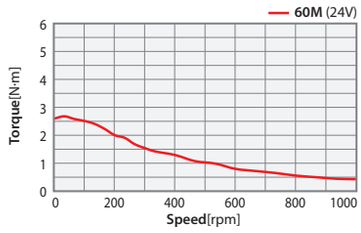
● Specifications of Motor with Gearbox [60M]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL		

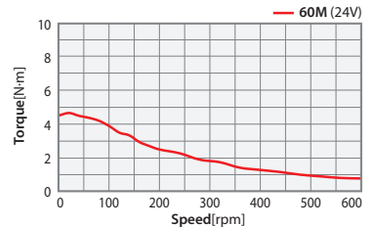
Model	Unit	60M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.6	4.4	7.0	8.8	12.8	21.4	27	27
Rotor Inertia Moment	$kg \cdot m^2$	490×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.3				2.5			

● Torque Graph with Gearbox

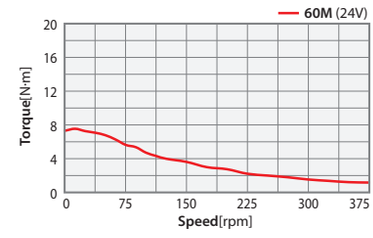
60M-PN3 Series



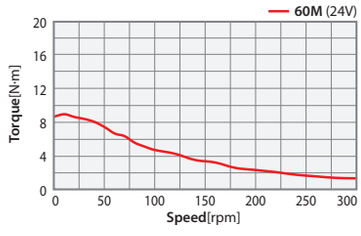
60M-PN5 Series



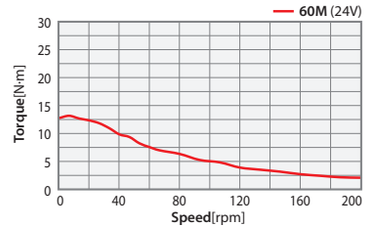
60M-PN8 Series



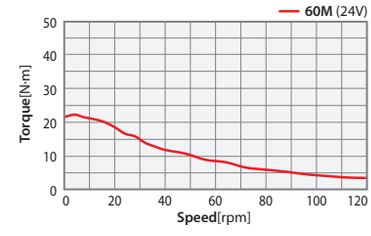
60M-PN10 Series



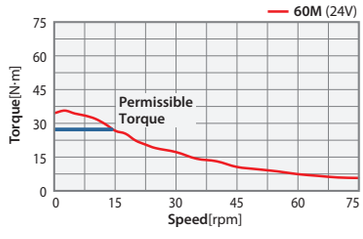
60M-PN15 Series



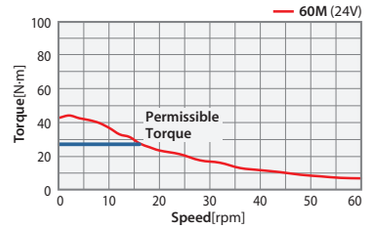
60M-PN25 Series



60M-PN40 Series



60M-PN50 Series



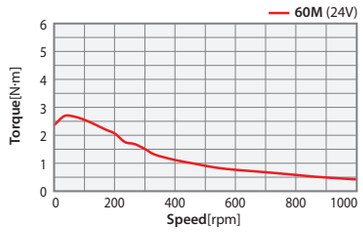
● Specifications of Motor with Gearbox [60M]

Applicable Model			
S-SERVO II ST	S-SERVO II 2X	S-SERVO II 3X	

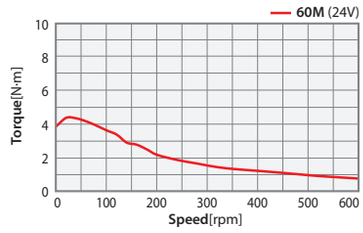
Model	Unit	60M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.3	3.8	6.2	7.7	11.2	18.8	27	27
Rotor Inertia Moment	kg·m^2	490×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2				2.2			

● Torque Graph with Gearbox

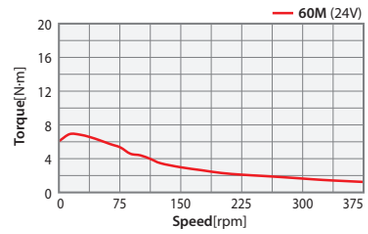
60M-PN3 Series



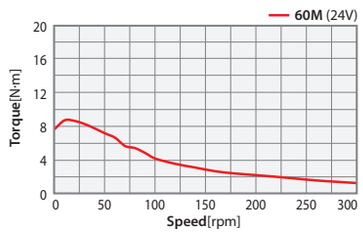
60M-PN5 Series



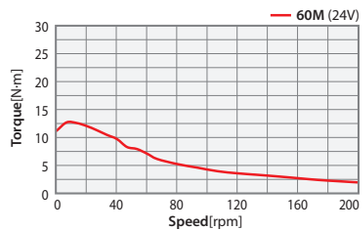
60M-PN8 Series



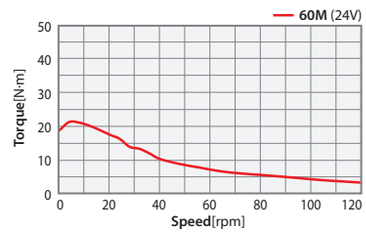
60M-PN10 Series



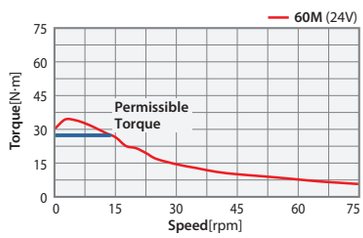
60M-PN15 Series



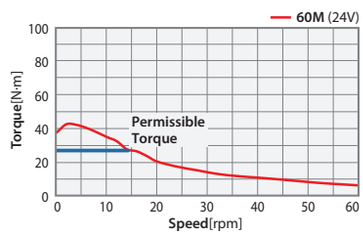
60M-PN25 Series



60M-PN40 Series



60M-PN50 Series



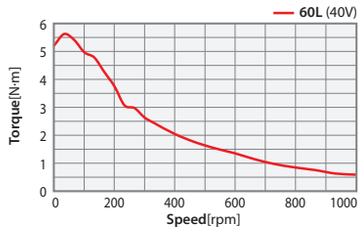
● Specifications of Motor with Gearbox [60L]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO ALL	Ezi-SERVO II Plus-E
Ezi-SERVO II EtherCAT	Ezi-SERVO II CC-Link		

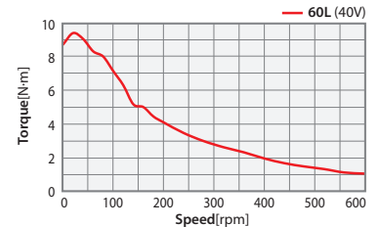
Model	Unit	60L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	5.2	8.7	13.9	18	18	27	27	27
Rotor Inertia Moment	kg·m^2	690×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	3				3.2			

● Torque Graph with Gearbox

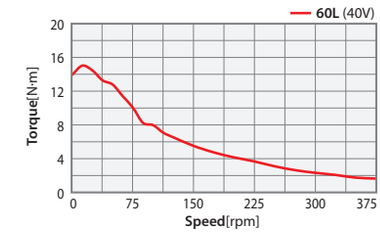
60L-PN3 Series



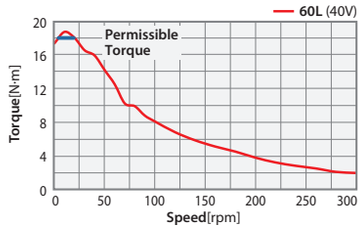
60L-PN5 Series



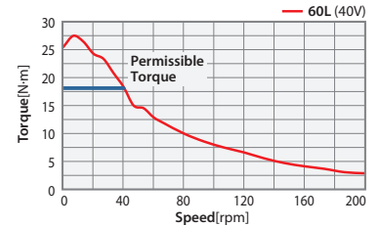
60L-PN8 Series



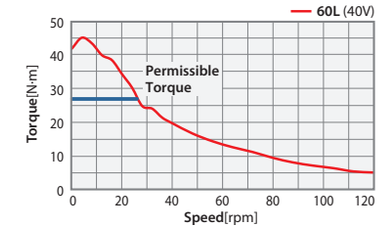
60L-PN10 Series



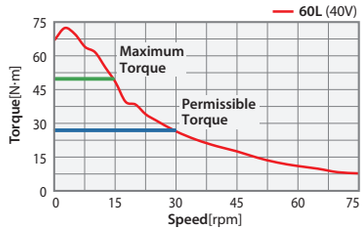
60L-PN15 Series



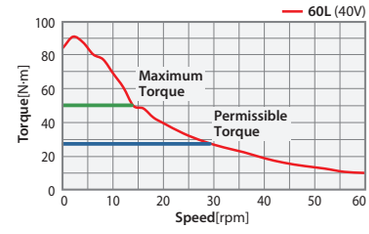
60L-PN25 Series



60L-PN40 Series



60L-PN50 Series



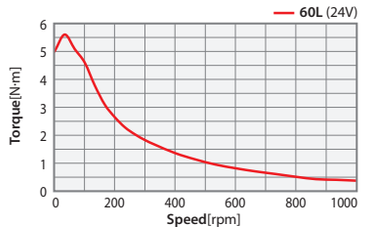
● Specifications of Motor with Gearbox [60L]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL		

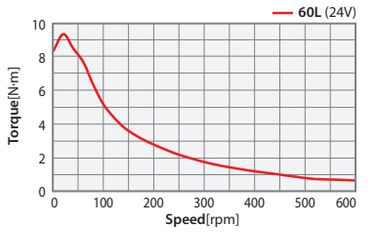
Model	Unit	60L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	4.9	8.3	13.2	16.6	18	27	27	27
Rotor Inertia Moment	kg·m²	690×10⁻⁷							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	3				3.2			

● Torque Graph with Gearbox

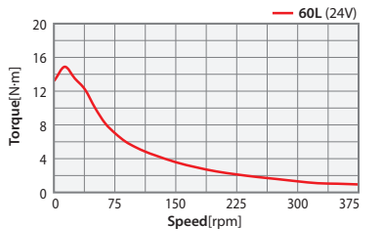
60L-PN3 Series



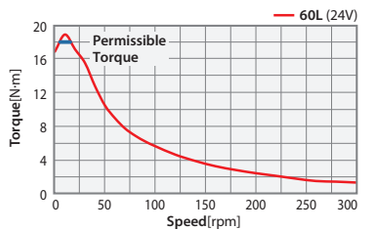
60L-PN5 Series



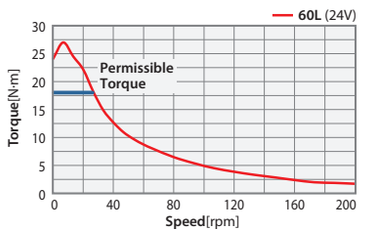
60L-PN8 Series



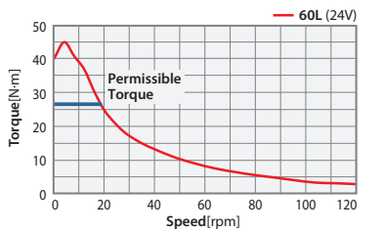
60L-PN10 Series



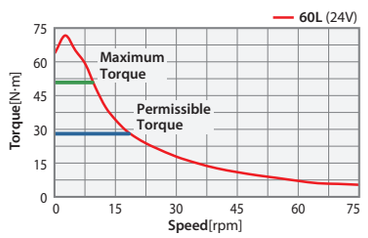
60L-PN15 Series



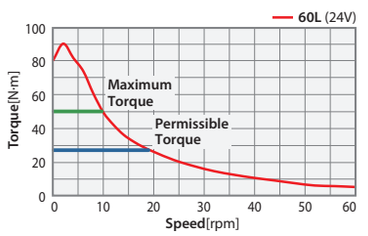
60L-PN25 Series



60L-PN40 Series



60L-PN50 Series



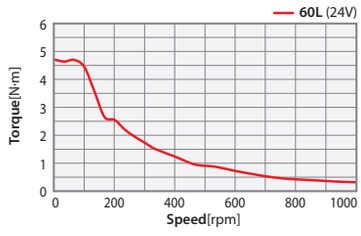
● Specifications of Motor with Gearbox [60L]

Applicable Model			
S-SERVO II ST	S-SERVO II 2X	S-SERVO II 3X	

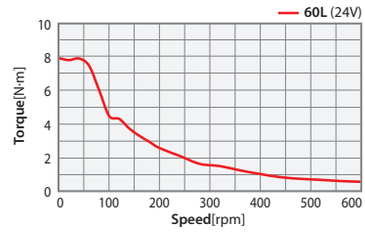
Model	Unit	60L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	4.7	7.8	12.5	15.7	18	27	27	27
Rotor Inertia Moment	kg·m^2	690×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	3				3.2			

● Torque Graph with Gearbox

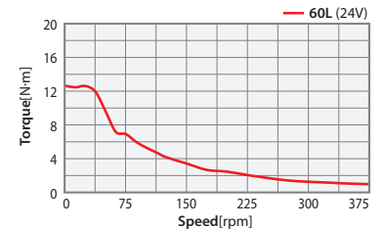
60L-PN3 Series



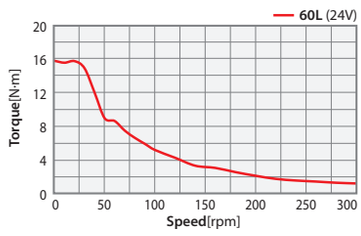
60L-PN5 Series



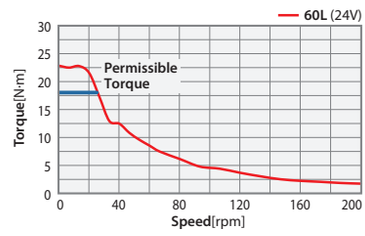
60L-PN8 Series



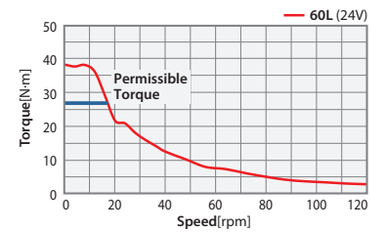
60L-PN10 Series



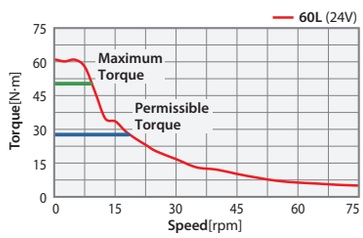
60L-PN15 Series



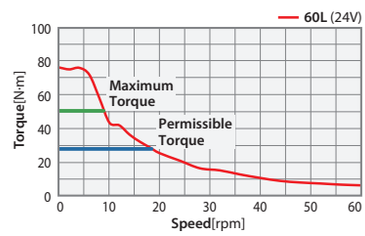
60L-PN25 Series



60L-PN40 Series



60L-PN50 Series



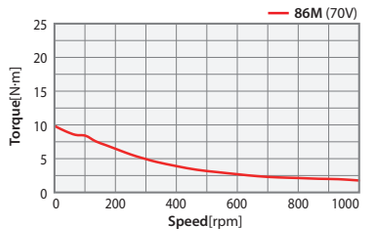
● Specifications of Motor with Gearbox [86M]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E ALL	

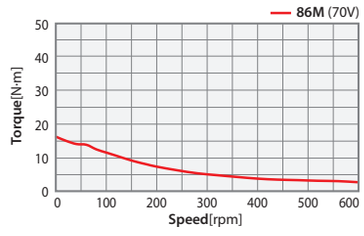
Model	Unit	86M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	9.6	16	25.7	32.1	46.6	75	75	75
Rotor Inertia Moment	kg·m^2	1800×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	50	75	75	50	50	75	75	75
Maximum Torque	N·m	80	125	125	80	80	125	125	125
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	6				6.5			

● Torque Graph with Gearbox

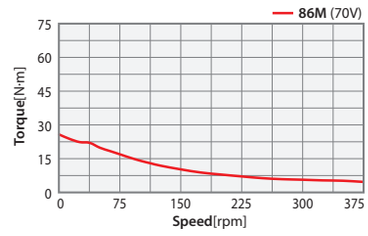
86M-PN3 Series



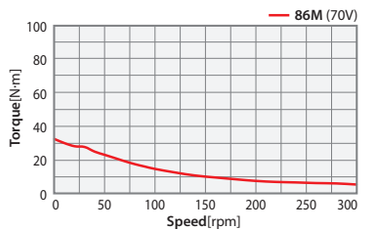
86M-PN5 Series



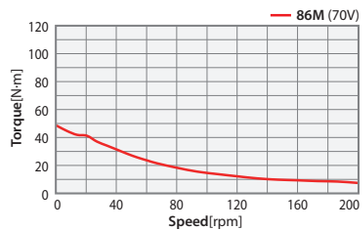
86M-PN8 Series



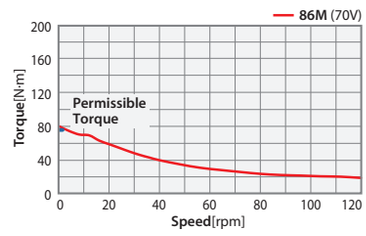
86M-PN10 Series



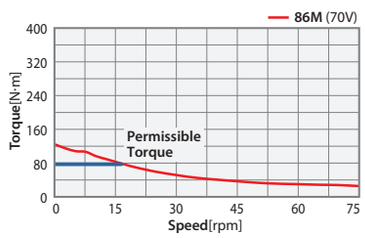
86M-PN15 Series



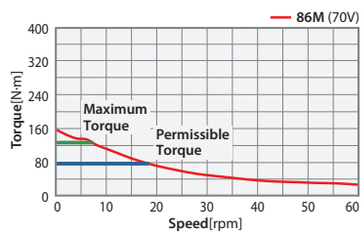
86M-PN25 Series



86M-PN40 Series



86M-PN50 Series



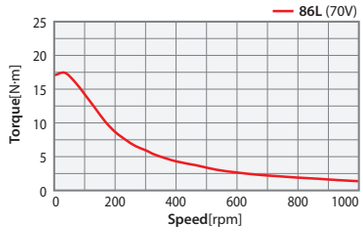
● Specifications of Motor with Gearbox [86L]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E ALL	

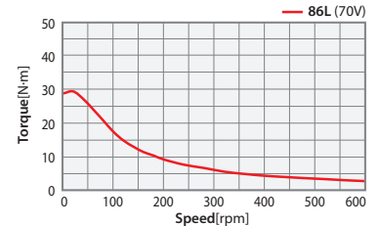
Model	Unit	86L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	17.1	28.5	45.6	50	50	75	75	75
Rotor Inertia Moment	kg·m²	3600×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	50	75	75	50	50	75	75	75
Maximum Torque	N·m	80	125	125	80	80	125	125	125
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	7.5				8			

● Torque Graph with Gearbox

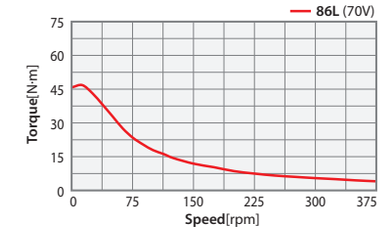
86L-PN3 Series



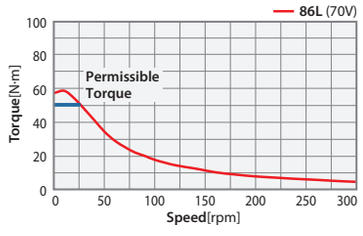
86L-PN5 Series



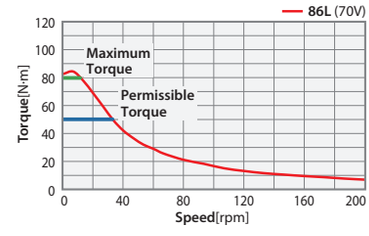
86L-PN8 Series



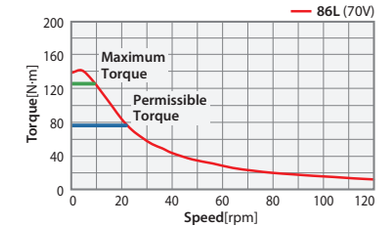
86L-PN10 Series



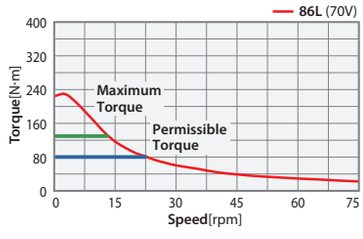
86L-PN15 Series



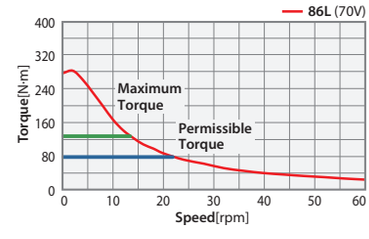
86L-PN25 Series



86L-PN40 Series



86L-PN50 Series



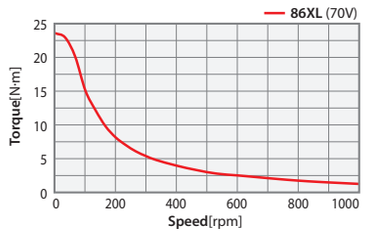
● Specifications of Motor with Gearbox [86XL]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT
Ezi-SERVO II CC-Link	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E ALL	

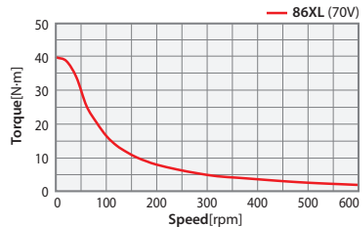
Model	Unit	86XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	23.6	39.4	63.0	50	50	75	75	75
Rotor Inertia Moment	kg·m^2	5400×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	50	75	75	50	50	75	75	75
Maximum Torque	N·m	80	125	125	80	80	125	125	125
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	9				9.5			

● Torque Graph with Gearbox

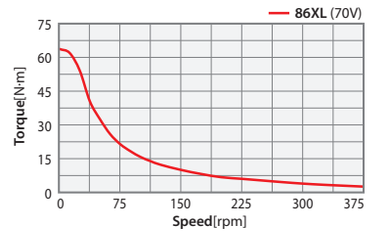
86XL-PN3 Series



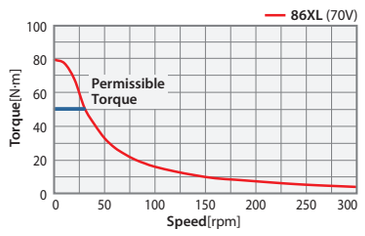
86XL-PN5 Series



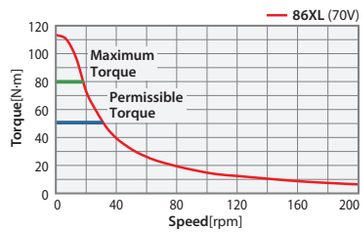
86XL-PN8 Series



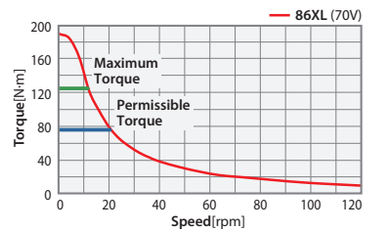
86XL-PN10 Series



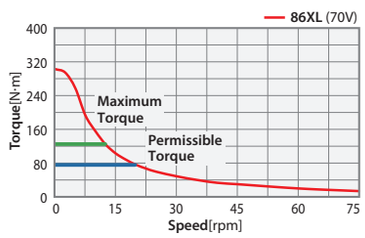
86XL-PN15 Series



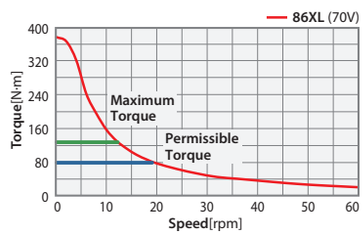
86XL-PN25 Series



86XL-PN40 Series



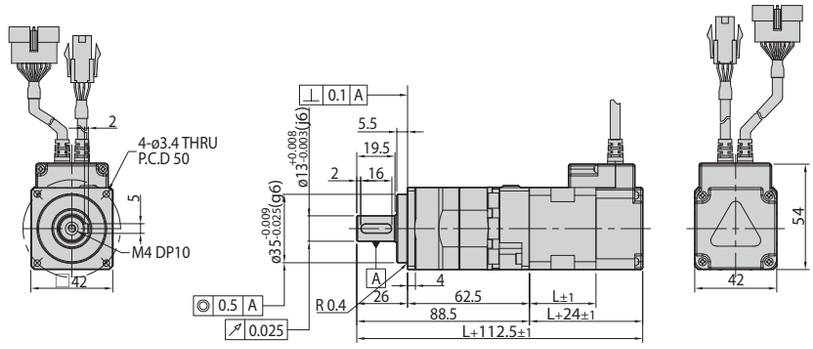
86XL-PN50 Series



● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO MINI	Ezi-SERVO Plus-R	Ezi-SERVO Plus-R MINI

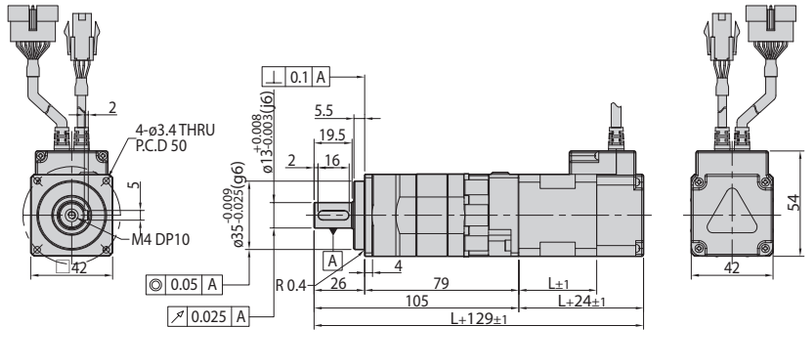
Gear Ratio 3, 5, 8, 10 : Single



42mm

Model name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60

Gear Ratio 15, 25, 40, 50 : Double

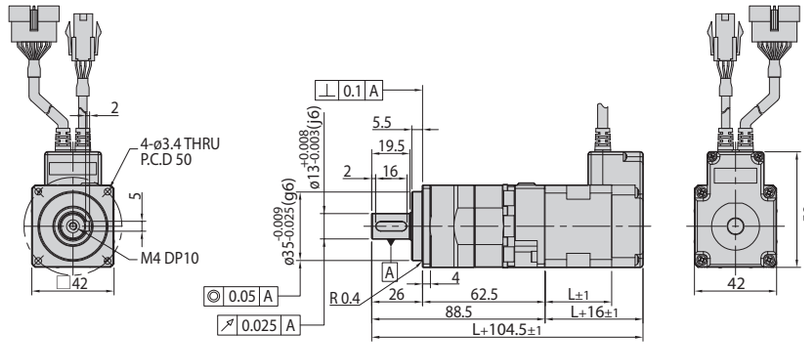


42mm

Model name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link		

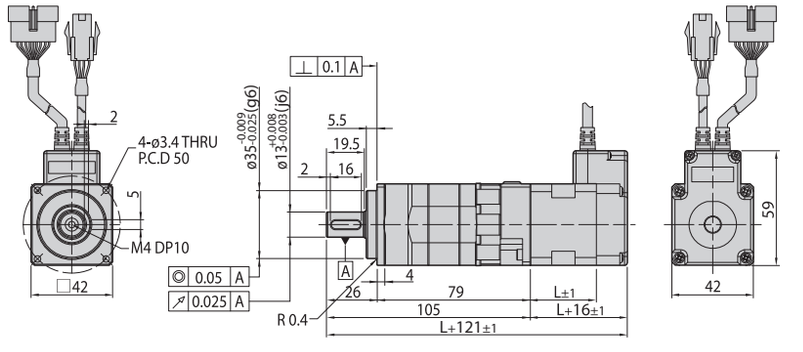
Gear Ratio 3, 5, 8, 10 : Single



42mm

Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60

Gear Ratio 15, 25, 40, 50 : Double



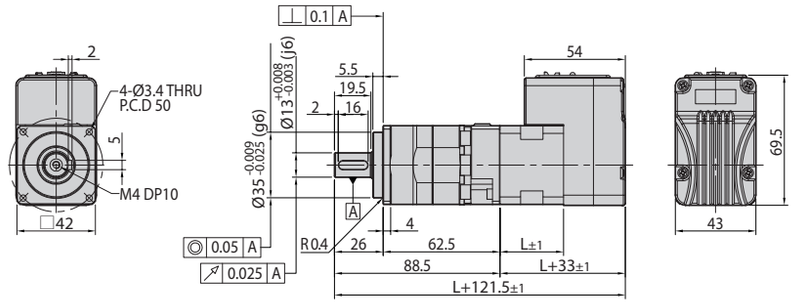
42mm

Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60

● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO II BT			

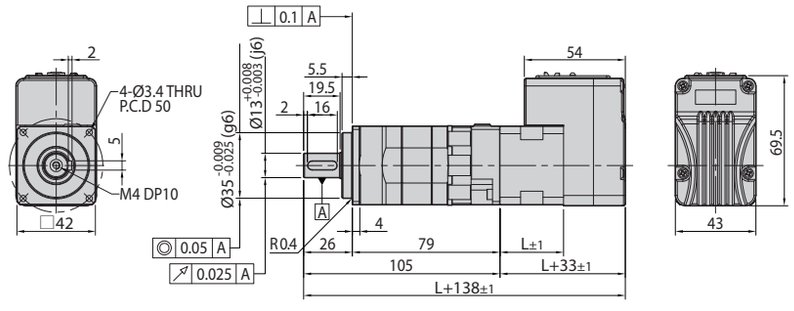
Gear Ratio 3, 5, 8, 10 : Single



42mm

Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60

Gear Ratio 15, 25, 40, 50 : Double

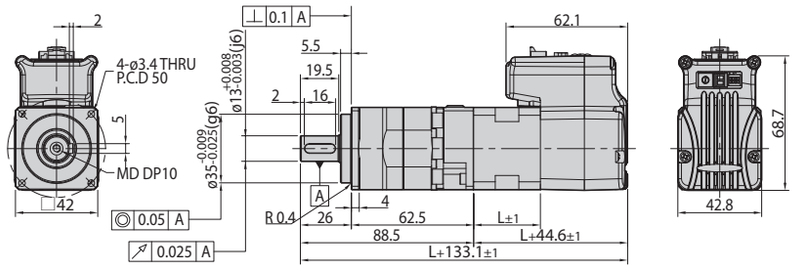


42mm

Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60

Applicable Model			
Ezi-SERVO ALL			

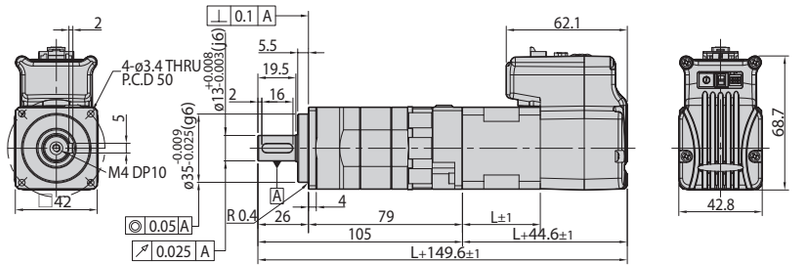
Gear Ratio 3, 5, 8, 10 : Single



42mm

Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60

Gear Ratio 15, 25, 40, 50 : Double



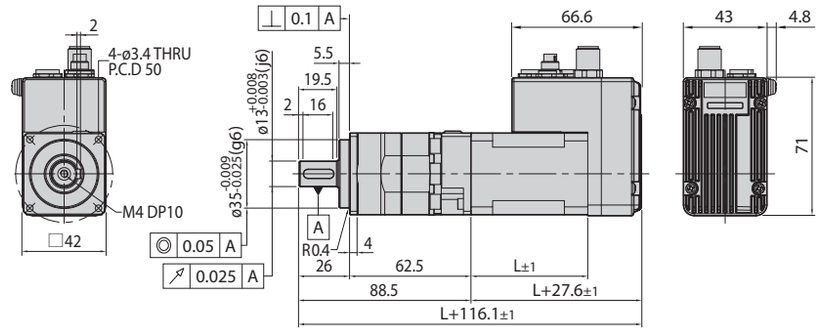
42mm

Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60

● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

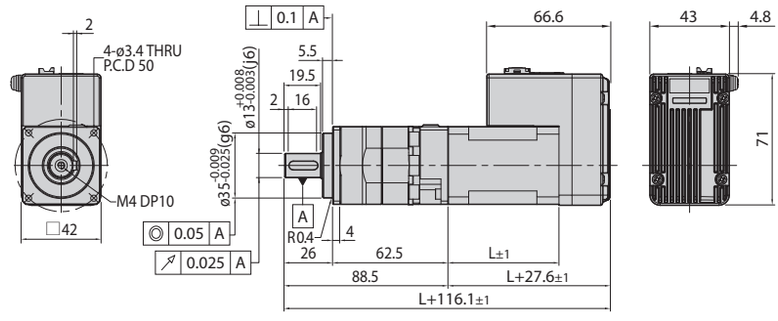
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)

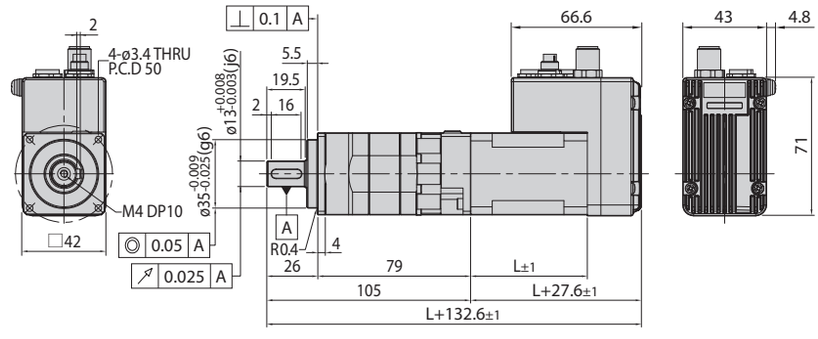


42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

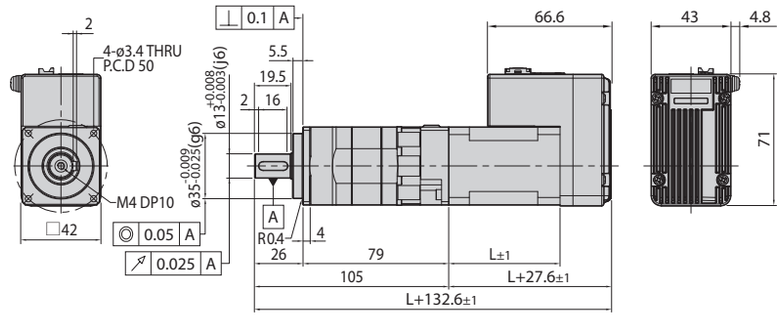
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



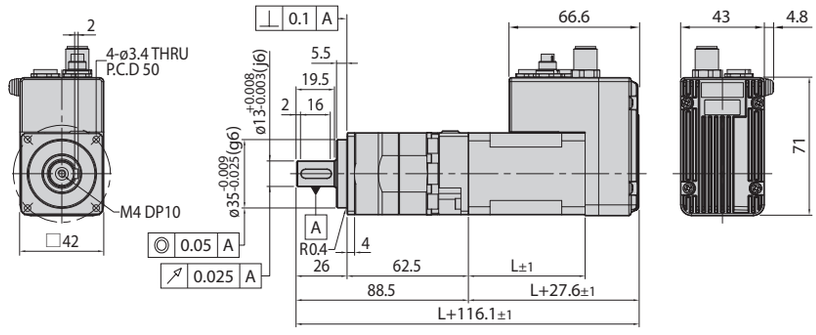
42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

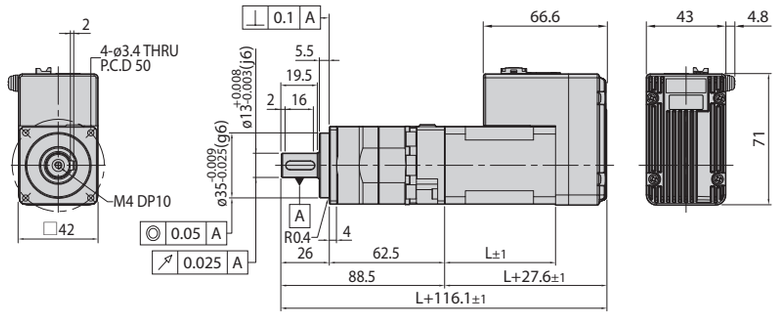
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)

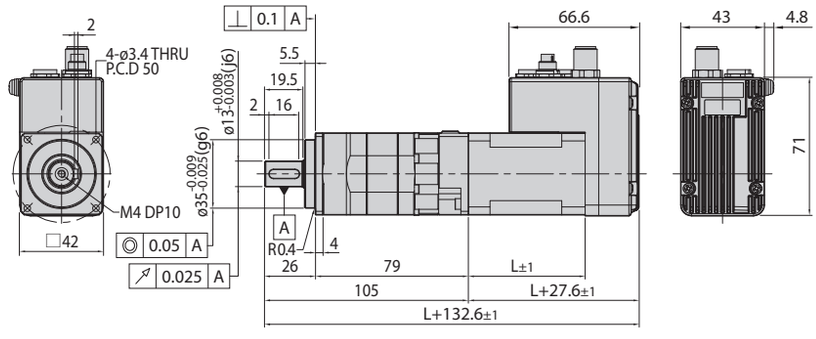


42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Applicable Model			
Ezi-SERVO II Plus-E ALL			

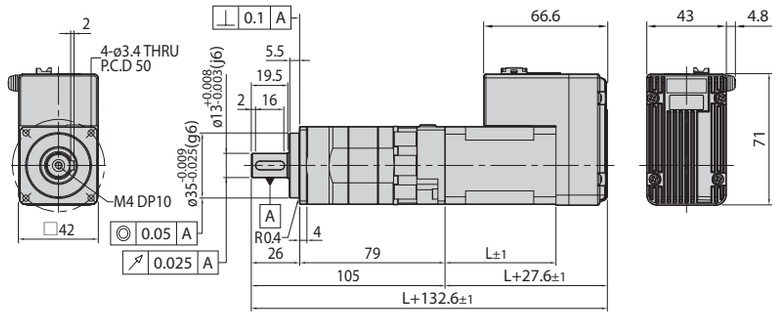
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



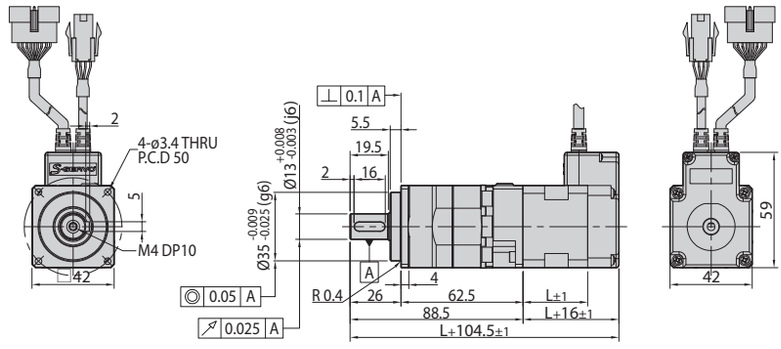
42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
S-SERVO II	S-SERVO II MINI	S-SERVO II 2X	S-SERVO II 3X

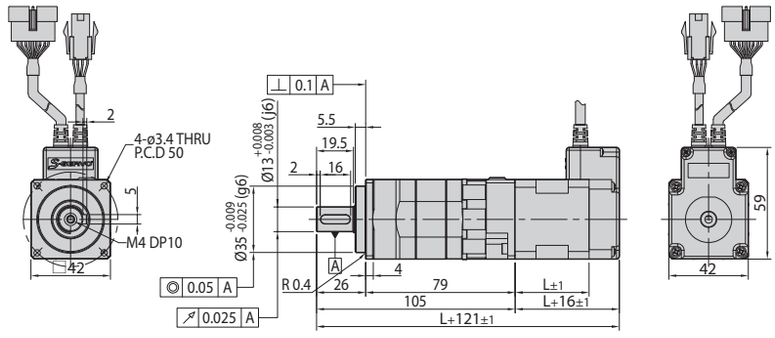
Gear Ratio 3, 5, 8, 10 : Single



42mm

Model name	Length(L)
SM-42S	33
SM-42M	39
SM-42L	47
SM-42XL	60

Gear Ratio 15, 25, 40, 50 : Double



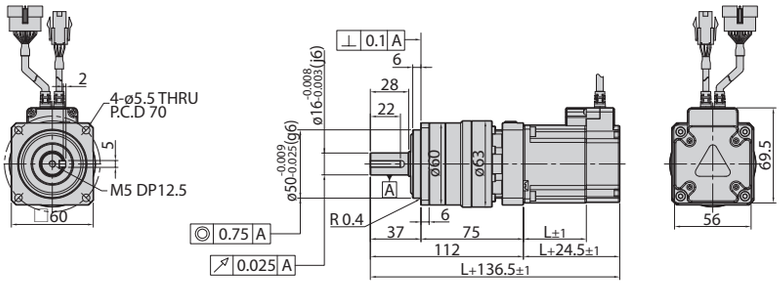
42mm

Model name	Length(L)
SM-42S	33
SM-42M	39
SM-42L	47
SM-42XL	60

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R		

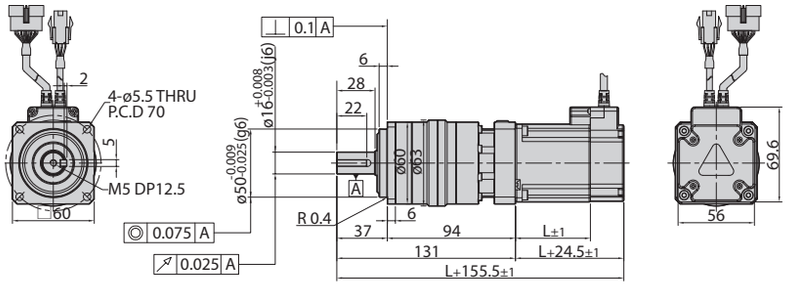
Gear Ratio 3, 5, 8, 10 : Single



56mm

Model name	Length(L)
EzM-56S	46
EzM-56M	55
EzM-56L	80

Gear Ratio 15, 25, 40, 50 : Double

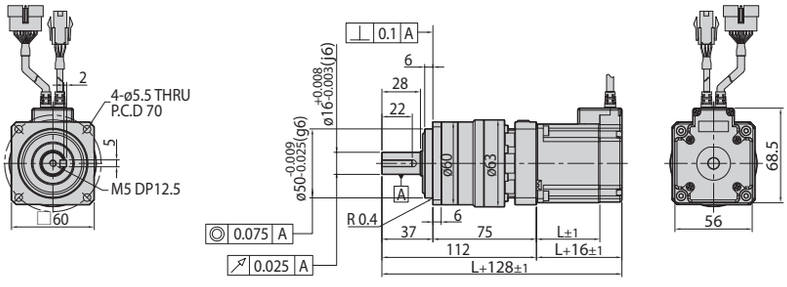


56mm

Model name	Length(L)
EzM-56S	46
EzM-56M	55
EzM-56L	80

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link		

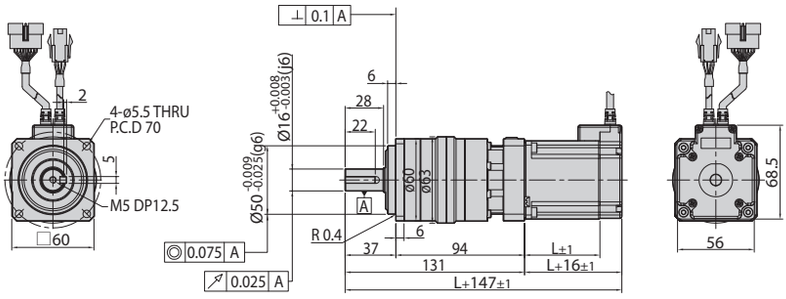
Gear Ratio 3, 5, 8, 10 : Single



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

Gear Ratio 15, 25, 40, 50 : Double



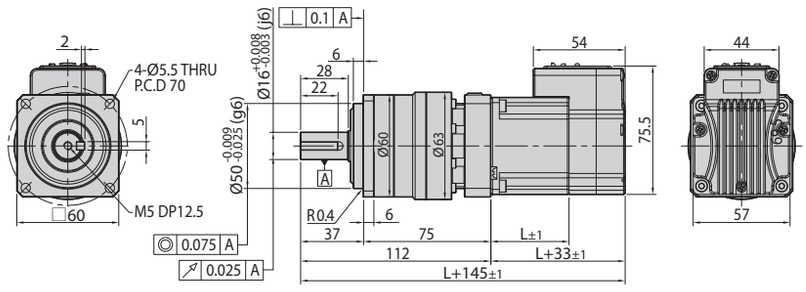
56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO II BT			

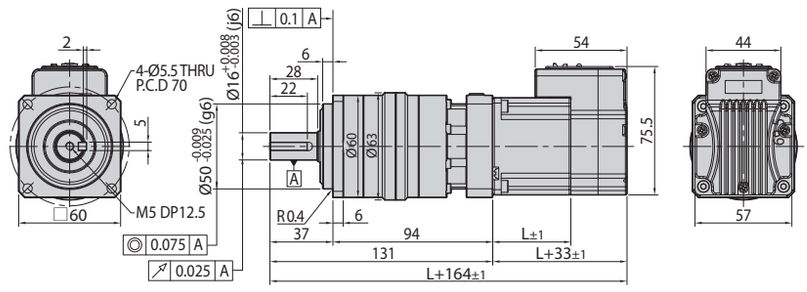
Gear Ratio 3, 5, 8, 10 : Single



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 15, 25, 40, 50 : Double

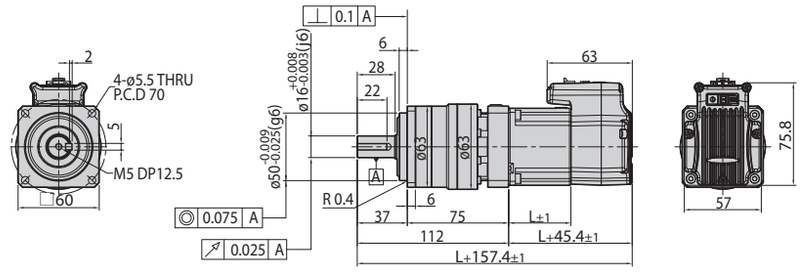


56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Applicable Model			
Ezi-SERVO ALL			

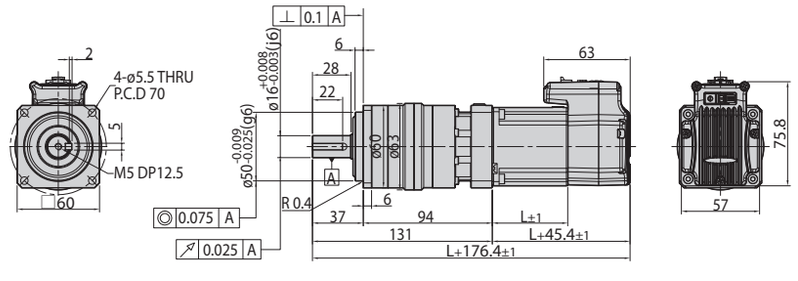
Gear Ratio 3, 5, 8, 10 : Single



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 15, 25, 40, 50 : Double



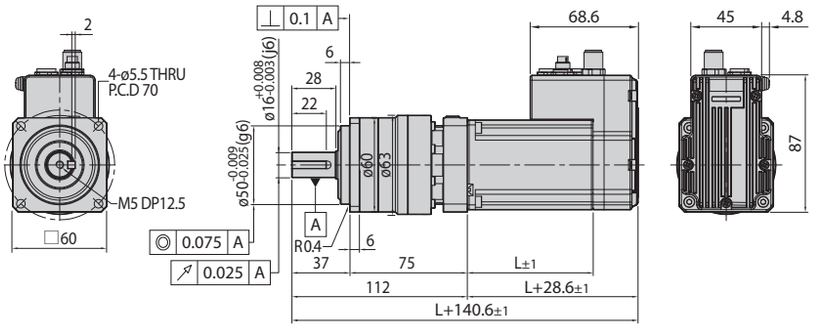
56mm

Model name	Length(L)
56S	46
56M	55
56L	80

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

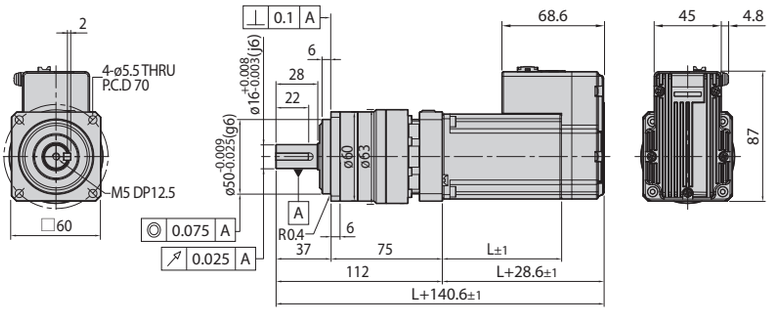
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)

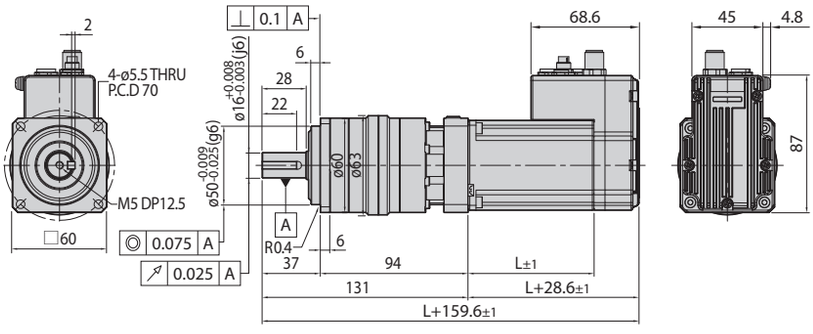


56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

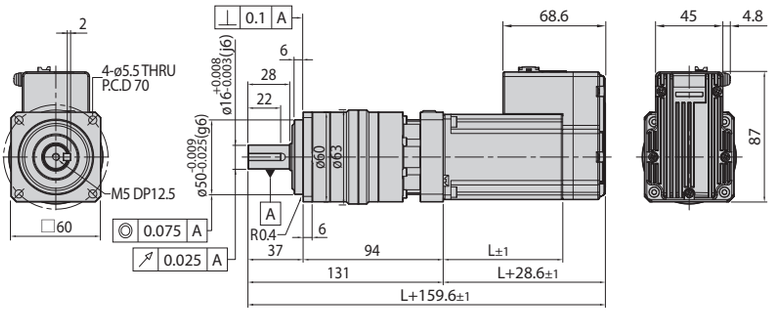
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



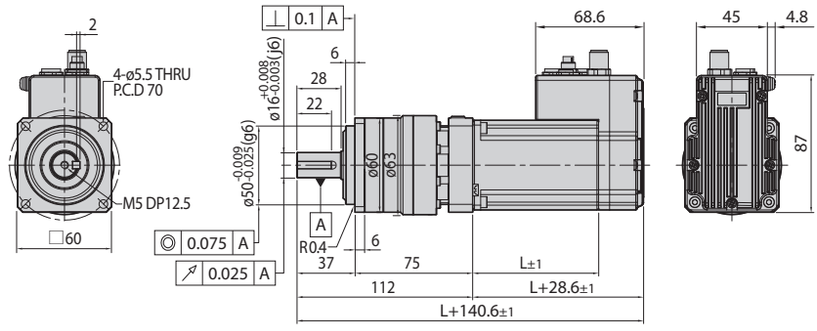
56mm

Model name	Length(L)
56S	46
56M	55
56L	80

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

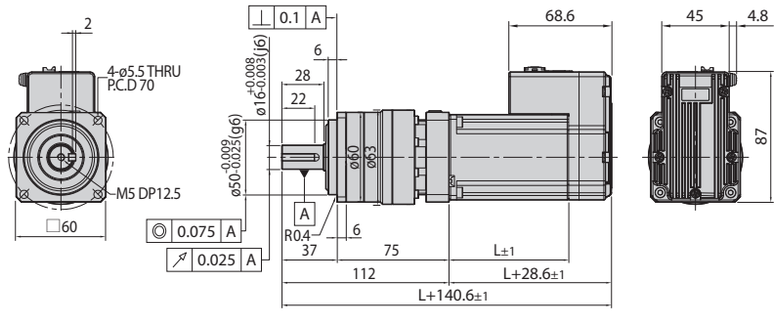
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)

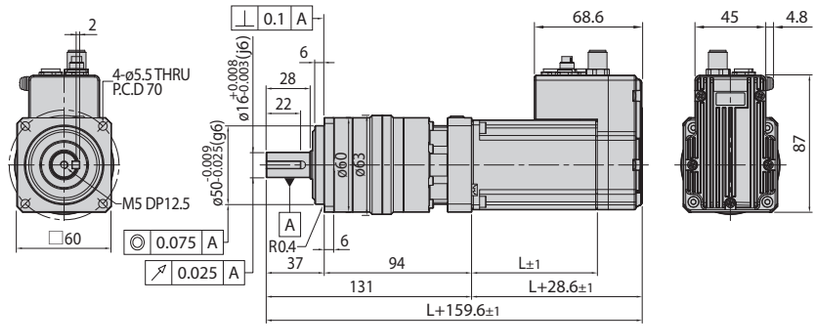


56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Applicable Model			
Ezi-SERVO II Plus-E ALL			

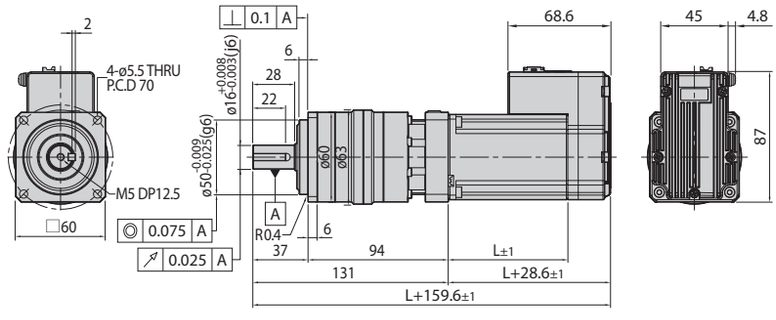
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



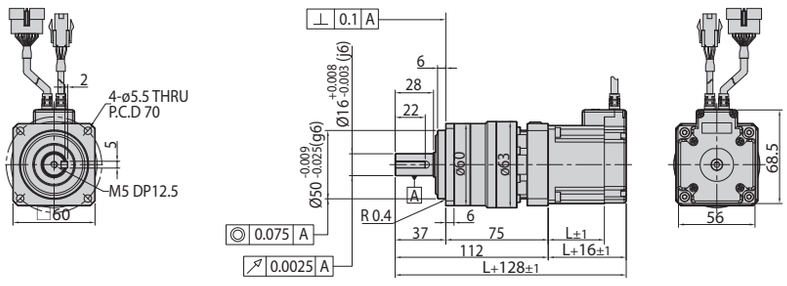
56mm

Model name	Length(L)
56S	46
56M	55
56L	80

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
S-SERVO II	S-SERVO II 2X	S-SERVO II 3X	

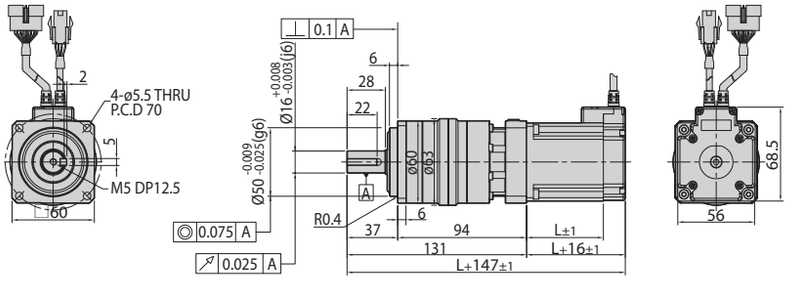
Gear Ratio 3, 5, 8, 10 : Single



56mm

Model name	Length(L)
SM-56S	41
SM-56M	56
SM-56L	76

Gear Ratio 15, 25, 40, 50 : Double



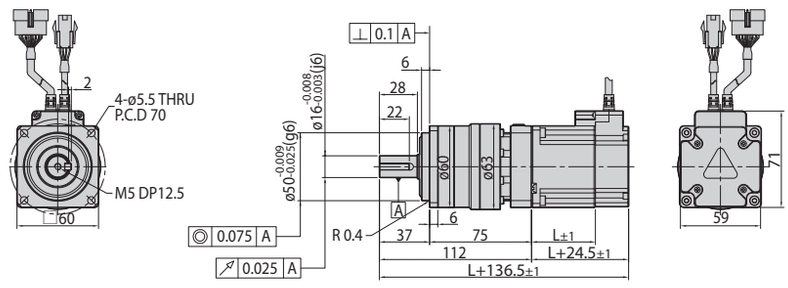
56mm

Model name	Length(L)
SM-56S	41
SM-56M	56
SM-56L	76

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R		

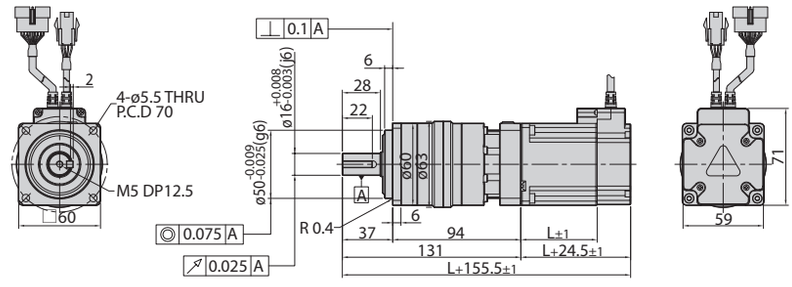
Gear Ratio 3, 5, 8, 10 : Single



60mm

Model name	Length(L)
EzM-60S	47
EzM-60M	56
EzM-60L	85

Gear Ratio 15, 25, 40, 50 : Double

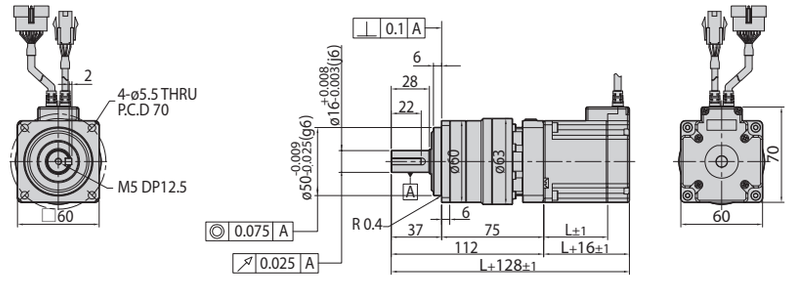


60mm

Model name	Length(L)
EzM-60S	47
EzM-60M	56
EzM-60L	85

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link		

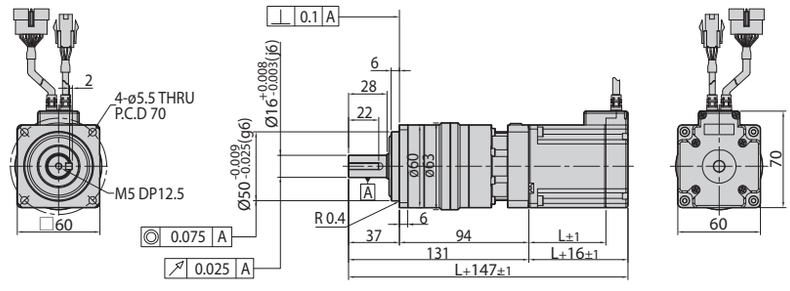
Gear Ratio 3, 5, 8, 10 : Single



60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

Gear Ratio 15, 25, 40, 50 : Double



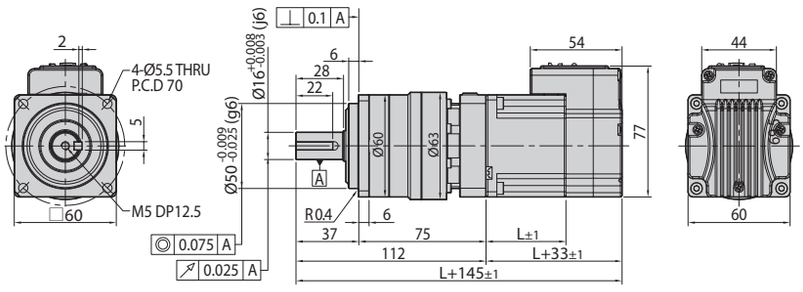
60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

● Dimensions of Motor with Gearbox [60mm]

적용 가능 모델			
Ezi-SERVO II BT			

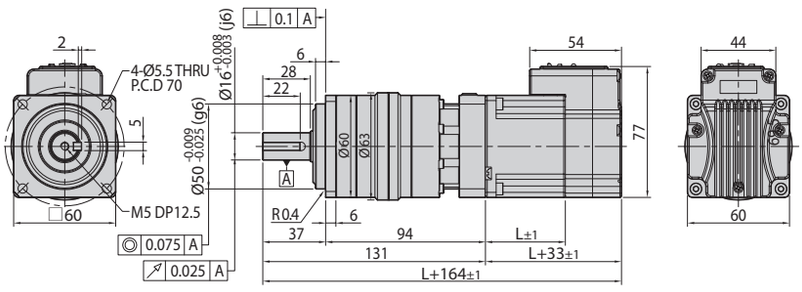
Gear Ratio 3, 5, 8, 10 : Single



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 15, 25, 40, 50 : Double

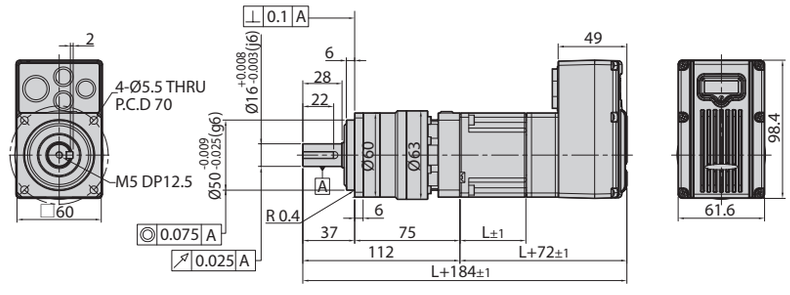


60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Applicable Model			
Ezi-SERVO ALL			

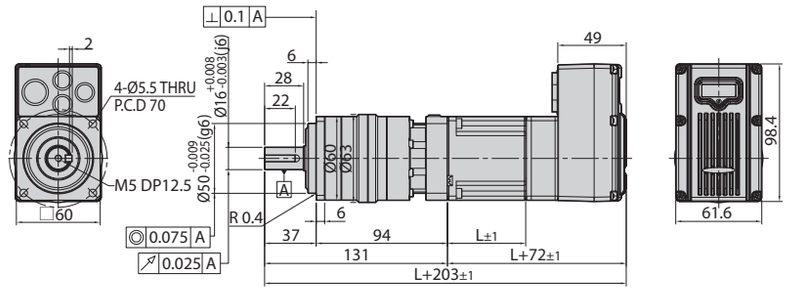
Gear Ratio 3, 5, 8, 10 : Single



60mm

Model name	Length(L)
60L	85

Gear Ratio 15, 25, 40, 50 : Double



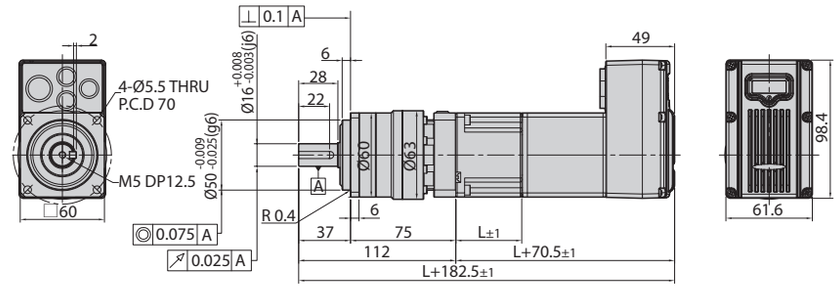
60mm

Model name	Length(L)
60L	85

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO ALL ABS			

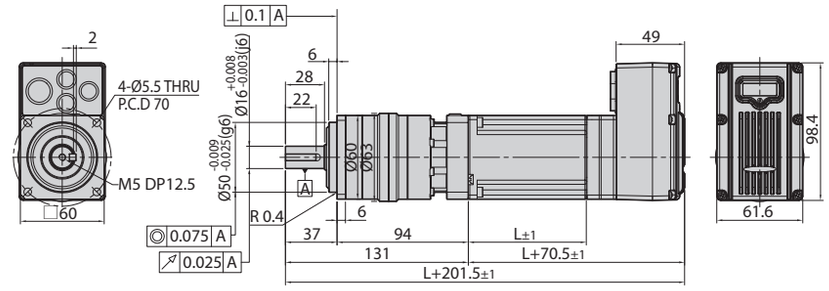
Gear Ratio 3, 5, 8, 10 : Single



60mm

Model name	Length(L)
60L-ABS	85

Gear Ratio 15, 25, 40, 50 : Double

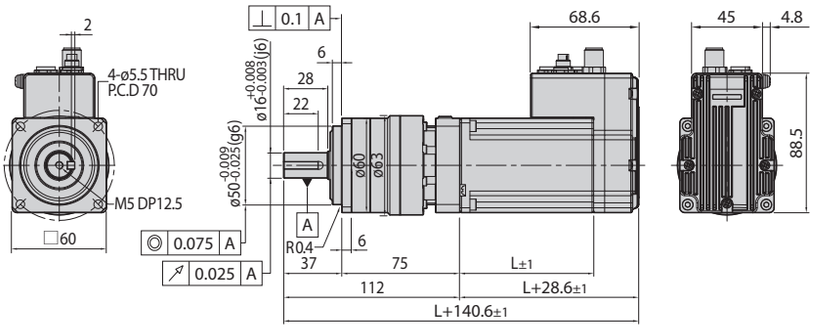


60mm

Model name	Length(L)
60L-ABS	85

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

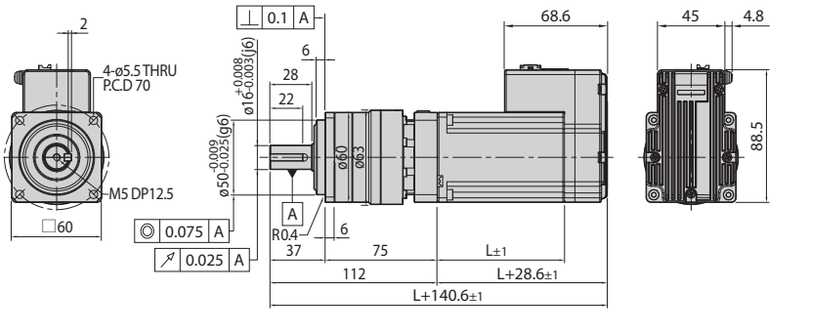
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



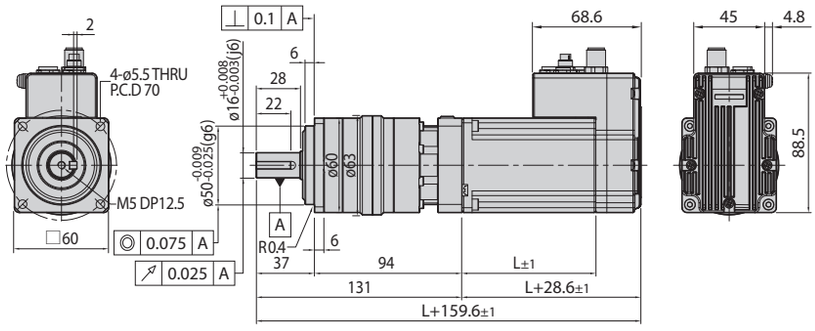
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

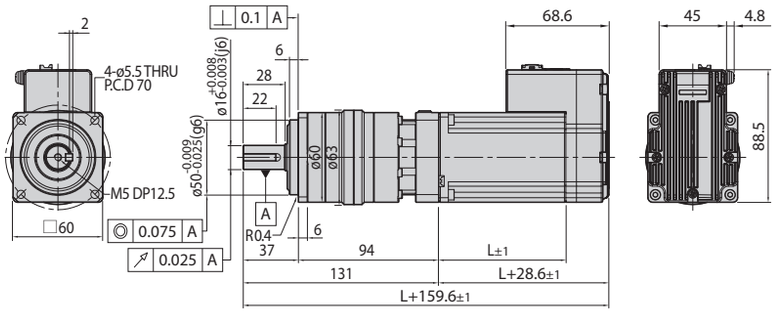
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)

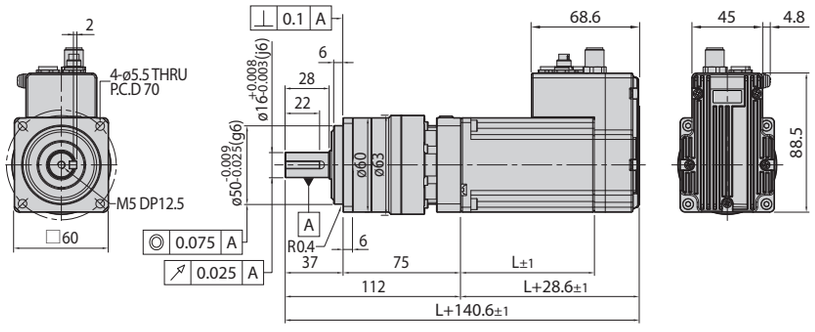


60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Applicable Model			
Ezi-SERVO II Plus-E ALL			

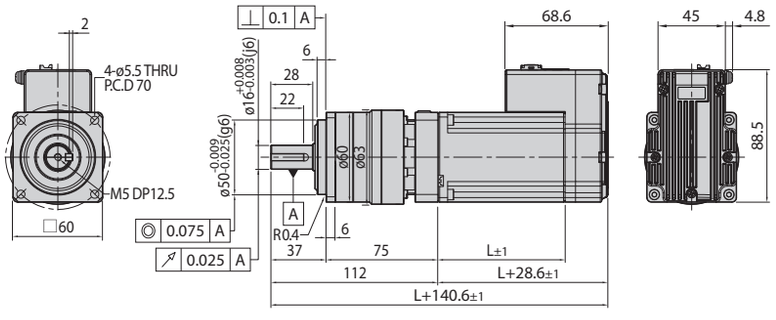
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



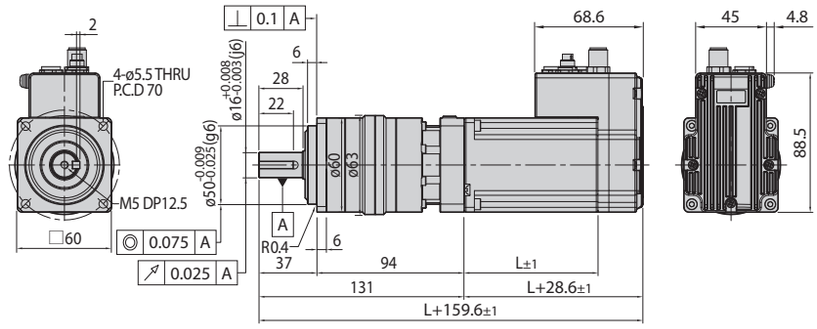
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

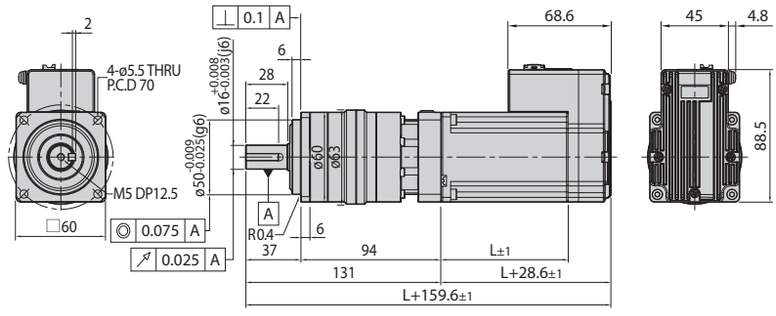
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)

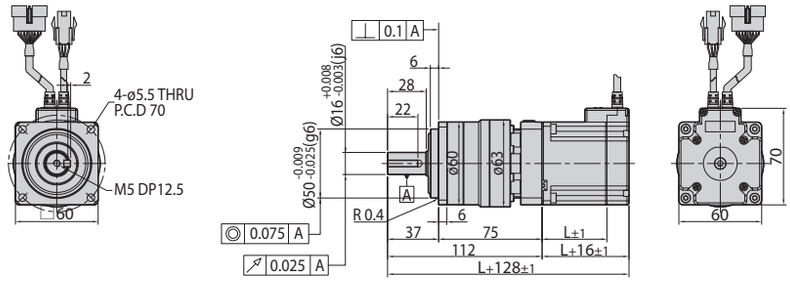


60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Applicable Model			
S-SERVO II	S-SERVO II 2X	S-SERVO II 3X	

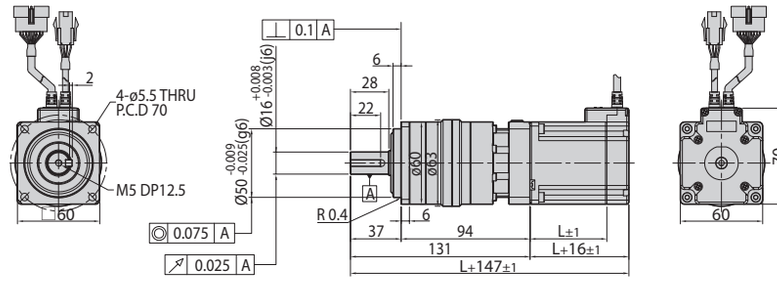
Gear Ratio 3, 5, 8, 10 : Single



60mm

Model name	Length(L)
SM-60S	47
SM-60M	56
SM-60L	85

Gear Ratio 15, 25, 40, 50 : Double



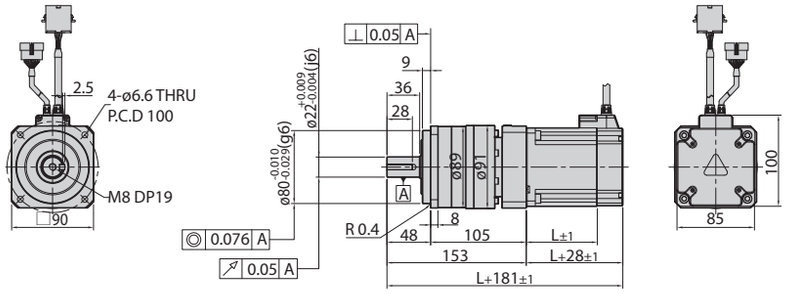
60mm

Model name	Length(L)
SM-60S	47
SM-60M	56
SM-60L	85

● Dimensions of Motor with Gearbox [86mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO Plus-R		

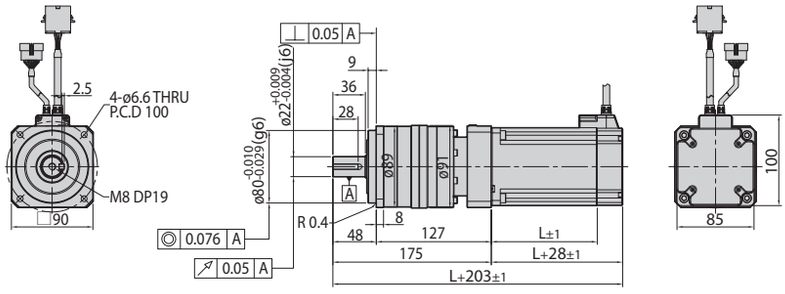
Gear Ratio 3, 5, 8, 10 : Single



86mm

Model name	Length(L)
EzM-86M	78
EzM-86L	117
EzM-86XL	155

Gear Ratio 15, 25, 40, 50 : Double

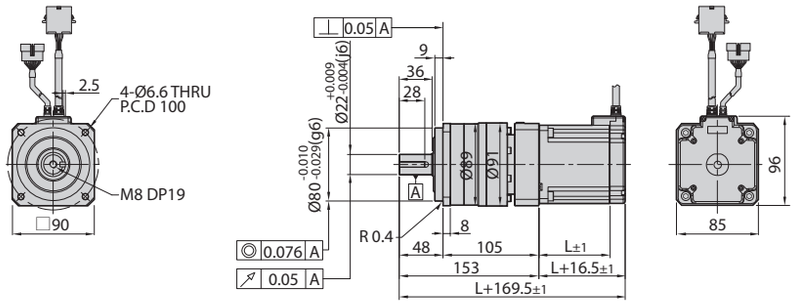


86mm

Model name	Length(L)
EzM-86M	78
EzM-86L	117
EzM-86XL	155

Applicable Model			
Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II CC-Link	

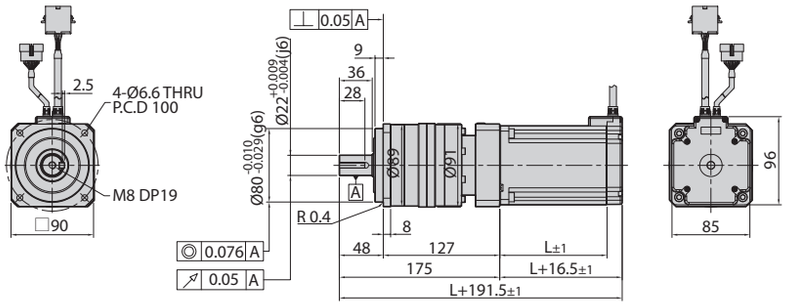
Gear Ratio 3, 5, 8, 10 : Single



86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

Gear Ratio 15, 25, 40, 50 : Double



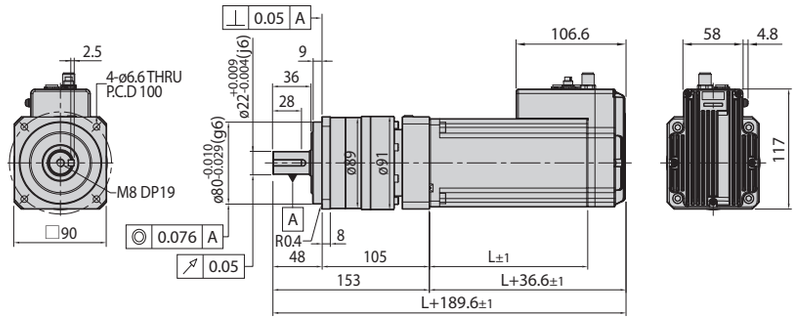
86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

● Dimensions of Motor with Gearbox [86mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

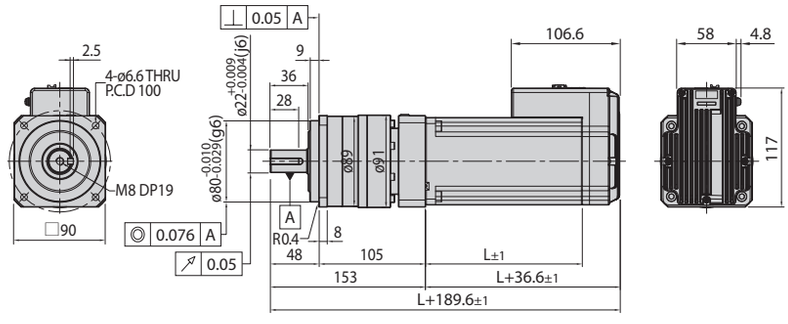
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)

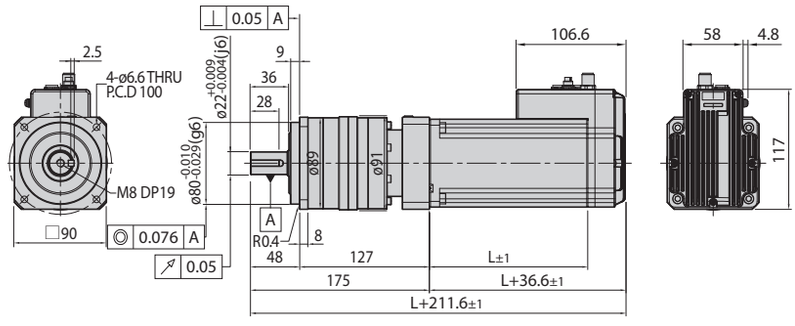


86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

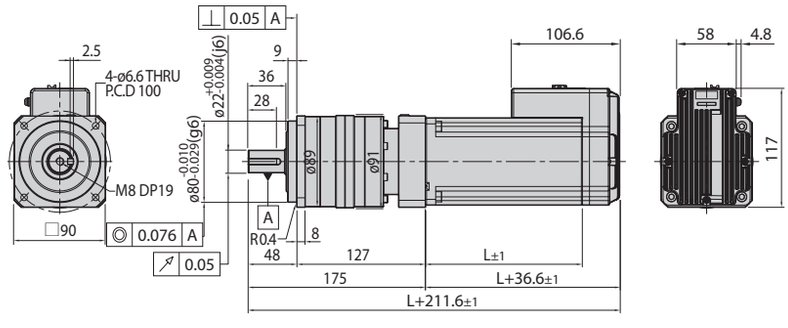
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



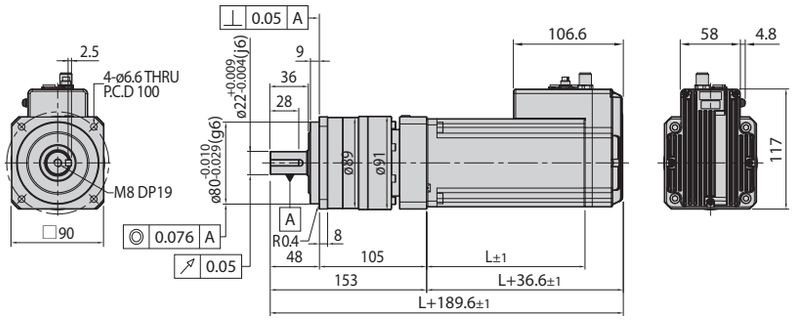
86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

● Dimensions of Motor with Gearbox [86mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

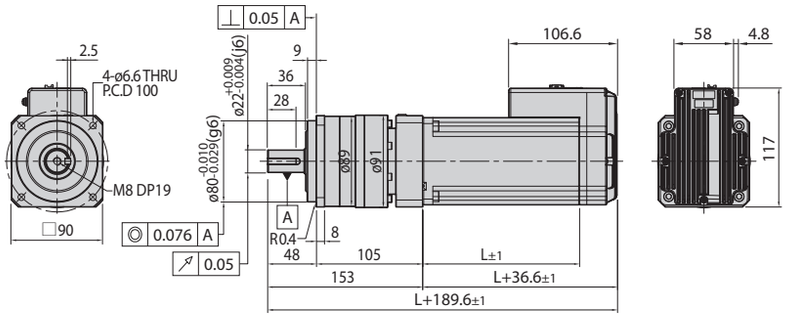
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)

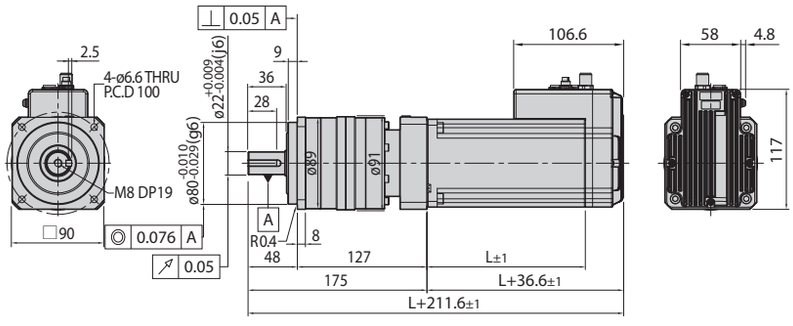


86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Applicable Model			
Ezi-SERVO II Plus-E ALL			

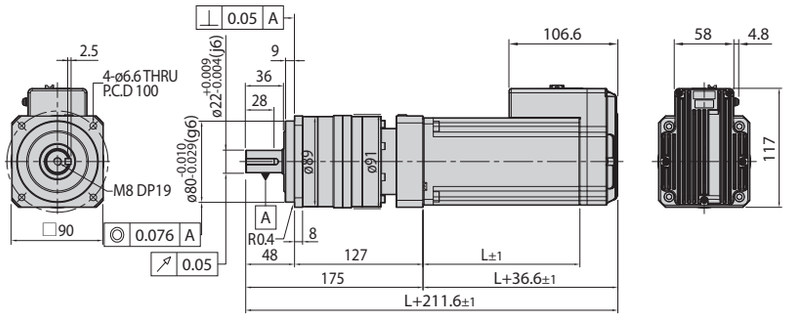
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

FASTECH_

Product Information

Ezi-SERVO®

S-SERVO® II

Ezi-STEP®

OPTION

Ezi-IO®

- EtherCAT
- EtherCAT AD
- EtherCAT DA
- Plus-E
- Plus-R

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®





Digital Input / Output Module_ Ezi-IO EtherCAT

- EtherCAT based Digital I/O Module
- Simple and Easy Wiring(e-CON / Terminal Block type)
- Various 16CH & 32CH I/O Module(NPN / PNP type)
- Digital I/O Photocoupler Isolation



FASTECH
Fast, Accurate, Smooth Motion

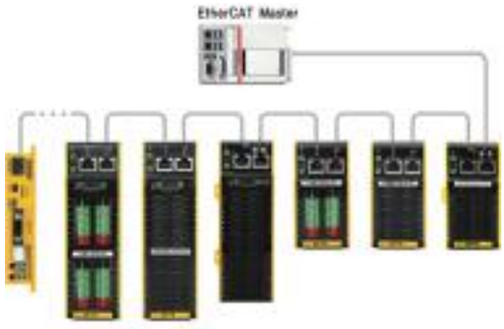
Ezi-IO® EtherCAT®

Input/Output Module



1 EtherCAT Based Digital I/O module

Ezi-IO EtherCAT is a Digital I/O module supporting EtherCAT, a fieldbus based on high speed Ethernet (100Mbps, Full-Duplex). EtherCAT enables fast data transfer with peripheral devices and supports connection of various devices without topology limitation.



2 Simple and Easy Wiring

Ezi-IO EtherCAT offers e-CON connector type and terminal block type products. The e-CON connector type makes it easy to attach and detach peripheral devices. The terminal block type allows easy wiring of peripheral devices in a one-touch method. Therefore peripherals can be easily and simply connected to the EtherCAT network for control.

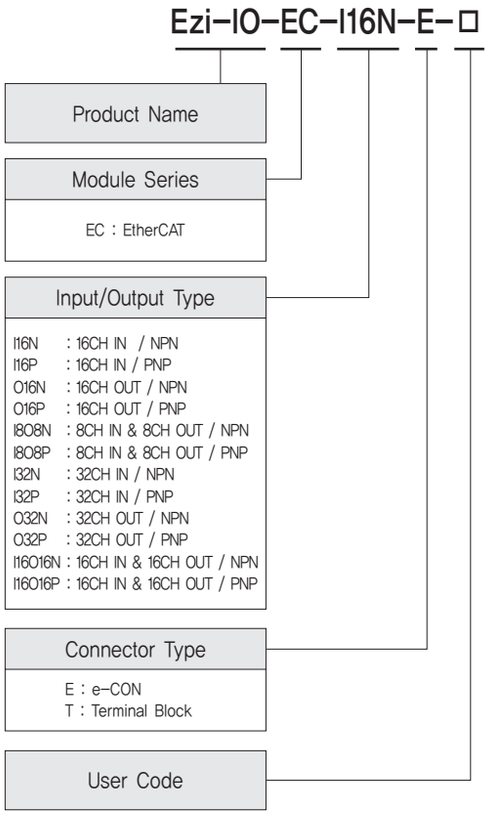
3 Various 16CH & 32CH I/O module

Ezi-IO EtherCAT offers 16CH and 32CH products. 16CH types are provided with 16CH input, 16CH output, 8CH input + 8CH output products and 32CH types are provided with 32CH input, 32CH output, 16CH input + 16CH output. Ezi-IO EtherCAT offers NPN and PNP products to support various peripheral I/O methods.

4 Digital I/O Photocoupler Isolation

Ezi-IO EtherCAT is isolated with photocoupler for input and output, makes easy connection to peripherals without additional circuit. (32CH module only)

● Ezi-IO EtherCAT Part Numbering



● Ezi-IO EtherCAT Part Number

Part Number	Series
Ezi-IO-EC-I16N-E	Ezi-IO-EC-■16□-E
Ezi-IO-EC-I16P-E	
Ezi-IO-EC-O16N-E	
Ezi-IO-EC-O16P-E	
Ezi-IO-EC-I8O8N-E	Ezi-IO-EC-I8O8□-E
Ezi-IO-EC-I8O8P-E	
Ezi-IO-EC-I16N-T	Ezi-IO-EC-■16□-T
Ezi-IO-EC-I16P-T	
Ezi-IO-EC-O16N-T	
Ezi-IO-EC-O16P-T	
Ezi-IO-EC-I8O8N-T	Ezi-IO-EC-I8O8□-T
Ezi-IO-EC-I8O8P-T	
Ezi-IO-EC-I32N-E	Ezi-IO-EC-■32□-E
Ezi-IO-EC-I32P-E	
Ezi-IO-EC-O32N-E	
Ezi-IO-EC-O32P-E	
Ezi-IO-EC-I16O16N-E	Ezi-IO-EC-I16O16□-E
Ezi-IO-EC-I16O16P-E	
Ezi-IO-EC-I32N-T	Ezi-IO-EC-■32□-T
Ezi-IO-EC-I32P-T	
Ezi-IO-EC-O32N-T	
Ezi-IO-EC-O32P-T	
Ezi-IO-EC-I16O16N-T	Ezi-IO-EC-I16O16□-T
Ezi-IO-EC-I16O16P-T	

* ■ : Input / Output Type
□ : NPN / PNP Type

Specifications of Module

Model		Ezi-IO-EC-I16N-□	Ezi-IO-EC-I16P-□	Ezi-IO-EC-O16N-□	Ezi-IO-EC-O16P-□	Ezi-IO-EC-I8O8N-□	Ezi-IO-EC-I8O8P-□
Input Voltage		24VDC ±10%					
Current Consumption		Max. 150mA (Except I/O current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% (Non-Condensing) · In Storage: 10~90% (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Input Signal	· 16CH Input (Photocoupler Input, NPN/PNP) · 24VDC · Max. 15mA/CH		-		· 8CH Input (Photocoupler Input, NPN/PNP) · 24VDC · Max. 15mA/CH	
	Output signal	-		· 16CH Output (FET Output, NPN/PNP) · 24VDC · Max. 200mA/CH		· 8CH Output (FET Output, NPN/PNP) · 24VDC · Max. 200mA/CH	
	Signal Isolation Method	No Isolation					
LED Display		· Power status (PWR) · EtherCAT Communication status (RUN) · EtherCAT Communication connection status (ECAT IN, ECAT OUT) · I/O status (0~15)				· Power status (PWR) · EtherCAT Communication status (RUN) · EtherCAT Communication connection status (ECAT IN, ECAT OUT) · I/O status (0~7/0~7)	
EtherCAT	Synchronization	Free RUN, SM Event					
	Bus Interface	2×RJ45 connector					
	Cable	STP (Shielded Twisted Pair) cable of category 5e or higher / Max. Length 100m					

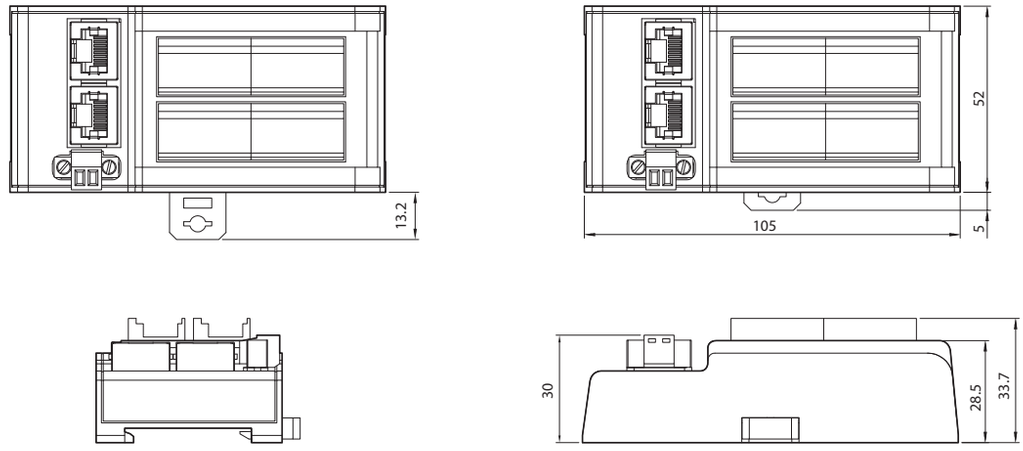
* □ : Connector Type

Model		Ezi-IO-EC-I32N-□	Ezi-IO-EC-I32P-□	Ezi-IO-EC-O32N-□	Ezi-IO-EC-O32P-□	Ezi-IO-EC-I16O16N-□	Ezi-IO-EC-I16O16P-□
Input Voltage		24VDC ±10%					
Current Consumption		Max. 300mA (Except I/O current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% (Non-Condensing) · In Storage: 10~90% (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Input Signal	· 32CH Input (Photocoupler Input, NPN/PNP) · 24VDC · Max. 15mA/CH		-		· 16CH Input (Photocoupler Input, NPN/PNP) · 24VDC · Max. 15mA/CH	
	Output signal	-		· 32CH Output (FET Output, NPN/PNP) · 24VDC · Max. 200mA/CH		· 16CH Output (FET Output, NPN/PNP) · 24VDC · Max. 200mA/CH	
	Signal Isolation Method	Photocoupler Isolation					
LED Display		· Control Power status (PWR) · EtherCAT Communication status (RUN) · EtherCAT Communication connection status (ECAT IN, ECAT OUT) · I/O status (0~31)				· Control Power status (PWR) · EtherCAT Communication status (RUN) · EtherCAT Communication connection status (ECAT IN, ECAT OUT) · I/O status (0~15/0~15)	
EtherCAT	Synchronization	Free RUN, SM Event					
	Bus Interface	2×RJ45 connector					
	Cable	STP (Shielded Twisted Pair) cable of category 5e or higher / Max. Length 100m					

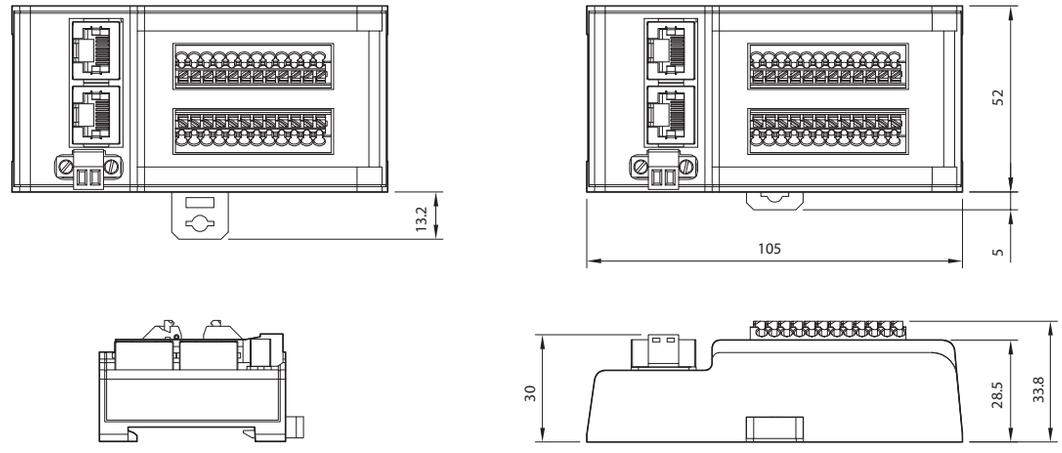
* □ : Connector Type

● Dimensions of Module [mm]

◆ Ezi-IO-EC-■16□-E / Ezi-IO-EC-I808□-E Series



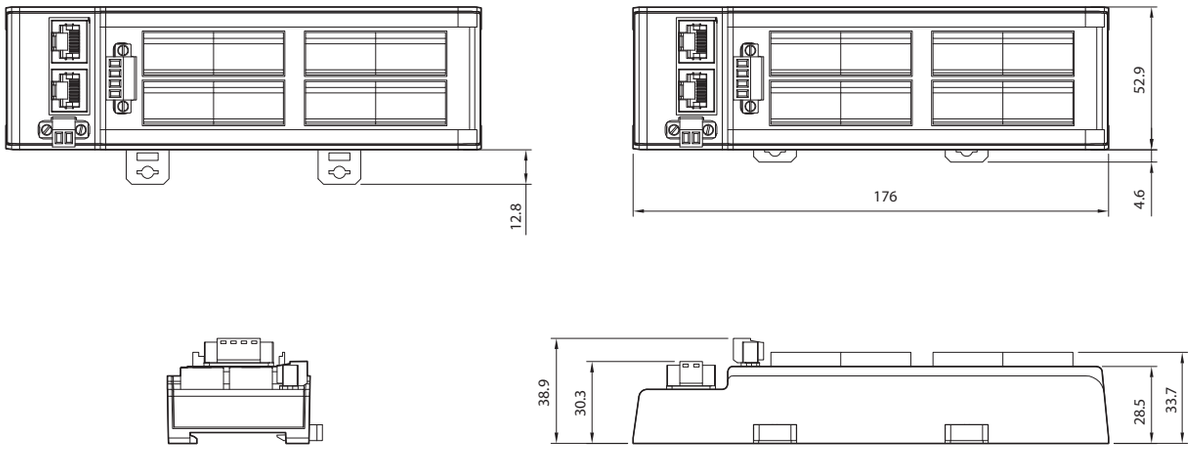
◆ Ezi-IO-EC-■16□-T / Ezi-IO-EC-I808□-T Series



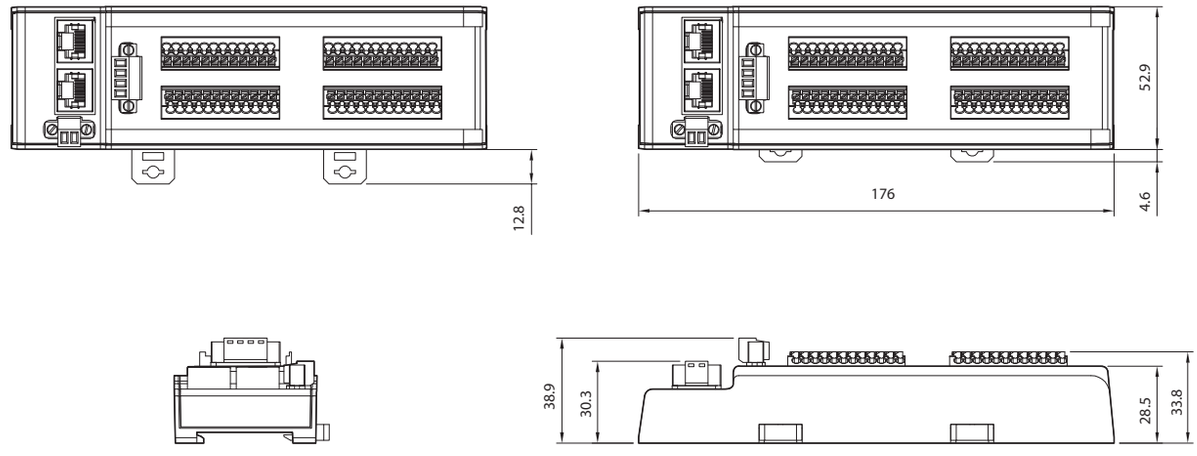
* ■ : Input / Output Type
  □ : NPN / PNP Type
* Can be installed on 35mm DIN Rail.

● Dimensions of Module [mm]

◆ Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16016□-E Series

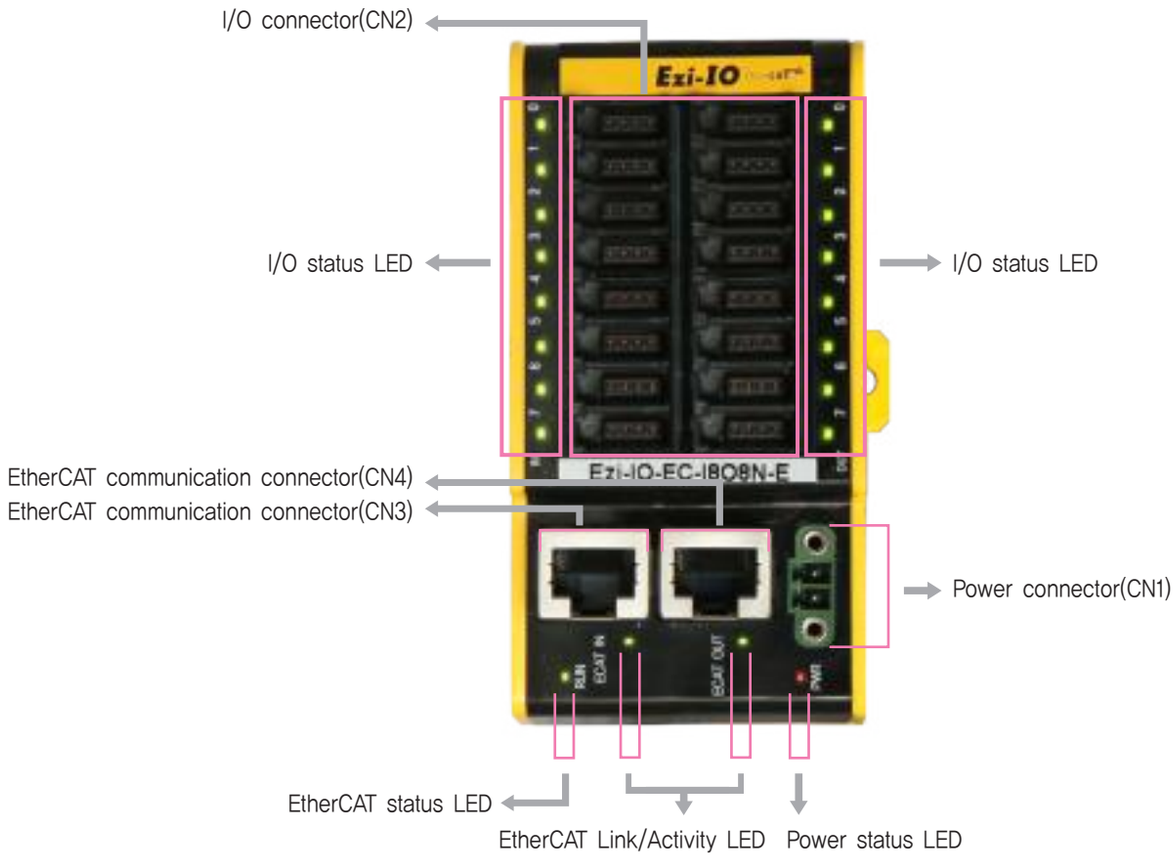


◆ Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16016□-T Series



* ■ : Input / Output Type
  □ : NPN / PNP Type
* Can be installed on 35mm DIN Rail.

● Settings and Operation [Ezi-IO-EC-■16□-E / Ezi-IO-EC-I808□-E Series]



1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Power input indication	Turn on when power is applied
RUN	Green	EtherCAT communication status indication	Turn on when EtherCAT Communication status is active
ECAT IN	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT IN link active
ECAT OUT	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT OUT link active
0~15 0~7/0~7	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Power Connector(CN1)

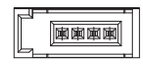
NO.	Function	I/O
1	24VDC	Input
2	GND	Input



* Be sure to supply power which is suitable for the load of I/O and control.

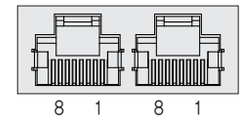
3. I/O Connector(CN2)

NO.	Function	I/O
1	24VDC	Output
2	NC	----
3	GND	Output
4	SIGNAL	I/O

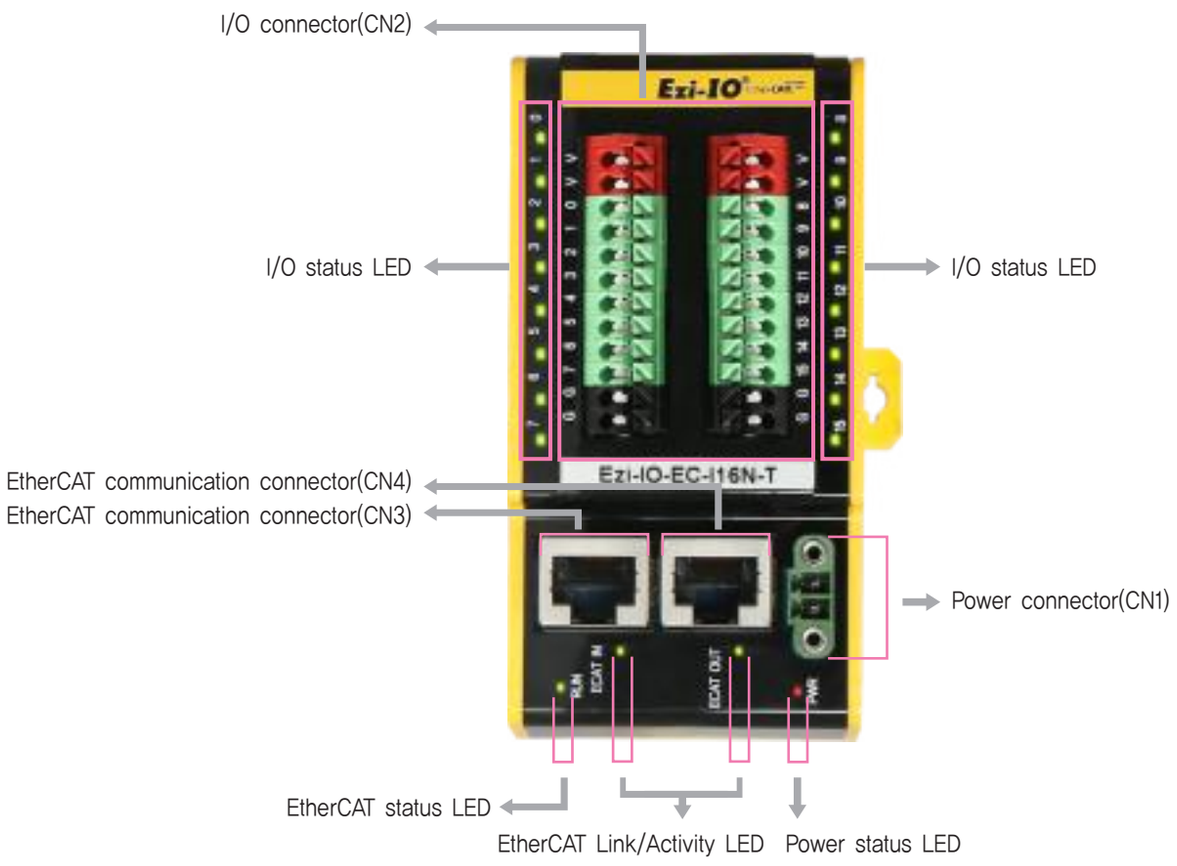


4. EtherCAT Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD-
2	TD-	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		



● Settings and Operation [Ezi-IO-EC-■16□-T / Ezi-IO-EC-I808□-T Series]



1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Power input indication	Turn on when power is applied
RUN	Green	EtherCAT communication status indication	Turn on when EtherCAT Communication status is active
ECAT IN	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT IN link active
ECAT OUT	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT OUT link active
0~15 0~7/0~7	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Power Connector(CN1)

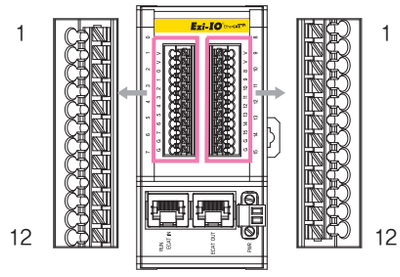
NO.	Function	I/O
1	24VDC	Input
2	GND	Input



* Be sure to supply power which is suitable for the load of I/O and control.

3. I/O Connector(CN2)

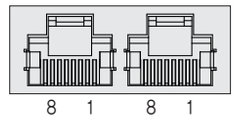
NO.	Function	I/O
1	24VDC	Output
2	24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	GND	Output
12	GND	Output



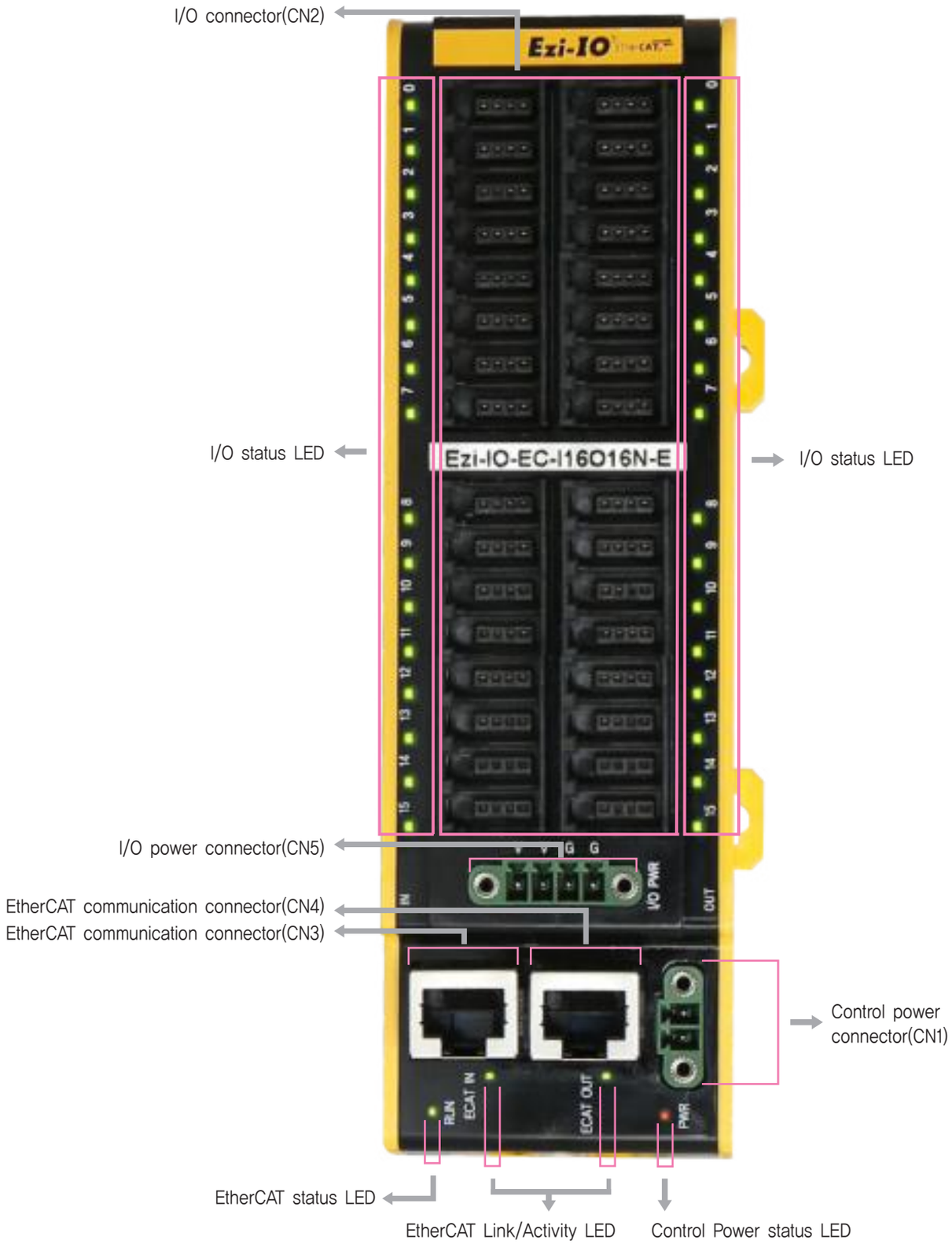
NO.	Function	I/O
1	24VDC	Output
2	24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	GND	Output
12	GND	Output

4. EtherCAT Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		



● Settings and Operation [Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16016□-E Series]



1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Control power input indication	Turn on when control power is applied
RUN	Green	EtherCAT communication status indication	Turn on when EtherCAT Communication status is active
ECAT IN	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT IN link active
ECAT OUT	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT OUT link active
0~31 0~15 / 0~15	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Control Power Connector(CN1)

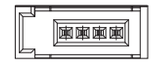
NO.	Function	I/O
1	24VDC	Input
2	GND	Input



1 2

3. I/O Connector(CN2)

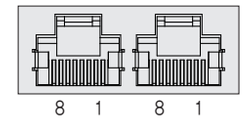
NO.	Function	I/O
1	EXT_24VDC	Output
2	NC	----
3	EXT_GND	Output
4	SIGNAL	I/O



1 2 3 4

4. EtherCAT Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD-
2	TD-	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		



8 1 8 1

5. I/O Power Connector(CN5)

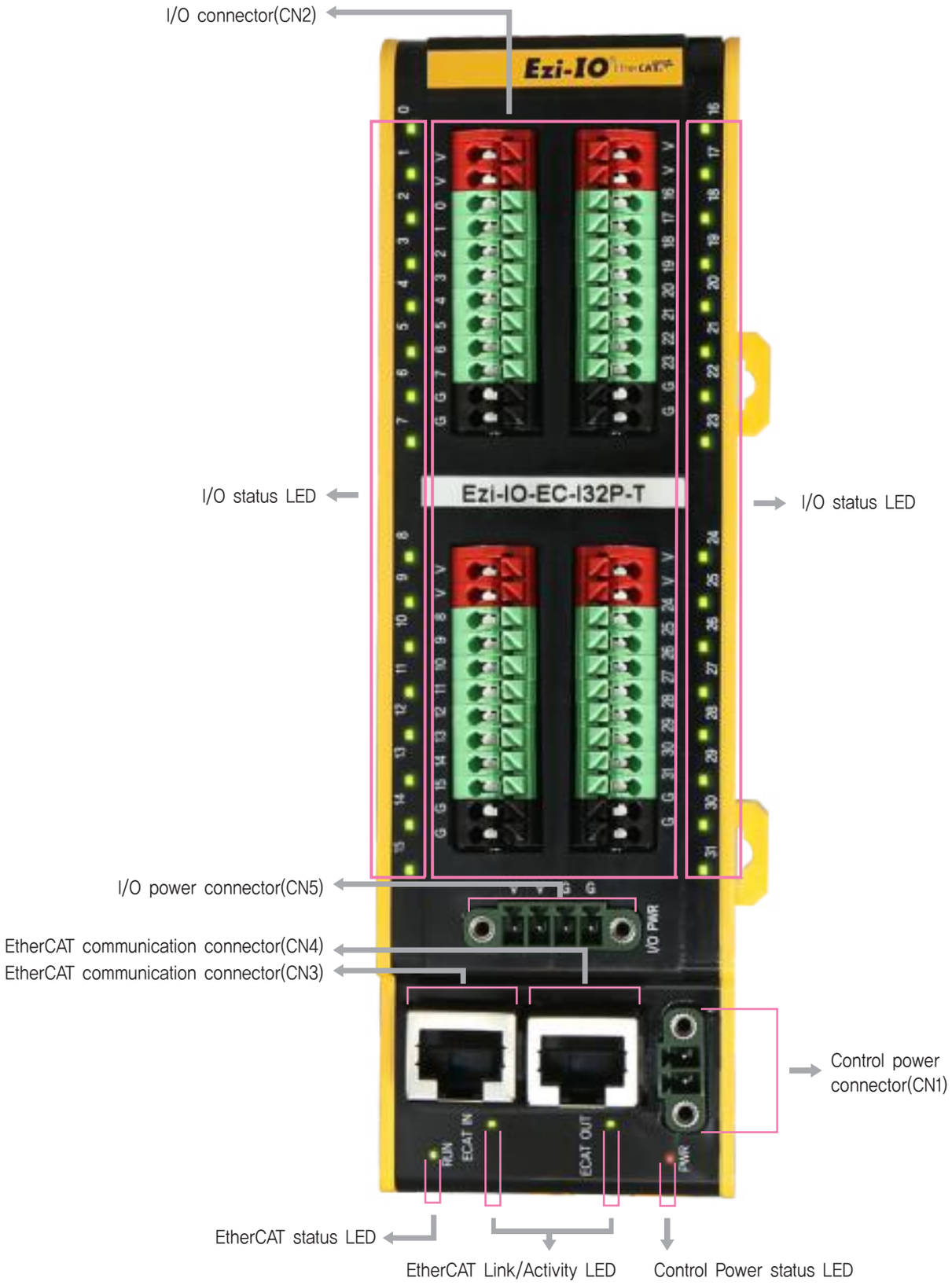
NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_24VDC	Input
3	EXT_GND	Input
4	EXT_GND	Input



1 2 3 4

* Be sure to supply a power source which is suitable for the load of I/O.

● Settings and Operation [Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16016□-T Series]



1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Control power input indication	Turn on when control power is applied
RUN	Green	EtherCAT communication status indication	Turn on when EtherCAT Communication status is active
ECAT IN	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT IN link active
ECAT OUT	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT OUT link active
0~31 0~15 / 0~15	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

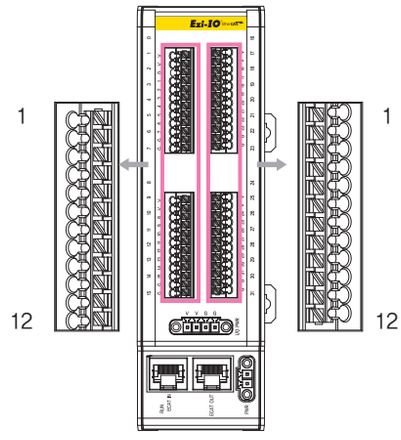
2. Control Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



3. I/O Connector(CN2)

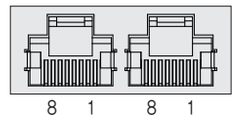
NO.	Function	I/O
1	EXT_24VDC	Output
2	EXT_24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	EXT_GND	Output
12	EXT_GND	Output



NO.	Function	I/O
1	EXT_24VDC	Output
2	EXT_24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	EXT_GND	Output
12	EXT_GND	Output

4. EtherCAT Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		



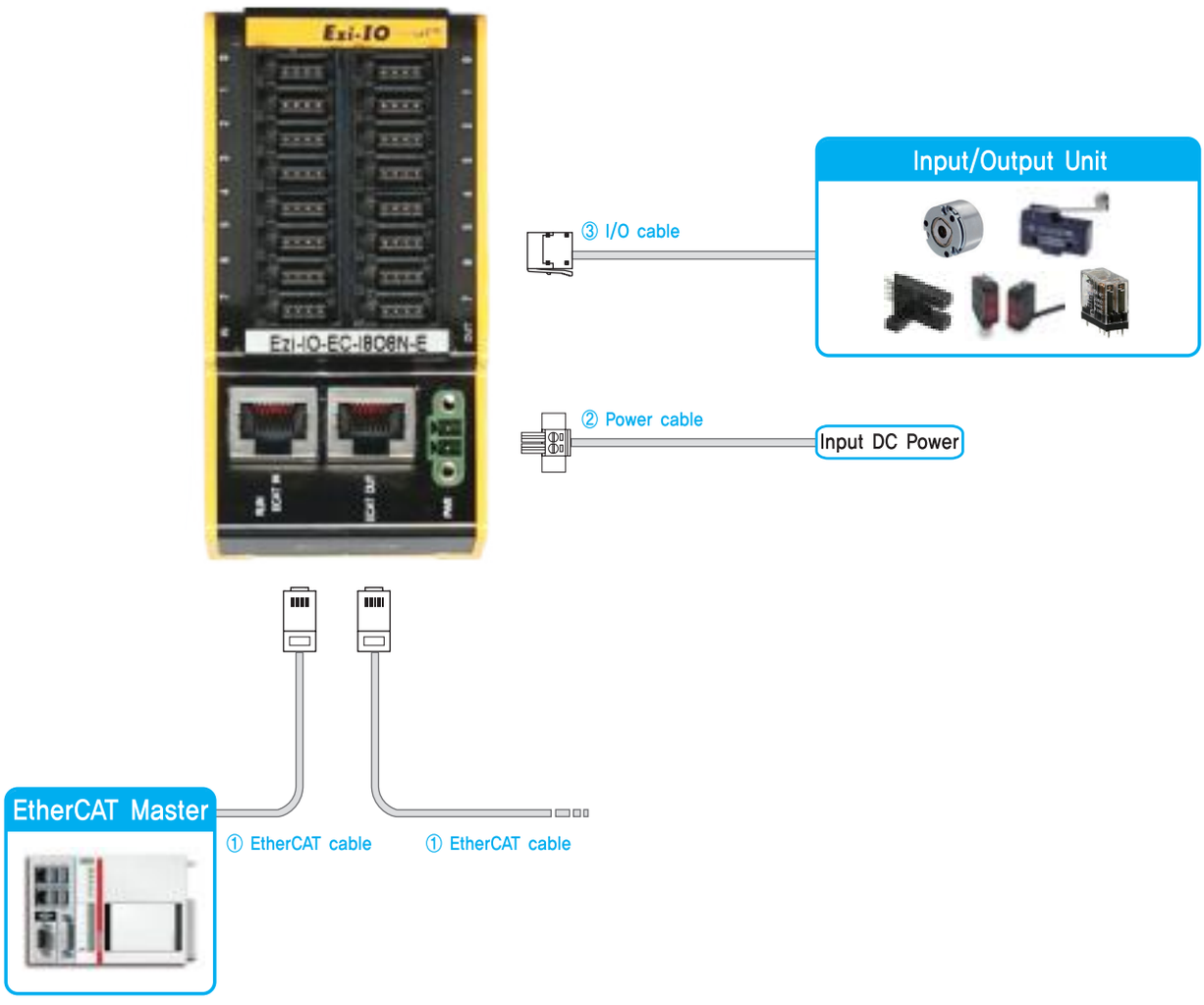
5. I/O Power Connector(CN5)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_24VDC	Input
3	EXT_GND	Input
4	EXT_GND	Input



* Be sure to supply a power source which is suitable for the load of I/O.

● System Configuration [Ezi-IO-EC-■16□-E / Ezi-IO-EC-I8O8□-E Series]



Type	I/O Cable	Power Cable	EtherCAT Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① EtherCAT Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

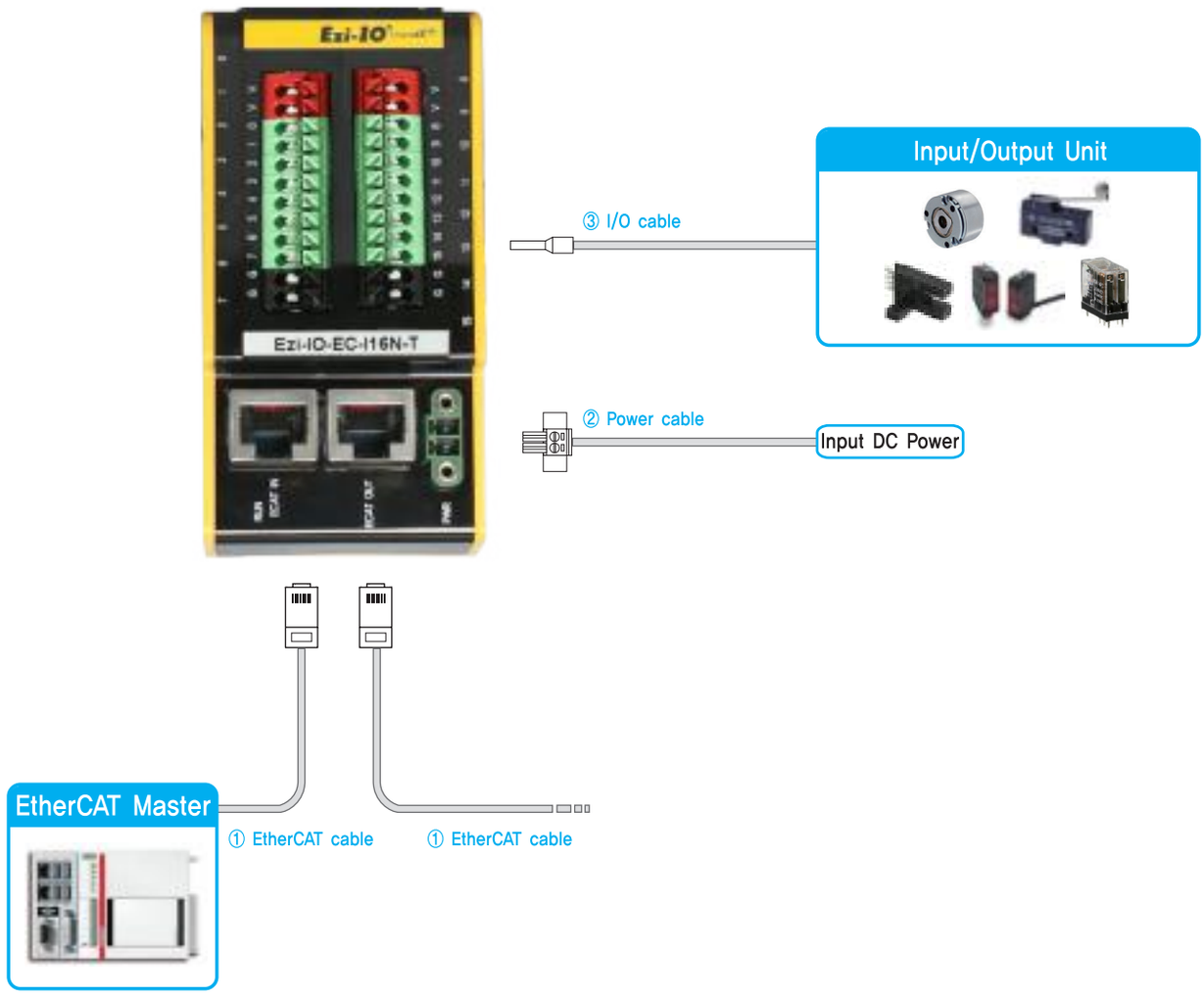
2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Power(CN1)	Terminal Block	MC421-38102	DECA
I/O(CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● System Configuration [Ezi-IO-EC-■16□-T / Ezi-IO-EC-I808□-T Series]



Type	I/O Cable	Power Cable	EtherCAT Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① EtherCAT Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

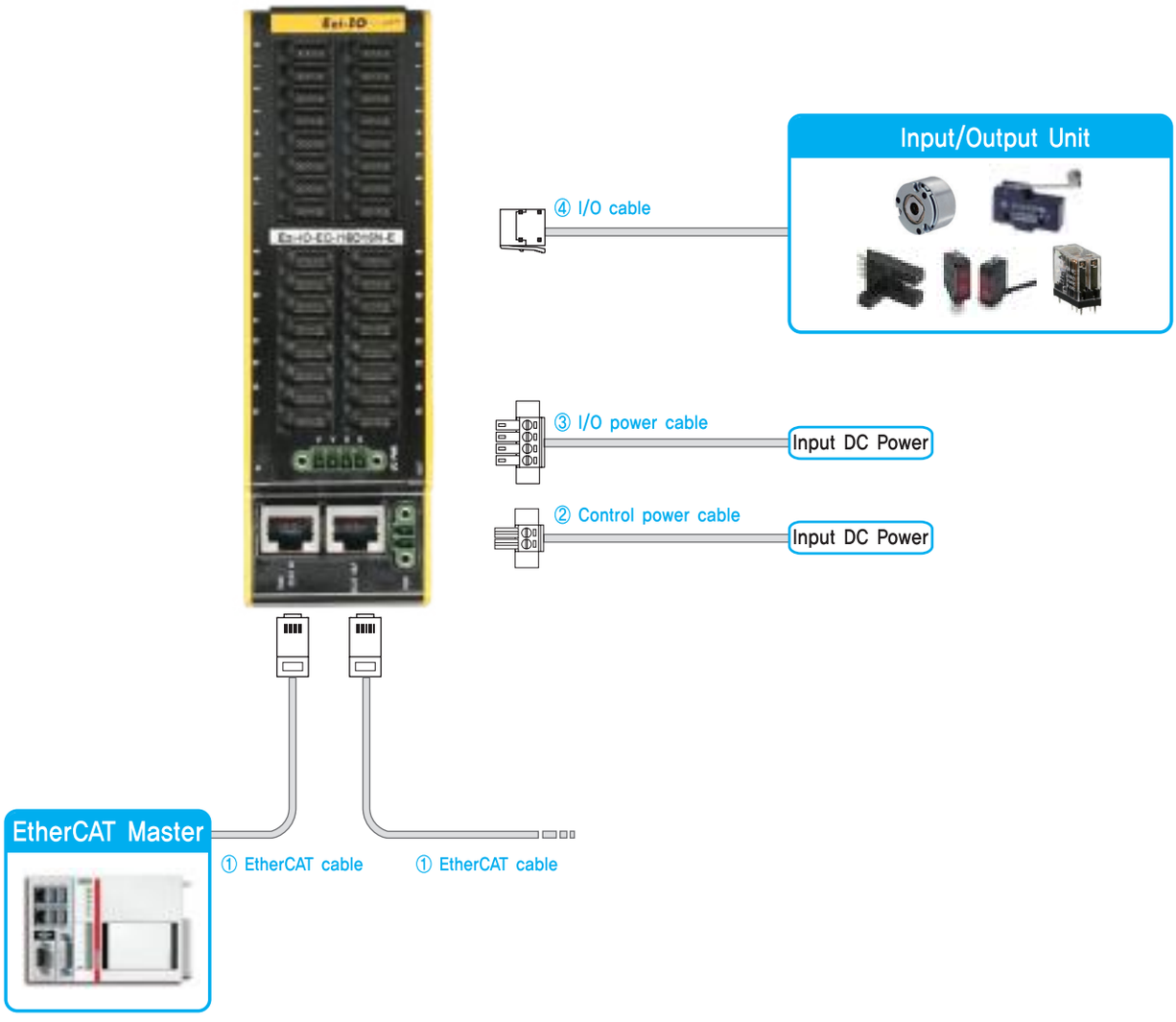
2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Power(CN1)	Terminal Block	MC421-38102	DECA

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● System Configuration [Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16O16□-E Series]



Type	I/O Cable	Control Power Cable	I/O Power Cable	EtherCAT Cable
Length supplied	–	–	–	–
Max. Length	20m	2m	2m	100m

1. Options

① EtherCAT Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

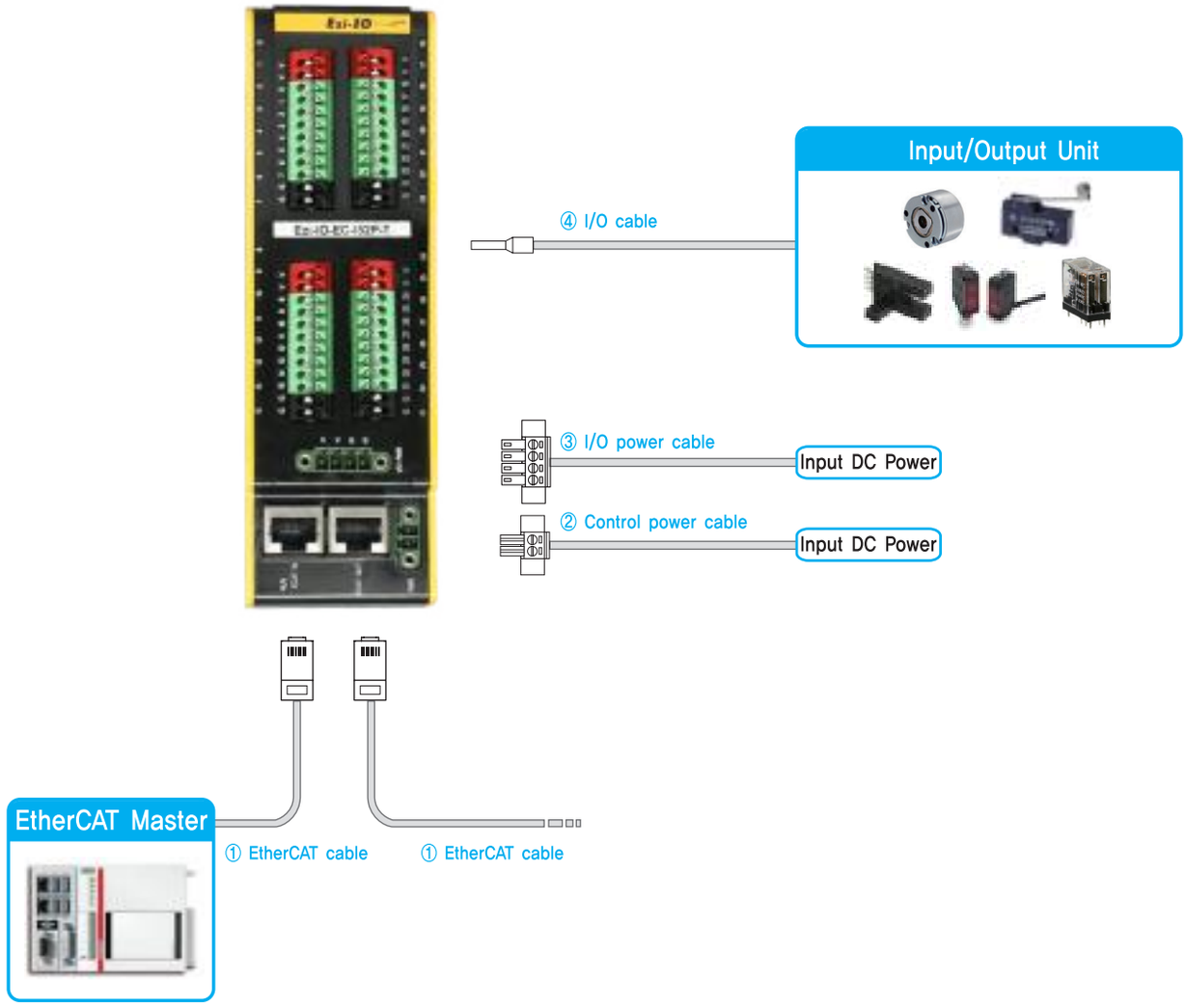
2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Control Power(CN1)	Terminal Block	MC421-38102	DECA
I/O Power(CN5)	Terminal Block	MC421-38104	DECA
I/O(CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● System Configuration [Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16O16□-T Series]



Type	I/O Cable	Control Power Cable	I/O Power Cable	EtherCAT Cable
Length supplied	–	–	–	–
Max. Length	20m	2m	2m	100m

1. Options

① EtherCAT Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

2. Connector Specifications

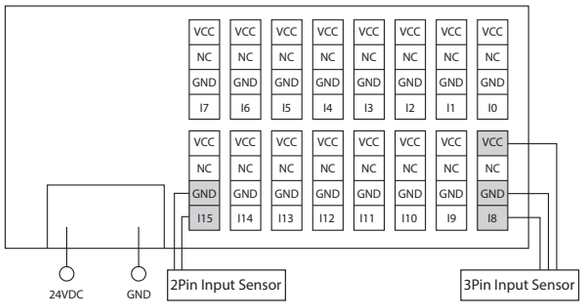
Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Control Power(CN1)	Terminal Block	MC421-38102	DECA
I/O Power(CN5)	Terminal Block	MC421-38104	DECA

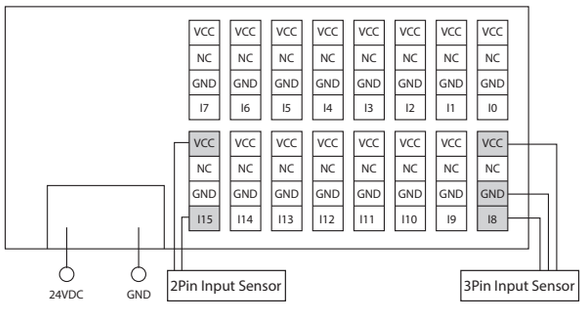
※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● External Wiring Diagram [Ezi-IO-EC-■16□-E / Ezi-IO-EC-I8O8□-E Series]

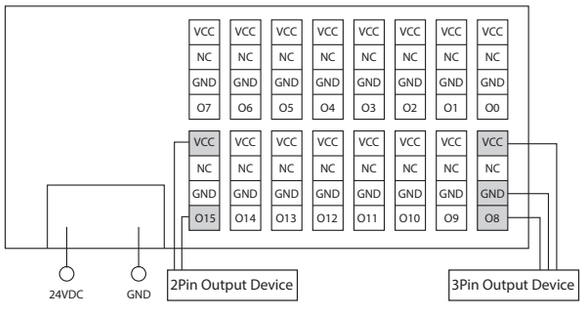
1 Ezi-IO-EC-I16N-E(NPN)



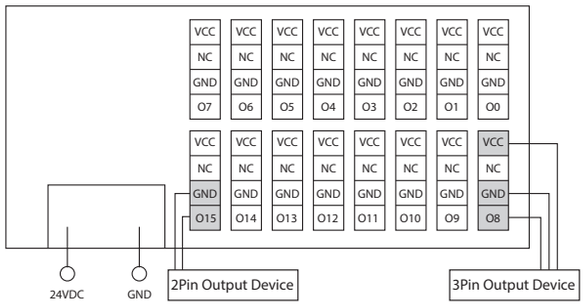
2 Ezi-IO-EC-I16P-E(PNP)



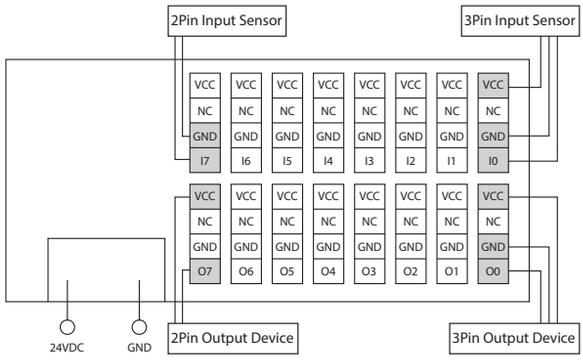
3 Ezi-IO-EC-O16N-E(NPN)



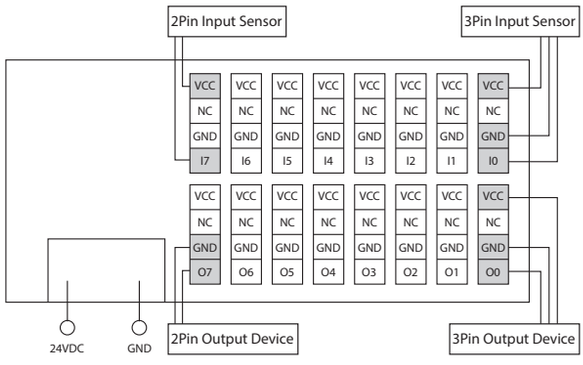
4 Ezi-IO-EC-O16P-E(PNP)



5 Ezi-IO-EC-I8O8N-E(NPN)



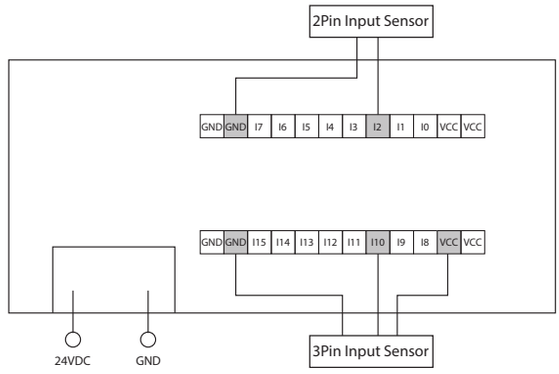
6 Ezi-IO-EC-I8O8P-E(PNP)



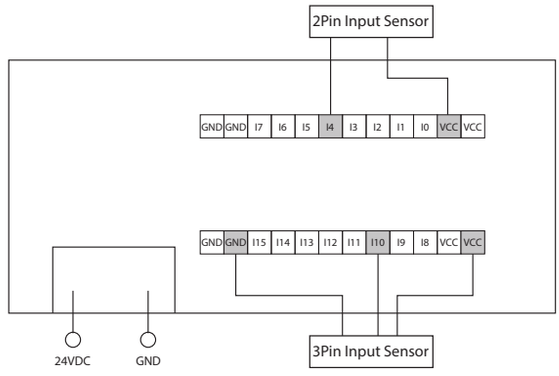
※ VCC is 24VDC output.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-EC-■16□-T / Ezi-IO-EC-I8O8□-T Series]

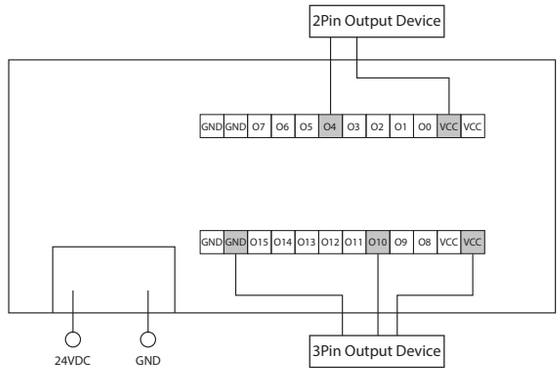
1 Ezi-IO-EC-I16N-T(NPN)



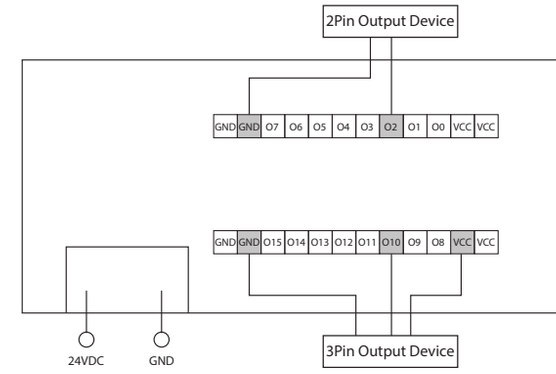
2 Ezi-IO-EC-I16P-T(PNP)



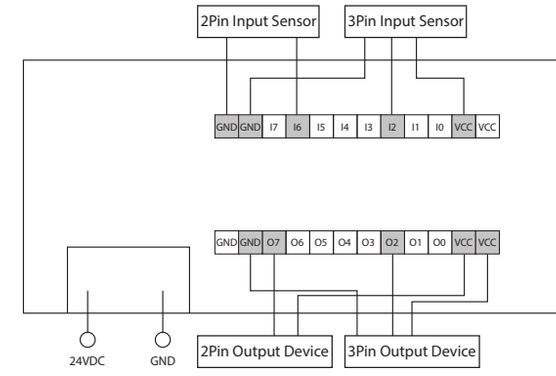
3 Ezi-IO-EC-O16N-T(NPN)



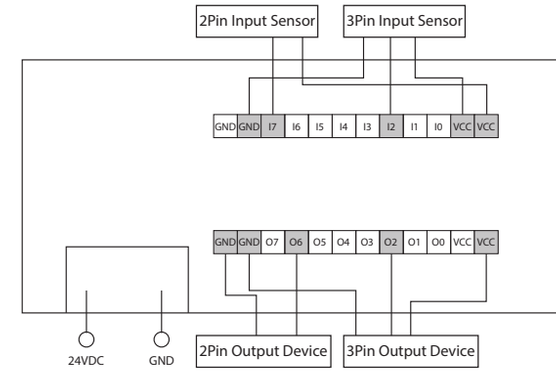
4 Ezi-IO-EC-O16P-T(PNP)



5 Ezi-IO-EC-I8O8N-T(NPN)



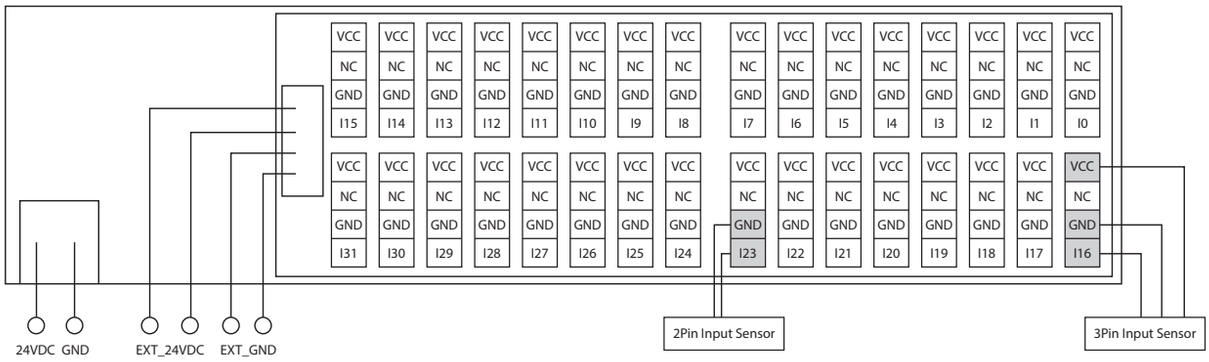
6 Ezi-IO-EC-I8O8P-T(PNP)



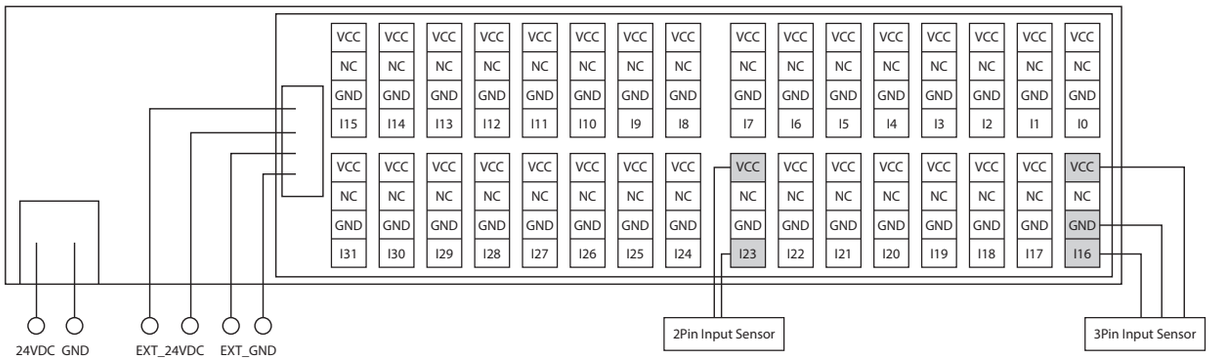
※ VCC is 24VDC output.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16O16□-E Series]

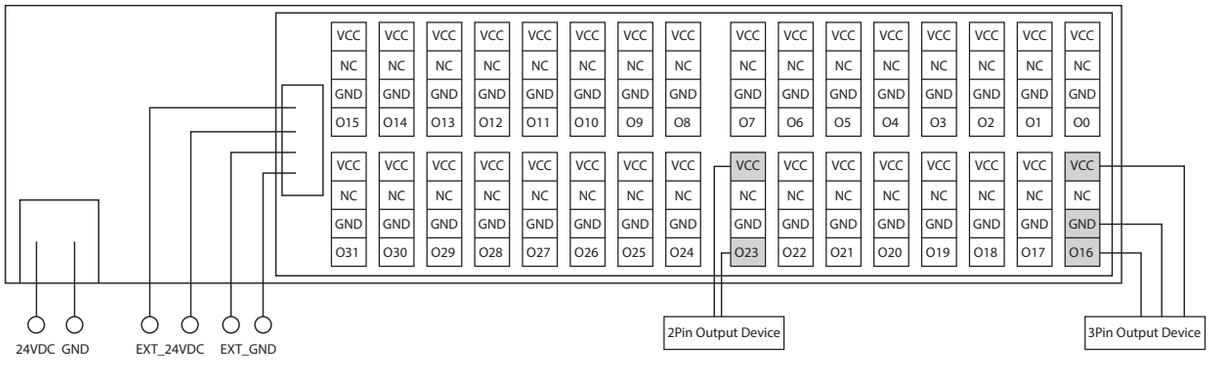
1 Ezi-IO-EC-I32N-E(NPN)



2 Ezi-IO-EC-I32P-E(PNP)



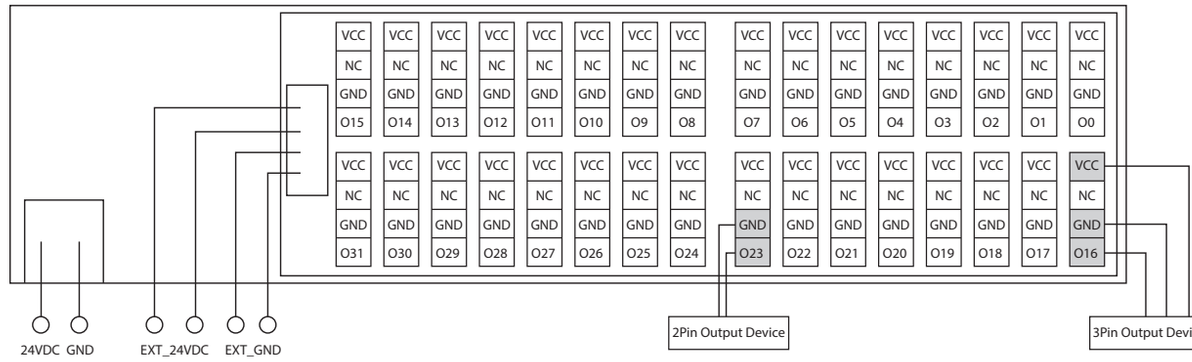
3 Ezi-IO-EC-O32N-E(NPN)



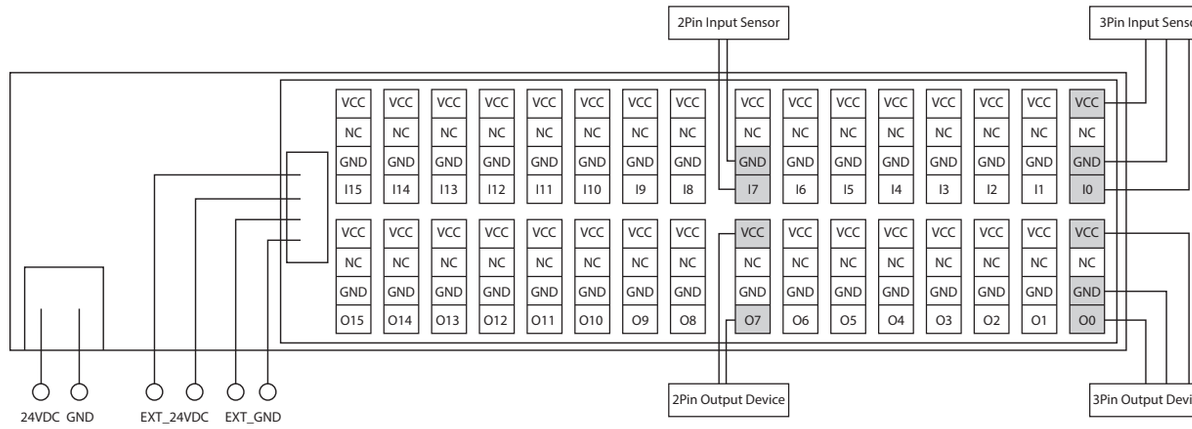
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16O16□-E Series]

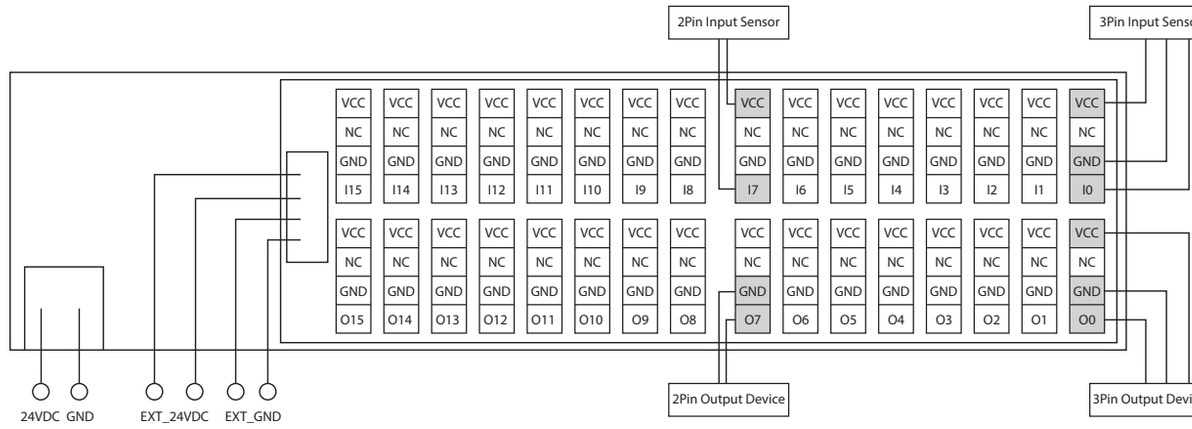
4 Ezi-IO-EC-O32P-E(PNP)



5 Ezi-IO-EC-I16O16N-E(NPN)



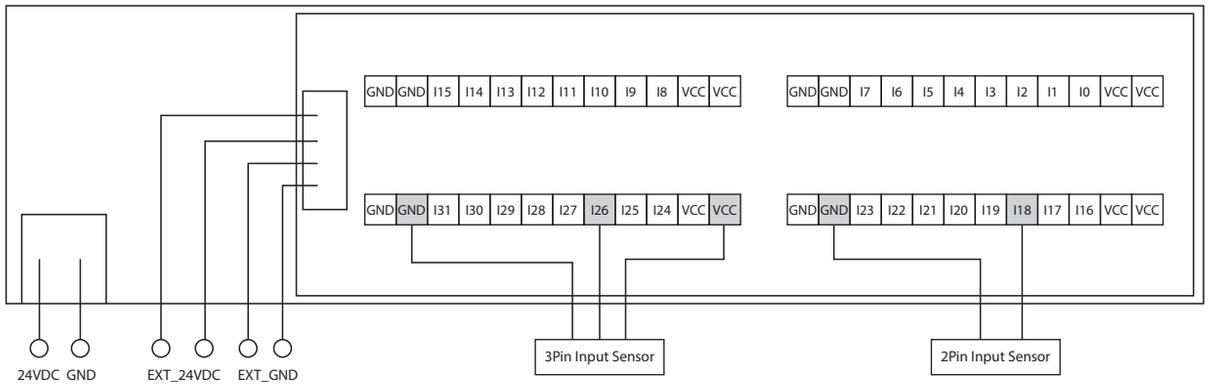
6 Ezi-IO-EC-I16O16P-E(PNP)



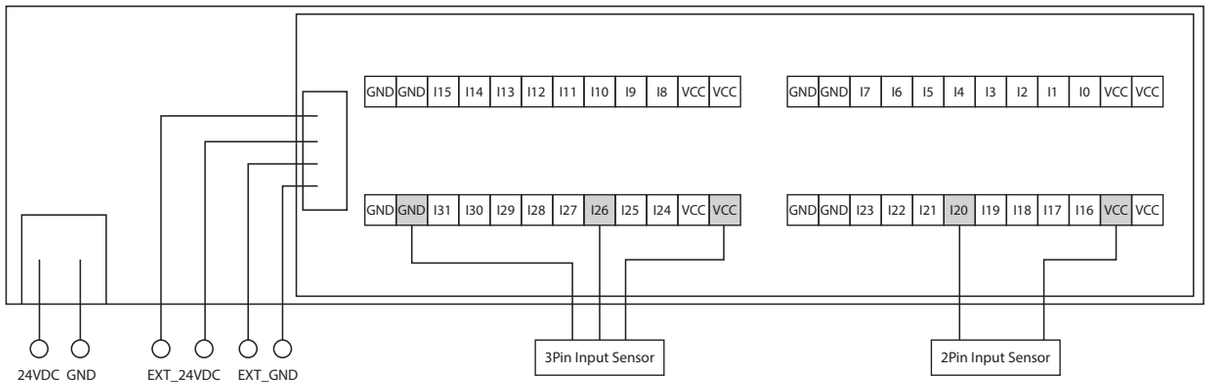
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16016□-T Series]

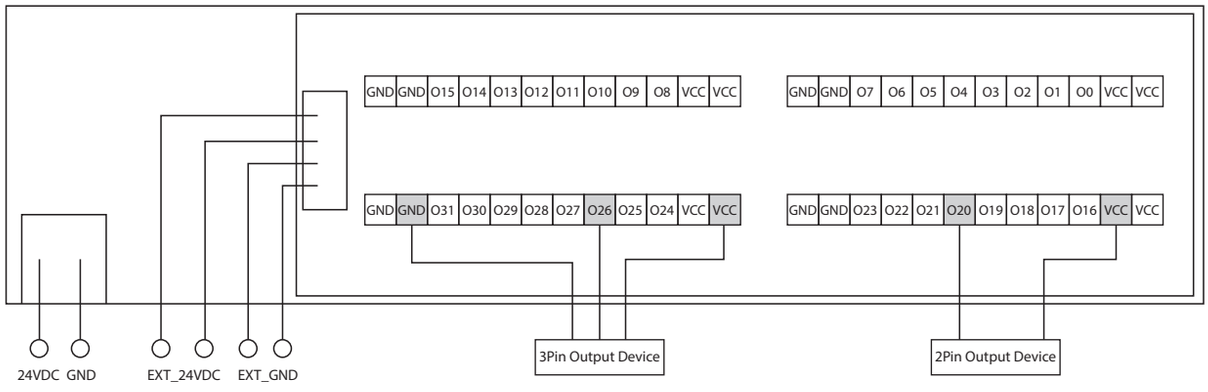
1 Ezi-IO-EC-I32N-T(NPN)



2 Ezi-IO-EC-I32P-T(PNP)



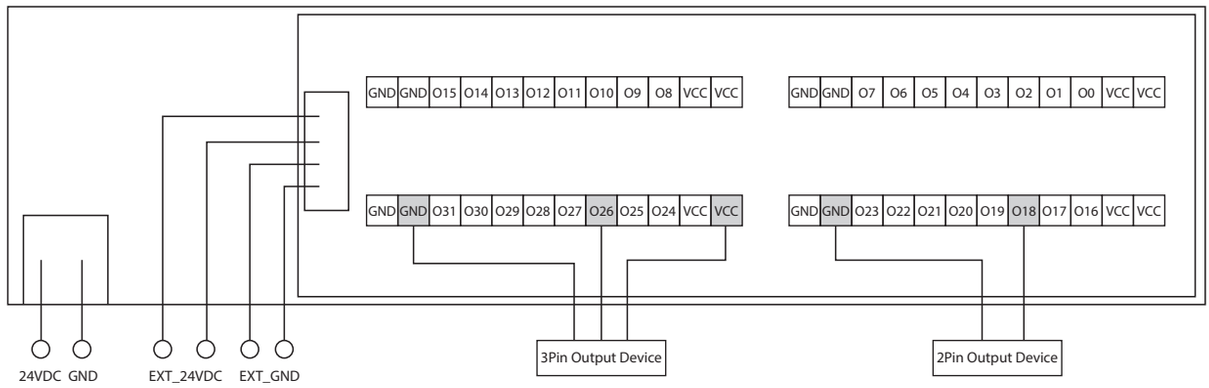
3 Ezi-IO-EC-O32N-T(NPN)



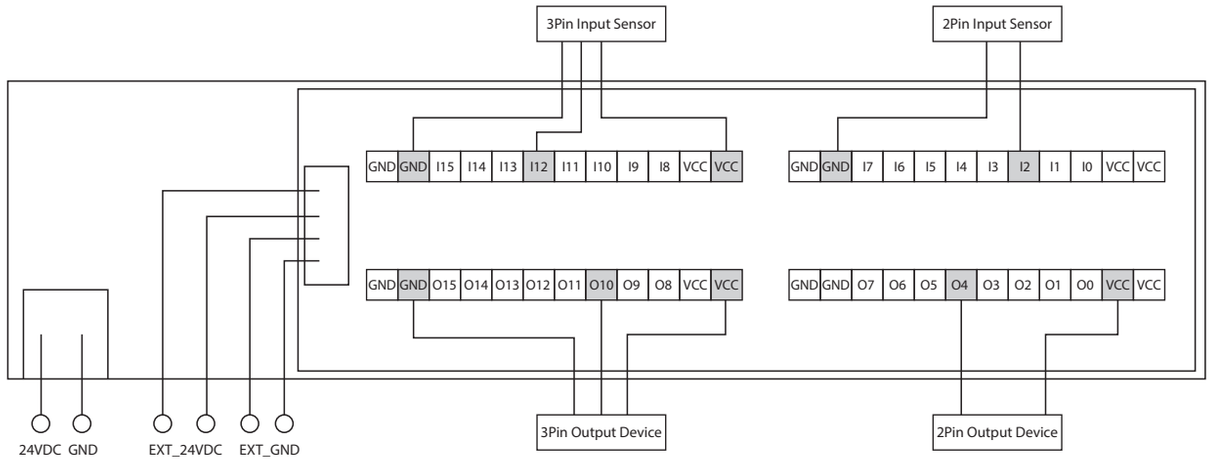
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16O16□-T Series]

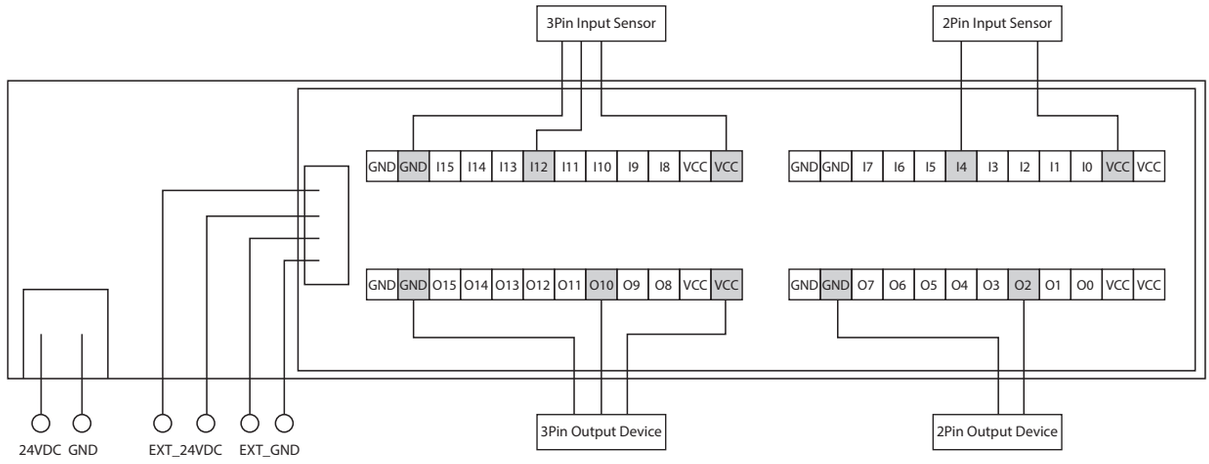
4 Ezi-IO-EC-O32P-T(PNP)



5 Ezi-IO-EC-I16O16N-T(NPN)



6 Ezi-IO-EC-I16O16P-T(PNP)

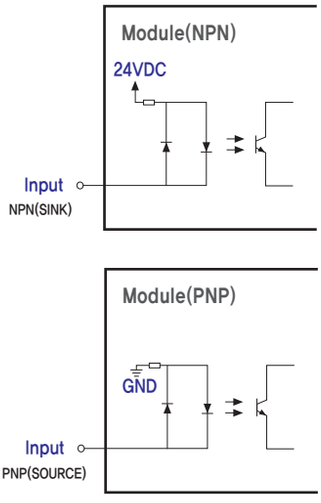


※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

Control Signal Input/Output Description

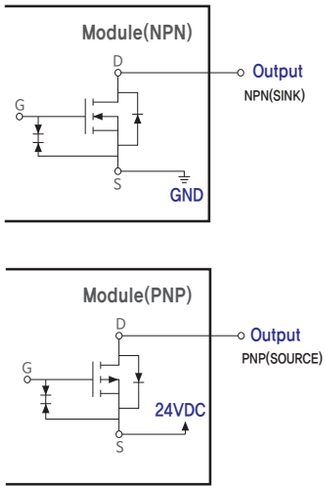
1 Input signal

The inputs of the Ezi-IO EtherCAT are all photocouplers. The signal shows the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.
Depending on the output method of peripheral devices, there are NPN(SINK) type or PNP(SOURCE) type module products. The input circuit for this is based on 24V and the input current is 15mA maximum for each channel.



2 Output signal

The outputs of the Ezi-IO EtherCAT are all transistors. Depending on the input method of peripheral devices, there are NPN(SINK) type or PNP(SOURCE) type module products. The output current is 200mA maximum per channel.



Remark (NPN / PNP / SINK / SOURCE)

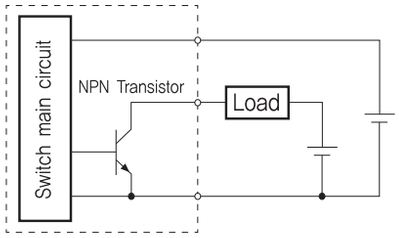


Fig1. NPN Out type interface

Fig1. shows example of NPN out interface.
When Transistor is on, Load current is flew into inside of NPN out which we call it as SINK type or NPN open collector type. Please connect (+) voltage into the load which connects output.

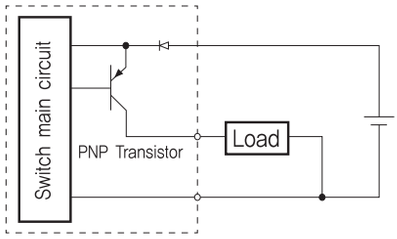


Fig2. PNP Out type interface

Fig2. shows example of PNP out interface.
When Transistor is on, Load current is flew out to outside load. We call it as SOURCE type or PNP open collector type. Please connect (-) voltage into other side of load which connects output.





Analog Input Module_ Ezi-IO EtherCAT AD

- EtherCAT Remote Analog Input Module
- Fully Support EtherCAT Synchronization Modes
- CiA 401 Compatible
- Simple and Easy Wiring
- Configuration by Switch Setting
- Moving Average Filter



FASTECH
Fast, Accurate, Smooth Motion

Ezi-IO® EtherCAT® AD

Input/Output Module



1 EtherCAT Based Analog I/O Module

Ezi-IO EtherCAT AD is an analog I/O module supporting EtherCAT, a fieldbus based on high speed Ethernet (100Mbps, Full-Duplex).
Ezi-IO EtherCAT AD is an EtherCAT Slave module which supports CAN Application layer over EtherCAT(CoE) and CiA 401 Profile. EtherCAT enables fast data transfer with peripheral devices and supports connection of various devices without topology limitation.



2 Simple and Easy Wiring

Ezi-IO EtherCAT AD is supplied with push-in spring type terminal blocks which are connected with wires in simple and easy way using ferrule connectors.
Connections of analog devices to Ezi-IO EtherCAT AD are also simplified.

3 EtherCAT Synchronization Modes

Ezi-IO EtherCAT AD supports all EtherCAT synchronization modes. Selectable among Free Run, SM Event, DC SYNC Event modes.

4 Easy Setup with Switches

Ezi-IO EtherCAT AD simply sets the EtherCAT ID with rotary switches. Voltage or current input mode per channel is easily configured with dip switches, and the voltage input range is selectable.

5 Moving Average Filtering

Ezi-IO EtherCAT AD supports the moving average filter function to smooth input analog signals of each channel. Selectable time range of moving average filter is 0~100msec.

● Ezi-IO EtherCAT AD Part Numbering

Ezi-IO-EC-AD08-T-□

- Product Name
- Module Series
  - EC : EtherCAT
- Module Type
  - AD08 : 8CH / Analog Intput
- Connector Type
  - T : Terminal Block
- User Code

● Ezi-IO EtherCAT AD Part Number

Part Number
Ezi-IO-EC-AD08-T

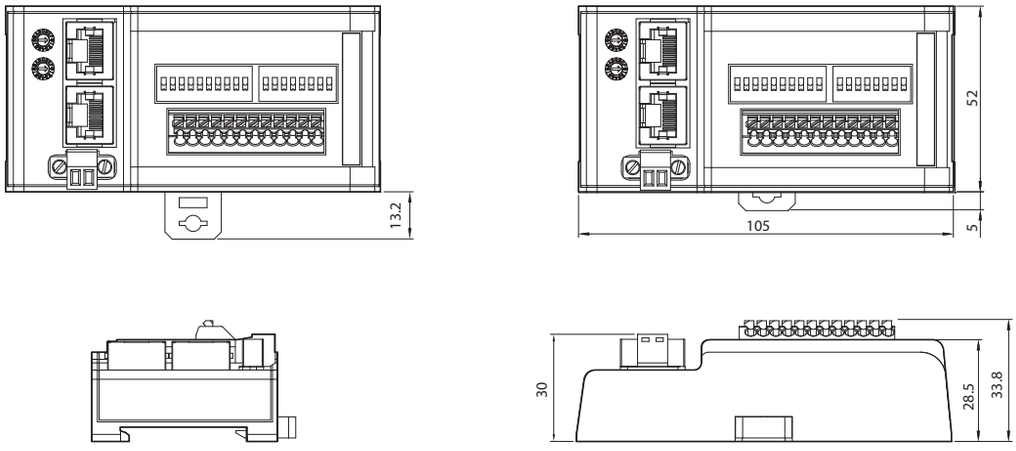
● Specifications of Module

Model			Ezi-IO-EC-AD08-□	
Intput Mode			Voltage Input	Current Input
Input Voltage			24VDC ±10%	
Current Consumption			Max. 120mA	
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃	
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)	
	Vib. Resist.		0.5g	
Function	Number of Channels		8CH	
	Max. Input Signal		±15V	±30mA
	Input Range		· -10~10V · -5~5V · -2.5~2.5V · 0~10V	· 0~20mA
	Input Range Setting Method		· SDO Communications (Separate setting for CH1~8) · DIP Switch (Separate setting for CH1/CH2, CH3/CH4, CH5/CH6, CH7/CH8)	
	Input Impedance		1MΩ	249Ω
	Resolution		13bit	
	Measuring Error	25℃	±0.3%(Full Scale)	±0.3%(Full Scale)
		0~50℃	±0.4%(Full Scale)	±0.6%(Full Scale)
	Analog Conversion Cycle		200μs	
	A/D Converted Data		· -10~10V : -4096~4095 · -5~5V : -4096~4095 · -2.5~2.5V : -4096~4095 · 0~10V : 0~8191	· 0~20mA : 0~8191
	Signal Isolation Method		Digital isolation between analog input and communication connections	
LED Indication			· Power Status (PWR) · EtherCAT Communication Status (RUN) · Operation Error (ERR) · EtherCAT Link/Activity Status (LA IN, LA OUT)	
EtherCAT	Protocol		CoE (CiA 401 Profile), FoE (Firmware Download)	
	Synchronization		Free Run, SM Event, DC SYNC Event	
	Bus Interface		2×RJ45 connector	
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m	

* □ : Connector Type

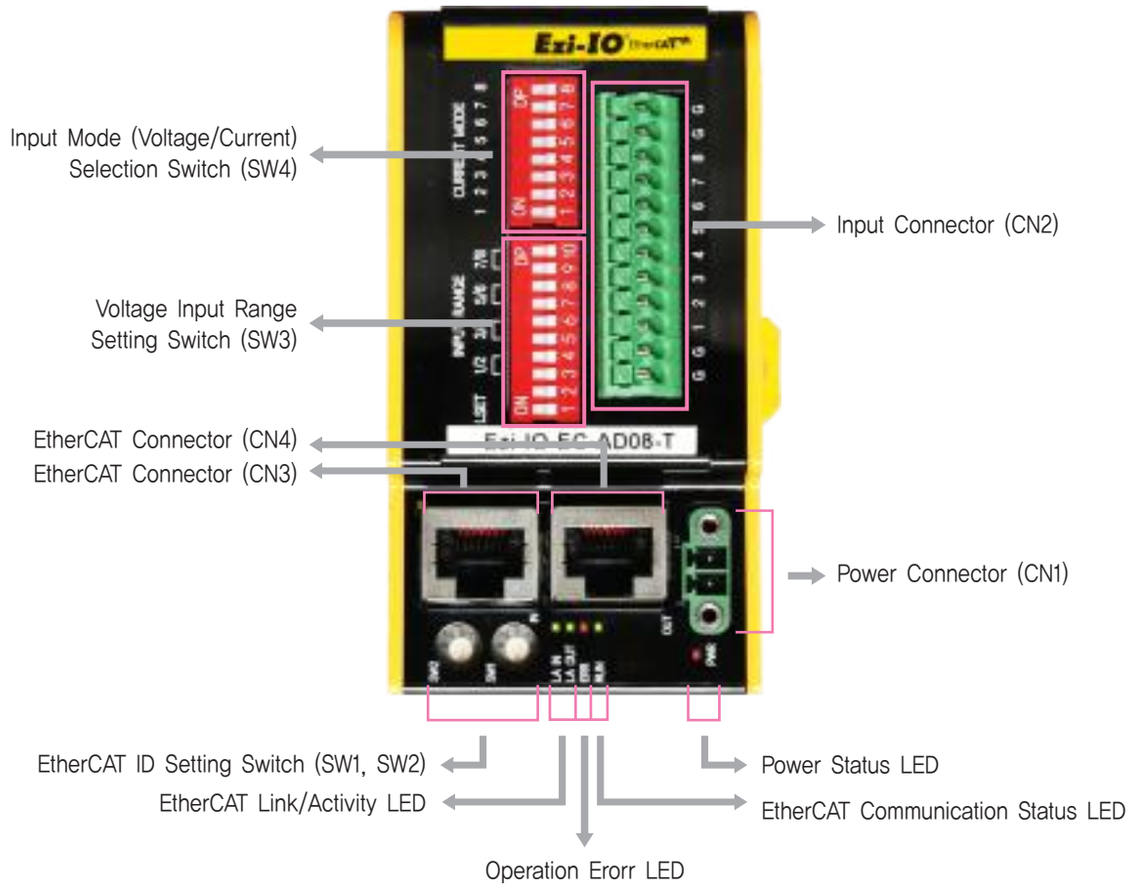
● Dimensions of Module [mm]

◆ Ezi-IO-EC-AD08-T



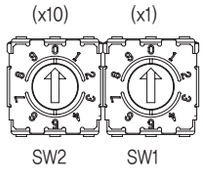
* Can be installed on 35mm DIN Rail.

● Settings and Operation [Ezi-IO-EC-AD08-T]

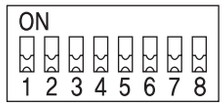


1. EtherCAT ID Setting Switches (SW1, SW2)

Use two rotary switches to set EtherCAT ID (ECAT Device ID). Set ones digit (x1) of EtherCAT ID on the right rotary switch (SW1), and set tens digit (x10) of EtherCAT ID on the left rotary switch (SW2).



2. Input Mode (Voltage/Current) Selection Switch (SW4)



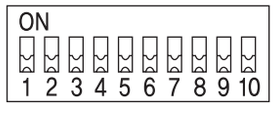
Select either Voltage or Current Input Mode for each channel with SW4 referring to the chart.

		CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
		SW4.1	SW4.2	SW4.3	SW4.4	SW4.5	SW4.6	SW4.7	SW4.8
Mode	Voltage Input	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	Current Input	ON	ON	ON	ON	ON	ON	ON	ON

* Select the input mode for each channel with the Input Mode Selection Switch (SW4) before supplying power to the module.

3. Voltage Input Range Setting Switch (SW3)

Select the voltage input range by SW3 referring to the chart. Analog signals are converted to the digital data according to the selected range of input voltage.



Select the input setting method with the LSET (SW3.1) switch.

[Selecting Input Setting Method]

		LSET	Description
		SW3.1	
Setting Method	DIP Switch	ON	Setting voltage input range with DIP switches (SW3.3~SW3.10)
	SDO Communication	OFF	Setting voltage/current input range through EtherCAT SDO communication

* If you use any channel in current input mode, select the SDO Communication for setting method (SW3.1=OFF).
* Set SW3.1 before supply power to the module.
* SW3.2 is not used.

When using the DIP Switch for setting method (SW3.1= ON), select voltage input range referring to the chart.

[Selecting Voltage Input Range]

		CH1/CH2		CH3/CH4		CH5/CH6		CH7/CH8	
		SW3.3	SW3.4	SW3.5	SW3.6	SW3.7	SW3.8	SW3.9	SW3.10
Input Voltage Range	−10~10V	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	−5~5V	OFF	ON	OFF	ON	OFF	ON	OFF	ON
	−2.5~2.5V	ON	OFF	ON	OFF	ON	OFF	ON	OFF
	0~10V	ON	ON	ON	ON	ON	ON	ON	ON

4. LED Indication

LED	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

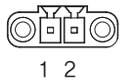
LED	Color	Status	Description
RUN	Green	OFF	INIT Status or Power is OFF
		Blinking	PRE-OPERATIONAL Status
		Single Flash	SAFE-OPERATIONAL Status
		ON	OPERATIONAL Status
		Flickering	BOOTSTRAP Status

LED	Color	Status	Description
ERR	Red	OFF	No Error or Power is OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

LED	Color	Status	Description
Link/ Activity	Green	OFF	Link is not established physically.
		ON	Link is established physically.
		Flickering	Link is active in operation.

5. Power Connector (CN1)

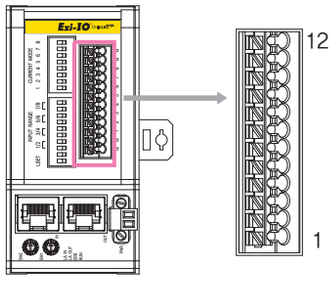
NO.	Function	I/O
1	24VDC	Input
2	GND	Input



* Supply rated power source to the connector.

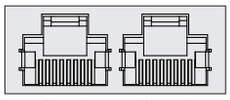
6. Input Connector (CN2)

NO.	Function	I/O
1	GND	Input
2	GND	Input
3	Analog In 1	Input
4	Analog In 2	Input
5	Analog In 3	Input
6	Analog In 4	Input
7	Analog In 5	Input
8	Analog In 6	Input
9	Analog In 7	Input
10	Analog In 8	Input
11	GND	Input
12	GND	Input

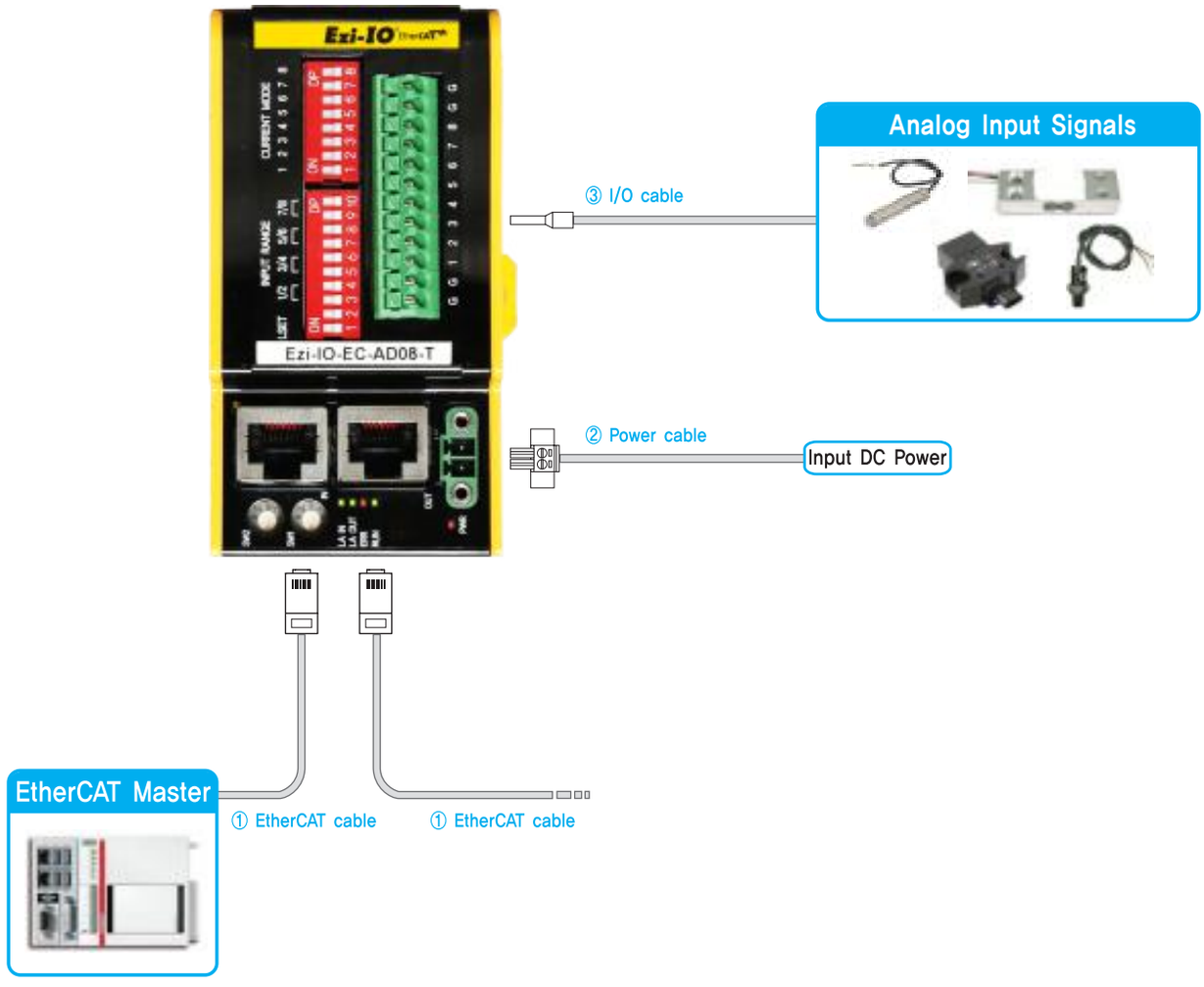


7. EtherCAT Connector (CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD-
2	TD-	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		



System Configuration [Ezi-IO-EC-AD08-T]



1. Options

① EtherCAT Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Part Number	Length [m]	Remarks
CGNR-EC-□□□F	□□□	Normal Type

□ : Cable Length, Unit in m, Max. 100m.

2. Connector Specifications

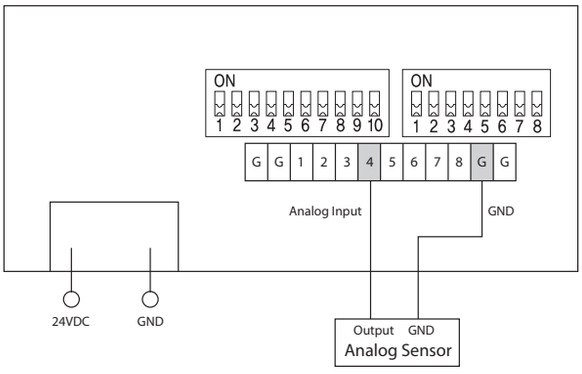
Terminal block for power connection to the module.

Function	Item	Part Number	Manufacturer
Power Connector (CN1)	Terminal Block	MC421-38102	DECA

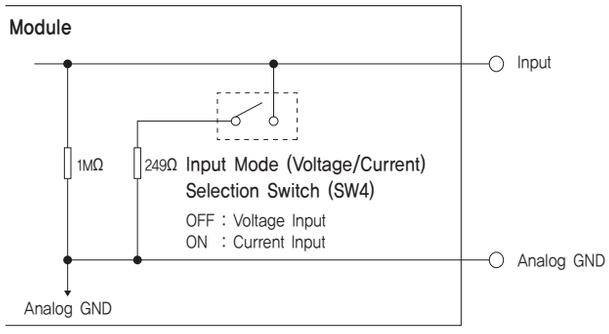
※ The connector above is the most suitable model for Ezi-IO EtherCAT AD. Another equivalent connector can be used.

External Wiring Diagram [Ezi-IO-EC-AD08-□]

1 Ezi-IO-EC-AD08-T



Internal Circuit Diagram

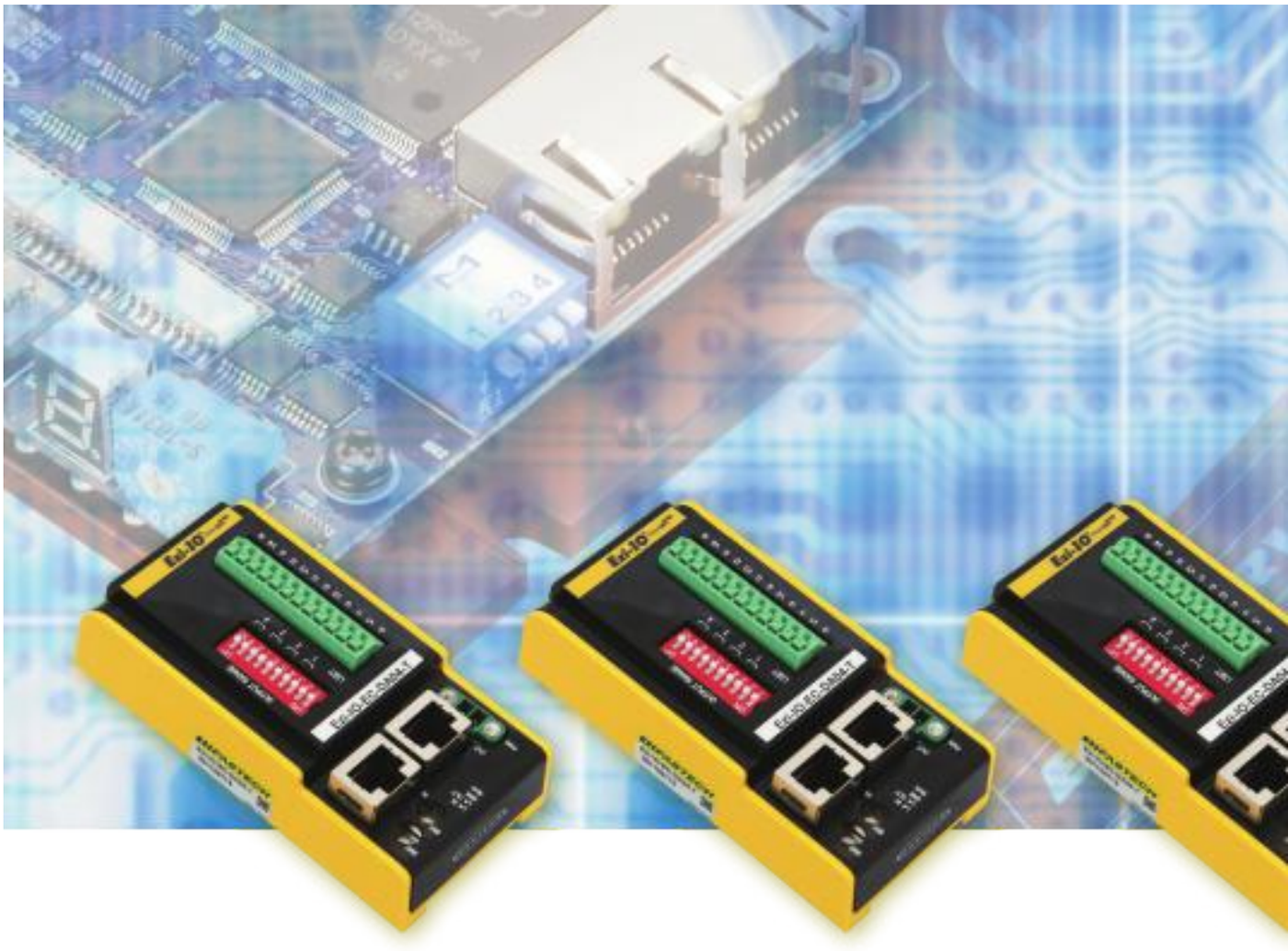






Input/Output Module_ Ezi-IO EtherCAT DA

- EtherCAT Based Analog Output Modules
- Fully Support EtherCAT Synchronization Modes
- CiA 401 Compatible
- Simple and Easy Wiring
- Configuration by Switch Setting
- User Calibration for Output Deviation



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Ezi-IO® EtherCAT DA

Input/Output Module



2 Simple and Easy Wiring

Ezi-IO EtherCAT DA is supplied with push-in spring type terminal blocks which are connected with wires in simple and easy way using ferrule connectors.
Connections of Ezi-IO EtherCAT DA to analog devices are also simplified.

3 EtherCAT Synchronization Modes

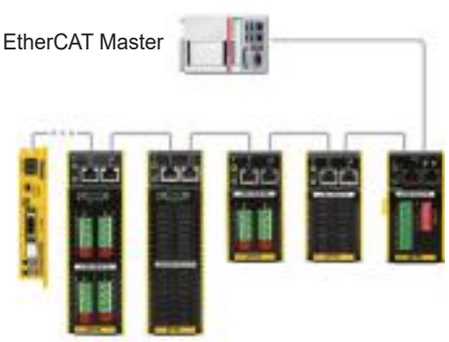
Ezi-IO EtherCAT DA supports all EtherCAT synchronization modes. Selectable among Free Run, SM Event, DC SYNC Event modes.

4 Easy Setting with Switches

Ezi-IO EtherCAT DA simply sets the EtherCAT ID with rotary switches. Voltage or current output range is easily configured with dip switches.

1 EtherCAT Based Analog Output Module

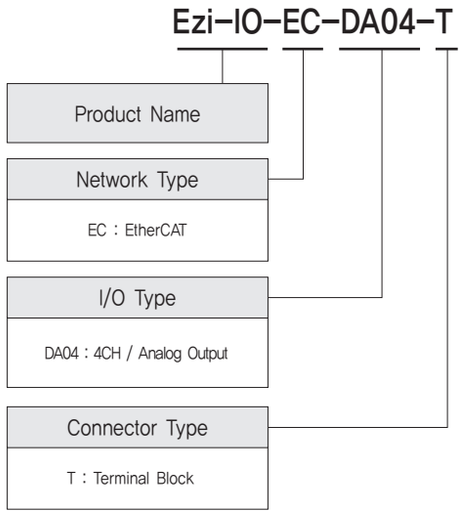
Ezi-IO EtherCAT DA is an analog output module supporting EtherCAT, a field-bus based on high speed Ethernet (100Mbps, Full-Duplex). Ezi-IO EtherCAT DA is an EtherCAT Slave module which supports CAN Application layer over EtherCAT (CoE) and CiA 401 profile. EtherCAT enables fast data transfer with peripheral devices and supports connection of various devices without topology limitation.



5 User Calibration for Output Deviation

Deviation in output signals can be occurred due to the various conditions such as connected devices, cables and connection methods. Users can calibrate the deviation values of output signals.

Ezi-IO EtherCAT DA Part Numbering



Ezi-IO EtherCAT DA Part Number

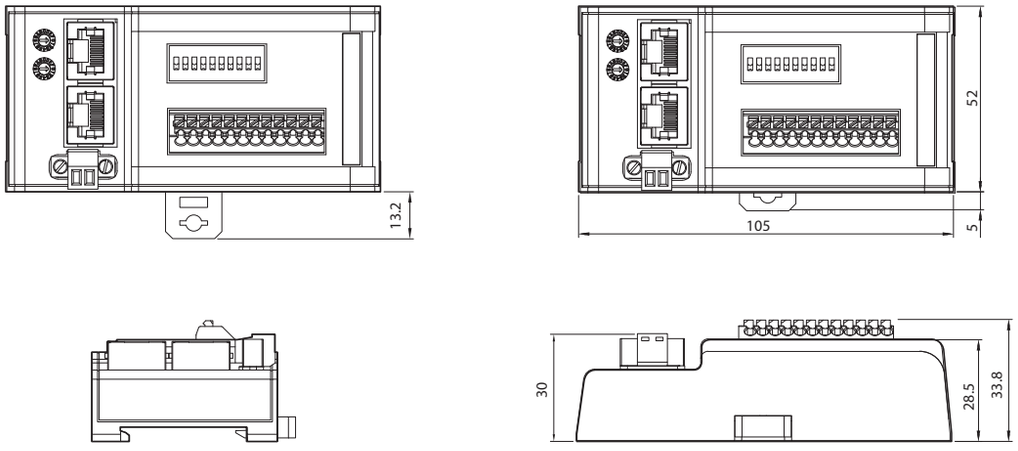
Part Number
Ezi-IO-EC-DA04-T

Specifications

Part Number			Ezi-IO-EC-DA04-T	
Output Mode			Voltage Output	Current Output
Input Voltage			24VDC ±10%	
Current Consumption			Max. 180mA	
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃	
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)	
	Vibration Resistance		0.5g	
Function	Number of Channels		4	
	Output Range		· 0~5 V · 1~5 V · 0~10 V · -10~10 V	· 0~20 mA · 4~20 mA
	Output Range Setting Method		· SDO Communications (Separate setting for each channel) · DIP Switch (Separate setting for each channel)	
	Load Impedance		Min. 1kΩ	Max. 400Ω
	Resolution		Max. 1/50,000	
	Accuracy	25℃	±0.3% (Full Scale)	
		0~50℃	±0.4% (Full Scale)	
	Output Delay		Max. 500μs	
	D/A Converted Data		· -25,000~25,000 (for -10~10V voltage output) · 0~25,000 (for all voltage output except -10~10V)	0~25,000 (for current output)
	Signal Isolation Method		Digital isolation between analog output and communication connections	
LED Indication			· Power Status (PWR) · EtherCAT Communication State (RUN) · Operation Error (ERR) · EtherCAT Link/Activity Status (LA IN, LA OUT)	
EtherCAT	Protocol		CoE (CiA 401 Profile), FoE (Firmware Download)	
	Synchronization		Free Run, SM Event, DC SYNC Event	
	Bus Interface		2×RJ45 connectors	
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m	

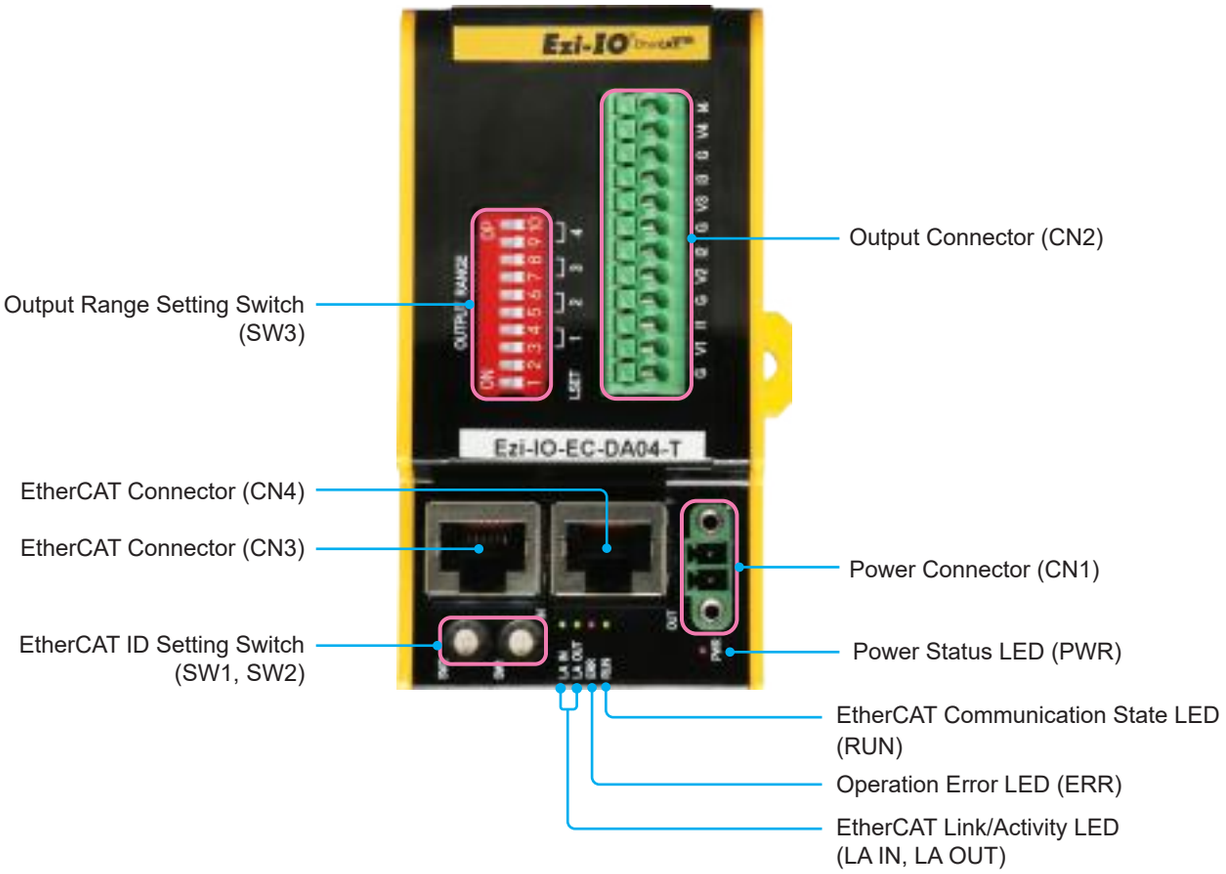
● Dimensions of Module [mm]

◆ Ezi-IO-EC-DA04-T



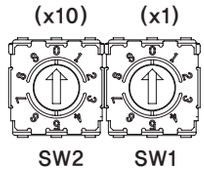
* Can be installed on 35mm DIN Rail.

● Settings and Operation [Ezi-IO-EC-DA04-T]



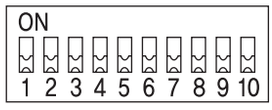
1. Switch Settings

- EtherCAT ID Setting Switch (SW1, SW2)



Use two rotary switches to set EtherCAT ID (ECAT Device ID). Set ones digit (x1) of EtherCAT ID on the right rotary switch (SW1), and set tens digit (x10) of EtherCAT ID on the left rotary switch (SW2).

- Output Range Setting Switch (SW3)



Select the output range by SW3 referring to the chart.

1 Selecting Output Setting Method

Select the output setting method with LSET switch (SW3.1).

Switch / Setting Method	LSET SW3.1	Description
DIP Switch	ON	Setting output range with DIP switches (SW3.3~SW3.10)
SDO Communication	OFF	Setting output range through EtherCAT SDO communication

* Set SW3.1 before supply power to the module.
* SW3.2 is not used.

2 Selecting Output Range

When using the DIP Switch for the setting method (SW3.1=ON), select output range referring to the chart.

Switch / Output Range	CH1		CH2		CH3		CH4	
	SW3.3	SW3.4	SW3.5	SW3.6	SW3.7	SW3.8	SW3.9	SW3.10
0~5V	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
-10~10V	OFF	ON	OFF	ON	OFF	ON	OFF	ON
0~20mA	ON	OFF	ON	OFF	ON	OFF	ON	OFF
4~20mA	ON	ON	ON	ON	ON	ON	ON	ON

* 1~5V, 0~10V voltage output range can be set by the SDO communication ONLY.

2. LED Indications

- Power Status LED (PWR)

LED	Color	Status	Description
PWR	Red	OFF	Power OFF
		ON	Power ON

- EtherCAT Network State LED (RUN)

LED	Color	Status	Description
RUN	Green	OFF	INIT State or Power OFF
		Blinking	PRE-OPERATIONAL State
		Single Flash	SAFE-OPERATIONAL State
		ON	OPERATIONAL State
		Flickering	BOOTSTRAP State

• Operation Error LED (ERR)

LED	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

• EtherCAT Link/Activity LED (LA IN, LA OUT)

LED	Color	Status	Description
LA IN / LA OUT	Green	OFF	Link is not established physically.
		ON	Link is established physically.
		Flickering	Link is active in operation.

3. Connectors

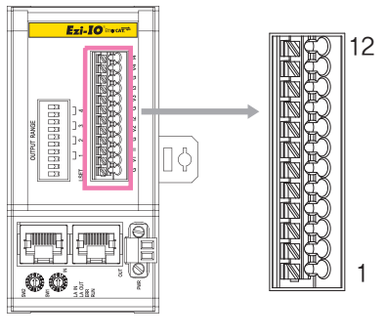
• Power Connector (CN1)

No.	Function
1	24VDC
2	GND



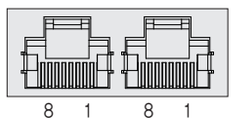
• Output Connector (CN2)

No.	Label	Function	I/O
1	G	GND	—
2	V1	Voltage Out 1	Output
3	I1	Current Out 1	Output
4	G	GND	—
5	V2	Voltage Out 2	Output
6	I2	Current Out 2	Output
7	G	GND	—
8	V3	Voltage Out 3	Output
9	I3	Current Out 3	Output
10	G	GND	—
11	V4	Voltage Out 4	Output
12	I4	Current Out 4	Output

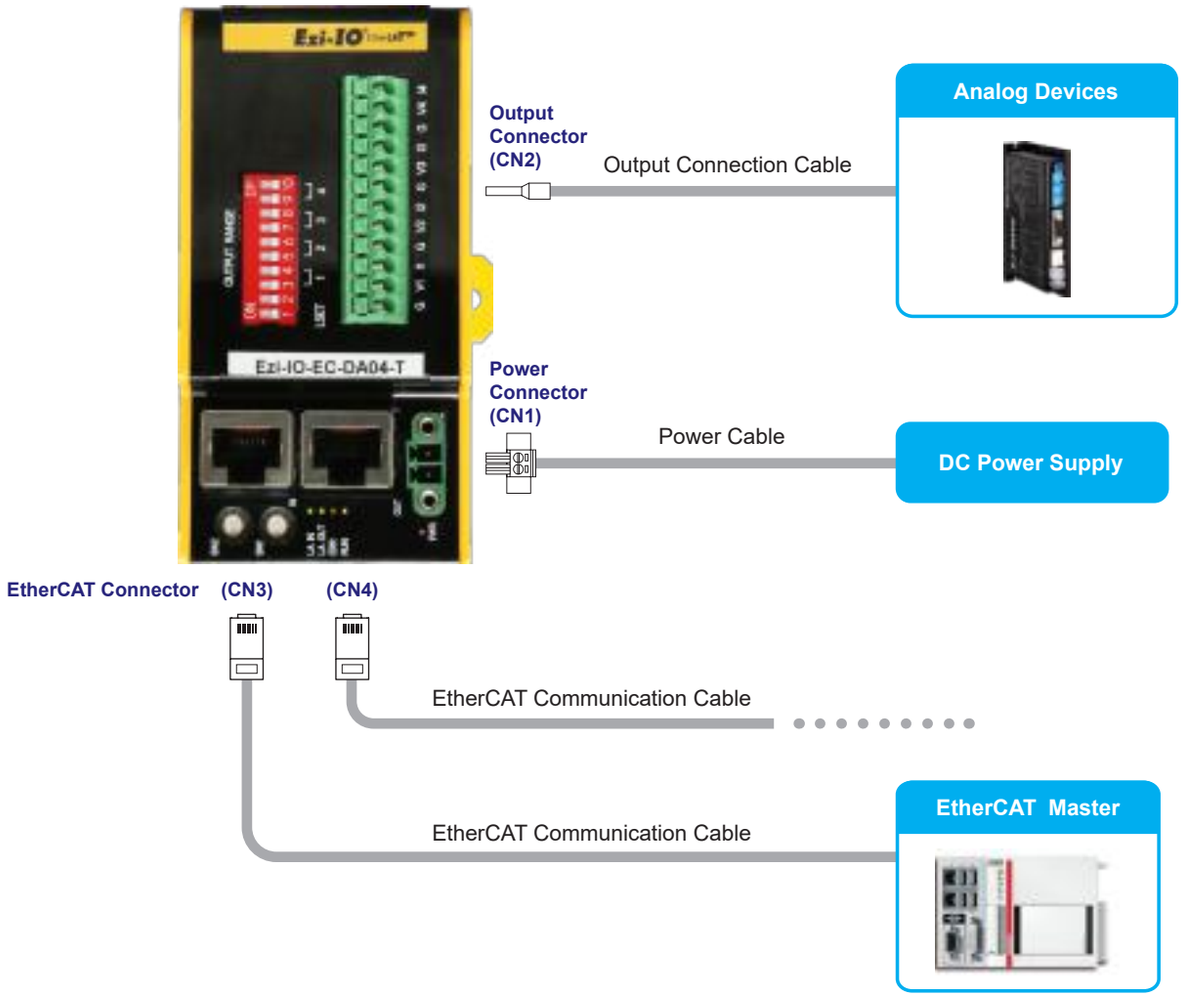


• EtherCAT Connector (CN3, CN4)

No.	Function
1	TD+
2	TD−
3	RD+
4	—
5	—
6	RD−
7	—
8	—
Connector Hood	F.GND



● System Configuration [Ezi-IO-EC-DA04-T]



1. Parts Included

- Power Connector

Function	Item	Part Number	Manufacturer
Power Connector (CN1)	Terminal Block	MC421-38102	DECA

※ The connector above is the most suitable model for Ezi-IO EtherCAT DA. Another equivalent connector can be used.

2. Accessories (Sold Separately)

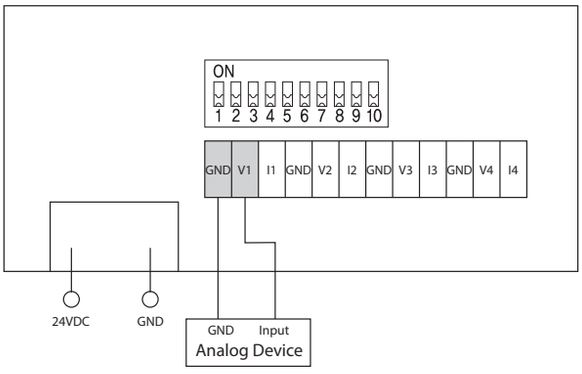
- EtherCAT Cable

Function	Part Number	Length [m]	Remarks
EtherCAT Connector (CN3, CN4)	CGNR-EC-001F	1	· STP (Shielded Twisted Pair) cable · Category 5e or higher · Max. cable length: 100m · For fixed installation
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

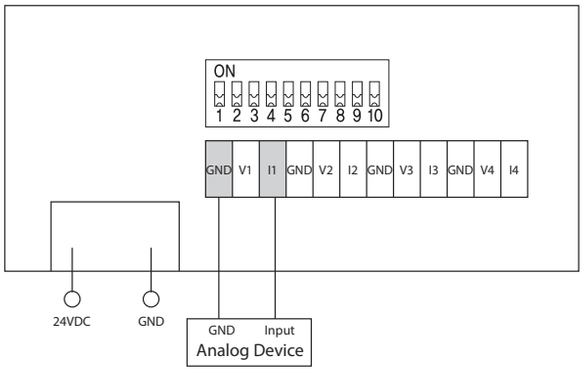
※ If you need another length of cable (in unit of m), please contact FASTECH.

External Wiring Diagram [Ezi-IO-EC-DA04-T]

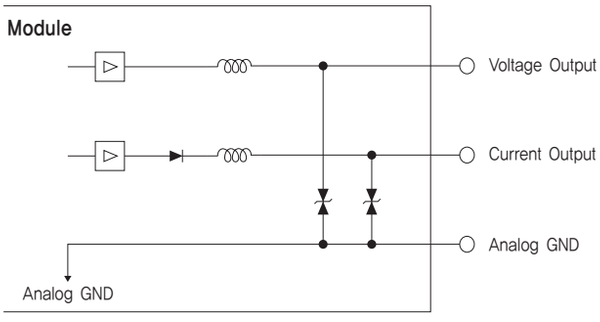
1 Voltage Output Mode



2 Current Output Mode



Internal Circuit Diagram

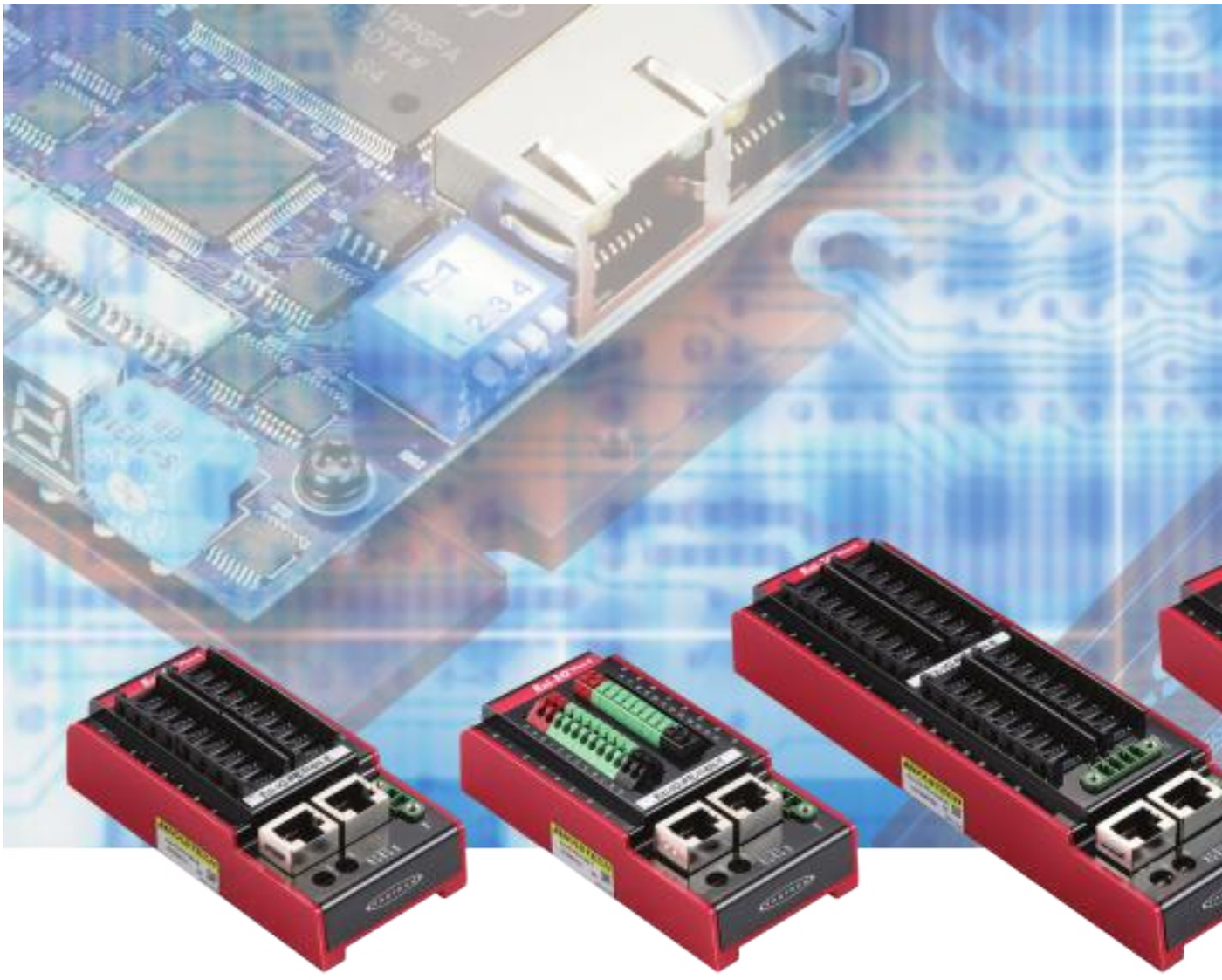




Ezi-IO Plus-E

Digital Input / Output Module_ Ezi-IO Plus-E

- Control by Ethernet communication
- Use the same communication protocol as Plus-E product series
- Digital I/O Photocoupler Isolation
- Various 16CH & 32CH I/O Module(NPN / PNP type)



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Ezi-IO® Plus-E

Input/Output Module

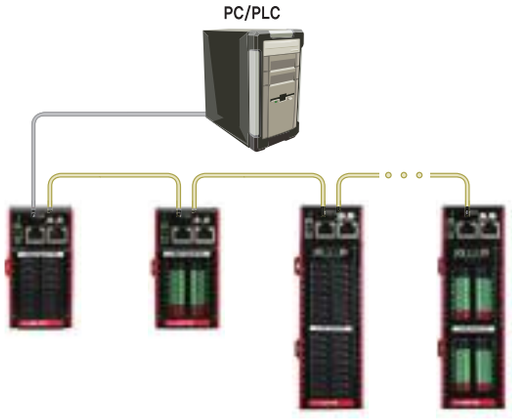


1 Ethernet Based Digital I/O Module

Ezi-IO Plus-E Series are products which provide Digital input and output module with Ethernet network so that customers can easily control many peripheral devices on the equipment as needed.

2 Supported FASTECH Protocol

It is easy to use for users of the existing Plus-E series due to using the same Ethernet communication protocol as the existing Plus-E product series.



3 Provide User GUI and Library

For customer convenience in a PC-controlled environment, the Graphic User Interface and Windows 7/8/10 corresponding Library (DLL) are provided.



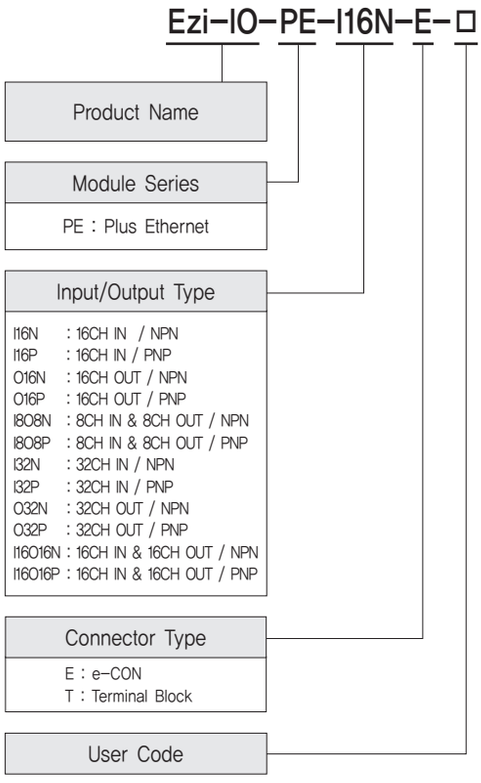
4 Speciallized I/O Module

Ezi-IO Plue-E supports independent 16CH/32CH input and 16CH/32CH output module products, and can be applied to various installation environments by selecting NPN or PNP type. In addition, Input module has Latch and Latch Count function, so it is possible to detect and count without losing important signal change, and Output module supports Trigger output function to set and output the signal of fixed period and fixed quantity.

5 Digital I/O Photocoupler Isolation

By using photocoupler isolation elements, input and output circuit of both side can be protected from electrical damage.

● Ezi-IO Plus-E Part Numbering



● Ezi-IO Plus-E Part Number

Part Number
Ezi-IO-PE-I16N-E
Ezi-IO-PE-I16P-E
Ezi-IO-PE-O16N-E
Ezi-IO-PE-O16P-E
Ezi-IO-PE-I8O8N-E
Ezi-IO-PE-I8O8P-E
Ezi-IO-PE-I16N-T
Ezi-IO-PE-I16P-T
Ezi-IO-PE-O16N-T
Ezi-IO-PE-O16P-T
Ezi-IO-PE-I8O8N-T
Ezi-IO-PE-I8O8P-T
Ezi-IO-PE-I32N-E
Ezi-IO-PE-I32P-E
Ezi-IO-PE-O32N-E
Ezi-IO-PE-O32P-E
Ezi-IO-PE-I16O16N-E
Ezi-IO-PE-I16O16P-E
Ezi-IO-PE-I32N-T
Ezi-IO-PE-I32P-T
Ezi-IO-PE-O32N-T
Ezi-IO-PE-O32P-T
Ezi-IO-PE-I16O16N-T
Ezi-IO-PE-I16O16P-T

● Specifications of Module

Module Series		Ezi-IO-PE series					
Module Name		Ezi-IO-PE-I16N-□	Ezi-IO-PE-I16P-□	Ezi-IO-PE-O16N-□	Ezi-IO-PE-O16P-□	Ezi-IO-PE-I8O8N-□	Ezi-IO-PE-I8O8P-□
Input Voltage		24VDC ±10%					
Control Method		Control with 32bit MCU					
Network Connection		Standard Ethernet (Max 254 Connection)					
Current Consumption		Max 500mA (I/O Except I/O current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Input Signal	· 16CH Input (Photocoupler Input, NPN/PNP) · Latch for 16CH (Rising/Falling) · Latch Pulse Width: Min. 25 μsec · Latch counter for 16CH · 24VDC: Max. 10mA/CH		-		· 8CH Input (Photocoupler Input, NPN/PNP) · Latch for 8CH (Rising/Falling) · Latch Pulse Width: Min. 25 μsec · Latch counter for 8CH · 24VDC: Max. 10mA/CH	
	Output Signal	-		· 16CH Output (Photocoupler Isolation, FET Output) · Trigger output for 16CH (Setting for each channel) - 50% Duty, Pulse Width = Min. 1 msec · 24VDC: Max. 200mA/CH - under full operating condition		· 8CH Output (Photocoupler Isolation, FET Output) · Trigger output for 8CH (Setting for each channel) - 50% Duty, Pulse Width = Min. 1 msec · 24VDC: Max. 200mA/CH - under full operating condition	
	LED Display	· Power status · Input status · Ethernet status (Link, Activity) · Run status		· Power status · Output status · Ethernet status (Link, Activity) · Run status		· Power status · Input/Output status · Ethernet status (Link, Activity) · Run status	
Communication Protocol		Ethernet UDP/TCP, network speed: 10/100Base-T/Tx Full Duplex					
User Program		Windows based User interface program					
Library		Library(DLL) for Windows 7/8/10					

* □ : Connector Type

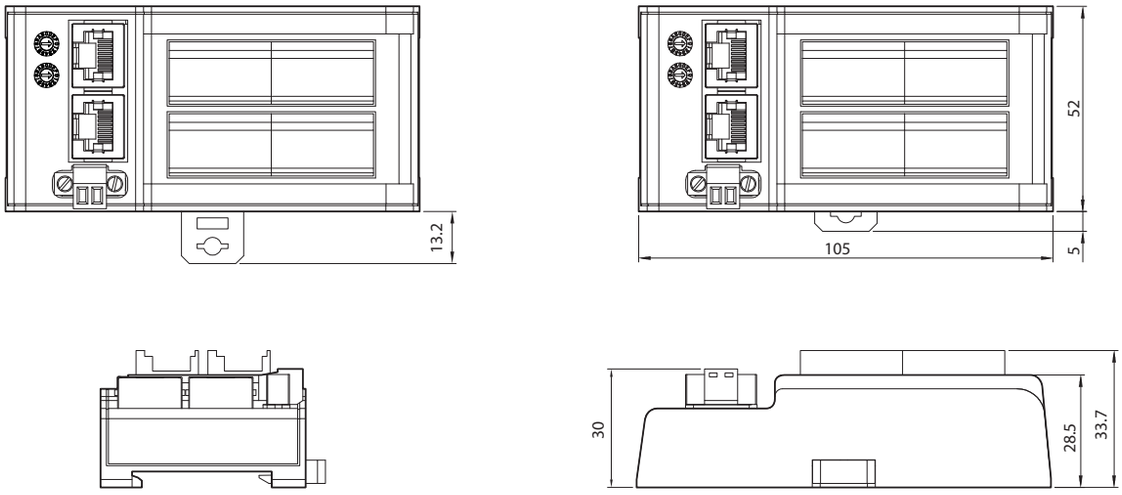
Specifications of Module

Module Series		Ezi-IO-PE series					
Module Name		Ezi-IO-PE-I32N-□	Ezi-IO-PE-I32P-□	Ezi-IO-PE-O32N-□	Ezi-IO-PE-O32P-□	Ezi-IO-PE-I16O16N-□	Ezi-IO-PE-I16O16P-□
Input Voltage		24VDC ±10%					
Control Method		Control with 32bit MCU					
Network Connection		Standard Ethernet (Max 254 Connection)					
Current Consumption		Max 500mA (I/O Except I/O current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Input Signal	· 32CH Input (Photocoupler Input, NPN/PNP) · Latch for 32CH (Rising/Falling) · Latch Pulse Width: Min. 25 μsec(0~15CH) Min. 100 μsec(16~31CH) · Latch counter for 32CH · 24VDC: Max. 10mA/CH		-		· 16CH Input (Photocoupler Input, NPN/PNP) · Latch for 16CH (Rising/Falling) · Latch Pulse Width: Min. 25 μsec · Latch counter for 16CH · 24VDC: Max. 10mA/CH	
	Output Signal	-		· 32CH Output (Photocoupler Isolation, FET Output) · Trigger output for 32CH (Setting for each channel) - 50% Duty, Pulse Width = Min. 1 msec · 24VDC: Max. 200mA/CH - under full operating condition		· 16CH Output (Photocoupler Isolation, FET Output) · Trigger output for 16CH (Setting for each channel) - 50% Duty, Pulse Width = Min. 1 msec · 24VDC: Max. 200mA/CH - under full operating condition	
	LED Display	· Power status · Input status · Ethernet status (Link, Activity) · Run status		· Power status · Output status · Ethernet status (Link, Activity) · Run status		· Power status · Input/Output status · Ethernet status (Link, Activity) · Run status	
Communication Protocol		Ethernet UDP/TCP, network speed: 10/100Base-T/Tx Full Duplex					
User Program		Windows based User interface program					
Library		Library(DLL) for Windows 7/8/10					

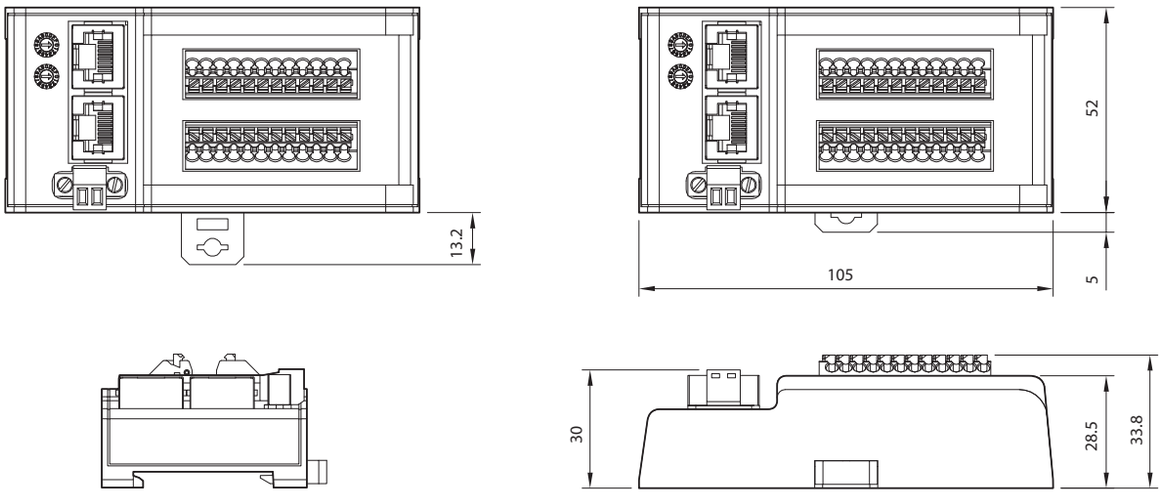
* □ : Connector Type

● Dimensions of Module [mm]

◆ Ezi-IO-PE-■16□-E / Ezi-IO-PE-I808□-E Series



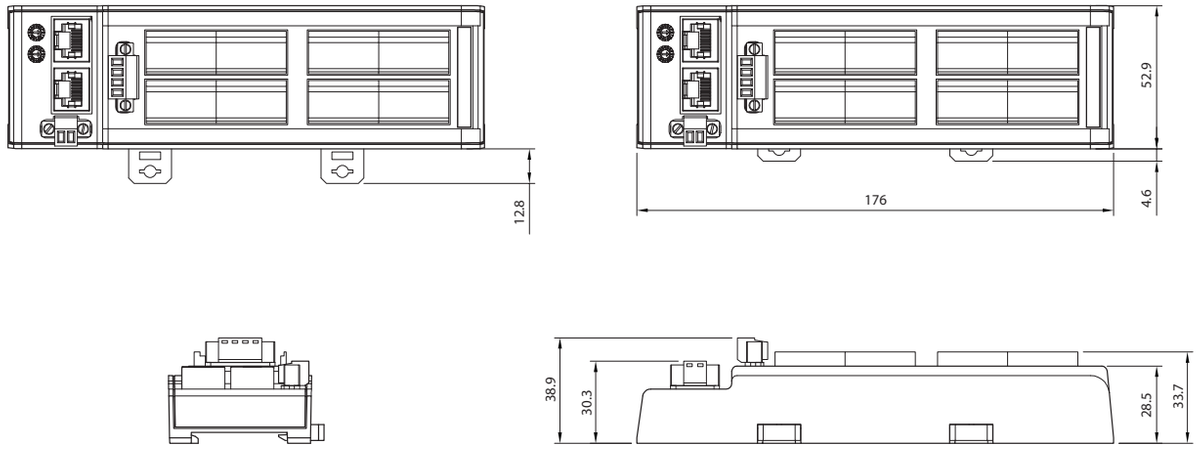
◆ Ezi-IO-PE-■16□-T / Ezi-IO-PE-I808□-T Series



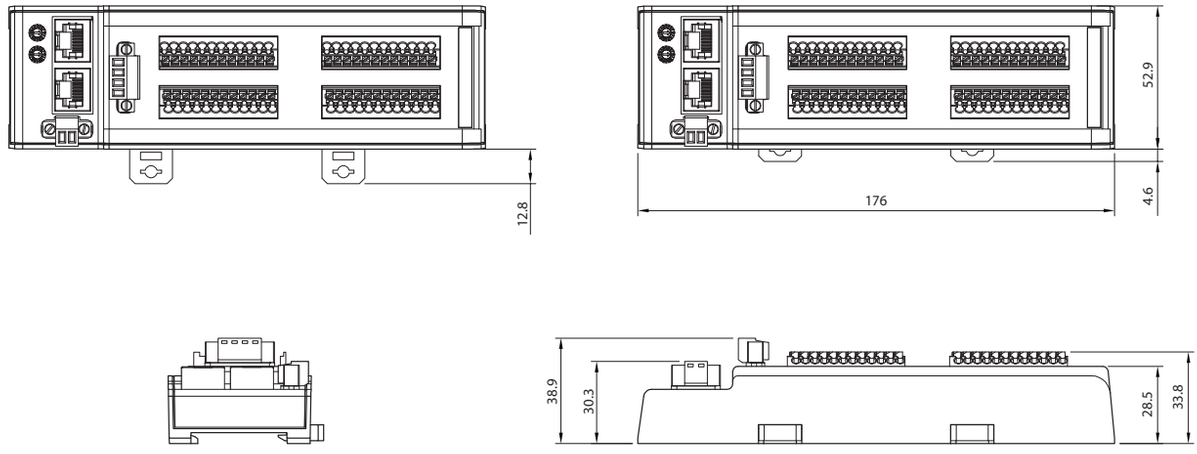
* ■ : Input / Output Type
  □ : NPN / PNP Type
* Can be installed on 35mm DIN Rail.

● Dimensions of Module [mm]

◆ Ezi-IO-PE-■32□-E / Ezi-IO-PE-I16016□-E Series

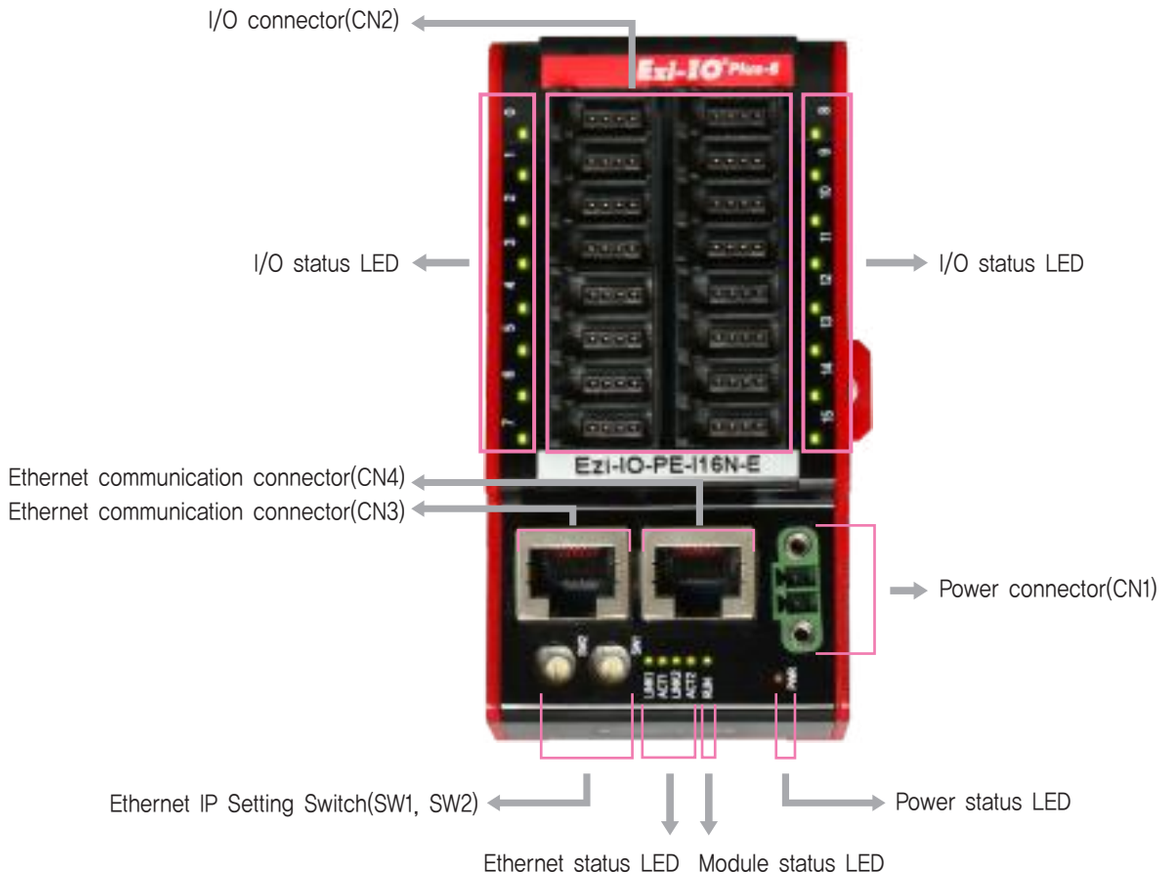


◆ Ezi-IO-PE-■32□-T / Ezi-IO-PE-I16016□-T Series



* ■ : Input / Output Type
  □ : NPN / PNP Type
* Can be installed on 35mm DIN Rail.

● Settings and Operation [Ezi-IO-PE-■16□-E / Ezi-IO-PE-I808□-E Series]



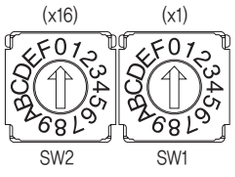
1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Power input indication	Turn on when power is applied
RUN	Green	Display module status	Flashing when normal operation
Link1,2	Green	Link Status	Turn on when Link is activated
ACT1,2	Yellow	Activity Status	Flashing when communicating
0~15 0~7/0~7	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Ethernet IP Display and Setting Switch(SW1, SW2)

It can be set the value of the fourth digit of Ethernet IP through the setting switch. Set the product's IP not to overlap with the connected products. The first, second and third values of IP can be set through the GUI. Please refer to the manual for details. When the switch is set to 255 (FF), IP is automatically set, ignoring the setting. (DHCP function).

Example) in case SW2=**5**, SW1=**7**
(5x16) + (7x1) = **87**
therefore, IP: 192.168.0.**87**



3. Power Connector(CN1)

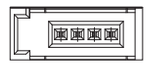
NO.	Function	I/O
1	24VDC	Input
2	GND	Input



* Be sure to supply power which is suitable for the load of I/O and control.

4. I/O Connector(CN2)

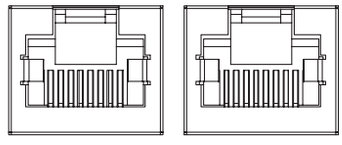
NO.	Function	I/O
1	24VDC	Output
2	NC	----
3	GND	Output
4	SIGNAL	I/O



1 2 3 4

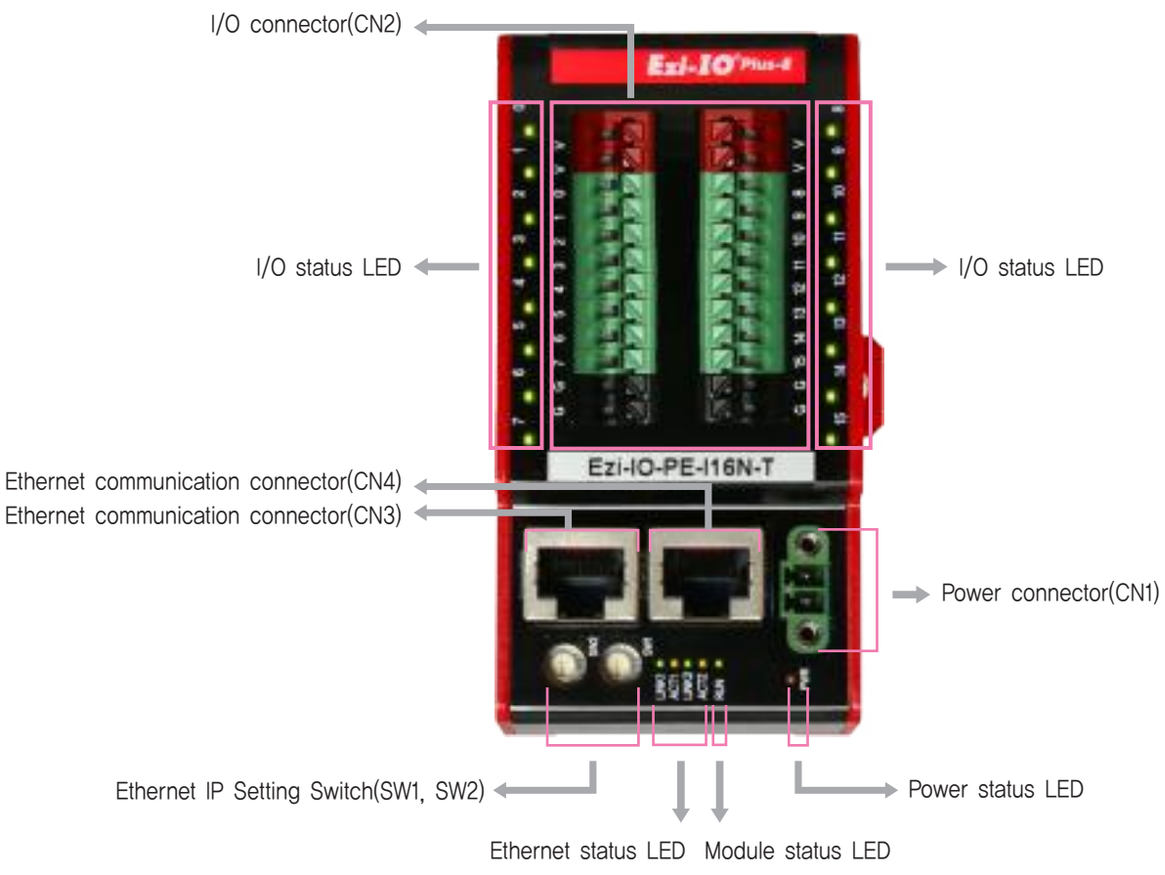
5. Ethernet Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD-
2	TD-	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		



8 1 8 1

● Settings and Operation [Ezi-IO-PE-■16□-T / Ezi-IO-PE-I808□-T Series]



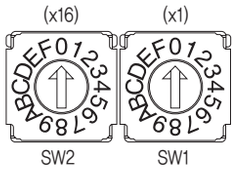
1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Power input indication	Turn on when power is applied
RUN	Green	Display module status	Flashing when normal operation
Link1,2	Green	Link Status	Turn on when Link is activated
ACT1,2	Yellow	Activity Status	Flashing when communicating
0~15 0~7/0~7	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Ethernet IP Display and Setting Switch(SW1, SW2)

It can be set the value of the fourth digit of Ethernet IP through the setting switch. Set the product's IP not to overlap with the connected products. The first, second and third values of IP can be set through the GUI. Please refer to the manual for details. When the switch is set to 255 (FF), IP is automatically set, ignoring the setting. (DHCP function).

Example) in case SW2=**5**, SW1=**7**
(5x16) + (7x1) = **87**
therefore, IP: 192.168.0.**87**



3. Power Connector(CN1)

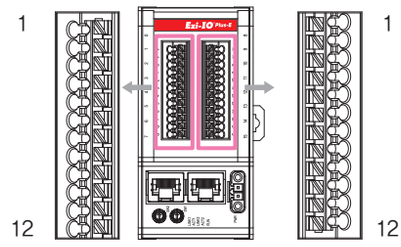
NO.	Function	I/O
1	24VDC	Input
2	GND	Input



* Be sure to supply power which is suitable for the load of I/O and control.

4. I/O Connector(CN2)

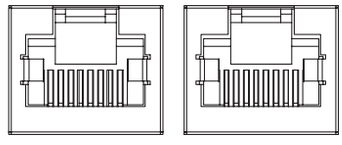
NO.	Function	I/O
1	24VDC	Output
2	24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	GND	Output
12	GND	Output



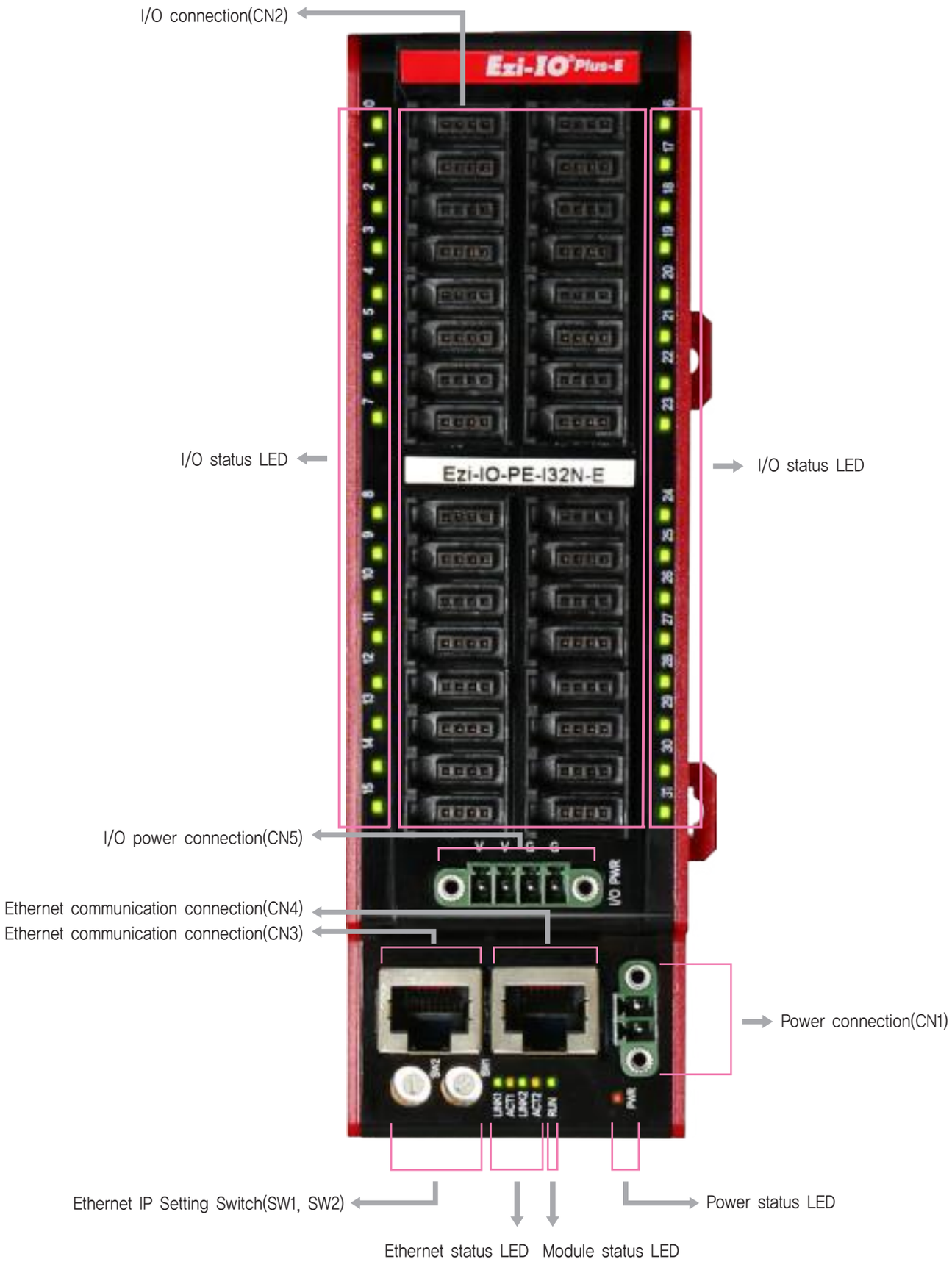
NO.	Function	I/O
1	24VDC	Output
2	24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	GND	Output
12	GND	Output

5. Ethernet Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connector Hood	F.GND
5	-----		



● Settings and Operation [Ezi-IO-PE-■32□-E / Ezi-IO-PE-I16O16□-E Series]



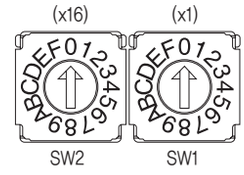
1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Power input indication	Turn on when power is applied
RUN	Green	Display module status	Flashing when normal operation
Link1,2	Green	Link Status	Turn on when Link is activated
ACT1,2	Yellow	Activity Status	Flashing when communicating
0~31 0~15/0~15	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Ethernet IP Display and Setting (SW1, SW2)

It can be set the value of the fourth digit of Ethernet IP through the setting switch. Set the product's IP not to overlap with the connected products. The first, second and third values of IP can be set through the GUI. Please refer to the manual for details. When the switch is set to 255 (FF), IP is automatically set, ignoring the setting. (DHCP function).

Example) in case SW2=**5**, SW1=**7**
(5x16) + (7x1) = **87**
therefore, IP: 192.168.0.**87**



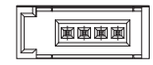
3. Control Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



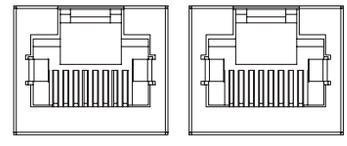
4. I/O Connector(CN2)

NO.	Function	I/O
1	EXT_24VDC	Output
2	NC	-----
3	EXT_GND	Output
4	SIGNAL	I/O



5. Ethernet Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD-
2	TD-	7	-----
3	RD+	8	-----
4	-----	Connector Hood	F.GND
5	-----		



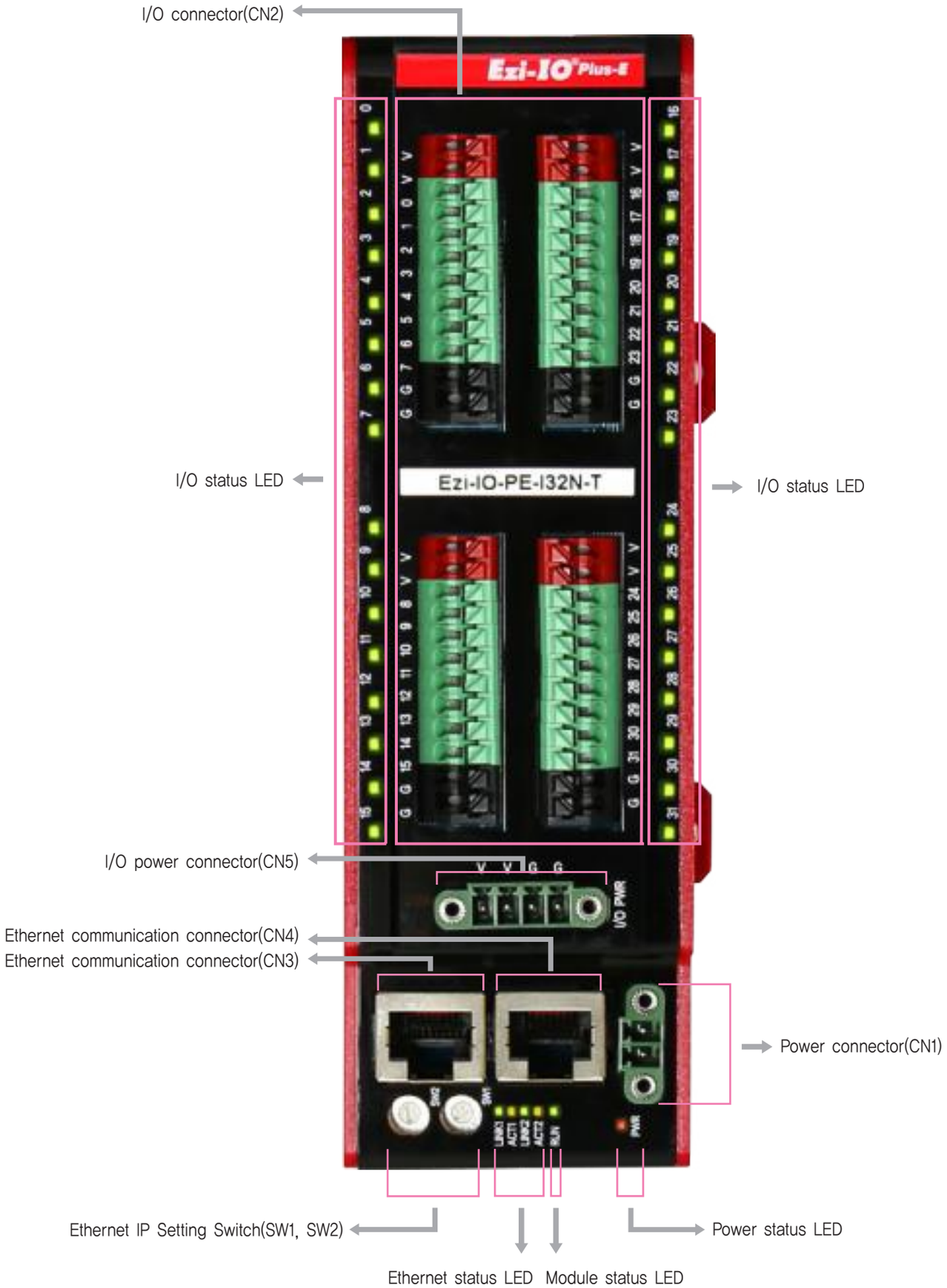
6. I/O Power Connector(CN5)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_24VDC	Input
3	EXT_GND	Input
4	EXT_GND	Input



* Be sure to supply a power source which is suitable for the load of I/O.

● Settings and Operation [Ezi-IO-PE-■32□-T / Ezi-IO-PE-I16O16□-T Series]



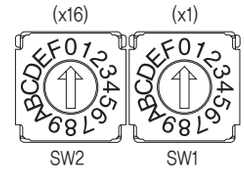
1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Power input indication	Turn on when power is applied
RUN	Green	Display module status	Flashing when normal operation
Link1,2	Green	Link Status	Turn on when Link is activated
ACT1,2	Yellow	Activity Status	Flashing when communicating
0~31 0~15/0~15	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Ethernet IP Display and Setting (SW1, SW2)

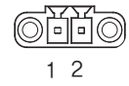
It can be set the value of the fourth digit of Ethernet IP through the setting switch. Set the product's IP not to overlap with the connected products. The first, second and third values of IP can be set through the GUI. Please refer to the manual for details. When the switch is set to 255 (FF), IP is automatically set, ignoring the setting. (DHCP function).

Example) in case SW2=**5**, SW1=**7**
(5x16) + (7x1) = **87**
therefore, IP: 192.168.0.**87**



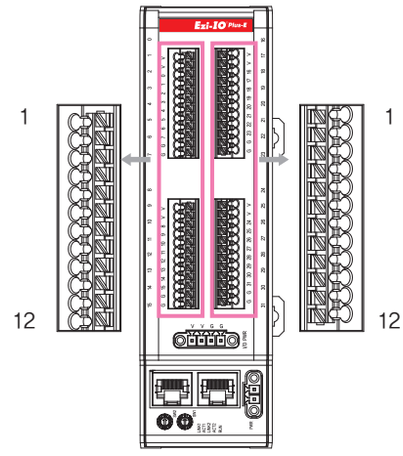
3. Control Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



4. I/O Connector(CN2)

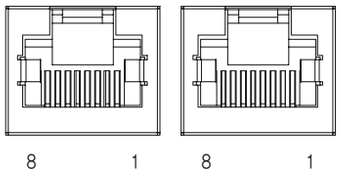
NO.	Function	I/O
1	EXT_24VDC	Output
2	EXT_24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	EXT_GND	Output
12	EXT_GND	Output



NO.	Function	I/O
1	EXT_24VDC	Output
2	EXT_24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	EXT_GND	Output
12	EXT_GND	Output

5. Ethernet Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		



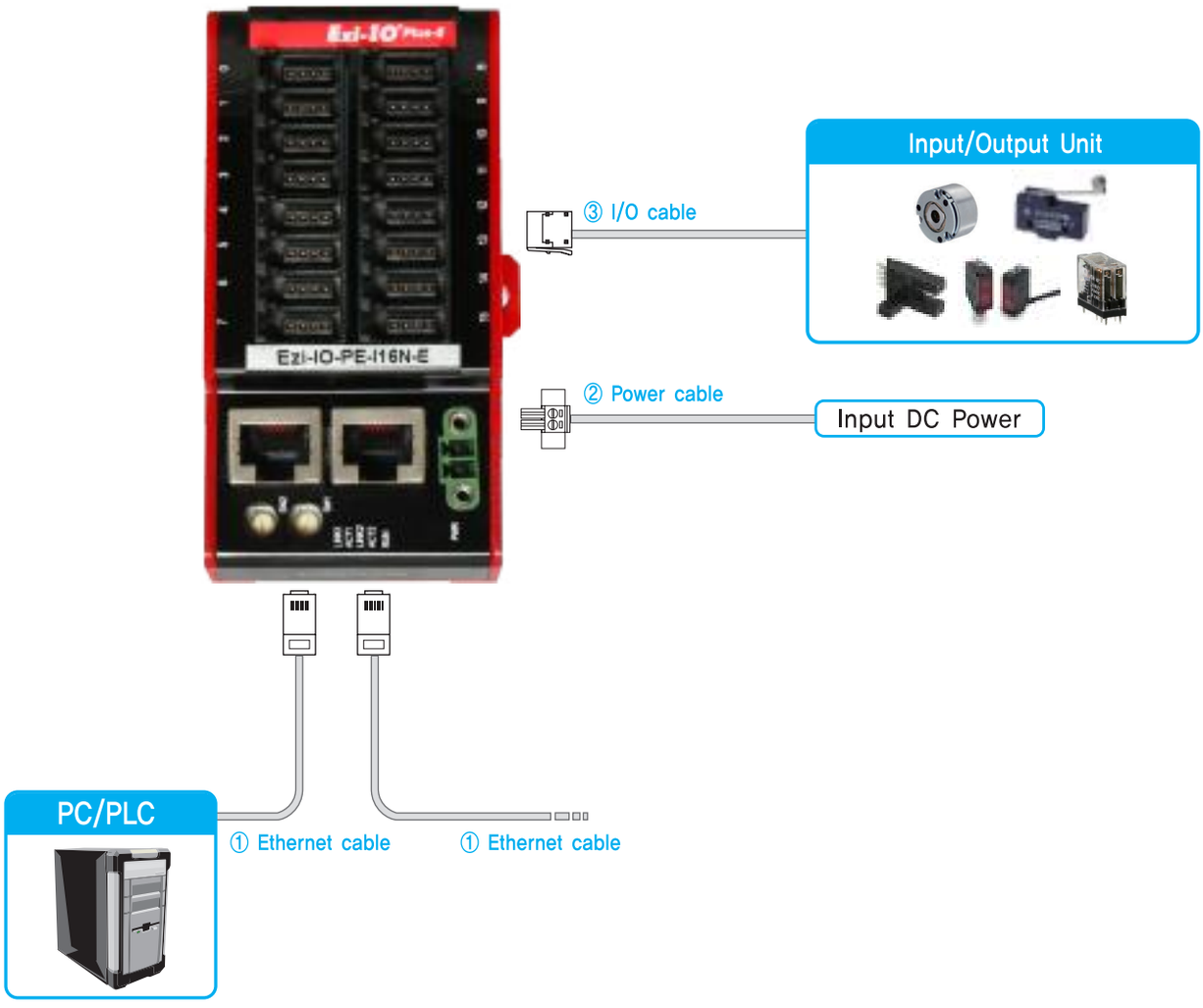
6. I/O Power Connector(CN5)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_24VDC	Input
3	EXT_GND	Input
4	EXT_GND	Input



* Be sure to supply a power source which is suitable for the load of I/O.

● System Configuration [Ezi-IO-PE-■16□-E / Ezi-IO-PE-I808□-E Series]



Type	I/O Cable	Power Cable	Ethernet Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① Ethernet Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

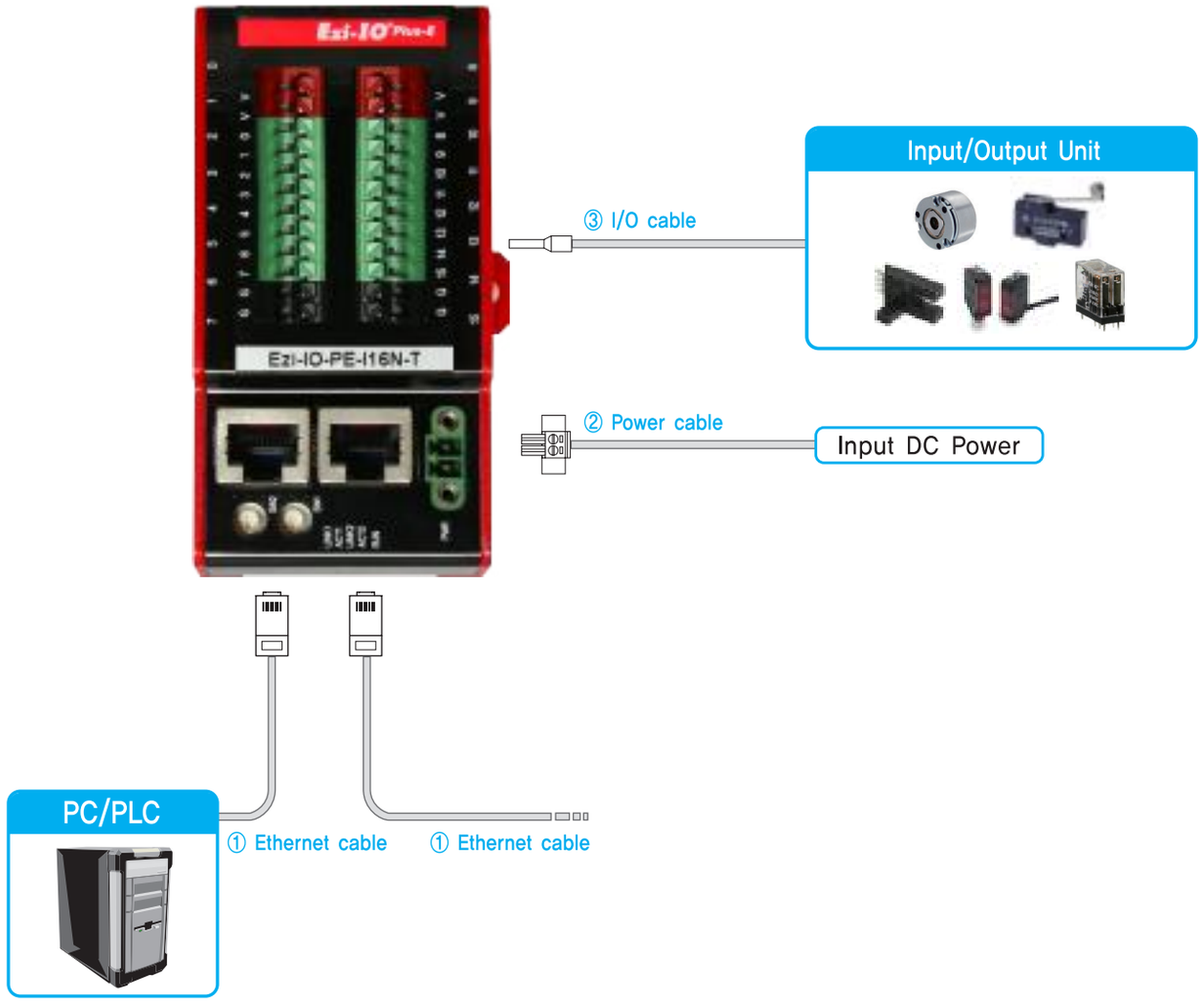
2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Power(CN1)	Terminal Block	MC421-38102	DECA
I/O(CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● System Configuration [Ezi-IO-PE■16□-T / Ezi-IO-PE-I808□-T Series]



Type	I/O Cable	Power Cable	Ethernet Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① Ethernet Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

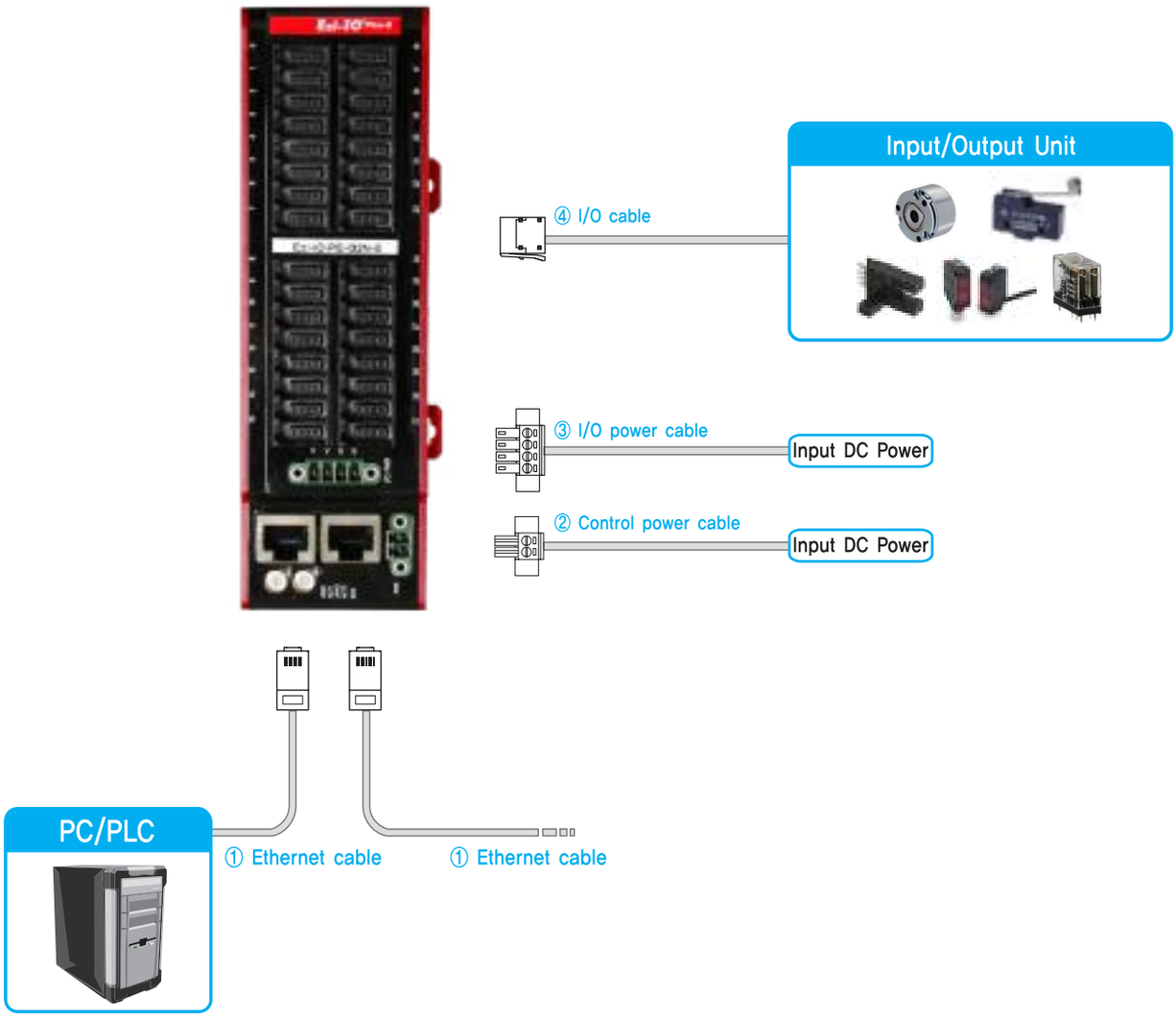
2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Power(CN1)	Terminal Block	MC421-38102	DECA

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● System Configuration [Ezi-IO-PE-■32□-E / Ezi-IO-PE-I16016□-E Series]



Type	I/O Cable	Control Power Cable	I/O Power Cable	Ethernet Cable
Length supplied	–	–	–	–
Max. Length	20m	2m	2m	100m

1. Options

① Ethernet Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

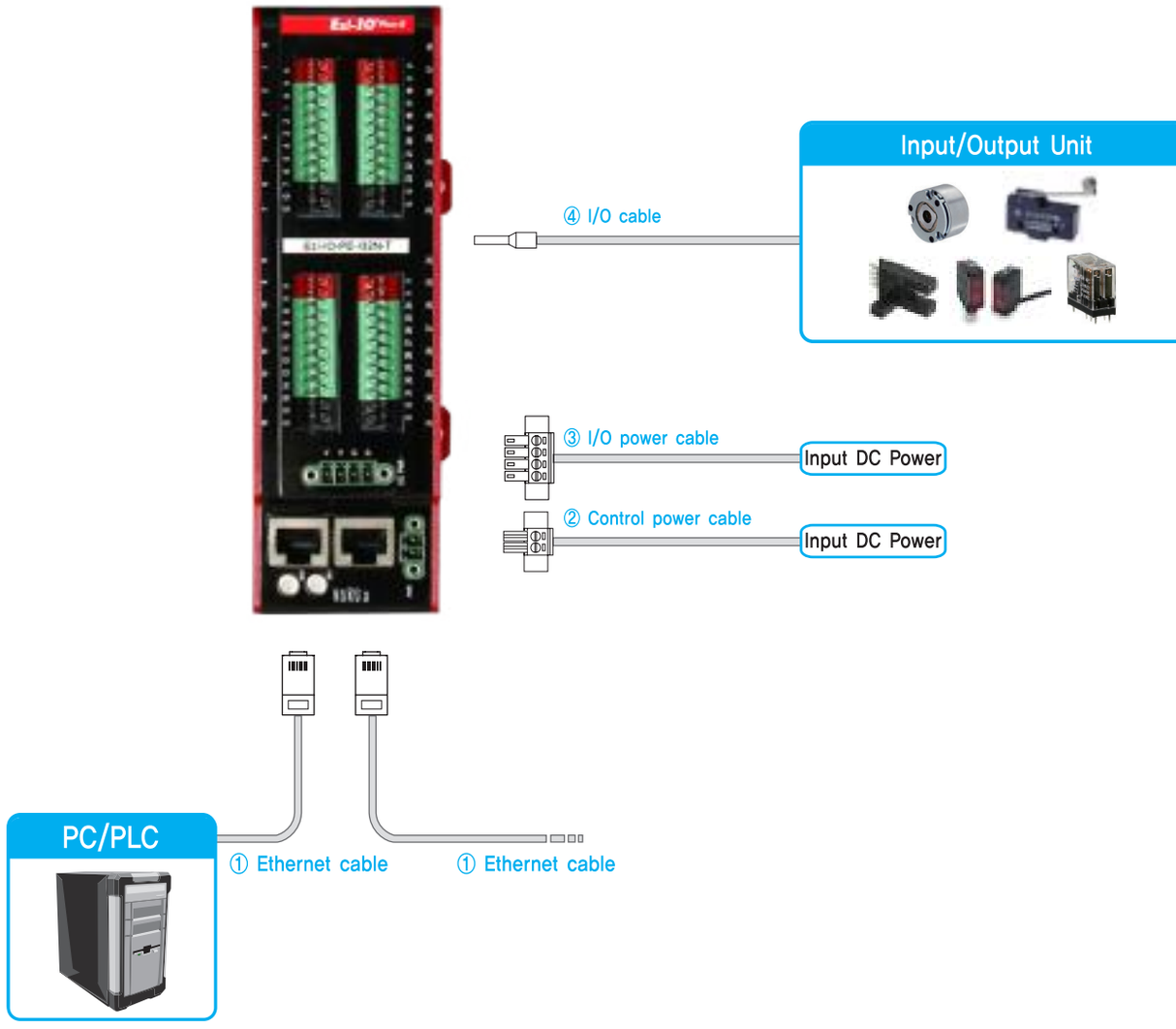
2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Control Power(CN1)	Terminal Block	MC421-38102	DECA
I/O Power(CN5)	Terminal Block	MC421-38104	DECA
I/O(CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● System Configuration [Ezi-IO-PE-■32□-T / Ezi-IO-PE-I16016□-T Series]



Type	I/O Cable	Control Power Cable	I/O Power Cable	Ethernet Cable
Length supplied	–	–	–	–
Max. Length	20m	2m	2m	100m

1. Options

① Ethernet Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

2. Connector Specifications

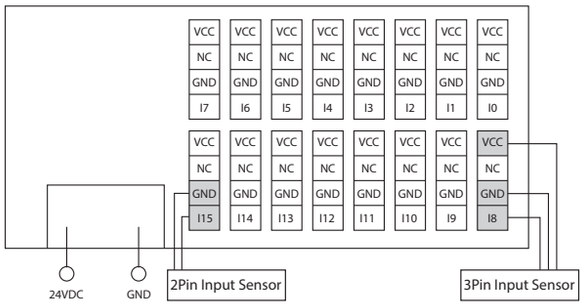
Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Control Power(CN1)	Terminal Block	MC421-38102	DECA
I/O Power(CN5)	Terminal Block	MC421-38104	DECA

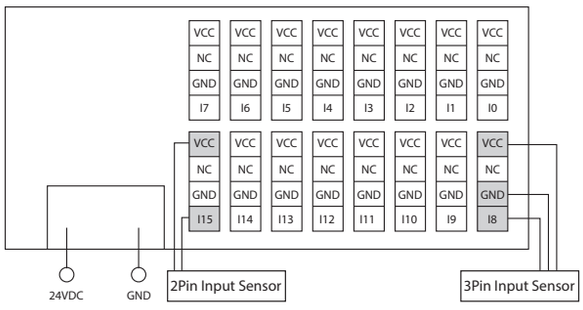
※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● External Wiring Diagram [Ezi-IO-PE-■16□-E / Ezi-IO-PE-I808□-E Series]

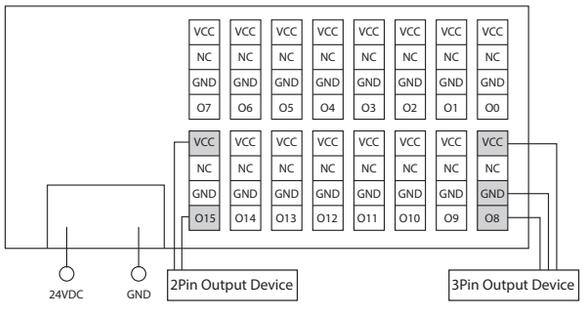
1 Ezi-IO-PE-I16N-E(NPN)



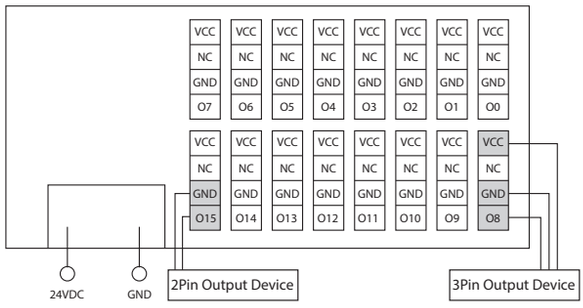
2 Ezi-IO-PE-I16P-E(PNP)



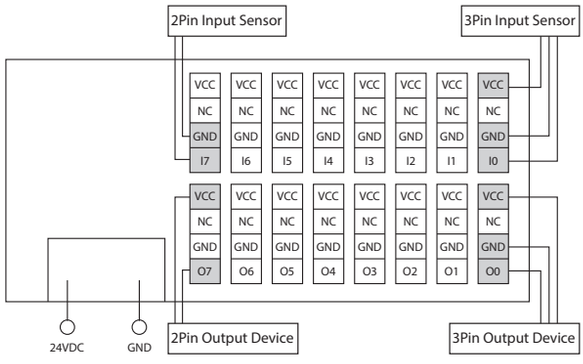
3 Ezi-IO-PE-O16N-E(NPN)



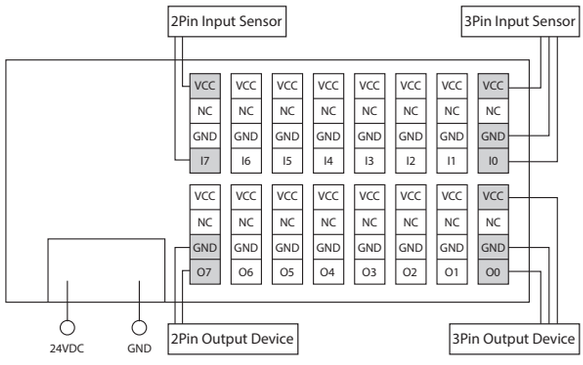
4 Ezi-IO-PE-O16P-E(PNP)



5 Ezi-IO-PE-I808N-E(NPN)



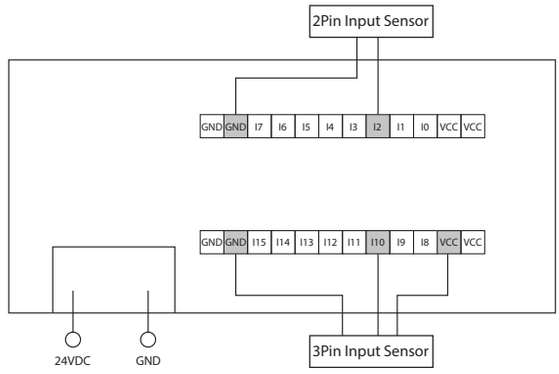
6 Ezi-IO-PE-I808P-E(PNP)



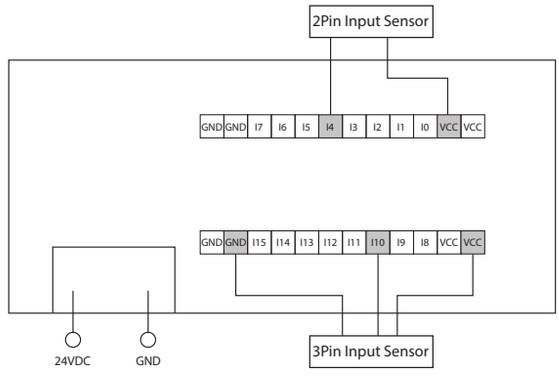
※ VCC is 24VDC output.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-PE-■16□-T / Ezi-IO-PE-I808□-T Series]

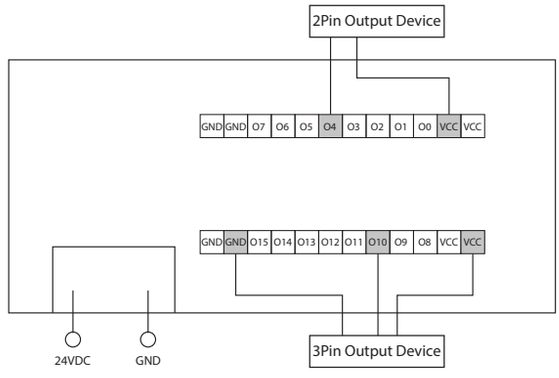
1 Ezi-IO-PE-I16N-T(NPN)



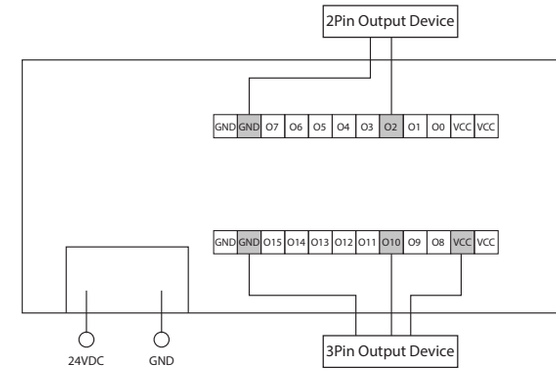
2 Ezi-IO-PE-I16P-T(PNP)



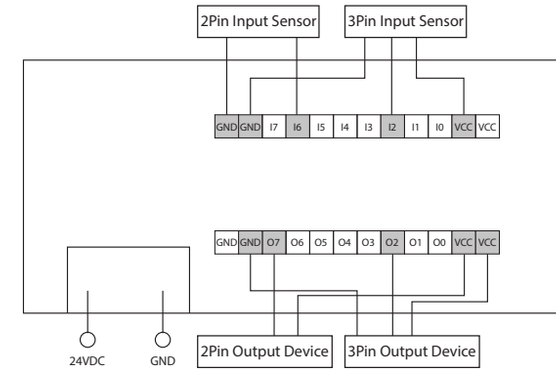
3 Ezi-IO-PE-O16N-T(NPN)



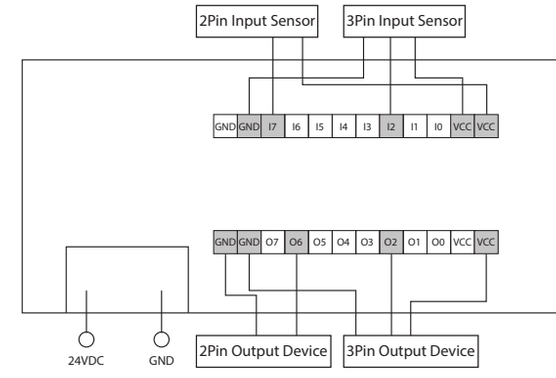
4 Ezi-IO-PE-O16P-T(PNP)



5 Ezi-IO-PE-I808N-T(NPN)



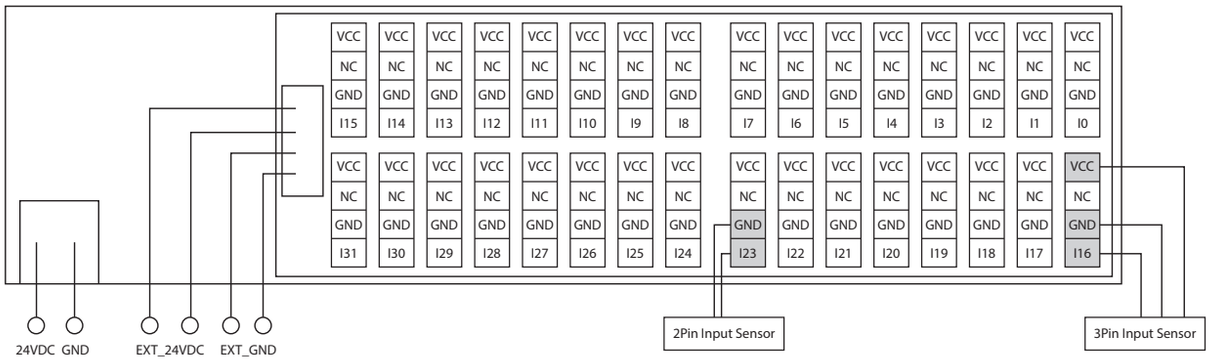
6 Ezi-IO-PE-I808P-T(PNP)



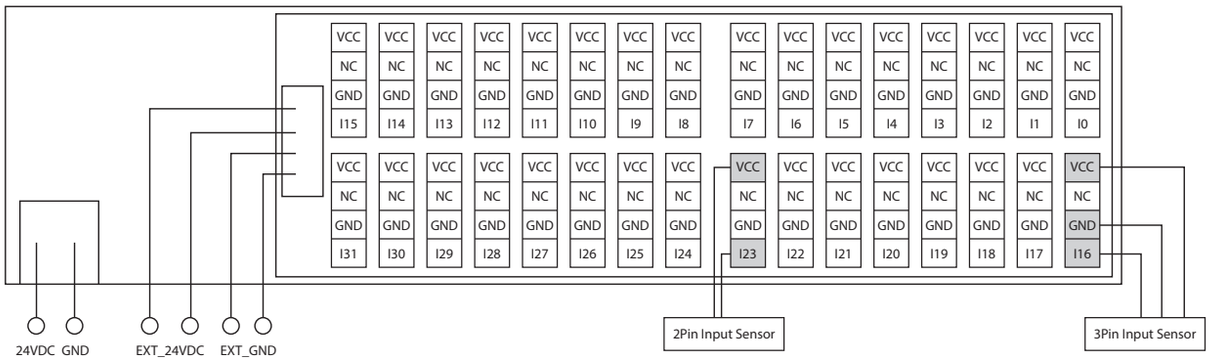
※ VCC is 24VDC output.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-PE-■32□-E / Ezi-IO-PE-I16O16□-E Series]

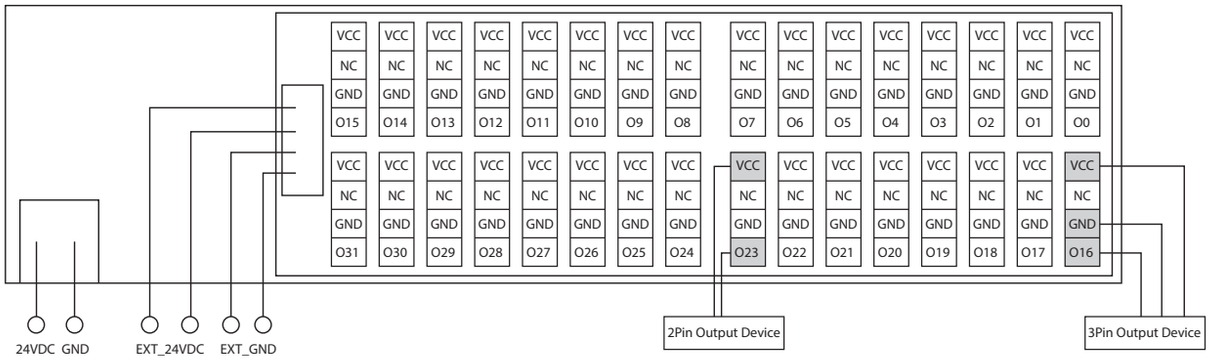
1 Ezi-IO-PE-I32N-E(NPN)



2 Ezi-IO-PE-I32P-E(PNP)



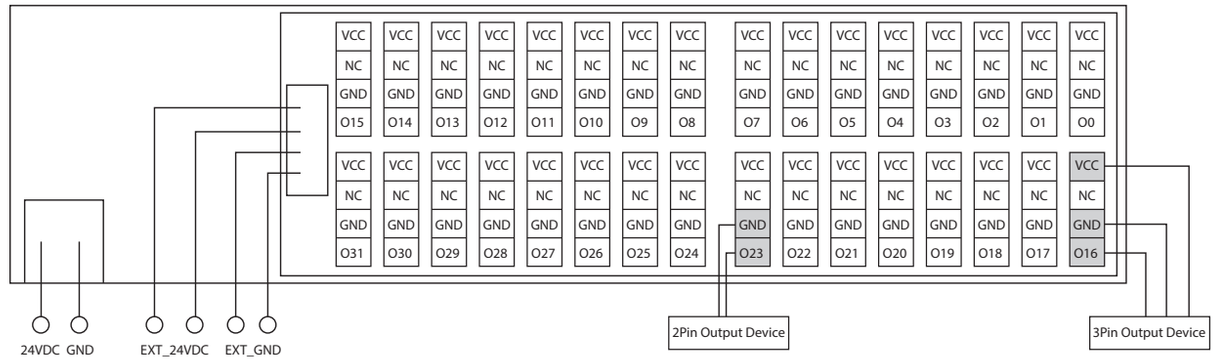
3 Ezi-IO-PE-O32N-E(NPN)



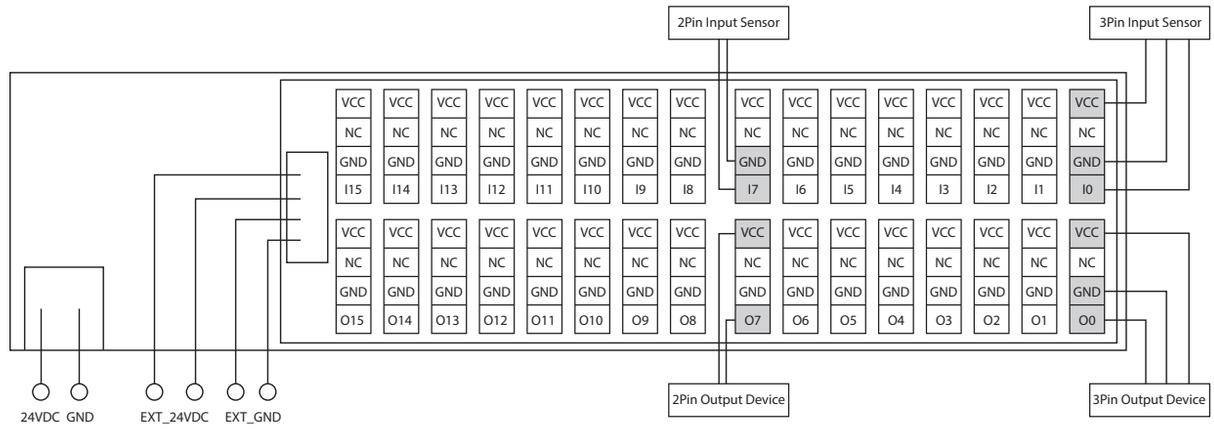
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-PE-■32□-E / Ezi-IO-PE-I16O16□-E Series]

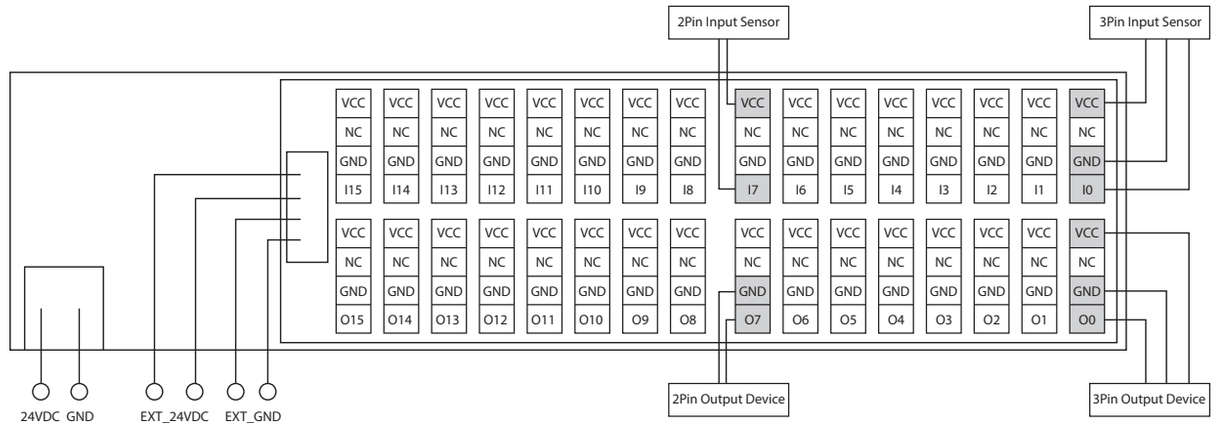
4 Ezi-IO-PE-O32P-E(PNP)



5 Ezi-IO-PE-I16O16N-E(NPN)



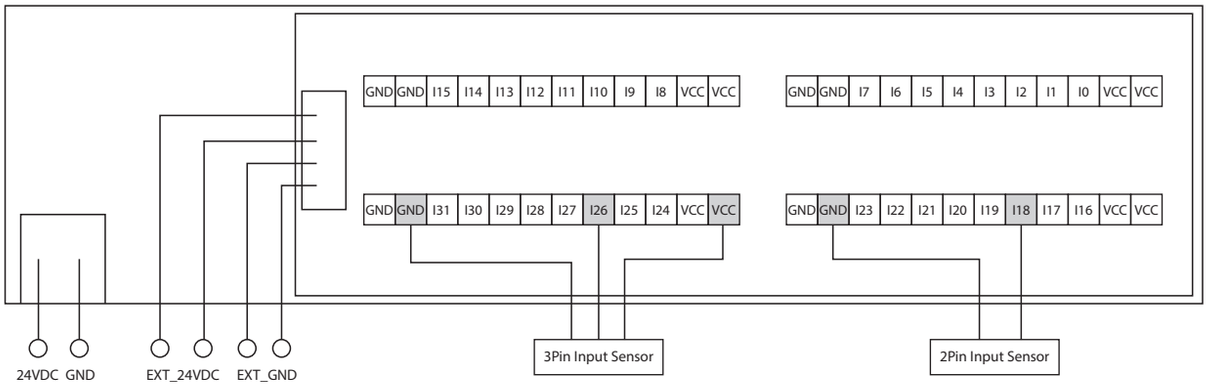
6 Ezi-IO-PE-I16O16P-E(PNP)



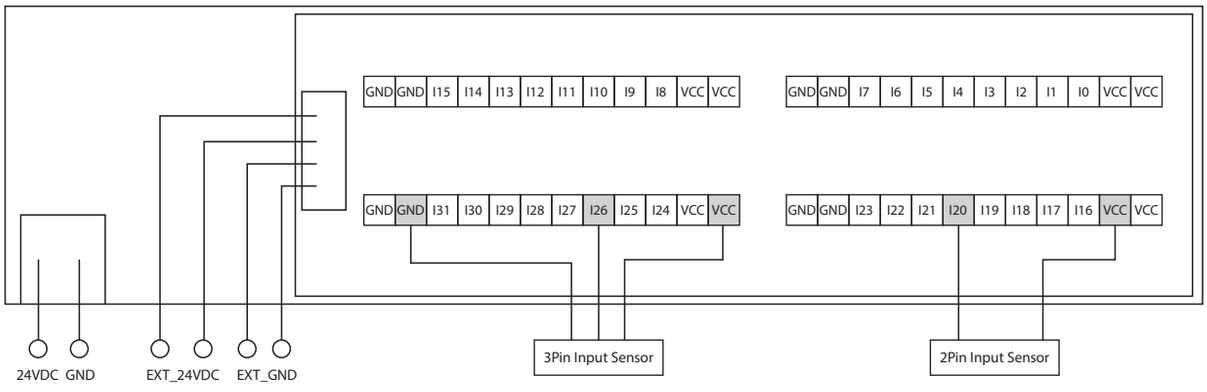
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-PE-■32□-T / Ezi-IO-PE-I16016□-T Series]

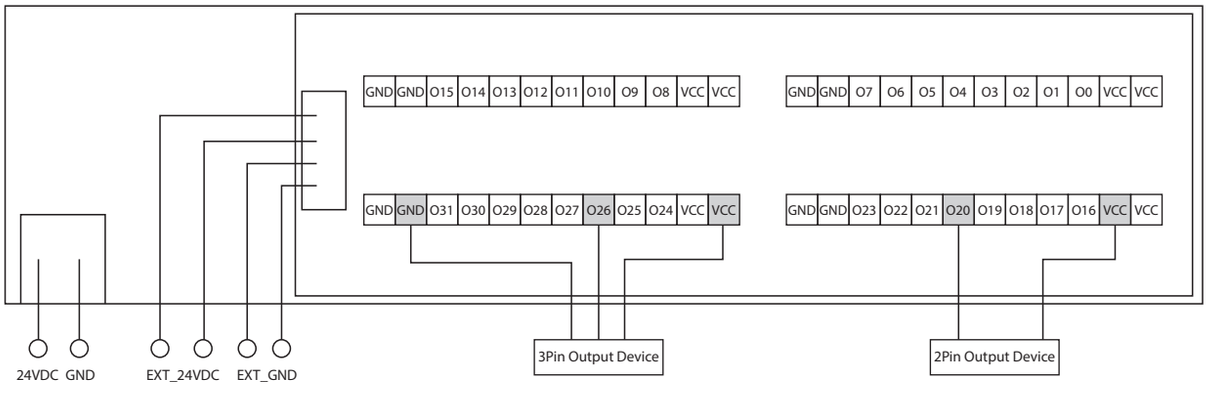
1 Ezi-IO-PE-I32N-T(NPN)



2 Ezi-IO-PE-I32P-T(PNP)



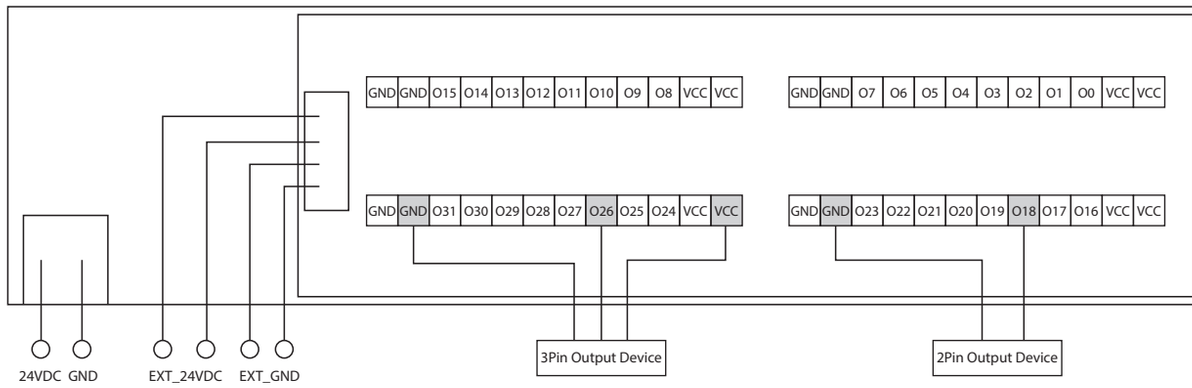
3 Ezi-IO-PE-O32N-T(NPN)



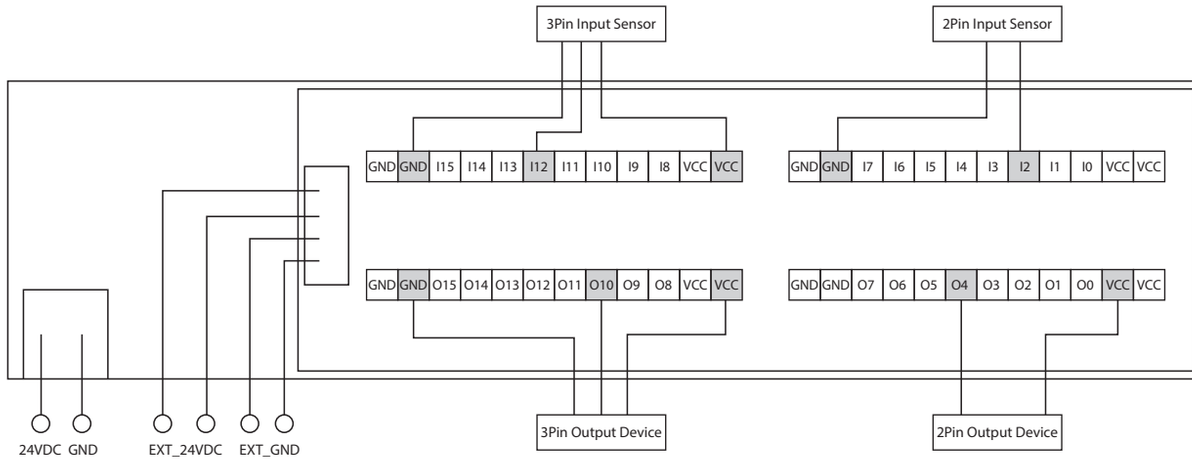
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-PE-■32□-T / Ezi-IO-PE-I16O16□-T Series]

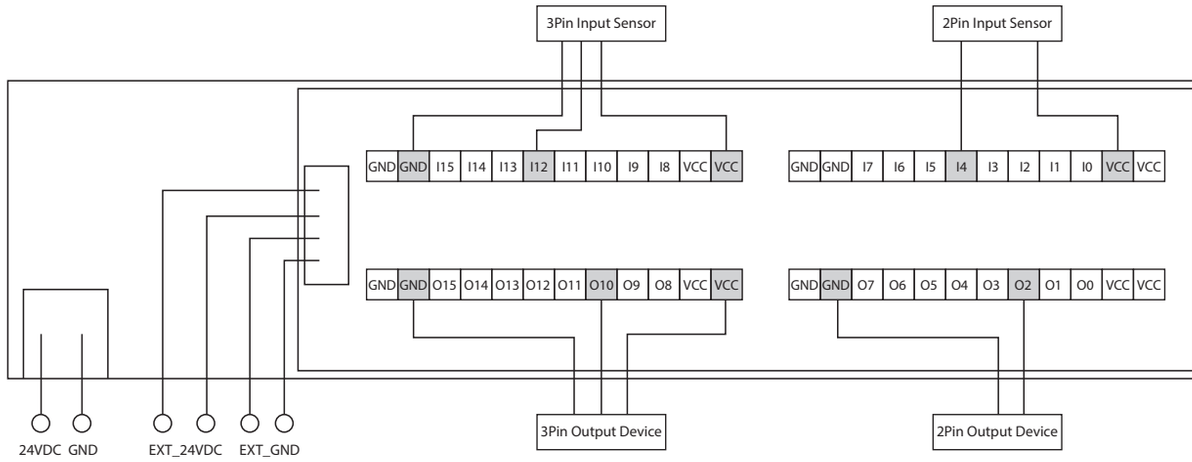
4 Ezi-IO-PE-O32P-T(PNP)



5 Ezi-IO-PE-I16O16N-T(NPN)



6 Ezi-IO-PE-I16O16P-T(PNP)



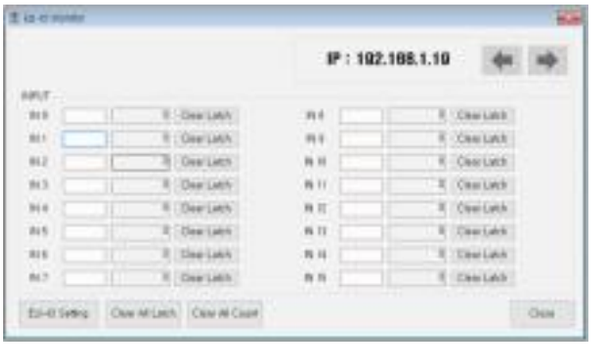
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● GUI(Graphic User Interface) Screenshot



◆ Ezi-IO Summary

In/out status of connected in/out board can be monitored at once.



◆ Ezi-IO-PE Input series Monitoring

Current input status and Latch status can be monitored.



◆ Ezi-IO-PE Output series Monitoring

Control and state of each output can be monitored.



◆ I/O Logic Setting

Level of real signal can be selected in order to recognize in/out signal as ON. All changes can be stored and uploaded later.

● Remark (NPN / PNP / SINK / SOURCE)

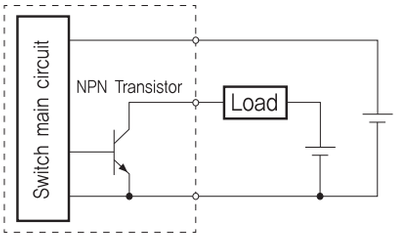


Fig1. NPN Out type interface

Fig1. shows example of NPN out interface.
When Transistor is on, Load current is flew into inside of NPN out which we call it as SINK type or NPN open collector type. Please connect (+) voltage into the load which connects output.

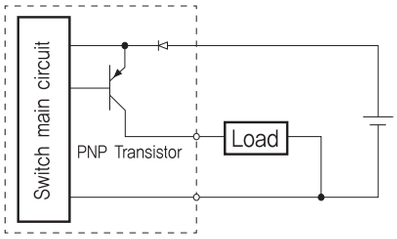


Fig2. PNP Out type interface

Fig2. shows example of PNP out interface.
When Transistor is on, Load current is flew out to outside load. We call it as SOURCE type or PNP open collector type. Please connect (−) voltage into other side of load which connects output.


Ezi-IO Plus-R
PWR
OUTPUT
EZI-IO-MR-016

Ezi-IO Plus-R

Digital Input / Output Module_ Ezi-IO Plus-R

- Controlled by RS-485 communication
- The same communication protocol as Plus-R product series
- Digital I/O Photocoupler Isolation
- Specialized for 16 input channels
- Specialized for 16 output channels
- Specialized for 8 input 8 output channels



FASTECH

Fast, Accurate, Smooth Motion

Ezi-IO® Plus-R

Input/Output Module



1 Network Supported Digital I/O

Ezi-IO Plus-R Series are products which provide Digital input and output module with RS-485 network so that customers can easily control many peripheral devices on the equipment as needed.

2 Supported FASTECH Protocol

It is easy to use for users of the existing Plus-R series due to using the same RS-485 communication protocol as the existing Plus-R product series.

3 Provide User GUI and Library

For customer convenience in a PC-controlled environment, the Graphic User Interface and Windows 7/8/10 corresponding Library (DLL) are provided.



4 Speciallized I/O Module

Ezi-IO Plue-R supports independent 16CH input and 16CH output module products, and can be applied to various installation environments by selecting NPN or PNP type. In addition, Input module has Latch and Latch Count function, so it is possible to detect and count without losing important signal change, and Output module supports Trigger output function to set and output the signal of fixed period and fixed quantity.

5 Digital I/O Photocoupler Isolation

By using photocoupler isolation elements, input and output circuit of both side can be protected from electrical damage.

● Ezi-IO Plus-R Part Numbering

Ezi-IO-PR-I16N-□

- Product Name
- Module Series
  - PR : Plus RS-485
- Input/Output Type
  - I16N : 16CH / Sink Input
  - I16P : 16CH / Source Input
  - O16 : 16CH / Open Drain Output
  - I8NO8 : 8CH / Sink Input, 8CH / Open Drain Output
  - I8PO8 : 8CH / Source Input, 8CH / Open Drain Output
- User Code

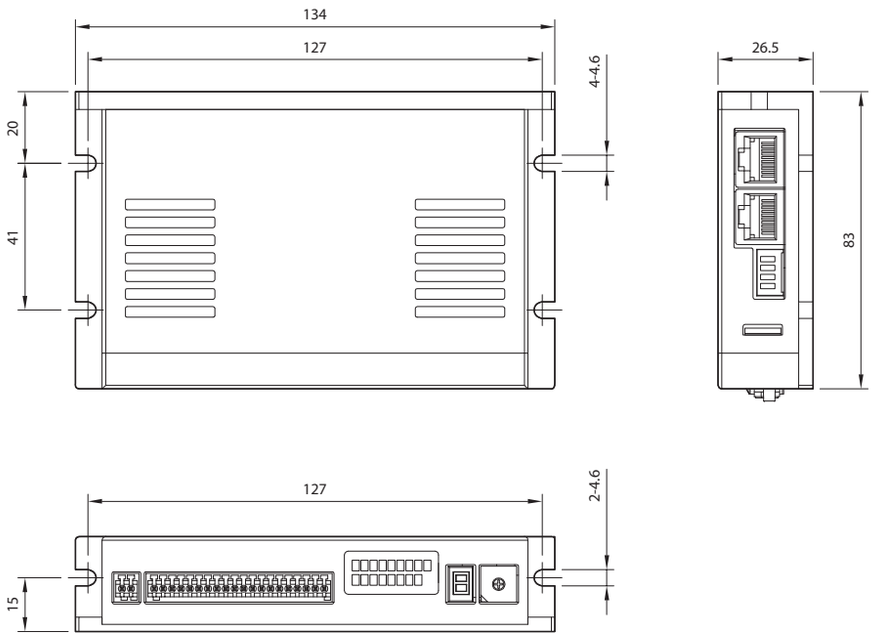
● Ezi-IO Plus-R Part Number

Part Number
Ezi-IO-PR-I16N
Ezi-IO-PR-I16P
Ezi-IO-PR-O16
Ezi-IO-PR-I8NO8
Ezi-IO-PR-I8PO8

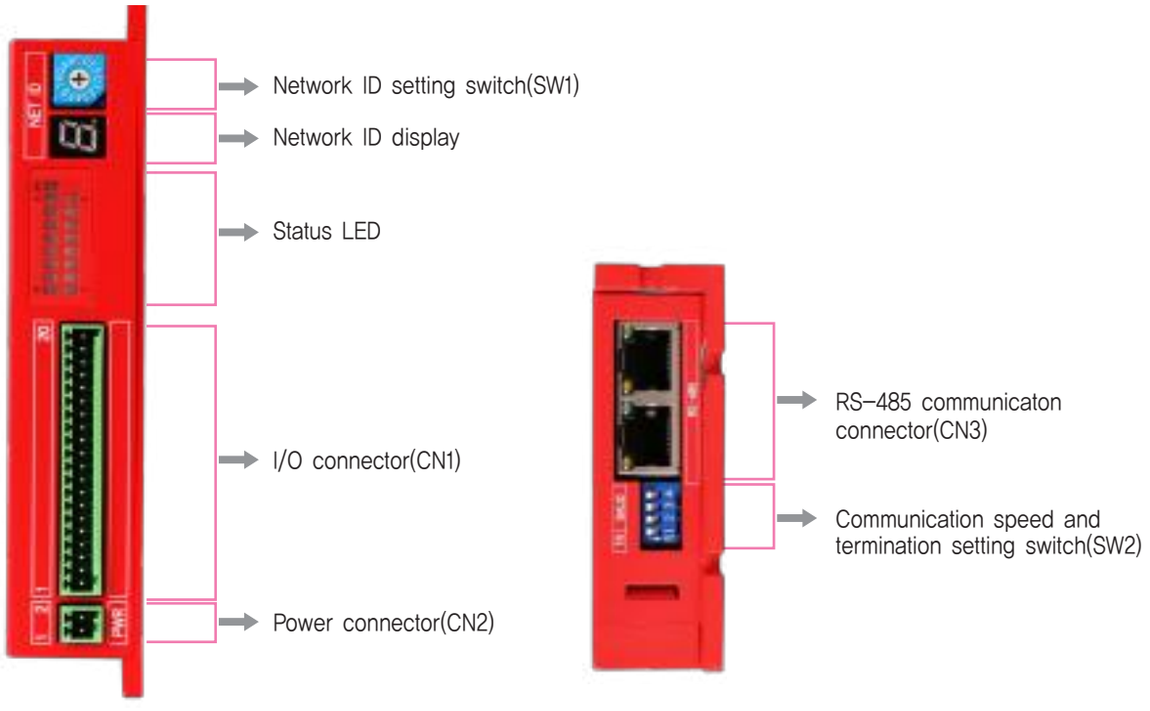
● Specifications of Module

Module Series		Ezi-IO-PR series		
Module Name		Ezi-IO-PR-I16 series	Ezi-IO-PR-O16 series	Ezi-IO-PR-I808 series
Input Voltage		24VDC ±10%		
Control Method		Control with 32bit MCU		
Network Connection		Max 16 channel connection by Daisy-chain		
Current Consumption		Max 500mA		
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.	0.5g		
Function	Input Signal	16CH Input (Photocoupler Input, NPN/PNP) Latch for 16CH (Rising/Falling) Latch Pulse Width: Min. 25 μsec Latch counter for 16CH 24VDC : Max. 10mA/CH	-	8CH Input (Photo coupler input, NPN / PNP) Latch for 8CH input (Rising / Falling) Latch Pulse Width: Min. 25 μsec Latch counter for 8CH input 24VDC: Max. 10mA / CH
	Output Signal	-	16CH Output (Photocoupler Isolation, FET Output) Trigger output for 16CH (Setting for each channel) - 50% Duty, Pulse Width = Min. 1 msec 24VDC : Max. 200mA/CH - under full operating condition	8CH output (Photo coupler isolation, FET output) Trigger output function for 8CH output (can be set in CH units) - 50% Duty, Pulse Width = Min. 1 msec 24VDC: Max. 200mA/CH - Simultaneous operation based for all contacts
	LED Display	Input power status(Red) Input status(Green)	Output power status (Red) Output status (Green)	Power status (Red) I/O status (Green)
Communication Protocol		RS-485 Serial communication, 9,600~921,600 [bps]		
User Program		Windows based User interface program		
Library		Library(DLL) for Windows 7/8/10		

Dimensions of Module [mm]



Settings and Operation



1. Status LED

Indication	Color	Function	ON/OFF Condition
24V	Red	Ext 24V Power	LED is turned ON when power is applied
0~15	Green	In/Out status	Input On : Input signal On Output On : Output signal On

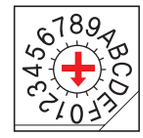
2. Network ID Setting Switch(SW1)

1) Unique ID setting for each module

2) Total 16 number setting (0~F)

Position	ID Number	Position	ID Number
0*1	0	8	8
1	1	9	9
2	2	A	10
3	3	B	11
4	4	C	12
5	5	D	13
6	6	E	14
7	7	F	15

*1 : Default settings



3. Communication Speed and Termination Setting Switch(SW2)

Termination Setting Switch(SW2.1)

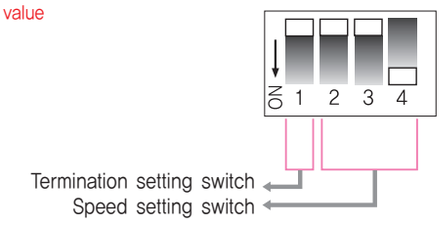
The module installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if module installed at the end of the network.

Speed Setting Switch(SW2.2~SW2.4)

SW2.2~SW2.4 used for setting speed as follows

SW2.1	SW2.2	SW2.3	SW2.4	Baud Rate [bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

*1 : Default setting value



4. I/O Connector(CN1)

◆ Input Module

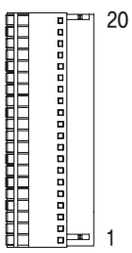
NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_24VDC	Input
3	Input0	Input
4	Input1	Input
5	Input2	Input
6	Input3	Input
7	Input4	Input
8	Input5	Input
9	Input6	Input
10	Input7	Input
11	Input8	Input
12	Input9	Input
13	Input10	Input
14	Input11	Input
15	Input12	Input
16	Input13	Input
17	Input14	Input
18	Input15	Input
19	EXT_GND	Input
20	EXT_GND	Input

◆ Output Module

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_24VDC	Input
3	Output0	Output
4	Output1	Output
5	Output2	Output
6	Output3	Output
7	Output4	Output
8	Output5	Output
9	Output6	Output
10	Output7	Output
11	Output8	Output
12	Output9	Output
13	Output10	Output
14	Output11	Output
15	Output12	Output
16	Output13	Output
17	Output14	Output
18	Output15	Output
19	EXT_GND	Input
20	EXT_GND	Input

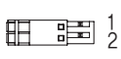
◆ I/O Module

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_24VDC	Input
3	Input0	Input
4	Input1	Input
5	Input2	Input
6	Input3	Input
7	Input4	Input
8	Input5	Input
9	Input6	Input
10	Input7	Input
11	Output0	Output
12	Output1	Output
13	Output2	Output
14	Output3	Output
15	Output4	Output
16	Output5	Output
17	Output6	Output
18	Output7	Output
19	EXT_GND	Input
20	EXT_GND	Input



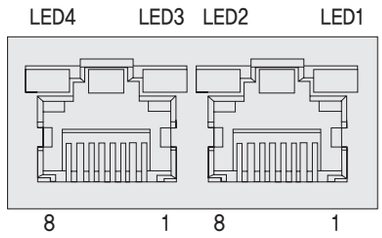
5. Power Connector(CN2)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

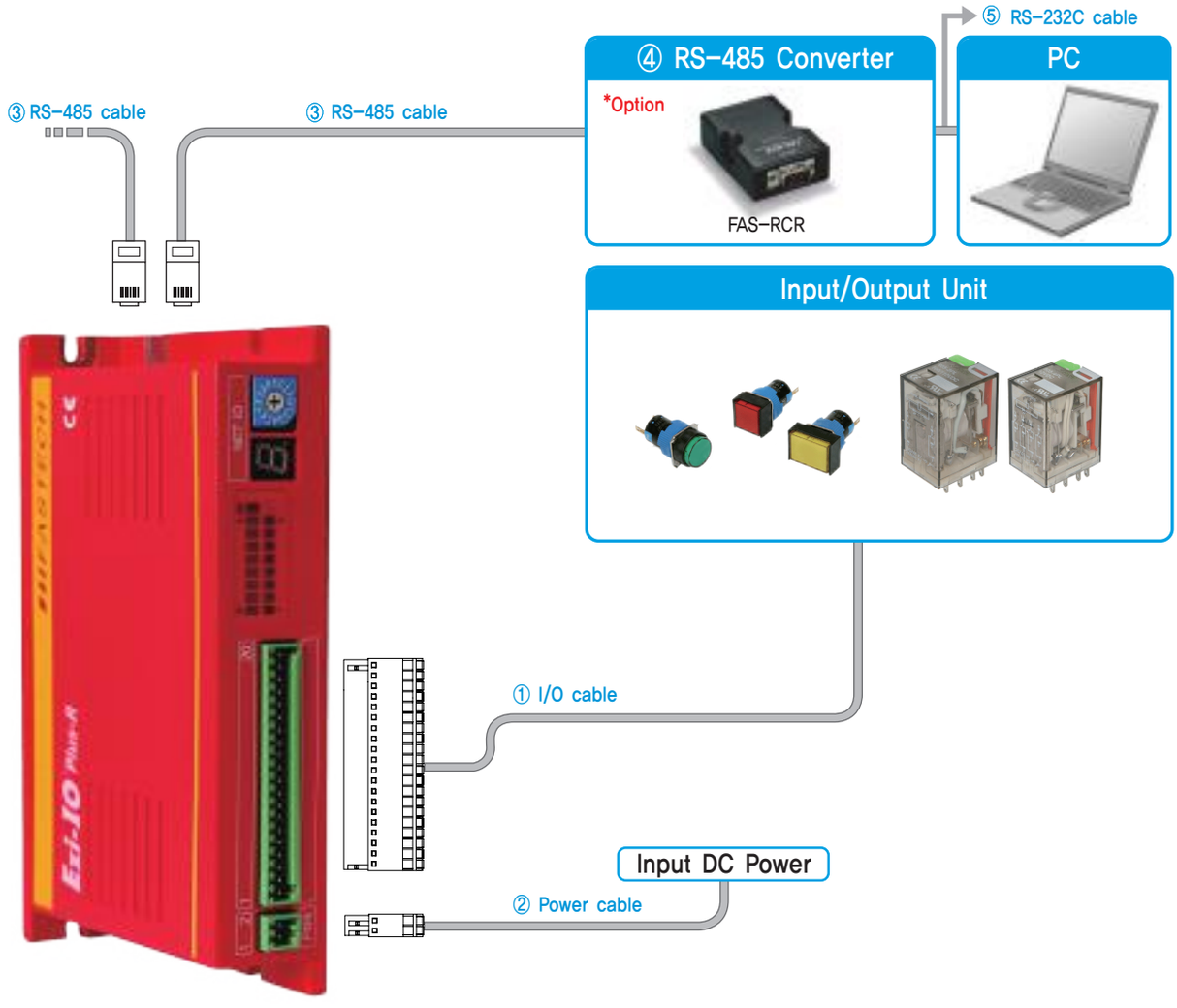


6. RS-485 Communication Connector(CN3)

NO.	Function	NO.	Function
1	GND	6	Data-
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Module status
5	GND	LED 2, 4	Communication status



System Configuration



Type	I/O Cable	Power Cable	RS-485 Cable
Length supplied	–	–	–
Max. Length	20m	2m	30m

1. Options

① RS-485 Cable

Available to connect between the modules of Ezi-IO Plus-R or with FAS-RCR..

Item	Length [m]	Remark
CGNR-R-0R6F	0.6	Normal Cable
CGNR-R-001F	1	
CGNR-R-1R5F	1.5	
CGNR-R-002F	2	
CGNR-R-003F	3	
CGNR-R-005F	5	

② FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C : Max. 15m RS-485 : Max. 1.2km
Connection Type	RS-232C : DB9 Female RS-485 : RJ-45
Dimension	50X75X23mm
Weight	38g
Power	RS-232C Self Power (Usable for external DC5~24V)

③ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR

Item	Length [m]	Remark
CGNR-C-002F CGNR-C-003F CGNR-C-005F	2 3 5	Normal Cable

2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Terminal Block	RSC250V-02P	DINKLE
I/O (CN1)	Terminal Block	RSC250V-20P	DINKLE

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● GUI(Graphic User Interface) Screenshot



◆ Ezi-IO Summary

In/out status of connected in/out board can be monitored at once.



◆ Ezi-IO-PR-I16 series Monitoring

Current input status and Latch status can be monitored.



◆ Ezi-IO-PR-O16 series Monitoring

Control and state of each output can be monitored.



◆ Ezi-IO-PR-I808 Series Monitoring

Current input status and Latch status can be checked. Control and status of each output can be checked.



◆ I/O Logic Setting

It can be selected the level of the actual signal to recognize the input / output signal as [ON] state, and all changes can be saved and loaded.

● Remark (NPN / PNP / SINK / SOURCE)

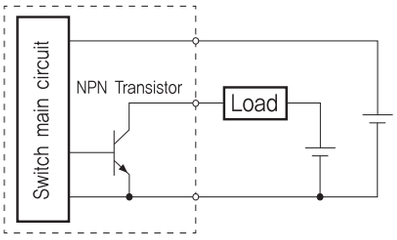


Fig1. NPN Out type interface

Fig1. shows example of NPN out interface.
When Transistor On, Load current is flew into inside of NPN out which we call it as SINK type or NPN open collector type. Please connect (+) voltage into the load which connects output.

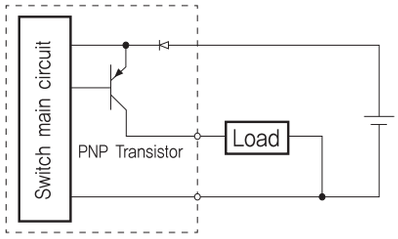


Fig2. PNP Out type interface

Fig2. shows example of PNP out interface.
When Transistor ON, Load current is flew out to outside load. We call it as SOURCE type or PNP open collector type. Please connect (–) voltage into other side of load which connects output.

FASTECH_

Product Information

Ezi-SERVO®

S-SERVO® II

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Plus-E
Plus-R

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®


Panasonic

Ezi-MotionLink Plus-E

Network Based Motion Controller Plug-in to Servo Drives

- Ethernet Based Motion Controller
- Plug-in to Various Types of Servo Drive
- Various Motion Functions
- Simplification of the Wirings


DSP
MITSUBISHI
SERVO AMPLIFIER
MR-J4-10A
CHARGE
POWER
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
CN10
CN11
CN12
CN13
CN14
CN15
CN16
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CN39
CN40



2 Plug-in to Various Servo Drives

Ezi-MOTIONLINK Plus-E does not need wiring of drives because it is directly connected to User interface connector of Servo Drives. Available Servo Drives are Yaskawa, Mitsubishi, Panasonic, Sanyo Denki, Nidec Sankyo, LS Mecapion, Higen, RS Automation Servo Drives.

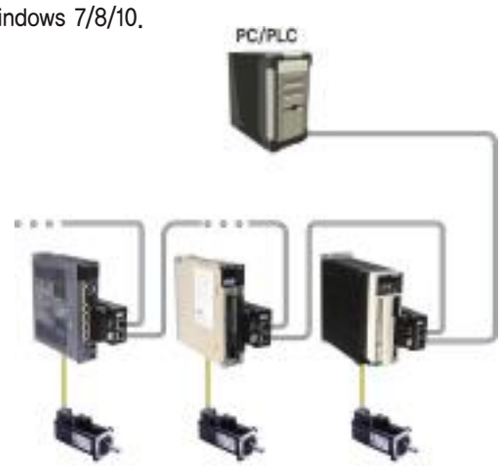


3 Various Motion Function

Ezi-MOTIONLINK supports various motions such as symmertic/asymmetric trapezoidal acceleration/deceleration, In addition, motion test, parameter setting, I/O setting, etc. can be performed simply and conveniently using the GUI(Graphic User Interface) provided.



Windows 7/8/10.



● Ezi-MOTIONLINK Plus-E Part Numbering

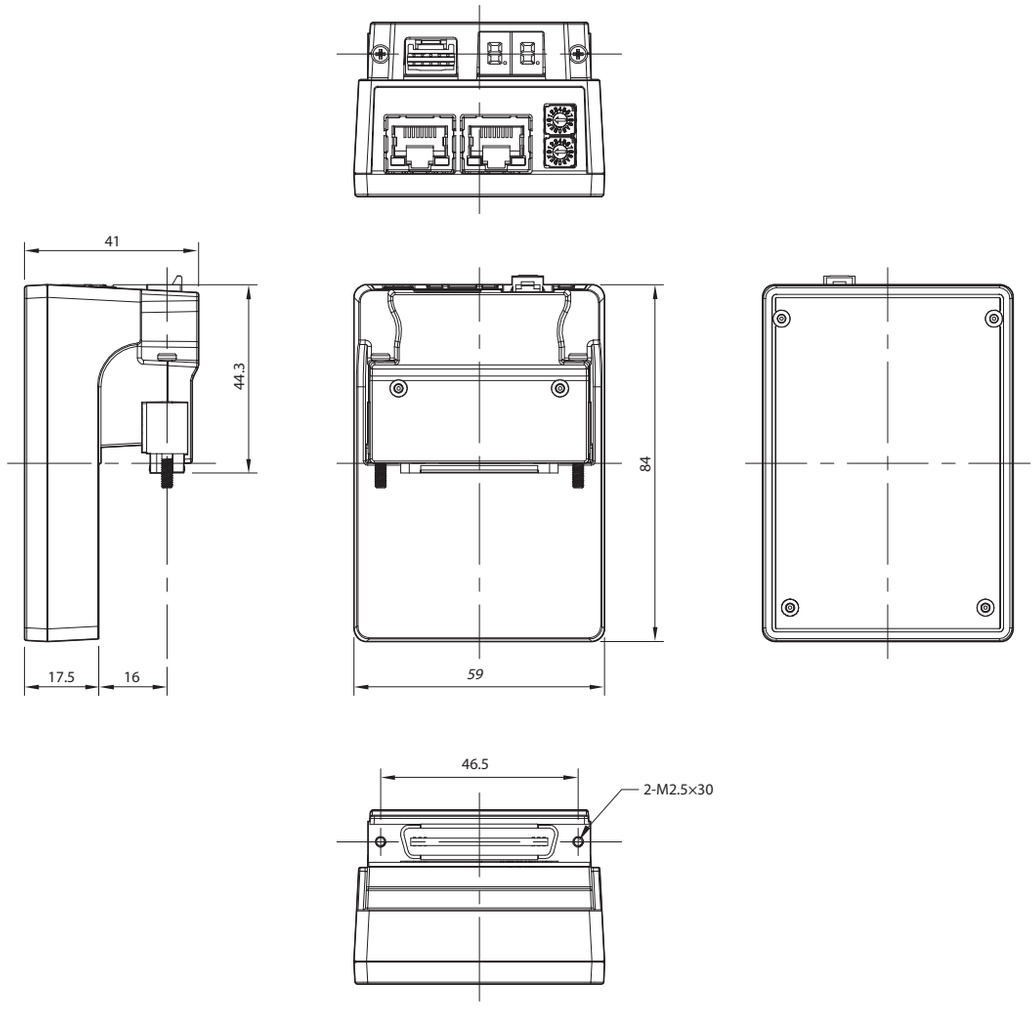
Ez-ML-PE-YAS-□

Product Name	
Drive Series	PE : Plus Ethernet
Servo Drive Model Number	YAS : Yaskawa Sigma 2, 3, 5, 7 MIT : Mitsubishi MR-J3, J4, J5 PAN : Panasonic Minas A, A3, A4, A5, A6 SAN : Sanyo Denki RSA : RS Automation CSD7 LSS : LS Mecapion L7S DEL : DELTA ASD-A2
User Code	

● Part Number

Part Number
Ez-ML-PE-YAS
Ez-ML-PE-MIT
Ez-ML-PE-PAN
Ez-ML-PE-SAN
Ez-ML-PE-RSA
Ez-ML-PE-LSS
Ez-ML-PE-DEL

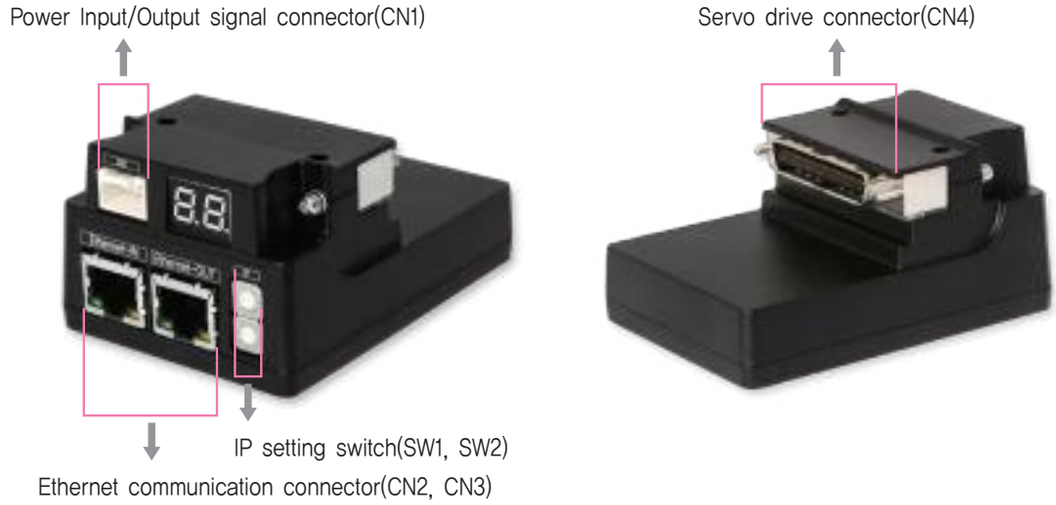
● Dimensions of Controller [mm]



● Specifications of Controller

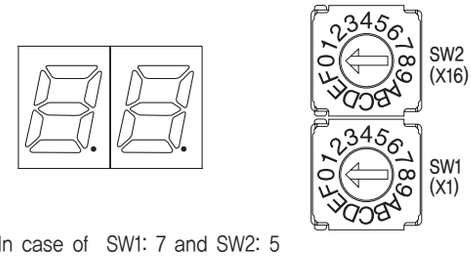
Input Voltage		24VDC ±10%
Data Range		−134,217,728 ~ +134,217,727 [pulse] (28bit)
Type of Acc/Dec		Symmetric / Asymmetric trapezoidal acceleration & deceleration
Command pulse output method		2 pulse mode (CW/CCW) or 1 pulse mode (Pulse/Dir) (Selected by parameter)
Max. Output Freguency		5MHz
Encoder Max. Input Freguency		4MHz
Input Signal		3 dedicated inputs (LIMIT+, LIMIT−, ORIGIN), 1 programmable input (photocoupler)
Output Signal		1 programmable output (photocoupler), Brake
Rotational Direction		CW/CCW (Selectable by parameter)
7−Segment Display		IP address, Alarm status
Communication Interface		Ethernet communication, Dual port Ethernet switch embeded, Communication speed: 10/100 Base − T/TX Full−Duplex
Multi Axis Drive		Maximum 254 axis operating with default configuration(Selectable IP: 1~254)
Return to Origin		Origin Sensor, Z phase, ±Limit Sensor
GUI		User Interface Program within Windows
Library		Motion Library (DLL) for windows 7/8/10
Operating Condition	Ambient Temperature	· In Use: 0~55℃ · In Storage: −20~70℃
	Humidity	· In Use: 35~85% RH (Non−condensing) · In Storage: 10~90% RH (Non−condensing)
	Vib. Resist.	0.5g

Settings and Operation



1. Ethernet IP Display and Setting Switch(SW1, SW2)

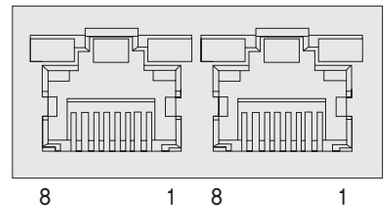
It is to be set from 1 to 254. Please set the IP not to overap each other. (Basic set up is "192.168.0.xxx" and xxx is to be set by switch)
If set the switch to 255, IP is set automatically. (DHCP)



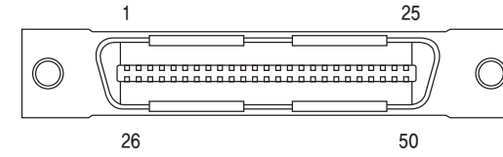
Ex) In case of SW1: 7 and SW2: 5
5×16 + 7×1 = 87
IP is to be set as 192.168.0.87

2. Ethernet Communication Connector(CN2, CN3)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connection hood	F.GND
5	----		



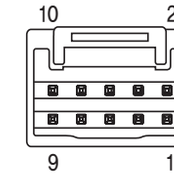
3. Servo Drive Connector(CN4)



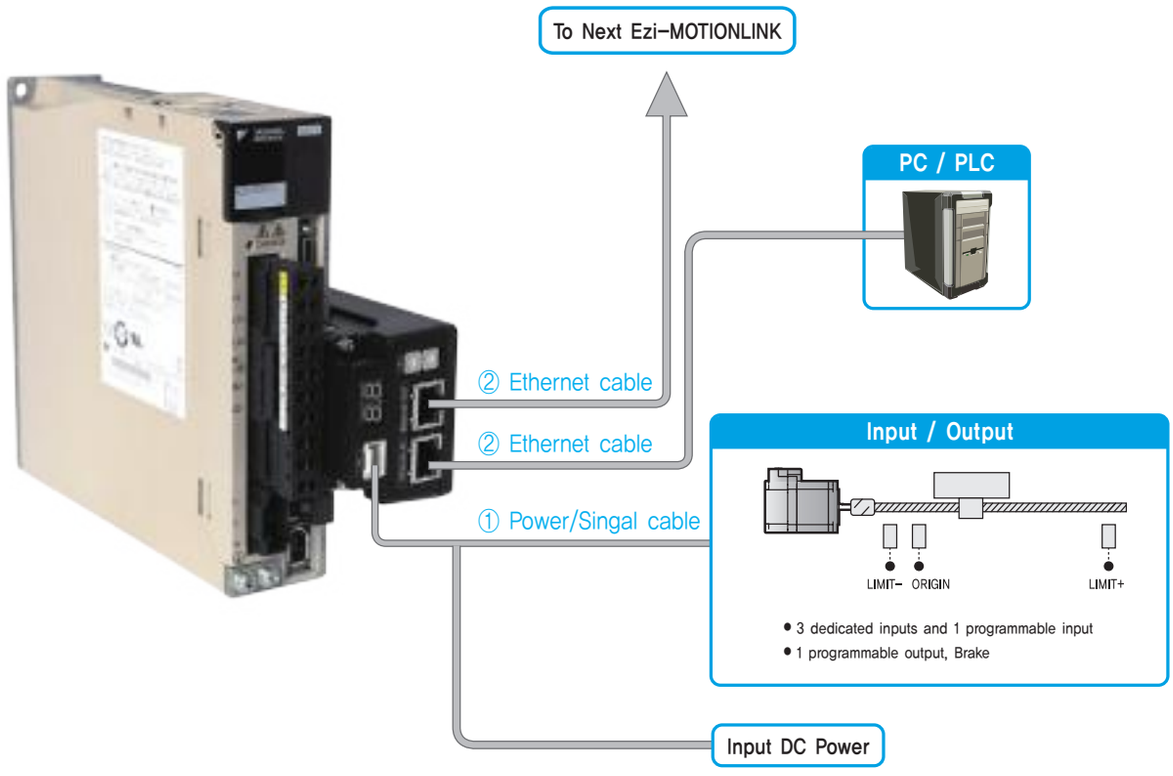
Pin Map of connector(CN4) which connects to Servo Drives is various according to type of Servo Drives. Please check Manual in detail. (It is plug-in to Servo Drives which are using normally so users do not have to concern.

4. Power Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input
3	EXT_24VDC	Output
4	EXT_GND	Output
5	LIMIT+	Input
6	LIMIT−	Input
7	ORIGIN	Input
8	Digital In1	Input
9	BRAKE	Output
10	Digital Out1	Output



System Configuration



1. Options

① Power/Signal Cable

Power and I/O connection cable
for Ezi-MOTIONLINK Plus-E, Origin Sensor and etc.

Item	Length [m]	Remark
CSPE-S-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Ethenet Cable

STP(Shielded twisted pair) cable of Category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

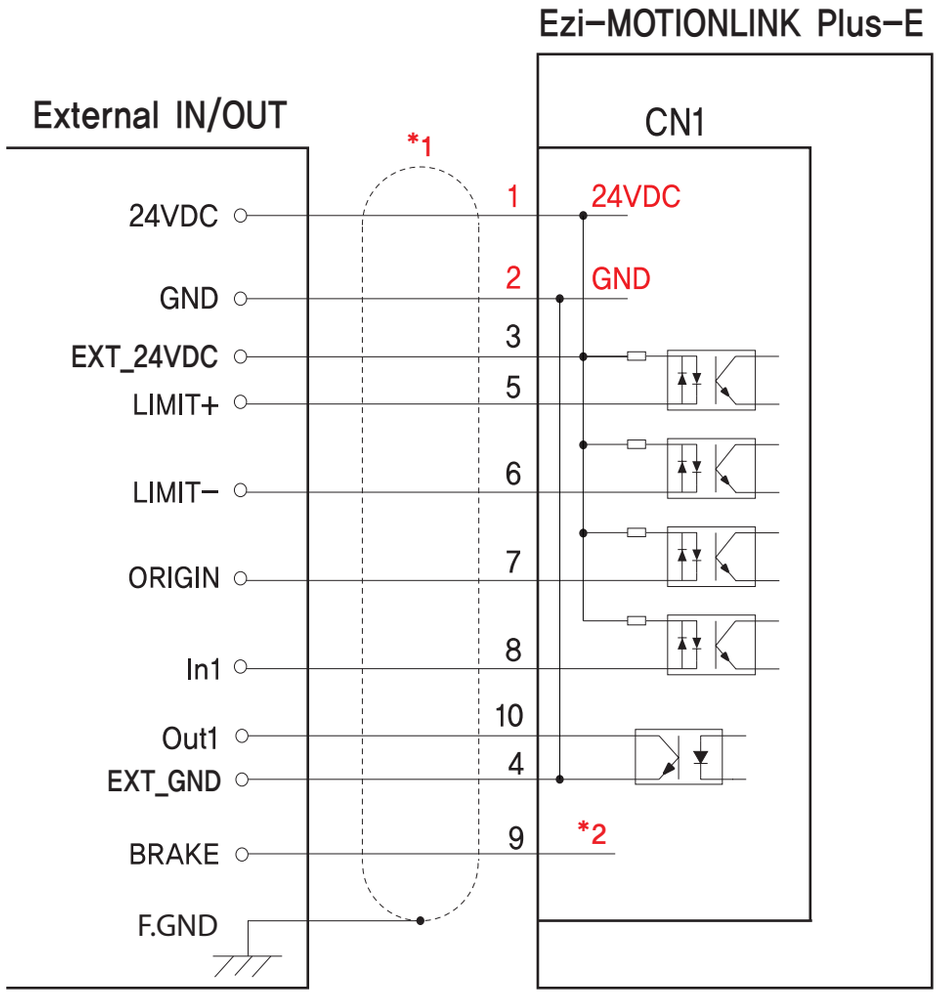
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power/Signal Connector (CN1)	Housing Terminal	501646-1000 501648-1000 (AWG 26~28)	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram

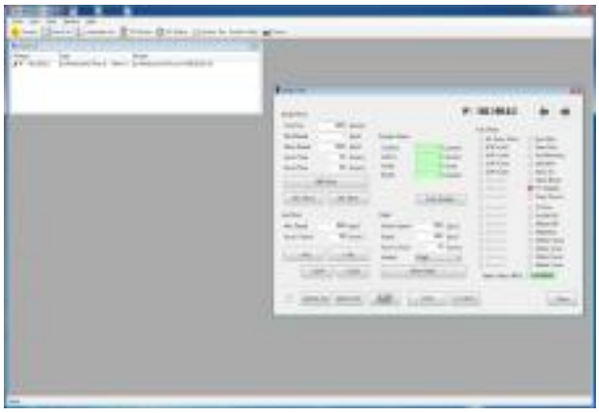


*** 1**) Shield Cable

*** 2**) Please refer to the manual of the servo drive and set the brake function if you want to use the brake function with Ezi-MOTIONLINK.

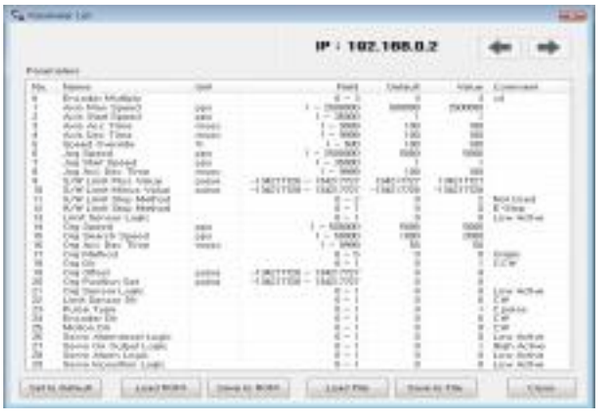
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● GUI(Graphic User Interface) Screenshot



◆ Controller Lists and Motion Test

This screen display the controller list that connected to system. You can make a single move, jog and origin command and also the motor status is displayed.



◆ Parameter List

All of the parameters are displayed and modified on this screen.



◆ Motion Repeat and Monitor Status

Target position, speed, delay time and repeat count are selected for repeat motion test. Motion library(DLL) is also displayed on screen.



◆ I/O Monitoring and Setting

You can select various digital input and output signals of controller.



◆ Position Table

You can edit the position table and execute it. The position table data can be saved and loaded from Flash ROM and Windows file.

※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.


Panasonic
SANMOTION
R

Ezi-MotionLink Plus-R

RS-485 Network Based Motion Controller Plug-in to Servo Drives

- RS-485 Network Based Motion Controller
- Plug-in to Various Type of Servo Drives
- Various Motion Functions
- Simplification of the Wirings



FASTECH

Fast, Accurate, Smooth Motion

Ezi-MotionLink® Plus-R

Network based Motion Controller Plug-In to Servo Drives



2 Plug-in to Various Servo Drives

Ezi-MOTIONLINK does not need wiring of drives because it is directly connected to User interface connector of Servo Drives. Available Servo Drives are Yaskawa, Mitsubishi, Panasonic, Sanyo Denki, LS Mecapion, Higen and RS Automation Servo Drives.



3 Various Motion Function

Ezi-MOTIONLINK supports various motions such as symmertic/asymmetric trapezoidal acceleration/deceleration, In addition, motion test, parameter setting, I/O setting, etc. can be performed simply and conveniently using the GUI(Graphic User Interface) provided.





● Ezi-MOTIONLINK Plus-R Part Numbering

Ez-ML-PR-YAS-□

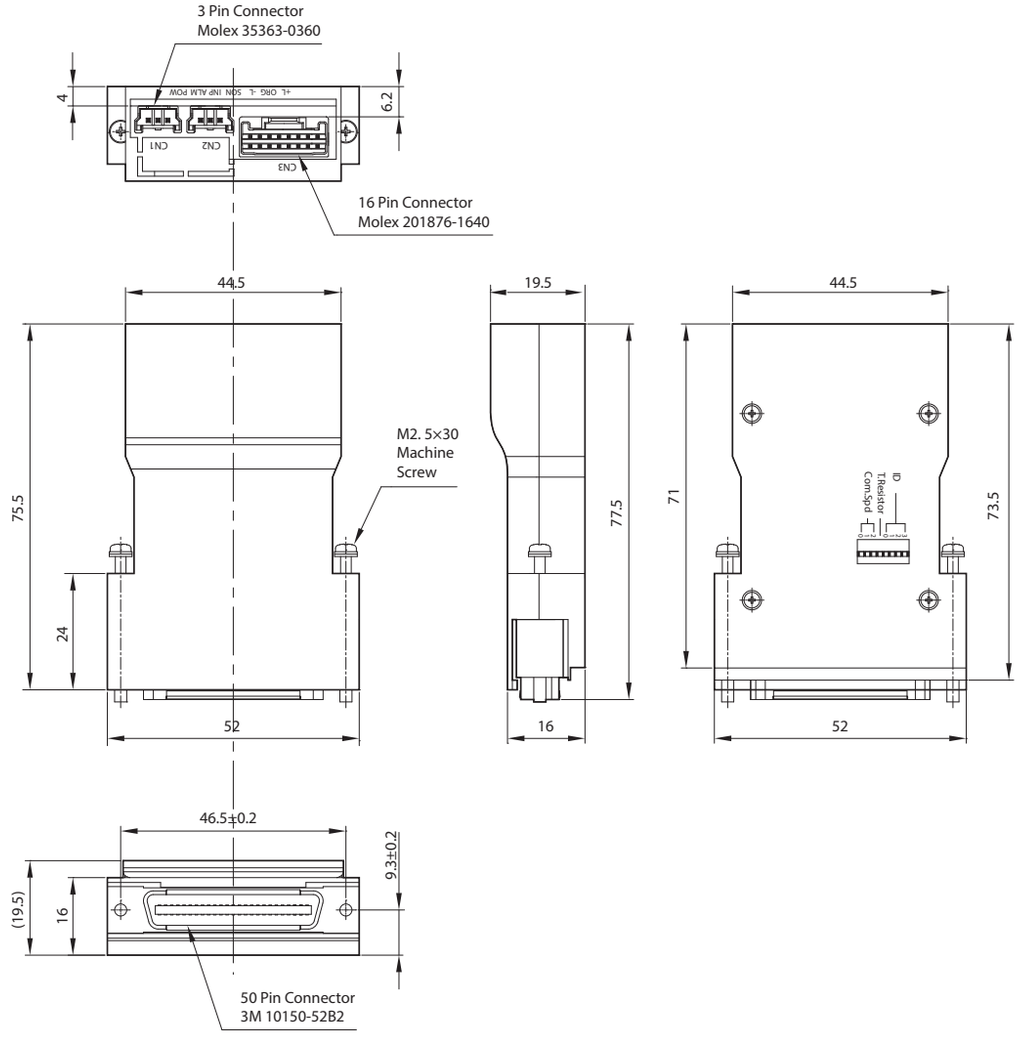
Product Name	
Drive Series	PR : Plus RS-485
Servo Drive Model Number	YAS : Yaskawa Sigma 2, 3, 5, 6 MIT : Mitsubishi MR-J3, J4, J5 PAN : Panasonic Minas A, A3, A4, A5, A6 SAN : Sanyo Denki NIS : Nidec Sankyo RSA : RS Automation
User Code	

※ LS Mecapion, Higen will be released

● Part Number

Part Number
Ez-ML-PR-YAS
Ez-ML-PR-MIT
Ez-ML-PR-PAN
Ez-ML-PR-SAN
Ez-ML-PR-NIS
Ez-ML-PR-RSA

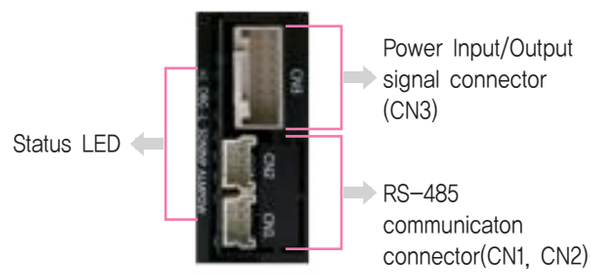
● Dimensions of Controller [mm]

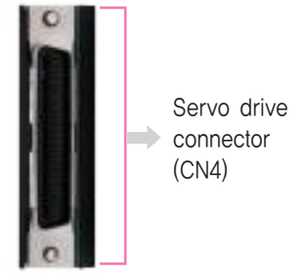


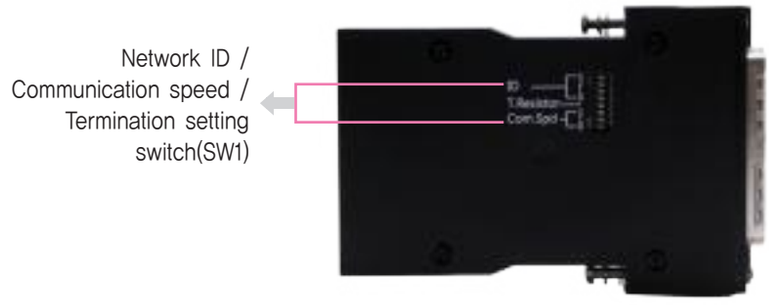
● Specifications of Controller

Input Voltage		24VDC ±10%
Data Range		−134,217,728 ~ +134,217,727 [pulse] (28bit)
Type of Acc/Dec		Symmetric / Asymmetric trapezoidal acceleration & deceleration
Pulse Input Method		2 pulse mode (CW/CCW) or 1 pulse mode (Pulse/Dir) (Selected by parameter)
Max. Output Freguency		5MHz
Encoder Max. Input Freguency		4MHz
Input Signal		3 dedicated inputs (LIMIT+, LIMIT−, ORIGIN), 5 programmable inputs (photocoupler)
Output Signal		1 dedicated output (Compare Out), 3 programmable outputs (photocoupler), Brake
Rotational Direction		CW/CCW (Selectable by parameter)
LED Display		Power status, Alarm status, In−Position status, Servo On/Of status, ±Limit Sensor status, Origin Sensor status
Communication Interface		The RS−485 serial communication Communication speed: 9,600~921,600[bps]
Multi Axis Drive		Maximum 16 axis through Daisy−Chain
Return to Origin		Origin Sensor, Z phase, ±Limit Sensor
GUI		User Interface Program within Windows
Software		Motion Library (DLL) for windows 7/8/10
Operating Condition	Ambient Temperature	· In Use: 0~55℃ · In Storage: −20~70℃
	Humidity	· In Use: 35~85% (Non−condensing) · In Storage: 10~90% (Non−condensing)
	Vib. Resist.	0.5g

Settings and Operation







1. Status LED

Indication	Color	Function	ON/OFF Condition
POW	Green	Power input indication	LED is turned ON when power is applied
ALM	Red	Alarm indication	Lights when alarm occurs at Servo Drives
INP	Yellow	Complete positioning motion	Lights when position deviation is within In-Position value which set as parameter of Servo Drive after completion of position command pulse input.
SON	Orange	Servo On/Off indication	Servo On: Lights On, Servo Off: Lights Off
-L	Green	Indicate -Limit sensor detection	Lights when -Limit sensor is detected
ORG	Green	Indicate Origin sensor detection	Lights when Origin sensor is detected
+L	Green	Indicate +Limit sensor detection	Lights when +Limit sensor is detected

2. Network ID Setting Switch(SW1.5~SW1.8)

SW1.8	SW1.7	SW1.6	SW1.5	ID
OFF	OFF	OFF	OFF	0
OFF	OFF	OFF	ON	1
OFF	OFF	ON	OFF	2
OFF	OFF	ON	ON	3
OFF	ON	OFF	OFF	4
OFF	ON	OFF	ON	5
OFF	ON	ON	OFF	6
OFF	ON	ON	ON	7
ON	OFF	OFF	OFF	8
ON	OFF	OFF	ON	9
ON	OFF	ON	OFF	10
ON	OFF	ON	ON	11
ON	ON	OFF	OFF	12
ON	ON	OFF	ON	13
ON	ON	ON	OFF	14
ON	ON	ON	ON	15

3. Communication Speed Setting Switch(SW1.1~SW1.3)

SW1.3	SW1.2	SW1.1	Baud rate [bps]
OFF	OFF	OFF	9,600
OFF	OFF	ON	19,200
OFF	ON	OFF	38,400
OFF	ON	ON	57,600
ON	OFF	OFF	115,200*1
ON	OFF	ON	230,400
ON	ON	OFF	460,800
ON	ON	ON	921,600

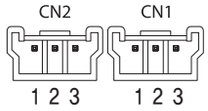
*1 : Default setting value

4. Termination Setting Switch(SW1.4)

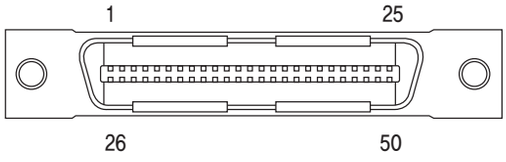
The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive installed at the end of the network.

5. RS-485 Communication Connector(CN1, CN2)

NO.	Function
1	Data+
2	Data-
3	GND



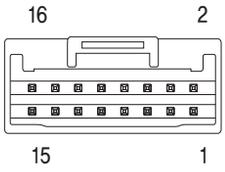
6. Servo Drive Connector(CN4)



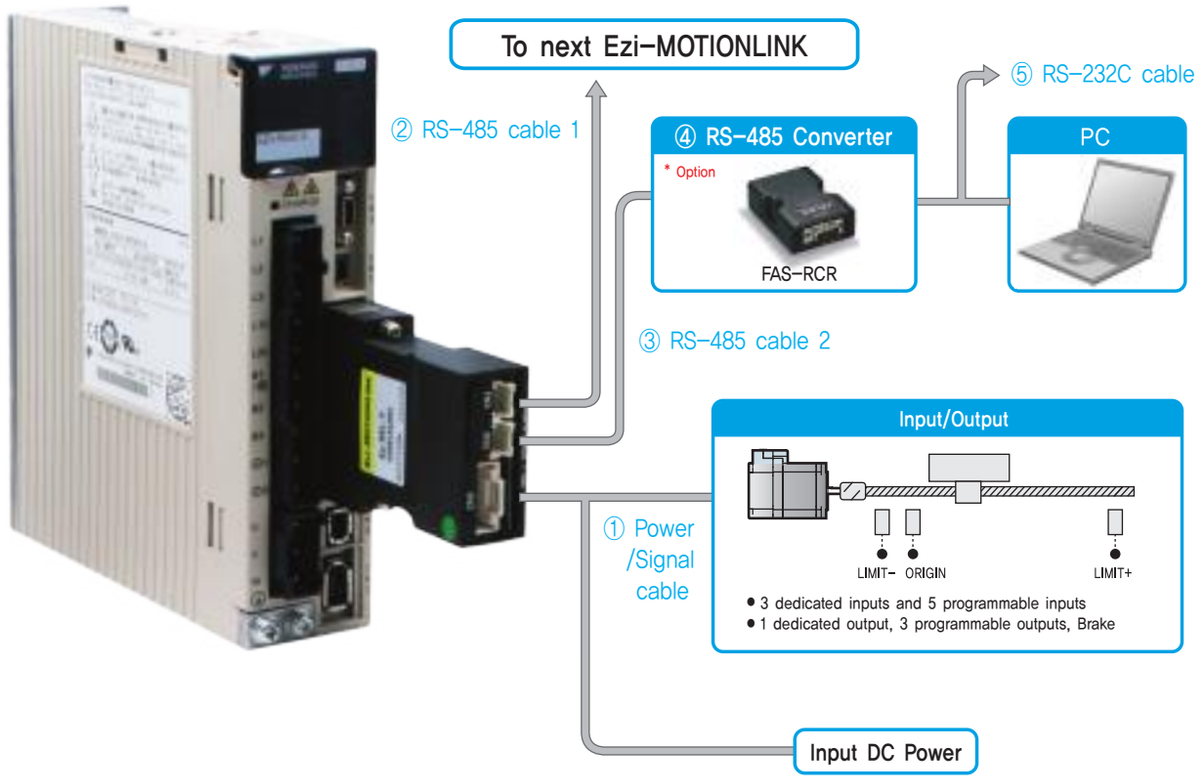
Pin Map of connector(CN4) which connects to Servo Drives is various according to type of Servo Drives. Please check Manual in detail. (It is plug-in to Servo Drives which are using normally so users do not have to concern.

7. Power Input/Output Signal Connector(CN3)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input
3	F.GND	----
4	BRAKE	Output
5	LIMIT+	Input
6	LIMIT-	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital In4	Input
12	Digital In5	Input
13	Compare Out	Output
14	Digital Out1	Output
15	Digital Out2	Output
16	Digital Out3	Output



System Configuration



1. Options

① Power/Signal Cable

Power and I/O connection cable
for Ezi-MOTIONLINK Plus-R, Origin Sensor and etc.

Item	Length [m]	Remark
CSVM-S-□□□F	□□□	Normal Cable
CSVM-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② RS-485 Cable 1

Common cable to connect Ezi-SERVO-ALL-42/56,
Ezi-STEP-ALL-42/56, Ezi-MOTIONLINK Plus-R and
Ezi-SERVO Plus-R MINI thru by Network.

Item	Length [m]	Remark
CGNB-R-0R6F	0.6	Normal Cable
CGNB-R-001F	1	
CGNB-R-1R5F	1.5	
CGNB-R-002F	2	
CGNB-R-003F	3	
CGNB-R-005F	5	

③ RS-485 Cable 2

RCR to Ezi-SERVO-ALL-42/56, FAS-RCR to Ezi-STEP-
ALL-42/56, FAS-RCR to Ezi-SERVO Plus-R MINI,
FAS-RCR to Ezi-MOTIONLINK Plus-R.

Item	Length [m]	Remark
CGNA-R-0R6F	0.6	Normal Cable
CGNA-R-001F	1	
CGNA-R-1R5F	1.5	
CGNA-R-002F	2	
CGNA-R-003F	3	
CGNA-R-005F	5	

④ FAS-RCR(RS-232C to RS-485 Converter)

Item	Specification
Comm. Speed	Max. 115.2 [kbps]
Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km
Connection Type	RS-232C: DB9 Female RS-485: RJ-45
Dimension	50×75×23mm
Weight	38g
Power	Powered from PC (Usable for external DC5~24V)

⑤ RS-232C Cable

Available to connect between RS-232C port of master and FAS-RCR.

Item	Length [m]	Remark
CGNR-R-002F CGNR-R-003F CGNR-R-005F	2 3 5	Normal Cable

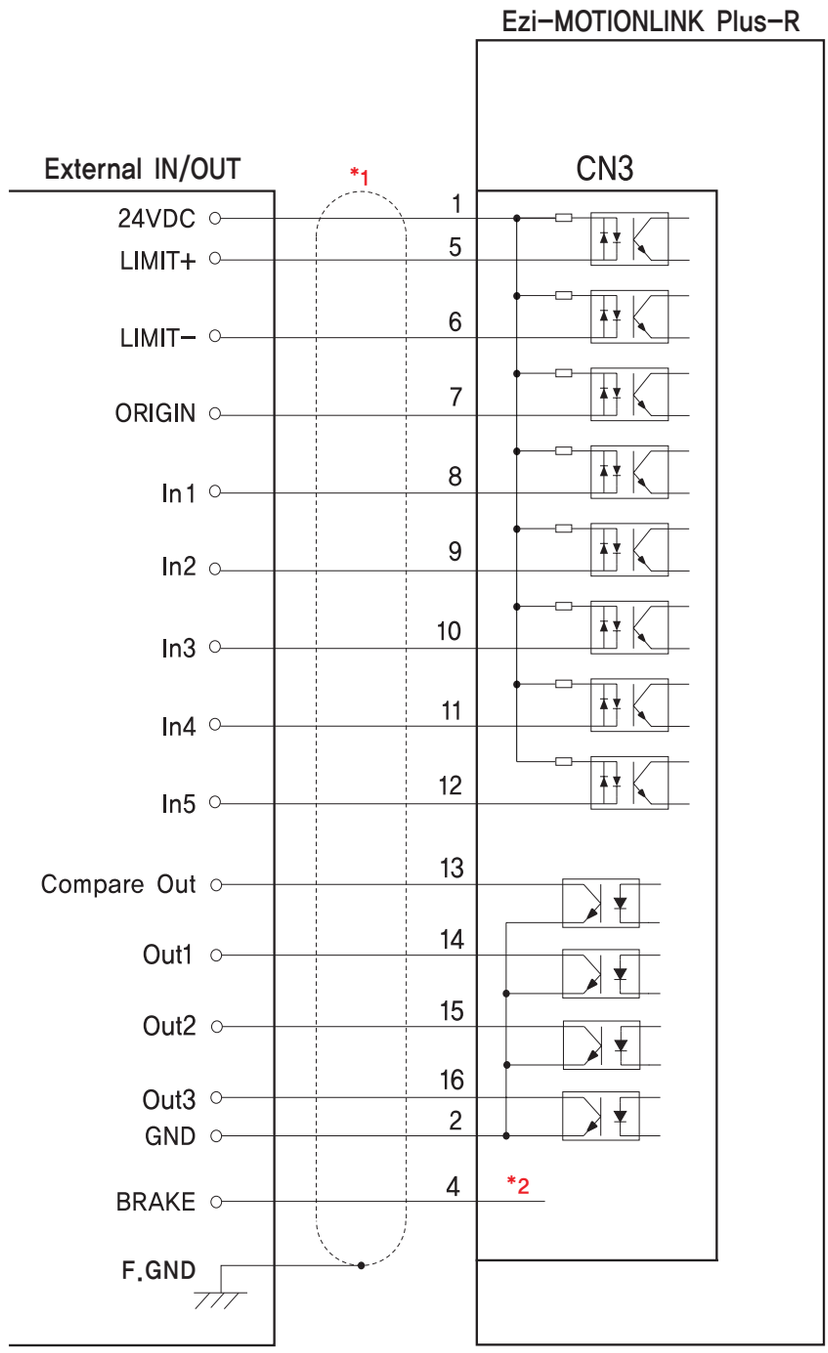
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power/Signal Connector (CN3)	Housing Terminal	501646-1600 501648-1000(AWG 26~28)	MOLEX
RS-485 Connector (CN1,CN2)	Housing Terminal	35507-0300 50212-8100	MOLEX

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



*** 1)** Shield Cable

*** 2)** Please refer to the manual of the servo drive and set the brake function if you want to use the brake function with Ezi-MOTIONLINK.

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● GUI(Graphic User Interface) Screenshot



◆ Controller Lists and Motion Test

This screen display the controller list that connected to system. You can make a single move, jog and origin command and also the motor status is displayed.



◆ Parameter List

All of the parameters are displayed and modified on this screen.



◆ Motion Repeat and Monitor Status

Target position, speed, delay time and repeat count are selected for repeat motion test. Motion library(DLL) is also displayed on screen.



◆ I/O Monitoring and Setting

You can select various digital input and output signals of controller.

※ Graphic User Interface(GUI) Program can be downloaded from website. (www.fastech-motions.com)
※ Graphic User Interface(GUI) Program can support Windows 7/8/10.
※ Graphic User Interface(GUI) Program can be update without prior notice for improving the performance or convenience of user.

FASTECH_

Product Information

Ezi-SERVO®

S-SERVO® II

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

PROFIBUS
DeviceNet
EtherNet/IP

Ezi-Robo®

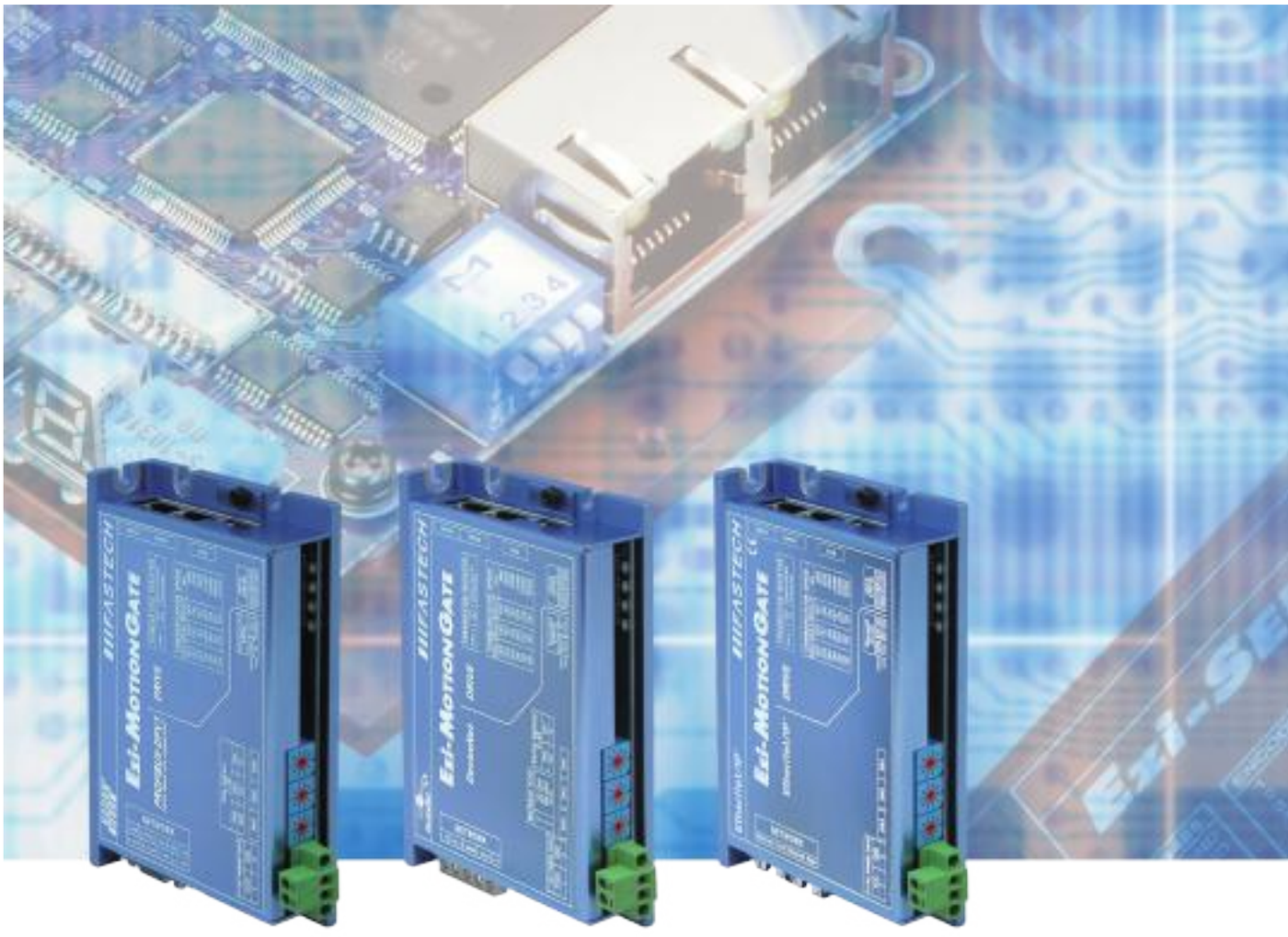
Ezi-SPEED®


Esi-MotionGate
Esi-MotionGate
Esi-MotionGate

Ezi-MotionGate

Gateway Solutions for Motion Networks_ Ezi-MOTIONGATE

- Field Network to RS-485 Protocol
- PROFIBUS, DeviceNet, EtherNet/IP Support
- Connect Max. 16-Axis of Ezi-SERVO Plus-R



FASTECH

Fast, Accurate, Smooth Motion

Ezi-MotionGate®

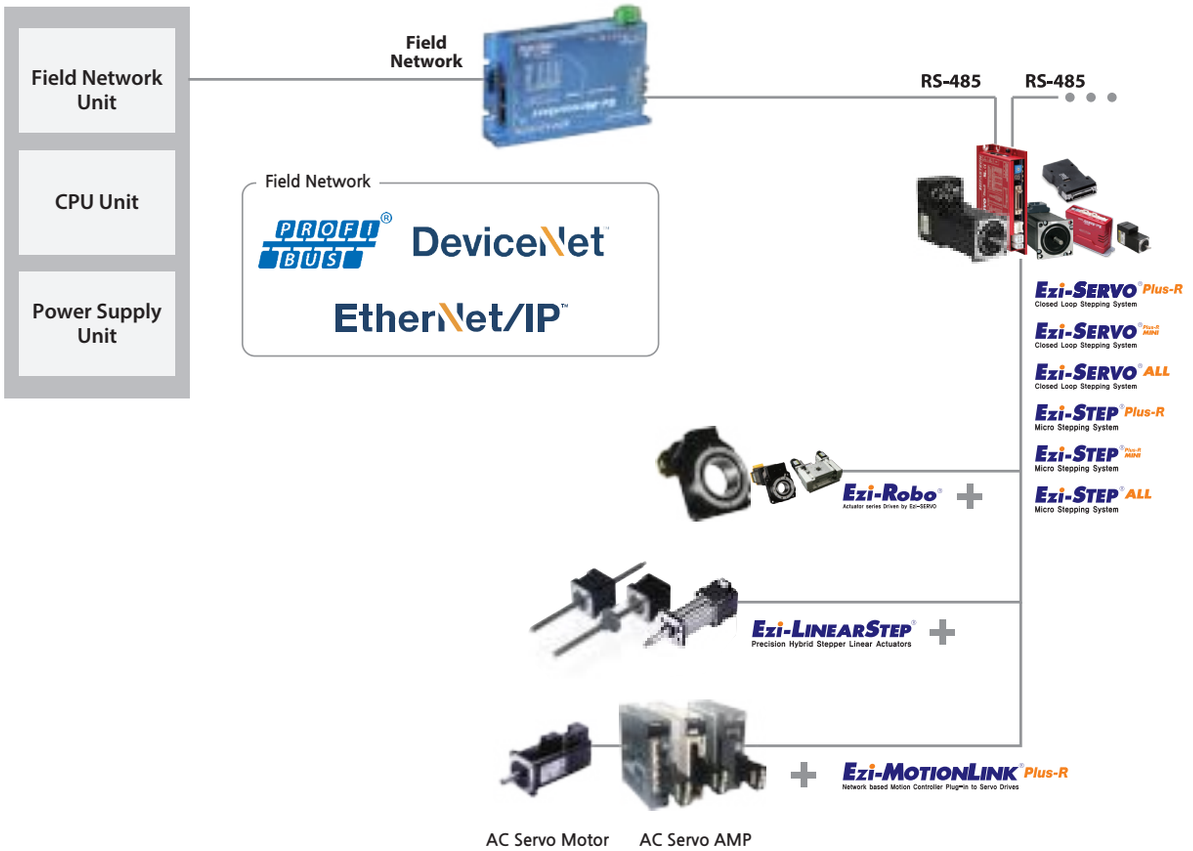
Gateway Solution for Ezi-SERVO



1 Gateway Solution for Various Networks

Ezi-MOTIONGATE is a gateway solution that converts field networks such as PROFIBUS, DeviceNet and EtherNet/IP to RS-485 communication. The Ezi-MOTIONGATE slave can be connected to the Ezi-Robo series to implement various actuator systems. Ezi-MOTIONGATE can check the motion command, parameter setting, status information and alarm information from the master through the network, and it is providing with flexibility to system configuration and shorten the system design.

※ Ezi-MOTIONGATE system will be expanded to support more type of field networks as MECHATROLINK II, MECHATROLINK III and SERCOS III.



2 Multi-Axis Control

Ezi-MOTIONGATE can support multi-axis controls which will make possible for simpler control and wiring.
According to each networks, maximum axis available for multi-axis control is as follows.

- PROFIBUS supports Max. 9 Axis
- DeviceNet supports Max. 16 Axis
- EtherNet/IP supports Max. 16 Axis



Part Numbering

Ezi-MOTIONGATE-DPV1-P□ □

- Product Name
- Network Type
  - DPV1 : PROFIBUS-DPV1
  - DNET : DeviceNet
  - ENIP : EtherNet/IP
- Protocol Version
  - P6 : Ver.6
  - P8 : Ver.8 *1
- Byte Order
  - L : Little Endian
  - B : Big Endian *2

*1 : MOTIONGATE connecting Ezi-SERVO ALL-ABS to MOTIONGATE has to use protocol Ver. 8

*2 : To use MOTIONGATE with SIEMENS PLC, the data type must be Big Endian.

※ The default value of PROFIBUS are Big Endian based on SIEMENSE PLC.

Part Number

Part Number
Ezi-MOTIONGATE-DPV1-P6L
Ezi-MOTIONGATE-DPV1-P6B
Ezi-MOTIONGATE-DPV1-P8L
Ezi-MOTIONGATE-DPV1-P8B
Ezi-MOTIONGATE-DNET-P6L
Ezi-MOTIONGATE-DNET-P6B
Ezi-MOTIONGATE-DNET-P8L
Ezi-MOTIONGATE-DNET-P8B
Ezi-MOTIONGATE-ENIP-P6L
Ezi-MOTIONGATE-ENIP-P6B
Ezi-MOTIONGATE-ENIP-P8L
Ezi-MOTIONGATE-ENIP-P6B

● Product Line up [Ezi-MOTIONGATE series]

Ezi-MOTIONGATE PROFIBUS-DPV1

Ezi-MOTIONGATE PROFIBUS-DPV1 is motion gateway device to be connected with PROFIBUS network from SIEMENS PLC, MITSUBISHI PLC and LS PLC.
This product can connect up to 9 axis through Ezi-MotionNetwork which consists of Ezi-SERVO Plus-R series, Ezi-STEP Plus-R series and Ezi-MOTIONLINK series.



Ezi-MOTIONGATE DeviceNet

Ezi-MOTIONGATE DeviceNet is motion gateway device to be connected with DeviceNet network from Rockwell/Allen-Bradley PLC, Mitsubishi PLC and LS PLC.
This product can connect up to 16 axis through Ezi-MotionNetwork which consists of Ezi-SERVO Plus-R series, Ezi-STEP Plus-R series and Ezi-MOTIONLINK series.



Ezi-MOTIONGATE EtherNet/IP

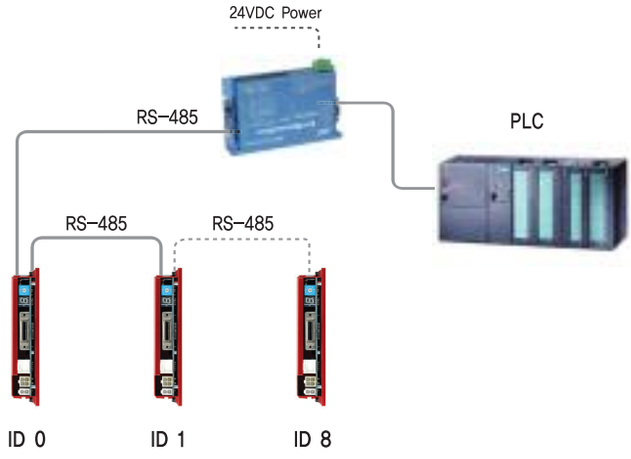
Ezi-MOTIONGATE EtherNet/IP is motion gateway device to be connected with EtherNet/IP network from Rockwell/Allen-Bradley PLC, MITSUBISHI PLC, OMRON PLC and LS PLC.
This product can connect up to 16 axis through Ezi-MotionNetwork which consists of Ezi-SERVO Plus-R series, Ezi-STEP Plus-R series and Ezi-MOTIONLINK series.



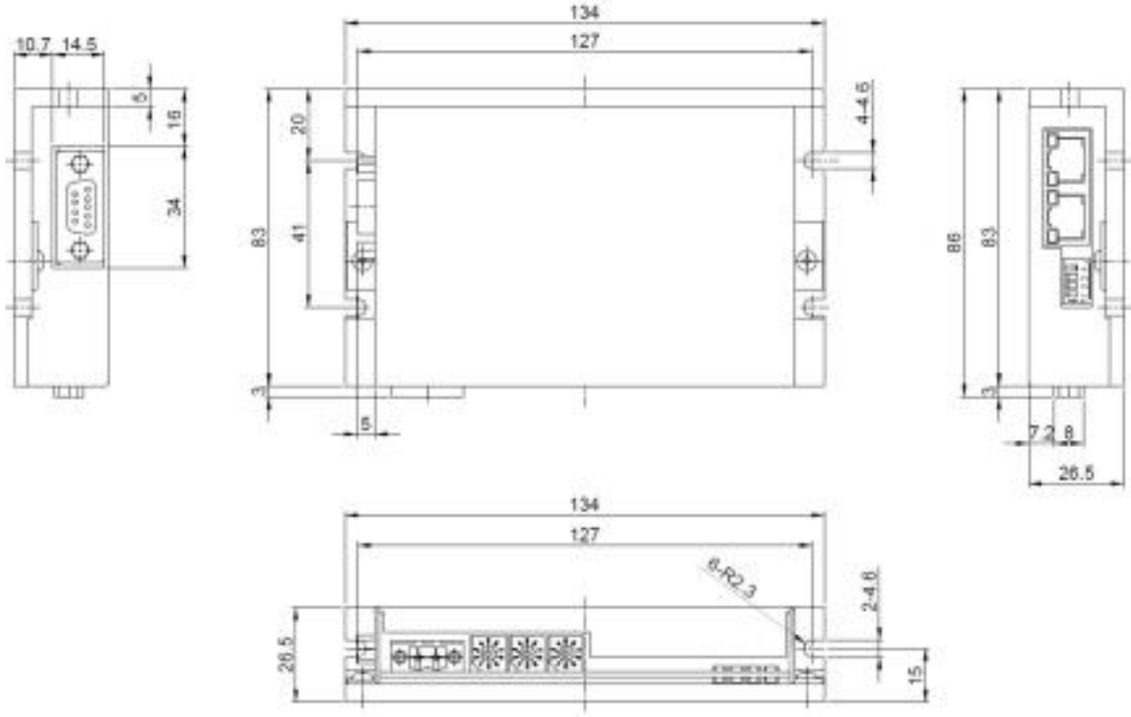
Product Overview [Ezi-MOTIONGATE PROFIBUS-DPV1]

Ezi-MOTIONGATE PROFIBUS-DPV1 is motion gateway device to be connected with PROFIBUS network from SIEMENS PLC, MITSUBISHI PLC and LS PLC. It can control up to 9 axis by connecting network consisting of Ezi-SERVO Plus-R, Ezi-SERVO Plus-R MINI, Ezi-SERVO ALL, Ezi-STEP Plus-R, Ezi-STEP Plus-R MINI, Ezi-STEP ALL and Ezi-MOTIONLINK Plus-R.



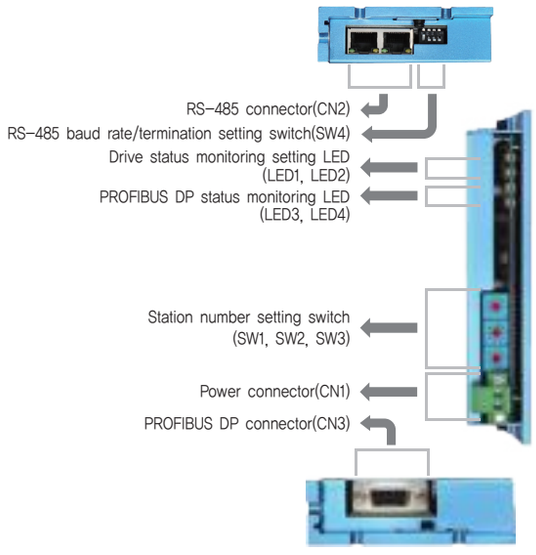


Dimensions of Product [mm]

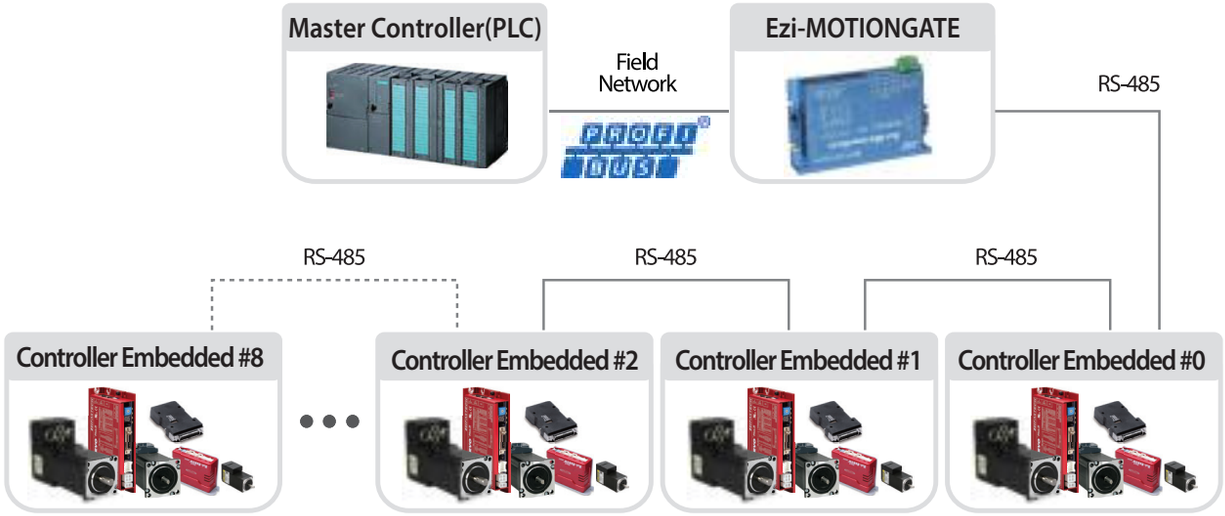


● Specifications of Product [Ezi-MOTIONGATE PROFIBUS-DPV1]

Network Type		PROFIBUS-DPV1
Network Speed		9.6 [kbps] / 19.2 [kbps] / 93.75 [kbps] / 187.5 [kbps] / 0.5 [Mbps] / 1.5 [Mbps] / 12 [Mbps] Auto Baud-Rate
Network Node type		Slave device station
Maximum-axis		9 axis
Occupation station (Output/Input)		72 bytes / 72 bytes (When 9 axis drives connected)
Maximum MOTIONGATE (PROFIBUS-DPV1)		125 Gateway
Operating Condition	Ambient Temperature	· In Use : 0~55℃ · In Storage : -20~70℃
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Select Switch	Set network station No.
	LED Functions	LED display based on industrial network standard as check network status, abnormal connection with master, Servo-On status of drive, alarm generation status of drive
Special Function	Jog Control	4-Speed Step, Speed Ratio
	Step Move Control	4-Step Distance
	Connected products	Ezi-SERVO Plus-R Series Ezi-STEP Plus-R Series Ezi-MOTIONLINK Plus-R Series



● System Configuration [Ezi-MOTIONGATE PROFIBUS-DPV1]

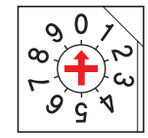


1. Status LED

Indication	Color	Function	On/Off Condition
ENABLE	Green	Drive activated	The motor of the drive connected to the motion gate is activated (Servo On or Step enable)
ALARM	Red	Drive alarm status	Alarms on connected drives
CONNECT	Green	Drive connection status	Motor drive is operating normally with the “CONNECT” command
ERROR	Red	Drive connection error	Communication error occurred during “CONNECT” command of motor drive
RUN	Green	PROFIBUS Status	Indicating connected PROFIBUS network status
ERROR	Red	PROFIBUS exceptional error	Data setting error occurred with master controller
POWER	Green	Network connection status	PROFIBUS network connection status and motion gate power status
BF	Red	PROFIBUS setting error	PROFIBUS parameter setting error

2. PROFIBUS Network ID Setting Switch(SW1, SW2, SW3)

Number (SW3)	ID number X100 (100 digit)	Number (SW2)	ID number X10 (10 digit)	Number (SW1)	ID number X1 (1 digit)
0	000	0	00	0	0
1	100	1	10	1	1
2	-----	2	20	2	2
3	-----	3	30	3	3
4	-----	4	40	4	4
5	-----	5	50	5	5
6	-----	6	60	6	6
7	-----	7	70	7	7
8	-----	8	80	8	8
9	-----	9	90	9	9



3. Communication Speed and Termination Setting Switch(SW4)

Termination Setting Switch(SW4.1)

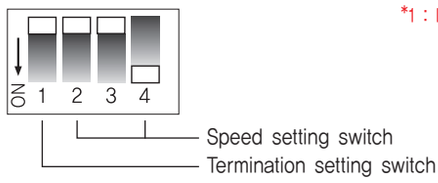
The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive installed at the end of the network.

Speed Setting Switch(SW4.2~SW4.4)

SW4.2~SW4.4 used for setting speed as follows

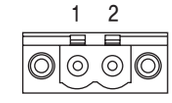
SW4.1	SW4.2	SW4.3	SW4.4	Baud Rate[bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

*1 : Default setting value



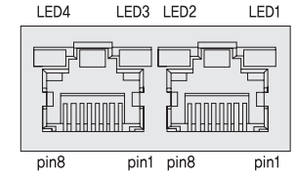
4. Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



5. RS-485 Communication Connector(CN2)

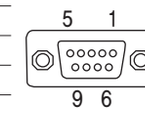
NO.	Function	NO.	Function
1	GND	6	Data–
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Receiving status
5	GND	LED 2, 4	Transmission status



6. PROFIBUS DP connector(CN3)

Network connection connector compatible with PROFIBUS DP.

NO.	Function	I/O
1	-----	-----
2	-----	-----
3	B Line	Input/Output
4	RTS.	Input/Output
5	GND	Input/Output
6	5v	Power output(60mA)
7	-----	-----
8	A Line	Input/Output
10	-----	-----

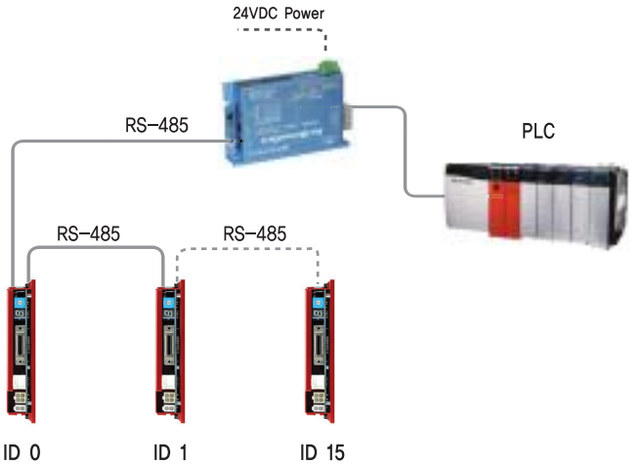


※ The connection to the PROFIBUS cable, we recommend using a dedicated cable connector for DP.

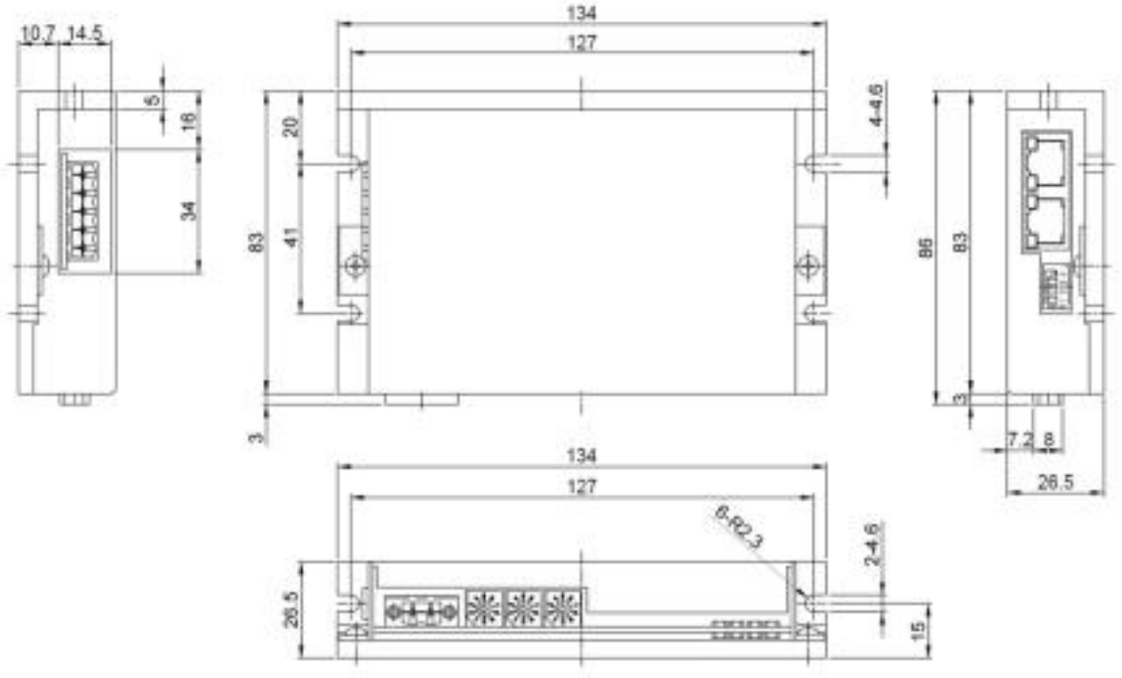
● Product Overview [Ezi-MOTIONGATE DeviceNet]

Ezi-MOTIONGATE DeviceNet is motion gateway device to be connected with DeviceNet network from Rockwell/Allen-Bradley PLC, MITSUBISHI PLC and LS PLC. It can control up to 16 axis by connecting network consisting of Ezi-SERVO Plus-R, Ezi-SERVO Plus-R MINI, Ezi-SERVO ALL, Ezi-STEP Plus-R, Ezi-STEP Plus-R MINI, Ezi-STEP ALL and Ezi-MOTIONLINK Plus-R.



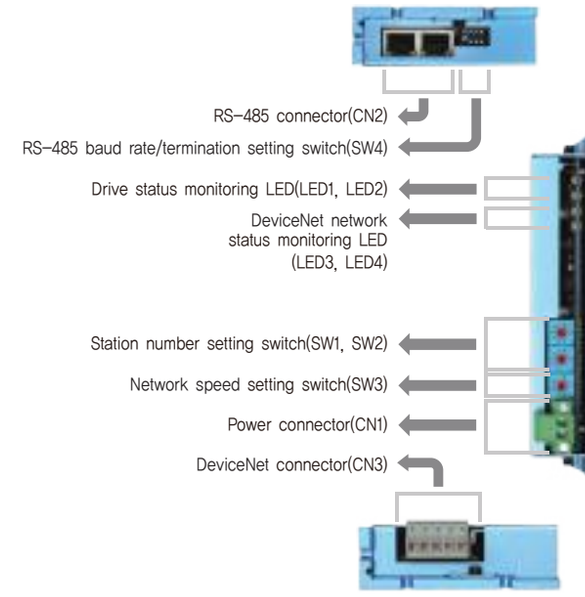


● Dimensions of Product [mm]

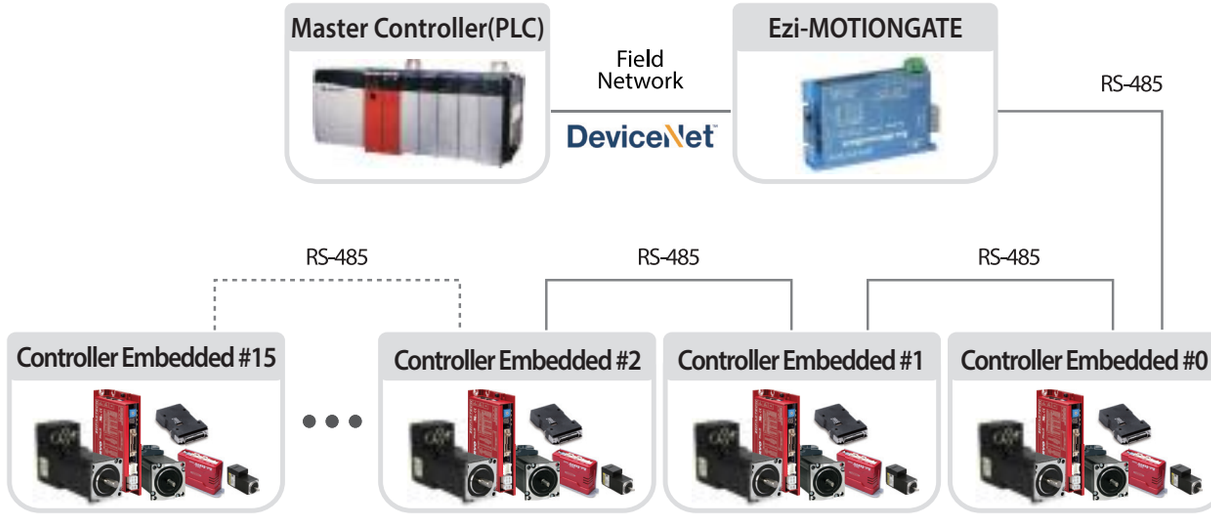


Specifications of Product [Ezi-MOTIONGATE DeviceNet]

Network Type		DeviceNet
Network Speed		125 [kbps] / 150 [kbps] / 500 [kbps]
Network Node type		Slave device station
Maximum-axis		16 axis
Data size		IN : 128 bytes (64 words) OUT : 128 bytes (64 words)
Maximum MOTIONGATE (DeviceNet)		63 Gateway
Operating Condition	Ambient Temperature	· In Use : 0~55℃ · In Storage : -20~70℃
	Humidity	· In Use : 35~85% RH (Non-Condensing) · In Storage : 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Select Switch	Set network station No., Set network Baud-Rate
	LED Functions	LED display based on industrial network standard as check network status, abnormal connection with master, Servo on status of drive, alarm generation status of drive
Special Function	Jog Control	4-Speed Step, Speed Ratio
	Step Move Control	4-Step Distance
	Connected products	Ezi-SERVO Plus-R Series Ezi-STEP Plus-R Series Ezi-MOTIONLINK Plus-R Series



System Configuration [Ezi-MOTIONGATE DeviceNet]

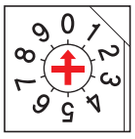


1. Status LED

Indication	Color	Function	On/Off Condition
ENABLE	Green	Drive activated	The motor of the drive connected to the motion gate is activated (Servo On or Step enable)
ALARM	Red	Drive alarm status	Alarms on connected drives
CONNECT	Green	Drive connection status	Motor drive is operating normally with the "CONNECT" command
ERROR	Red	Drive connection error	Communication error occurred during "CONNECT" command of motor drive
NS	Green	Network status	Indicating the active status of the DeviceNet master controller
	Red		when it can not communicate with DeviceNet master controller
MS	Green	Module Status	Indicating the status of the DeviceNet network of the motion gate.
	Red		Indicating the DeviceNet network error of motion gate

2. DeviceNet Network ID Setting Switch (SW1, SW2)

Number (SW2)	ID number X10 (10 digit)	Number (SW1)	ID number X1 (1 digit)
0	00	0	0
1	10	1	1
2	20	2	2
3	30	3	3
4	40	4	4
5	50	5	5
6	60	6	6
7	-----	7	7
8	-----	8	8
9	-----	9	9



3. DeviceNet Network Speed Setting Switch(SW3)

Number (SW3)	Baud Rate [kbps]
0	125
1	250
2	500
3	Auto Baud Rate
4···9	-----

4. Communication Speed and Termination Setting Switch(SW4)

Termination Setting Switch(SW4.1)

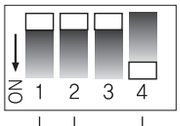
The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive installed at the end of the network.

Speed Setting Switch(SW4.2~SW4.4)

SW4.2~SW4.4 used for setting speed as follows

SW4.1	SW4.2	SW4.3	SW4.4	Baud Rate[bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

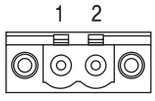
*1 : Default setting value



Speed setting switch
Termination setting switch

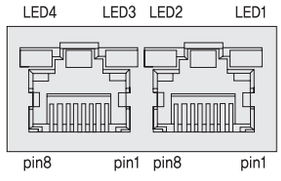
5. Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



6. RS-485 Communication Connector(CN2)

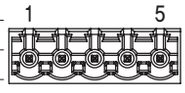
NO.	Function	NO.	Function
1	GND	6	Data–
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Receiving status
5	GND	LED 2, 4	Transmission status



7. DeviceNet connector(CN3)

The power of Ezi-MOTIONGATE is used independently with the bus power of the DeviceNet cable. If only the power of the DeviceNet connector is supplied, the power of Ezi-MOTIONGATE will not turn ON. Also, it will not work if DeviceNet bus power is not supplied to the network connector of Ezi-MOTIONGATE.

NO.	Function	Color
1	GND	Black
2	CAN_L	Blue
3	DRAIN	Shield
4	CAN_H	White
5	24VDC	Red

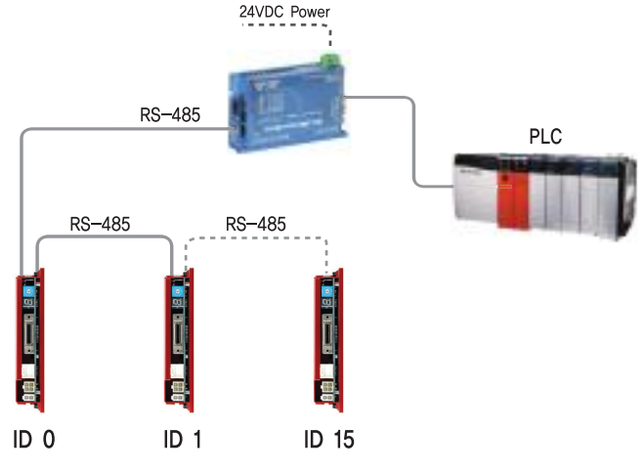


※ It is recommended to use dedicated DeviceNet cable.

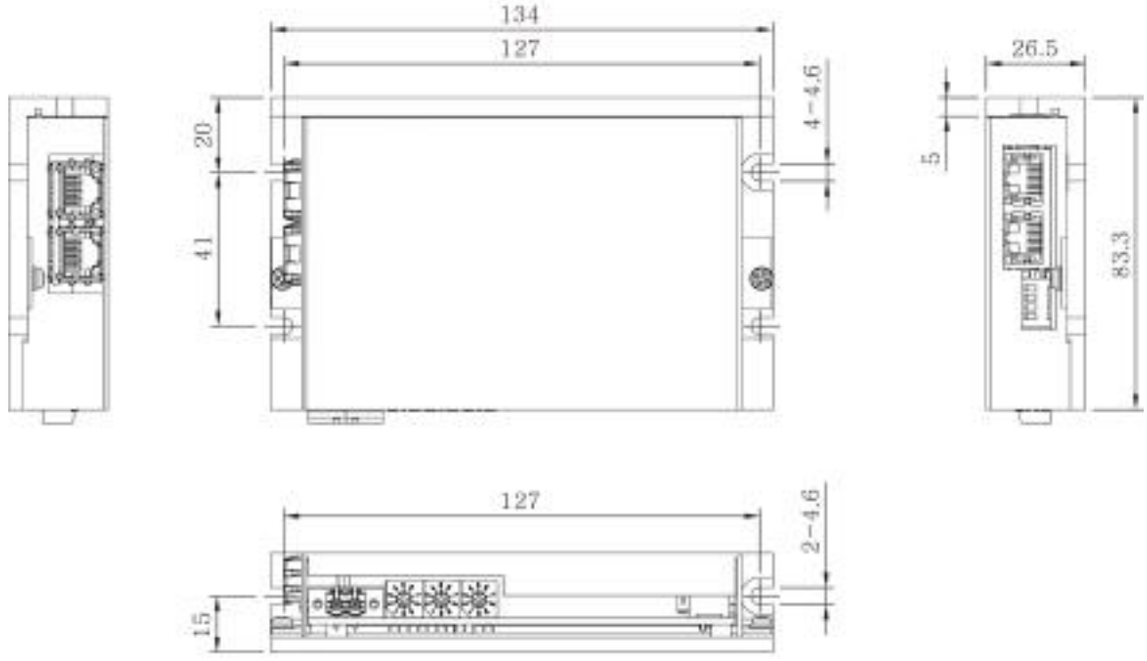
Product Overview [Ezi-MOTIONGATE EtherNet/IP]

Ezi-MOTIONGATE EtherNet/IP is motion gateway device to be connected with DeviceNet network from Rockwell/Allen-Bradley PLC, OMRON PLC, MITSUBISHI PLC and LS PLC. It can control up to 16 axis by connecting network consisting of Ezi-SERVO Plus-R, Ezi-SERVO Plus-R MINI, Ezi-SERVO ALL, Ezi-STEP Plus-R, Ezi-STEP Plus-R MINI, Ezi-STEP ALL and Ezi-MOTIONLINK Plus-R.



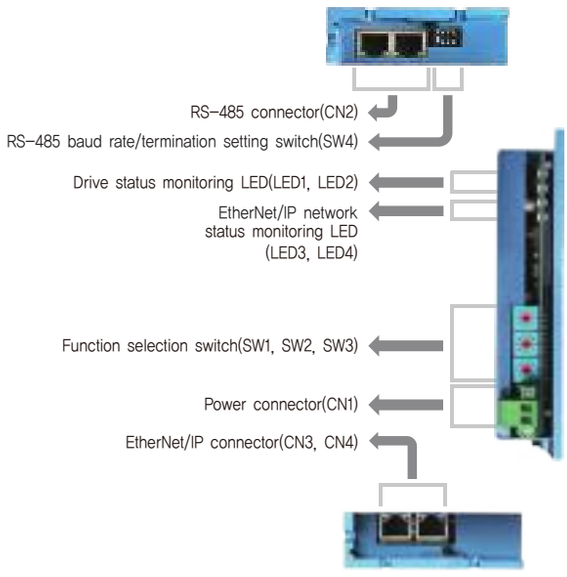


Dimensions of Product [mm]

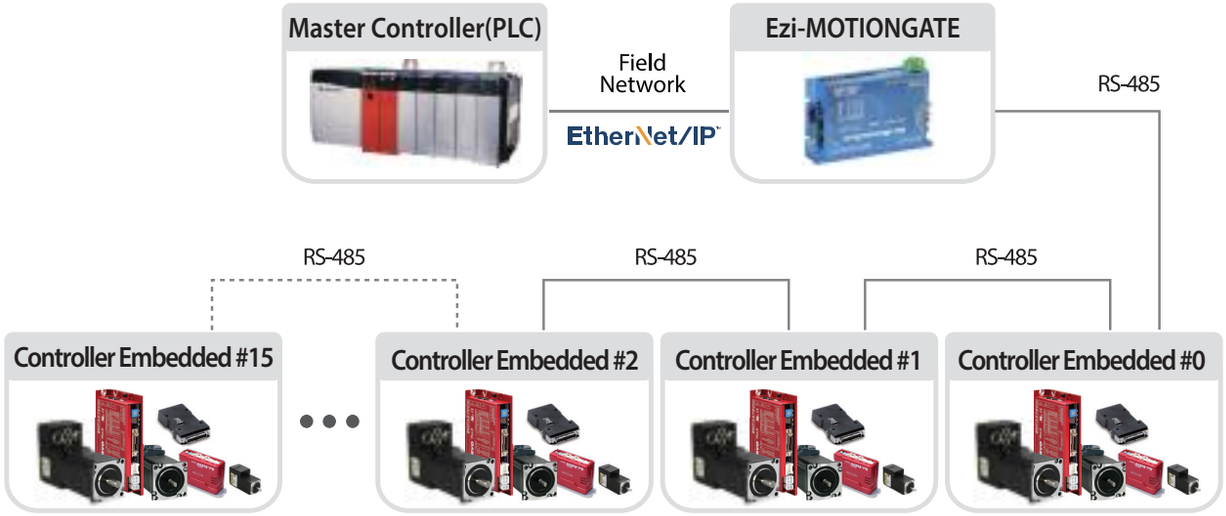


● Specifications of Product [Ezi-MOTIONGATE EtherNet/IP]

Network Type		EtherNet/IP
Physical Layer		Ethernet – 100 base
Network Node type		Slave device station
Maximum-axis		16 axis
Data size		IN : 128 bytes (64 words) OUT : 128 bytes (64 words)
EtherNet/IP device information		Product Code : 501 Assembly Instance : · Input – 100 · Output – 150
Operating Condition	Ambient Temperature	· In Use : 0~55℃ · In Storage : –20~70℃
	Humidity	· In Use : 35~85% RH (Non-Condensing) · In Storage : 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Select Switch	Option
	LED Functions	LED display based on industrial network standard as check network status, abnormal connection with master, Servo on status of drive, alarm generation status of drive
Special Function	Jog Control	4-Speed Step, Speed Ratio
	Step Move Control	4-Step Distance
	Connected products	Ezi-SERVO Plus-R Series Ezi-STEP Plus-R Series Ezi-MOTIONLINK Plus-R Series



● System Configuration [Ezi-MOTIONGATE EtherNet/IP]

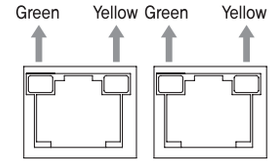


1. Status LED

Indication	Color	Function	On/Off Condition
ENABLE	Green	Drive activated	The motor of the drive connected to the motion gate is activated (Servo On or Step enable)
ALARM	Red	Drive alarm status	Alarms on connected drives
CONNECT	Green	Drive connection status	Motor drive is operating normally with the “CONNECT” command
ERROR	Red	Drive connection error	Communication error occurred during “CONNECT” command of motor drive
NS	Green	Network status	Indicating the EtherNet/IP connection status of master controller
	Red		IP address error and no communication with master controller
MS	Green	Module Status	Indicating the detected status of the EtherNet/IP network of the host controller
	Red		EtherNet/IP network device error

2. Ethernet Status LED

Name	Color	Status	Explanation
LINK/ Activity	Green	ON	100 [Mbps] Link setting status
		Flickering	100 [Mbps] Link activated
	Yellow	ON	10 [Mbps] Link setting status
		Flickering	10 [Mbps] Link activated



3. Function selection switch(SW1, SW2, SW3)

There are no configurable function currently.

4. Communication Speed and Termination Setting Switch(SW4)

Termination Setting Switch(SW4.1)

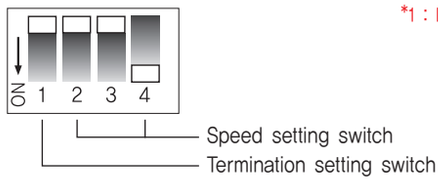
The drive installed at the end of the network must be terminated for reliable operation. Please termination setting switch is ON if drive installed at the end of the network.

Speed Setting Switch(SW4.2~SW4.4)

SW4.2~SW4.4 used for setting speed as follows

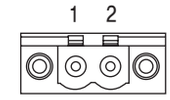
SW4.1	SW4.2	SW4.3	SW4.4	Baud Rate[bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

*1 : Default setting value



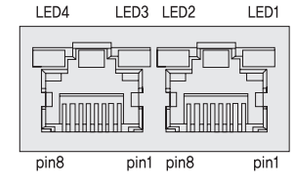
5. Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



6. RS-485 Communication Connector(CN2)

NO.	Function	NO.	Function
1	GND	6	Data–
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Receiving status
5	GND	LED 2, 4	Transmission status

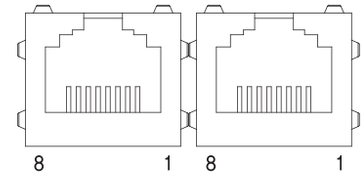


7. EtherNet/IP Connector(CN3, CN4)

The EtherNet/IP network is compatible with Ethernet cables manufactured by TIA/EIA-568-B(T568B).

NO.	Function	NO.	Function
1	TD+	6	RD–
2	TD–	7	-----
3	RD+	8	-----
4	-----	Connection hood	F.GND
5	-----		

* It is recommended to use Category 5e or more of STP/FTP cable.



FASTECH_

Product Information

Ezi-SERVO®

S-SERVO® II

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

- HG
- HB
- PMS

Ezi-SPEED®





Ezi-Robo HG

Actuator Series Driven by Ezi-SERVO_ Ezi-Robo HG

- Ezi-SERVO + Hollow Rotary Index Table
- Hollow Diameter : Max. Ø85m
- Maximum Torque : Max. 170N·m
- Permissible Axial Load : Max. 4000N
- Repeatability : Min. ±10arcsec
- EtherCAT, Ethernet, CC-Link Support



- Ezi-Robo HG(Hollow Gear) is a unit that combines a Hollow Rotary Table and Ezi-SERVO which is a Closed Loop System.

FASTECH
Fast, Accurate, Smooth Motion

Ezi-Robo® HG

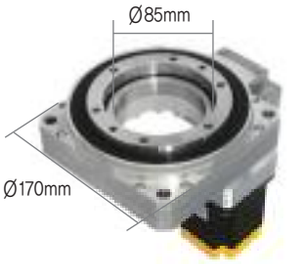
Actuator series Driven by Ezi-SERVO



1 Large Diameter Hollow Rotary Table

Large Diameter hollow bore to penetrate the output table equipped HG Series ensure flexibility and convenience in the design of equipment when installing complex wiring and piping.

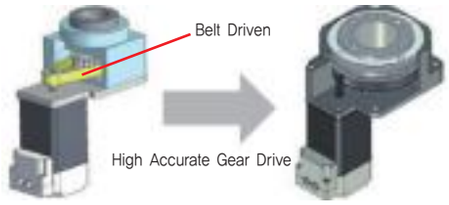
Model Name	Size of Plinth [mm]	Hollow bore Diameter [mm]
HG60	60	Ø20
HG100	100	Ø29
HG130S	130	Ø56
HG170S	170	Ø85



* HG170S series

2 High Accurate Gear Driven

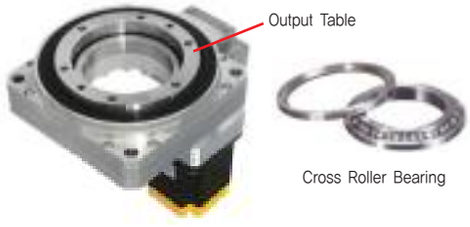
Since it is driven directly by the gear with extremely low backlash, it can perform precise positioning with ± 10arcsec of Repeatability and Lost Motion with less than 2 arcmin. In addition Belt-Pulley is not used, so there is no need to adjust the tension of the belt, so maintenance is easy and operation cost can be reduced.



3 High Rigidity / High Load

Cross roller bearing with high rigidity is integrated with a hollow rotary table to maximize the stiffness of the actuator by being able to receive loads in all directions such as thrust load and moment load.

※ In case of HG170S model
- Maximum permissible axial load : 4000N
- Maximum permissible moment : 200N·m



4 Simple Configuration of Homing Function

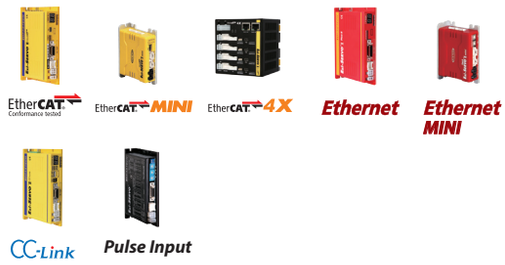
The home sensor is available as an option to easily configure the homing operation that is often needed in the rotary table. All the parts needed for homing output are provided, saving the effort to design, assemble and procure parts when the home sensor installation is needed.



* HG100 series

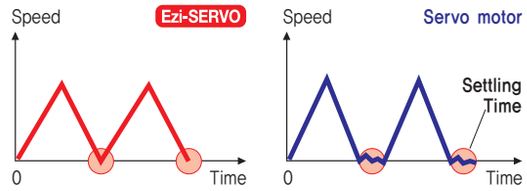
5 Supporting Various Field Network

Ezi-Robo HG is a unit that combines Ezi-SERVO, a high performance closed loop step drive. Ezi-SERVO drives that support field networks such as EtherCAT, Ethernet and CC-Link can be connected to master controllers such as PC/PLC through corresponding field networks.
In case of Ezi-SERVO II Plus-E products, motion library (DLL) for Windows 7/8/10 can be provided.



6 Fast Response

Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



7 No Gain Tuning

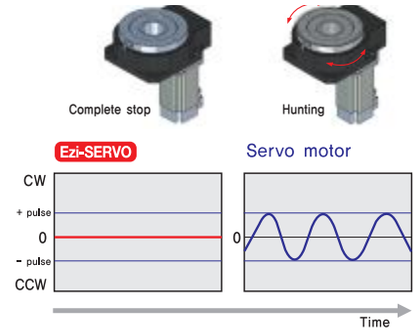
In general servo systems, gain adjustment is essential for performance improvement. It takes a lot of time to adjust the gain and it causes problems depending on the type of load. However Ezi-SERVO is a servo system that does not require gain adjustment by using characteristics of stepping motor. Ezi-Robo HG is a Tuning Free Actuator that does not need gain adjustment even in sudden load change or rapid acceleration because it is driven by Ezi-SERVO.



Even in the environments with load fluctuations, stable operation is possible without adjusting the gains.

8 No Hunting

Since Ezi-SERVO utilizes the characteristics of the stepping motor, there is no hunting problem in general servo system. Therefore hunting does not occur because it stops completely after motor stopping.



9 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller. You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PLC. The PLC can monitor In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PLC.

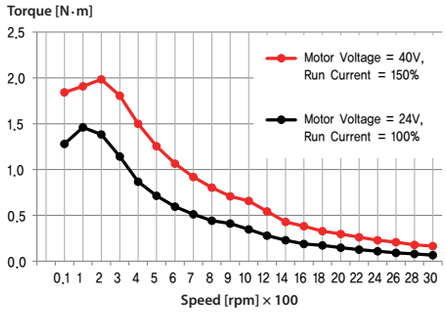


* Ethernet, CC-Link products only.

10 Torque Improvement

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.



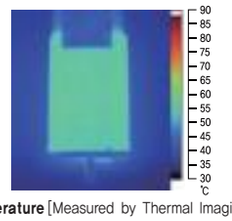
※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-PE-56L
Motor Voltage = 40VDC
Input Voltage = 24VDC

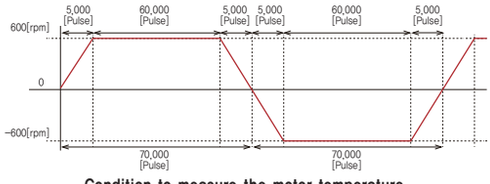
11 Heat Reduction / Energy Saving

(Motor Current Control according to load)

Ezi-SERVO automatically controls motor current according to load. Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



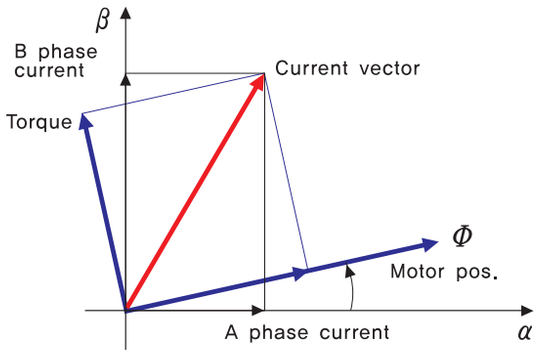
Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]



Example of the Motor Current Control according to load

12 Smooth and Accurate

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 10,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU performs vector control and filtering, producing a smooth rotational control with minimum ripples.



13 Avaliable I/O signal

The Ezi-SERVO drive offers the ability to process multiple input and output signals. Equipment can be configured without a separate I/O device.

- EtherCAT : 7 inputs / 6 outputs
- CC-Link : 7 inputs / 6 outputs
- Ethernet : 9 inputs / 9 outputs

* For more details on I/O signals, Please refer to the catalog or manual of each drive.

14 Examples of Ezi-Robo HG Applications

Applications support to changing load intertia fluctuation



Applications for high precision positining



Applications support moment load



Applications for optical applications using hollow bore



Applications for a precise positioning using hollow bore



Applications for air absorption using hollow bore



● Ezi-Robo HG Part Numbering

RB-HG130S-18-60L-EC-□

Product Name
Ezi-Robo HG

Frame size
60 : 60mm
100 : 100mm
130 : 130mm
170 : 170mm

Grade
No indication: Normal type
S : Premium

Reduction Gear Ratio
05 – 1:5
08 – 1:8
18 – 1:18
20 – 1:20
36 – 1:36

Motor Flange size
42 : 42mm
60 : 60mm
86 : 86mm

Motor Length
L : Large
XL : Extra Large

Drive Series
EC : EtherCAT
EC-MI : EtherCAT Mini Type
EC-4X : EtherCAT 4 axis
PE : Plus Ethernet
PE-MI : Plus Ethernet Mini Type
CL : CC-Link
ST : Pulse Input

User code

● Applicable Product Line-up

Product	Specification
Ezi-SERVO II EtherCAT	Embedded EtherCAT
Ezi-SERVO II EtherCAT MINI	Embedded EtherCAT Mini Type
Ezi-SERVO II EtherCAT 4X	Embedded EtherCAT 4 axis
Ezi-SERVO II Plus-E	Ethernet based controller integrated product
Ezi-SERVO II Plus-E MINI	Ethernet based controller integrated product Mini Type
Ezi-SERVO II CC-Link	Embedded CC-Link
Ezi-SERVO ST	Pulse Input Type



Ezi-SERVO II EtherCAT
(EtherCAT)



Ezi-SERVO II EtherCAT MINI
(EtherCAT / Mini Type)



Ezi-SERVO II EtherCAT 4X
(EtherCAT)



Ezi-SERVO II Plus-E
(Ethernet)



Ezi-SERVO II Plus-E MINI
(Ethernet / Mini Type)



Ezi-SERVO II CC-Link
(CC-Link)



Ezi-SERVO ST
(Pulse Input)

● Motor, Drive Combination

Unit Part Number	Reduc-tion Gear Number	Motor Model Number	DRIVE						
			Ezi-SERVO ST	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link
RB-HG60-05-42XL-□	HG60-05	EzM2-42XL-A	O	O	O	O	O	O	O
RB-HG100-08-60L-□	HG100-08	EzM2-60L-A	O	O	O	O	O	O	O
RB-HG130S-18-60L-□	HG130S-18	EzM2-60L-A	O	O	O	O	O	O	O
RB-HG170S-20-60L-□	HG170S-20	EzM2-60L-A	O	O	O	O	O	O	O
RB-HG170S-36-60L-□	HG170S-36	EzM2-60L-A	O	O	O	O	O	O	O
RB-HG170S-20-86L-□	HG170S-20	EzM2-86L-A	●	●			●		●
RB-HG170S-36-86L-□	HG170S-36	EzM2-86L-A	●	●			●		●

※ □ is the drive type.
● Corresponds to 86mm drives.

How to Read Specifications

Model Name		RB-HG60-05-42XL
① Type of output table supporting bearing		Ball Bearing
② Maximum torque	[N·m]	4.5
③ Inertia moment	[kg·m^2]	2,330×10^{-7}
④ Permissible speed	[rpm]	300
⑤ Gear ratio		1:5
⑥ Maximum holding torque*1	[N·m]	2.2
⑦ Repeatability	[arcsec]	±10(0.0028°)
⑧ Lost motion	[arcmin]	2(0.033°)
⑨ Angular transmission error	[arcmin]	4(0.067°)
⑩ Permissible axial load	[N]	100
⑪ Permissible moment load	[N·m]	2
⑫ Runout of output table surface	[mm]	0.015
⑬ Runout of output table inner/outer diameter	[mm]	0.015
⑭ Parallelism of output table	[mm]	0.03
⑮ Degree of protection*2		IP40
⑯ Mass	[kg]	1.6

*1 : When Stop Current is 100%
*2 : IP20 for motor connector

Description of Specification Items

① Type of output table supporting bearing The type of the bearing used for the output table.

② Maximum torque This is the maximum torque that can be applied to the gear output shaft during acceleration/deceleration such when an inertial load is started and stopped.

③ Inertia moment The total of inertia moment of rotor of motor, reduction mechanism and output table converted from output table side.

④ Permissible speed The output table speed can be tolerated by the mechanical strength of the reduction gear mechanism.

⑤ Gear ratio The tooth ratio of the two gears constituting the reduction mechanism.

⑥ Maximum holding torque The maximum torque that the output table can maintain the current position when the motor is excited.

⑦ Repeatability The degree of error when repeatedly positioning to the same location in the same direction.

⑧ Lost motion The difference between forward and reverse stop positions for the same destination. It is mainly caused by backlash of gears.

⑨ Angular transmission error The difference between the target rotation angle and the actual rotation angle of the output table

⑩ Permissible axial load The permissible value of thrust load applied to the output table in the axial direction.

⑪ Permissible moment load When load is applied to a position deviating from the center of rotation of the output table, a tilting force acts on the output table. This is the allowable value of the moment load calculated by multiplying the displacement from the center of rotation and the load.

⑫ Runout of output table surface The maximum value of runout of the mounting surface of the output table when the output table rotates without load.

⑬ Runout of output table inner/outer diameter The maximum value of runout of the inner diameter or outer diameter of the table when the output table rotates without load.

⑭ Parallelism of output table The angle at which the mounting surface of the actuator body and the mounting surface of the output table are inclined

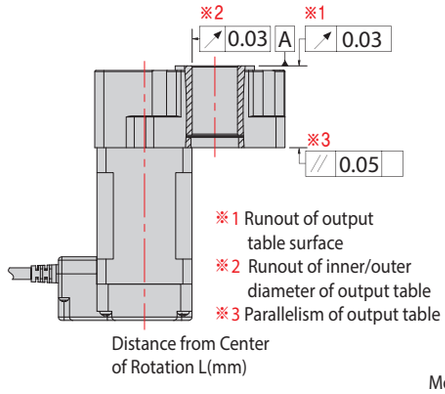
⑮ Degree of protection The grade of the equipment classified as dustproof and waterproof based on IEC 60529, EN60034-5 (=IEC60034-5)

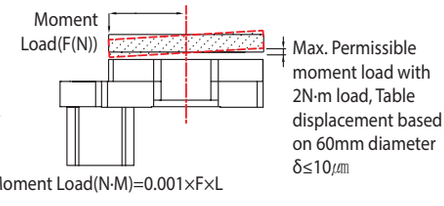
⑯ Mass The total weight of all parts, including the output table, reduction mechanism, motor and so on that make up the actuator.

● Specifications of Product [HG60 series]

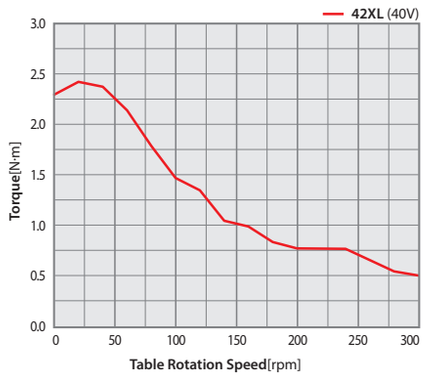
Model Name		RB-HG60-05-42XL
Type of output table supporting bearing		Ball Bearing
Maximum torque	[N·m]	4.5
Inertia moment	[kg·m^2]	2,330×10^{-7}
Permissible speed	[rpm]	300
Gear ratio		1:5
Maximum holding torque*1	[N·m]	2.2
Repeatability	[arcsec]	±10(0.0028°)
Lost motion	[arcmin]	2(0.033°)
Angular transmission error	[arcmin]	4(0.067°)
Permissible axial load	[N]	100
Permissible moment load	[N·m]	2
Runout of output table surface	[mm]	0.03
Runout of output table inner/outer diameter	[mm]	0.03
Parallelism of output table	[mm]	0.05
Degree of protection*2		IP40
Mass	[kg]	1.6

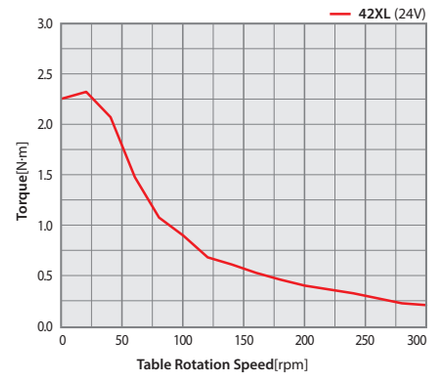
*1 : When Stop Current is 100%
*2 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

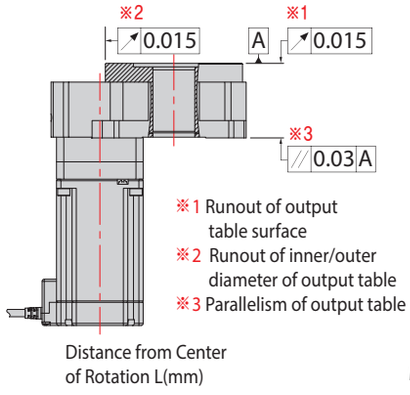


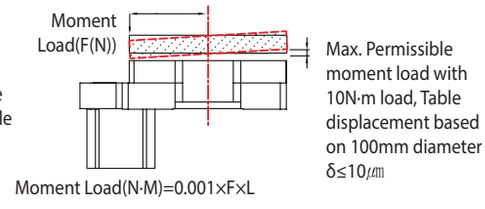


● Specifications of Product [HG100 series]

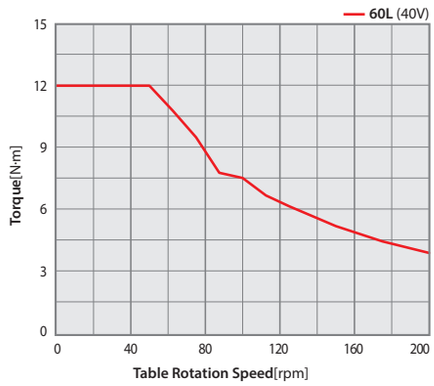
Model Name		RB-HG100-08-60L
Type of output table supporting bearing		Taper Roller Bearing + Ball Bearing
Maximum torque	[N·m]	12
Inertia moment	[kg·m^2]	3,898×10^{-6}
Permissible speed	[rpm]	200
Gear ratio		1:8
Maximum holding torque*1	[N·m]	12
Repetitive positioning accuracy	[arcsec]	±10(0.0028°)
Lost motion	[arcmin]	2(0.033°)
Angular transmission error	[arcmin]	4(0.067°)
Permissible axial load	[N]	500
Permissible moment load	[N·m]	10
Runout of output table surface	[mm]	0.015
Runout of output table inner/outer diameter	[mm]	0.015
Parallelism of output table	[mm]	0.03
Degree of protection*2		IP40
Mass	[kg]	4.0

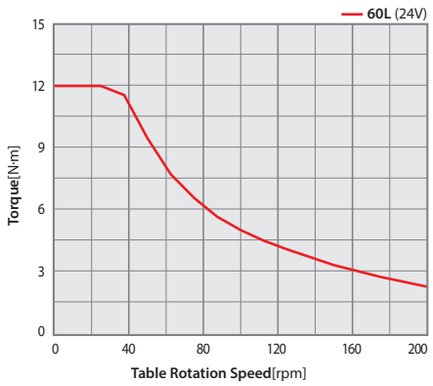
*1 : When Stop Current is 100%
*2 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

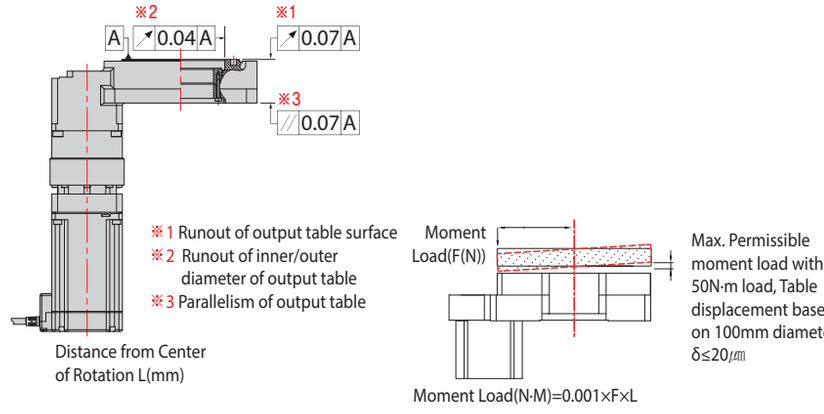




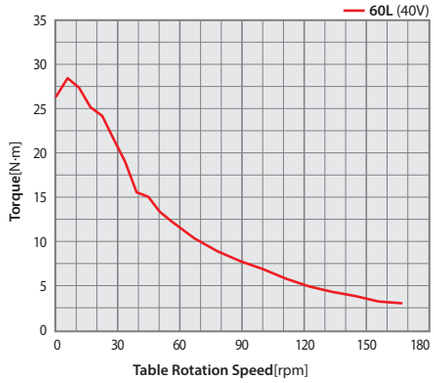
● Specifications of Product [HG130S series]

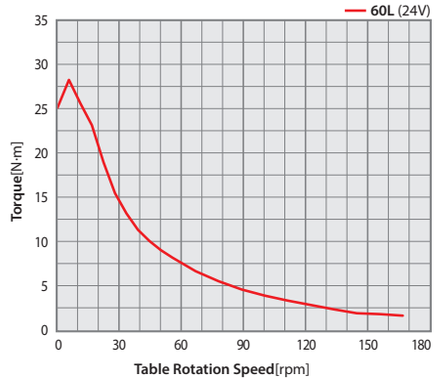
Model Name		RB-HG130S-18-60L
Type of output table supporting bearing		Cross Roller Bearing
Maximum torque	[N·m]	34
Inertia moment	[kg·m^2]	3,127×10^{-5}
Permissible speed	[rpm]	200
Gear ratio		1:18
Maximum holding torque*1	[N·m]	25.1
Repeatability	[arcsec]	±10(0.0028°)
Lost motion	[arcmin]	2(0.033°)
Angular transmission error	[arcmin]	4(0.067°)
Permissible axial load	[N]	2,000
Permissible moment load	[N·m]	50
Runout of output table surface	[mm]	0.07
Runout of output table inner/outer diameter	[mm]	0.04
Parallelism of output table	[mm]	0.07
Degree of protection*2		IP40
Mass	[kg]	6.3

*1 : When Stop Current is 100%
*2 : IP20 for motor connector



Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

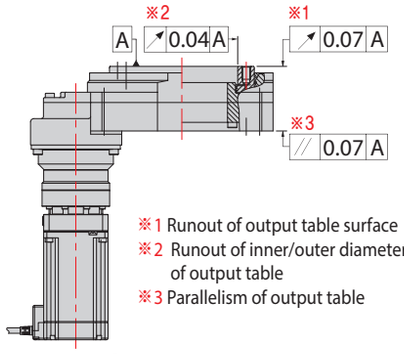




● Specifications of Product [HG170S series (Ratio 1:20)]

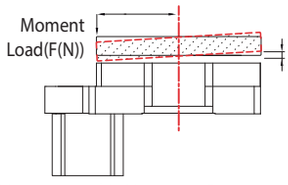
Model Name		RB-HG170S-20-60L
Type of output table supporting bearing		Cross Roller Bearing
Maximum torque	[N·m]	170
Inertia moment	[kg·m^2]	4,752×10^{-5}
Permissible speed	[rpm]	150
Gear ratio		1:20
Maximum holding torque*1	[N·m]	27.8
Repeatability	[arcsec]	±10(0.0028°)
Lost motion	[arcmin]	2(0.033°)
Angular transmission error	[arcmin]	4(0.067°)
Permissible axial load	[N]	3,900
Permissible moment load	[N·m]	152
Runout of output table surface	[mm]	0.07
Runout of output table inner/outer diameter	[mm]	0.04
Parallelism of output table	[mm]	0.07
Degree of protection*2		IP40
Mass	[kg]	8.7

*1 : When Stop Current is 100%
*2 : IP20 for motor connector



※1 Runout of output table surface
※2 Runout of inner/outer diameter of output table
※3 Parallelism of output table

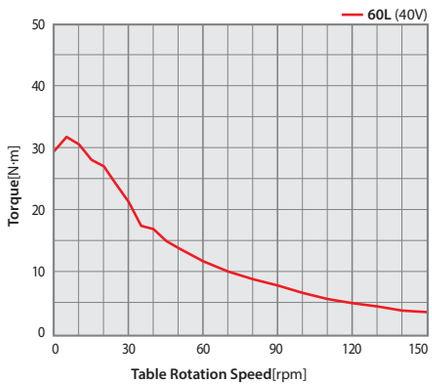
Distance from Center of Rotation L(mm)

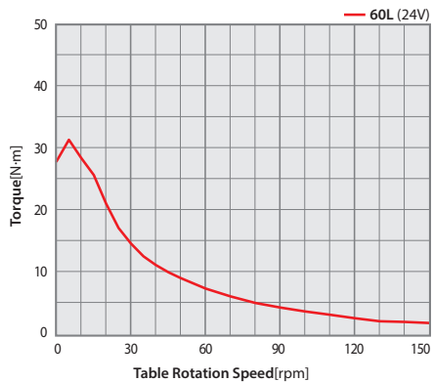


Max. Permissible moment load with 152N·m load, Table displacement based on 100mm diameter δ≤20㎛

Moment Load(N·M)=0.001×F×L

Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

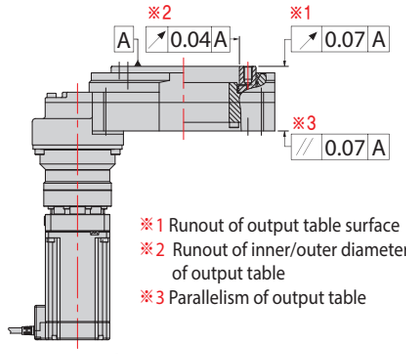




● Specifications of Product [HG170S series (Ratio 1:20)]

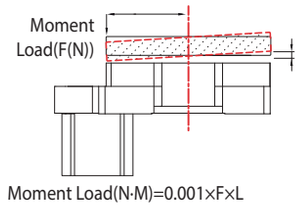
Model Name		RB-HG170S-20-86L
Type of output table supporting bearing		Cross Roller Bearing
Maximum torque	[N·m]	170
Inertia moment	[kg·m^2]	7,484×10^{-5}
Permissible speed	[rpm]	150
Gear ratio		1:20
Maximum holding torque*1	[N·m]	96.1
Repeatability	[arcsec]	±10(0.0028°)
Lost motion	[arcmin]	2(0.033°)
Angular transmission error	[arcmin]	4(0.067°)
Permissible axial load	[N]	3,900
Permissible moment load	[N·m]	152
Runout of output table surface	[mm]	0.07
Runout of output table inner/outer diameter	[mm]	0.04
Parallelism of output table	[mm]	0.07
Degree of protection*2		IP40
Mass	[kg]	11.9

*1 : When Stop Current is 100%
*2 : IP20 for motor connector



※1 Runout of output table surface
※2 Runout of inner/outer diameter of output table
※3 Parallelism of output table

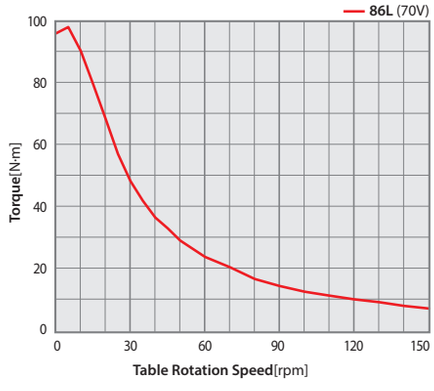
Distance from Center of Rotation L(mm)



Max. Permissible moment load with 152N·m load, Table displacement based on 100mm diameter δ≤20㎛

Moment Load(N·M)=0.001×F×L

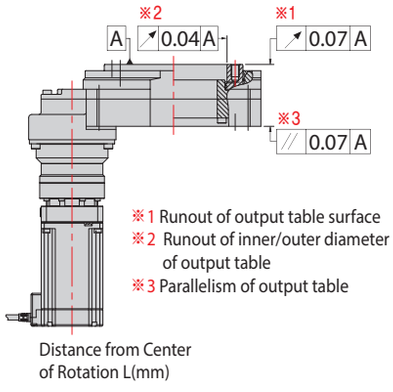
Applicable Model			
70V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST

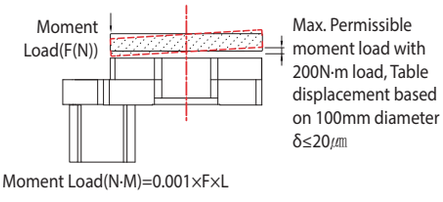


● Specifications of Product [HG170S series (Ratio 1:36)]

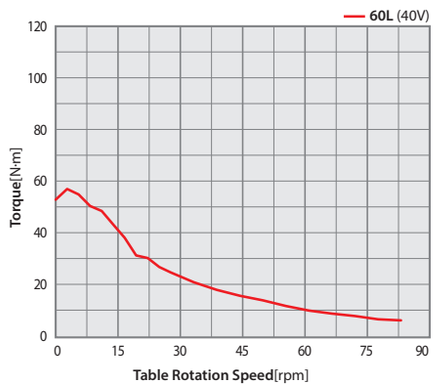
Model Name		RB-HG170S-36-60L
Type of output table supporting bearing		Cross Roller Bearing
Maximum torque	[N·m]	107
Inertia moment	[kg·m^2]	12,351×10^{-5}
Permissible speed	[rpm]	150
Gear ratio		1:36
Maximum holding torque*1	[N·m]	50.2
Repeatability	[arcsec]	±10(0.0028°)
Lost motion	[arcmin]	2(0.033°)
Angular transmission error	[arcmin]	4(0.067°)
Permissible axial load	[N]	4,000
Permissible moment load	[N·m]	200
Runout of output table surface	[mm]	0.07
Runout of output table inner/outer diameter	[mm]	0.04
Parallelism of output table	[mm]	0.07
Degree of protection*2		IP40
Mass	[kg]	8.7

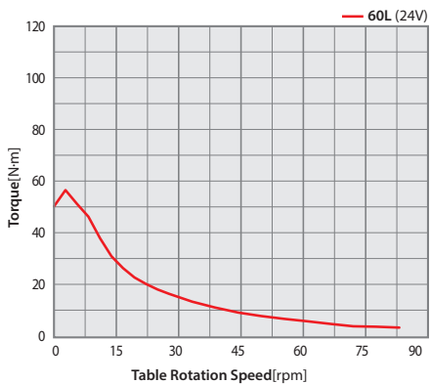
*1 : When Stop Current is 100%
*2 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

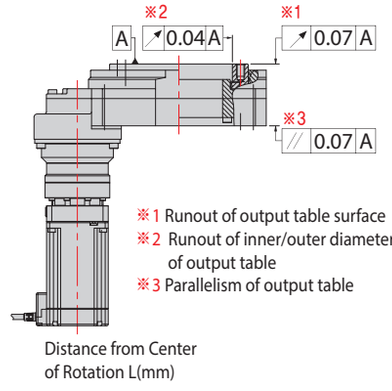


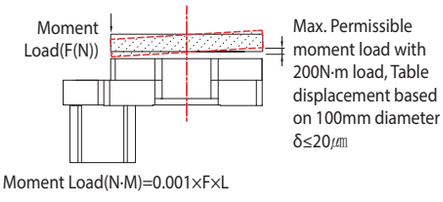


● Specifications of Product [HG170S series (Ratio 1:36)]

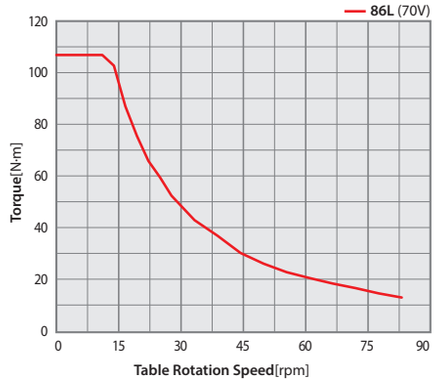
Model Name		RB-HG170S-36-86L
Type of output table supporting bearing		Cross Roller Bearing
Maximum torque	[N·m]	107
Inertia moment	[kg·m^2]	21,203×10^{-5}
Permissible speed	[rpm]	150
Gear ratio		1:36
Maximum holding torque*1	[N·m]	107
Repeatability	[arcsec]	±10(0.0028°)
Lost motion	[arcmin]	2(0.033°)
Angular transmission error	[arcmin]	4(0.067°)
Permissible axial load	[N]	4,000
Permissible moment load	[N·m]	200
Runout of output table surface	[mm]	0.07
Runout of output table inner/outer diameter	[mm]	0.04
Parallelism of output table	[mm]	0.07
Degree of protection*2		IP40
Mass	[kg]	11.9

*1 : When Stop Current is 100%
*2 : IP20 for motor connector



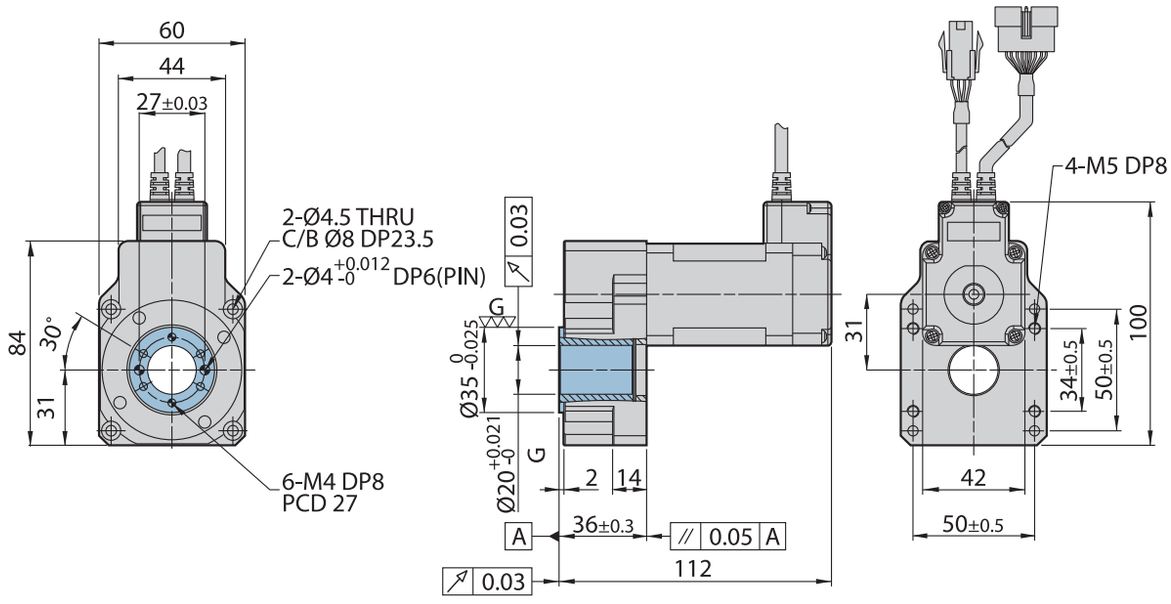


Applicable Model			
70V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST



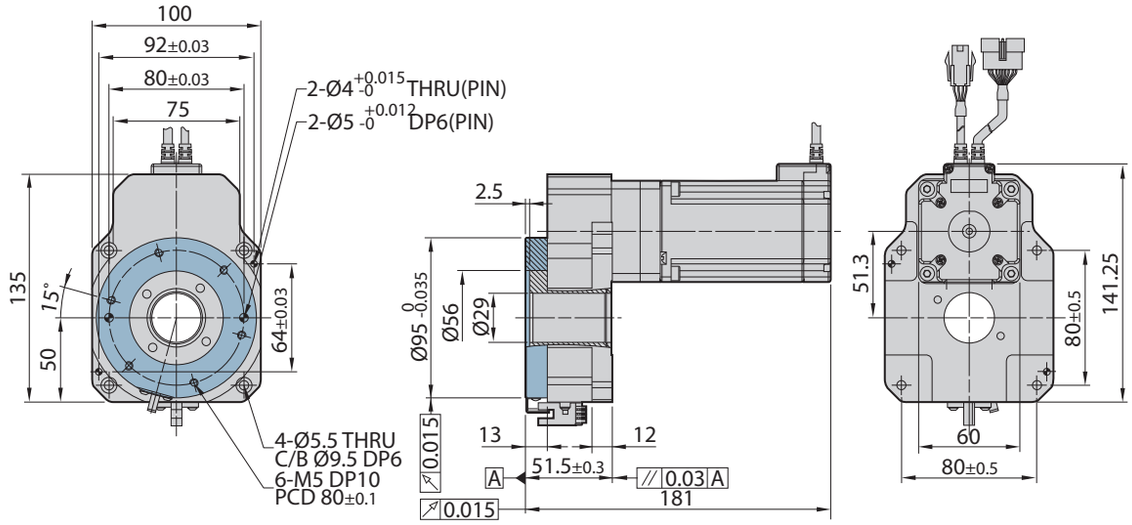
● Dimensions of Product [mm]

RB-HG60-05-42XL-□



※ □ is the drive type.

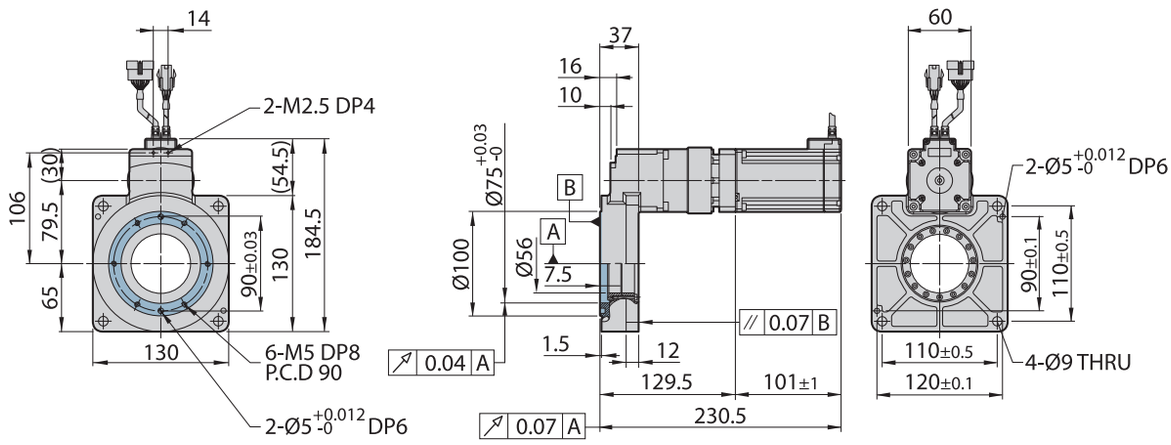
RB-HG100-08-60L-□



※ □ is the drive type.

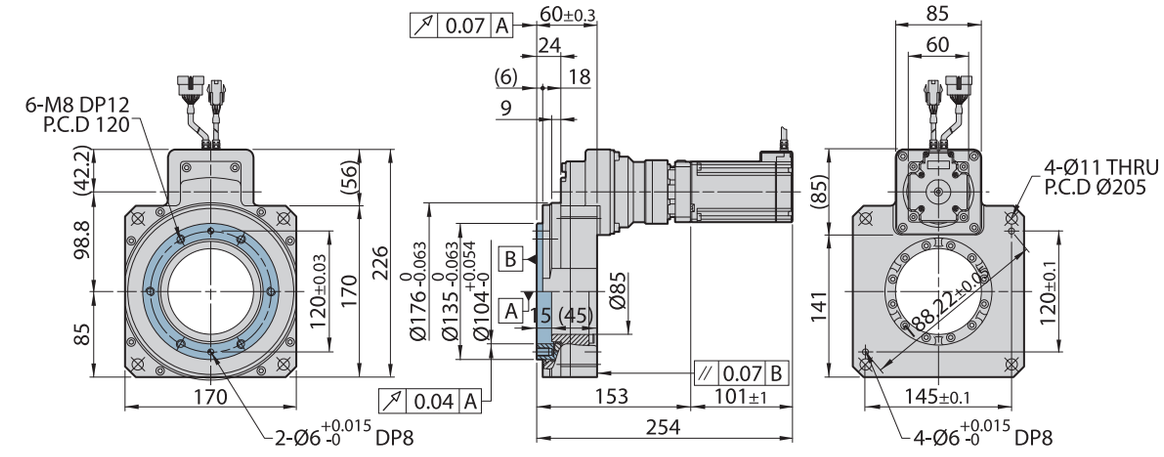
● Dimensions of Product [mm]

RB-HG130S-18-60L-□



※ □ is the drive type.

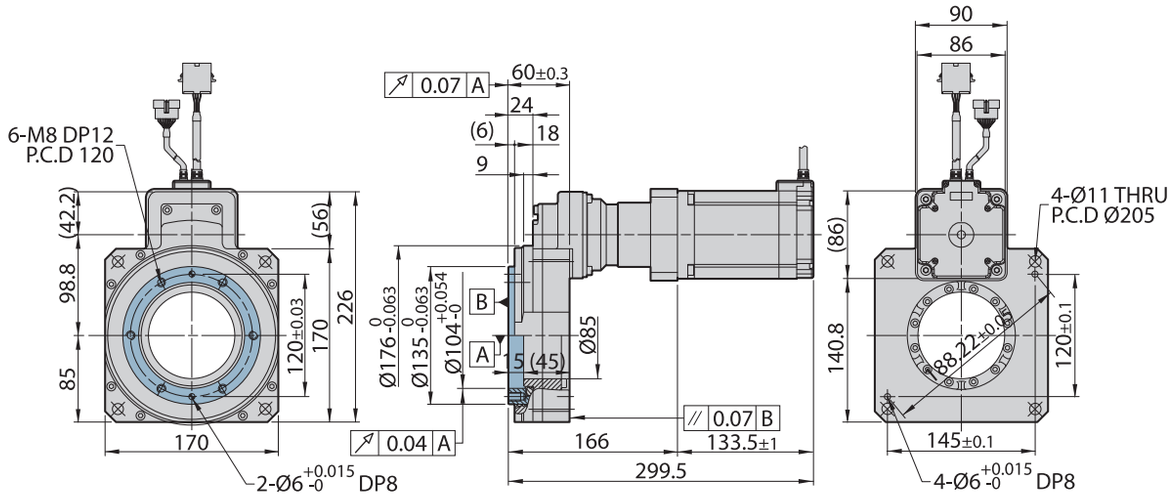
RB-HG170S-20-60L-□
RB-HG170S-36-60L-□



※ □ is the drive type.

● Dimensions of Product [mm]

RB-HG170S-20-86L-□
RB-HG170S-36-86L-□



※ □ is the drive type.

● Mechanical Part Option [Home-sensor Set]

In order to simplify configuring the homing operation on the rotary table, there is an option to configure the home sensor set with Photo Micro Sensor, connector cable, shield plate and mounting screw. Since all the parts necessary for home detection are provided, it is possible to save the effort to design, manufacture and procure parts when the origin sensor is needed and it can be installed and used immediately.

1. Type

Part Number	Sensor output	Applicable product
OSHG-A	NPN	HG60, HG85W, HG100, HG130W, HG130S, HG170S, HG200W
OSHG-AY	PNP	

2. Home-sensor Set Composition OSHG-A



3. Specifications

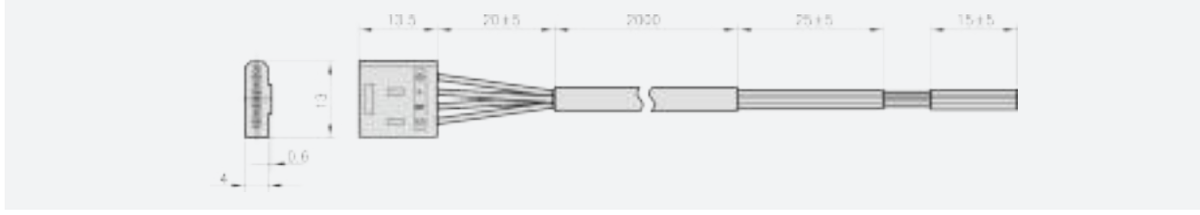
	NPN Type	PNP Type
Sensor Model	EE-SX672A(OMRON Product)	EE-SX672R(OMRON Product)
Input Voltage	5~24VDC ±10%, Ripple(P-P) 10% less	5~24VDC ±10%, Ripple(P-P) 10% less
Current Consumption	35mA less	30mA less
Control Output	NPN Open Collector output 5~24VDC 100mA less Residual Voltage 0.8V less(at load current of 100mA)	PNP Open Collector output 5~24VDC 100mA less Residual Voltage 1.3V less(at load current of 100mA)
Display LED	Detection(Red)	Detection(Red)
Sensor Logic	Normally Open / Normally Closed (Depending on connection)	Normally Open / Normally Closed (Depending on connection)

4. Cable with connector(OMRON robot code attached connector EE1010-R)

· Terminal Layout

①	⊕	Brown
②	L	Pink
③	OUT	Black
④	⊖	Blue





5. Precautions for installing home sensor.

Please note the followings when installing the home sensor set.

· Keep the operating temperature below 40℃ and the motor surface temperature below 90℃.

· When configuring the homing function using the shaft of the motor, Prepare an individual sensor and bracket.

6. Precautions for extending the sensor cable

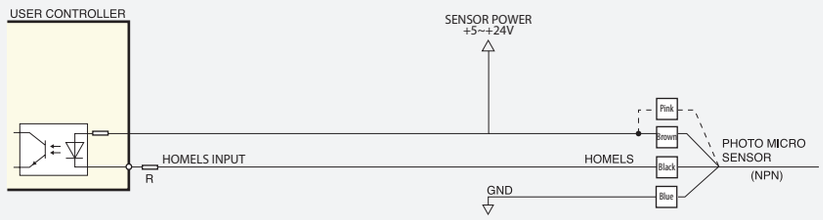
Sensor shield should be cabled and grounded if extended to more than 2m long.

● Mechanical Part Option [Home-sensor Installation]

1. NPN Type

Please use 5~24VDC power supply and configure the active current to 5~20mA. Connect external resistor if it exceeds 20mA.
The GND of the power supplies of the sensor and user controller must be common.

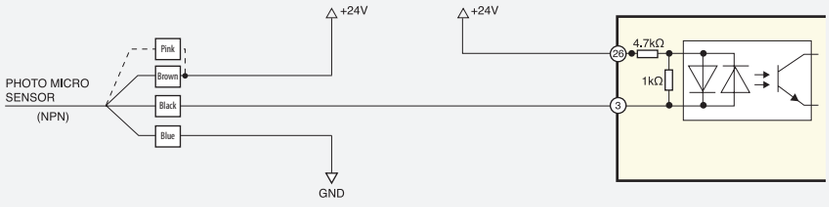
· Pulse Train Input unit



N.C (Normal Closed) : Connect Pink lead wire with Brown lead wire.

N.O (Normal Open) : Do not connect Pink lead wire.

· Controller integrated unit (Example of Ezi-SERVO II Plus-E)



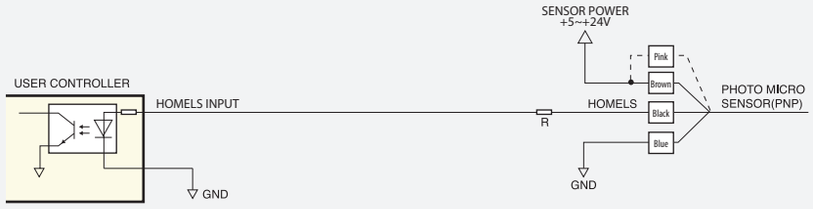
N.C (Normal Closed) : Connect Pink lead wire with Brown lead wire.

N.O (Normal Open) : Do not connect Pink lead wire.

2. PNP Type

Please use 5~24VDC power supply and configure the active current to 5~20mA. Connect external resistor if it exceeds 20mA.
The GND of the power supplies of the sensor and user controller must be common.

· Pulse Train Input unit



N.C (Normal Closed) : Connect Pink lead wire with Brown lead wire.

N.O (Normal Open) : Do not connect Pink lead wire.

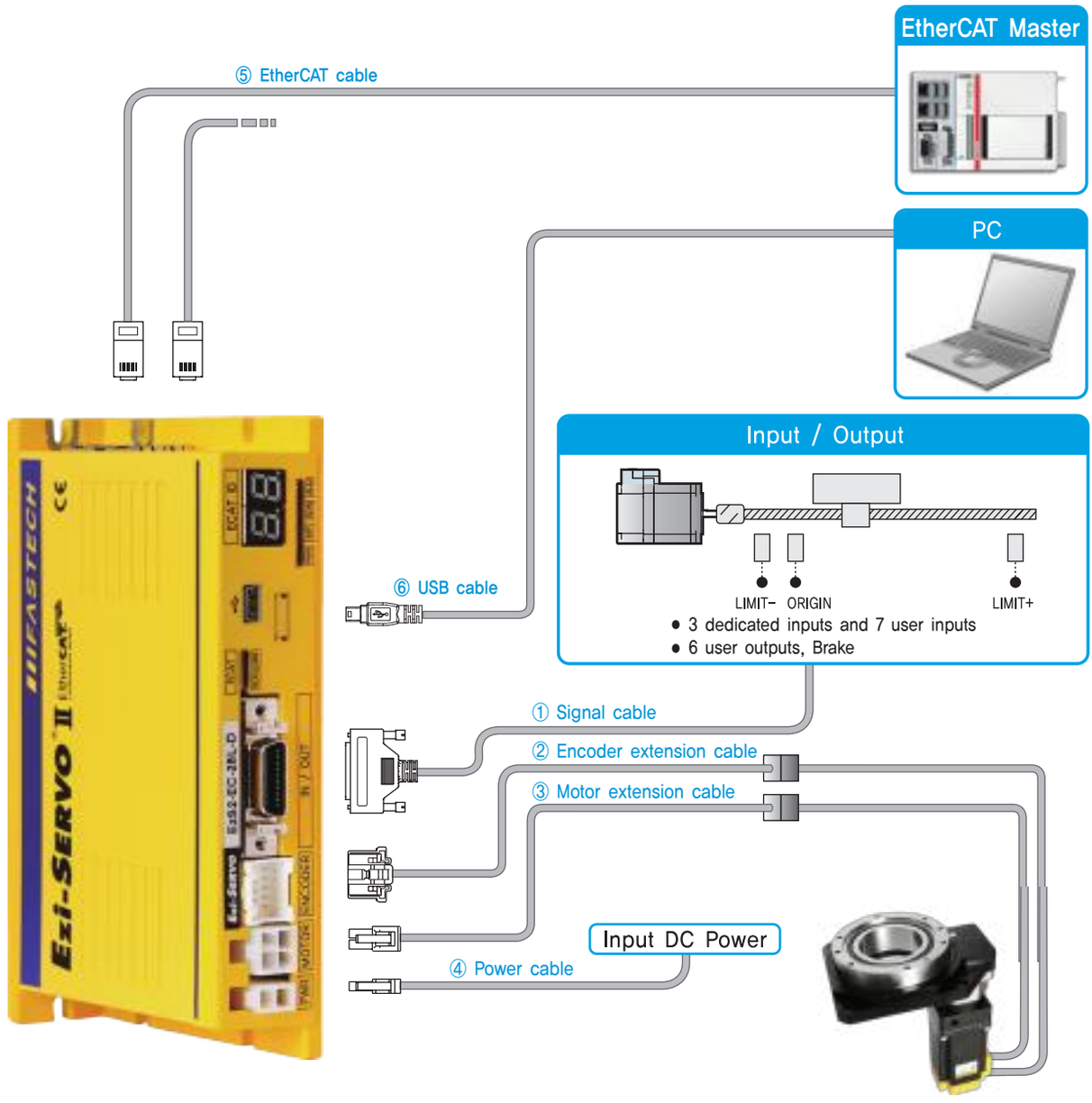
· Controller integrated unit (Example of Ezi-SERVO II Plus-E)



N.C (Normal Closed) : Connect Pink lead wire with Brown lead wire.

N.O (Normal Open) : Do not connect Pink lead wire.

System Configuration [EtherCAT (Ezi-SERVO II EtherCAT)]

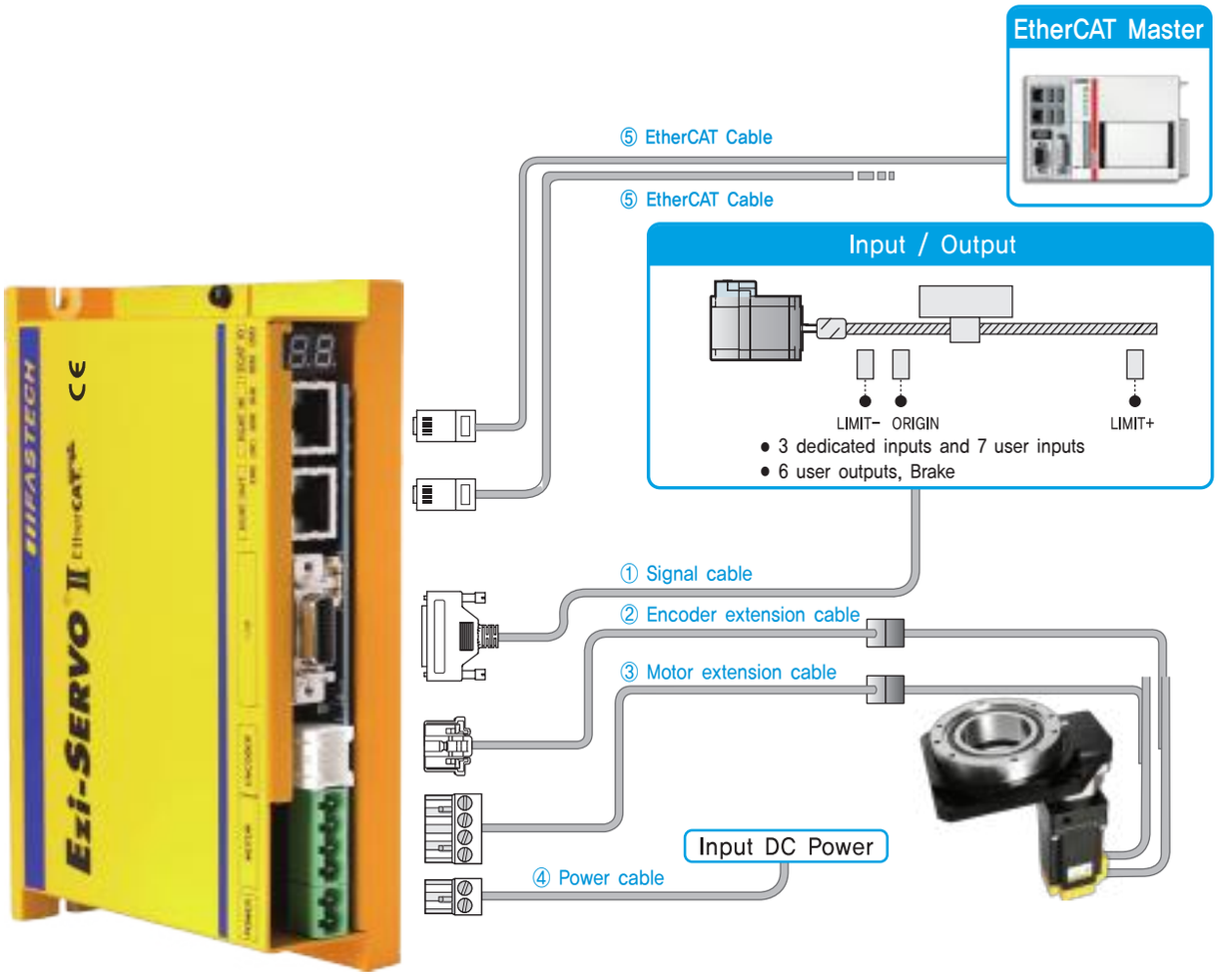


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO II EtherCAT drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed Ethernet(100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT catalog for optional cables, functions and operation.

● System Configuration [EtherCAT (Ezi-SERVO II EtherCAT 86mm)]

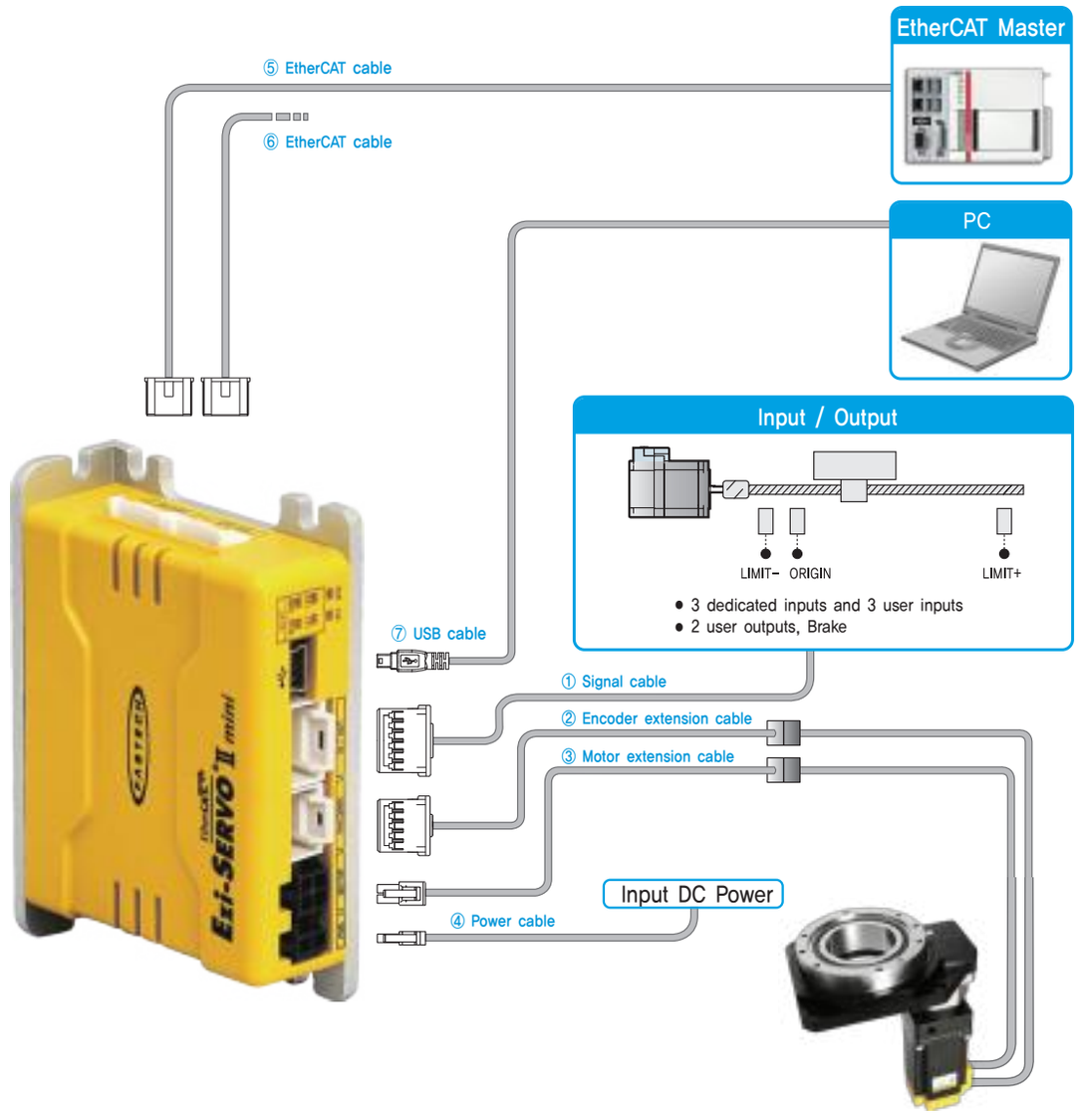


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO II EtherCAT drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed Ethernet(100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT catalog for optional cables, functions and operation.

● System Configuration [EtherCAT (Ezi-SERVO II EtherCAT MINI)]

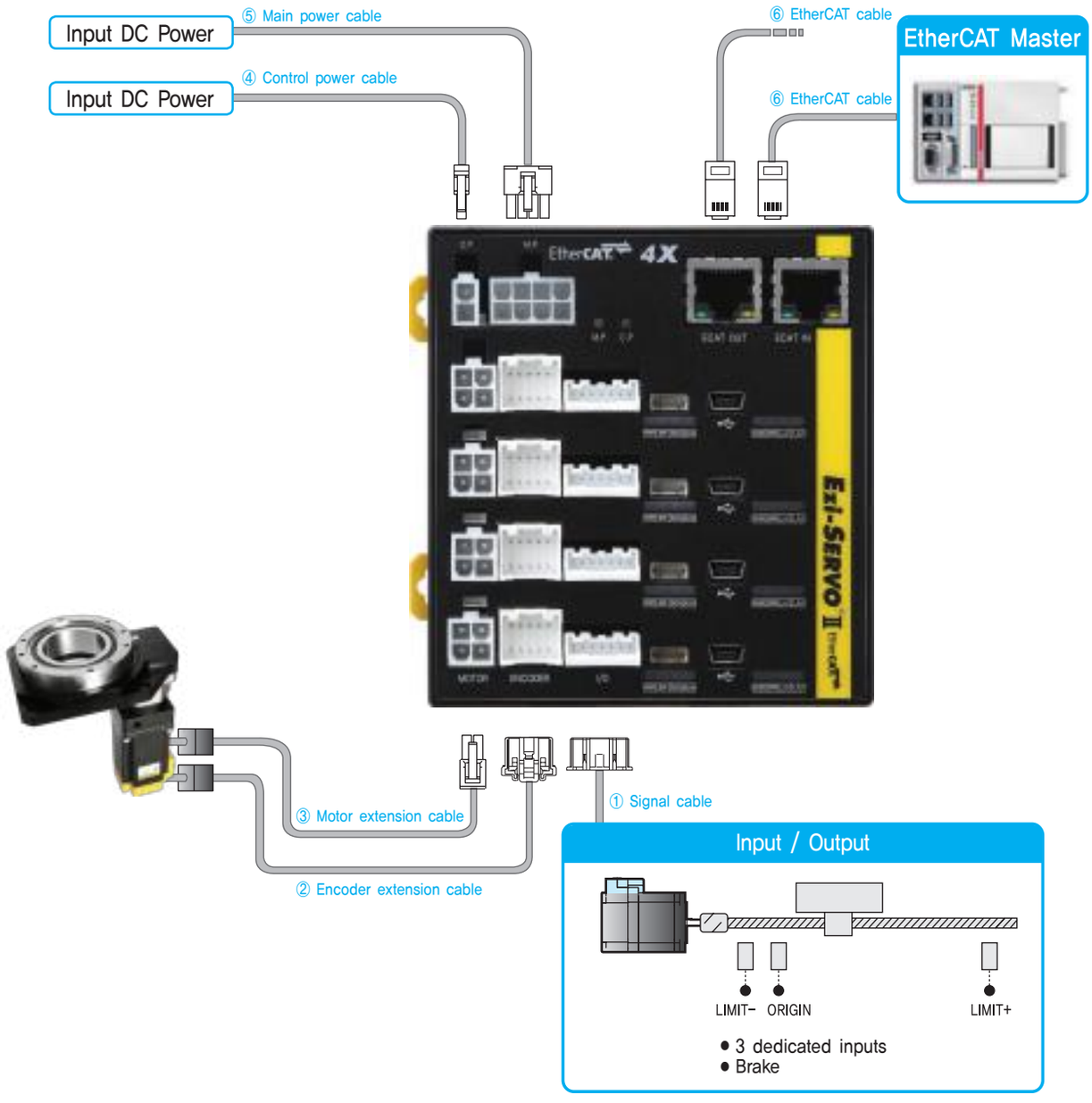


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO II EtherCAT MINI drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT MINI is stepping motor control system using EtherCAT, high speed Ethernet(100Mbps full-duplex) based fieldbus. Ezi-SERVO II EtherCAT MINI is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT MINI catalog for optional cables, functions and operation.

● System Configuration [EtherCAT 4X (Ezi-SERVO II EtherCAT 4X)]

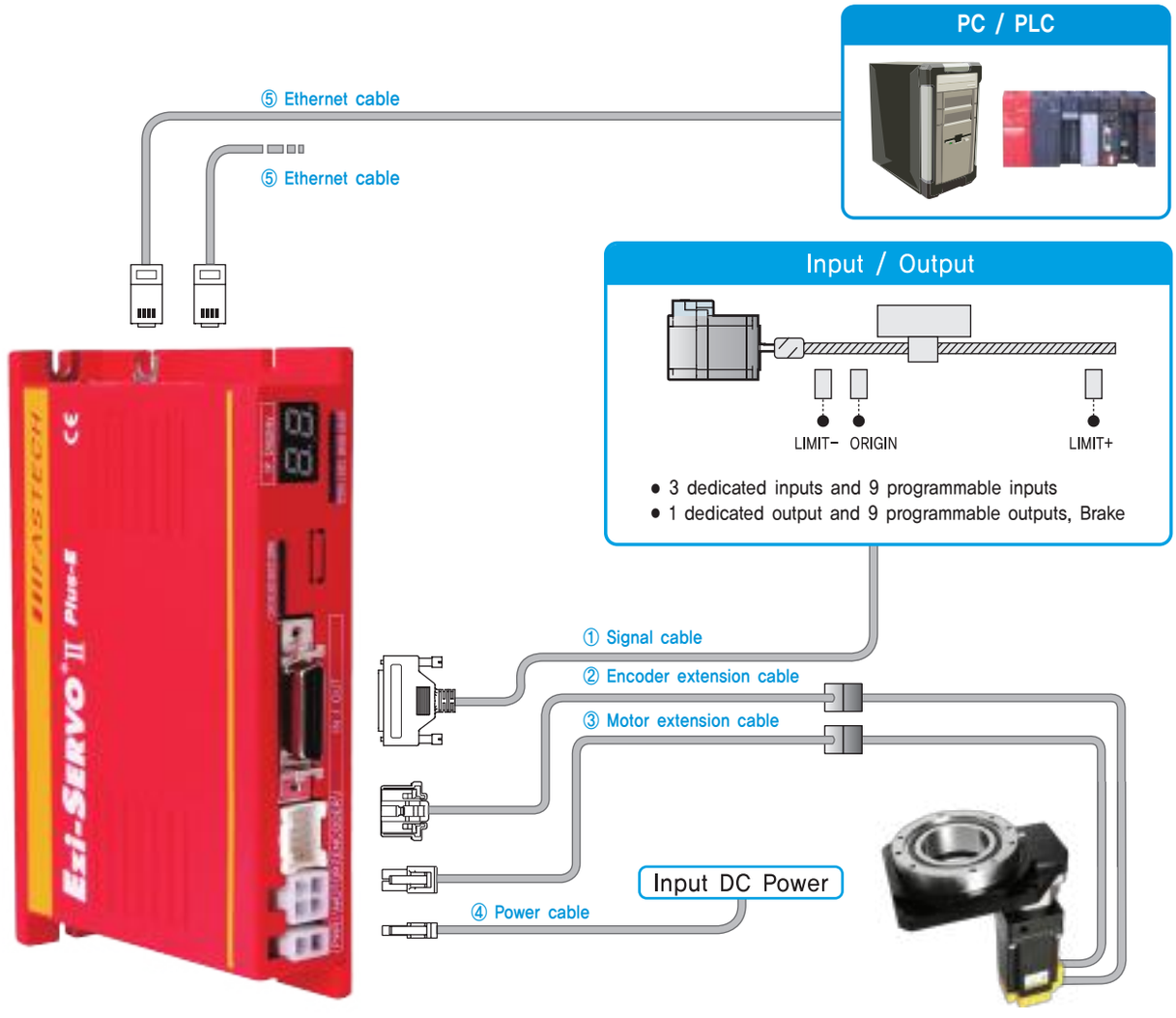


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO II EtherCAT 4X drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Control Power Cable	Main Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	2m	100m

- Ezi-SERVO II EtherCAT 4X is 4 axis stepping motor control system using EtherCAT, high speed Ethernet(100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT 4X is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT 4X catalog for optional cables, functions and operation.

● System Configuration [Ethernet (Ezi-SERVO II Plus-E)]

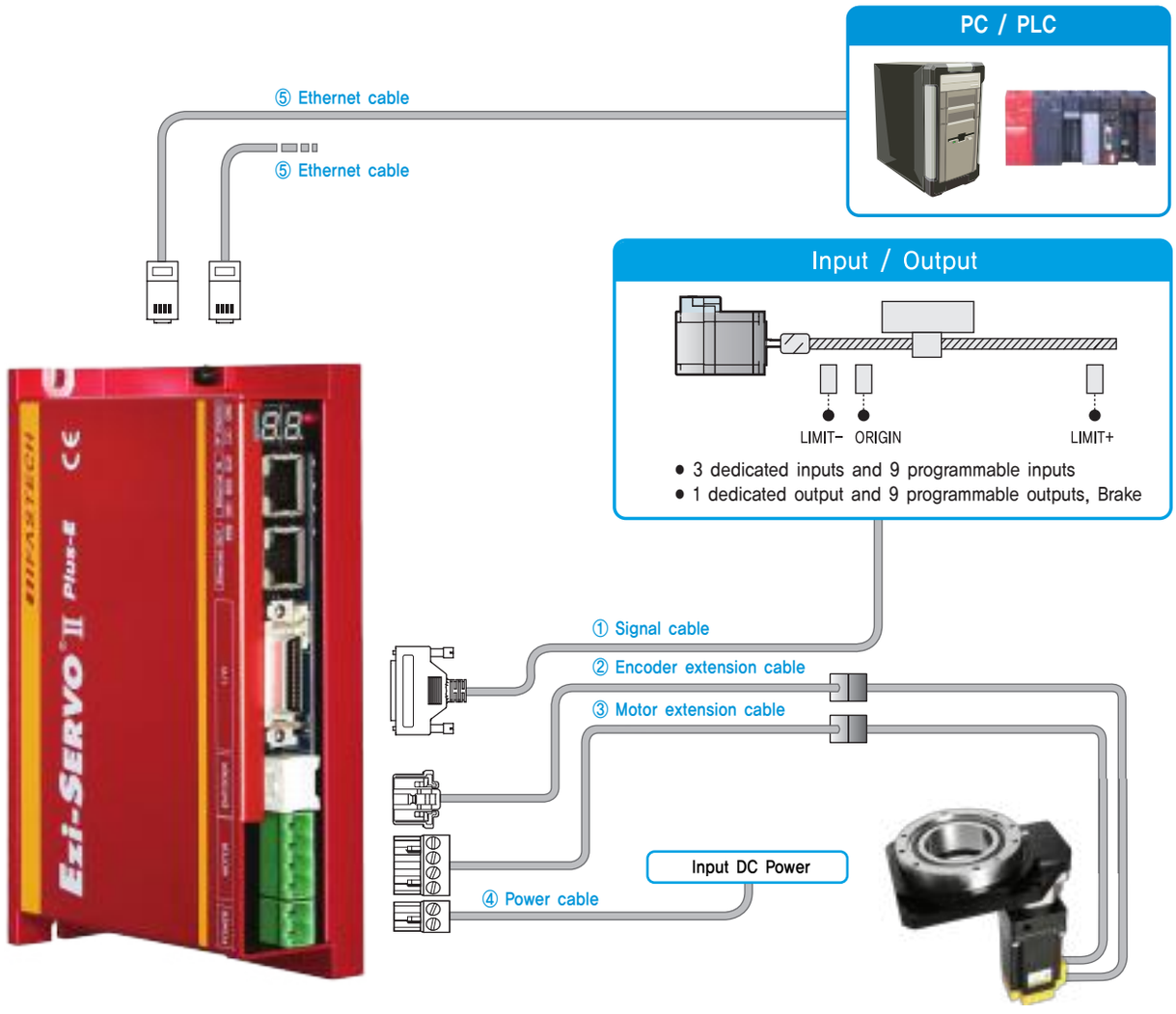


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO II Plus-E drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E catalog for optional cables, functions and operation.

● System Configuration [Ethernet (Ezi-SERVO II Plus-E 86mm)]

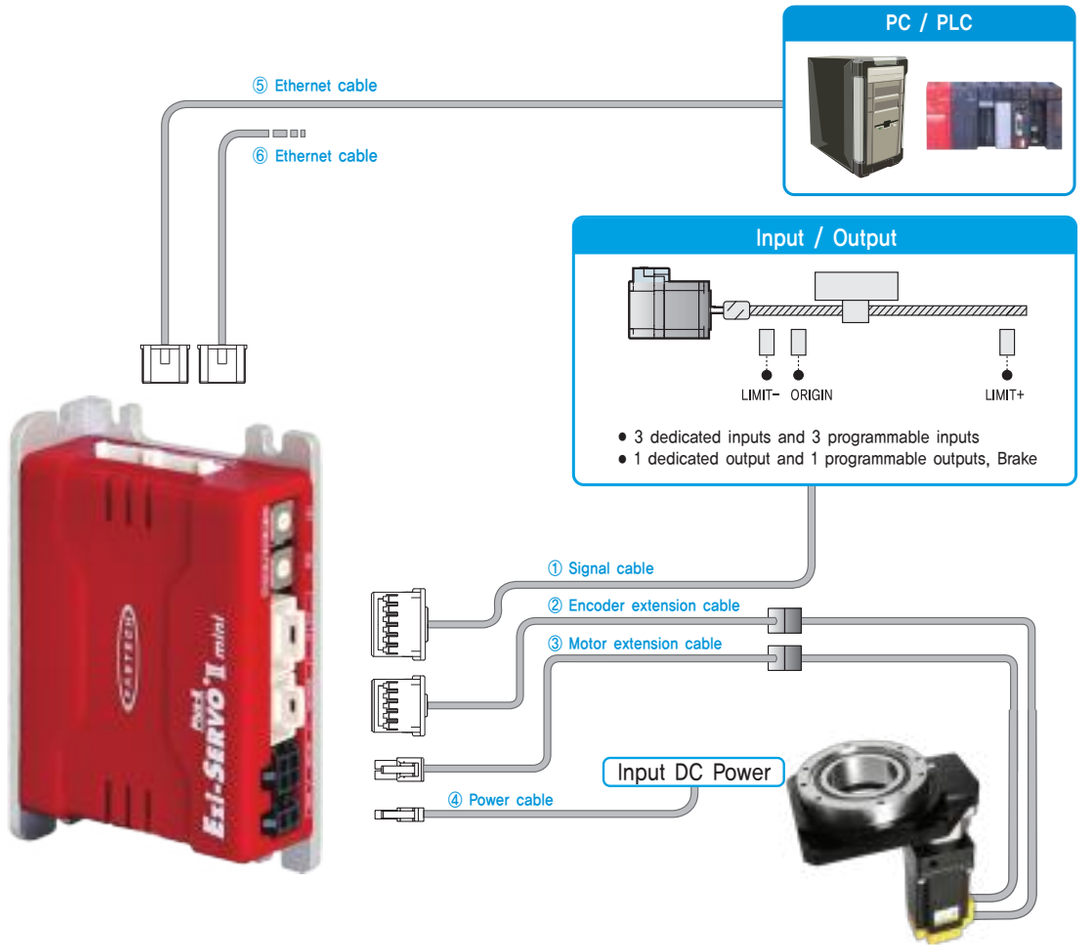


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO II Plus-E drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E catalog for optional cables, functions and operation.

● System Configuration [Ethernet (Ezi-SERVO II Plus-E MINI)]

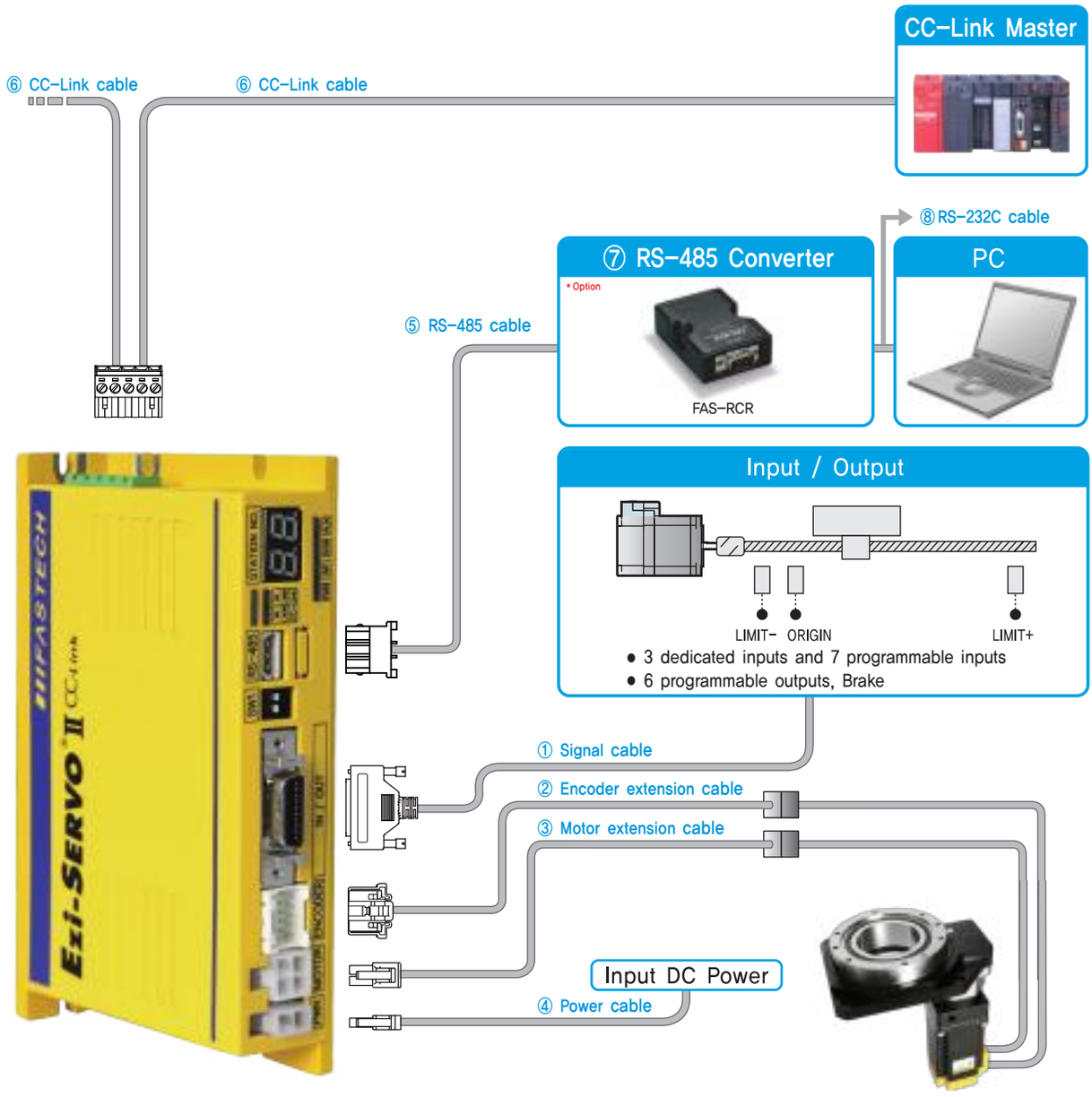


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO II Plus-E MINI drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	-	30cm	30cm	-	-
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E MINI drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication, and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E MINI catalog for optional cables, functions and operation.

● System Configuration [CC-Link (Ezi-SERVO II CC-Link)]

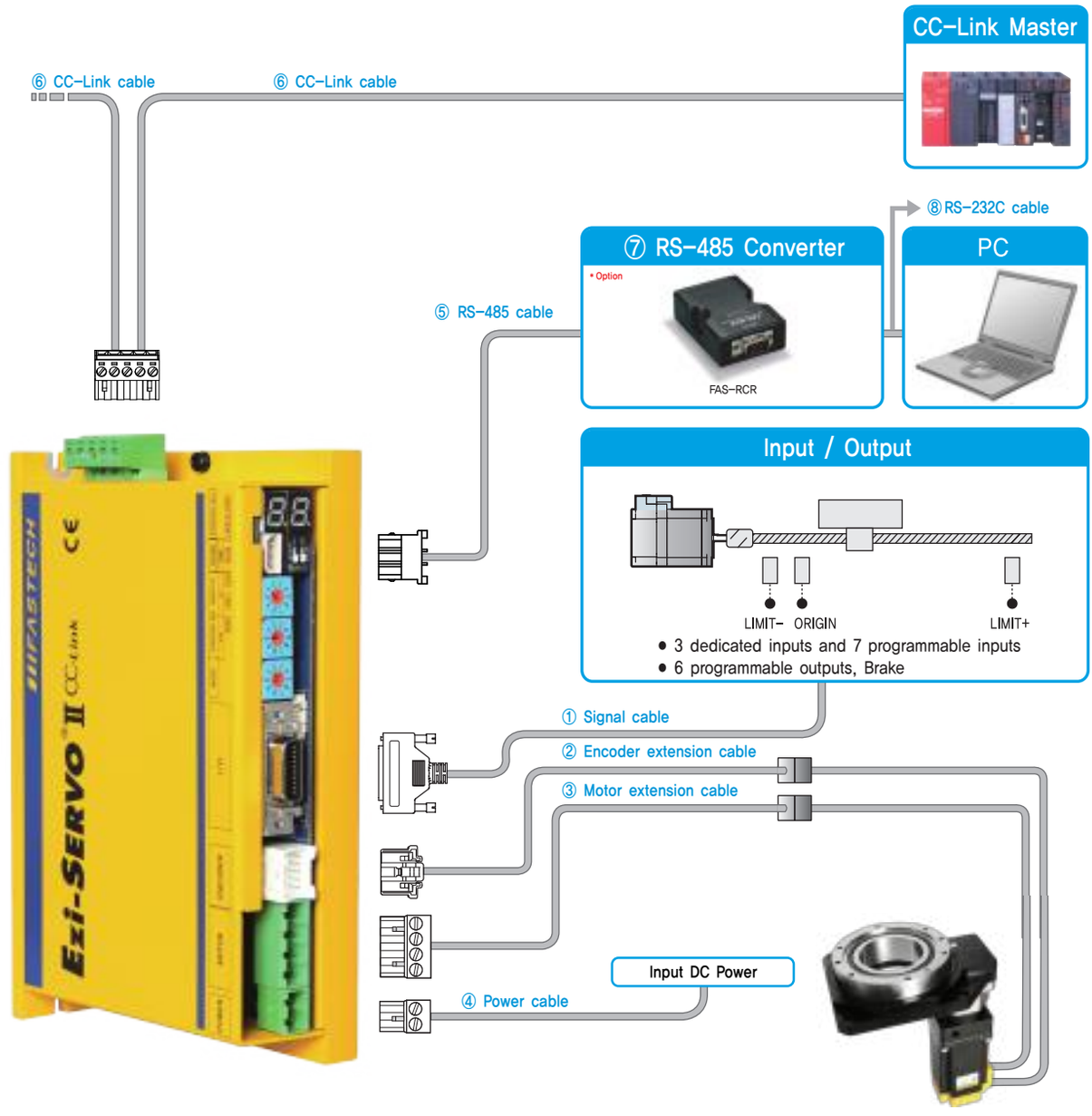


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO II CC-Link drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

- Ezi-SERVO II CC-Link is a drive supporting CC-Link , a high speed fieldbus(max. 10Mbps). Ezi-SERVO II CC-Link is a Remote Device module supporting CC-Link network. Multi-function control is possible by occupying 1 station and 2 stations in CC-Link, and motion and monitoring functions are processed by device commands.
- Please refer to the Ezi-SERVO II CC-Link catalog for optional cables, functions and operation.

● System Configuration [CC-Link (Ezi-SERVO II CC-Link 86mm)]

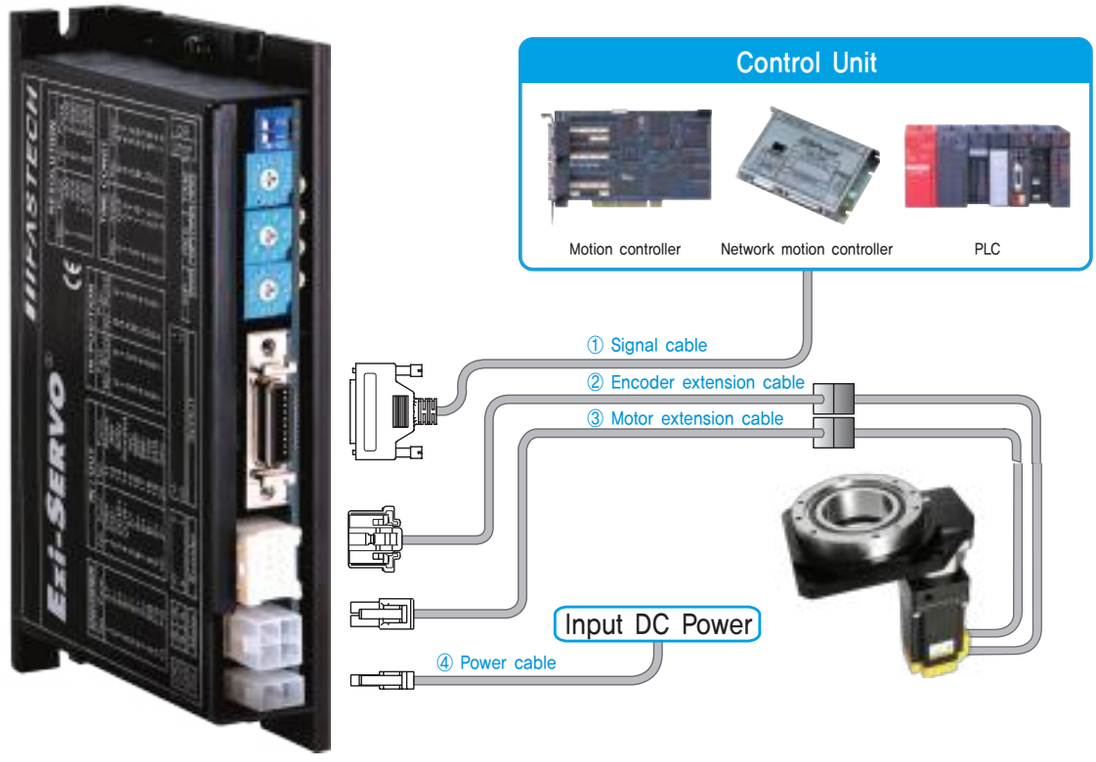


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO II CC-Link drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

- Ezi-SERVO II CC-Link is a drive supporting CC-Link , a high speed fieldbus(max. 10Mbps). Ezi-SERVO II CC-Link is a Remote Device module supporting CC-Link network. Multi-function control is possible by occupying 1 station and 2 stations in CC-Link, and motion and monitoring functions are processed by device commands.
- Please refer to the Ezi-SERVO II CC-Link catalog for optional cables, functions and operation.

● System Configuration [Pulse Input Drive (Ezi-SERVO ST)]

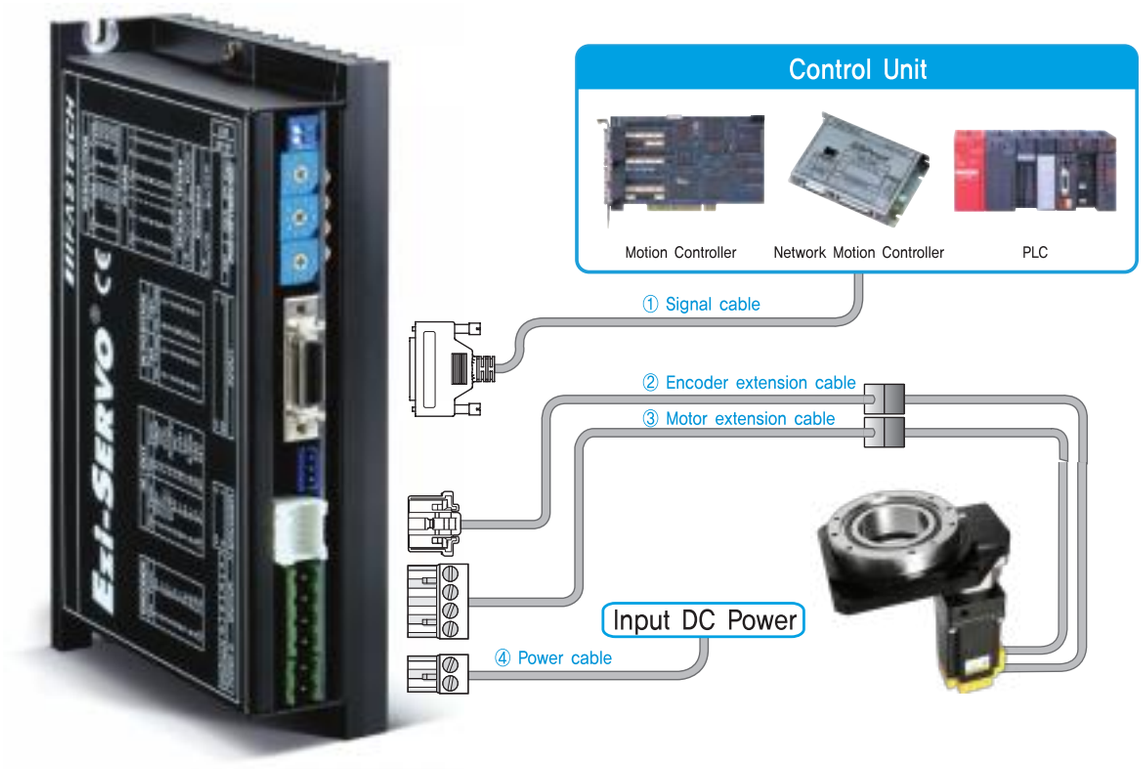


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO ST drive and Actuator part number.

Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

- Ezi-SERVO ST is a pulse input type drive. It is controlled by using of Motion controller, standalone controller or PLC (with positioning module).
- Please refer to the Ezi-SERVO ST catalog for optional cables, functions and operation.

● System Configuration [Pulse Input Drive (Ezi-SERVO ST 86mm)]

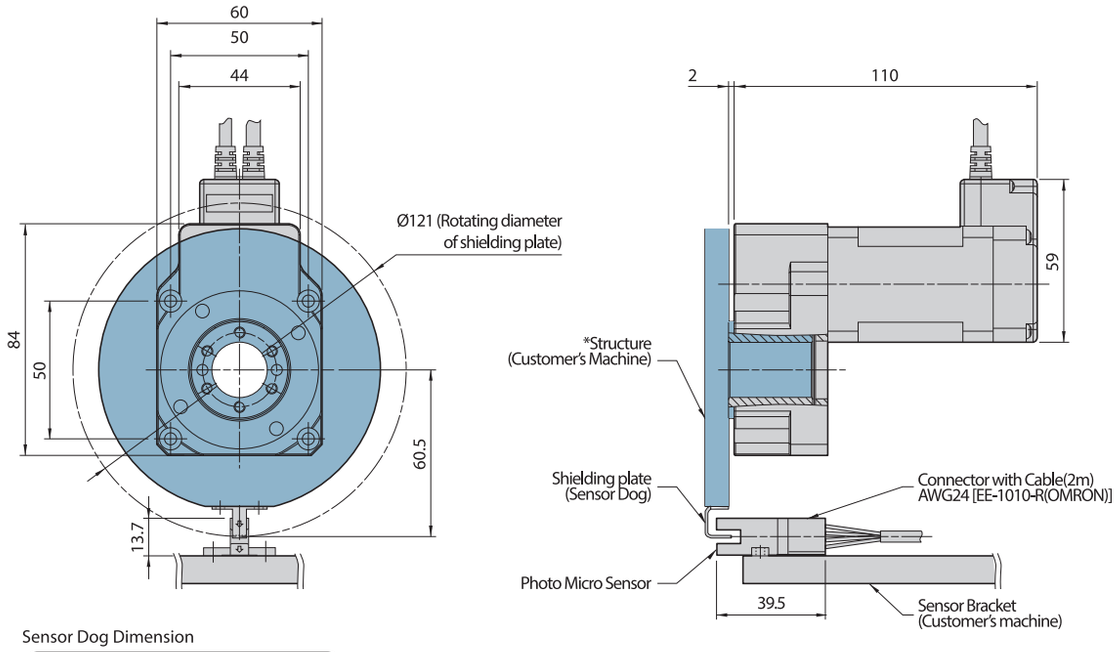


* Please refer to page 932 (Motor, Drive Combination) for the Ezi-SERVO ST drive and Actuator part number.

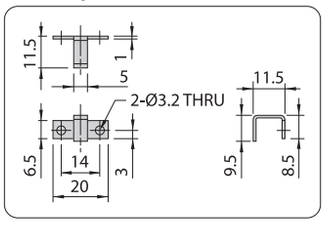
Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

- Ezi-SERVO ST is a pulse input type drive. It is controlled by using of Motion controller, standalone controller or PLC (with positioning module).
- Please refer to the Ezi-SERVO ST catalog for optional cables, functions and operation.

● Dimensions of Home-sensor Installation [RB-HG60]

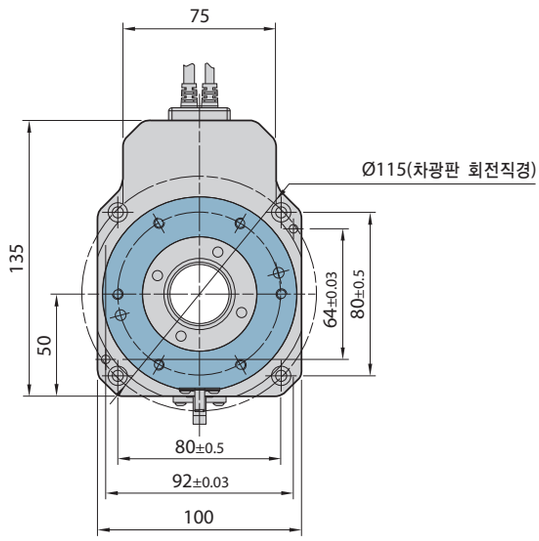


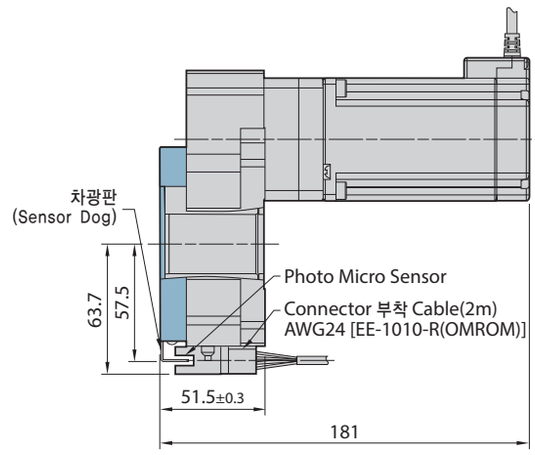
Sensor Dog Dimension



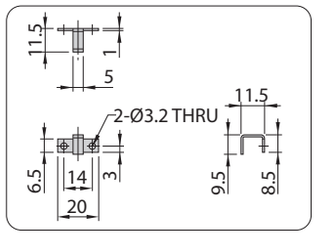
This is only example dimention of home-sensor installation and sensor braket and structures are not provided.

● Dimensions of Home-sensor Installation [RB-HG100]



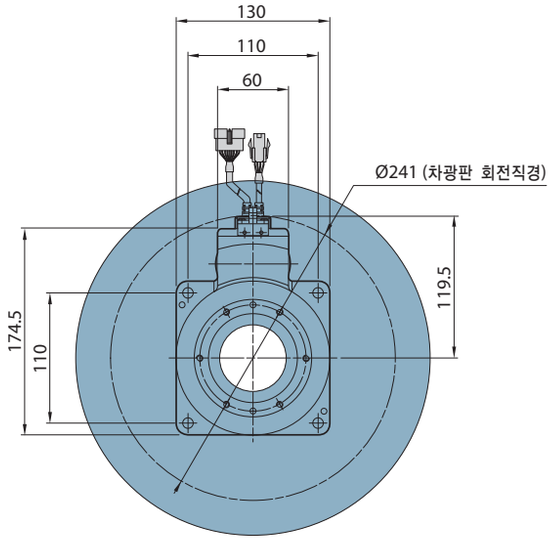


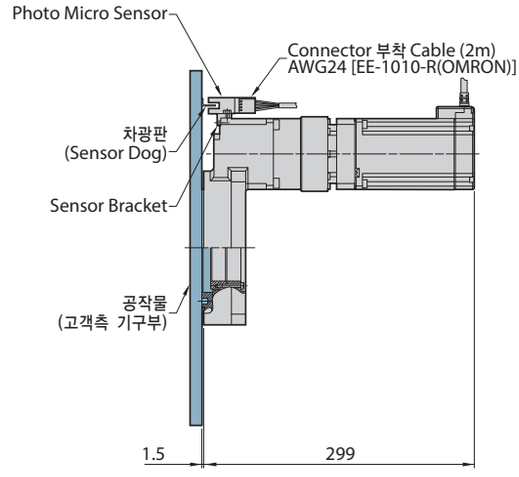
차광판 상세치수도



This is only example dimention of home-sensor installation and sensor braket and structures are not provided.

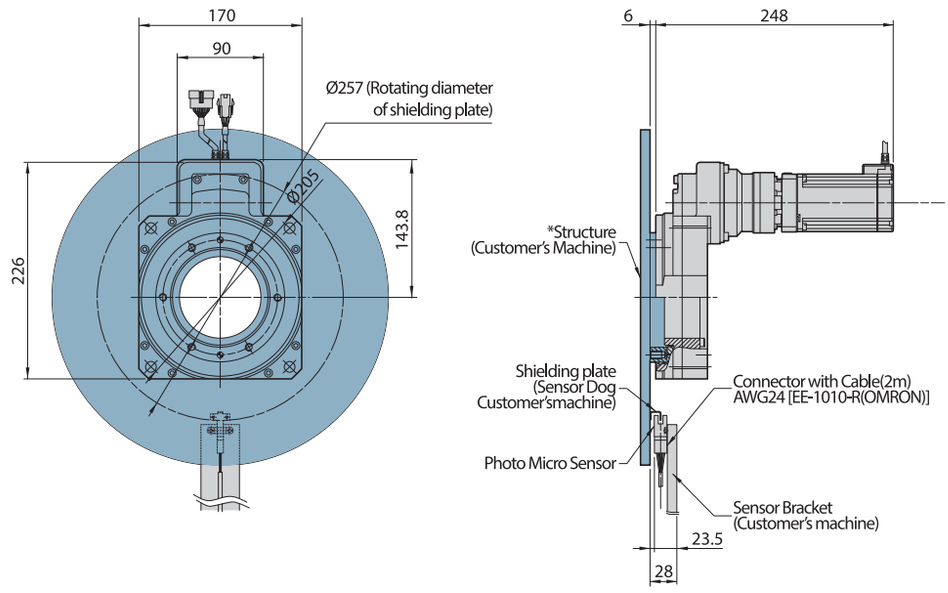
● Dimensions of Home-sensor Installation [RB-HG130S]





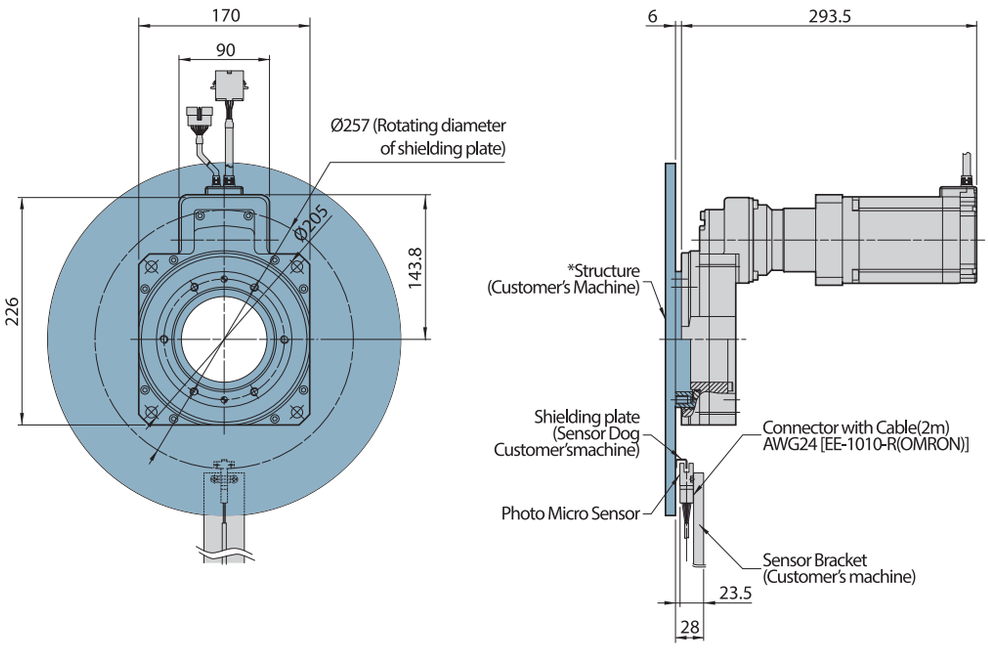
This is only example dimention of home-sensor installation and sensor braket and structures are not provided.

● Dimensions of Home-sensor Installation [RB-HG170S-60L]



This is only example dimention of home-sensor installation and sensor braket and structures are not provided.

● Dimensions of Home-sensor Installation [RB-HG170S-86L]



This is only example dimention of home-sensor installation and sensor braket and structures are not provided.



Ezi-Robo HB

Actuator Series Driven by Ezi-SERVO_ Ezi-Robo HB

- Unit solution of Ezi-SERVO + Hollow rotary index table
- Accurate timing belt driven(Lost motion 6min)
- Realize long-life durability
- Economic solution
- EtherCAT, Ethernet, CC-Link Support



FASTECH

Fast, Accurate, Smooth Motion

Ezi-Robo® HB

Actuator series Driven by Ezi-SERVO



1 Hollow Rotary Table

Large Diameter hollow bore to penetrate the output table equipped HB Series ensure flexibility and con-venience in the design of equipment when install complex wiring and piping.

Model Name	Size of plinth(Frame Size)	Hollow Bore Diameter
HB60	60mm	Ø27mm
HB85	85mm	Ø37mm
HB130	130mm	Ø55mm



Ex) Only for HB85

2 Accurate Timing Belt Driven

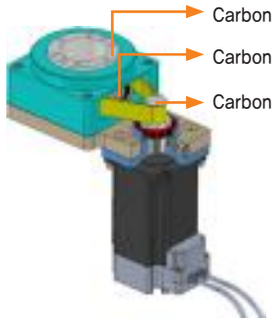
Extremely low backlash timing belt direct drive, so that repetitive posi-tioning accuracy from single di-rection is +/-30sec and lost motion by positioning two directions for less than 6min and the precise positioning can be determined. Involute teeth type of timing belt enables Max. electric capacity and low noise operation.



Involute teeth type of High performance timing belt

3 High Rigidity

High rigidity of 2 Deep Groove Ball Bearing and hol-low rotary table integ-rated HB Series maximizes al-lowable thrust load and moment load. Also high ri-gidity carbon steel timing pulley reinforce durability of abrasion and innovate durability.



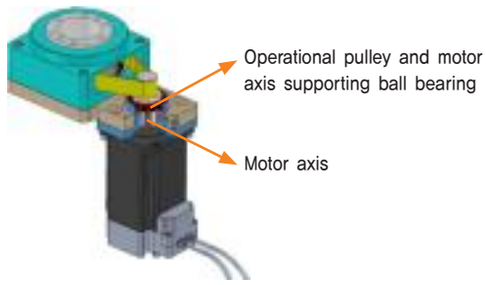
Carbon Steel material output table

Carbon steel driven shaft timing pulley

Carbon steel drive shaft timing pully

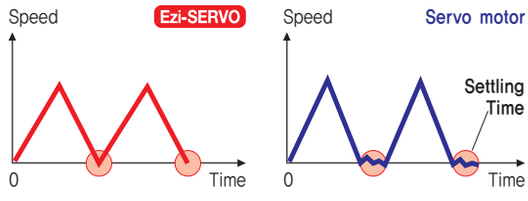
4 Long & Durable Life

To solve most common fracture of the motor shaft at timing belt drive actuator, HB series dramatically improves endurance to resolve driven motor shaft' s fatigue from the timing belt tension of the driven motor shaft fatigue with bearings firmly supports driven pulley directly coupled with motor shaft.



5 Fast Response

The combination of a high-rigidity hollow rotary table and Ezi-SERVO, a high-precision closed loop stepping motor control system, can significantly reduce positioning time even with large inertial loads.



6 Supporting Various Field Network

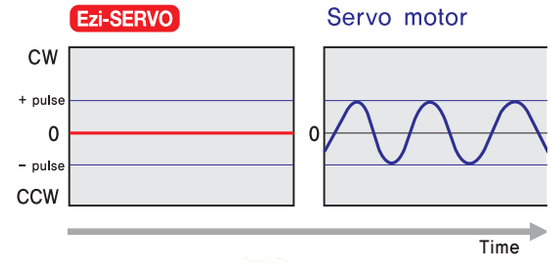
Ezi-Robo HB is a unit that combines Ezi-SERVO, a high performance closed loop step drive. Ezi-SERVO drives that support field networks such as EtherCAT, Ethernet and CC-Link can be connected to master controllers such as PC/PLC through corresponding field networks.
In case of Ezi-SERVO II Plus-E products, motion library (DLL) for Windows 7/8/10 can be provided.

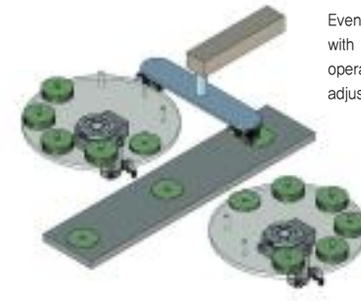


7 Applicable to Abrupt Load Fluctuations and Rapid Acceleration Applications

The Ezi-Robo HB Series driven by Ezi-SERVO, a closed-loop stepping motor control system without step-out, has no fine vibrations, i.e. hunting problem unlike general servo system.
In addition, It is Tuning Free Actuator that does not require gain adjustment for abrupt load fluctuation.







Even in the environments with load fluctuations, stable operation is possible without adjusting the gains.

8 Avaliable I/O signal

The Ezi-SERVO drive offers the ability to process multiple input and output signals. Equipment can be configured without a separate I/O device.

- EtherCAT : 7 inputs / 6 outputs
- CC-Link : 7 inputs / 6 outputs
- Ethernet : 9 inputs / 9 outputs

* For more details on I/O signals, Please refer to the catalog or manual of each drive.

9 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller. You can operate the motor directly by sending the position table number, start / stop, origin search and other digital input values from a PLC. The PLC can monitor The In-Position, origin search, moving / stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PLC.



10 Examples of Ezi-Robo HB Applications

Applications support to changing load intertia fluctuation



Applications for high precision positining



Applications support moment load



Applications for optical applications using hollow bore



Applications for air absorption using hollow bore



Applications for a precise positioning using hollow bore



● Ezi-Robo HB Part Numbering

RB-HB60-05-42XL-A-ST

Product Name
Ezi-Robo HB

Frame Size
60 : 60mm
85 : 85mm
130 : 130mm

Reduction Gear Ratio
05 – 1:5

Motor Flange Size
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length
L : Large
XL : Extra Large

Encoder Resolution
A : 10,000[ppr]
B : 20,000[ppr]

Drive Series
EC : EtherCAT
EC-MI : EtherCAT Mini Type
EC-4X : EtherCAT 4 axis
PE : Plus Ethernet
PE-MI : Plus Ethernet Mini Type
CL : CC-Link
ST : Pulse Input

● Applicable Product Line-up

Product	Specification
Ezi-SERVO II EtherCAT	Embedded EtherCAT
Ezi-SERVO II EtherCAT MINI	Embedded EtherCAT Mini Type
Ezi-SERVO II EtherCAT 4X	Embedded EtherCAT 4 axis
Ezi-SERVO II Plus-E	Ethernet based controller integrated product
Ezi-SERVO II Plus-E MINI	Ethernet based controller integrated product Mini Type
Ezi-SERVO II CC-Link	Embedded CC-Link
Ezi-SERVO ST	Pulse Input Type



Ezi-SERVO II EtherCAT
(EtherCAT)



Ezi-SERVO II EtherCAT MINI
(EtherCAT / Mini Type)



Ezi-SERVO II EtherCAT 4X
(EtherCAT)



Ezi-SERVO II Plus-E
(Ethernet)



Ezi-SERVO II Plus-E MINI
(Ethernet / Mini Type)



Ezi-SERVO II CC-Link
(CC-Link)



Ezi-SERVO ST
(Pulse Input)

● Motor, Drive Combination

Unit Part Number	Gearbox Model Number	Motor Model Number	DRIVE						
			Ezi-SERVO ST	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link
RB-HB60-05-42XL-A-□	HB60-05	EzM-42XL-A	O	O	O	O	O	O	O
RB-HB85-05-56L-A-□	HB85-05	EzM-56L-A	O	O	O	O	O	O	O
RB-HB130-05-60L-A-□	HB130-05	EzM-60L-A	O	O	O	O	O	O	O

※ ① Ezi-SERVO II series motors are applied to EzM2 series motors
② Encoder resolution can be specified by customer.

How to Read Specifications

Model Name		RB-HB60-05-42XL
① Type of output table supporting bearing		Ball Bearing
② Permissible torque	[N·m]	2.7
③ Inertia moment	[kg·m^2]	500 × 10^{-7}
④ Permissible speed	[rpm]	300
⑤ Gear ratio		1:5
⑥ Maximum holding torque	[N·m]	2.2
⑦ Repetitive positioning accuracy	[arcsec]	±30(0.0083°)
⑧ Lost motion	[arcmin]	6
⑨ Angular transmission error	[arcmin]	10
⑩ Permissible axial load	[N]	100
⑪ Permissible moment load	[N·m]	2
⑫ Runout of output table surface	[mm]	0.015
⑬ Runout of output table inner/outer diameter	[mm]	0.015
⑭ Parallelism of output table	[mm]	0.03
⑮ Degree of protection*1		IP40
⑯ Mass	[kg]	1.1

*1 : IP20 for motor connector

Description of Specification Items

① Type of output table supporting bearing The type of the bearing used for the output table.

② Permissible torque The mechanical strength limit of reduction mechanism. Make sure that the applied torque, including acceleration and load fluctuations, does not exceed this permissible torque.

③ Inertia moment The total of inertia moment of rotor of motor, reduction mechanism and output table converted from output table side.

④ Permissible speed The output table speed can be tolerated by the mechanical strength of the reduction gear mechanism.

⑤ Gear ratio The tooth ratio of the two gears constituting the reduction mechanism.

⑥ Maximum holding torque The maximum torque that the output table can maintain the current position when the motor is excited.

⑦ Repetitive positioning accuracy The degree of error when repeatedly positioning to the same location in the same direction.

⑧ Lost motion The difference between forward and reverse stop positions for the same destination. It is mainly caused by backlash of gears.

⑨ Angular transmission error The difference between the target rotation angle and the actual rotation angle of the output table

⑩ Permissible axial load The permissible value of thrust load applied to the output table in the axial direction.

⑪ Permissible moment load When load is applied to a position deviating from the center of rotation of the output table, a tilting force acts on the output table. This is the allowable value of the moment load calculated by multiplying the displacement from the center of rotation and the load.

⑫ Runout of output table surface The maximum value of runout of the mounting surface of the output table when the output table rotates without load.

⑬ Runout of output table inner/outer diameter The maximum value of runout of the inner diameter or outer diameter of the table when the output table rotates without load.

⑭ Parallelism of output table The angle at which the mounting surface of the actuator body and the mounting surface of the output table are inclined

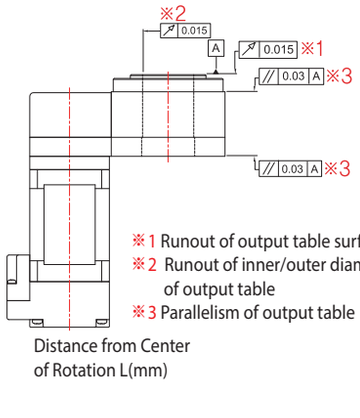
⑮ Degree of protection The grade of the equipment classified as dustproof and waterproof based on IEC 60529, EN60034-5 (=IEC60034-5)

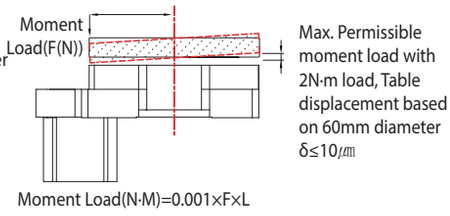
⑯ Mass The total weight of all parts, including the output table, reduction mechanism, motor and so on that make up the actuator.

● Specifications of Motor [HB60 Series]

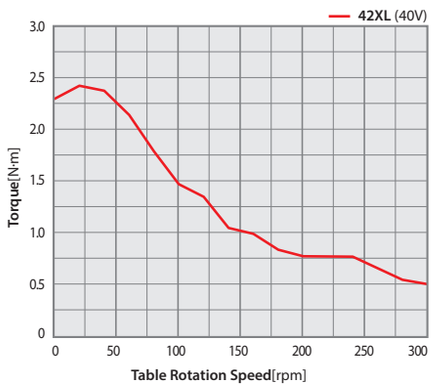
Model Name		RB-HB60-05-42XL
Type of output table supporting bearing		Ball Bearing
Permissible torque	[N·m]	2.7
Inertia moment	[kg·m^2]	500 × 10^{-7}
Permissible speed	[rpm]	300
Gear ratio		1:5
Maximum holding torque	[N·m]	2.2
Repetitive positioning accuracy	[arcsec]	±30(0.0083°)
Lost motion	[arcmin]	6
Angular transmission error	[arcmin]	10
Permissible axial load	[N]	100
Permissible moment load	[N·m]	2
Runout of output table surface	[mm]	0.015
Runout of output table inner/outer diameter	[mm]	0.015
Parallelism of output table	[mm]	0.03
Degree of protection*1		IP40(IP20 for motor Connector)
Mass	[kg]	1.1

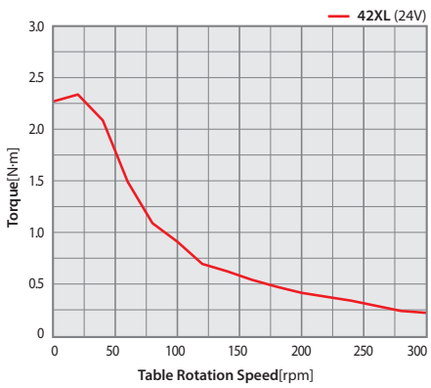
*1 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

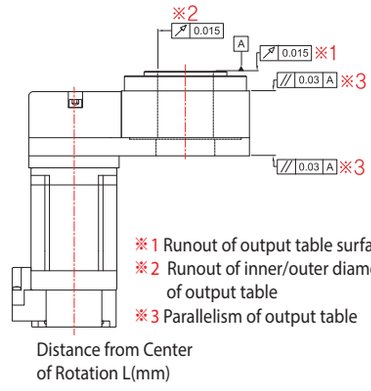


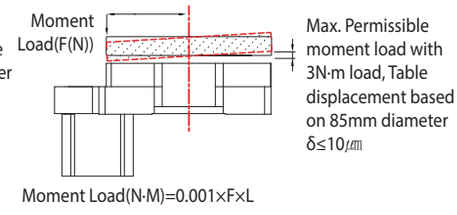


● Specifications of Motor [HB85 Series]

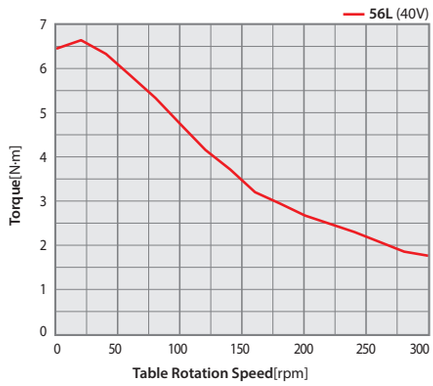
Model Name		RB-HB85-05-56L
Type of output table supporting bearing		Ball Bearing
Permissible torque	[N·m]	7
Inertia moment	[kg·m^2]	3,800 × 10^{-7}
Permissible speed	[rpm]	300
Gear ratio		1:5
Maximum holding torque	[N·m]	5.7
Repetitive positioning accuracy	[arcsec]	±30(0.0083°)
Lost motion	[arcmin]	6
Angular transmission error	[arcmin]	10
Permissible axial load	[N]	200
Permissible moment load	[N·m]	3
Runout of output table surface	[mm]	0.015
Runout of output table inner/outer diameter	[mm]	0.015
Parallelism of output table	[mm]	0.03
Degree of protection*1		IP40
Mass	[kg]	3.1

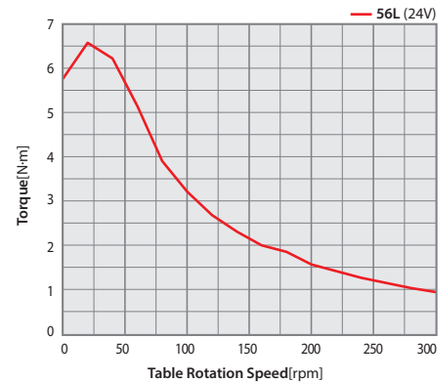
*1 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

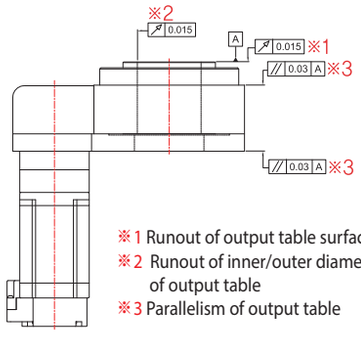




● Specifications of Motor [HB130 Series]

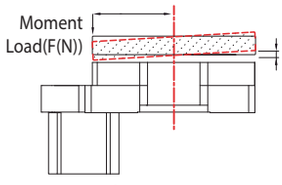
Model Name		RB-HB130-05-60L
Type of output table supporting bearing		Ball Bearing
Permissible torque	[N·m]	12.8
Inertia moment	[kg·m^2]	15,500 × 10^{-7}
Permissible speed	[rpm]	300
Gear ratio		1:5
Maximum holding torque	[N·m]	7.8
Repetitive positioning accuracy	[arcsec]	±30(0.0083°)
Lost motion	[arcmin]	6
Angular transmission error	[arcmin]	10
Permissible axial load	[N]	500
Permissible moment load	[N·m]	5
Runout of output table surface	[mm]	0.015
Runout of output table inner/outer diameter	[mm]	0.015
Parallelism of output table	[mm]	0.03
Degree of protection*1		IP40
Mass	[kg]	4.0

*1 : IP20 for motor connector



※1 Runout of output table surface
※2 Runout of inner/outer diameter of output table
※3 Parallelism of output table

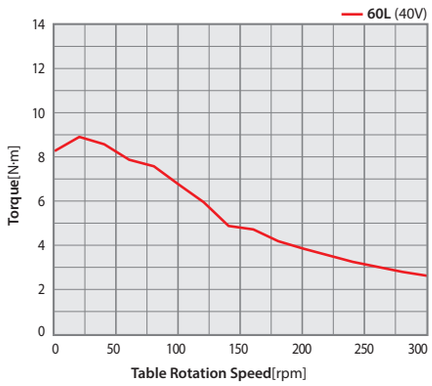
Distance from Center of Rotation L(mm)

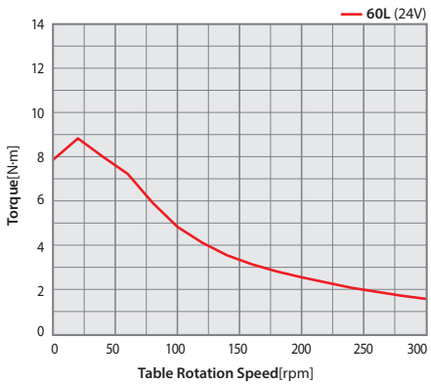


Max. Permissible moment load with 5N·m load, Table displacement based on 130mm diameter δ≤10㎛

Moment Load(N·M)=0.001×F×L

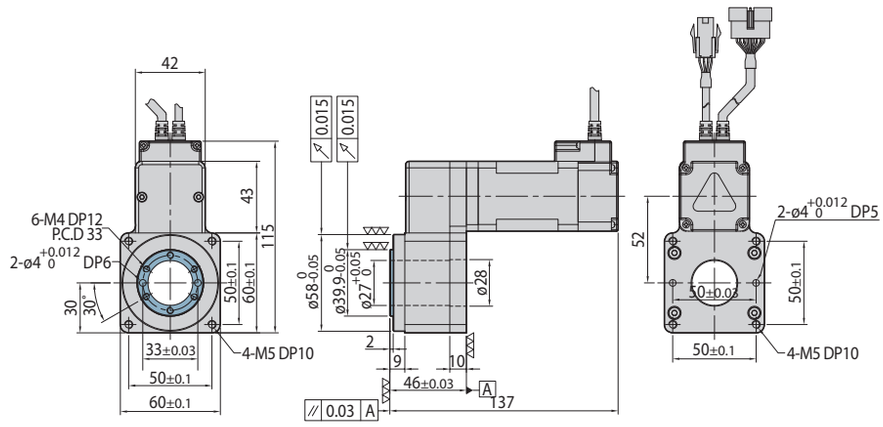
Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	



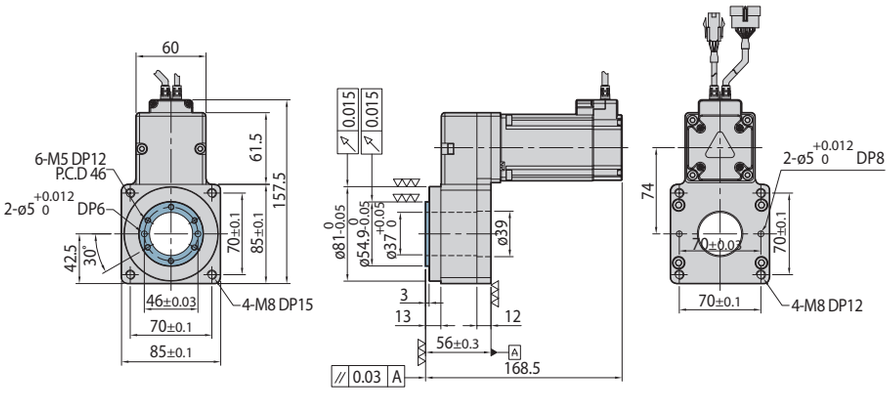


● Dimensions of Motor [mm]

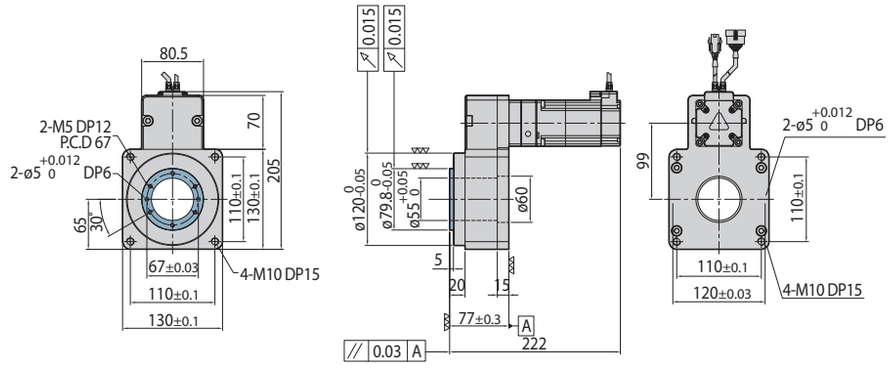
RB-HB60-05-42XL-A-□



RB-HB85-05-56L-A-□



RB-HB130-05-60L-A-□



※ The above drawing is made based on EzM series.
□is the type of drive.

● Mechanical Part Option [Home-sensor Set]

In order to simplify configuring the homing operation on the rotary table, there is an option to configure the home sensor set with Photo Micro Sensor, connector cable, shield plate and mounting screw. Since all the parts necessary for home detection are provided, it is possible to save the effort to design, manufacture and procure parts when the origin sensor is needed and it can be installed and used immediately.

1. Type

Model	Sensor output	Applicable product
OSHG-A	NPN	HB60, HB85, HB130
OSHG-B	PNP	

2. Home-sensor Set Composition OSHB-A



3. Specifications

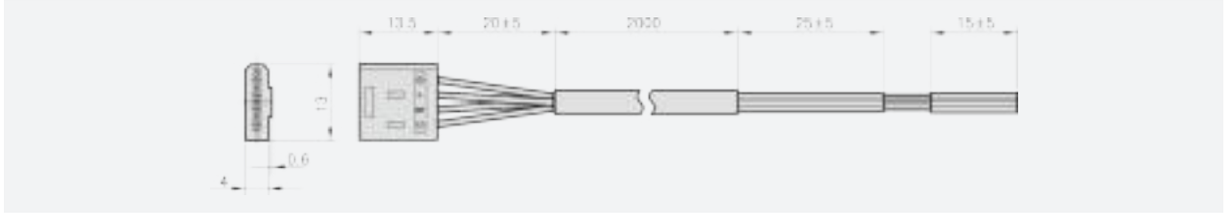
Times	NPN Type	PNP Type
Sensor Model	EE-SX672A(OMRON Product)	EE-SX672A(OMRON Product)
Input Voltage	5~24VDC ±10% Ripple(P-P) 10% less	5~24VDC ±10%, Ripple(P-P) 10% less
Current Consumption	35mA less	30mA less
Control Output	NPN Open Collector output 5~24VDC 100mA less Residual Voltage 0.8V less(at load current of 100mA)	PNP Open Collector output 5~24VDC 100mA less Residual Voltage 1.3V less(at load current of 100mA)
Display LED	Detection(Red)	Detection(Red)
Sensor Logic	Normally Open / Normally Closed (Switchable, Depending on connection)	Normally Open / Normally Closed (Switchable, Depending on connection)

4. Cable with connector(OMRON robot ode attached connector EE1010-R)

· Terminal Layout

①	⊕	Brown
②	L	Pink
③	OUT	Black
④	⊖	Blue





5. Precautions for installing home sensor.

Please note the followings when installing the home sensor set.

- Keep the operating temperature below 40℃ and the motor surface temperature below 90℃
- When configuring the homing function using the shaft of the motor, Prepare an individual sensor and bracket.

6. Precautions for extending the sensor cable

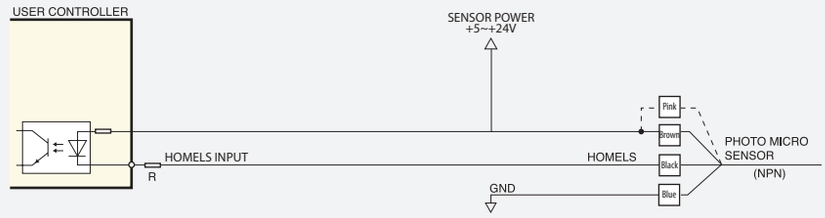
Sensor shield should be cabled and grounded if extended to more than 2m long.

● Mechanical Part Option [Home-sensor Installation]

1. NPN Type

Please use 5~24VDC power supply and configure the active current to 5~20mA. Connect external resistor if it exceeds 20mA.
The GND of the power supplies of the sensor and user controller must be common.

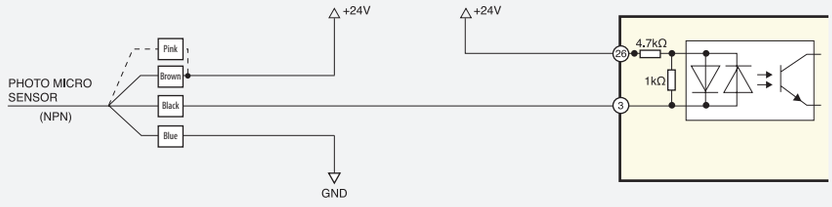
· Pulse Train Input unit



N.C (Normal Closed) : Connect Pink lead wire with Brown lead wire.

N.O (Normal Open) : Do not connect Pink lead wire.

· Controller integrated unit (Example of Ezi-SERVO II Plus-E)



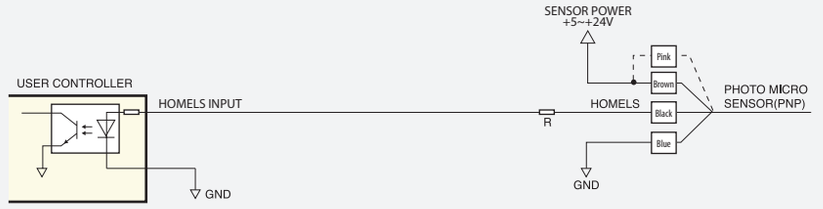
N.C (Normal Closed) : Connect Pink lead wire with Brown lead wire.

N.O (Normal Open) : Do not connect Pink lead wire.

2. PNP Type

Please use 5~24VDC power supply and configure the active current to 5~20mA. Connect external resistor if it exceeds 20mA.
The GND of the power supplies of the sensor and user controller must be common.

· Pulse Train Input unit



N.C (Normal Closed) : Connect Pink lead wire with Brown lead wire.

N.O (Normal Open) : Do not connect Pink lead wire.

· Controller integrated unit (Example of Ezi-SERVO II Plus-E)



N.C (Normal Closed) : Connect Pink lead wire with Brown lead wire.

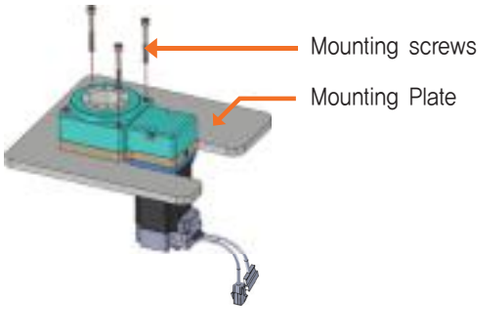
N.O (Normal Open) : Do not connect Pink lead wire.

● Product Installation Method [How to Install the Ezi-Robo HB]

Please refer to the installation method as shown in the picture when attach the actuator to mounting plate in the case of applying HB series.

1 How to Install to the Mounting Plate

(IF the Tab Hole is exist on the mountiong plate)

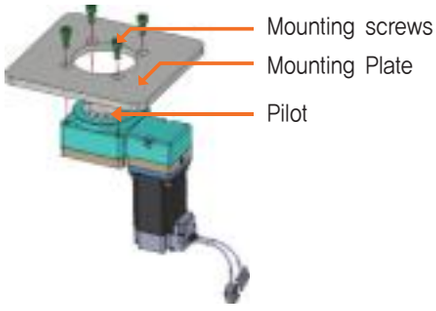


◆ The Screw Specification

Model Name	Dimension
Ezi-Robo HB60	M4 X 45L
Ezi-Robo HB85	M6 X 55L
Ezi-Robo HB130	M8 X 70L

※ Please refer to the table to find the screw dimension. If non-standard bolt is used, it may cause damage to the product, therefore the standard bolt must be used.

2 How to Install to the Actuator Plate



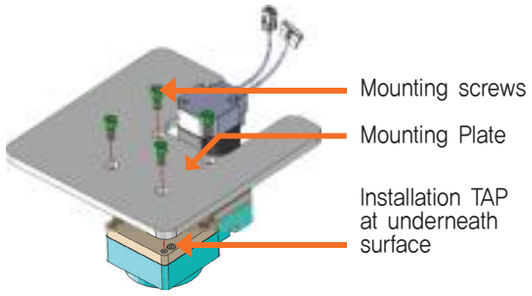
◆ The Screw Specification

Model Name	Dimension
Ezi-Robo HB60	M5 X 15L
Ezi-Robo HB85	M8 X 20L
Ezi-Robo HB130	M10 X 25L

◆ Pilot Dimension

Model Name	Dimension
Ezi-Robo HB60	$\Phi 58\ {}^{0}_{-0.05}$
Ezi-Robo HB85	$\Phi 81\ {}^{0}_{-0.05}$
Ezi-Robo HB130	$\Phi 120\ {}^{0}_{-0.05}$

3 Installation guides with using TAP underneath surface of Actuator

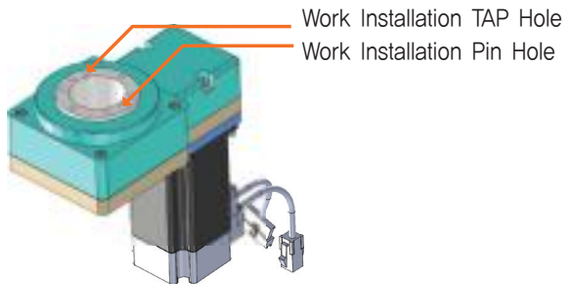


◆ The Screw Specification

Model Name	Dimension
Ezi-Robo HB60	M5 X 15L
Ezi-Robo HB85	M8 X 20L
Ezi-Robo HB130	M10 X 25L

※ Please refer to the table to find the screw dimension. If non-standard bolt is used, it may cause damage to the product, therefore the standard bolt must be used.

4 Work Installation guides on output table

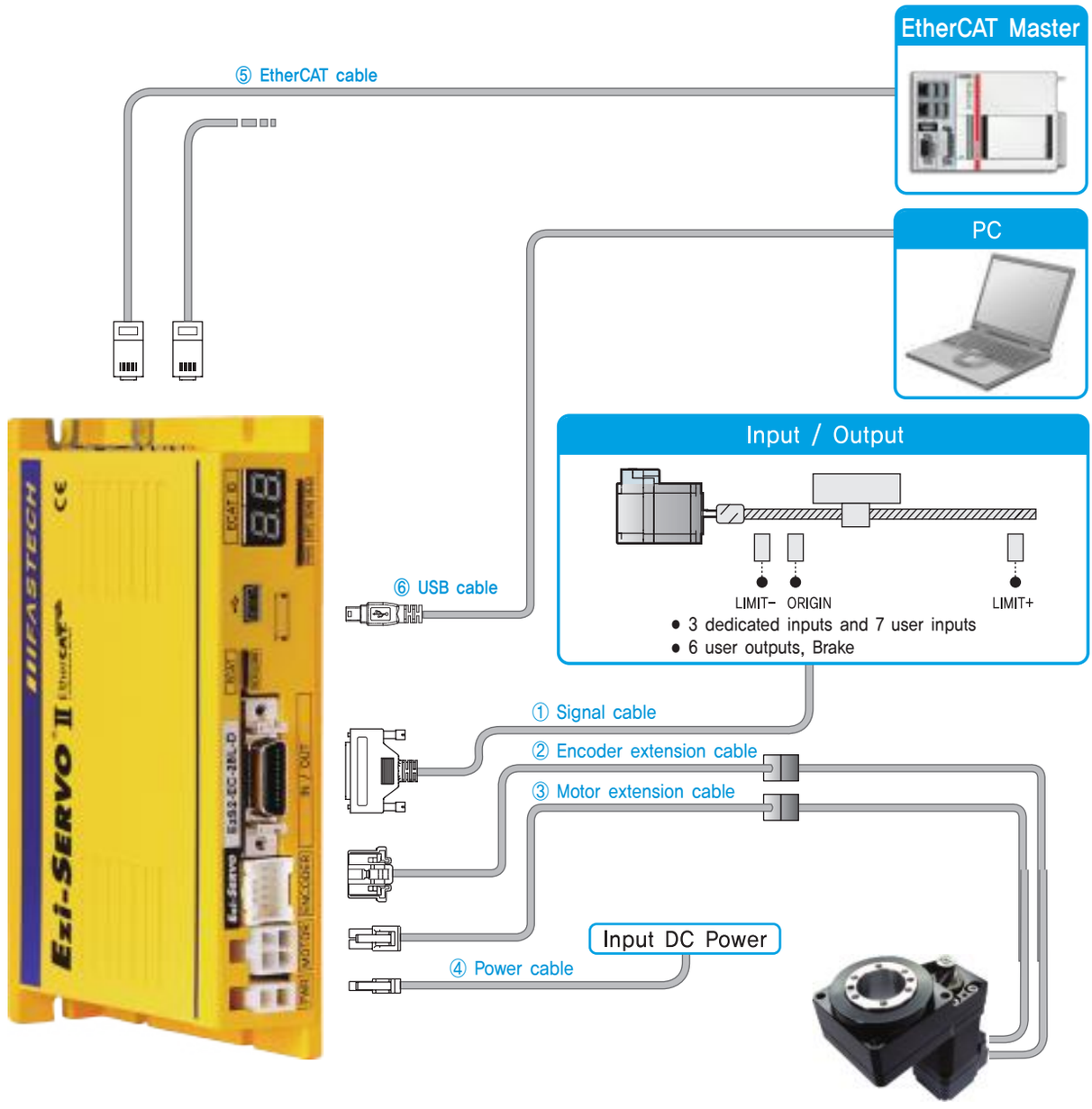


- Please fix work by screw at 6 positions of TAP Hole on output tabler
- Prepared 2 Pin Holes at Output table to set Work (Please use for accurate positioning)
- Please attach positioning pin at Pin Hole of Work in order to use Output Table Work Installation purpose Pin Hole.

◆ Positioning Pin Hole

Model Name	Dimension	Pin Hole
Ezi-Robo HB60	$\Phi 4\ {}^{+0.012}_{0}$ depth6	2
Ezi-Robo HB85	$\Phi 5\ {}^{+0.012}_{0}$ depth6	
Ezi-Robo HB130	$\Phi 5\ {}^{+0.012}_{0}$ depth6	

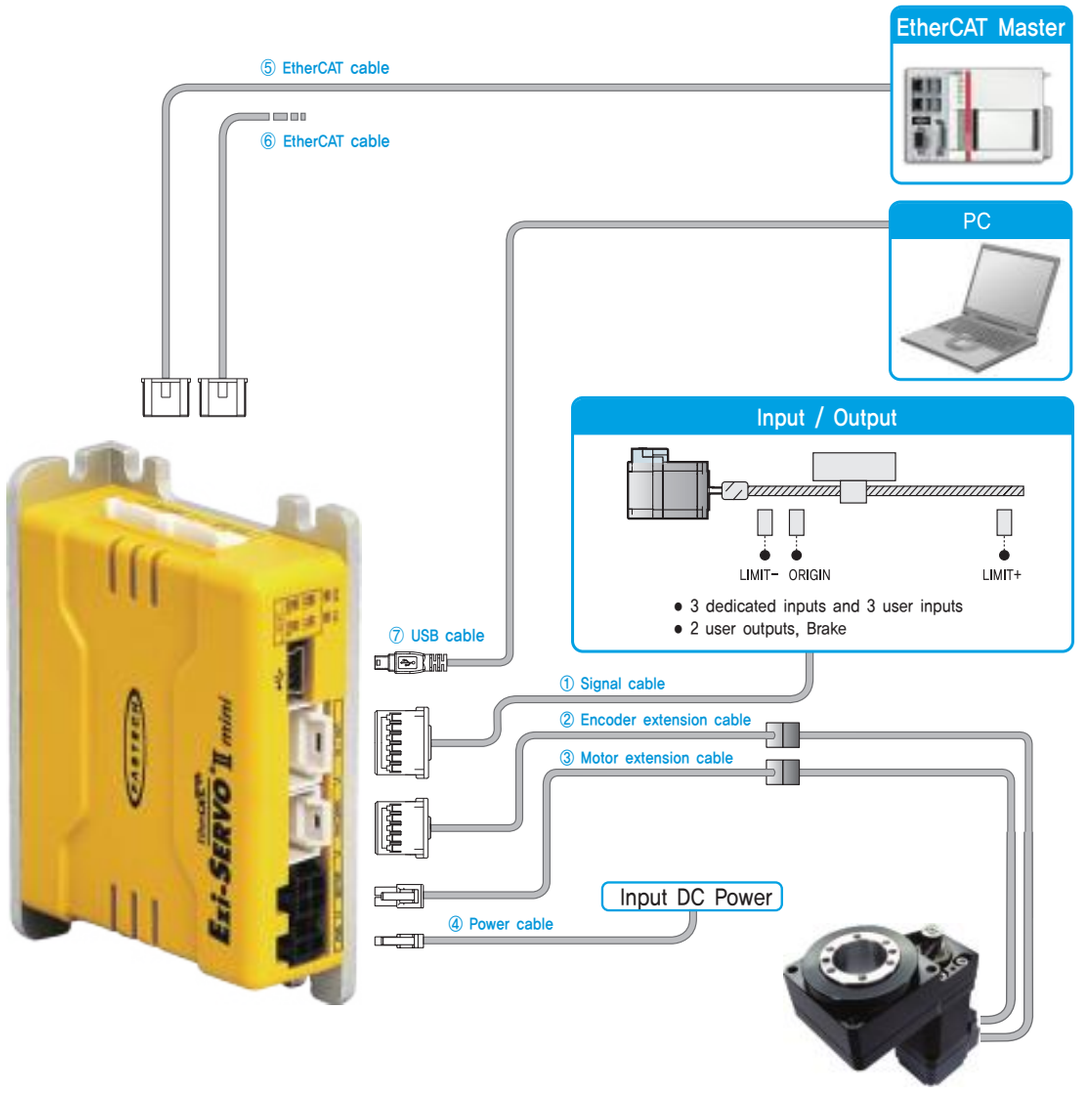
System Configuration [EtherCAT (Ezi-SERVO II EtherCAT)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed Ethernet(100Mbps full-duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT catalog for optional cables, functions and operation.

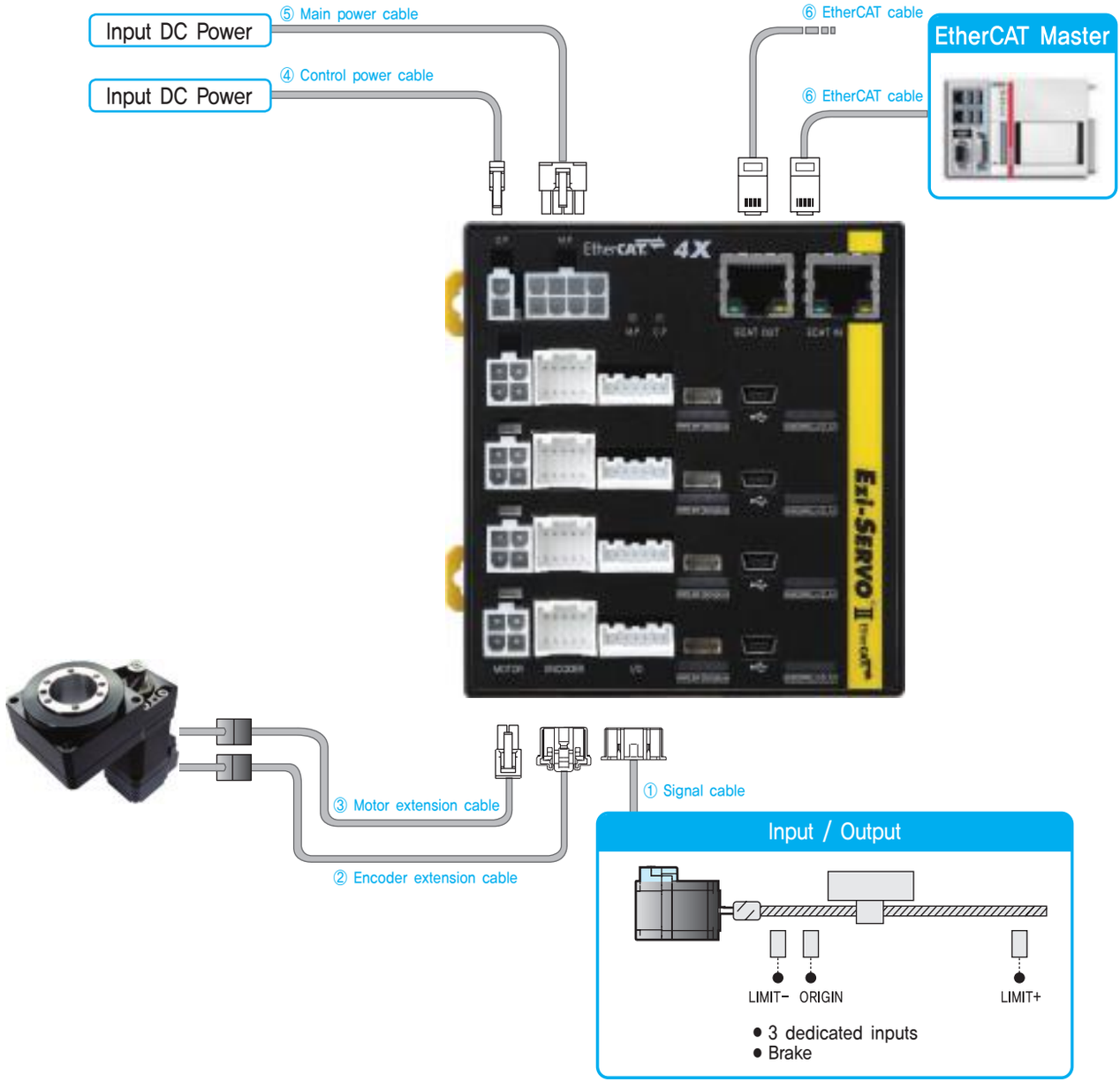
● System Configuration [EtherCAT (Ezi-SERVO II EtherCAT MINI)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT MINI is stepping motor control system using EtherCAT, high speed Ethernet(100Mbps full-duplex) based fieldbus. Ezi-SERVO II EtherCAT MINI is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT MINI catalog for optional cables, functions and operation.

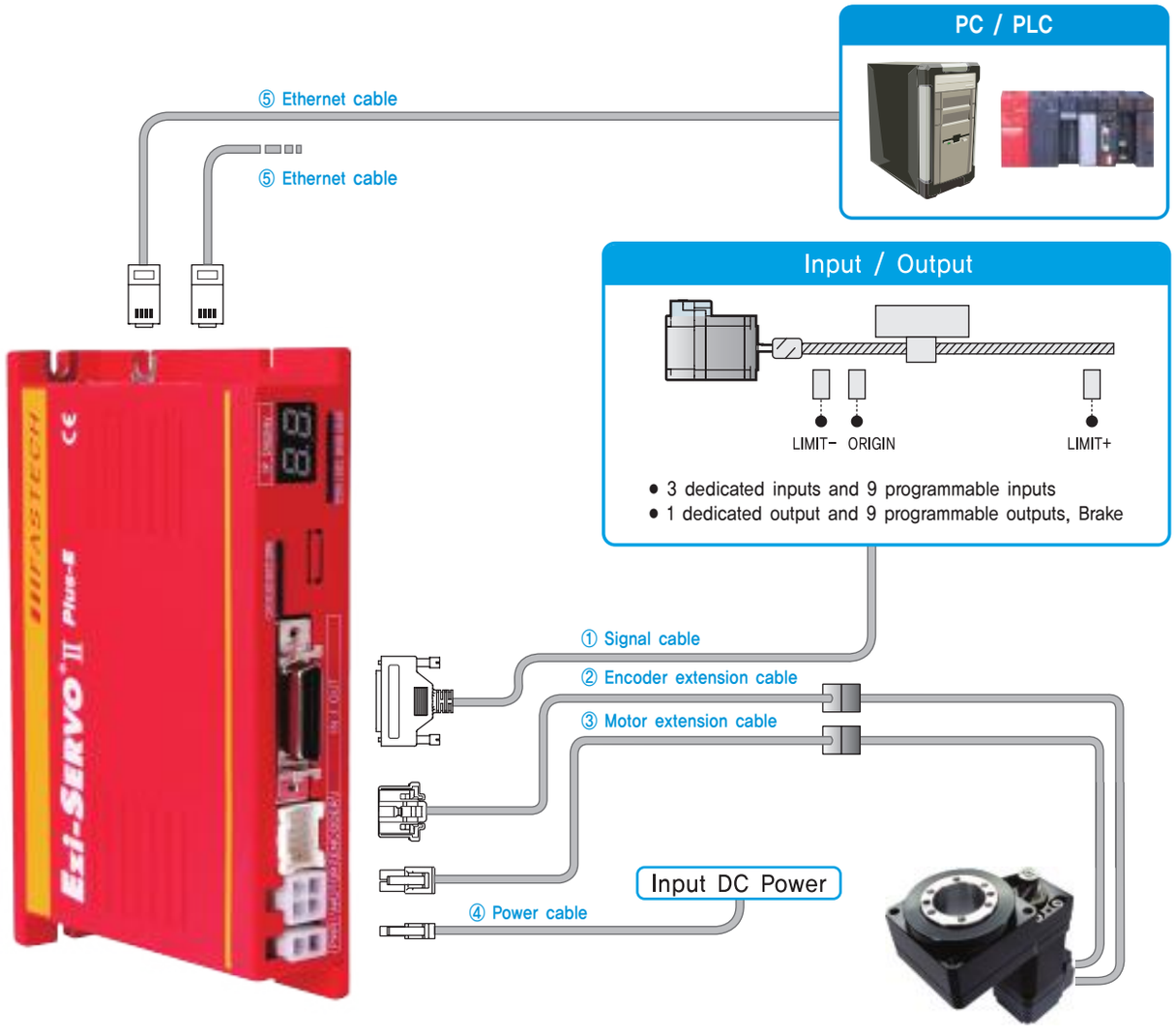
System Configuration [EtherCAT 4X (Ezi-SERVO II EtherCAT 4X)]



Type	Signal Cable	Encoder Cable	Motor Cable	Control Power Cable	Main Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	2m	100m

- Ezi-SERVO II EtherCAT 4X is 4 axis stepping motor control system using EtherCAT, high speed Ethernet(100Mbps full-duplex) based fieldbus. Ezi-SERVO II EtherCAT 4X is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT 4X catalog for optional cables, functions and operation.

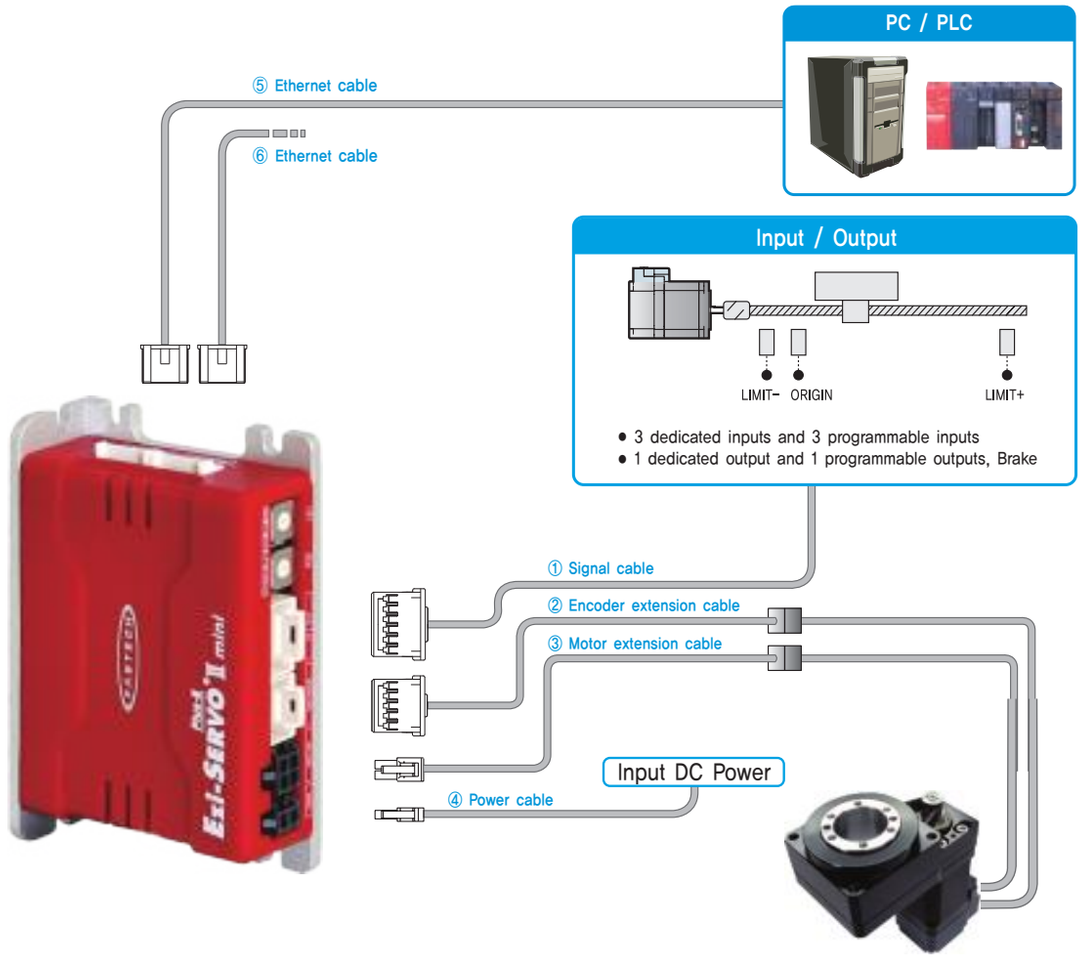
● System Configuration [Ethernet (Ezi-SERVO II Plus-E)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication, and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E catalog for optional cables, functions and operation.

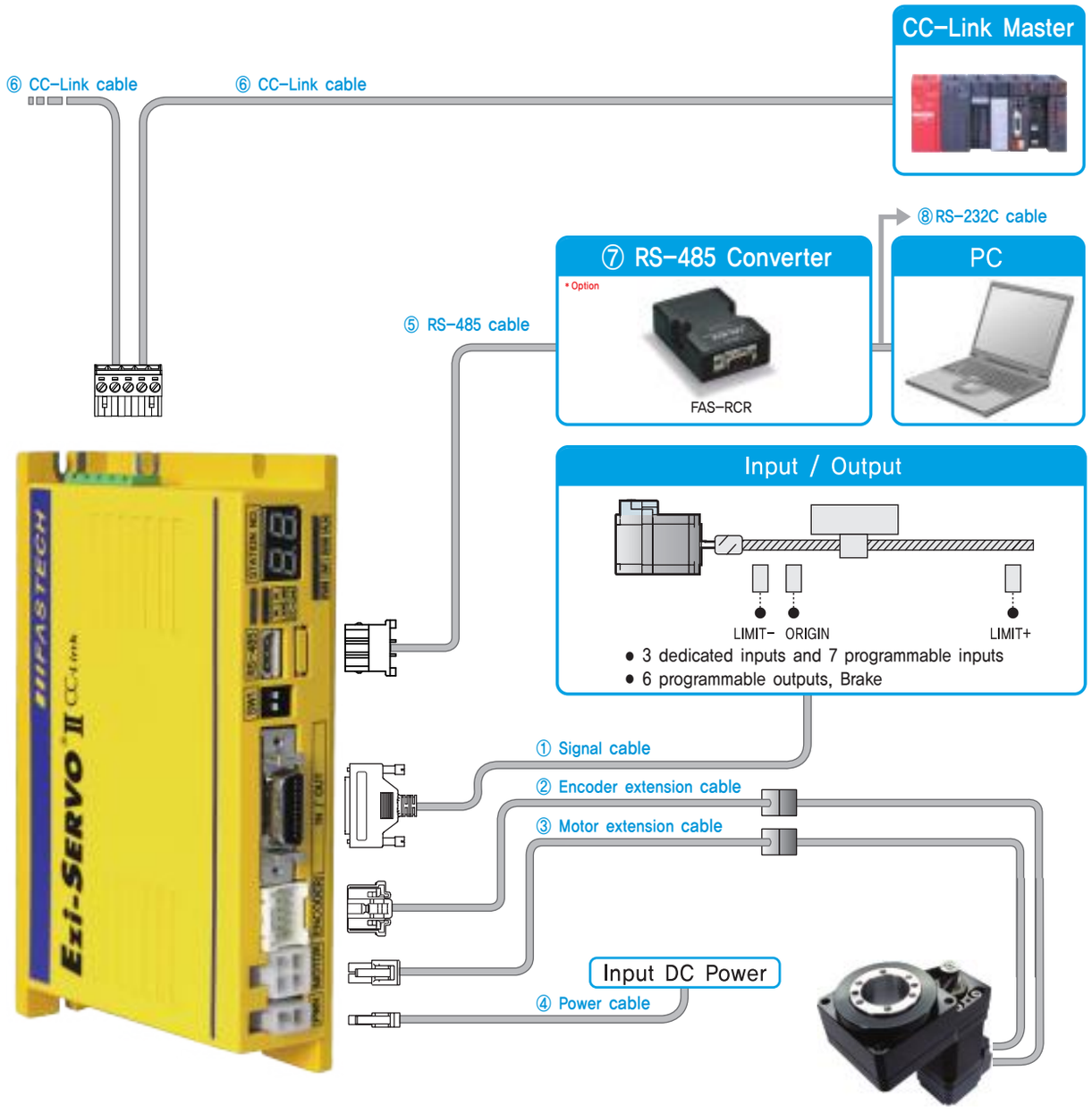
● System Configuration [Ethernet (Ezi-SERVO II Plus-E MINI)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E MINI drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication, and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E MINI catalog for optional cables, functions and operation.

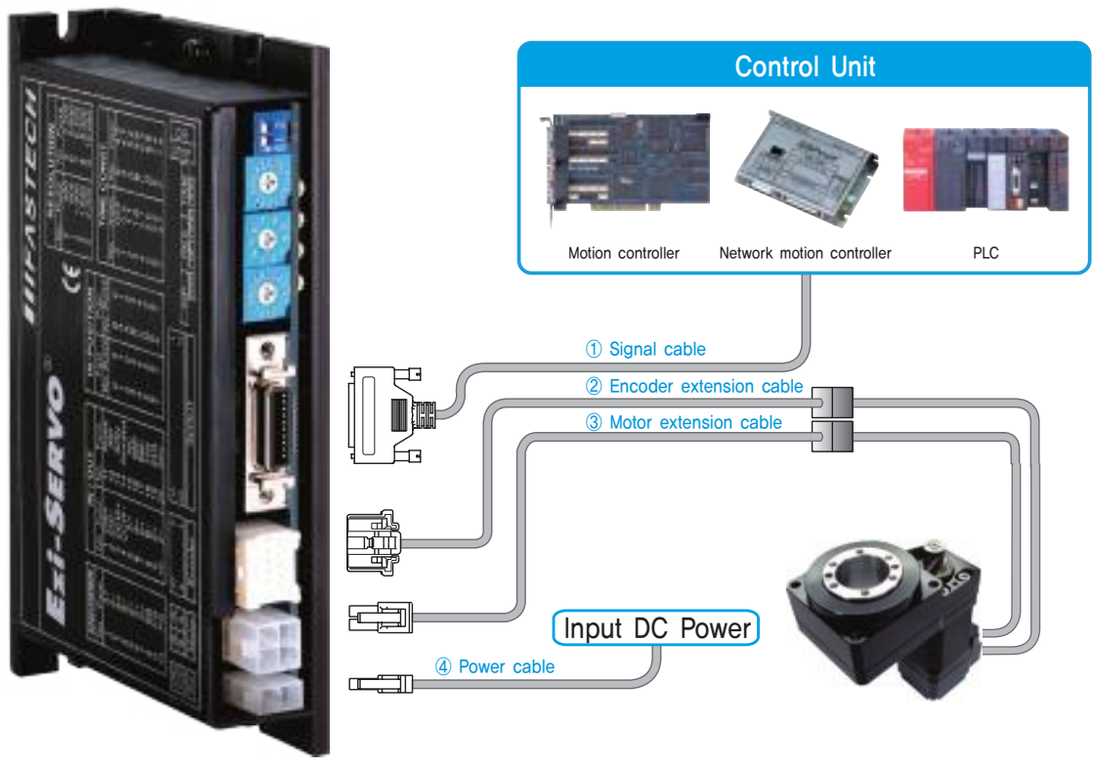
● System Configuration [CC-Link (Ezi-SERVO II CC-Link)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

- Ezi-SERVO II CC-Link is a drive supporting CC-Link , a high speed fieldbus(max. 10Mbps). Ezi-SERVO II CC-Link is a Remote Device module supporting CC-Link network. Multi-function control is possible by occupying 1 station and 2 stations in CC-Link, and motion and monitoring functions are processed by device commands.
- Please refer to the Ezi-SERVO II CC-Link catalog for optional cables, functions and operation.

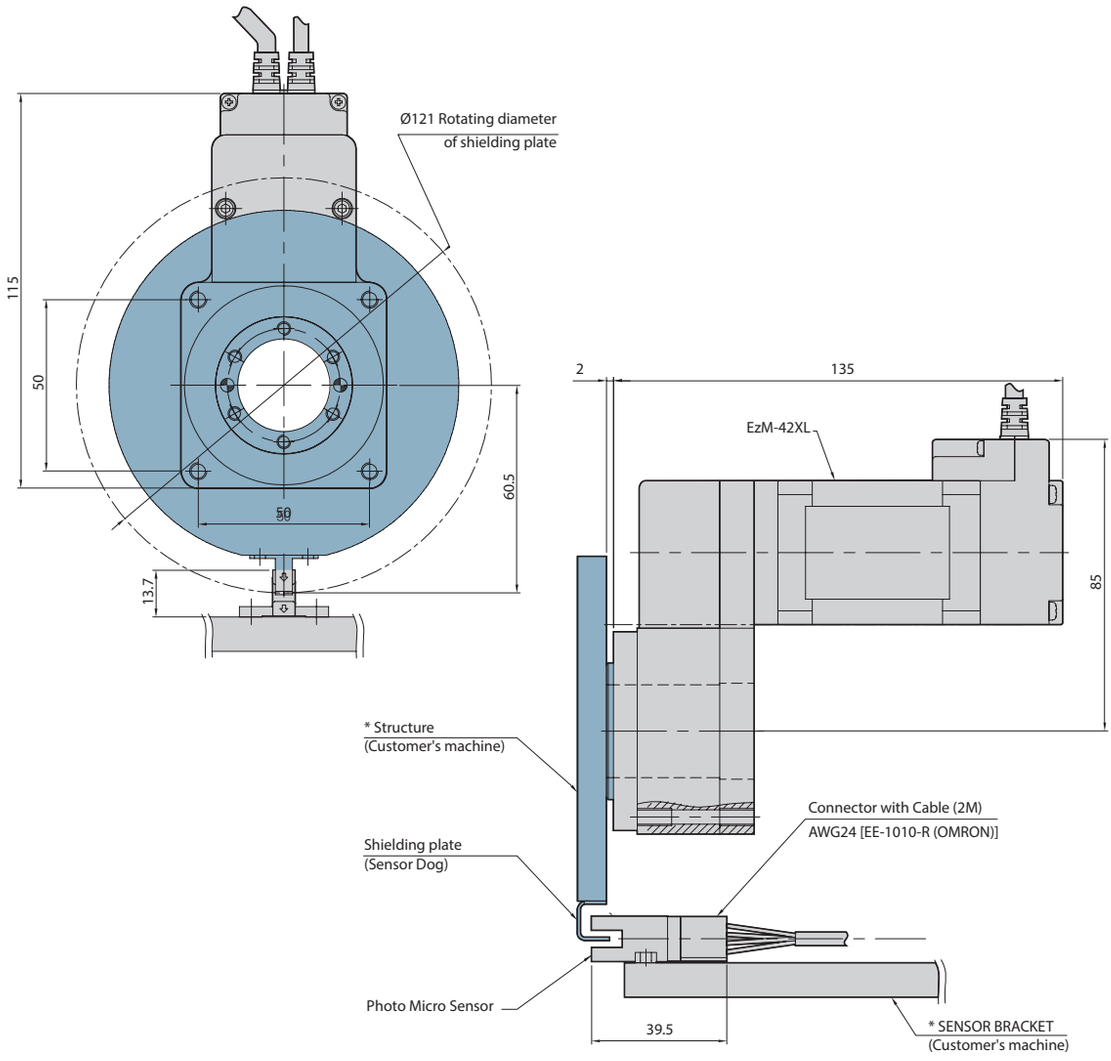
System Configuration [Pulse Input Drive (Ezi-SERVO ST)]



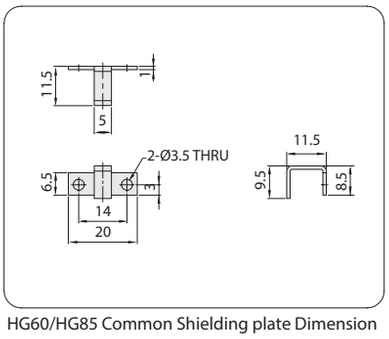
Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

- Ezi-SERVO ST is a pulse input type drive. It is controlled by using of Motion controller, standalone controller or PLC (with positioning module).
- Please refer to the Ezi-SERVO ST catalog for optional cables, functions and operation.

● Dimension of Home-sensor Installation [Ezi-Robo HB60]



- Sensor Dog Dimension -

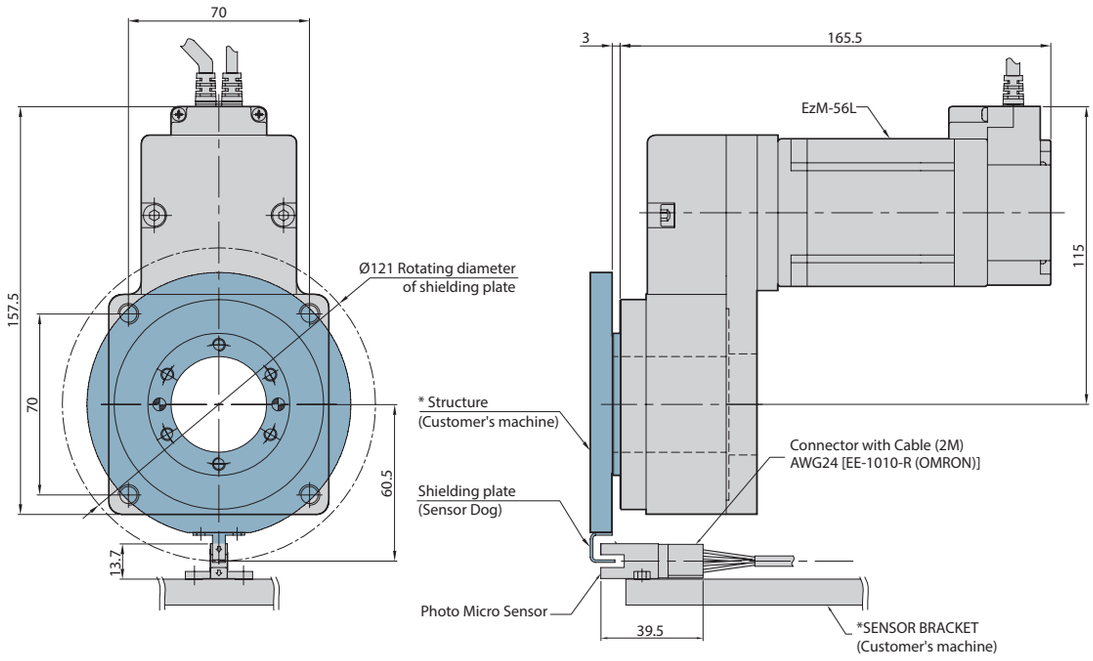


HG60/HG85 Common Shielding plate Dimension

※ The above drawing is made based on EzM series.

This is only example dimention of home-sensor installation and sensor braket and structures are not provided.

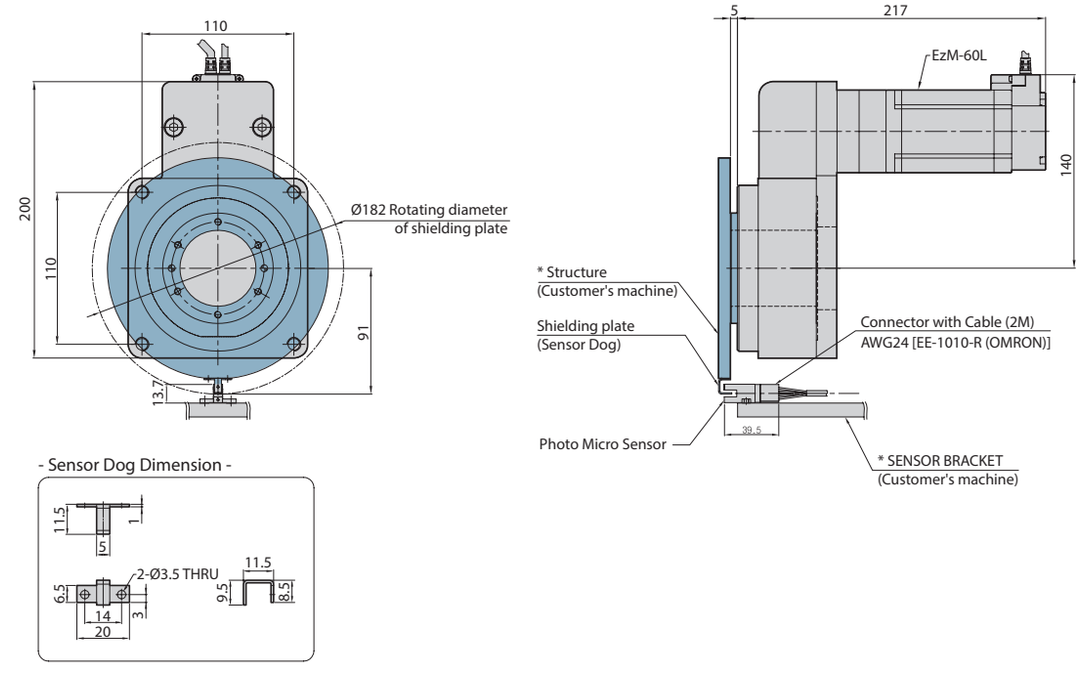
● Dimension of Home-sensor Installation [Ezi-Robo HB85]



※ The above drawing is made based on EzM series.

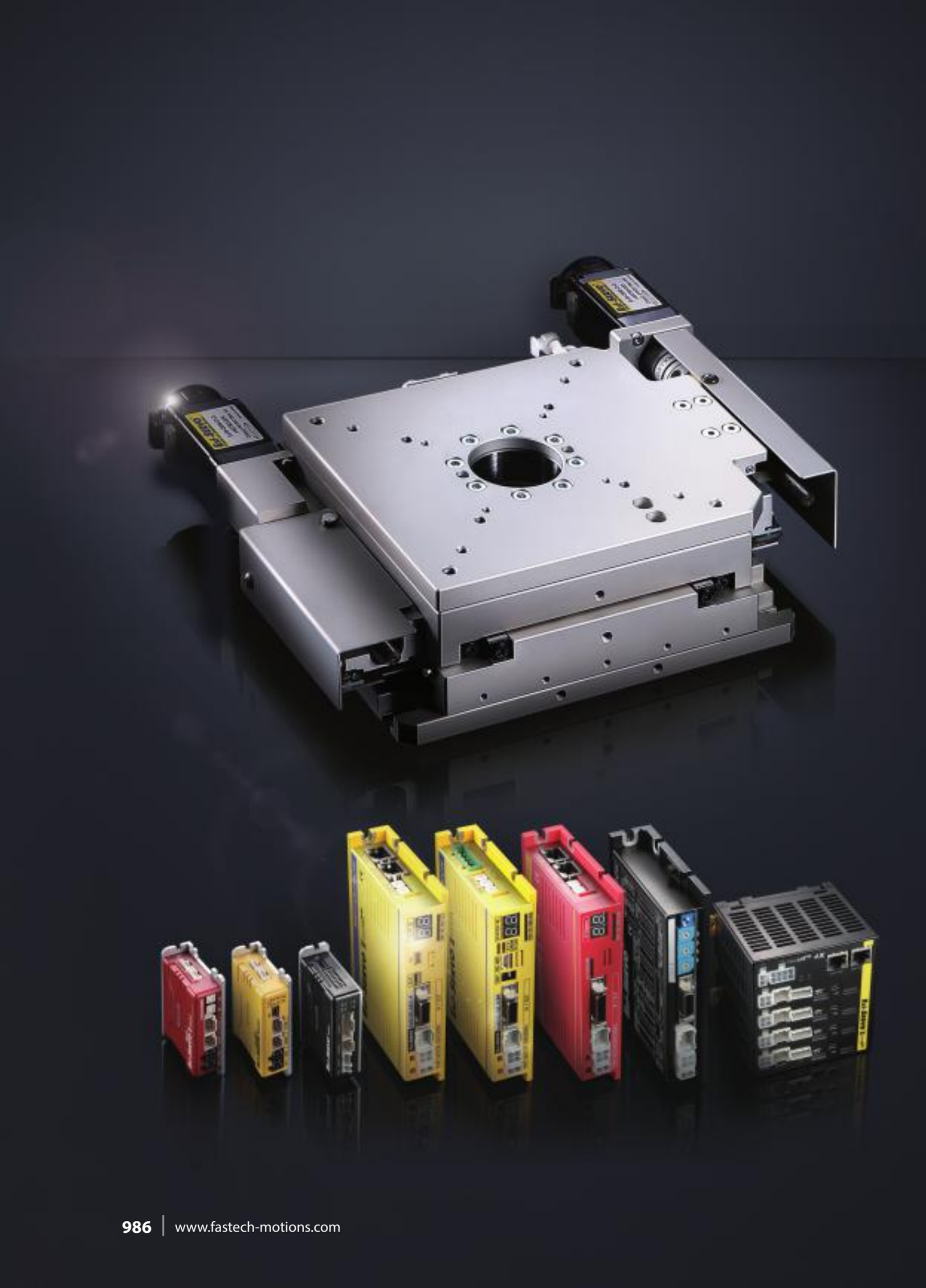
This is only example dimention of home-sensor installation and sensor braket and structures are not provided.

● Dimension of Home-sensor Installation [Ezi-Robo HB130]



※ The above drawing is made based on EzM series.

This is only example dimention of home-sensor installation and sensor braket and structures are not provided.



Ezi-Robo PMS

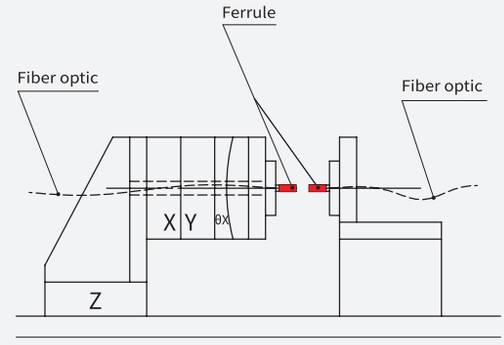
Actuator Series Driven by Ezi-SERVO_ Ezi-Robo PMS

- Unit solution of Ezi-SERVO + Precision Stage
- Ultra-precision XYθ alignment stage capable of high precision positioning
- Improved the position accuracy by using Ezi-SERVO
- EtherCAT, Ethernet, CC-Link Support

Use of positioning stage

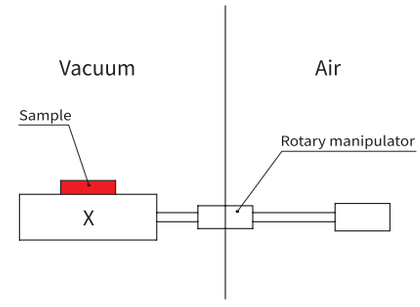
1. Assembly Application Fiber optic alignment

High precision positioning is required to connect fiber optics or optic and the core of optical devices accurately and send the optic without the loss. KOHZU stages can align the positioning from Nanometer scale. High precision alignments to XY direction or angle direction are needed according to the fiber optic types.



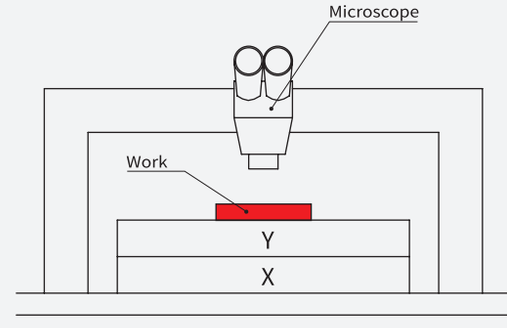
2. Inspection / Measurement Application Motion mechanism for vacuum stage

With the stage installed in the vacuum, connect it to the drive shaft of the stage through the flange using the rotary manipulator at the air side Sample mounted on the stage in vacuum can be aligned the positioning from air side



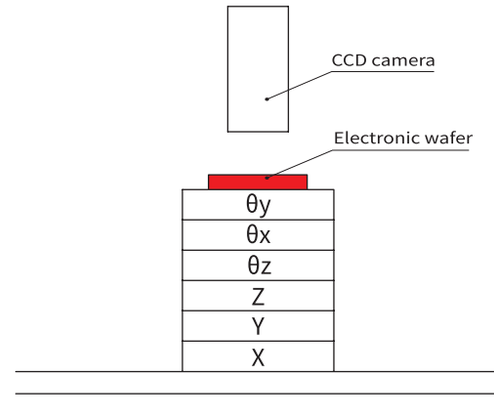
3. Inspection / Measurement Application Microscope observation and measurement

When measuring a workpiece with an optical system such as a microscope from the top, it is necessary to move the workpiece in the X and Y direc–tions. Depending on the degree of work and the optical system, it is necessary to limit the degree of XY distortion to several μm.
Our stage is mainly used for work observation and measurement requiring high precision of μm band and sub micrometer with stroke up to 300mm.



4. Inspection / Measurement Application Various application

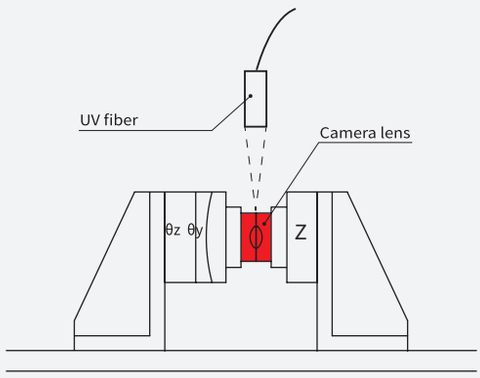
This is an automatic 6 axis stage for observing and inspecting electronic component boards with CCD camera in various directions.
From the bottom, it consists of X, Y, Z, θz, θx, θy. You can also change the motor to a sub motor in order to shorten the tact time.



● Use of positioning stage

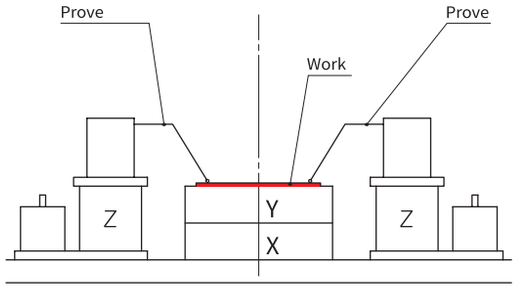
5. Assembly Adjustment Application Camera lens parts such as cellular phone

The Stages can be used for UV bonding of camera lens parts. Positioning is performed in three directions when the other lens part is bonded based on one lens part.



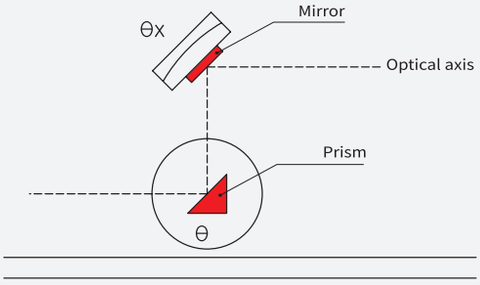
6. Inspection / Measurment Application Prove Tester

Electronic tests on the wafer for semiconductor and liquid crystal devices are measured with probes. XY stages need good accumulated lead error and straightness for touching the tip of probe to the terminal on work accurately and measuring all devices on wafer with same condition. And the repeatability of Z stage is also required for touching the tip of probe on same height every time when probe is up and down during the work positioning.



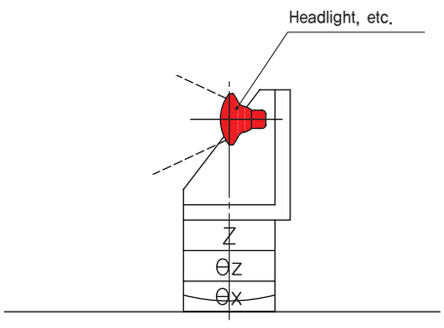
7. Inspection / Measurement Application Optical axis alignment for laser interferometer

Measurements with laser interferometer need the high precision positioning of optical devices(mirror, prism, etc.) on optical axis. And after positioning, they must keep the position stably. KOHZU manual stages which have the clamp mechanism for keeping the position can be used for this measurement.



8. Inspection / Measurement Application Lamp measurement

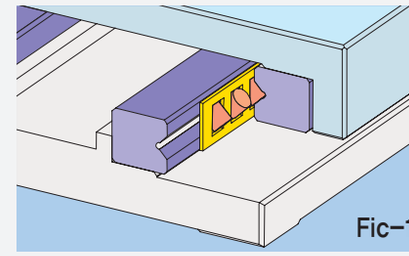
When measuring the light distribution of headlights, stage lights, and show-window lights in automobiles, tilt the lamp vertically and hori-zontally to measure the illuminance at the specified distance. In particular, automotive headlights require highly reliable measurements based on strict standards for safety. In addition, when the size of the workpiece changes, a Z stage is required at the top to align the center of the workpiece with the center of rotation. Stage requires high rigidity because it is mount relatively heavy weight



● Guide Mechanism Type

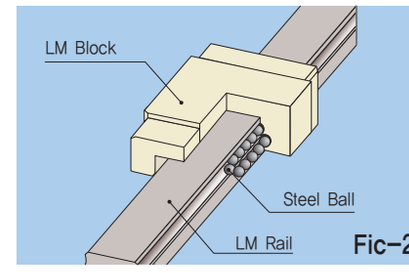
1. Cross -Roller Guide

In cross-roller guides, quench hardened and precision ground bearing surfaces move upon loose hardened steel cylinders(rollers) with rotation axis oriented in alternating 90 degree angles(Ref. Fig.1). Having rollers arranged in an alternating cross pattern allows preloading and operation at any angle. The roller bearings are held apart from one another by a bearing cage, which prevents adjacent rollers from touching. Since cross roller bearings have little difference between static and dynamic friction they minimize start-to-stop slip-motion typical of other bearing types. The line contact of roller bearings along with precise roller-to-race gap management provide larger load-bearing surfaces, higher preloads and meet very tight runout and stiffness specifications.


Fic-1

2. Linear Guide

The linear guide system consists of a LM rail and steel ball(see Fig. 2). The ball rolls in the groove of the rail, is picked up by an end cap at the LM block, passes through the circulating hole in the LM block main body, and returns to the other end. Since the sliding surface is fabricated by quenching and abrasive finishing, the rail surface is precise, flat and hard. The ball is set in the pseudocylinder shaped groove formed by the sliding surface. Since the pseudo-cylinder surface and the bearing are in contact with each other at two points or four points, slipping does not easily occur.

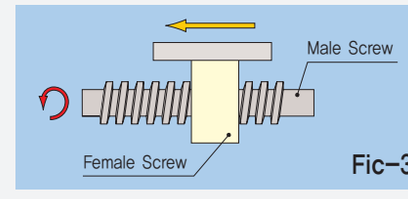


Fic-2

● Lead Mechanism Type

1. Ground Screw

The ground screw is ground at high precision and is held in place by a female screw(see Fig. 3). Since the ground screw and female screw are in contact with each other over a wide area, they do not move even if a horizontal load is applied to the stage. Also compared with the ball screw, the feed distance per rotation can be reduced to improve the resolution.



Fic-3

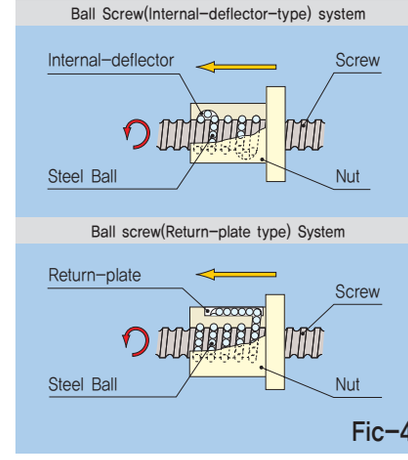
2. Ball screw

The ball screw consists of a screw spindle, a nut, and steel ball between them(Fig. 4). When the screw is rotated, the ball rolls and moves between the ball screw and the nut, and then returns to its original position. Since a ball is rolled, the friction is low, a high transmission efficiency is obtained, the difference between static friction and dynamic friction is small, and stick-slip does not easily occur

※ Resolution : The resolution of the stage can be obtained by the calculation below.

$$\Delta X = \left(\frac{p \cdot \Delta\theta}{360m} \right)$$

ΔX : Resolution(mm)
$\Delta\theta$: Basic step angle of motor(°)
p : Lead of sending screw(mm)
m : Number of micro-step interpolation



Fic-4

● Ezi-Robo PMS series Model List

Title	Standard Unit Paty No.	Motor Part No.	Imr
X	Ezi-Robo-PMS-□□-28M-D-XA05A-R201 / Ezi-Robo-PMS-□□-28M-D-XA07A-R201	EzM-28M-D	
XY	Ezi-Robo-PMS-□□-28M-D-YA05A-R201 / Ezi-Robo-PMS-□□-28M-D-YA07A-R201	EzM-28M-D	
Z	Ezi-Robo-PMS-□□-42M-□-ZA07A-W2C01	EzM-42M-■	
	Ezi-Robo-PMS-□□-42M-□-ZA07A-X102	EzM-42M-■	
θ	Ezi-Robo-PMS-□□-28M-D-RA07A-T01	EzM-28M-D	
Swivel (Gonio)	Ezi-Robo-PMS-□□-28M-D-SA05A-R2T / Ezi-Robo-PMS-□□-28M-D-SA05A-R2M	EzM-28M-D	
	Ezi-Robo-PMS-□□-28M-D-SA05A-R2S	EzM-28M-D	
	Ezi-Robo-PMS-□□-28M-D-SA07A-R2T / Ezi-Robo-PMS-□□-28M-D-SA07A-R2M	EzM-28M-D	
	Ezi-Robo-PMS-□□-28M-D-SA07A-R2S	EzM-28M-D	
XYθ	Ezi-Robo-PMS-□□-28M-D-YRA-071-KO	EzM-28M-D	
	Ezi-Robo-PMS-□□-28M-D-YRA-130-KO	EzM-28M-D	

※ □□ is Drive series.
■ is Drive resolution.

● Ezi-Robo PMS Part Numbering

Ezi-Robo-PMS-ST-28M-D-□

Product Name

Drive Series

EC : EtherCAT
EC-MI : EtherCAT Mini Type
EC-4X : EtherCAT 4 axis
PE : Plus Ethernet
PE-MI : Plus Ethernet Mini Type
CL : CC-Link
ST : Pulse Input
MI : Pulse Input Mini Type

Motor Flange Type

28 : 28mm
42 : 42mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000[ppr]
D : 16,000[ppr]

User Code

X : XA05A-R201
XA07A-R201

XY : YA05A-R201
YA07A-R201

Z : ZA07A-W2C01
ZA07A-X1

θ : RA07A-T01

Swivel(Gonio) :
SA05A-R2T
SA05A-R2M
SA05A-R2S
SA07A-R2T
SA07A-R2M
SA07A-R2S

XYθ : YRA-071-K0
YRA-130-K0

● Applicable Product Line-up

Product	Specification
Ezi-SERVO II EtherCAT	Embedded EtherCAT
Ezi-SERVO II EtherCAT MINI	Embedded EtherCAT Mini Type
Ezi-SERVO II EtherCAT 4X	Embedded EtherCAT 4 axis
Ezi-SERVO II Plus-E	Ethernet based controller integrated product
Ezi-SERVO II Plus-E MINI	Ethernet based controller integrated product Mini Type
Ezi-SERVO II CC-Link	Embedded CC-Link
Ezi-SERVO ST	Pulse Input Type
Ezi-SERVO MINI	Pulse Input Mini Type



Ezi-SERVO II EtherCAT
(EtherCAT)



Ezi-SERVO II EtherCAT MINI
(EtherCAT / Mini Type)



Ezi-SERVO II EtherCAT 4X
(EtherCAT)



Ezi-SERVO II Plus-E
(Ethernet)



Ezi-SERVO II Plus-E MINI
(Ethernet / Mini Type)



Ezi-SERVO II CC-Link
(CC-Link)



Ezi-SERVO ST
(Pulse Input)



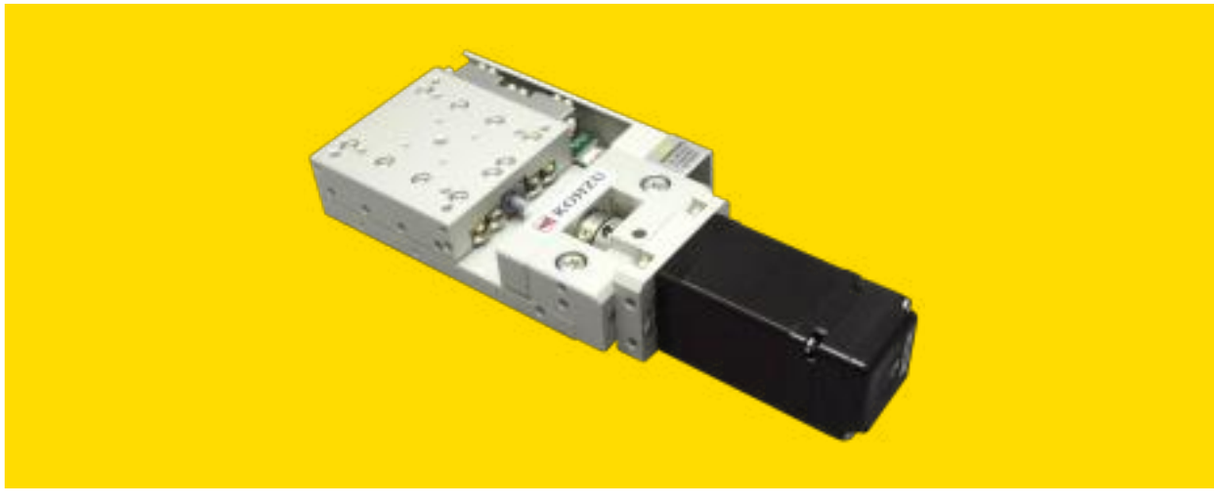
Ezi-SERVO MINI
(Pulse Input / Mini Type)

● Motor, Drive Combination

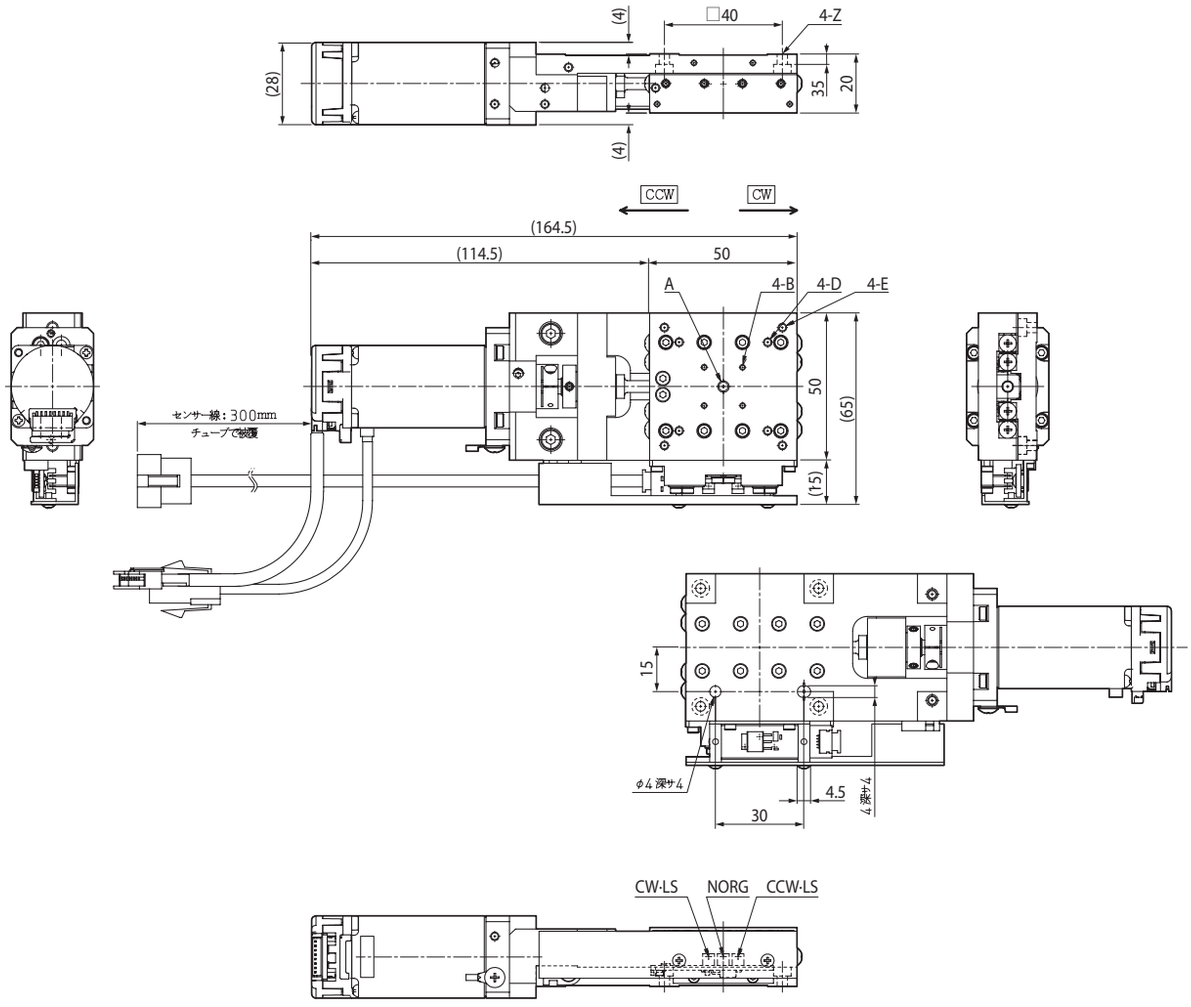
Unit Part Number	Motor Model Number	Drive							
		Ezi-SERVO ST	Ezi-SERVO MINI	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link
XA05A-R201-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
XA07A-R201-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
YA05A-R201-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
YA07A-R201-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
ZA07A-W2C01-42M01	EzM-42M-A	O	O	O	O	O	O	O	O
ZA07A-X102-42M01	EzM-42M-A	O	O	O	O	O	O	O	O
RA07A-T01-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
SA05A-R2T-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
SA05A-R2M-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
SA05A-R2S-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
SA07A-R2T-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
SA07A-R2M-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
SA07A-R2S-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
YRA-071-28M01	EzM-28M-D	O	O	O	O	O	O	O	O
YRA-130-28M01	EzM-28M-D	O	O	O	O	O	O	O	O

※ The motor size can be changed among the same series.

● Slim High-Precision X Stage(XA05A-R201) Table Size: 50×50



◆ Ezi-Robo-PMS-□□-28M-D-XA05A-R201



Main Features

- High precision ultra-slim X Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

Model Number	Ezi-Robo-PMS-□□-28M-D-XA05A-R201
	X Specification
Table Size	50×50mm
Motion Range	±7.5mm
Lead Mechanism	Ball screw, Lead 1.0mm
Hight	20mm
Guide	Cross Roller Guide
Resolution *1	1㎛
Max. Speed	5mm/sec
Repeatability(X)	Less ±0.2㎛
Lost Motion	Less 0.5㎛
Straightness	Less 1㎛ / 15mm
Backlash	Less 0.2㎛
Motor	EzM-28M(FASTECH)

*1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

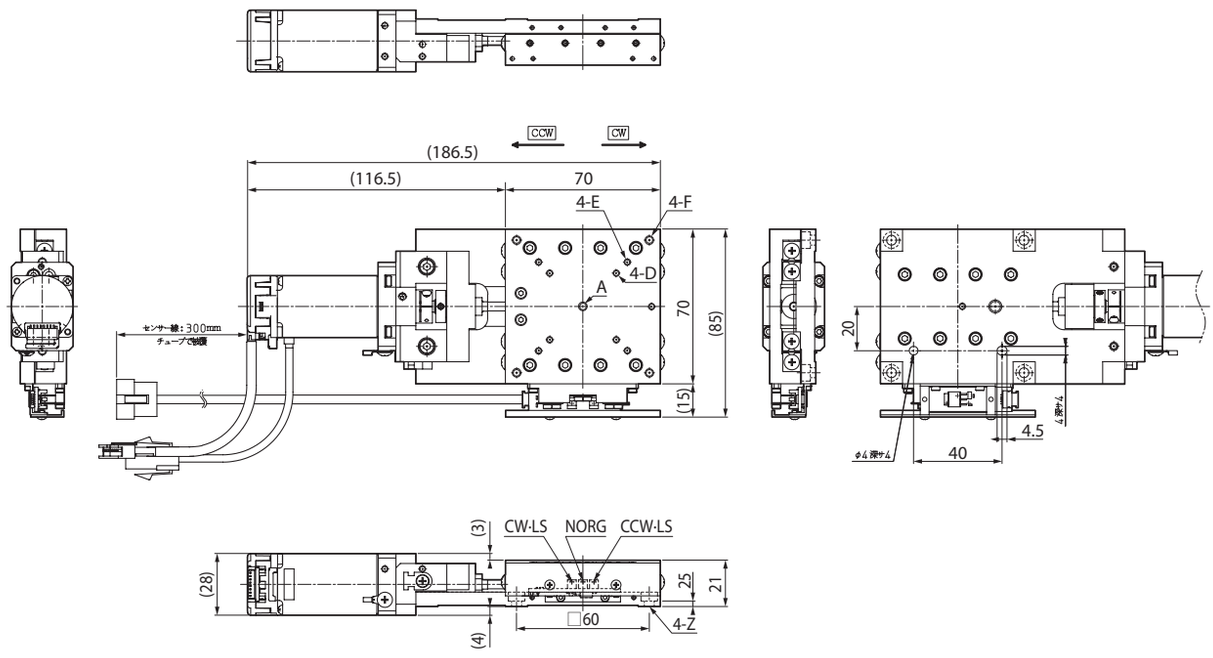
Application

- Alignment, measurement and bonding of small substrates such as LCD or OLED
- Mark alignment on screen printers
- Probe Inspection Equipment
- Round glass cutting process
- Alignment and evaluation of optical equipment, medical equipment and biotechnology equipment

● Slim High-Precision X Stage(XA07A-R201) Table Size: 70×70



◆ Ezi-Robo-PMS-□□-28M-D-XA07A-R201



Main Features

- High precision ultra-slim X Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

Model Number		Ezi-Robo-PMS-□□-28M-D-XA07A-R201
		X Specification
Table Size		70×70mm
Motion Range		±10mm
Lead Mechanism		Ball screw, Lead 1.0mm
Height		21mm
Guide		Cross Roller Guide
Resolution *1		1㎛
Max. Speed		5mm/sec
Repeatability		Less ±0.2㎛
Lost Motion		Less 0.5㎛
Straightness	Vertical	Less 1㎛ / 20mm
	Horizontal	Less 0.5㎛ / 20mm
Backlash		Less 0.2㎛
Motor		EzM-28M(FASTECH)

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

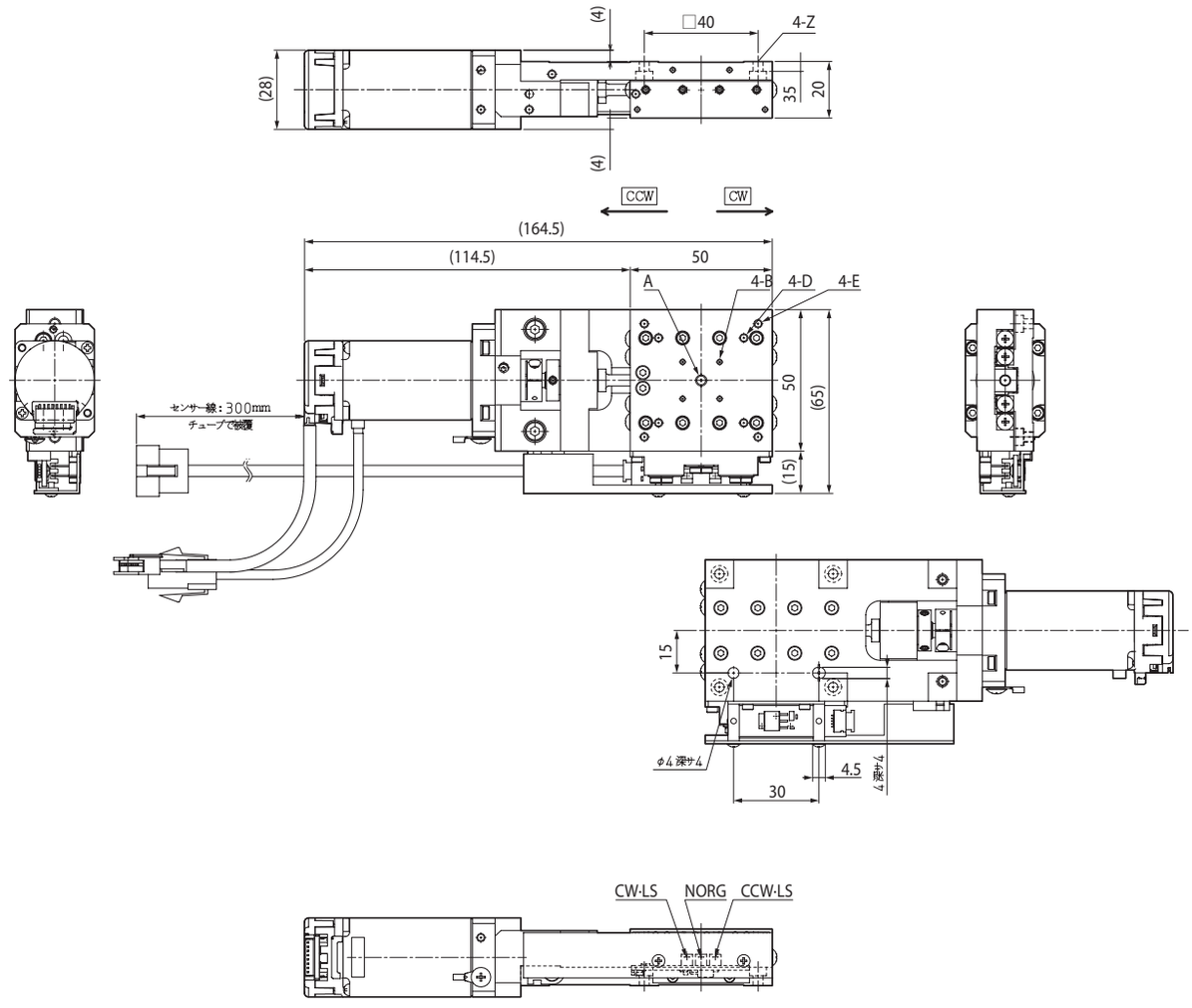
Application

- Moving or focusing the CCD camera module
- Slide table for precision assembly
- Pick & Place movement axis
- Return of work(Horizontal, Vertical)
- Pallet positioning stopper on conveyor

● Slim High-Precision XY Stage(YA05A-R201) Table Size: 50×50



◆ Ezi-Robo-PMS-□□-28M-D-YA05A-R201



Main Features

- High precision ultra-slim XY Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

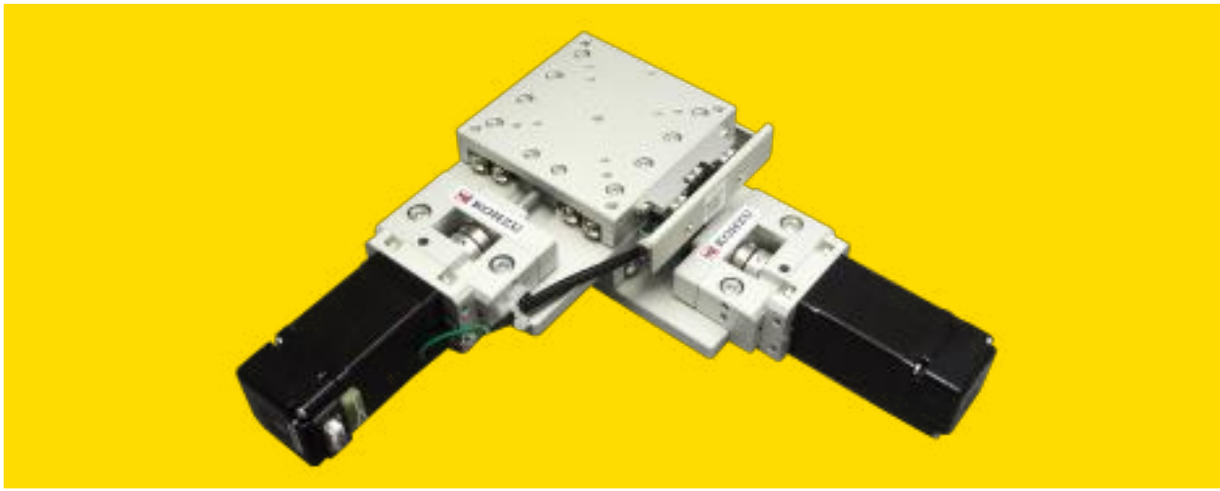
Model Number	Ezi-Robo-PMS-□□-28M-D-YA05A-R201
	XY Specification
Table Size	50×50mm
Motion Range	±7.5mm
Lead Mechanism	Ball screw, Lead 1.0mm
Height	50mm
Guide	Cross Roller Guide
Resolution *1	1㎛
Max. Speed	5mm/sec
Repeatability(XY)	Less ±0.2㎛
Lost Motion	Less ±0.5㎛
Straightness	Less 1㎛ / 15mm
Backlash	Less 0.2㎛
Motor	EzM-28M(FASTECH)

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

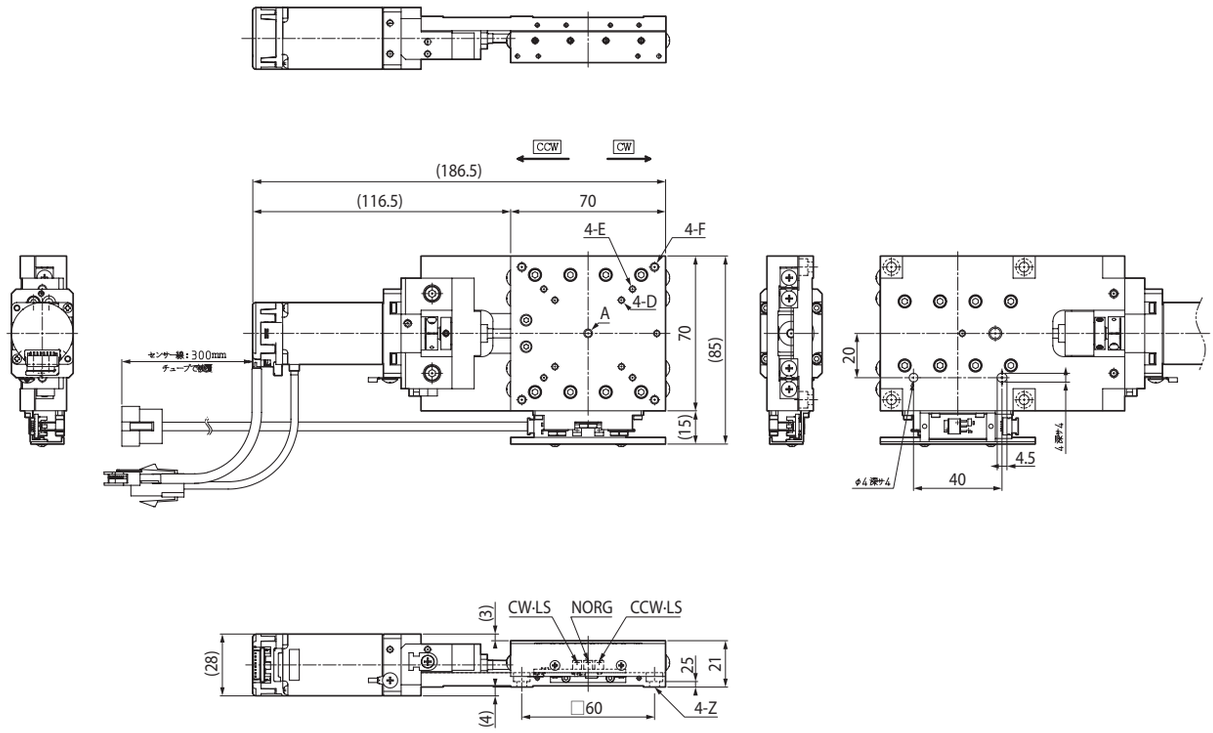
Application

- Alignment and inspection of camera module
- Alignment measurement and bonding of small substrates such as LCD or OLED
- Mark alignment on screen printers
- Alignment and evaluation of optical equipment, medical equipment and biotechnology equipment

● Slim High-Precision XY Stage(YA07A-R201) Table Size: 70×70



◆ Ezi-Robo-PMS-□□-28M-D-YA07A-R201



Main Features

- High precision ultra-slim XY Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

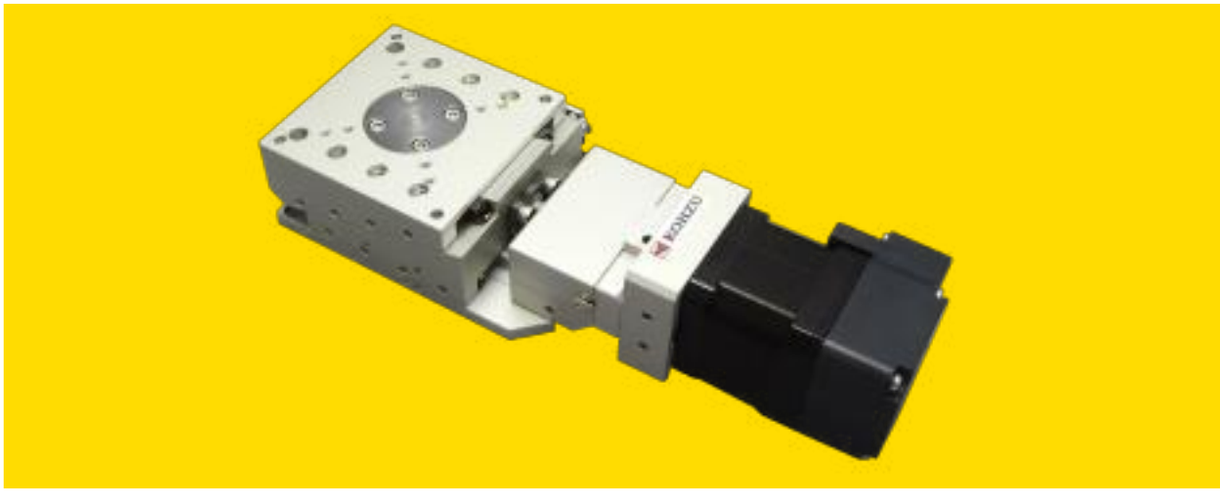
Model Number		Ezi-Robo-PMS-□□-28M-D-YA07A-R201
		XY Specification
Table Size		70×70mm
Travel Range		±10mm
Lead Mechanism		Ball screw, Lead 1.0mm
Height		50mm
Guide		Cross Roller Guide
Resolution *1		1㎛
Max. Speed		5mm/sec
Repeatability(XY)		Less ±0.2㎛
Lost Motion		Less 0.5㎛
Straightness	Vertical	Less 0.5㎛ / 20mm
	Horizontal	Less 1㎛ / 20mm
Backlash		Less 0.2㎛
Motor		EzM-28M(FASTECH)

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

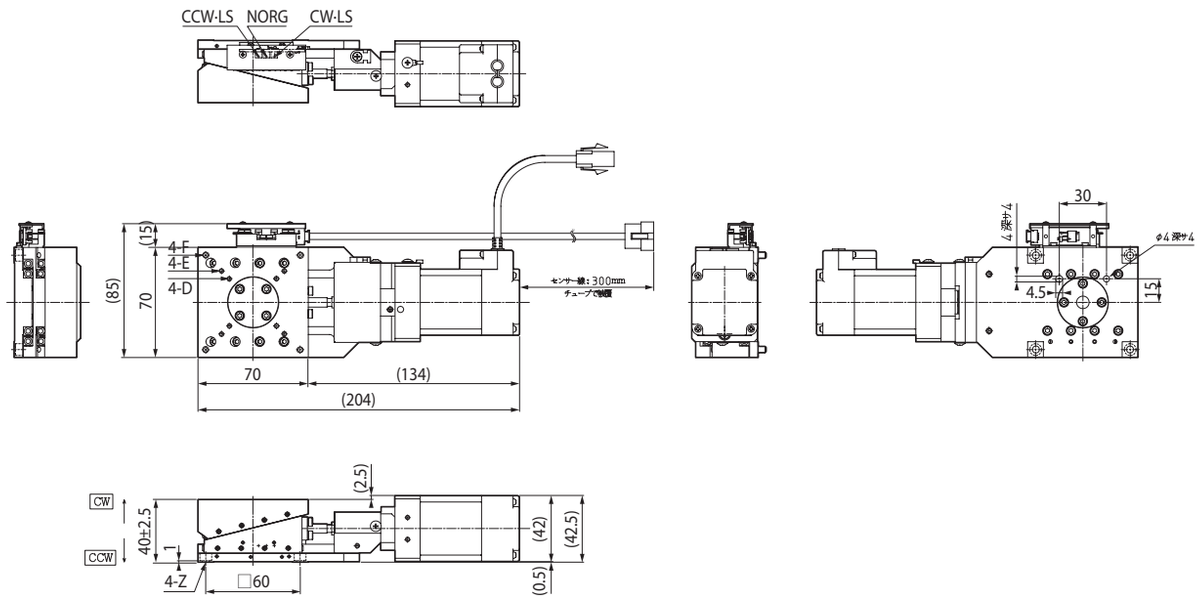
Application

- Alignment and inspection of camera module
- Alignment measurement and bonding of small substrates such as LCD or OLED
- Mark alignment on screen printers
- Alignment and evaluation of optical equipment, medical equipment and biotechnology equipment

● Slim High-Precision Vertical Stage(ZA07A-W2C01) Table Size: 70×70



◆ Ezi-Robo-PMS-□□-42M-□-ZA07A-W2C01



Main Features

- High precision ultra-slim Vertical Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

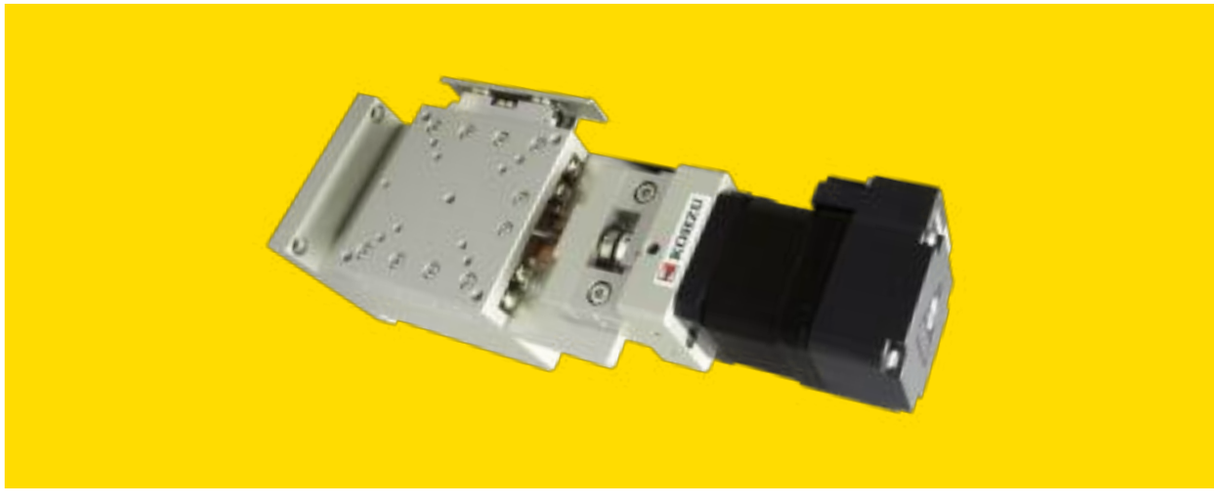
Model Number	Ezi-Robo-PMS-□□-42M-□-ZA07A-W2C01
	Vertical Specification
Table Size	70×70mm
Travel Range	±2.5mm
Lead Mechanism	1/4 Wedge, Ball screw, Lead 1.0mm
Height	40mm
Guide	Cross Roller Guide
Resolution *1	0.25㎛
Max. Speed	1.25mm/sec
Repeatability(XY)	Less ±0.5㎛
Lost Motion	Less 0.3㎛
Straightness(Vertical)	Less 5㎛ / 5mm
Backlash	Less 1㎛
Motor	EzM-42M(FASTECH)

* 1 : Specification based on Ezi-SERVO 42M Motor resolution as 1,000 [Step/rev].

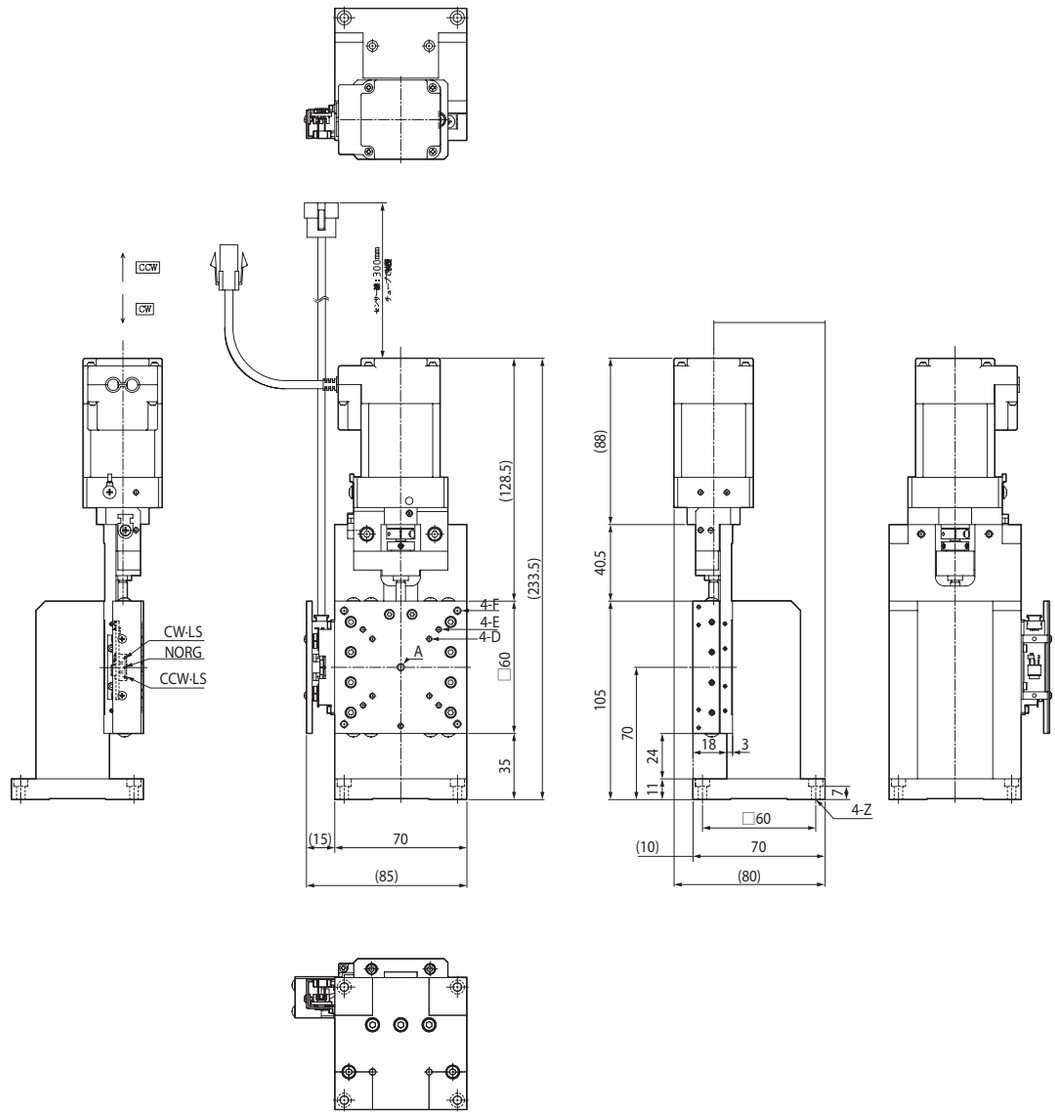
Application

- Moving or focusing the CCD camera module
- Slide table for precision assembly
- Pick & Place movement axis
- Return of work(Horizontal, Vertical)
- Pallet positioning stopper on conveyor

● Slim High-Precision Vertical Stage(ZA07A-X102) Table Size: 70×70



◆ Ezi-Robo-PMS-□□-42M-□-ZA07A-X102



Main Features

- High precision ultra-slim Vertical Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

Model Number	Ezi-Robo-PMS-□□-42M-□-ZA07A-X102
	Vertical Specification
Table Size	70×70mm
Motion Range	±10mm
Lead Mechanism	Ground screw, Lead 0.5mm
Height	50mm
Guide	Cross Roller Guide
Resolution *1	0.5㎛
Max. Speed	2.5mm/sec
Repeatability(XY)	Less ±0.5㎛
Lost Motion	Less 1.5㎛
Straightness(Vertical)	Less 7㎛ / 20mm
Motor	EzM-42M(FASTECH)

* 1 : Specification based on Ezi-SERVO 42M Motor resolution as 1,000 [Step/rev].

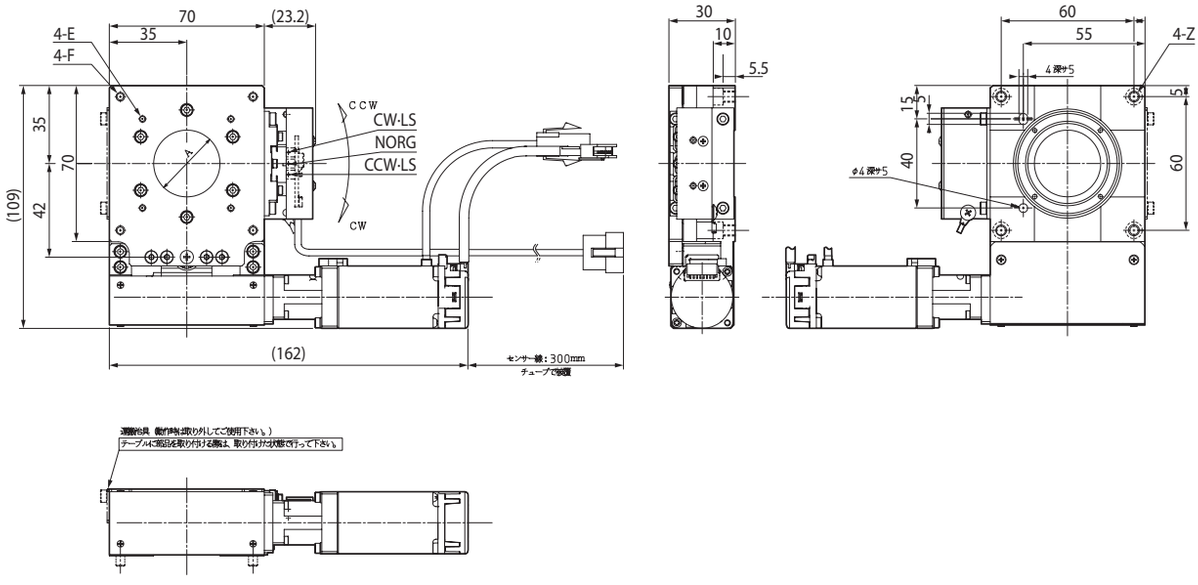
Application

- Moving or focusing the CCD camera module
- Slide table for precision assembly
- Pick & Place movement axis
- Return of work(Horizontal, Vertical)
- Pallet positioning stopper on conveyor

● Slim High-Precision Rotation Stage(RA07A-T01) Table Size: 70×70



◆ Ezi-Robo-PMS-□□-28M-D-RA07A-T01



Main Features

- High precision ultra-slim θ Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

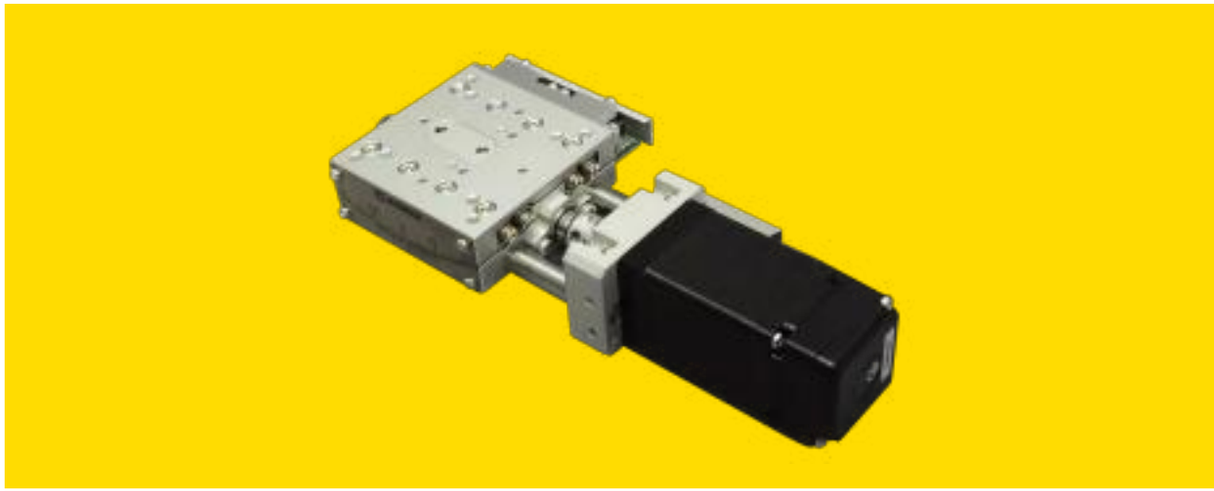
Model Number	Ezi-Robo-PMS-□□-28M-D-RA07A-T01
	θ Specification
Table Size	70×70mm
Motion Range	±5°
Lead Mechanism	Tangent-Bar System, Ball Screw
Height	30mm
Guide	Cross Roller Guide
Resolution *1	0.001364°
Max. Speed	13.64°/sec
Angular Repeatability(θ)	Less 0.002
Lost Motion	Less 0.005
Backlash	Less 0.005
Eccentricity	Less 5㎛ / ±5°
Motor	EzM-28M(FASTECH)

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

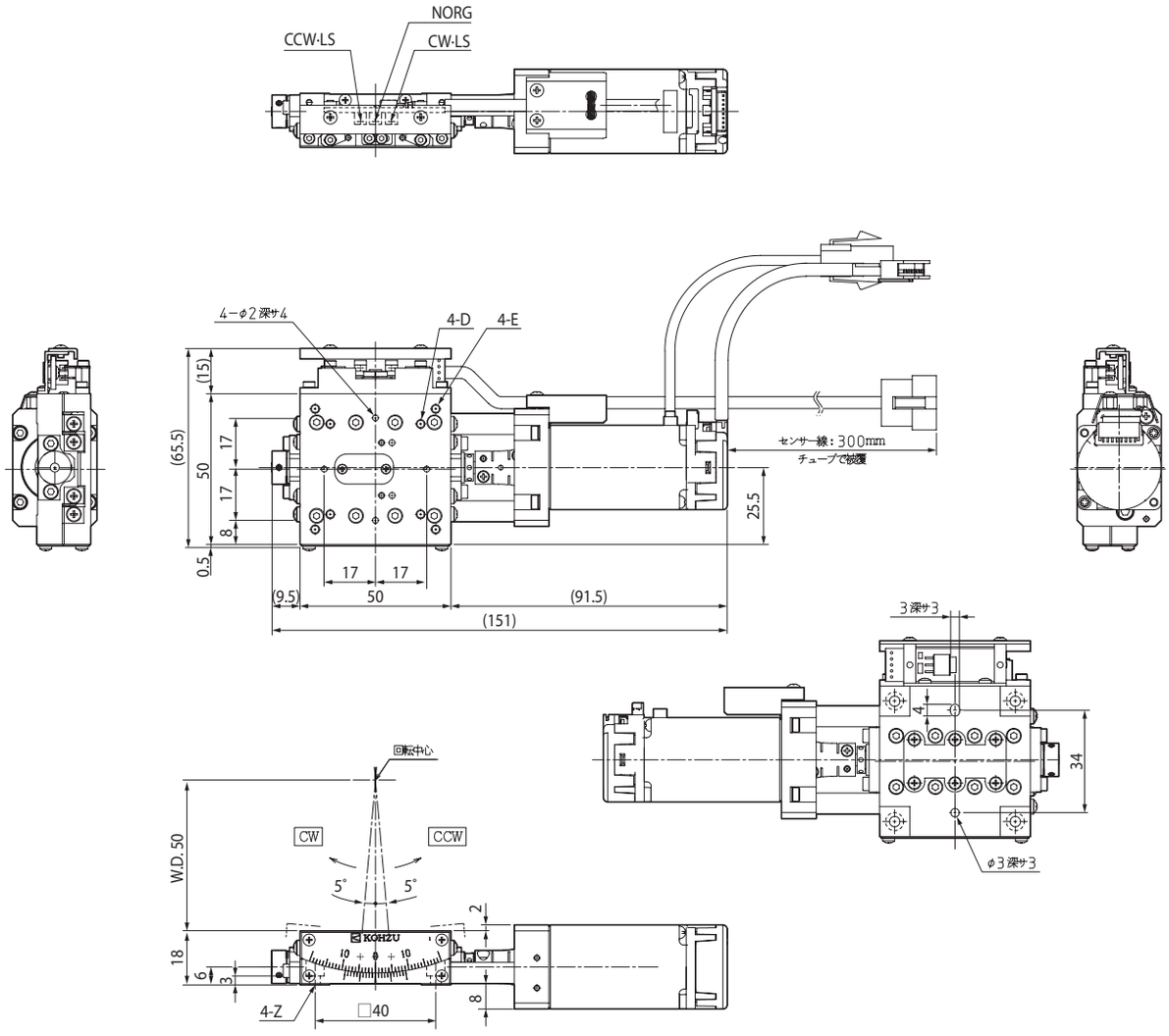
Application

- Rotation of Work
- Position correction in the θ direction of work
- Part Scanning, Laser Position Compensation
- θ direction alignment in combination with XY stage

● Slim High-Precision Swivel Stage(SA05A-R2T, SA05A-R2M) Table Size: 50×50



◆ Ezi-Robo-PMS-□□-28M-D-SA05A-R2T, SA05A-R2M



Main Features

- High precision ultra-slim Swivel Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

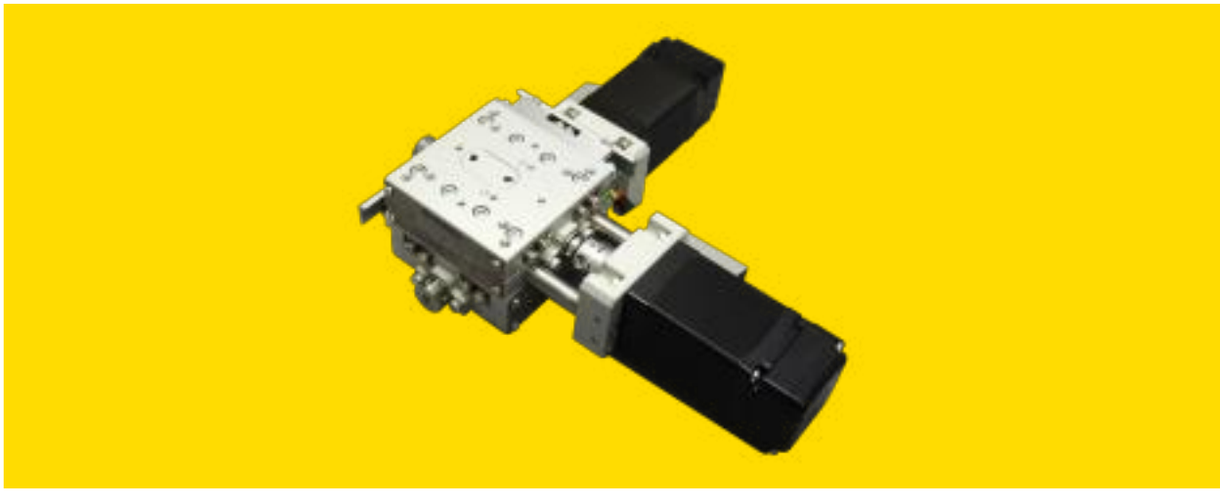
Model Number	Ezi-Robo-PMS-□□-28M-D-SA05A-R2T	Ezi-Robo-PMS-□□-28M-D-SA05A-R2M
	Swivel Sepcification	
Table Size	50×50mm	
Angular Range	±5°	±4.5°
Lead Mechanism	Ball Screw, Lead 1.0mm	
Height	18mm	
Guide	Cross Roller Guide	
Resolution *1	0.001063°	0.000797°
Max. Speed	16° /sec	12° /sec
Angular Repeatability(θ)	Less ±0.003°	
Lost Motion	Less 0.003°	
Backlash	Less 0.003°	
Motor	EzM-28M(FASTECH)	

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

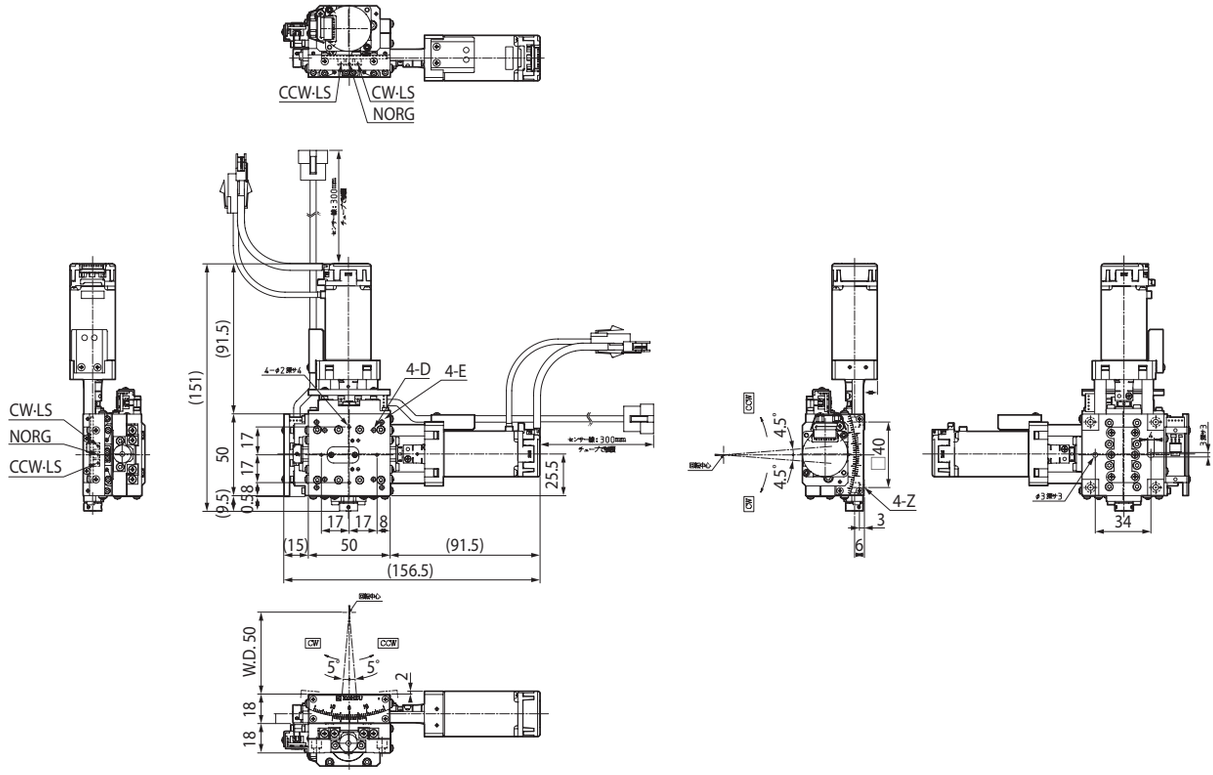
Application

- Camera and laser alignment
- Optical pick-up adjustment, fine angle positioning in the inspection system
- Angle alignment of work

● Slim High-Precision Swivel Stage(SA05A-R2S) Table Size: 50×50



◆ Ezi-Robo-PMS-□□-28M-D-SA05A-R2S



Main Features

- High precision ultra-slim Swivel Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

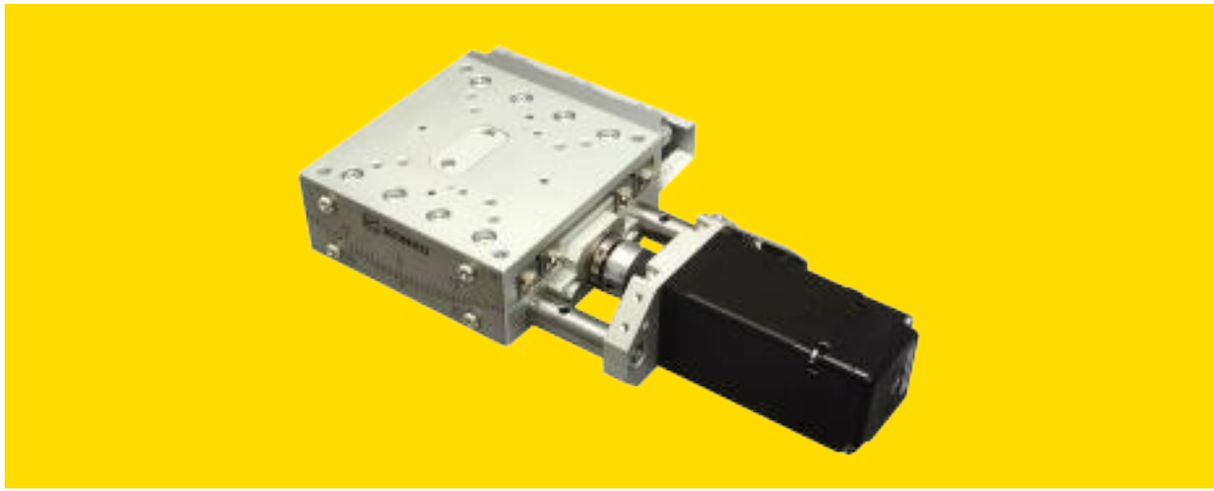
Model Number	Ezi-Robo-PMS-□□-28M-D-SA05A-R2S	
	R2T	R2M
	Swivel Sepcification	
Table Size	50×50mm	
Angular Range	±5°	±4.5°
Lead Mechanism	Ball Screw, Lead 1.0mm	
Height	40mm	
Guide	Cross Roller Guide	
Resolution *1	0.001063°	0.000797°
Max. Speed	16° /sec	12° /sec
Angular Repeatability(θ)	Less 0.003°	
Lost Motion	Less 0.003°	
Backlash	Less 0.003°	
Motor	EzM-28M(FASTECH)	

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

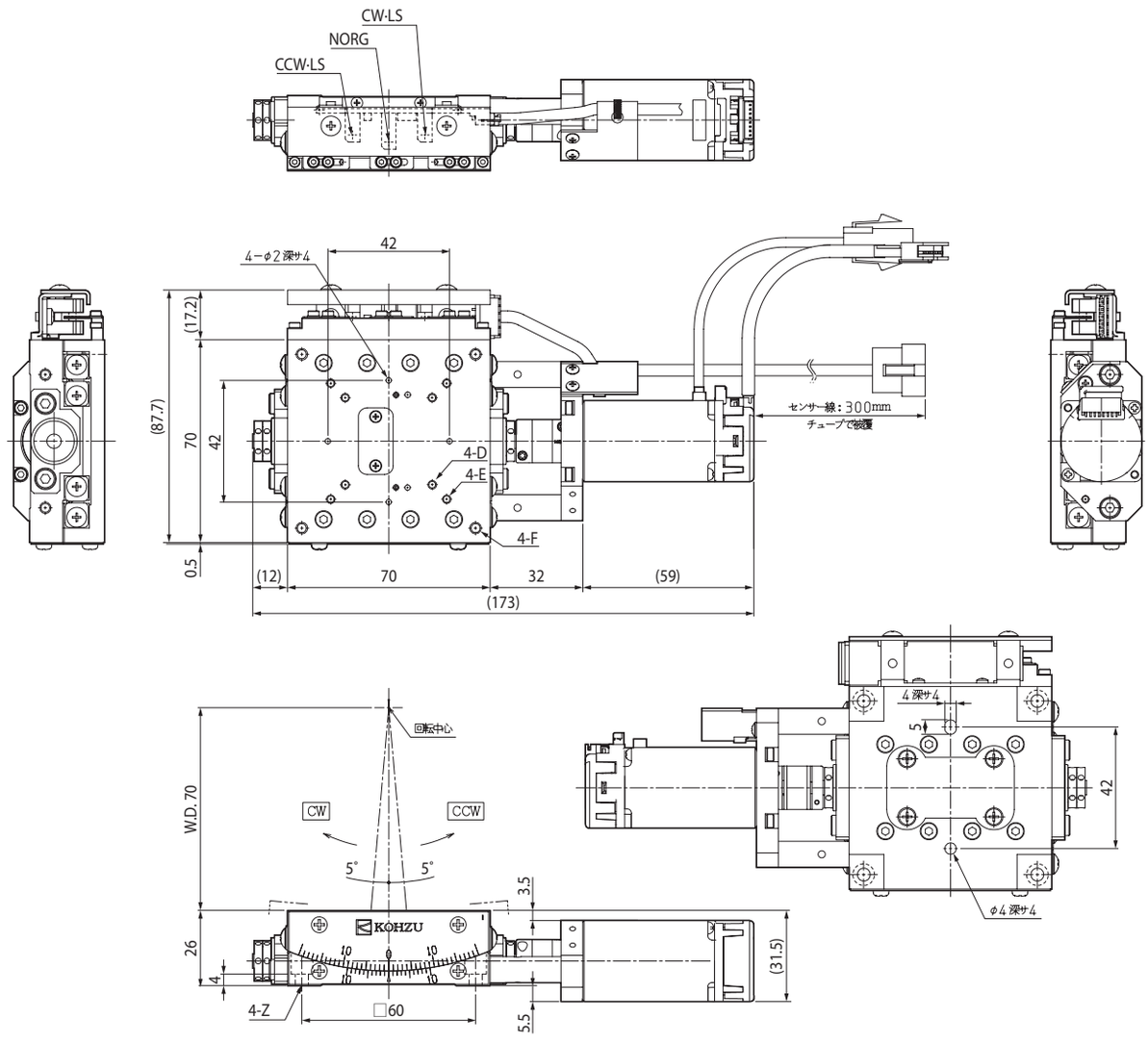
Application

- Camera and laser alignment
- Optical pick-up adjustment, fine angle positioning in the inspection system
- Angle alignment of work

● Slim High-Precision Swivel Stage(SA07A-R2T, SA07A-R2M) Table Size: 70×70



◆ Ezi-Robo-PMS-□□-28M-D-SA07A-R2T, SA07A-R2M



Main Features

- High precision ultra-slim Swivel Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertiona 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

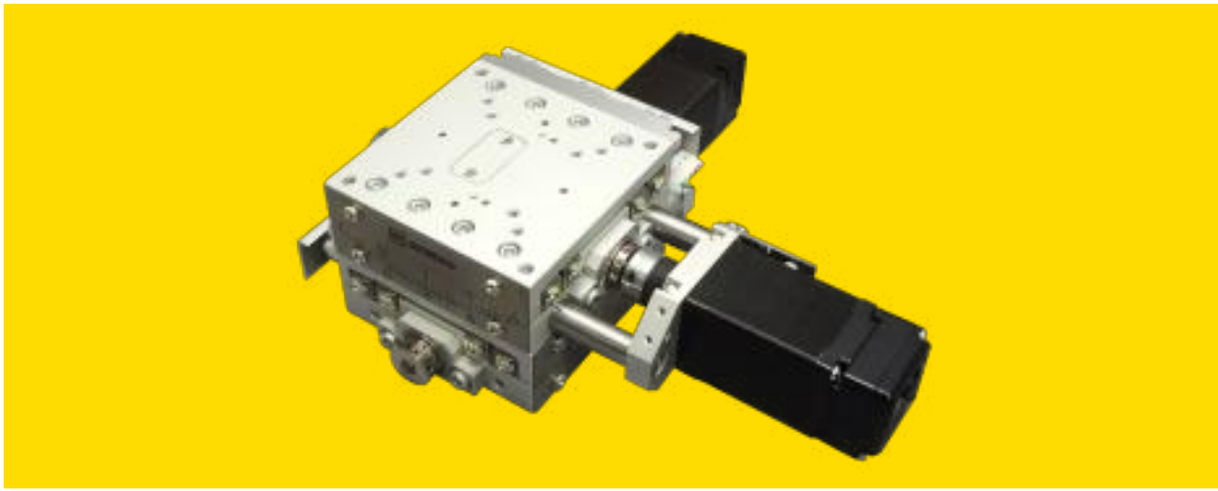
Model Number	Ezi-Robo-PMS-□□-28M-D-SA07A-R2T	Ezi-Robo-PMS-□□-28M-D-SA07A-R2M
	Swivel 사양	
Table Size	70×70mm	
Angular Range	±5°	±4.5°
Lead Mechanism	Ball Screw, Lead 1.0mm	
Height	26mm	
Guide	Cross Roller Guide	
Resolution *1	0.000756°	0.000564°
Max. Speed	11.3° /sec	8.5° /sec
Angular Repeatability(θ)	Less 0.001°	
Lost Motion	Less 0.003°	
Backlash	Less 0.003°	
Motor	EzM-28M(FASTECH)	

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

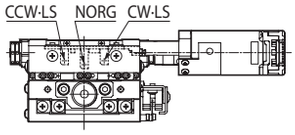
Application

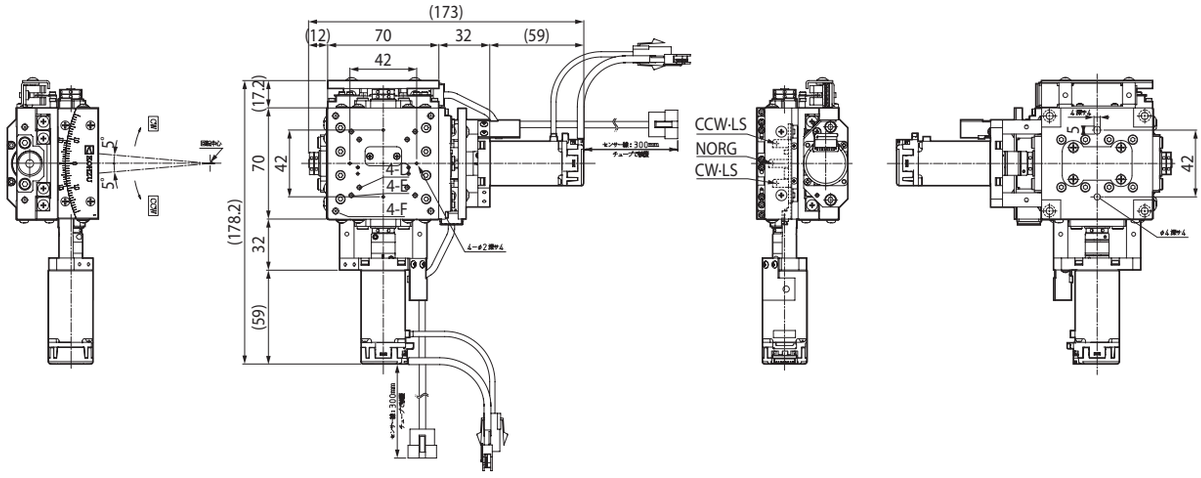
- Camera and laser alignment
- Optical pick-up adjustment, fine angle positioning in the inspection system
- Angle alignment of work

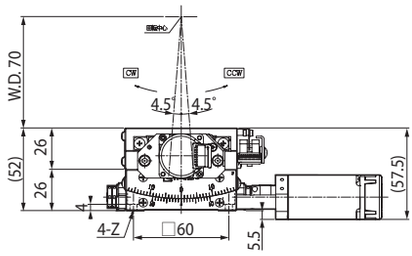
● Slim High-Precision Swivel Stage(SA07A-R2S) Table Size: 70×70



◆ Ezi-Robo-PMS-□□-28M-D-SA07A-R2S







Main Features

- High precision ultra-slim Swivel Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- High precision Ball Screw mechanism accomplished Long life
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

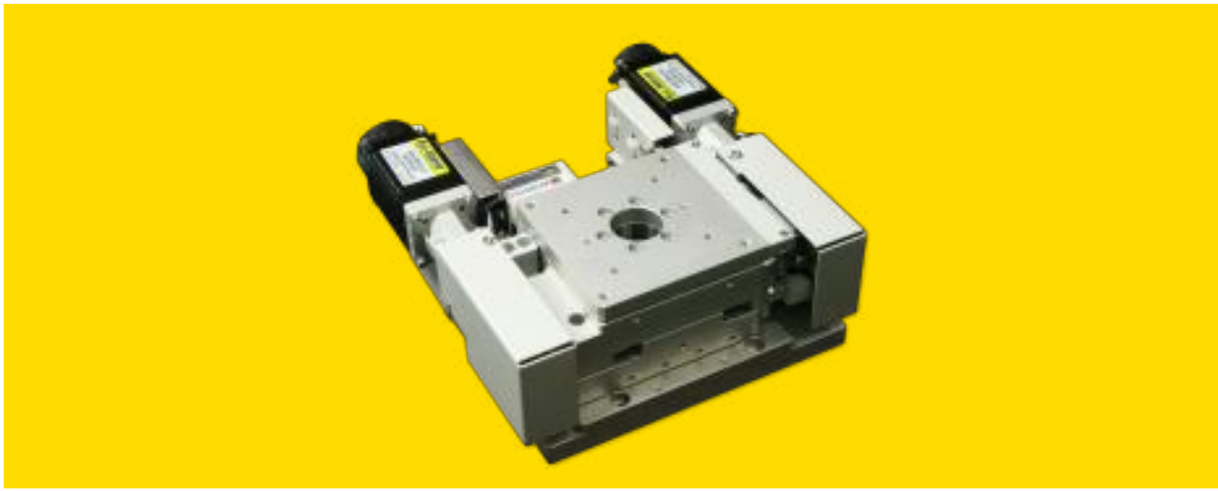
Model Number	Ezi-Robo-PMS-□□-28M-D-SA07A-R2S	
	R2T	R2M
	Swivel Specification	
Table Size	70×70mm	
Angular Range	±5°	±4.5°
Lead Mechanism	Ball Screw, Lead 1.0mm	
Height	26mm	
Guide	Cross Roller Guide	
Resolution *1	0.000756°	0.000564°
Max. Speed	11.3° /sec	8.5° /sec
Angular Repeatability(θ)	Less 0.003°	
Lost Motion	Less 0.003°	
Backlash	Less 0.001°	
Motor	EzM-28M(FASTECH)	

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

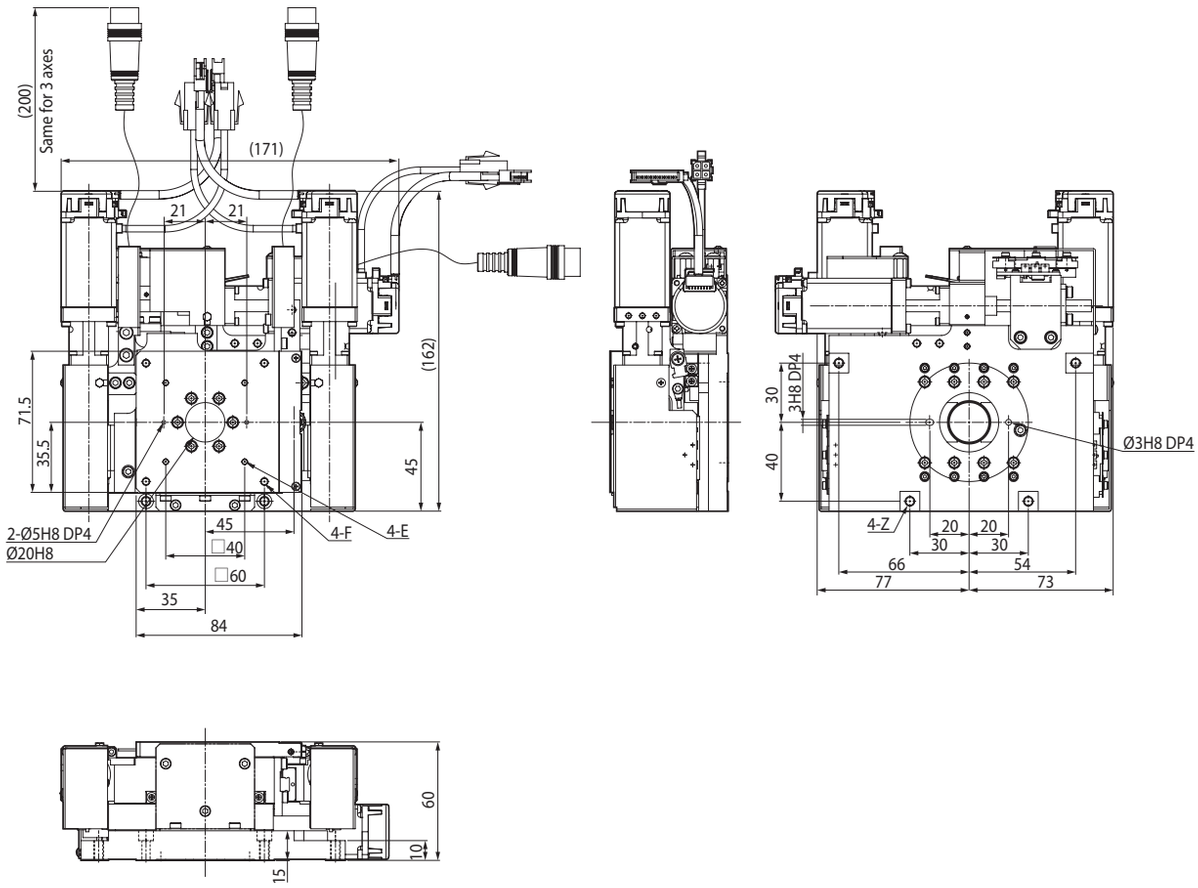
Application

- Camera and laser alignment
- Optical pick-up adjustment, fine angle positioning in the inspection system
- Angle alignment of work

● Slim High-Precision XYθ Alignment Stage(YRA-071-KO) 1Table Size: 70×70



◆ Ezi-Robo-PMS-□□-28M-D-YRA-071-KO



Main Features

- High precision XYθ Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- Ultra-slim stage with integrated 3 axis structure
- High precision Ball Screw mechanism accomplished Long life
- Equipped with center hole opening while full stroke moving
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

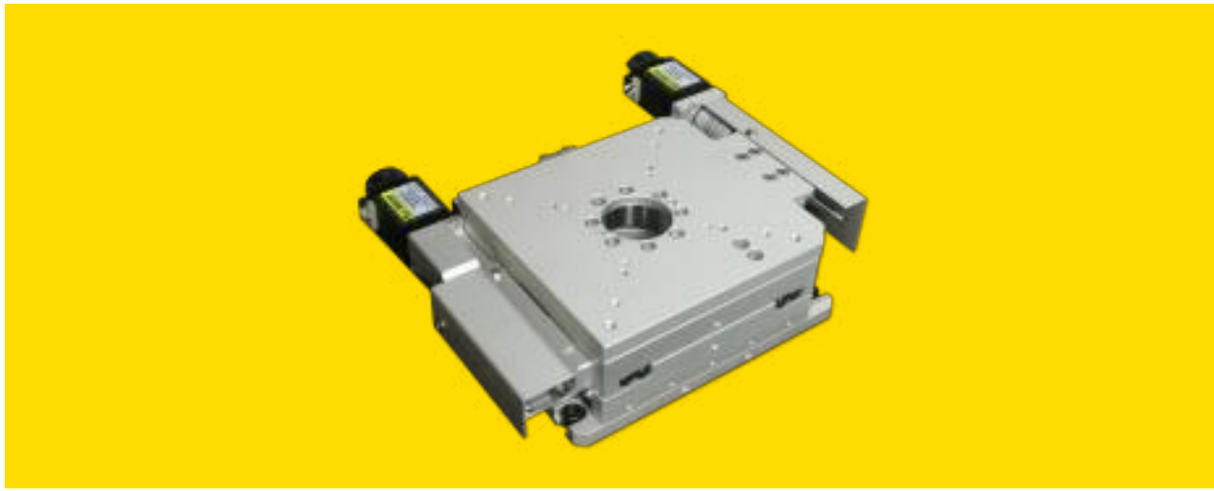
Model Number	Ezi-Robo-PMS-□□-28M-D-YRA-071-KO	
	XY Specification	θ Specification
Table Size	70×70mm	
Travel Range	±5mm	±5°
Lead Mechanism	Ball Screw, Lead 1.0mm	
Height	60mm	
Guide	Cross Roller Guide, Cross Roller Bearing	
Resolution *1	1㎛	0.0012732°
Max. Speed	5mm/sec	6.36° /sec
Repeatability(XY)	Less ±0.5㎛	-
Angular Repeatability(θ)	-	Less 0.001°
Lost Motion	Less 2㎛	Less 0.005°
Straightness	Less 1㎛ / 10mm	-
Backlash	Less 1㎛	Less 0.005°
Motor	EzM-28M(FASTECH)	

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

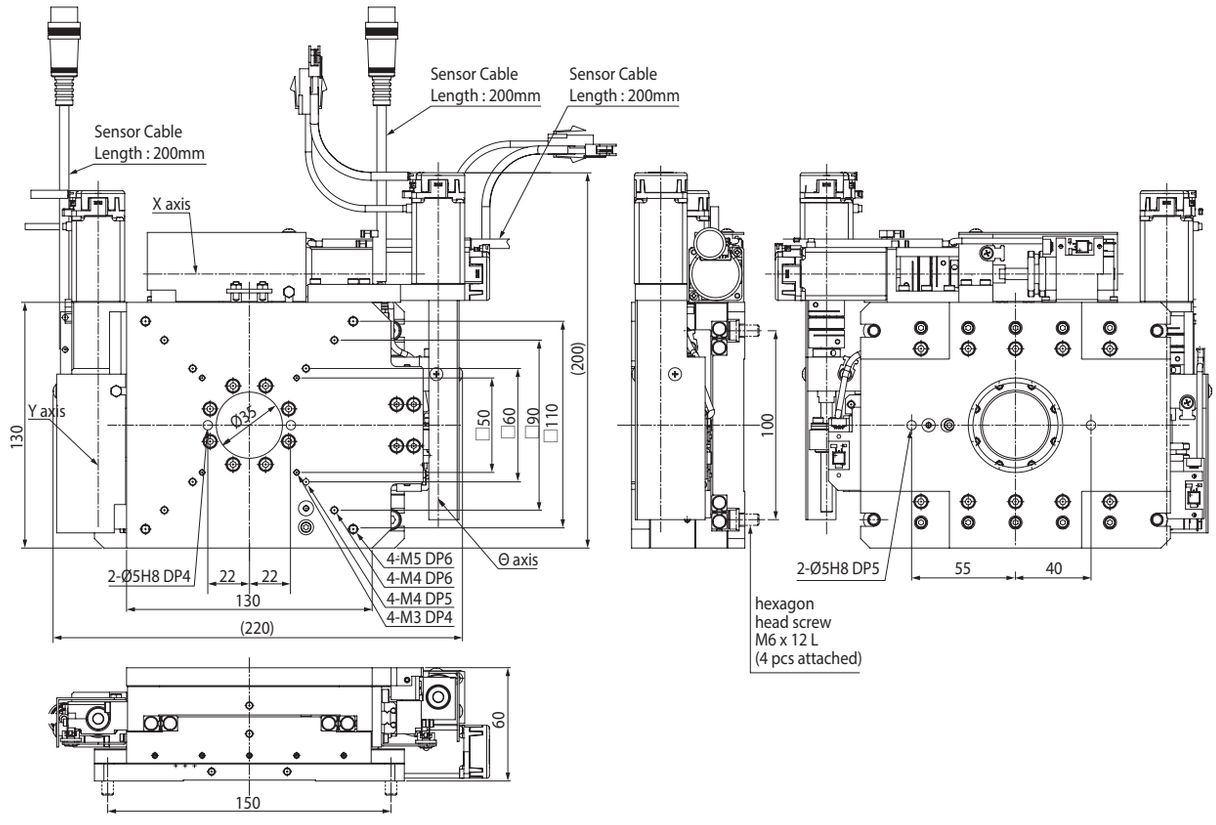
Application

- Camera and laser alignment
- Alignment measurement and bonding of small substrates such as LCD or OLED
- Mark alignment on screen printers
- Alignment and evaluation of optical equipment, medical equipment and biotechnology equipment

● Slim High-Precision XYθ Alignment Stage(YRA-130-KO) Table Size: 130×130



◆ Ezi-Robo-PMS-□□-28M-D-YRA-130-KO



Main Features

- High precision XYθ Stage for high accuracy of positioning
- Provide DLL Library for PC(Window) interface
- Ultra-slim stage with integrated 3 axis structure
- High precision Ball Screw mechanism accomplished Long life
- Equipped with center hole opening while full stroke moving
- Position Accuracy Improvement than convertional 5 phase stepping motor by combination with High Accuracy Optical Encoder of Ezi-SERVO

Specification

Model Number	Ezi-Robo-PMS-□□-28M-D-YRA-130-KO	
	XY Specification	θ Specification
Table Size	130×130mm	
Travel Range	±5mm	±5°
Lead Mechanism	Ball Screw, Lead 1.0mm	
Height	60mm	
Guide	Cross Roller Guide, Cross Roller Bearing	
Resolution *1	0.001mm	0.000674°
Max. Speed	5mm/sec	3.37° /sec
Repeatability(XY)	Less ±0.5㎛	-
Angular Repeatability(θ)	-	Less 0.001°
Lost Motion	Less 2㎛	Less 0.005°
Straightness	Less 1㎛ / 10mm	-
Backlash	Less 1㎛	Less 0.005°
Motor	EzM-28M(FASTECH)	

* 1 : Specification based on Ezi-SERVO 28M Motor resolution as 1,000 [Step/rev].

Application

- Camera and laser alignment
- Alignment measurement and bonding of small substrates such as LCD or OLED
- Mark alignment on screen printers
- Alignment and evaluation of optical equipment, medical equipment and biotechnology equipment

● Precision Comparison with 5-phase standard motor and Ezi-SERVO



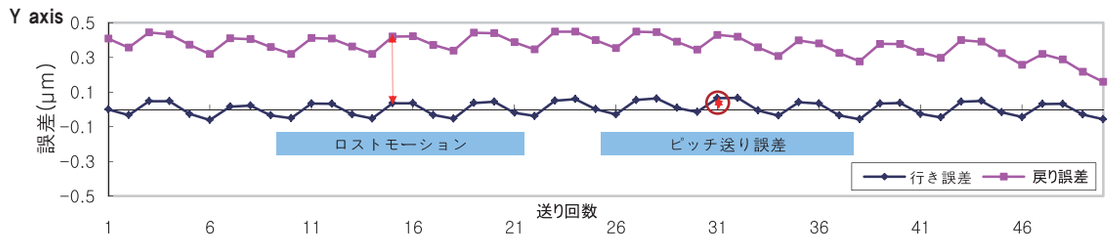
Ezi-Robo-PMS-□□-28M-D-YRA-071-KO

〈Measure Lost Motion and Pitch Movement Error〉

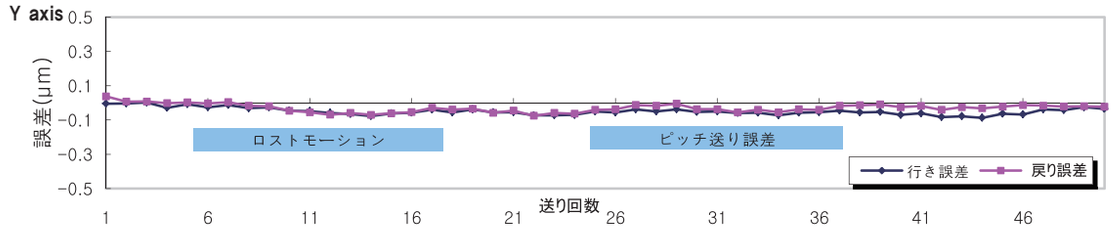
Below data describes measured data by Japan KOHZU company (www.kohzu.com) for Lost Motion and Pitch Movement Error with Ezi-SERVO 28M Motor equipped at PMS Automatic XYθ Series. X, Y axis to measure 50 times of movement under 1 step [0.5um] and θ Axis to measure 50 times of repeated positioning under 1 step 1.2133 [arcsec].
(Measurement Device : Laser Inteferometer)

- Tested Motor : EzM-28M-D
- Tested Drive : EzS-NDR-MI-28M-D
- Steps per 1 Revolution : 1,000 [Step/Revolution]
  (5Relevant to 5-phase motor of Half Step)

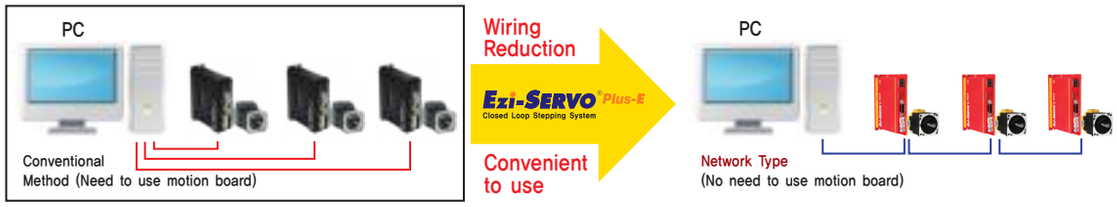
Lost motion and pitch movement error by standard motor



Lost motion and pitch movement error by Ezi-SERVO

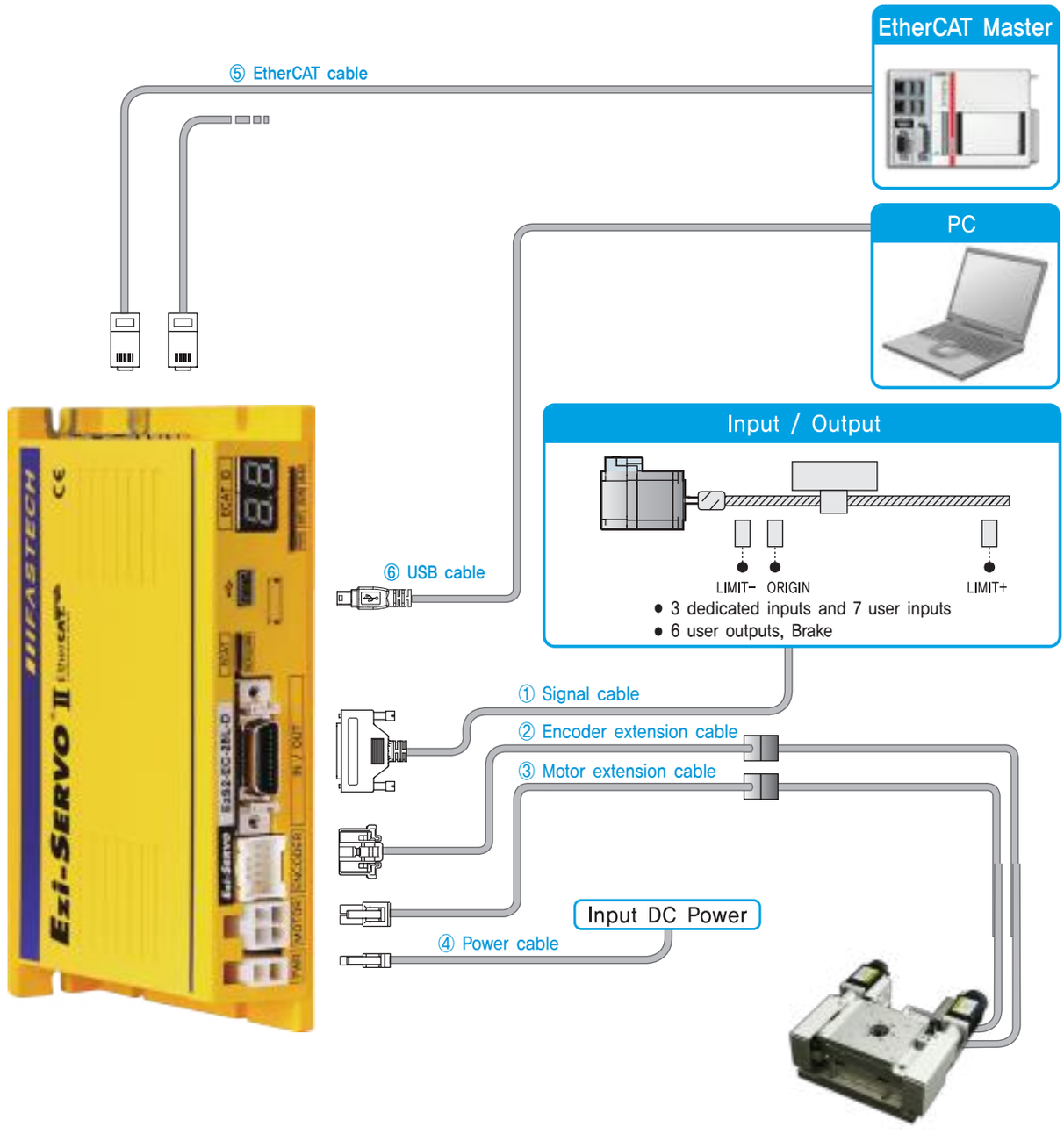


● Optimized Ezi-SERVO II Plus-E series for Network based Alignment System Struct



- Provide DLL Library for PC(Windows) Interface
- Positioning Control by EtherCAT, Ethernet, CC-Link Network(Controller embedded)
- Non-use of Motion Board reduce cost and wiring
- CW / CCW movement error(Lost Motion) minization enables more fast and accurate positioning
- Position accuracy improvement by precise fine pitch movement
  (Position accuracy is 3 times improved than current 5 phase motor)

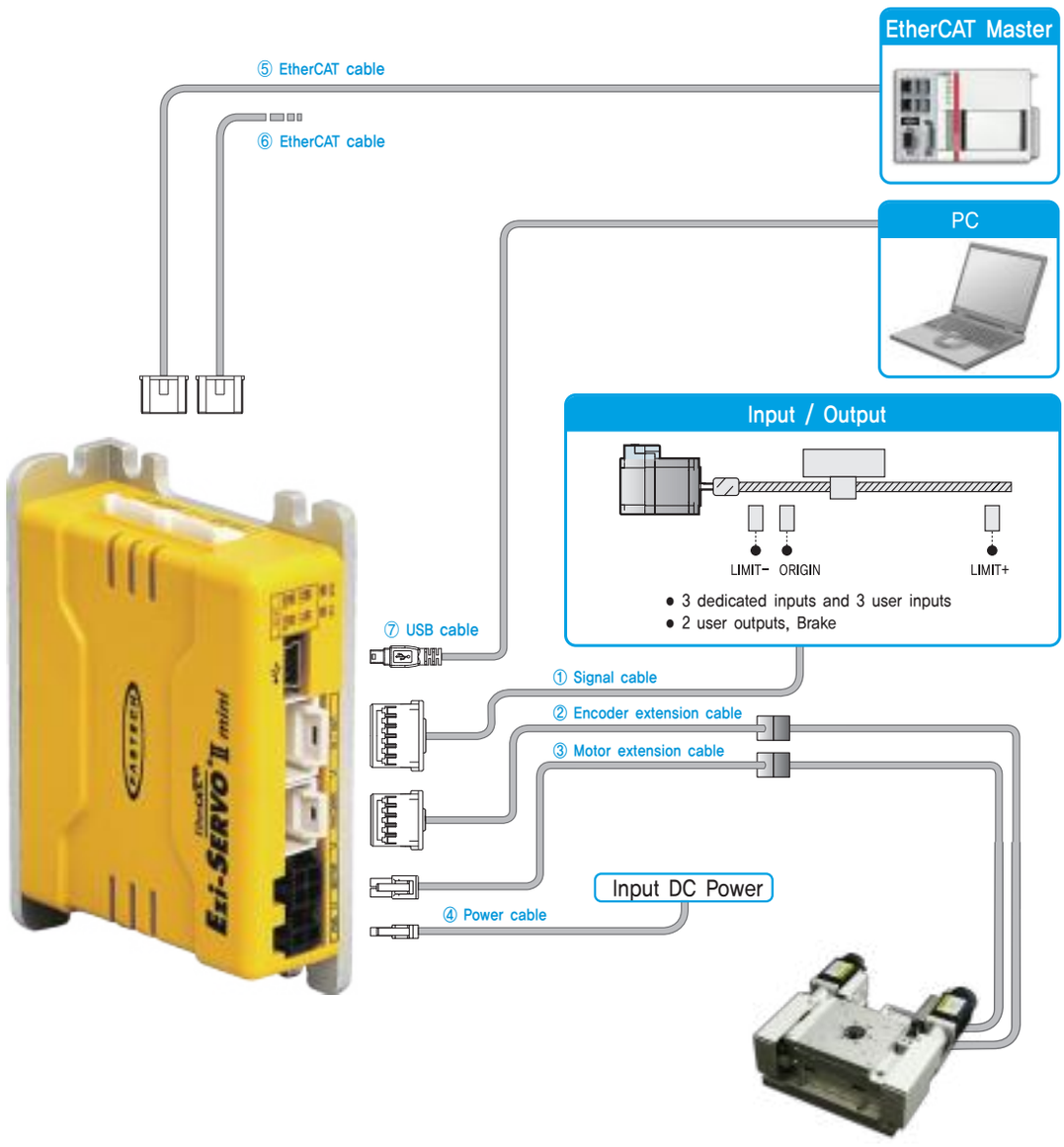
System Configuration [EtherCAT (Ezi-SERVO II EtherCAT)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed Ethernet(100Mbps full-duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT catalog for optional cables, functions and operation.

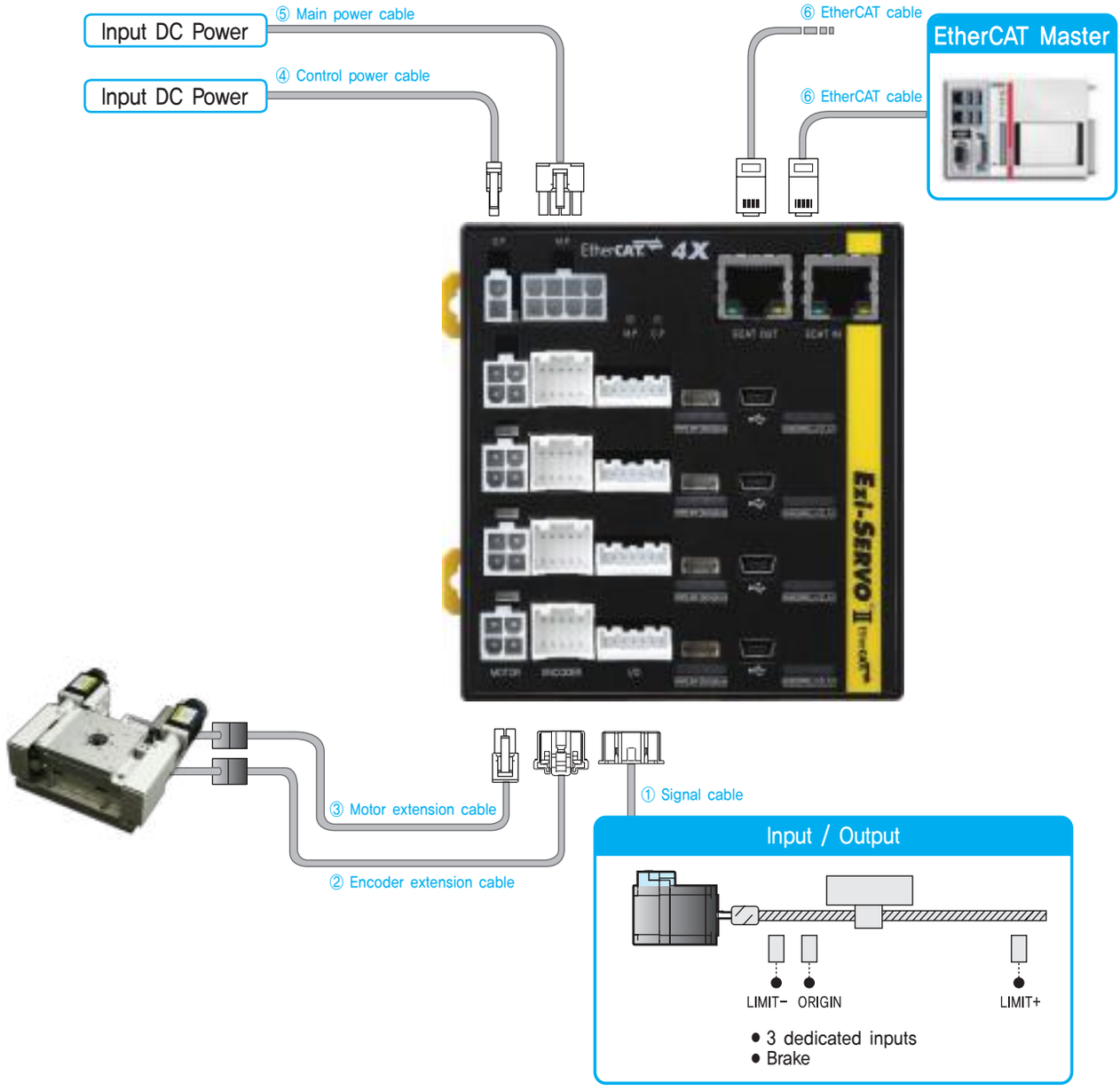
● System Configuration [EtherCAT (Ezi-SERVO II EtherCAT MINI)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II EtherCAT MINI is stepping motor control system using EtherCAT, high speed Ethernet(100Mbps full-duplex) based fieldbus. Ezi-SERVO II EtherCAT MINI is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT MINI catalog for optional cables, functions and operation.

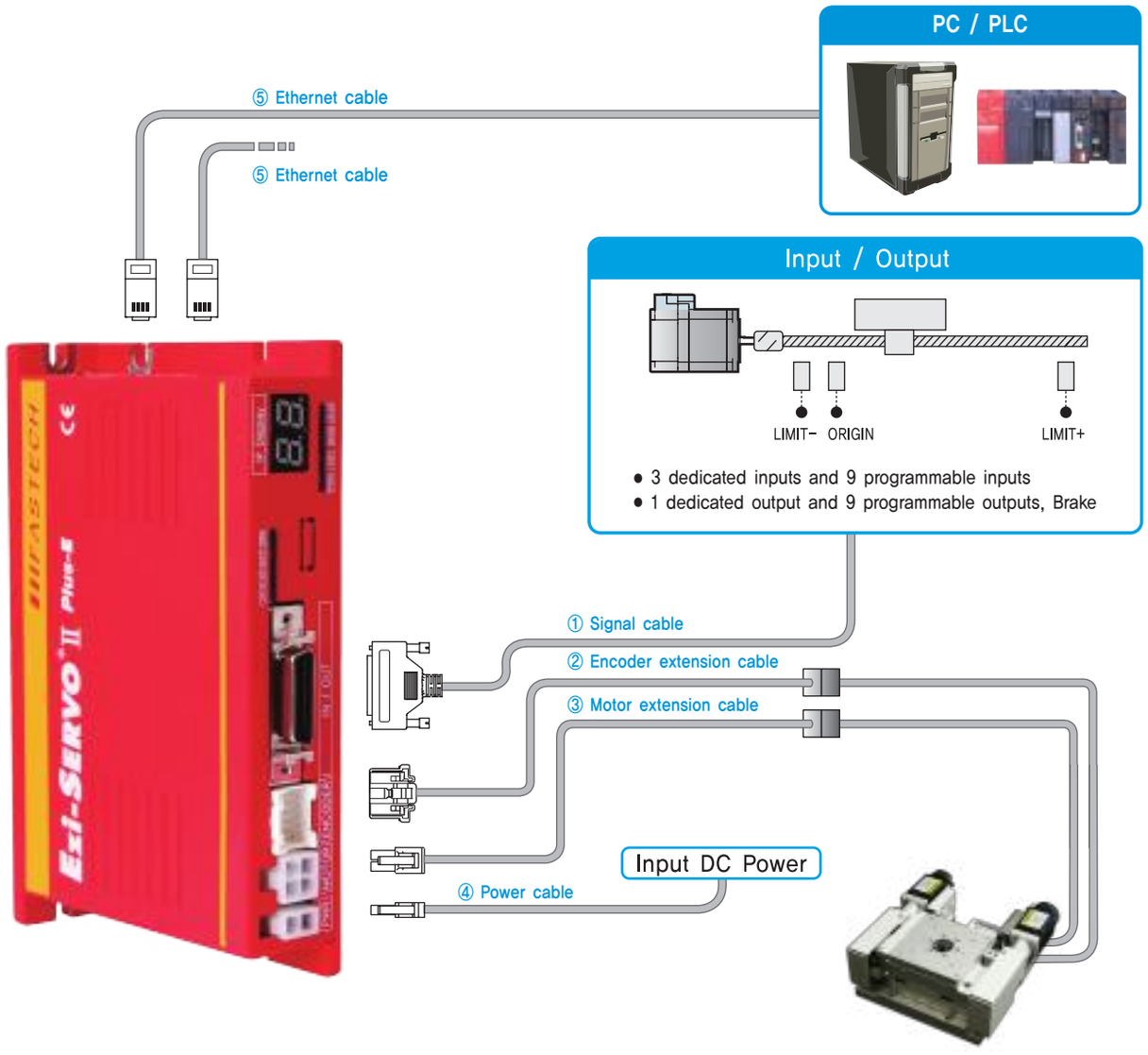
● System Configuration [EtherCAT 4X (Ezi-SERVO II EtherCAT 4X)]



Type	Signal Cable	Encoder Cable	Motor Cable	Control Power Cable	Main Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	2m	100m

- Ezi-SERVO II EtherCAT 4X is 4 axis stepping motor control system using EtherCAT, high speed Ethernet(100Mbps full-duplex) based fieldbus. Ezi-SERVO II EtherCAT 4X is EtherCAT slave module which support CAN application layer over EtherCAT(CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to the Ezi-SERVO II EtherCAT 4X catalog for optional cables, functions and operation.

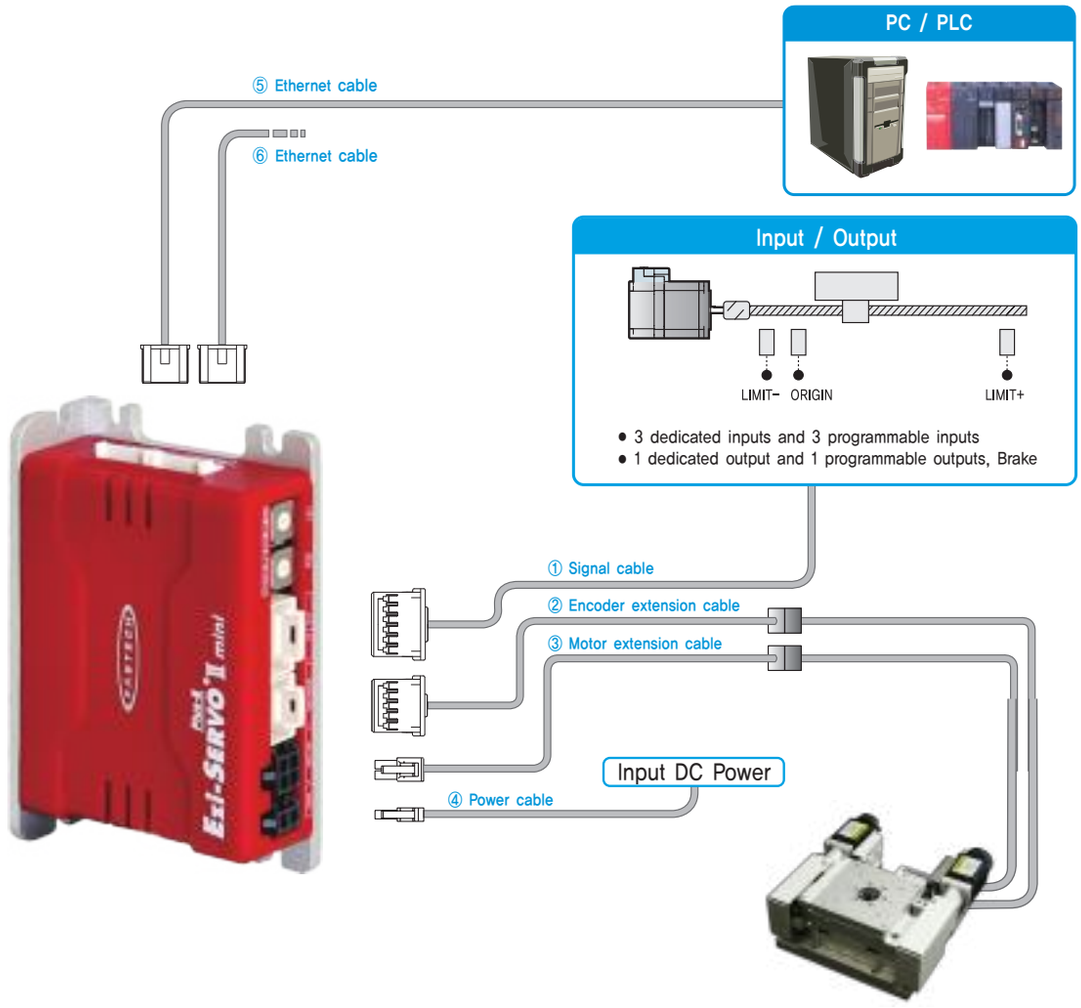
● System Configuration [Ethernet (Ezi-SERVO II Plus-E)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication, and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E catalog for optional cables, functions and operation.

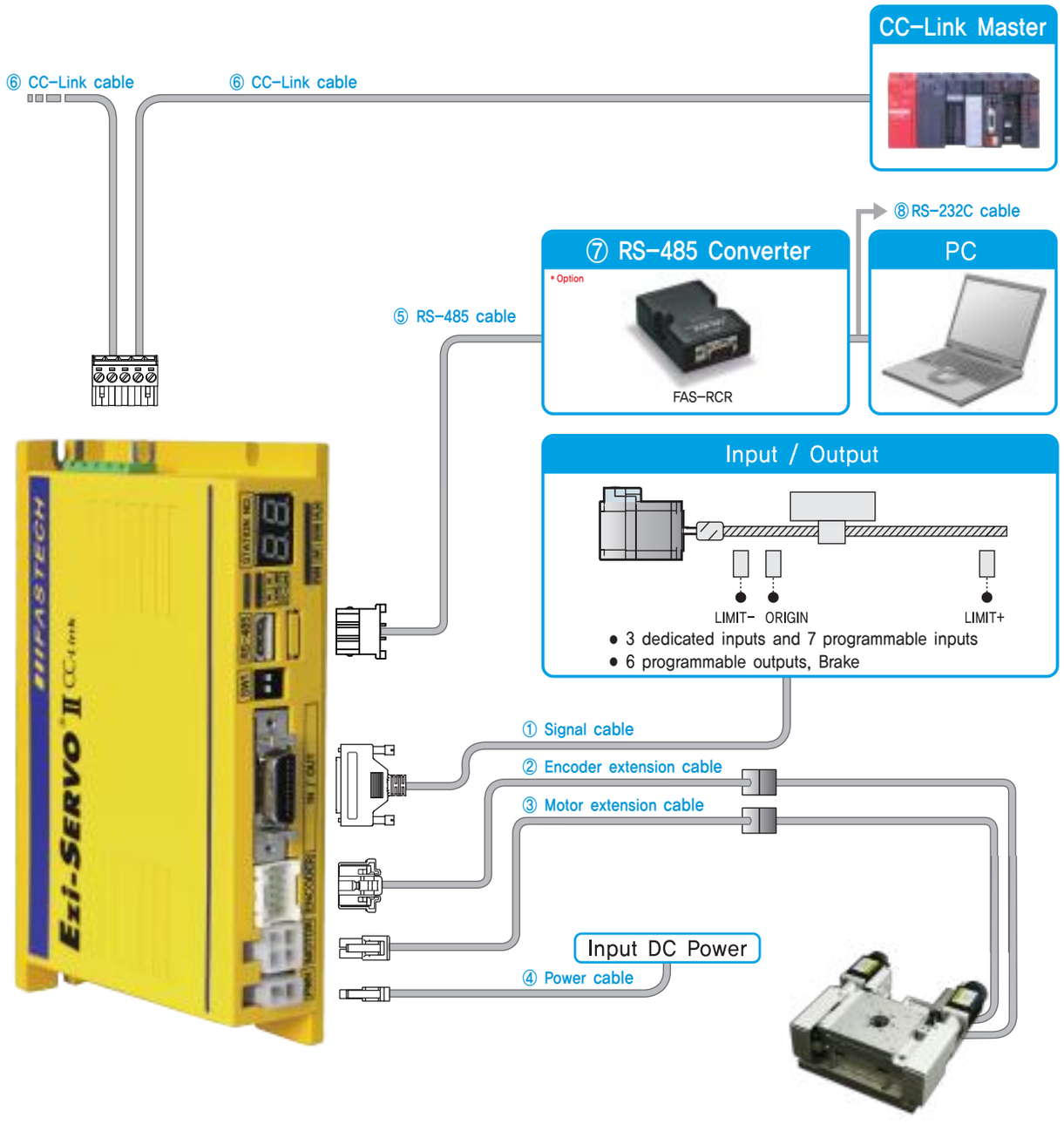
● System Configuration [Ethernet (Ezi-SERVO II Plus-E MINI)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	Ethernet Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

- Ezi-SERVO II Plus-E MINI drive can drive up to 254 axis through Ethernet communication with master controller such as PC. Ethernet HUB is built-in and can be connected in Daisy-chain form. All motion control functions can be controlled through network communication, and motion related conditions(eg. acceleration/deceleration time, etc.) are stored in the ROM as parameters. A motion library(DLL) is provided for programming under Windows 7/8/10.
- Please refer to the Ezi-SERVO II Plus-E MINI catalog for optional cables, functions and operation.

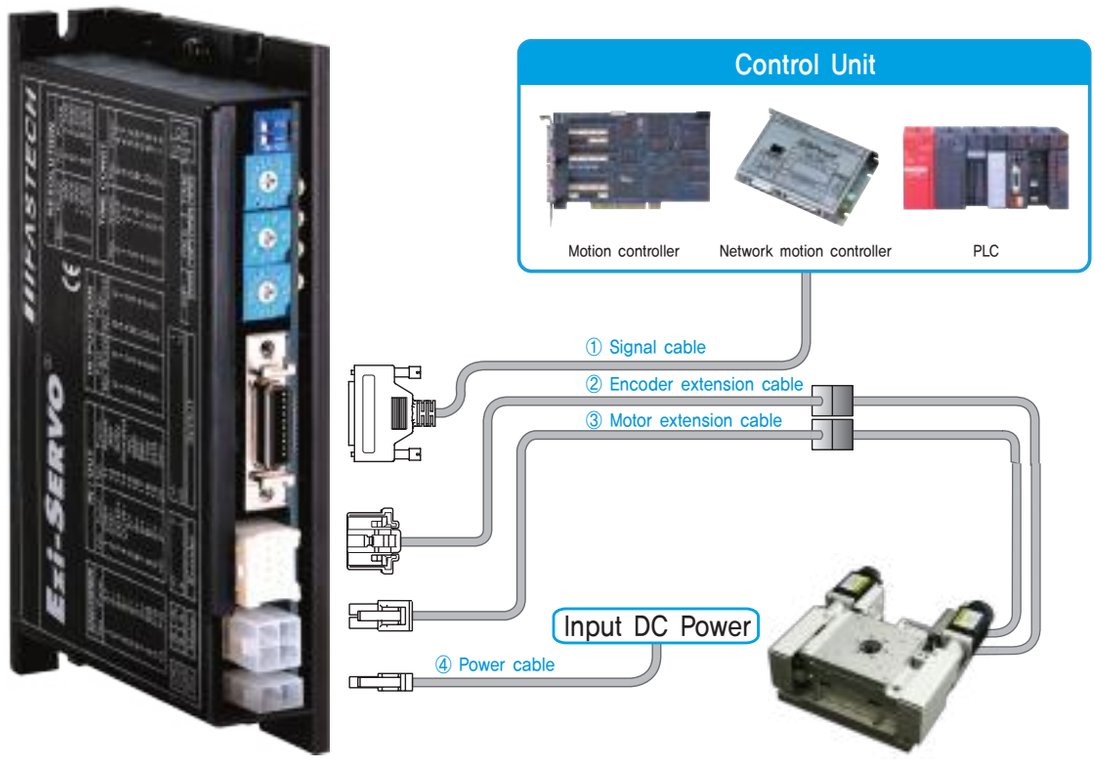
● System Configuration [CC-Link (Ezi-SERVO II CC-Link)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	CC-Link Cable	RS-485 Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	100m	2m

- Ezi-SERVO II CC-Link is a drive supporting CC-Link , a high speed fieldbus(max. 10Mbps). Ezi-SERVO II CC-Link is a Remote Device module supporting CC-Link network. Multi-function control is possible by occupying 1 station and 2 stations in CC-Link, and motion and monitoring functions are processed by device commands.
- Please refer to the Ezi-SERVO II CC-Link catalog for optional cables, functions and operation.

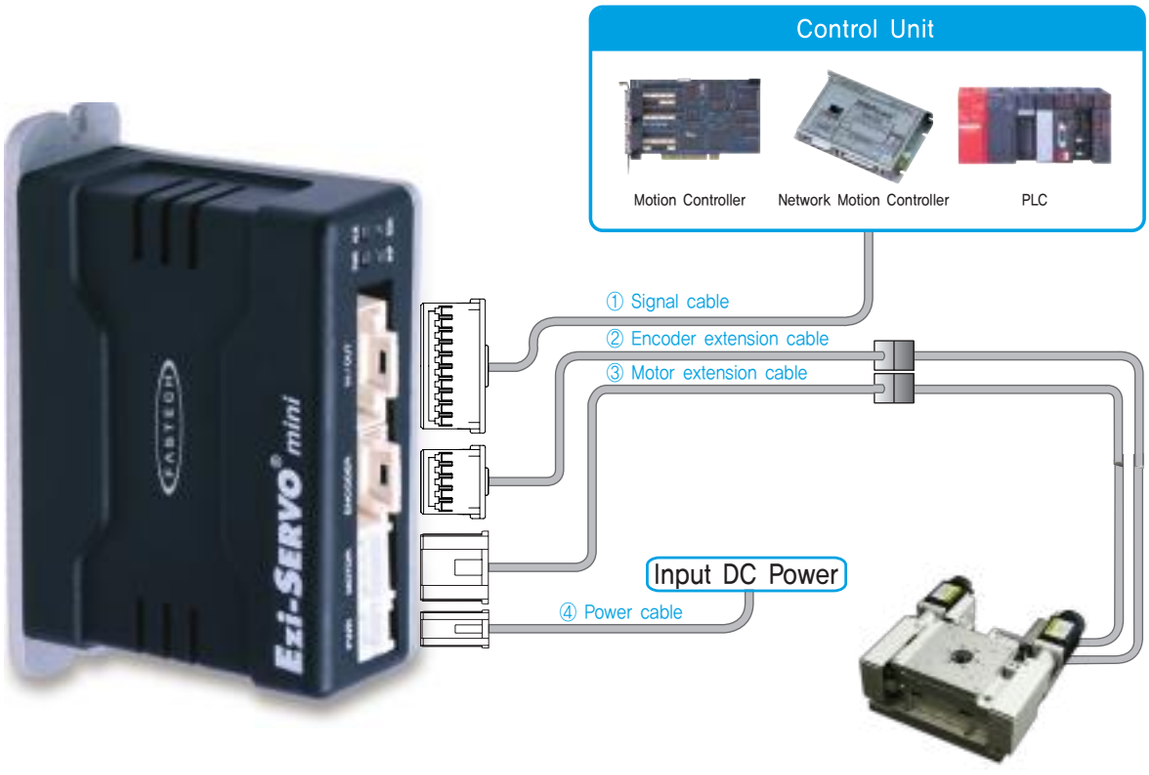
● System Configuration [Pulse Input Drive (Ezi-SERVO ST)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

- Ezi-SERVO ST is a pulse input type drive. It is controlled by using of Motion controller, standalone controller or PLC (with positioning module).
- Please refer to the Ezi-SERVO ST catalog for optional cables, functions and operation.

● System Configuration [Pulse Input Mini Drive (Ezi-SERVO MINI)]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable
Length supplied	–	30cm	30cm	–
Max. Length	20m	20m	20m	2m

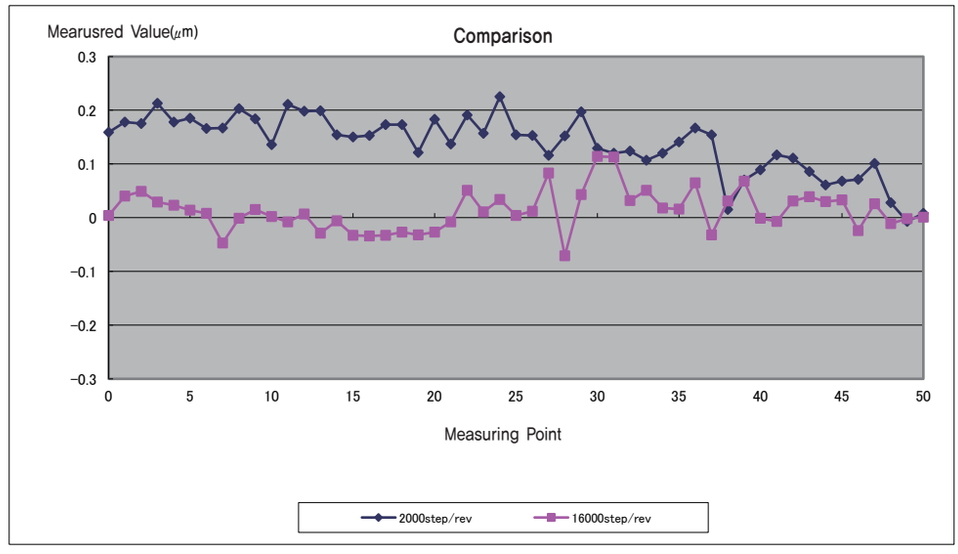
- Ezi-SERVO MINI is a pulse input type drive. It is controlled by using of Motion controller, standalone controller or PLC (with positioning module).
- Please refer to the Ezi-SERVO MINI catalog for optional cables, functions and operation.

● Motorized Linear Stage(XA05A-R201-28M01)

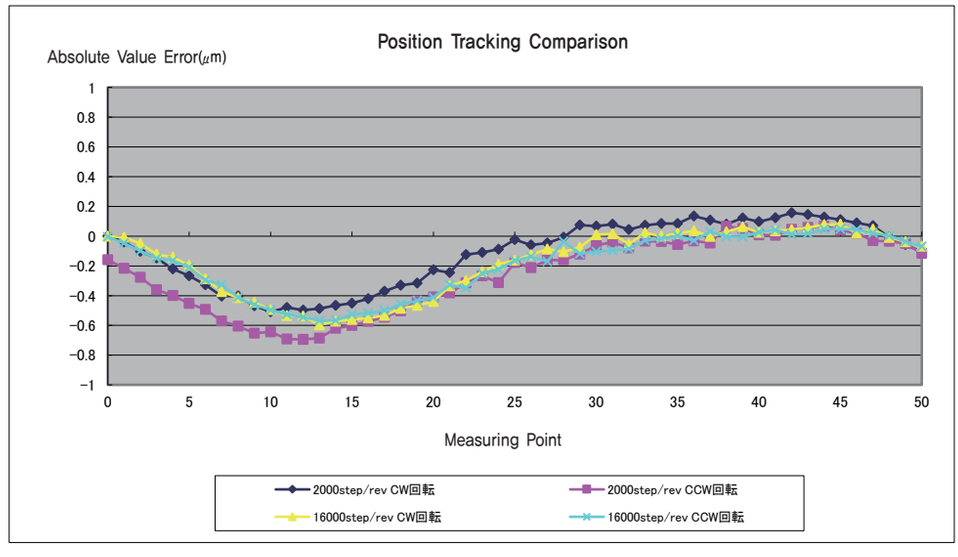
Test Item		Test Specification	Result
Accumulated lead error	[㎛/15mm]	5	2.3
Position repeatability	[±㎛]	0.2	0.04
Lost motion	[㎛]	0.5	0.2
Straightness : Vertical	[㎛/15mm]	1	0.3
Straightness : Horizontal	[㎛/15mm]	1	0.2
Backlash	[㎛]	0.2	0.1
Moment load stiffness	[arcsec/N-cm]	0.31	0.143

◆ One step movement measurement result (Resolution 2,000 or 16,000 [ppr])
Stage : XA05A-R201-28M01 / Motor : Ezi-SERVO-28M-D

Lost Motion



Position Accuracy

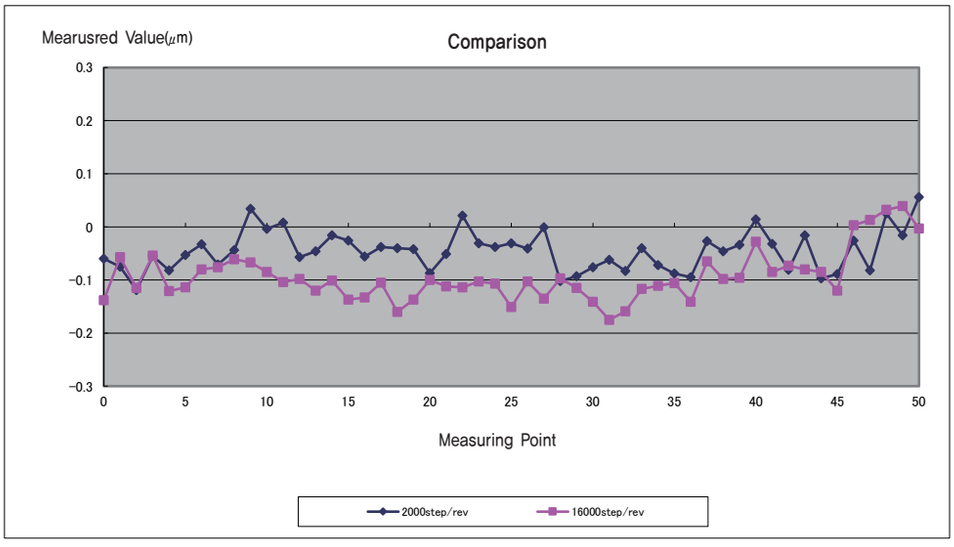


● Motorized Linear Stage(XA07A-R201-28M01)

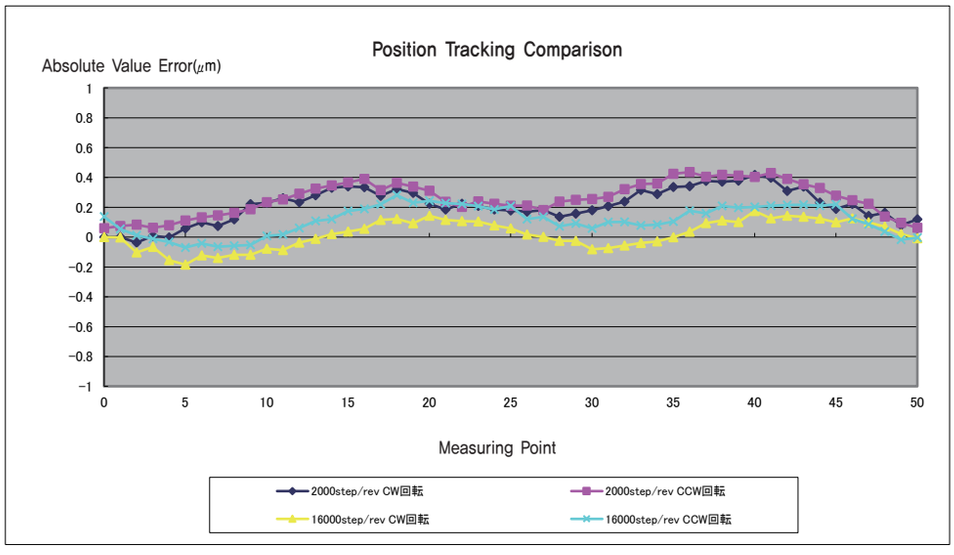
Test Item		Test Specification	Result
Accumulated lead error	[㎛/15mm]	5	2.3
Position repeatability	[±㎛]	0.2	0.04
Lost motion	[㎛]	0.5	0.1
Straightness : Vertical	[㎛/15mm]	1	0.3
Straightness : Horizontal	[㎛/15mm]	0.5	0.2
Backlash	[㎛]	0.2	0.1
Moment load stiffness	[arcsec/N-cm]	0.1	0.048

◆ One step movement measurement result (Resolution 2,000 or 16,000 [ppr])
Stage : XA07A-R201-28M01 / Motor : Ezi-SERVO-28M-D

Lost Motion



Position Accuracy

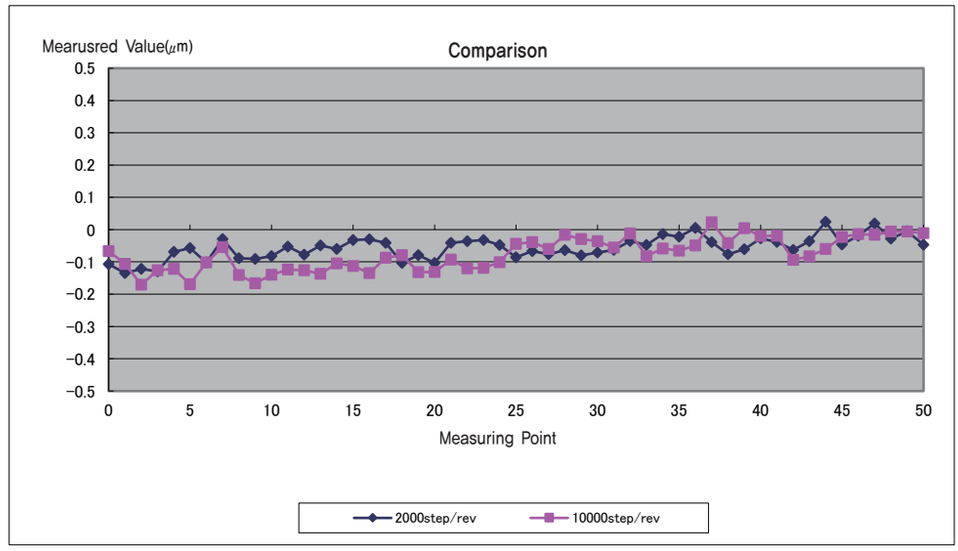


● Motorized Linear Stage(ZA07A-W2C01-42M01)

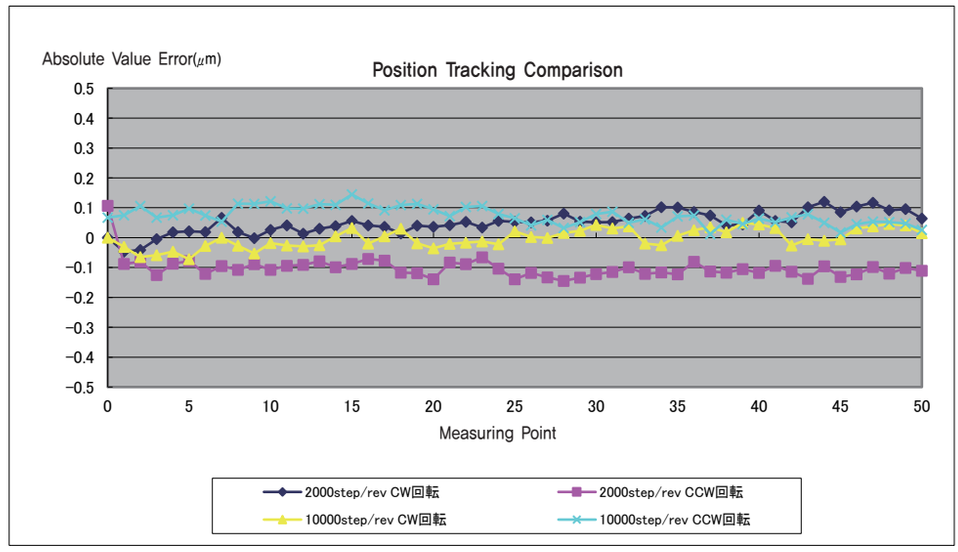
Test Item		Test Specification	Result
Position repeatability	[±㎛]	0.3	0.13
Lost motion	[㎛]	1.5	0.1
Straightness : Vertical	[㎛/20mm]	7	2
Straightness : Horizontal	[㎛/20mm]	7	2

◆ One step movement measurement result (Resolution 2,000 or 10,000 [ppr])
Stage : ZA07A-W2C01-42M01 / Motor : Ezi-SERVO-42M-D

Lost Motion



Position Accuracy

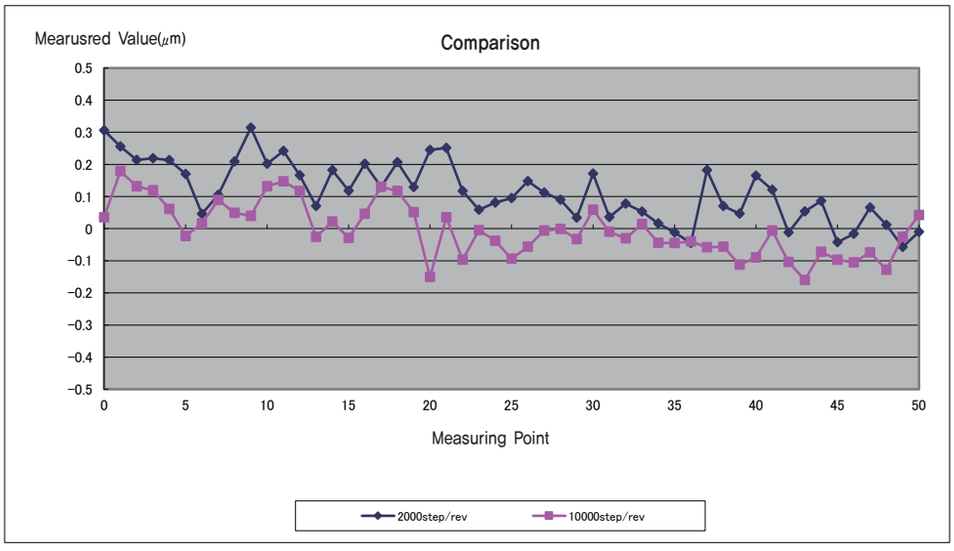


● Motorized Linear Stage(ZA07A-X102-42M01)

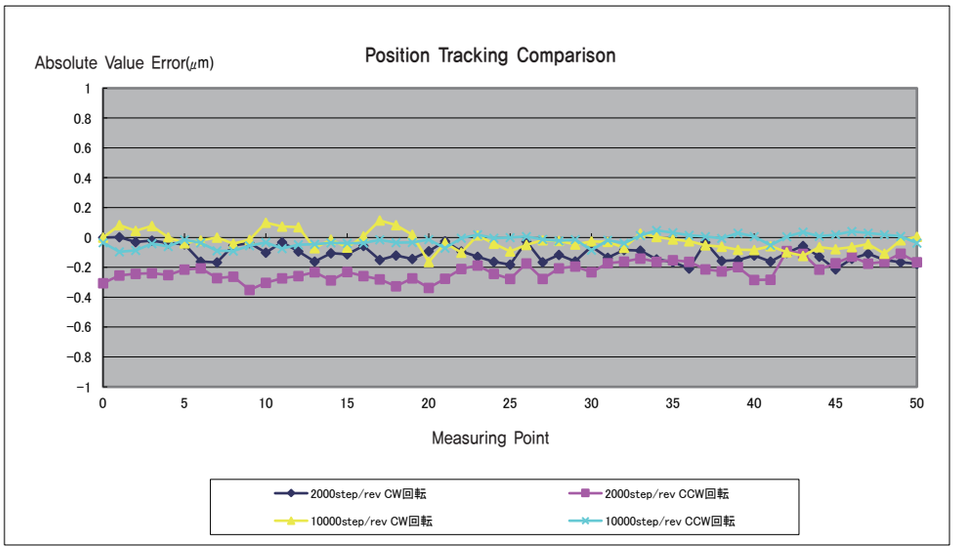
Test Item		Test Specification	Result
Accumulated lead error	[㎛/15mm]	5	2.3
Position repeatability	[±㎛]	0.2	0.04
Lost motion	[㎛]	0.5	0.1
Straightness : Vertical	[㎛/15mm]	1	0.3
Straightness : Horizontal	[㎛/15mm]	0.5	0.2
Backlash	[㎛]	0.2	0.1
Moment load stiffness	[arcsec/N-cm]	0.1	0.048

◆ One step movement measurement result (Resolution 2,000 or 10,000 [ppr])
Stage : ZA07A-X102-42M01 / Motor : Ezi-SERVO-42M-D

Lost Motion



Position Accuracy

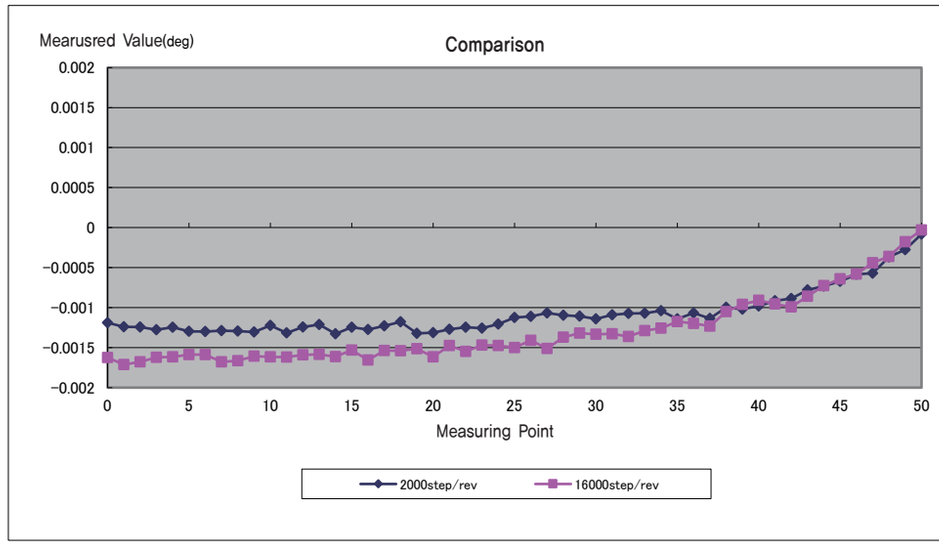


● Motorized Rotation Stage(RA07A-T01-28M01)

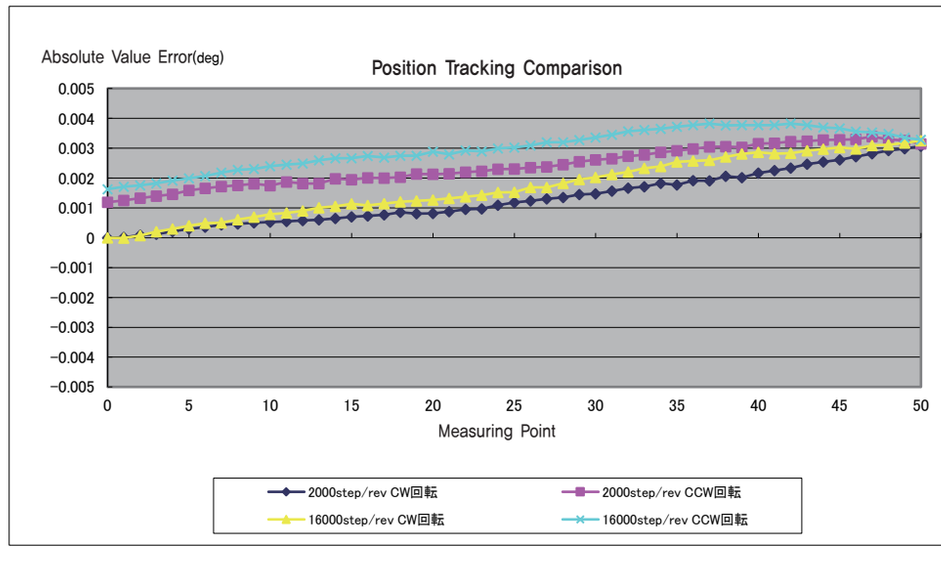
Test Item		Test Specification	Result
Lost motion	[deg]	0.005	0.0011
Angular repeata bility	[deg]	0.002	0.0002
Backlash	[deg]	0.005	0.0011
Surface runout	[㎛/±5deg]	5	0.7
Eccentricity	[㎛/±5deg]	5	0.1
Moment load stiffness	[arcsec/N-cm]	0.15	0.03

◆ One step movement measurement result (Resolution 2,000 or 16,000 [ppr])
Stage : RA07A-T01-28M01 / Motor : Ezi-SERVO-28M-D

Lost Motion



Position Accuracy

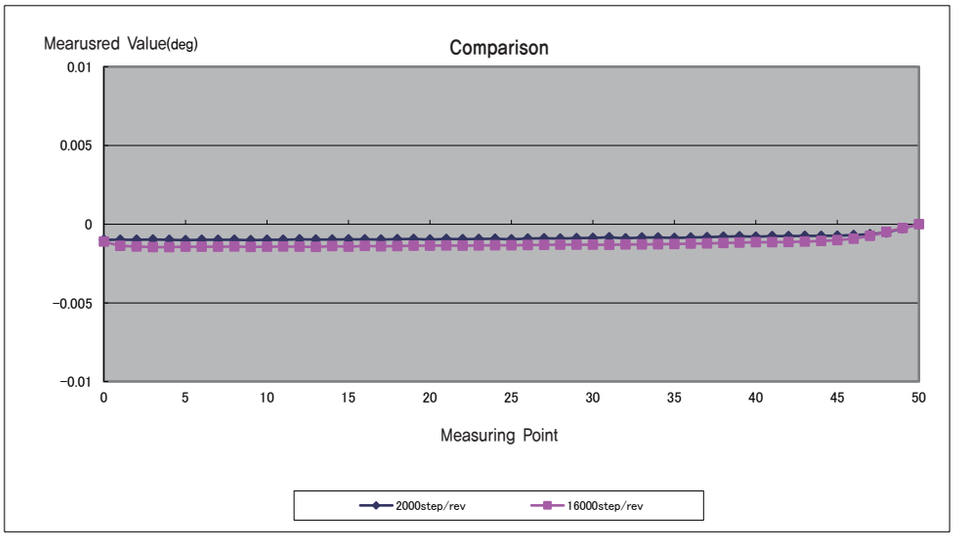


● Motorized Swivel Stage(SA05A-R2M-28M01)

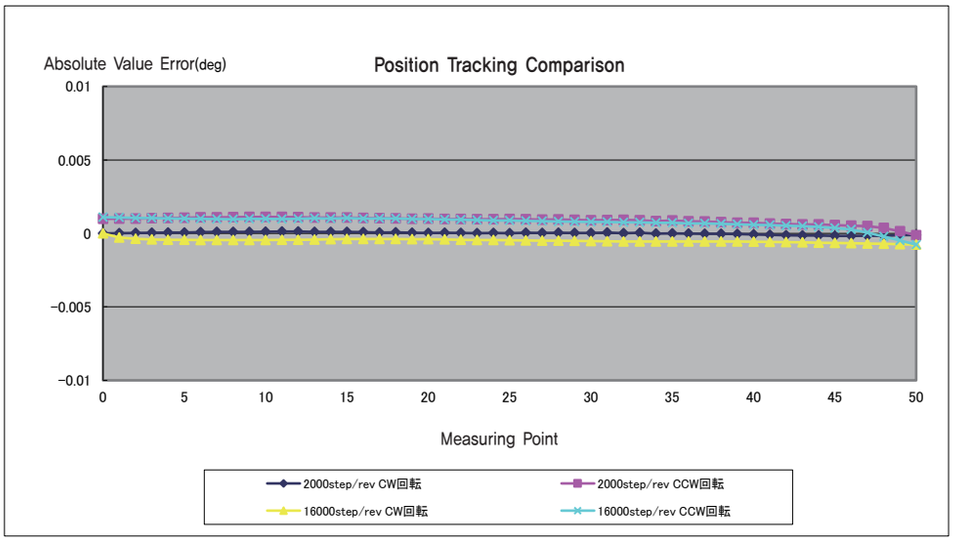
Test Item		Test Specification	Result
Position repeatability	[±deg]	0.003	0.0003
Lost motion	[deg]	0.003	0.0006
Backlash	[deg]	0.003	0.0017
Moment load stiffness	[arcsec/N-cm]	0.41	0.23

◆ One step movement measurement result (Resolution 2,000 or 16,000 [ppr])
Stage : SA05A-R2M-28M01 / Motor : Ezi-SERVO-28M-D

Lost Motion



Position Accuracy

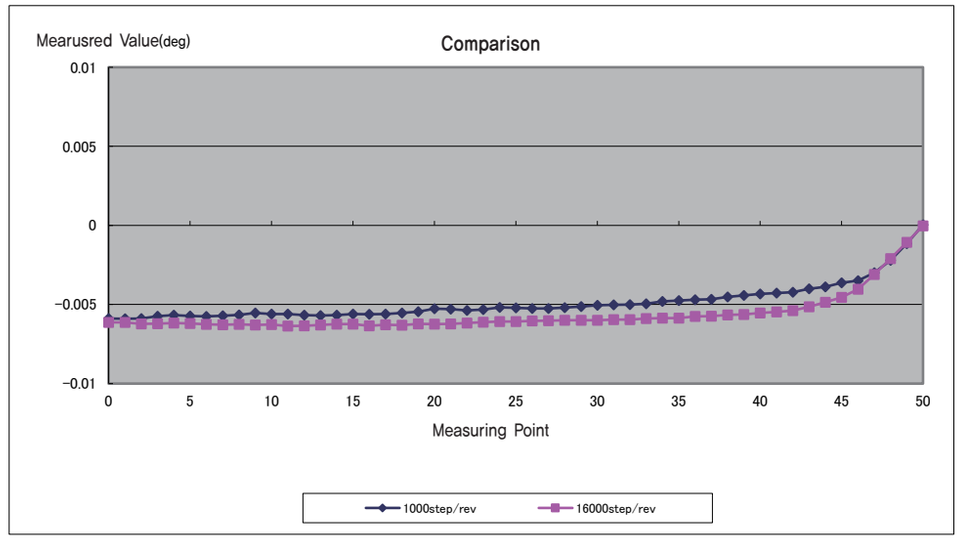


● Motorized Swivel Stage(SA05A-R2T-28M01)

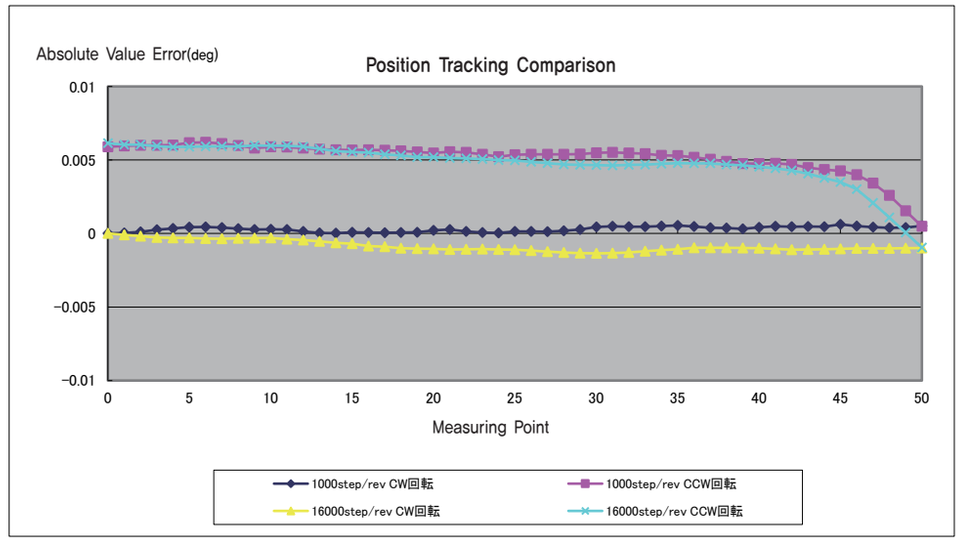
Test Item		Test Specification	Result
Position repeatability	[±deg]	0.003	0.0003
Lost motion	[deg]	0.003	0.0003
Backlash	[deg]	0.003	0.0017
Moment load stiffness	[arcsec/N-cm]	0.41	0.23

◆ One step movement measurement result (Resolution 2,000 or 16,000 [ppr])
Stage : SA05A-R2T-28M01 / Motor : Ezi-SERVO-28M-D

Lost Motion



Position Accuracy

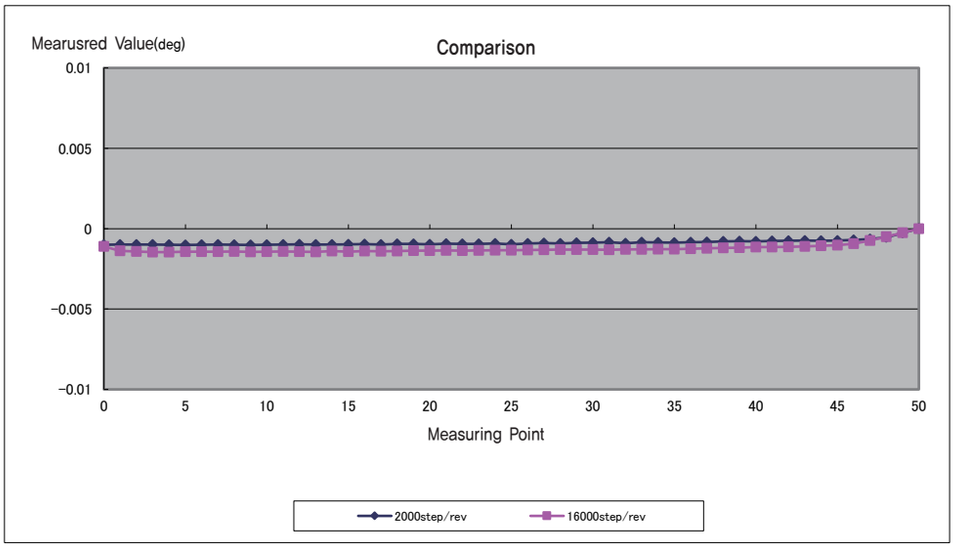


● Motorized Swivel Stage(SA07A-R2M-28M01)

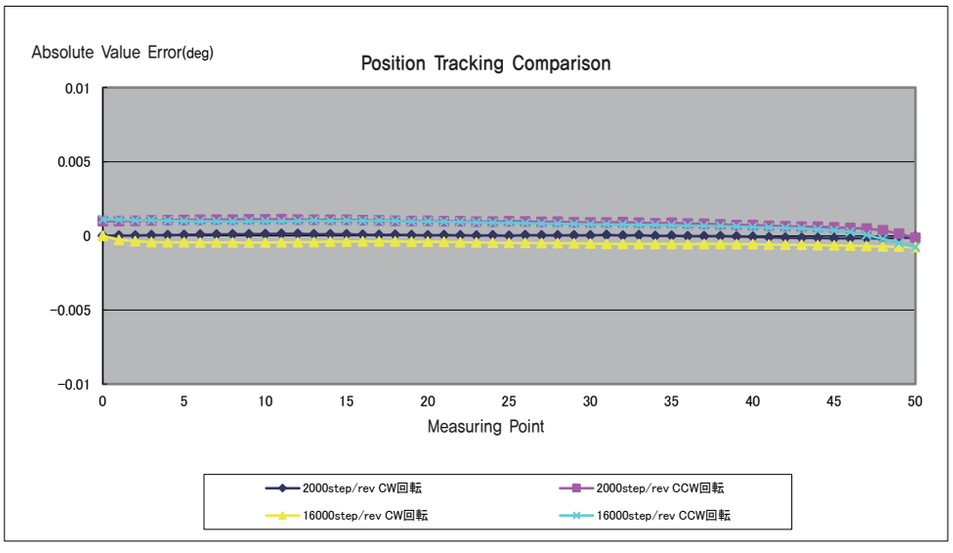
Test Item		Test Specification	Result
Position repeatability	[±deg]	0.001	0.0003
Lost motion	[deg]	0.003	0.0005
Backlash	[deg]	0.003	0.0004
Moment load stiffness	[arcsec/N-cm]	0.06	0.035

◆ One step movement measurement result (Resolution 2,000 or 16,000 [ppr])
Stage : SA07A-R2M-28M01 / Motor : Ezi-SERVO-28M-D

Lost Motion



Position Accuracy

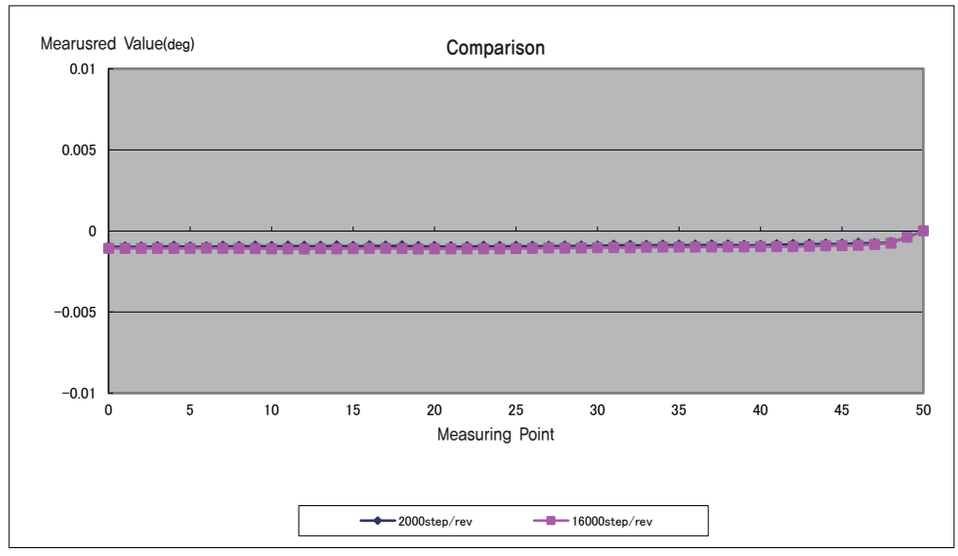


● Motorized Swivel Stage(SA07A-R2T-28M01)

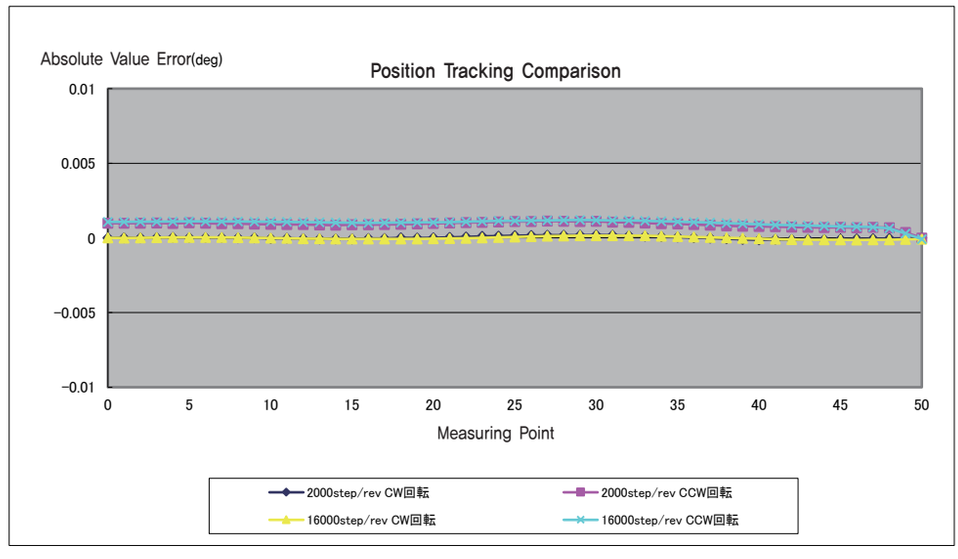
Test Item		Test Specification	Result
Position repeatability	[±deg]	0.001	0.0001
Lost motion	[deg]	0.003	0.0003
Backlash	[deg]	0.003	0.0003
Moment load stiffness	[arcsec/N-cm]	0.06	0.04

◆ One step movement measurement result (Resolution 2,000 or 16,000 [ppr])
Stage : SA07A-R2T-28M01 / Motor : Ezi-SERVO-28M-D

Lost Motion



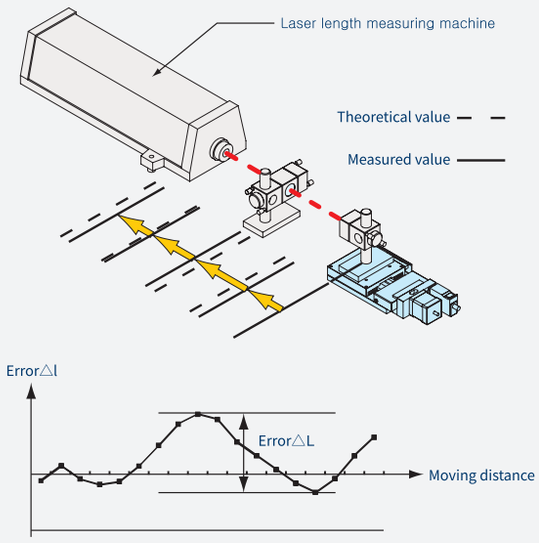
Position Accuracy



● Stage related terms and definitions

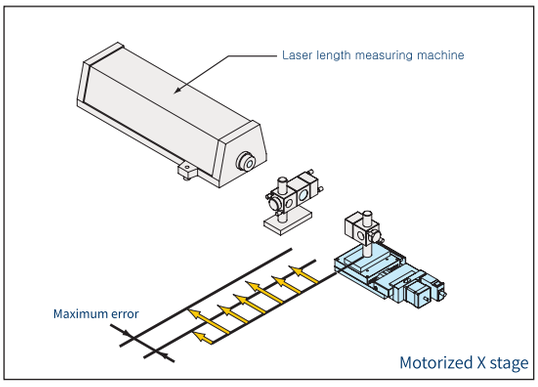
1. Accumulated Lead Error (Positioning Accuracy)

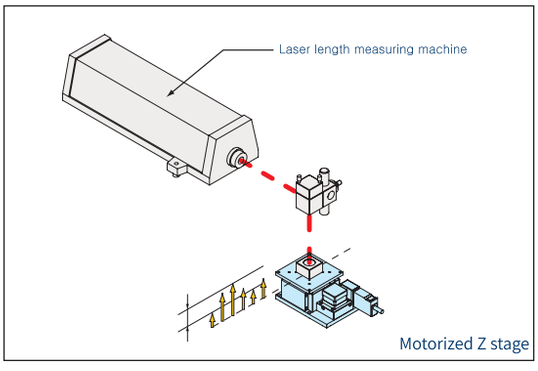
The positioning accuracy depends on errors in six degree of freedom. In a case of a linear positioning stage, the positioning accuracy is influenced by angular error(pitch, yaw, and roll), straightness(vertical and horizontal), and the lead error. Here is defined the positioning error is came from the lead error of screw as one of main reason and it is accumulated when the linear stage moves unidirectional within the full stroke. That' s why it is called as "Accumulated Lead Error." It is difference between a real output and ideal / calculated input. When the linear stage makes positioning in each position by each commanded values, there is an error between them. It is measured and calculated like following; (Actual displacement) −(Commanded displacement value).
The maximum deviation within the full stroke is defined as the Accumilated Lead Error.

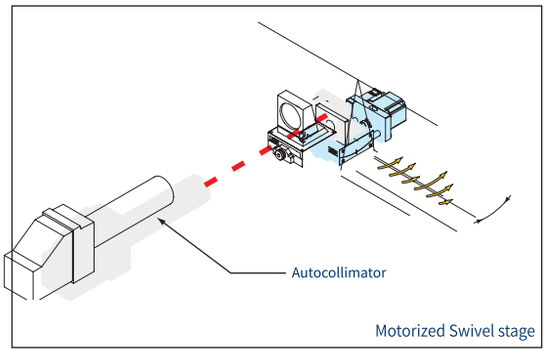


2. Repeatability

Positioning is repeated 7 times at an arbitrary point from the same direction, the stop position is measured. Perform this operation on three(3) points: at the center and at both ends. Then multiply the maximum deviation by 1/2. Repeatability is indicated by adding ± to one half of the maximum deviation. The load is only a corner cube placed on the center of the table.



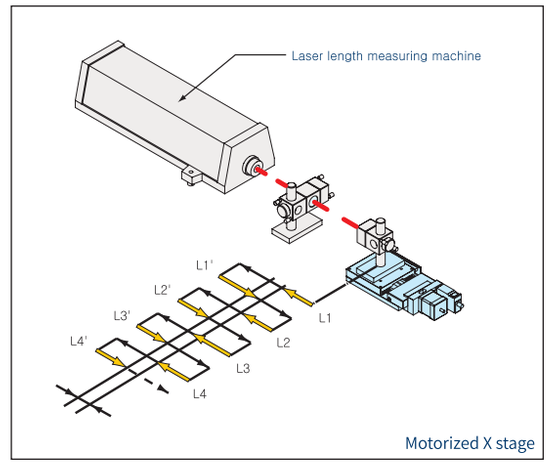




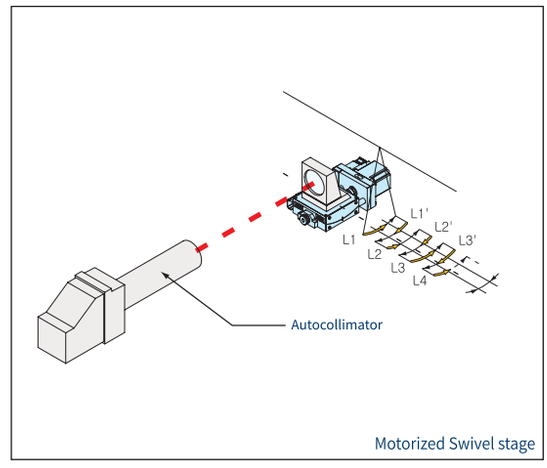
Stage related terms and definitions

3. Lost Motion

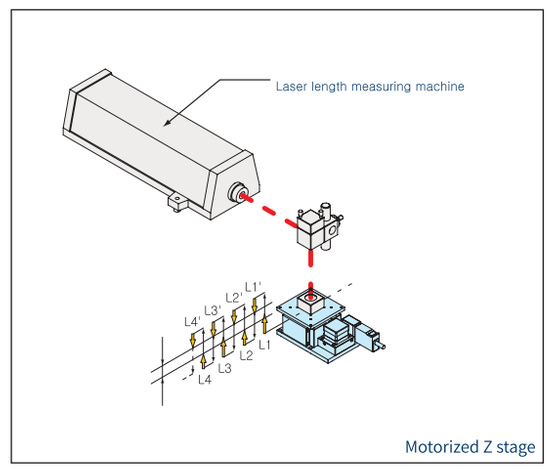
Positioning from a specified position(measurement position as a reference) from the positive direction and measuring its position.(L1) After moving in the forward direction, the same amount of command is given in the negative direction(motor rotation CCW direction) and Measuring this position.(L1') After moving in the negative direction, The same amount of command is given in the forward direction to move and determine the position. and Measuring that position.(L2) This positioning measurement is performed seven times in the forward and the negative directions, The maximum value within a given position obtained by calculating each difference and averaging the values is called a lost motion. However, the predetermined position means that the X stage has three points at the center and both ends, The swivel and Z stage are centered at one point.



Motorized X stage



Motorized Swivel stage

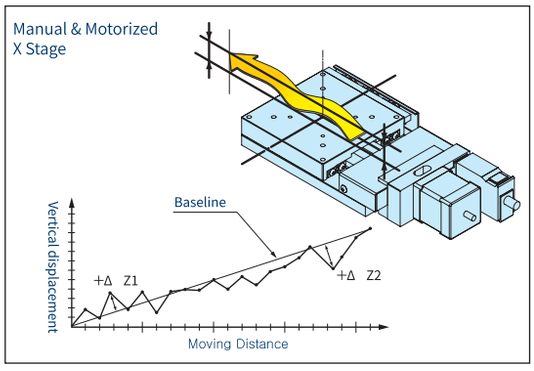


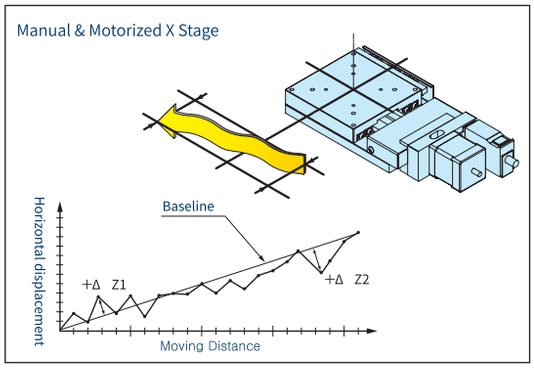
Motorized Z stage

● Stage related terms and definitions

4. Straightness(Within the vertical plane) / Straightness(Within the horizontal plane)

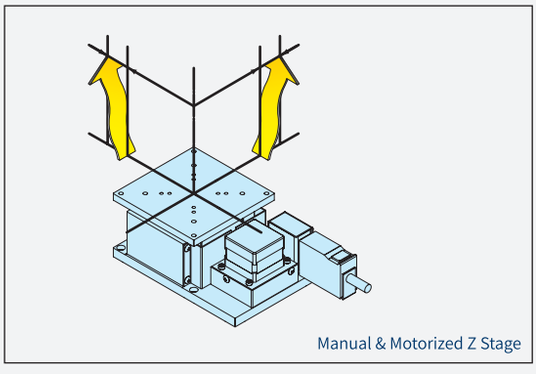
Place a reference plane(such as a straight edge) on the table top face, trace a displacement gauge in the table moving range, and obtain the maximum value of displacement from the straight line that connects the start point and the end point. This value is defined as straightness.
The straightness has a vertical component and a horizontal component. The maximum value of each component is defined as the stage straightness.

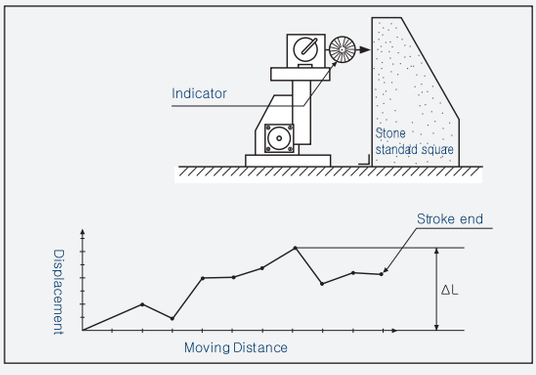




5. Verticality(Two directions)

An indicator is set up at the table so that it touches the perpendicular surface of the standard square, and then it is raised while measuring the displacement.
Displacement when moving from the starting point of one stroke end(displacement 0) to the opposite stroke end is defined as verticality.

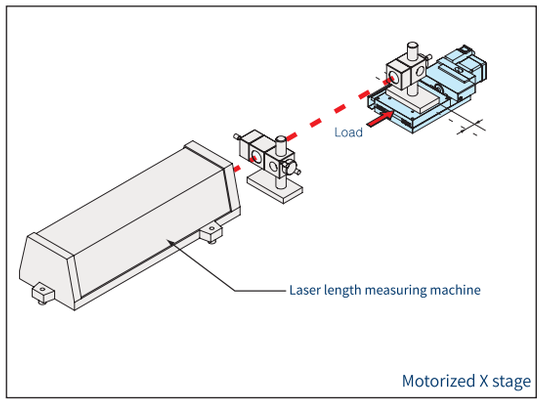




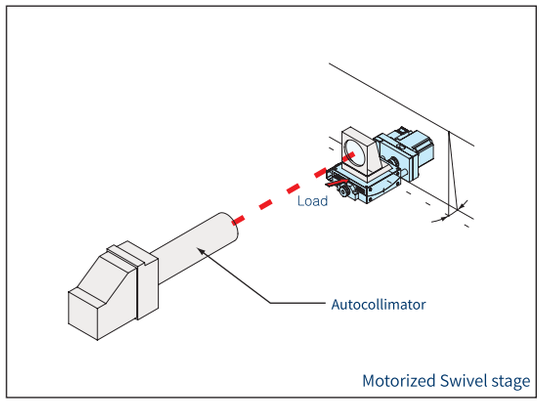
Stage related terms and definitions

6. Backlash

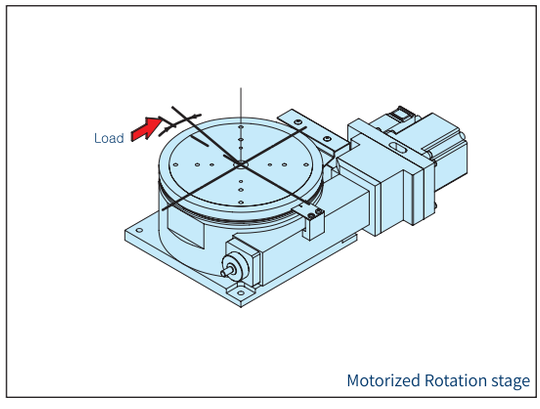
Let the table be the ORG position or the center of the movement range as the reference position, Loads the specified load in the same direction as the direction of travel when moving to the reference position, then releases the load. The difference between the reference position and the position after releasing the load is called backlash.
A predetermined position is set as a reference point, Apply the specified load in the same tangential direction as the sending direction and release the load. The difference between the reference position and the position after releasing the load is called backlash.



Motorized X stage



Motorized Swivel stage

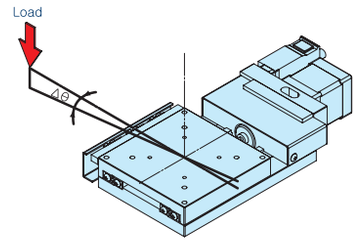


Motorized Rotation stage

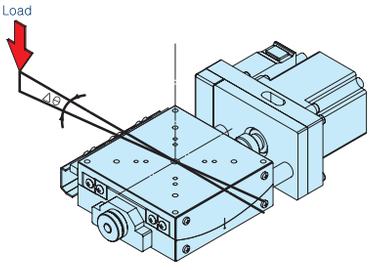
● Stage related terms and definitions

7. Moment Load Stiffness (Roll Direction)

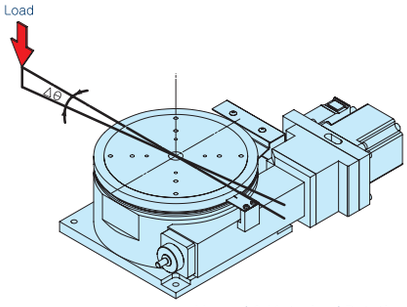
When an force in the roll direction is applied, the table tilts. Momentum Load is defined as the tilt angle of the table per momentum unit. Units are [arcsec / N · cm].



Manual & Motorized X Stage



Manual & Motorized Swivel Stage

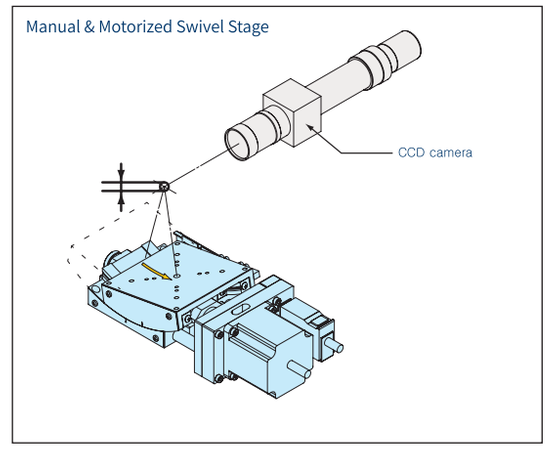


Manual & Motorized Rotation Stage

● Stage related terms and definitions

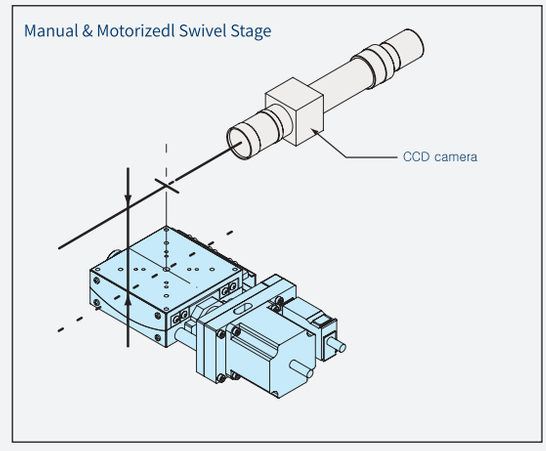
8. Rotational center displacement

When the reference point is installed on the actual rotation axis of the table, and the table is moved within the entire movement range, the shaking of the reference point is measured by the CCD camera, and the amount of shaking is called the rotation center displacement amount.



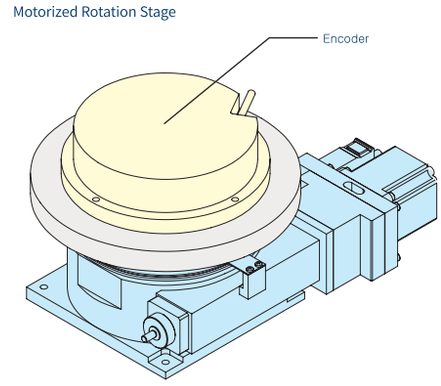
9. Work Distance

The distance from the reference point set for measuring the rotating center displacement to the table top face is defined as the working distance.



10. Horizontal withstand load

This is the limit load that can be applied to the table center when the stage is installed horizontally.(It is a limit load that can be guaranteed.) An encoder(shown in the below figure) is used for precision inspections of the accumulated lead error, lost motion, angle repeatability, and pitch error of motorized rotary stage(θ stage).



● Stage related terms and definitions

11. Accumulated Lead Error

A predetermined position is set as a reference point, Positioning is sequentially performed at regular intervals in one direction at a reference point, and then the difference between the measured value at each positioning point(the position actually moved from the reference point) and the command value(the position at which the command should actually be moved) is measured at 360° and the maximum difference is called the cumulative error.(⊿L in the below figure)

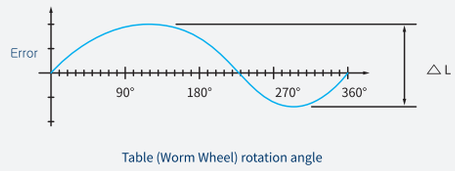


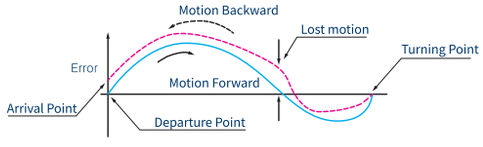
Table (Worm Wheel) rotation angle

Motorized Rotation Stage

12. Lost Motion

It is determined at a certain position as a reference point, and is sequentially measured at a certain interval in one direction at a reference point. After one rotation measurement, the measurement is performed in the opposite direction equally to the reference point. The maximum difference between the position of each locating point and the position of each locating point is called the lost motion.

※ Lost motion and definition of X stage are different.
※ The definition of the lost motion of the tangent bar type rotation stage is the same as that of the automatic swivel stage.

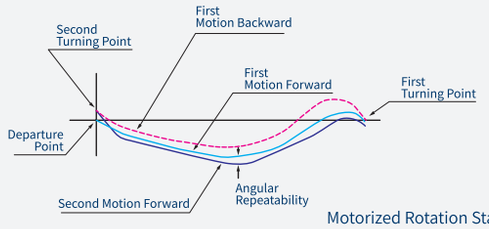


Motorized Rotation Stage

13. Angular Repeatability

The angular repeatability is defined as the maximum difference(regardless of the direction) when a rotation stage rotates twice of full turns of CW and CCW direction. The difference is calculated by comparing actual positioning in each angle from the first and second same directional rotation, and a bigger difference from CW and CCW rotations is defined as the maximum difference and same as the angular repeatability.

※ The definition of angular repeatability of tangent–bar lead mechanism motorized rotation stage is same as motorized swivel stage.

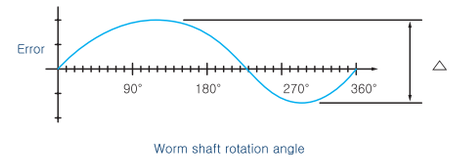


Motorized Rotation Stage

● Stage related terms and definitions

14. Pitch Error

A predetermined position is set as a reference point, the difference bet-ween the measured value(the position actually moved from the reference point) and the command value(the position at which the commanded actual movement is made) at each of the positioning points is set as a difference Measured in the range of 1 value(1 revolution of worm shaft), and the maximum difference(ΔL in the below figure) is called pitch error.

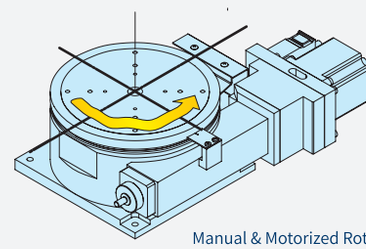


Motorized Rotation Stage

15. Surface Runout

An indicator is placed into contact in the vicinity of external periphery of the table, and a measurement is made at 36 points for every 10° . Maximum error(peak to peak) is obtained. This value is the sum of deviations resulting from surface runout errors and that derive from finished table surface irregularities.

※ The surface runout of tangent-bar lead mechanism rotation stage is measured in full stroke angular range.

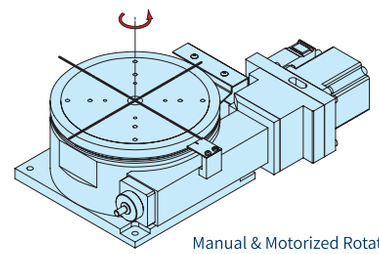


Manual & Motorized Rotation Stage

16. Eccentricity

The inner diameter as a reference is provided in the main shaft. During final assembly, displacement of this inner diameter is measured with an indicator. This value is the sum of roundness deviations of the inner diameter and eccentricity, and we define this value as eccentricity(only for Mont-Blanc series).

※ The eccentricity of tangent-bar lead mechanism rotation stage is measured in full stroke angular range.



Manual & Motorized Rotation Stage

FASTECH_

Product Information

Ezi-SERVO®

S-SERVO® II

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®

Ezi-SPEED


Exi-Speed
Exi-Speed

Ezi-SPEED

BLDC Motor Speed Control System_ Ezi-SPEED

- AC Input BLDC Motor Speed Control System
- Wide Speed Control Range (50~4000rpm)
- Stable Speed by Vector Control (Speed Regulation 0.2%)
- Stable Low Speed (50rpm) by Velocity Observer
- High Efficiency with Low Heat Generation
- Easy Speed Control, Easy Wiring and Connecting (Front Panel and I/O)
- Product Line-Up : 30, 60, 120, 200, 400W



FASTECH

Fast, Accurate, Smooth Motion

Ezi-SPEED®

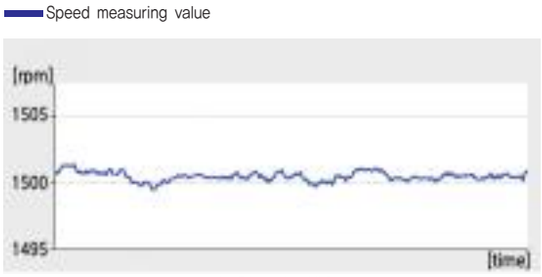
BLDC Motor Speed Control System



1 Stable Speed Control

(Speed Regulation 0.2%)

Ezi-SPEED compares the setting speed with the speed feedback signals from the motor at all time, and adjusts the motor current using vector control algorithm. So, even if the load changes, stable rotation is maintained from low speed to high speed. Inverter controlled AC induction motor does not perform feedback control, so the speed will be reduced significantly when load increases.
Ezi-SPEED is recommended for applications that require stable speed.



Ezi-SPEED 120W



Inverter + AC induction motor 100W

* Load factor: 95% * Setting speed: 1,500 [rpm]
* Resolution of external encoder for measuring velocity ripple : 32,000 [ppr]

2 Wide Speed Control Range

(Speed Ratio: 1:80)

Ezi-SPEED has wide speed control range compared to AC induction motor with inverter. Because torque is not restricted at low speed, Ezi-SPEED is recommended for application that requires stable torque over from low to high speed.

Product	Speed Control Range	Speed Ratio
Ezi-SPEED	50~4,000 [rpm]	1:80
Inverter + AC induction motor	200~2,400 [rpm]	1:12

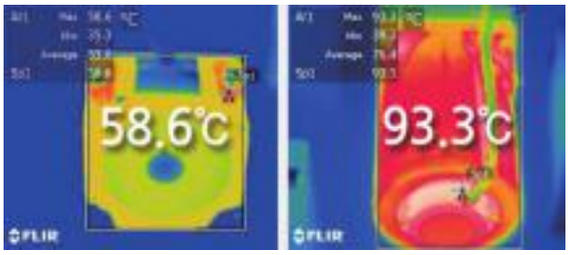
* Speed range of Inverter + AC induction motor varies depending on model type.

3 High Efficiency

(Energy Savings)

Unlike AC induction motors, BLDC motors use permanent magnets in the rotor so that it could prevent secondary loss from rotor.
Therefore, BLDC motors has higher efficiency than inverter controlled AC induction motor so that customers can save energy.

- Load factor : 100%, Setting speed: 1,500 [rpm]
- Comparison of motor temperature after 4 hours continuous operation.



Ezi-SPEED 60W AC Induction Motor 60W

4 Compact, Light Weight, High Power

Compared to AC induction motor, BLDC motor has compact size, light weight and high power because of the permanent magnets in the rotor.



Ezi-SPEED 60W AC Induction Motor 60W

5 Easy Wiring

The motor and sensor connector can be easily connected to drive. There is no need for soldering or special tools when connecting the power and I/O cables. For power connector, just insert the lead wire and fix using screw driver. For IO connector, just insert the lead wire while pushing the orange button.



Motor Connector Wiring

6 Easy to Use

(Front Panel)



• Control of Operation and Stop

The motor starts when switch is in the "RUN" position, and stops after deceleration when it is moved to the "STAND-BY" position.



• Control of rotation direction

Changing the rotation direction is possible with the rotation direction switch. Changing the rotation to Forward or Reverse direction.

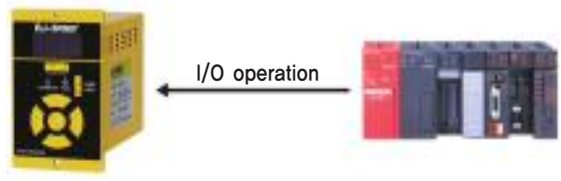


• Control of Speed

The speed control buttons allow you to use simple speed control and many functions. Pushing + button increases the speed and pushing − button reduces the speed. When the desired speed is reached, simply push the S button to set the speed value.

7 Operation by External I/O

External I/O can control Start/Stop, Changing rotation direction and Multi speed operation.



Ezi-SPEED PLC

8 Display Load Factor and Actual Speed

Load factor is displayed as percentage like 100% for rated torque. User can check the load during operating the motor and can maintain the motor in optimal condition by checking load changes due to the secular change. Also the actual speed can be displayed.
(Motor speed, Gearbox speed, Linear speed)



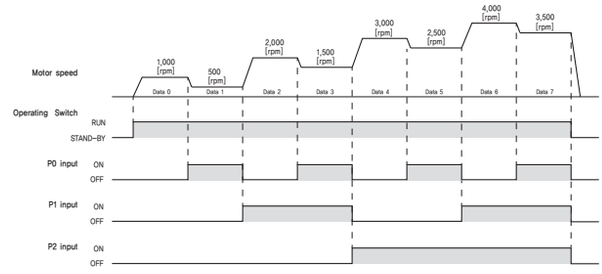
Indication at load factor of 100%



Actual speed at setting speed of 1,500 [rpm]

9 8-Speed Settings

8 steps speed operation can be done by setting No.0 ~ No.7 data using inputs P0, P1, P2. We can do this only with Ezi-SPEED without any extra controller.



10 Various Functions can be Set on the Drive

- Motor Start/Stop
- Setting the operation speed
- Changing the rotation direction
- Changing the indication
- Operation speed indication when the speed decreasing or increasing ratio is set
- Setting the acceleration/deceleration time
- Button operation lock
- Speed setting for 8-speed operation
- Speed limits setting
- Validating the external operation signals
- External I/O signal allocation
- Setting the overload alarm detection time

11 Lock the Setting and Operation

- Ezi-SPEED provides a lock function to prevents the unwanted changes in the speed. We can not change speed or data when it is in lock state.

- **Activating the lock function**

  Press the S button for 5 seconds or more when "STAND-BY" mode.
  When "LOCK" appears, the lock function is activated.

- **Deactivationg the lock function**

  Press the S button for 5 seconds or more.
  When "UnLk" appears, the lock function is cancelled.

12 Protection Function

- Ezi-SPEED detect abnormal situations like overload, over voltage etc. When this happens, the operation is stopped and alarm is displayed.

- A regenerative resistor can be used when the deceleration time is short or when the large inertia load is used. Also the protection function can be activated for the excessive external force acting on the motor shaft.

Ezi-SPEED Part Numbering

Ezi-SPEED-60-H-30-C-R5-P

Product Name

Motor Flange Size

60 : 61×61mm
80 : 81×81mm
90 : 90×90mm
104 : 104.5×104.5mm

Gearbox Size

60 : 60×60mm
80 : 80×80mm
90 : 90×90mm
104 : 110×110mm

Hollow Shaft Gearbox size

60 : 60×120.5mm
80 : 80×160.5mm
90 : 90×180mm
104 : Not applicable

Shaft Figuration

S : Straight
H : High Strength

Output Power

30 : 30W
60 : 60W
120 : 120W
200 : 200W
400 : 400W

Power Supply Voltage

A : Single-Phase 100~120V
C : Single-Phase, Three-Phase 200~240V

Gear Ratio

Blank – Without Gear
R5 – 1:5
R10 – 1:10
R15 – 1:15
R20 – 1:20
R30 – 1:30
R50 – 1:50
R100 – 1:100
R200 – 1:200

Gearbox

Blank – Without Gear
P – Parallel Gearbox
H – Hollow Shaft Gearbox

Standard Combination

Output Power	Unit Part Number	Motor Model Number	Drive Model Number
30W	Ezi-SPEED-60-S-30-A	ESM-60-S-30	ESD-30-A
	Ezi-SPEED-60-S-30-C		ESD-30-C
60W	Ezi-SPEED-80-S-60-A	ESM-80-S-60	ESD-60-A
	Ezi-SPEED-80-S-60-C		ESD-60-C
120W	Ezi-SPEED-90-S-120-A	ESM-90-S-120	ESD-120-A
	Ezi-SPEED-90-S-120-C		ESD-120-C
200W	Ezi-SPEED-104-S-200-C	ESM-104-S-200	ESD-200-C
400W	Ezi-SPEED-104-S-400-C	ESM-104-S-400	ESD-400-C

Combination with Gearbox

Output Power	Unit Part Number	Motor Model Number	Drive Model Number	Gearbox Model Number	Gear Ratio
30W	Ezi-SPEED-60-H-30-A-R5-P	ESM-60-H-30	ESD-30-A	ESG-60-H-R5-P	1:5
	Ezi-SPEED-60-H-30-C-R5-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R5-H		ESD-30-A	ESG-60-H-R5-H	
	Ezi-SPEED-60-H-30-C-R5-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R10-P		ESD-30-A	ESG-60-H-R10-P	1:10
	Ezi-SPEED-60-H-30-C-R10-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R10-H		ESD-30-A	ESG-60-H-R10-H	
	Ezi-SPEED-60-H-30-C-R10-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R15-P		ESD-30-A	ESG-60-H-R15-P	1:15
	Ezi-SPEED-60-H-30-C-R15-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R15-H		ESD-30-A	ESG-60-H-R15-H	
	Ezi-SPEED-60-H-30-C-R15-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R20-P		ESD-30-A	ESG-60-H-R20-P	1:20
	Ezi-SPEED-60-H-30-C-R20-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R20-H		ESD-30-A	ESG-60-H-R20-H	
	Ezi-SPEED-60-H-30-C-R20-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R30-P		ESD-30-A	ESG-60-H-R30-P	1:30
	Ezi-SPEED-60-H-30-C-R30-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R30-H		ESD-30-A	ESG-60-H-R30-H	
	Ezi-SPEED-60-H-30-C-R30-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R50-P		ESD-30-A	ESG-60-H-R50-P	1:50
	Ezi-SPEED-60-H-30-C-R50-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R50-H		ESD-30-A	ESG-60-H-R50-H	
	Ezi-SPEED-60-H-30-C-R50-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R100-P		ESD-30-A	ESG-60-H-R100-P	1:100
	Ezi-SPEED-60-H-30-C-R100-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R100-H		ESD-30-A	ESG-60-H-R100-H	
	Ezi-SPEED-60-H-30-C-R100-H		ESD-30-C		
	Ezi-SPEED-60-H-30-C-R200-P		ESD-30-A	ESG-60-H-R200-P	1:200
	Ezi-SPEED-60-H-30-C-R200-P		ESD-30-C		
	Ezi-SPEED-60-H-30-C-R200-H		ESD-30-A	ESG-60-H-R200-H	
	Ezi-SPEED-60-H-30-C-R200-H		ESD-30-C		

● Combination with Gearbox

Output Power	Unit Part Number	Motor Model Number	Drive Model Number	Gearbox Model Number	Gear Ratio
60W	Ezi-SPEED-80-H-60-A-R5-P	ESM-80-H-60	ESD-60-A	ESG-80-H-R5-P	1:5
	Ezi-SPEED-80-H-60-C-R5-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R5-H		ESD-60-A	ESG-80-H-R5-H	
	Ezi-SPEED-80-H-60-C-R5-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R10-P		ESD-60-A	ESG-80-H-R10-P	1:10
	Ezi-SPEED-80-H-60-C-R10-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R10-H		ESD-60-A	ESG-80-H-R10-H	
	Ezi-SPEED-80-H-60-C-R10-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R15-P		ESD-60-A	ESG-80-H-R15-P	1:15
	Ezi-SPEED-80-H-60-C-R15-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R15-H		ESD-60-A	ESG-80-H-R15-H	
	Ezi-SPEED-80-H-60-C-R15-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R20-P		ESD-60-A	ESG-80-H-R20-P	1:20
	Ezi-SPEED-80-H-60-C-R20-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R20-H		ESD-60-A	ESG-80-H-R20-H	
	Ezi-SPEED-80-H-60-C-R20-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R30-P		ESD-60-A	ESG-80-H-R30-P	1:30
	Ezi-SPEED-80-H-60-C-R30-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R30-H		ESD-60-A	ESG-80-H-R30-H	
	Ezi-SPEED-80-H-60-C-R30-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R50-P		ESD-60-A	ESG-80-H-R50-P	1:50
	Ezi-SPEED-80-H-60-C-R50-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R50-H		ESD-60-A	ESG-80-H-R50-H	
	Ezi-SPEED-80-H-60-C-R50-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R100-P		ESD-60-A	ESG-80-H-R100-P	1:100
	Ezi-SPEED-80-H-60-C-R100-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R100-H		ESD-60-A	ESG-80-H-R100-H	
	Ezi-SPEED-80-H-60-C-R100-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R200-P		ESD-60-A	ESG-80-H-R200-P	1:200
	Ezi-SPEED-80-H-60-C-R200-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R200-H		ESD-60-A	ESG-80-H-R200-H	
	Ezi-SPEED-80-H-60-C-R200-H		ESD-60-C		
120W	Ezi-SPEED-90-H-120-A-R5-P	ESM-90-H-120	ESD-120-A	ESG-90-H-R5-P	1:5
	Ezi-SPEED-90-H-120-C-R5-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R5-H		ESD-120-A	ESG-90-H-R5-H	
	Ezi-SPEED-90-H-120-C-R5-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R10-P		ESD-120-A	ESG-90-H-R10-P	1:10
	Ezi-SPEED-90-H-120-C-R10-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R10-H		ESD-120-A	ESG-90-H-R10-H	
	Ezi-SPEED-90-H-120-C-R10-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R15-P		ESD-120-A	ESG-90-H-R15-P	1:15
	Ezi-SPEED-90-H-120-C-R15-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R15-H		ESD-120-A	ESG-90-H-R15-H	
	Ezi-SPEED-90-H-120-C-R15-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R20-P		ESD-120-A	ESG-90-H-R20-P	1:20
	Ezi-SPEED-90-H-120-C-R20-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R20-H		ESD-120-A	ESG-90-H-R20-H	
	Ezi-SPEED-90-H-120-C-R20-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R30-P		ESD-120-A	ESG-90-H-R30-P	1:30
	Ezi-SPEED-90-H-120-C-R30-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R30-H		ESD-120-A	ESG-90-H-R30-H	
	Ezi-SPEED-90-H-120-C-R30-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R50-P		ESD-120-A	ESG-90-H-R50-P	1:50
	Ezi-SPEED-90-H-120-C-R50-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R50-H		ESD-120-A	ESG-90-H-R50-H	
	Ezi-SPEED-90-H-120-C-R50-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R100-P		ESD-120-A	ESG-90-H-R100-P	1:100
	Ezi-SPEED-90-H-120-C-R100-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R100-H		ESD-120-A	ESG-90-H-R100-H	
	Ezi-SPEED-90-H-120-C-R100-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R200-P		ESD-120-A	ESG-90-H-R200-P	1:200
	Ezi-SPEED-90-H-120-C-R200-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R200-H		ESD-120-A	ESG-90-H-R200-H	
	Ezi-SPEED-90-H-120-C-R200-H		ESD-120-C		

Output Power	Unit Part Number	Motor Model Number	Drive Model Number	Gearbox Model Number	Gear Ratio
200W	Ezi-SPEED-104-H-200-C-R5-P	ESM-104-H-200	ESD-200-C	ESG-104-H-R5-P	1:5
	Ezi-SPEED-104-H-200-C-R10-P			ESG-104-H-R10-P	1:10
	Ezi-SPEED-104-H-200-C-R15-P			ESG-104-H-R15-P	1:15
	Ezi-SPEED-104-H-200-C-R20-P			ESG-104-H-R20-P	1:20
	Ezi-SPEED-104-H-200-C-R30-P			ESG-104-H-R30-P	1:30
	Ezi-SPEED-104-H-200-C-R50-P			ESG-104-H-R50-P	1:50
	Ezi-SPEED-104-H-200-C-R100-P			ESG-104-H-R100-P	1:100
	Ezi-SPEED-104-H-200-C-R200-P			ESG-104-H-R200-P	1:200
400W	Ezi-SPEED-104-H-400-C-R5-P	ESM-104-H-400	ESD-400-C	ESG-104-H-R5-P	1:5
	Ezi-SPEED-104-H-400-C-R10-P			ESG-104-H-R10-P	1:10
	Ezi-SPEED-104-H-400-C-R15-P			ESG-104-H-R15-P	1:15
	Ezi-SPEED-104-H-400-C-R20-P			ESG-104-H-R20-P	1:20
	Ezi-SPEED-104-H-400-C-R30-P			ESG-104-H-R30-P	1:30
	Ezi-SPEED-104-H-400-C-R50-P			ESG-104-H-R50-P	1:50
	Ezi-SPEED-104-H-400-C-R100-P			ESG-104-H-R100-P	1:100
	Ezi-SPEED-104-H-400-C-R200-P			ESG-104-H-R200-P	1:200

● Specifications of Drive

1. Input Voltage 110V Specifications

Unit Part Number		ESD-30-A	ESD-60-A	ESD-120-A
Rated Output Power		30W	60W	120W
Power Supply Input	Rated Voltage	Single-Phase 100~120V		
	Frequency	50/60Hz		
	Permissible Frequency Range	±5%		
	Rated Input Current	0.95A	1.56A	2.69A
	Maximum Input Current	2.85A	4.68A	8.07A
Rated Output Current		0.21A	0.36A	0.85A
Rated Torque		0.096N·m	0.192N·m	0.382N·m
Maximum instantaneous Torque		0.288N·m	0.576N·m	1.146N·m
Rated Speed		3,000 [rpm]		
Speed Control Range		50~4,000 [rpm]		
Speed Regulation		0.2% or less / Conditions: 0~Rated Torque, Rated Speed, Rated Voltage, normal Temperature		
Protection Functions		Under voltage Error, Over voltage Error, Over heat Error, Over current Error, Speed feedback Error, Sensor Error, Over speed Error, Over load Error, Operation at power-on Error, External Error		
Environment	Temperature	· In Use: 0~40℃ · In Storage: -20~70℃		
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vibration resistant	0.5g		
I/O Signal	Input Signal Function	5 user inputs (Photocoupler)		
	Output Signal Function	3 user outputs (Photocoupler)		

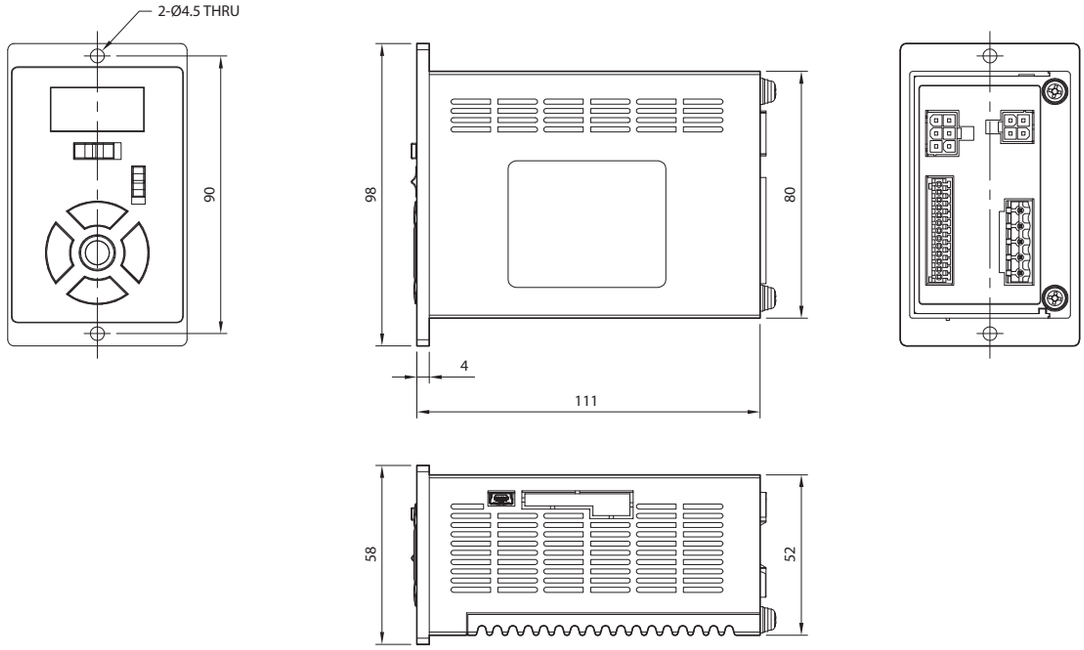
● Specifications of Drive

2. Input Voltage 220V Specifications

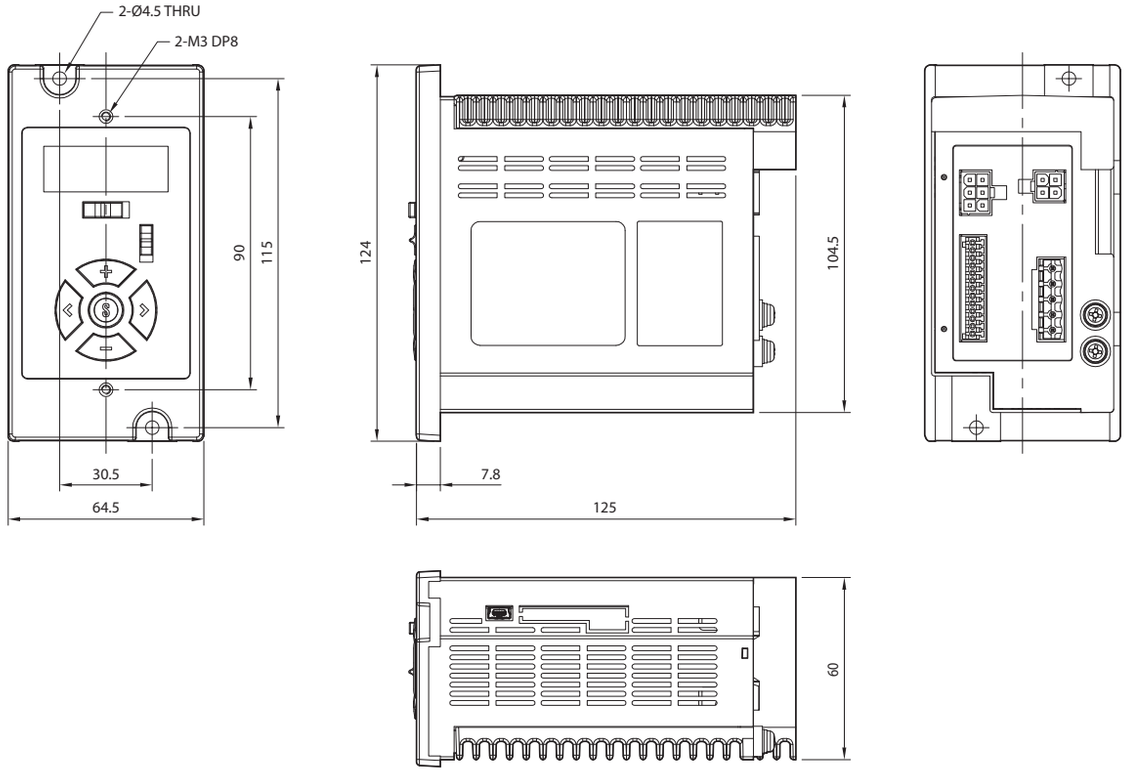
Unit Part Number		ESD-30-C	ESD-60-C	ESD-120-C	ESD-200-C	ESD-400-C
Rated Output Power		30W	60W	120W	200W	400W
Power Supply Input	Rated Voltage	Single-Phase 200~240V / Three-Phase 200~240V				
	Frequency	50/60Hz				
	Permissible Frequency Range	±5%				
	Rated Input Current	Single-Phase : 0.55A Three-Phase : 0.32A	Single-Phase : 0.92A Three-Phase : 0.53A	Single-Phase : 1.61A Three-Phase : 0.93A	Single-Phase : 2.34A Three-Phase : 1.35A	Single-Phase : 3.88A Three-Phase : 2.24A
	Maximum Input Current	Single-Phase : 1.65A Three-Phase : 0.95A	Single-Phase : 2.76A Three-Phase : 1.59A	Single-Phase : 4.83A Three-Phase : 2.79A	Single-Phase : 7.02A Three-Phase : 4.05A	Single-Phase : 11.64A Three-Phase : 6.72A
Rated Output Current		0.21A	0.36A	0.85A	1.65A	2.37A
Rated Torque		0.096N·m	0.192N · m	0.382N · m	0.637N · m	1.272N · m
Maximum instantaneous Torque		0.288N · m	0.576N · m	1.146N · m	1.911N · m	3.816N · m
Rated Speed		3,000 [rpm]				
Speed Control Range		50~4,000 [rpm]				
Speed Regulation		0.2% or less / Conditions: 0~Rated Torque, Rated Speed, Rated Voltage, normal Temperature				
Protection Functions		Under voltage Error, Over voltage Error, Over heat Error, Over current Error, Speed feedback Error, Sensor Error, Over speed Error, Over load Error, Operation at power-on Error, External Error				
Environment	Temperature	· In Use: 0~40℃ · In Storage: -20~70℃				
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)				
	Vibration resistant	0.5g				
I/O Signal	Input Signal Function	5 user inputs (Photocoupler)				
	Output Signal Function	3 user outputs (Photocoupler)				

● Dimensions of Drive [mm]

1. 30, 60, 120W Drive



2. 200, 400W Drive

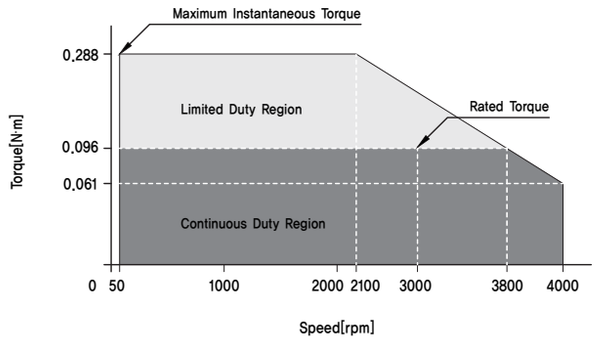


● Specifications of Motor

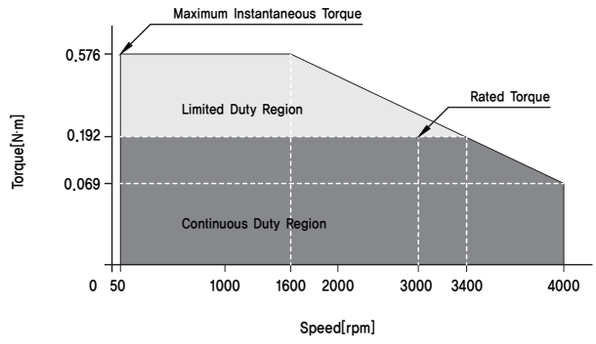
MODEL	UNIT	ESM-60-S-30	ESM-80-S-60	ESM-90-S-120	ESM-104-S-200	ESM-104-S-400
RATED OUTPUT POWER (CONTINUOUS)	W	30	60	120	200	400
RATED TORQUE	N·m	0.096	0.192	0.382	0.637	1.272
RATED INPUT CURRENT	A	0.21	0.36	0.85	1.65	2.37
RATED SPEED	rpm	3,000				
PERMISSIBLE LOAD INERTIA MOMENT	10^{-4}kg·m^2	0.5	1.8	5.8	5.8	8.75
INERTIA MOMENT	10^{-4}kg·m^2	0.086	0.234	0.61	0.61	0.66
WEIGHT	kg	0.5	0.8	1.3	2.4	2.4
LENGTH(L)	mm	62	74	94	156	156
PERMISSIBLE OVERHUNG LOAD	10mm from shaft end [N]	70	120	160	160	160
	20mm from shaft end [N]	100	140	170	170	170

Torque Characteristics of Motor

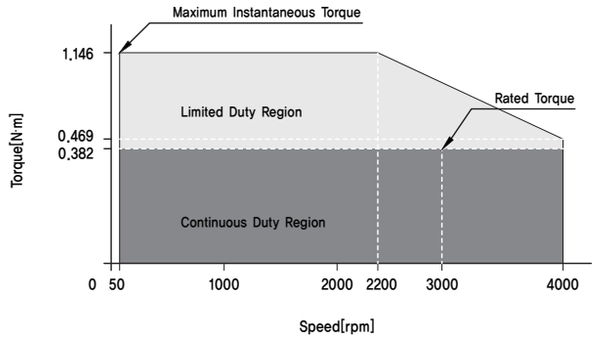
Ezi-SPEED-30W



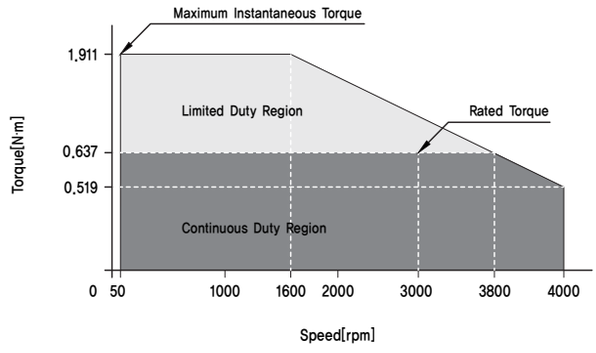
Ezi-SPEED-60W



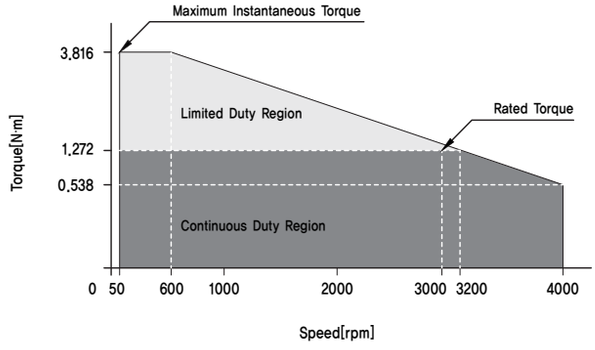
Ezi-SPEED-120W



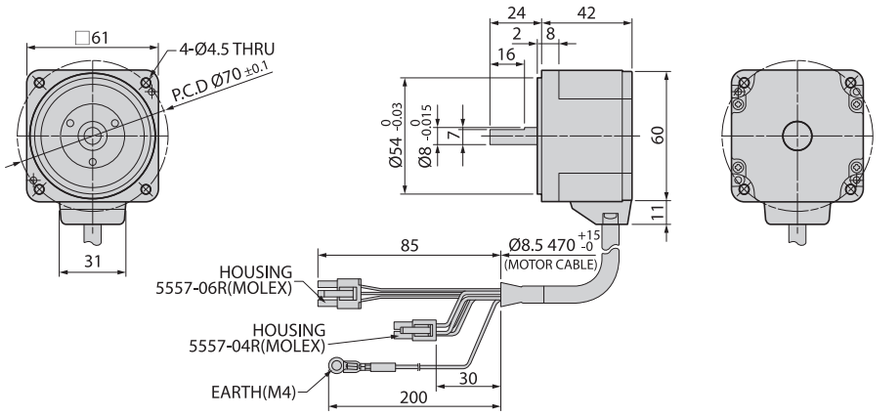
Ezi-SPEED-200W



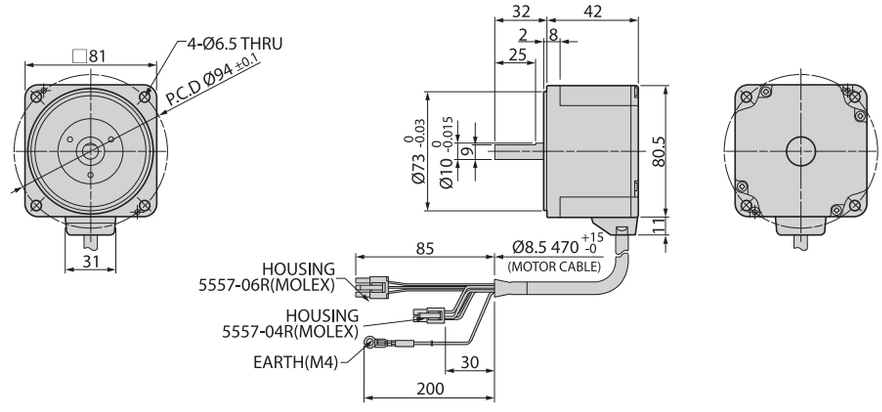
Ezi-SPEED-400W



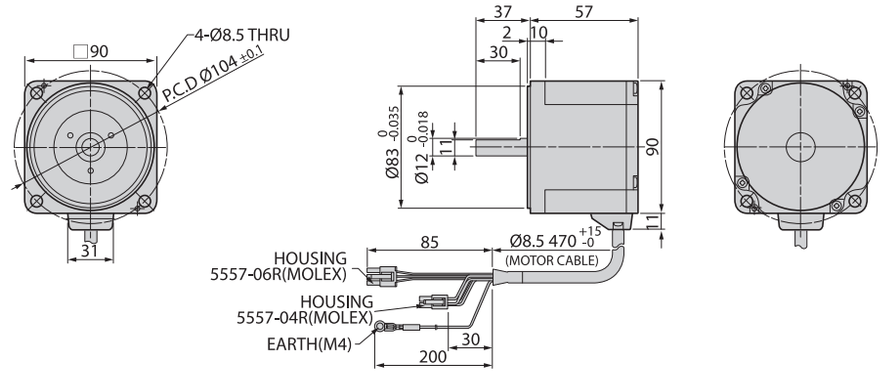
● Dimensions of Motor [mm]



30W
ESM-60-S-30

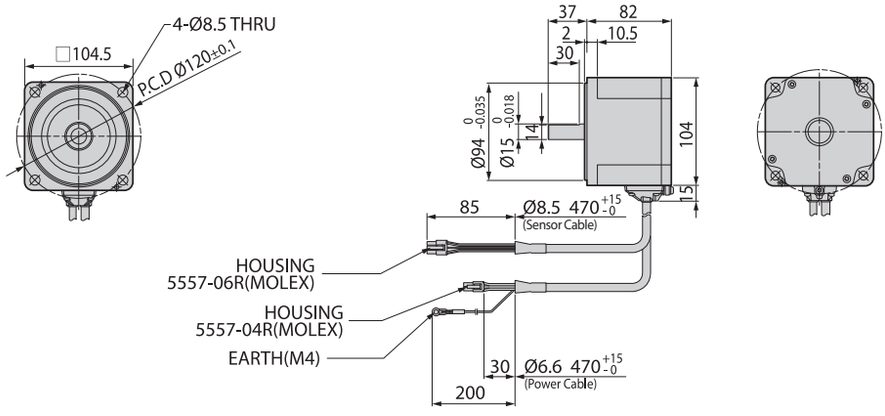


60W
ESM-80-S-60

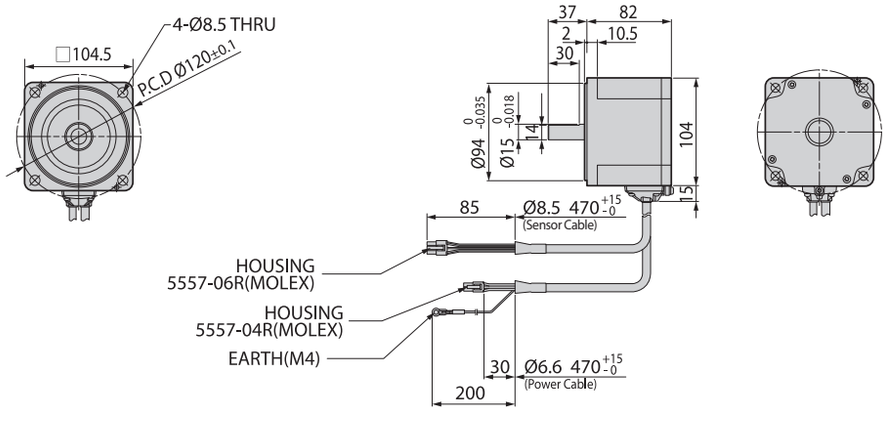


120W
ESM-90-S-120

● Dimensions of Motor [mm]



200W
ESM-104-S-200



400W
ESM-104-S-400

● Specifications of Motor with Gearbox

30W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [rpm]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [rpm]	4,000 [rpm]			10mm from shaft end	20mm from shaft end	
Ezi-SPEED-60-H-30-A-R5-P	5	0.45	0.34	10~800	0.9	100	150	40
Ezi-SPEED-60-H-30-C-R5-P								
Ezi-SPEED-60-H-30-A-R10-P	10	0.9	0.68	5~400		150	200	
Ezi-SPEED-60-H-30-C-R10-P								
Ezi-SPEED-60-H-30-A-R15-P	15	1.35	1	3.3~266.7				
Ezi-SPEED-60-H-30-C-R15-P								
Ezi-SPEED-60-H-30-A-R20-P	20	1.8	1.4	2.5~200				
Ezi-SPEED-60-H-30-C-R20-P								
Ezi-SPEED-60-H-30-A-R30-P	30	2.6	1.9	1.7~133.3		200	300	
Ezi-SPEED-60-H-30-C-R30-P								
Ezi-SPEED-60-H-30-A-R50-P	50	4.3	3.2	1~80				
Ezi-SPEED-60-H-30-C-R50-P								
Ezi-SPEED-60-H-30-A-R100-P	100	6	5.4	0.5~40				
Ezi-SPEED-60-H-30-C-R100-P								
Ezi-SPEED-60-H-30-A-R200-P	200	6	5.4	0.25~20				
Ezi-SPEED-60-H-30-C-R200-P								

60W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [rpm]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [rpm]	4,000 [rpm]			10mm from shaft end	20mm from shaft end	
Ezi-SPEED-80-H-60-A-R5-P	5	0.9	0.68	10~800	1.6	200	250	100
Ezi-SPEED-80-H-60-C-R5-P								
Ezi-SPEED-80-H-60-A-R10-P	10	1.8	1.4	5~400		300	350	
Ezi-SPEED-80-H-60-C-R10-P								
Ezi-SPEED-80-H-60-A-R15-P	15	2.7	2	3.3~266.7				
Ezi-SPEED-80-H-60-C-R15-P								
Ezi-SPEED-80-H-60-A-R20-P	20	3.6	2.7	2.5~200				
Ezi-SPEED-80-H-60-C-R20-P								
Ezi-SPEED-80-H-60-A-R30-P	30	5.2	3.9	1.7~133.3		150	550	
Ezi-SPEED-80-H-60-C-R30-P								
Ezi-SPEED-80-H-60-A-R50-P	50	8.6	6.5	1~80				
Ezi-SPEED-80-H-60-C-R50-P								
Ezi-SPEED-80-H-60-A-R100-P	100	16	12.9	0.5~40				
Ezi-SPEED-80-H-60-C-R100-P								
Ezi-SPEED-80-H-60-A-R200-P	200	16	14	0.25~20				
Ezi-SPEED-80-H-60-C-R200-P								

Specifications of Motor with Gearbox

120W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [rpm]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [rpm]	4,000 [rpm]			10mm from shaft end	20mm from shaft end	
Ezi-SPEED-90-H-120-A-R5-P	5	1.8	1.4	10~800	2.7	300	400	150
Ezi-SPEED-90-H-120-C-R5-P								
Ezi-SPEED-90-H-120-A-R10-P	10	3.6	2.7	5~400		400	500	
Ezi-SPEED-90-H-120-C-R10-P								
Ezi-SPEED-90-H-120-A-R15-P	15	5.4	4.1	3.3~266.7				
Ezi-SPEED-90-H-120-C-R15-P								
Ezi-SPEED-90-H-120-A-R20-P	20	7.2	5.4	2.5~200				
Ezi-SPEED-90-H-120-C-R20-P								
Ezi-SPEED-90-H-120-A-R30-P	30	10.3	7.7	1.7~133.3		500	650	
Ezi-SPEED-90-H-120-C-R30-P								
Ezi-SPEED-90-H-120-A-R50-P	50	17.2	12.9	1~80				
Ezi-SPEED-90-H-120-C-R50-P								
Ezi-SPEED-90-H-120-A-R100-P	100	30	25.8	0.5~40				
Ezi-SPEED-90-H-120-C-R100-P								
Ezi-SPEED-90-H-120-A-R200-P	200	30	27	0.25~20				
Ezi-SPEED-90-H-120-C-R200-P								

200W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [rpm]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [rpm]	4,000 [rpm]			10mm from shaft end	20mm from shaft end	
Ezi-SPEED-104-H-200-C-R5-P	5	2.9	2	10~800	4.2	300	400	150
Ezi-SPEED-104-H-200-C-R10-P	10	5.9	4.1	5~400		400	500	
Ezi-SPEED-104-H-200-C-R15-P	15	8.8	6.1	3.3~266.7				
Ezi-SPEED-104-H-200-C-R20-P	20	11.7	8.1	2.5~200				
Ezi-SPEED-104-H-200-C-R30-P	30	16.8	11.6	1.7~133.3		500	650	
Ezi-SPEED-104-H-200-C-R50-P	50	28	19.4	1~80				
Ezi-SPEED-104-H-200-C-R100-P	100	52.7	36.5	0.5~40				
Ezi-SPEED-104-H-200-C-R200-P	200	70	63	0.25~20				

● Specifications of Motor with Gearbox

400W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [rpm]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [rpm]	4,000 [rpm]			10mm from shaft end	20mm from shaft end	
Ezi-SPEED-104-H-400-C-R5-P	5	5.9	4.3	10~800	4.2	300	400	150
Ezi-SPEED-104-H-400-C-R10-P	10	11.7	8.6	5~400		400	500	
Ezi-SPEED-104-H-400-C-R15-P	15	17.6	12.8	3.3~266.7				
Ezi-SPEED-104-H-400-C-R20-P	20	23.4	17.1	2.5~200				
Ezi-SPEED-104-H-400-C-R30-P	30	33.5	24.5	1.7~133.3		500	650	
Ezi-SPEED-104-H-400-C-R50-P	50	55.9	40.9	1~80				
Ezi-SPEED-104-H-400-C-R100-P	100	70	63	0.5~40				
Ezi-SPEED-104-H-400-C-R200-P	200	70	63	0.25~20				

● Specifications of Motor with Hollow Shaft Gearbox

30W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [rpm]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [rpm]	4,000 [rpm]			10mm from shaft end	20mm from shaft end	
Ezi-SPEED-60-H-30-A-R5-H	5	0.4	0.3	10~800	1.2	450	370	200
Ezi-SPEED-60-H-30-C-R5-H								
Ezi-SPEED-60-H-30-A-R10-H	10	0.85	0.64	5~400		500	400	
Ezi-SPEED-60-H-30-C-R10-H								
Ezi-SPEED-60-H-30-A-R15-H	15	1.3	0.96	3.3~266.7				
Ezi-SPEED-60-H-30-C-R15-H								
Ezi-SPEED-60-H-30-A-R20-H	20	1.7	1.3	2.5~200				
Ezi-SPEED-60-H-30-C-R20-H								
Ezi-SPEED-60-H-30-A-R30-H	30	2.6	1.9	1.7~133.3				
Ezi-SPEED-60-H-30-C-R30-H								
Ezi-SPEED-60-H-30-A-R50-H	50	4.3	3.2	1~80				
Ezi-SPEED-60-H-30-C-R50-H								
Ezi-SPEED-60-H-30-A-R100-H	100	8.5	6.4	0.5~40				
Ezi-SPEED-60-H-30-C-R100-H								
Ezi-SPEED-60-H-30-A-R200-H	200	17	12.8	0.25~20				
Ezi-SPEED-60-H-30-C-R200-H								

60W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [rpm]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [rpm]	4,000 [rpm]			10mm from shaft end	20mm from shaft end	
Ezi-SPEED-80-H-60-A-R5-H	5	0.85	0.64	10~800	2.2	800	660	400
Ezi-SPEED-80-H-60-C-R5-H								
Ezi-SPEED-80-H-60-A-R10-H	10	1.7	1.3	5~400		1,200	1,000	
Ezi-SPEED-80-H-60-C-R10-H								
Ezi-SPEED-80-H-60-A-R15-H	15	2.6	1.9	3.3~266.7				
Ezi-SPEED-80-H-60-C-R15-H								
Ezi-SPEED-80-H-60-A-R20-H	20	3.4	2.6	2.5~200				
Ezi-SPEED-80-H-60-C-R20-H								
Ezi-SPEED-80-H-60-A-R30-H	30	5.1	3.8	1.7~133.3				
Ezi-SPEED-80-H-60-C-R30-H								
Ezi-SPEED-80-H-60-A-R50-H	50	8.5	6.4	1~80				
Ezi-SPEED-80-H-60-C-R50-H								
Ezi-SPEED-80-H-60-A-R100-H	100	17	12.8	0.5~40				
Ezi-SPEED-80-H-60-C-R100-H								
Ezi-SPEED-80-H-60-A-R200-H	200	34	25	0.25~20				
Ezi-SPEED-80-H-60-C-R200-H								

● Specifications of Motor with Hollow Shaft Gearbox

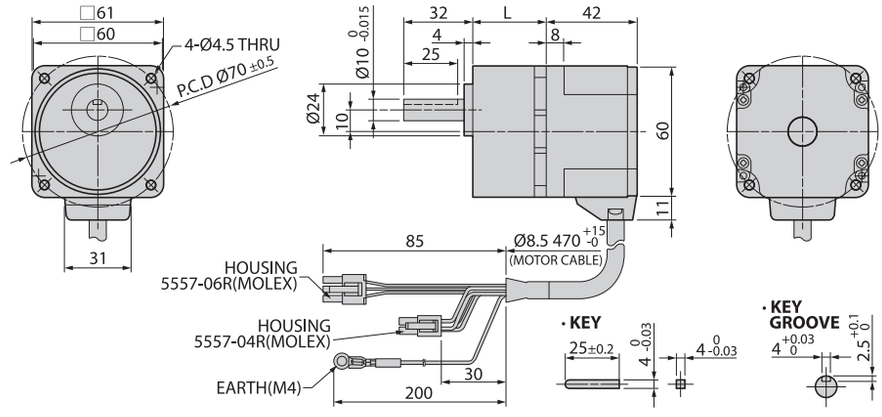
120w

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [rpm]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [rpm]	4,000 [rpm]			10mm from shaft end	20mm from shaft end	
Ezi-SPEED-90-H-120-A-R5-H	5	1.7	1.3	10~800	3.3	900	770	500
Ezi-SPEED-90-H-120-C-R5-H								
Ezi-SPEED-90-H-120-A-R10-H	10	3.4	2.6	5~400		1,300	1,110	
Ezi-SPEED-90-H-120-C-R10-H								
Ezi-SPEED-90-H-120-A-R15-H	15	5.1	3.8	3.3~266.7				
Ezi-SPEED-90-H-120-C-R15-H								
Ezi-SPEED-90-H-120-A-R20-H	20	6.8	5.1	2.5~200				
Ezi-SPEED-90-H-120-C-R20-H								
Ezi-SPEED-90-H-120-A-R30-H	30	10.2	7.7	1.7~133.3		1,500	1,280	
Ezi-SPEED-90-H-120-C-R30-H								
Ezi-SPEED-90-H-120-A-R50-H	50	17	12.8	1~80				
Ezi-SPEED-90-H-120-C-R50-H								
Ezi-SPEED-90-H-120-A-R100-H	100	34	25.5	0.5~40				
Ezi-SPEED-90-H-120-C-R100-H								
Ezi-SPEED-90-H-120-A-R200-H	200	68	51	0.25~20				
Ezi-SPEED-90-H-120-C-R200-H								

● Dimensions of Motor with Gearbox [mm]

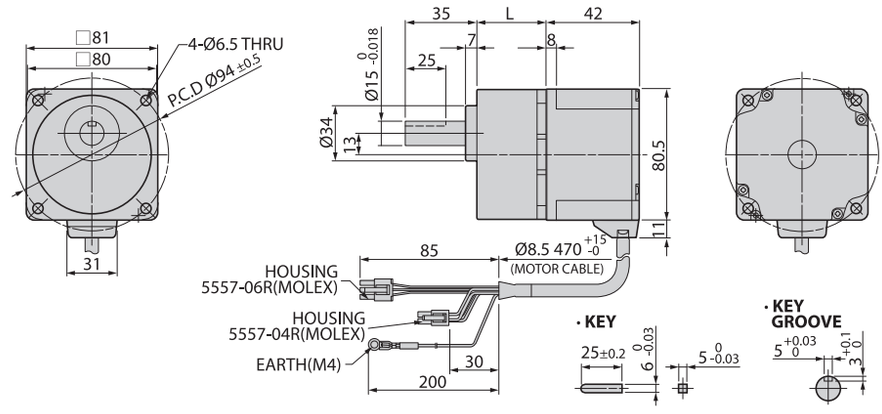
30w

Unit Part Number	Gearbox Part Number	□Reduction Gear Ratio	Mounting Bolt	L Length [mm]
Ezi-SPEED-60-H-30-A-R□-P Ezi-SPEED-60-H-30-C-R□-P	ESG-60-H-R□-P	5, 10, 15, 20	M4×50	34
		30, 50, 100	M4×55	38
		200	M4×60	43



60w

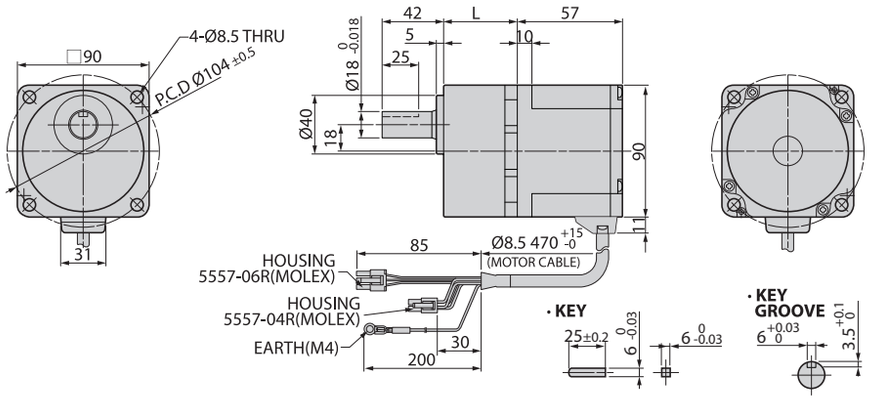
Unit Part Number	Gearbox Part Number	□Reduction Gear Ratio	Mounting Bolt	L Length [mm]
Ezi-SPEED-80-H-60-A-R□-P Ezi-SPEED-80-H-60-C-R□-P	ESG-80-H-R□-P	5, 10, 15, 20	M4×65	41
		30, 50, 100	M4×70	46
		200	M4×75	51



● Dimensions of Motor with Gearbox [mm]

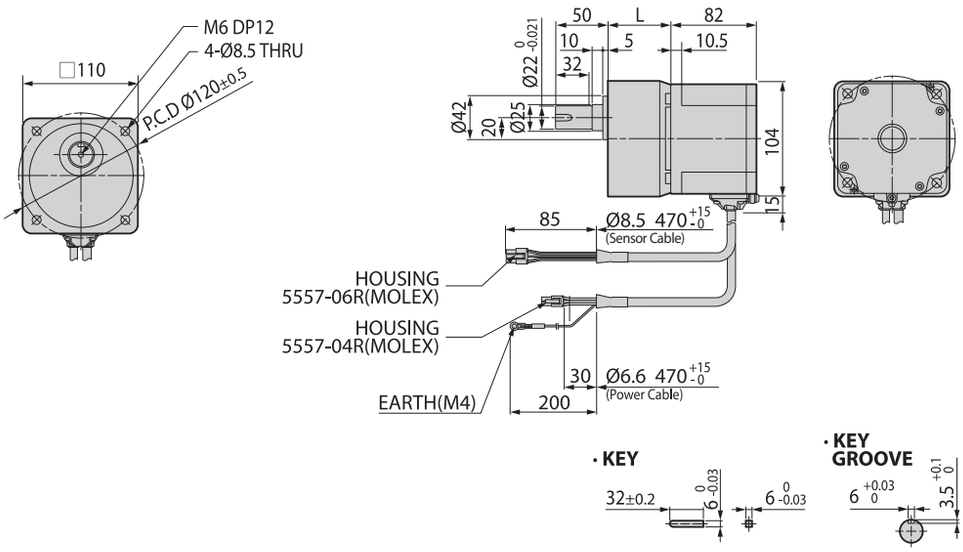
120W

Unit Part Number	Gearbox Part Number	□Reduction Gear Ratio	Mounting Bolt	L Length [mm]
Ezi-SPEED-90-H-120-A-R□-P Ezi-SPEED-90-H-120-C-R□-P	ESG-90-H-R□-P	5, 10, 15, 20	M8×75	45
		30, 50, 100	M8×90	58
		200	M8×95	64



200W

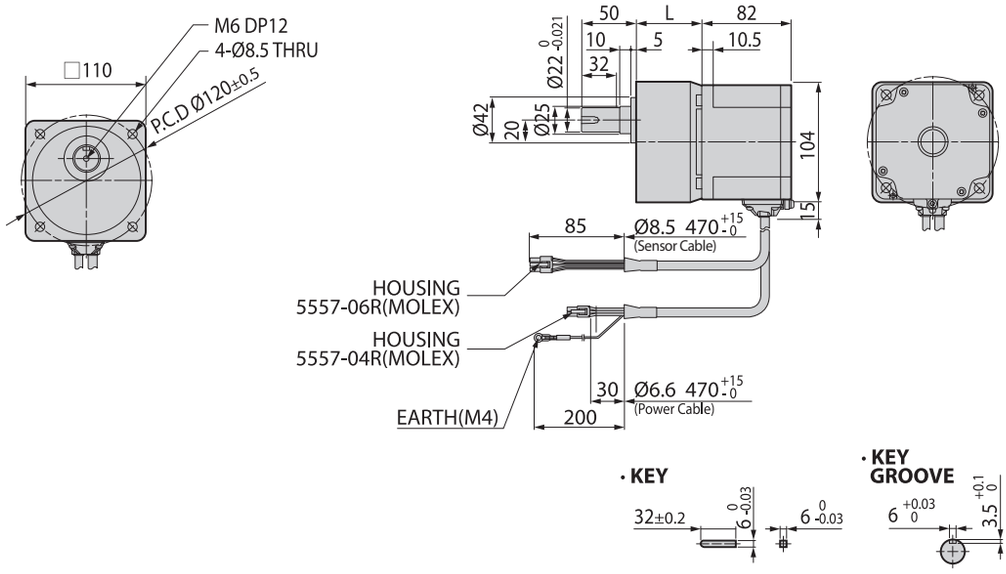
Unit Part Number	Gearbox Part Number	□Reduction Gear Ratio	Mounting Bolt	L Length [mm]
Ezi-SPEED-104-H-200-C-R□-P	ESG-104-H-R□-P	5, 10, 15, 20	M8×95	60
		30, 50, 100	M8×110	72
		200	M8×120	86



● Dimensions of Motor with Gearbox [mm]

400w

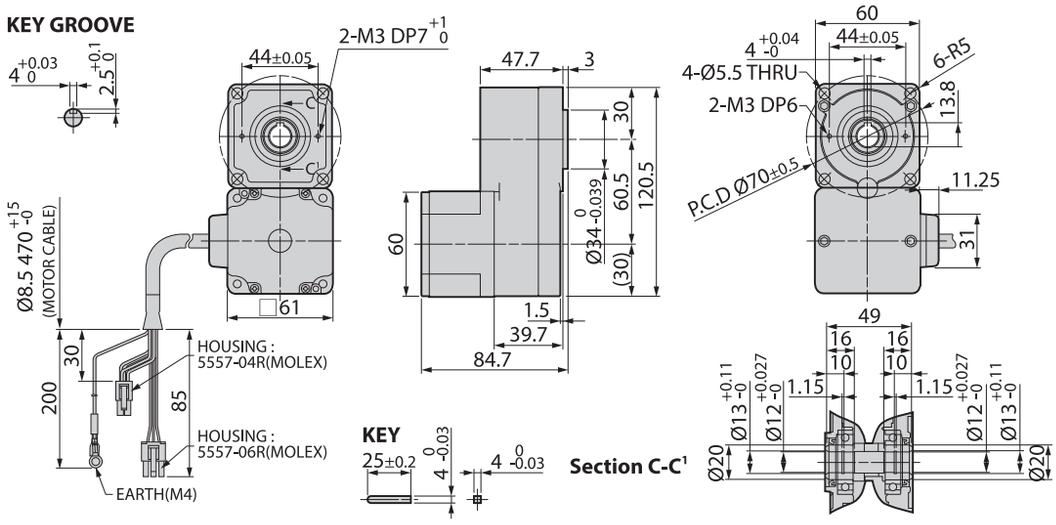
Unit Part Number	Gearbox Part Number	□Reduction Gear Ratio	Mounting Bolt	L Length [mm]
Ezi-SPEED-104-H-400-C-R□-P	ESG-104-H-R□-P	5, 10, 15, 20	M8×95	60
		30, 50, 100	M8×110	72
		200	M8×120	86



● Dimensions of Motor with Hollow shaft Gearbox [mm]

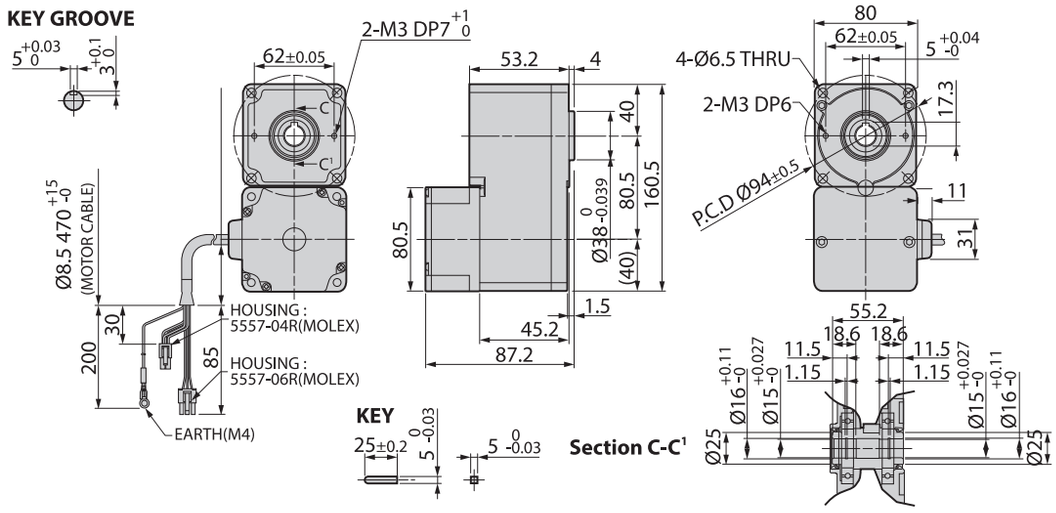
30W

Unit Part Number	Gearbox Part Number	□Reduction Gear Ratio	Mounting Bolt
Ezi-SPEED-60-H-30-A-R□-H Ezi-SPEED-60-H-30-C-R□-H	ESG-60-H-R□-H	5, 10, 15, 20, 30, 50, 100, 200	M5×65



60W

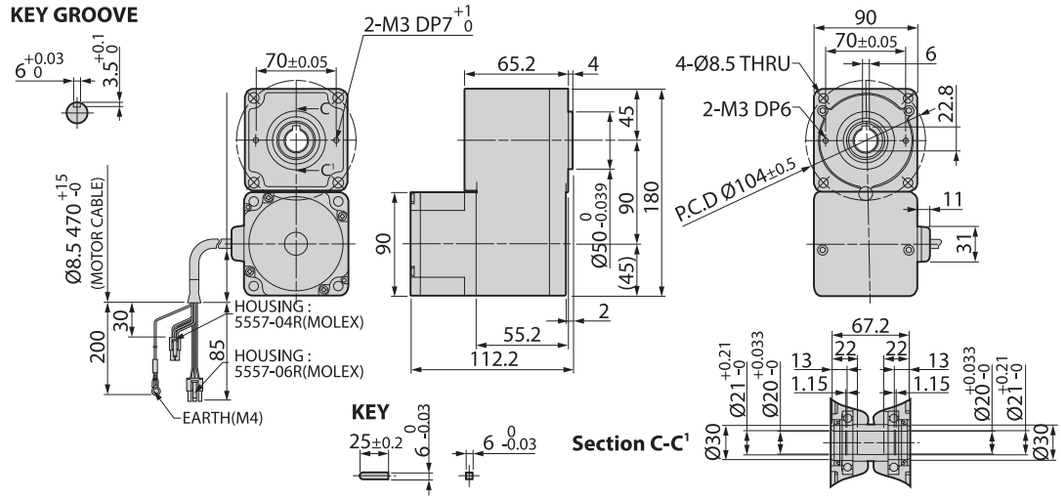
Unit Part Number	Gearbox Part Number	□Reduction Gear Ratio	Mounting Bolt
Ezi-SPEED-80-H-60-A-R□-H Ezi-SPEED-80-H-60-C-R□-H	ESG-80-H-R□-H	5, 10, 15, 20, 30, 50, 100, 200	M6×70



● Dimensions of Motor with Hollow shaft Gearbox [mm]

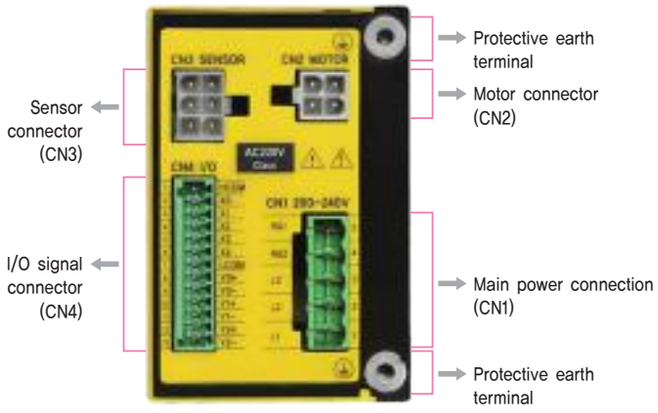
120w

Unit Part Number	Gearbox Part Number	□Reduction Gear Ratio	Mounting Bolt
Ezi-SPEED-90-H-120-A-R□-H Ezi-SPEED-90-H-120-C-R□-H	ESG-90-H-R□-H	5, 10, 15, 20, 30, 50, 100, 200	M8×90



● Settings and Operation





1. Setting

Indication	Conditions
Indication	Display the monitoring items, parameter, alarm, warning, etc
Operating Switch	The motor is started by setting it to the "RUN" position Setting it to the "STAND-BY" position stop the motor
Rotation Direction Switch	Change the rotation direction of the motor with rotation direction switch
Setting Button	Changes the speed and parameters The value is set when the "S" button is pressed after changes are made
Protective Earth Terminal	Ground either one of the protective earth terminals
Sensor Connection (CN3)	Connects to the signal Connection of the motor
Motor Connection (CN2)	Connects to the power Connection of the motor
I/O Signal Connection (CN4)	Connects with the I/O signals
Main Power Connection (CN1)	Connects to the main power supply and regenerative resistor

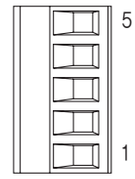
• Extended Functions

Ezi-SPEED can be perform various setting by operation button

Operating Mode	Conditions
Monitor Mode	Speed, Actual speed, Load factor, Alarm record and reset, Warning record and reset, Operating data number, I/O monitor
Data Mode	Data 8 points, Operating speed, Acceleration time, Deceleration time, Operating data reset
Parameter Mode	The acceleration/deceleration time, The overload alarm detection time, The speed upper limit and lower limit, Speed reduction ratio, Speed increasing ratio, Panel initial view, Alarm of "Run" condition at power on, External operation signal input, External input function, External output function, Speed attainment width, Parameter mode reset
NVM Saving Mode	Parameter save to NVM(Non-Volatile Memory)

2. Main Power Connector(CN1)

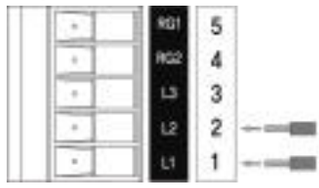
NO.	Function	I/O
1	L1	Input
2	L2	Input
3	L3	Input
4	RG2	Input
5	RG1	Input



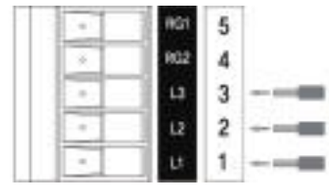
* Use RG1, RG2 terminals when connecting a regenerative resistor. A regenerative resistor can be used when the deceleration time is short or large inertia is used.
* Please refer to the manual for details of regenerative resister specification.

• Main Power Connection(CN1)

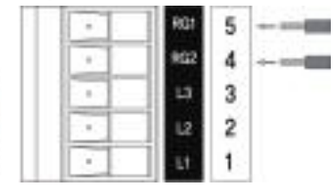
Single-Phase : 100-120V / 200-240V



Three-Phase : 200-240V



Regenerative resistor

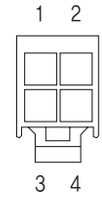


• Applicable Lead Wire Size

AWG18~14 (0.75~2.0mm²)

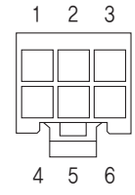
3. Motor Connector(CN2)

NO.	Function	I/O
1	–	–
2	BLDC_U	Output
3	BLDC_W	Output
4	BLDC_V	Output



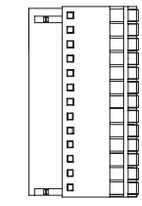
4. Sensor Connector(CN3)

NO.	Function	I/O
1	5VDC	Output
2	GND	–
3	GND	Output
4	HALL_U	Input
5	HALL_V	Input
6	HALL_W	Input



5. I/O Signal Connector(CN4)

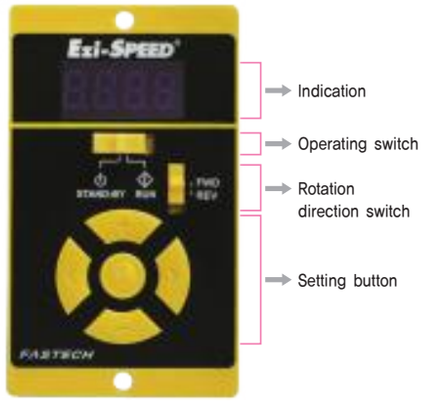
NO.	Function	I/O
1	HCOM	Common
2	X0	Input
3	X1	Input
4	X2	Input
5	X3	Input
6	X4	Input
7	LCOM	Common
8	Y0+	Output
9	Y0–	Output
10	Y1+	Output
11	Y1–	Output
12	Y2+	Output
13	Y2–	Output



• Applicable Lead Wire Size

AWG26~20 (0.14~0.5mm²)

6. Operating with Drive



• Running the motor

Set the operation switch to the "RUN", the motor to start rotating.

• Adjust the speed

Pressing the + button, the speed increase by 1 [rpm]
Pressing the – button, the speed decrease by 1 [rpm]

• Determining the speed

· Set
Pressing the S button, the rotation speed is determined.
When the display is blinking, the rotation speed has not set.

· Confirmation
To prevent unwanted changes of the speed, press S
for 5 seconds until "LOCK" displayed in the STAND–BY mode.

• Stopping the motor

Setting the operation switch to the "STAND–BY" side causes the motor to decelerate to a stop.
Setting the operation switch again to the "RUN" side causes the motor to start rotating at the set rotation speed.

• Changing the rotation direction

Change the rotation direction of the motor (gearbox) using the rotation direction switch. The rotation direction can be changed while operating. With the combination type, the rotation direction of the gearbox output shaft varies depending on the rear ratio of the gearbox.

7. Operation by I/O Signals

• Operation Method

- Using the built-in power supply in the driver, the motor is operated through external signals.
- Connect Pins the I/O signal connector as in the figure of the right.
- When operating using external signals, change the parameter setting in the "external operation signal input" to "on". Refer to Manual.
- Using the external I/O signals, the motor can be operated 8-Speeds data.

Pin No.	Terminal Name	Input/Output	Signal Name	Description
1	HCOM	Common	–	Input signal common: Sink Logic +24V, Source Logic 0V(GND)
2	X0	Input	FWd	The motor rotates is FWD direction during signal "ON"
3	X1	Input	rEv	The motor rotates is REV direction during signal "ON"
4	X2	Input	P0	Select the operating data
5	X3	Input	P1	Select the operating data
6	X4	Input	A.rSt	Reset the alarm
7	LCOM	Common	–	Input signal common
8	Y0+	Output	SPd	For every rotation of the motor, 30 pulses are output
9	Y0–	Output		
10	Y1+	Output	AL.on	It turns off when an alarm is generated (Normally closed)
11	Y1–	Output		
12	Y2+	Output	nouE	It turns on when the motor is operated (Normally opened)
13	Y2–	Output		

※ [ ] Function in [ ] is assigned at shipment

※ Can be assigned required functions to 5 input signals(X0~X4) and 3 output signals(Y0~Y2)

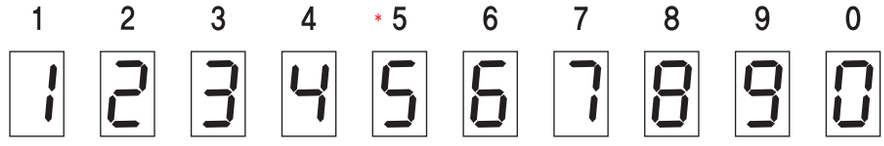
· Input signals: Can be used 5 functions out of FWd(CW rotation), rEv(CCW rotation), P0(Operation data 1), P1(Operation data 2), P2(Operation data 2), A.rst(Alarm reset), E.Err(External alarm), H-Fr(Motor activation/deactivation)

· Output signals: Can be used 3 functions out of SPd(Speed output), AL.on(Alarm output), AL.ov(Overvoltage alarm output), OvLd(Overload alarm output), Mov(Motor operation output), vA(Speed attainment alarm), WnG(Warning alarm)

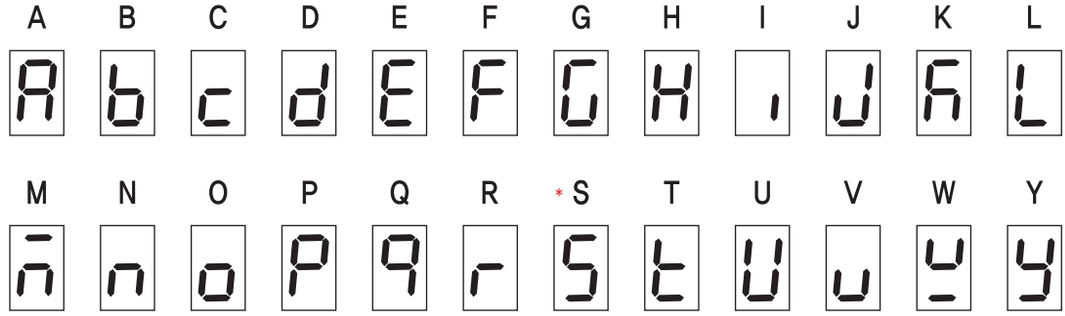
• Reading of 7-Segment

Can read the Arabic numerals and alphabets displayed on the 7-segemant as follows.

· Arabic numerals



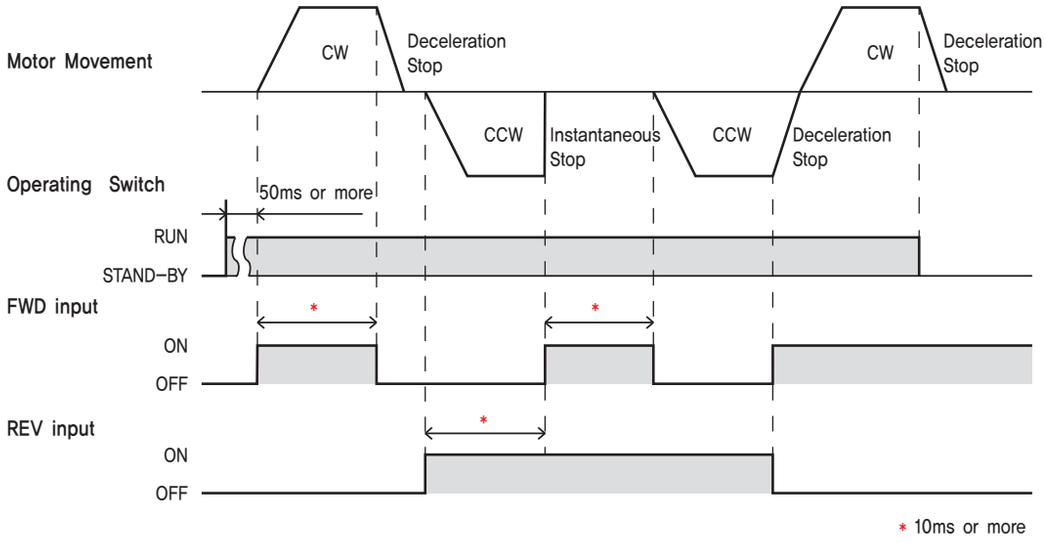
· Alphabets



* Please note that the Arabic numerals "5" and the letter "S" shown above are displayed identically.

• Timing Chart

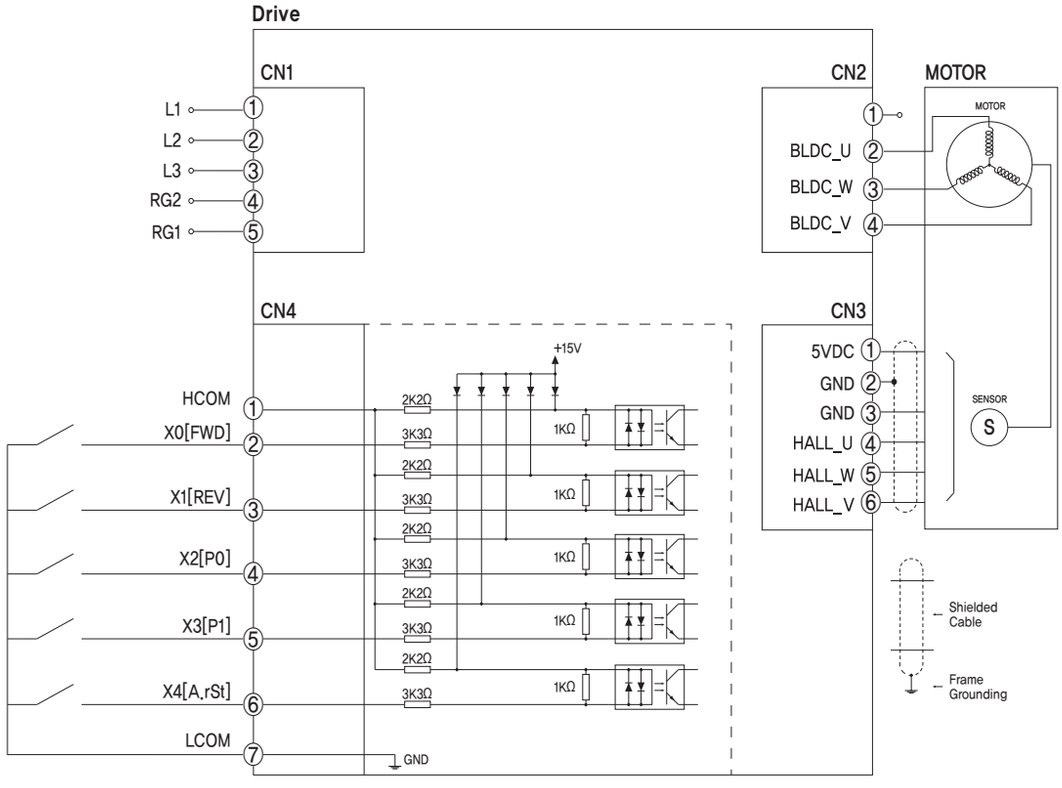
In case of parameter “external operation signal input” to “on” and the rotation direction switch is set to “FWD”.



· The motor rotates when either FWD input or REV input is set to “ON”.
· The motor instantaneous stop when FWD input and REV input is set to “ON” at the same time.
· Stop movement can differ according to gear box and load inertia.

• Example of connection using Switches or Relays

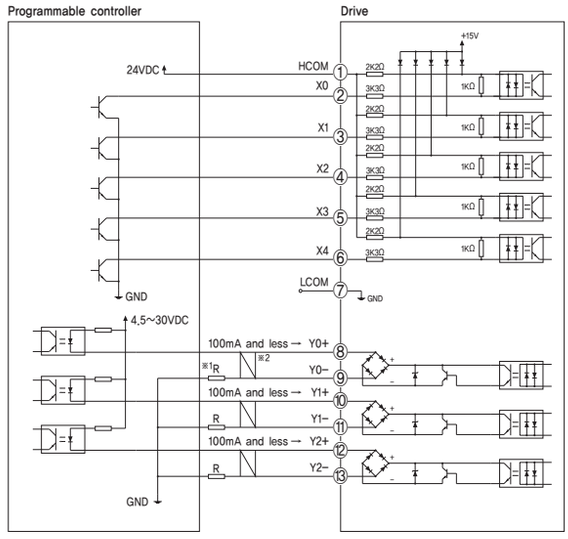
This is an example of connection when operating Ezi-SPEED using contact switches such as switches or relays.



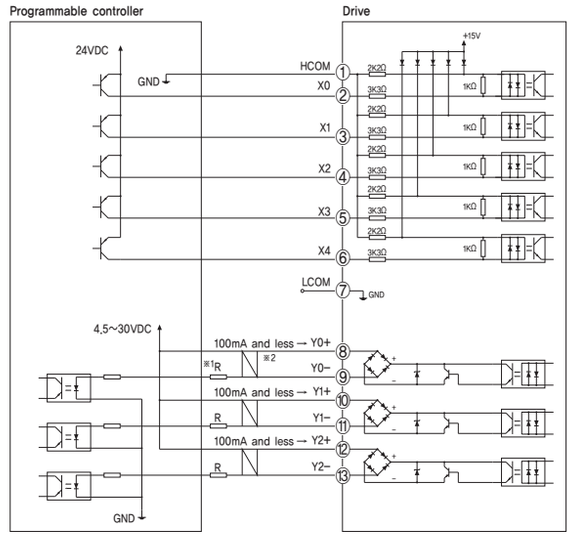
• Connection example for I/O signals and programmable controller

This is connection example when the motor is operated using a transistor output type programmable controller.

SINK LOGIC



SOURCE LOGIC



※1) Limited resistance
In the case of 24VDC : 680Ω~2.7kΩ(2W)
In the case of 5VDC : 150Ω~560Ω(0.5W)

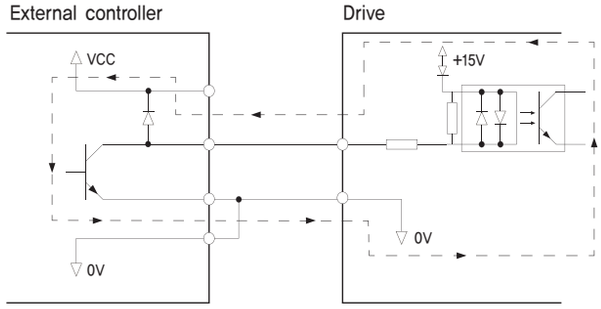
※2) Twisted Pair Shield Cable

⚠ Warning

For the Y0, Y1 and Y2, be sure to keep the current value at 100mA or less. If the current exceeds this value, connect the limiting resistor R.

• In the case of using a external controller with a built-in clamp diode

If a external controller with a built-in clamp diode is used, a leakage path may form and cause the motor to operate even when the external controller power is off, as long as the drive power is on.
Since the power capacity of the controller is different from that of the drive, the motor may operate when the external controller and drive powers ate turned on or off simultaneously.
When power off, turn off the drive power first, followed by the external controller power.
When power on, turn off the external controller power first, followed by the drive power.



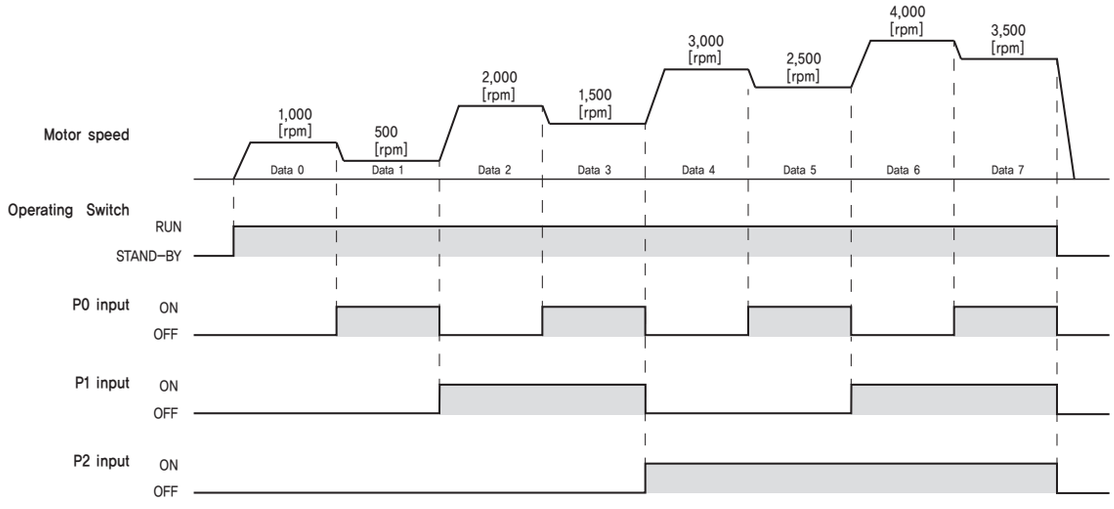
• 8-Speed Operation(In the case of the "external operation signal input" parameter is set to "ON")

1. Set the operation switch to the "RUN" side.
2. Select the operation data number using the P0, P1 and P2 inputs.
3. When either of the FWD input or REV input is turned ON, the motor will rotate.
4. Change the operation data number using the P0, P1 and P2 inputs.
5. When the FWD input or REV input which has been turned ON is turned OFF, the motor will stop.

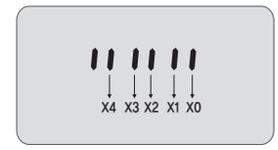
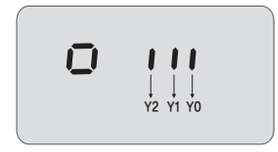
Operation data No.	P0	P1	P2	Rotation speed [rpm]
Data 0	OFF	OFF	OFF	1,000
Data 1	ON	OFF	OFF	500
Data 2	OFF	ON	OFF	2,000
Data 3	ON	ON	OFF	1,500
Data 4	OFF	OFF	ON	3,000
Data 5	ON	OFF	ON	2,500
Data 6	OFF	ON	ON	4,000
Data 7	ON	ON	ON	3,500

* Setting speed value is just example, user can change to any speed value.

When changing from the present speed to the new speed, the acceleration time and deceleration time set in the next operation data number are used.



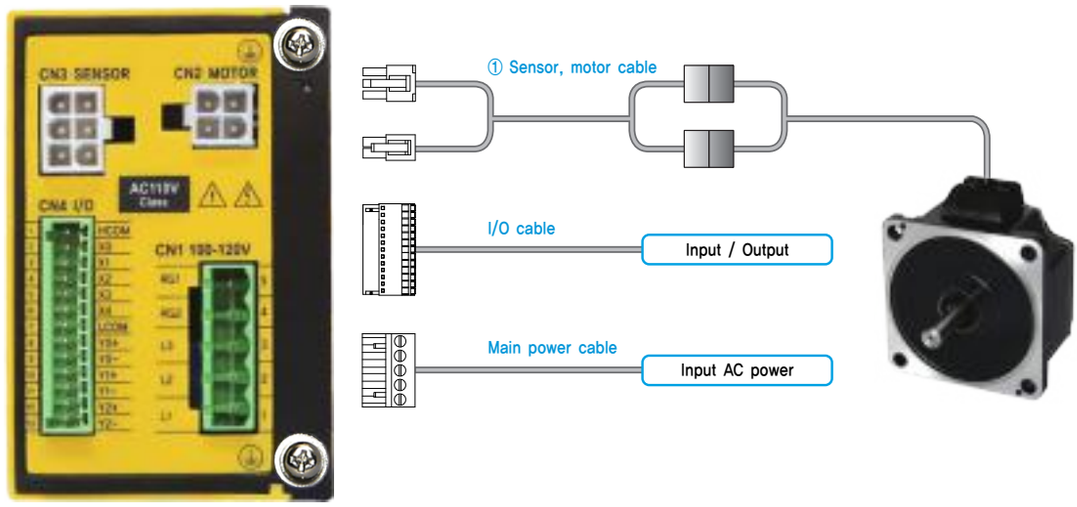
8. Monitor Mode Display

Item	Display	Description
Setting speed display and speed adjustment [rpm]	SD	Display the motor setting speed
Actual speed [rpm]	0.	Monitors the actual speed of motor. Monitors the rotation speed of gear output shaft or conveyor transfer speed when the “speed reduction ratio” parameter is set. When the “speed increasing ratio” parameter is set, the actual rotation speed will be increased by external mechanism.
Load factor [%]	L. 0	Monitors the current load factor based on the rated torque being 100%. Displaying value is load factor of motor shaft not gearbox shaft. In case of gearbox mounted motor type, permissible torque is different by reduction ratio of gearbox. Please use checking permissible torque limit of gearbox.
Alarm record display and record reset	AL.rc	Monitors the alarm record. You can check alarm record or delete alarm record.
Warning record display and record reset	Wn.rc	Monitors the warning record. You can check warning record or delete warning record.
Operation data number	oPd-	Monitors the operation data No. which is currently selected.
I/O monitor	io	You can check the ON/OFF status of I/O signal of drive. If the signal is ON, the corresponding LED is ON. if the signal is OFF, the LED is OFF. Input signals  Output signals 

9. Protection functions and LED display

Alarm Code	Alarm type	Cause	Remedial action	Alarm reset
AL.--	No alarm record	–	–	–
AL.Uu.	Under voltage	The power supply voltage became lower than approximately 60% of the rated voltage	1. Check the power supply voltage 2. Check the wiring of the power supply cable	Available
AL.ou.	Over voltage	1. The power supply voltage exceeded approximately 120% of the rated voltage. 2. Vertical load (gravitational operation) was driven load inertia was driven.	1. Check the power supply voltage 2. If this alarm occurs during operation, reduce the load or make the acceleration/deceleration time longer.	Available
AL.ot.	Over heat	The temperature inside drive exceeded the alarm detection temperature.	Check the ambient temperature	Available
AL.oc	Over current	Excessive current has flown through the drive due to ground fault. etc	Check the damage of wiring between the drive and motor.	Not available
AL.SF	Speed feedback	Actual speed and set speed are different.	1. Check the power supply voltage 2. Check the load	Available
AL.SS	Sensor error (Hall sensor)	The motor sensor signal line experienced an open circuit during operation or the motor sensor connection.	Check the wiring between the drive and motor.	Available
AL.oS	Over speed	The rotation speed of the motor output shaft exceeded approximately 4,800 [rpm]	1. Reduce the load 2. Review the operation pattern such as acceleration/ deceleration time.	Available
AL.oL	Over load	1. A load exceeding the continuous duty region was applied to the motor for the time exceeded the value set in the "The overload alarm detection time" parameter. 2. The motor was started running under the state that the motor temperature was low.		Available
AL.oP	Operation at power-on	When the "external operation signal input" parameter was set to "OFF", while the operation switch was set to the "RUN" side and the power was turned on again.	Set the operation switch to the "STAND-BY" side from the "RUN" side. Next press "S" button.	Available
		When the "external operation signal input" parameter was set to "ON", while the FWD input or REV input was turned ON, the power was turned on again.	1. Set the operation switch to the "STAND-BY" side from the "RUN" side. 2. Turn the FWD input or REV input from ON to OFF.	
AL.Et	External Error (From external input signal)	The motor instantaneous stop when EXT-ERROR(Stop) input.	1. Check the EXT-ERROR input. 2. Change status from activated to deactivated.	Available

● System Configuration [30, 60, 120W - 110V]



Type	I/O Cable	Sensor Cable	Motor Cable	Main Power Cable
Length supplied	–	50cm	50cm	–
Max. Length	20m	10m	10m	3m

1. Options

Sensor, Motor Cable of 30, 60, 120W

This cable is used connect the wiring between the motor (30W, 60W and 120W) and drive.
This cable is single cable with the motor relay cable and sensor relay cable.

① Sensor, Motor Cable

Item	Length [m]	Remark
CSPD-A-□□□F	1, 2, 3, 5, 7, 10	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 10m length.

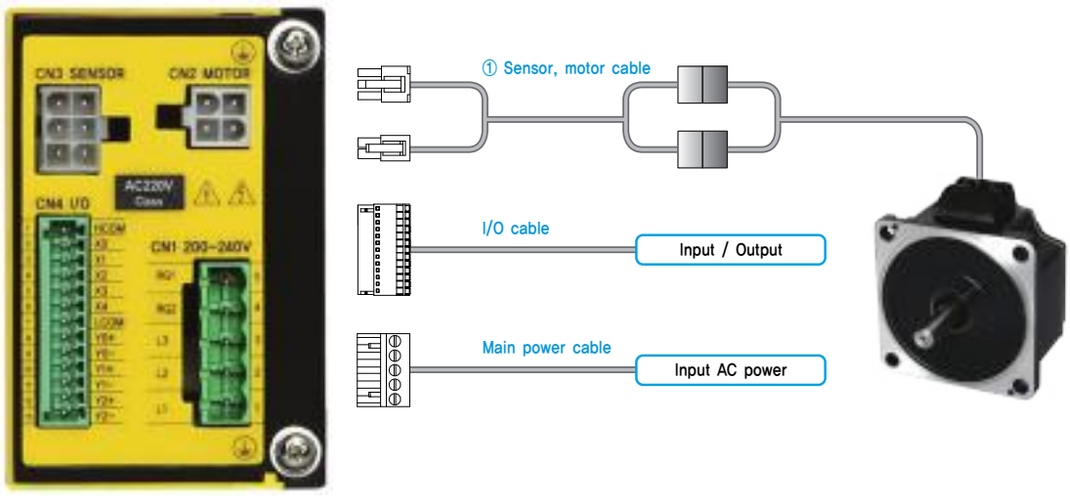
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Terminal Block	CPF5.08-05P	STELVIO
Motor (CN2)	Drive side (CN2)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor side	Housing Terminal	5559-04P 5558T	MOLEX
Sensor (CN3)	Drive side (CN3)	Housing Terminal	5557-06R 5556T	MOLEX
	Sensor side	Housing Terminal	5559-06P 5558T	MOLEX
I/O (CN4)		Terminal Block	15EDGKD-13P	DEGSON

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● System Configuration [30, 60, 120W – 220V]



Type	I/O Cable	Sensor Cable	Motor Cable	Main Power Cable
Length supplied	–	50cm	50cm	–
Max. Length	20m	10m	10m	3m

1. Options

Sensor, Motor Cable of 30, 60, 120W

This cable is used connect the wiring between the motor (30W, 60W and 120W) and drive.
This cable is single cable with the motor relay cable and sensor relay cable.

① Sensor, Motor Cable

Item	Length [m]	Remark
CSPD-A-□□□F	1, 2, 3, 5, 7, 10	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 10m length.

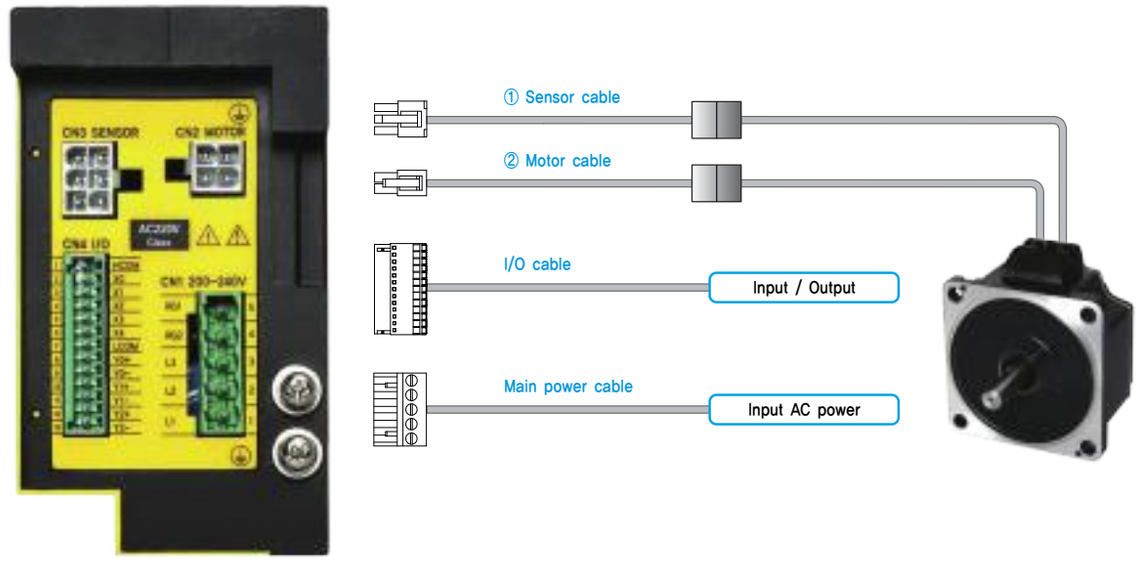
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Terminal Block	CPF5.08-05P	STELVIO
Motor (CN2)	Drive side (CN2)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor side	Housing Terminal	5559-04P 5558T	MOLEX
Sensor (CN3)	Drive side (CN3)	Housing Terminal	5557-06R 5556T	MOLEX
	Sensor side	Housing Terminal	5559-06P 5558T	MOLEX
I/O (CN4)		Terminal Block	15EDGKD-13P	DEGSON

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● System Configuration [200, 400W - 220V]



Type	I/O Cable	Sensor Cable	Motor Cable	Main Power Cable
Length supplied	–	50cm	50cm	–
Max. Length	20m	10m	10m	3m

1. Options

Sensor, Motor Cable of 200, 400W

This cable is used connect the wiring between the motor (200W, 400W) and drive.
This cable is each cable (Two line) with the motor relay cable and sensor relay cable.

① Sensor Cable

Item	Length [m]	Remark
CSPD-S-□□□F	1, 2, 3, 5, 7, 10	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 10m length.

② Motor Cable

Item	Length [m]	Remark
CSPD-M-□□□F	1, 2, 3, 5, 7, 10	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 10m length.

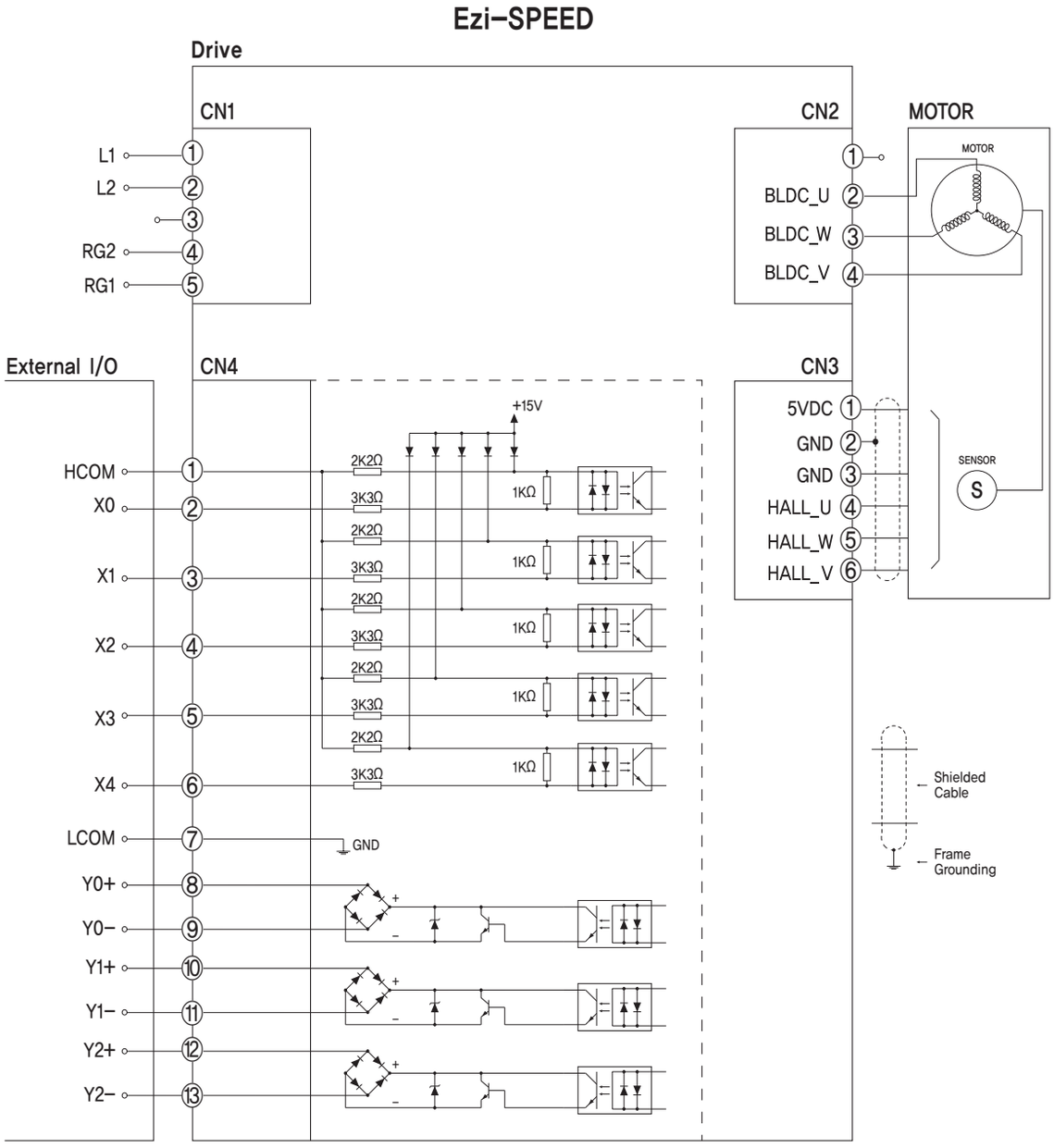
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Terminal Block	CPF5.08-05P	STELVIO
Motor (CN2)	Drive side (CN2)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor side	Housing Terminal	5559-04P 5558T	MOLEX
Sensor (CN3)	Drive side (CN3)	Housing Terminal	5557-06R 5556T	MOLEX
	Sensor side	Housing Terminal	5559-06P 5558T	MOLEX
I/O (CN4)		Terminal Block	15EDGKD-13P	DEGSON

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

● External Wiring Diagram [110V Drive]



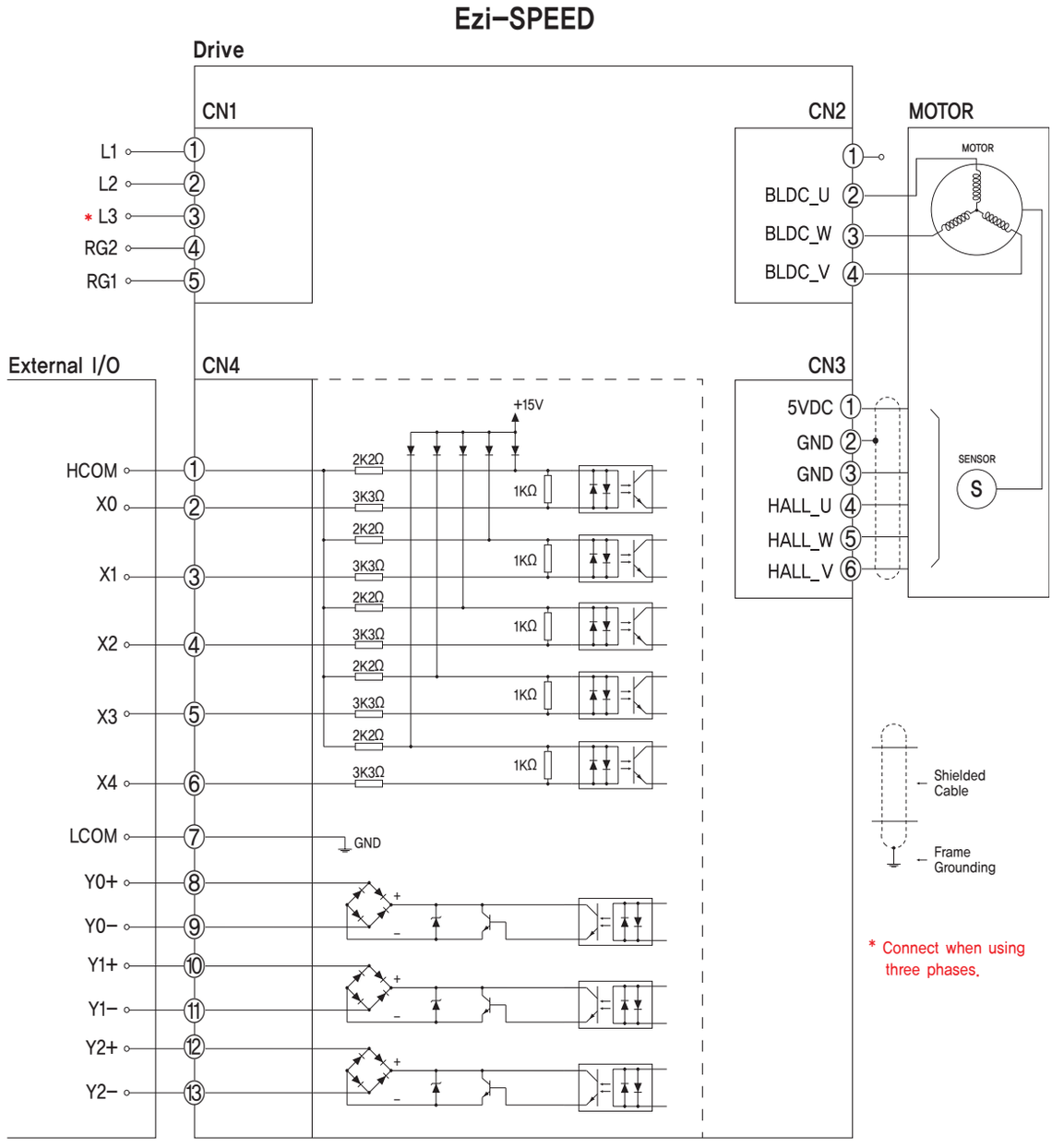
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

External Wiring Diagram [220V Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

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