Ezi-SERVO®

Closed Loop Stepping System

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

BT

CE

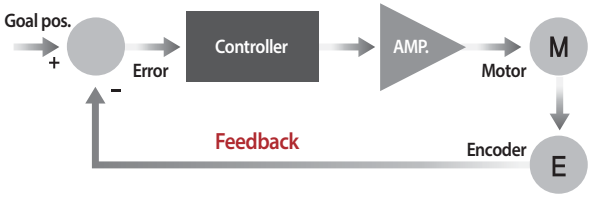
FASTECH

Fast, Accurate, Smooth Motion

Features

1. Closed Loop System

Ezi-SERVO BT is an innovative closed loop stepping motor and controller that utilizes a high-resolution motor mounted encoder to constantly monitor the motor shaft position. The encoder feedback feature allows the Ezi-SERVO BT to update the current motor shaft position information every 25 micro seconds. This allows the Ezi-SERVO BT 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 creating a positioning error and a great deal of cost to the end user!

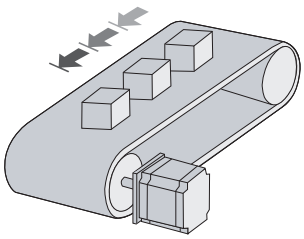


2. No Gain Tuning

Conventional servo systems, to ensure machine performance, smoothness, positional error and low servo noise, require the adjustment of its servo's gains as an initial crucial step. Even systems that employ autotuning require manual tweaking after the system is installed, especially if more that one axis are interdependent.

Ezi-SERVO BT employs the best characteristics of stepper and closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems.

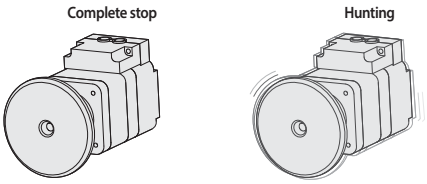
This means that Ezi-SERVO BT is optimized for the application and ready to work right out of the box! The Ezi-SERVO BT system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO BT 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 added expense and bulk of a gearbox. Ezi-SERVO BT also performs exceptionally, even under heavy loads and high speeds!

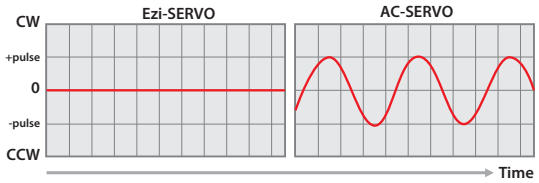


3. No Hunting

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.

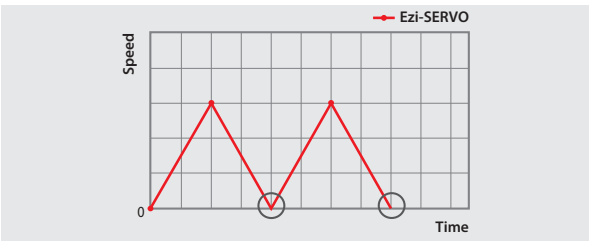
The cure is lowering the gain, which affects accuracy or using Ezi-SERVO BT Motion Control System! Ezi-SERVO BT utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.

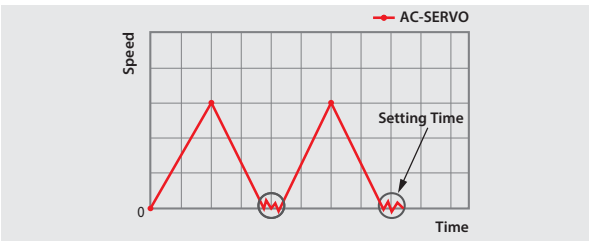




4. Fast Response

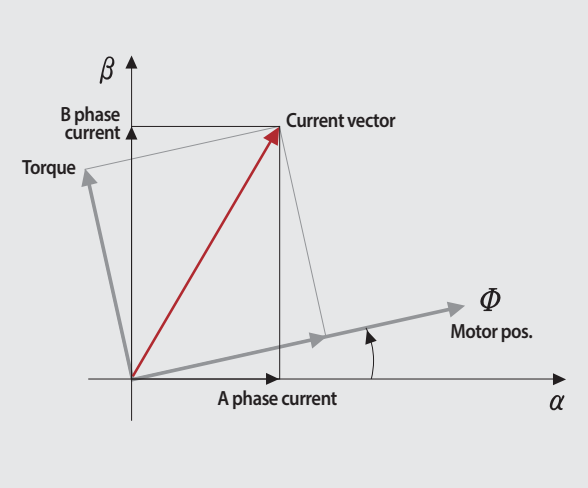
Similar to conventional stepping motors, Ezi-SERVO BT instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO BT is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay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





5. Smooth and Accurate

Ezi-SERVO BT is a high-precision servo drive, using a high-resolution encoder with 32,000[ppr].
Unlike a conventional Microstep drive, the on-board high performance DSP(Digital Signal Processor) performs vector control and filtering, producing a smooth rotational control with minimum ripples.

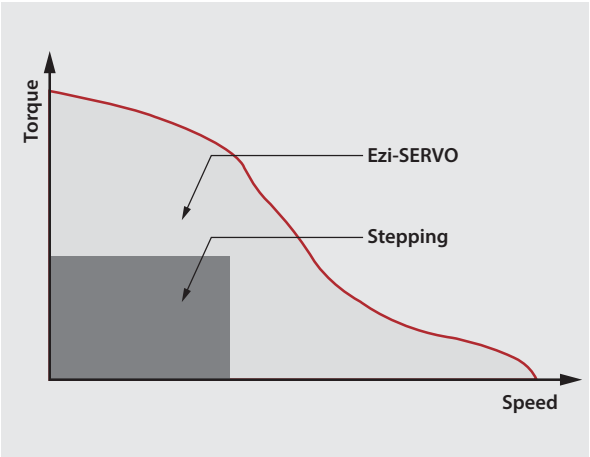


6. High Resolution

The unit of the position command can be divided precisely.
(Max. 32,000[ppr])

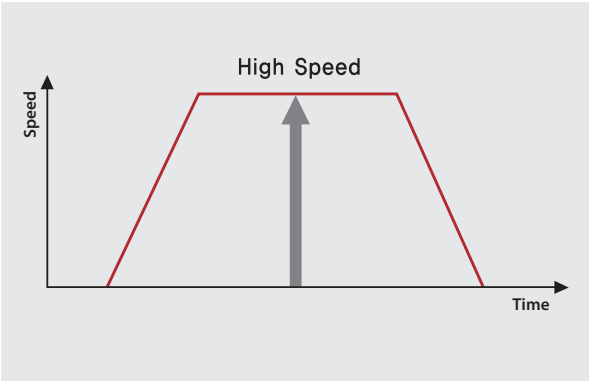
7. High Torque

Compared with common step motors and drives, Ezi-SERVO BT 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 BT exploits continuous high-torque operation during high-speed motion due to its innovative optimum current phase control.



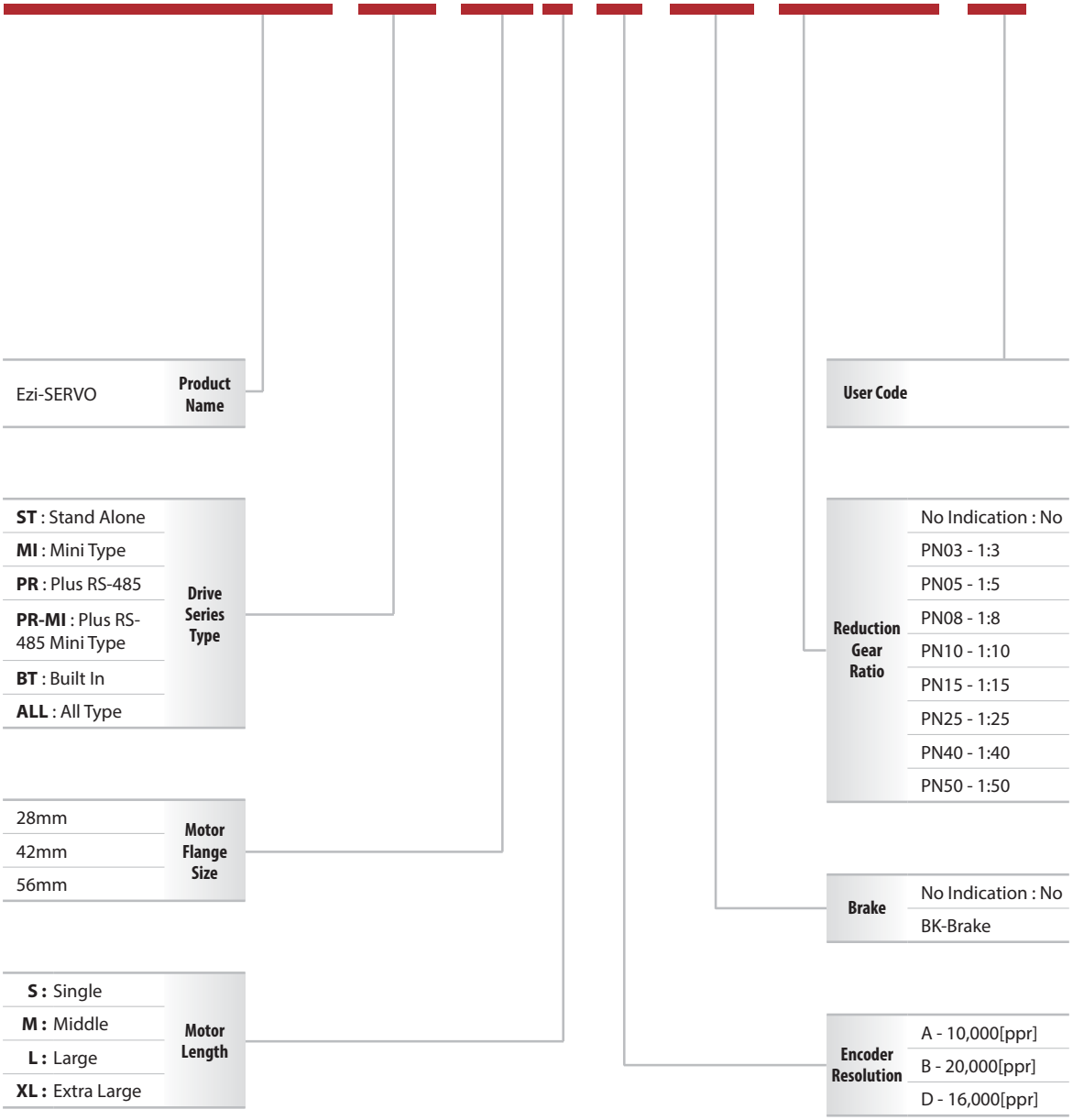
8. High Speed

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



Part Numbering Method

Ezi-SERVO-BT-56L-A-BK-PN05-□



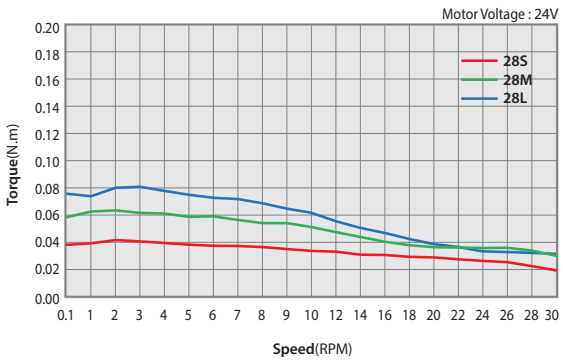
Motor, Drive Combination

UNIT No.	MOTOR No.	DRIVE No.
Ezi-SERVO-BT-28S-D	Motor & Drive Integrated	
Ezi-SERVO-BT-28M-D		
Ezi-SERVO-BT-28L-D		
Ezi-SERVO-BT-42S-A		
Ezi-SERVO-BT-42S-B		
Ezi-SERVO-BT-42M-A		
Ezi-SERVO-BT-42M-B		
Ezi-SERVO-BT-42L-A		
Ezi-SERVO-BT-42L-B		
Ezi-SERVO-BT-42XL-A		
Ezi-SERVO-BT-42XL-B		
Ezi-SERVO-BT-56S-A		
Ezi-SERVO-BT-56S-B		
Ezi-SERVO-BT-56M-A		
Ezi-SERVO-BT-56M-B		
Ezi-SERVO-BT-56L-A		
Ezi-SERVO-BT-56L-B		

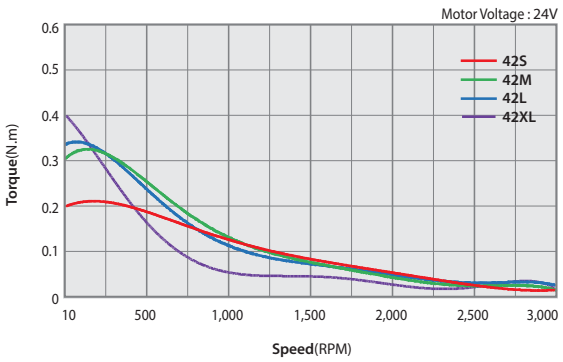
Motor Specification Table

Model		Unit	28			42				56		
			28S	28M	28L	42S	42M	42L	42XL	56S	56M	56L
DRIVE METHOD		-	BI-POLAR									
Number OF PHASES		-	2	2	2	2	2	2	2	2	2	2
VOLTAGE		VDC	3	3	3	3.36	4.32	4.56	7.2	1.56	1.62	2.64
CURRENT per PHASE		A	0.95	0.95	0.95	1.2	1.2	1.2	1.2	3	3.0	3.0
RESISTANCE per PHASE		Ohm	3.2	3.2	3.2	2.8	3.6	3.8	6	0.52	0.54	0.88
INDUCTANCE per PHASE		mH	2	2.7	3.2	5.4	7.2	8	15.6	1.2	2	4
HOLDING TORQUE		N·m	0.069	0.098	0.118	0.32	0.44	0.5	0.65	0.64	1	1.5
ROTOR INERTIA		g·cm^2	9	13	18	35	54	77	114	180	280	520
WEIGHTS		g	110	140	200	250	280	350	500	500	720	1150
LENGTH(L)		mm	32	45	50	34	40	48	60	46	55	80
ALLOWABLE OVERHUNG LOAD (DISTANCE FROM END OF SHAFT)	3mm	N	30	30	30	22	22	22	22	52	52	52
	8mm		38	38	38	26	26	26	26	65	65	65
	13mm		53	53	53	33	33	33	33	85	85	85
	18mm		-	-	-	46	46	46	46	123	123	123
ALLOWABLE THRUST LOAD		N	Lower than motor weight									
INSULATION RESISTANCE		Mohm	100 MΩ MIN.(at 500VDC)									
INSULATION CLASS		-	CLASS B(130˚C)									
OPERATING TEMPERATURE		˚C	0 to 55									

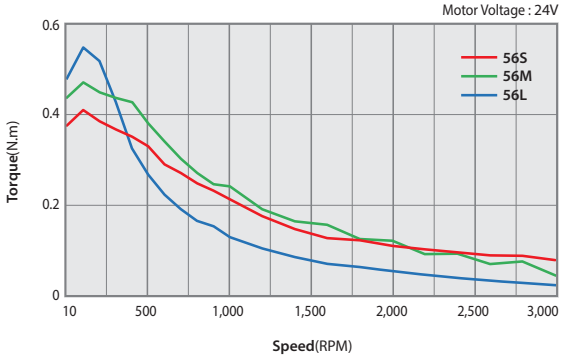
Ezi-SERVO BT_ 28 Series



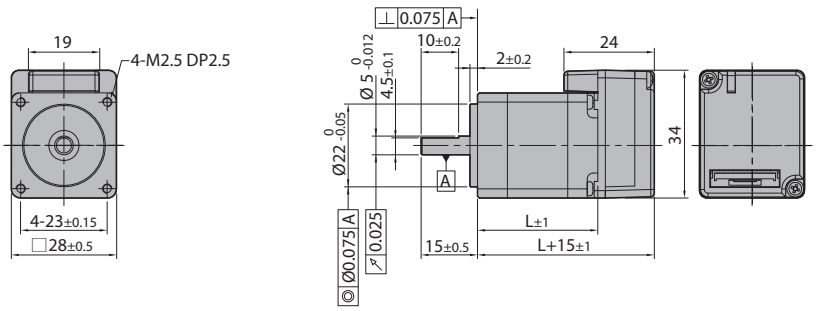
Ezi-SERVO BT_ 42 Series



Ezi-SERVO BT_ 56 Series

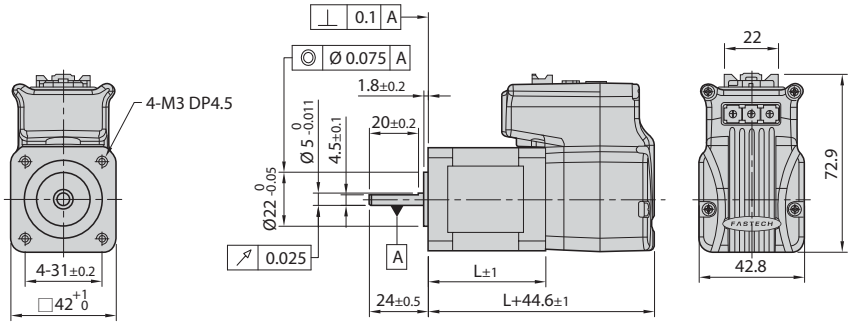


Motor Drawing



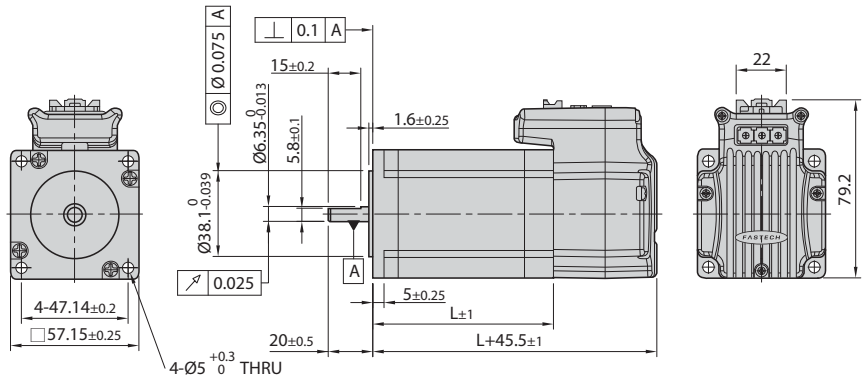
28mm

Model name	Length(L)
28S	32
28M	45
20L	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-BT-56 series as Φ6.35 and Φ8.0.

56mm

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

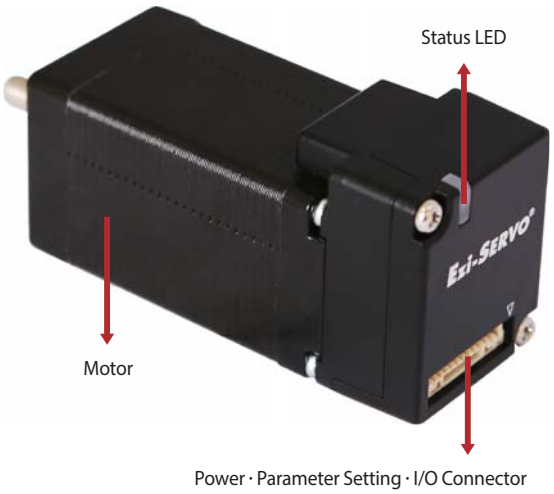
Drive Specification

(Ezi-SERVO BT-28 Series)

Specifications

Input Voltage		24VDC ±10%
Control Method		Closed Loop Control with ARM-Based 32bit MCU
Current Consumption		Max. 500mA(Except Motor Current)
Operating Condition	**Ambient Temperature**	· In Use : 0 ~ 50˚C · In Storage : -20 ~ 70˚C
	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]	· 16,000[ppr] Encoder model : 500 / 1,000 / 1,600 / 2,000 / 3,600 / 5,000 / 6,400 / 7,200 / 10,000 / 16,000 (Selectable with Parameter)
	Max. Input Pulse Frequency	500KHz(Duty 50%)
	Protection	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Motor Connect Error, Encoder Connect Error, Motor Voltage Error, In-Position Error, ROM Error, Position Overflow Error
	In-Position Selection	0 ~ F(Selectable with Rotary Switch) ※ Default : 0
	Position Gain Selection	0 ~ F(Selectable with Rotary Switch) ※ Default : 3
	Pulse Input Method	1-Pulse / 2-Pulse(Selectable with DIP Switch) ※ Default : 2-Pulse
	Speed / Position Control Command	Pulse Train Input
I/O Signal	**Input Signal**	Position command pulse, Servo On / Off, Alarm reset(Photocoupler Input)
	Output Signal	In-Position, Alarm

Setting and Operation



System Operation Manual

(Ezi-SERVO BT-28 Series)

Status Monitor LED

1. Status LED

In the case Ezi-SERVO BT(28mm) series products, status of operation can be checked by LED color lighting on/off and blinking.

Status	LED	
Disable	Green : Red :	Green light flashing, Red light off
Enable	Green : Red :	Green light on, Red light off
In Motion	Green : Red :	Green & Red light on
In-position deviation	Green : Red :	Green & Red light alternately flashing
Alarm	Green : Red :	Red light flashing repeat as may as alarm number

2. Protection functions and LED flash times

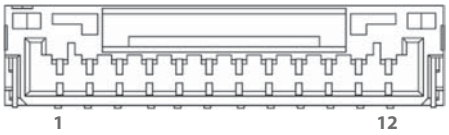
Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the limit value
2	Over Speed Error	Motor speed exceed 3,000[rpm]
3	Position Tracking Error	Position error value is higher than 90° in motor run state
4	Over Load Error	The motor is continuously operated more than 5 second under a load exceeding the Max. torque
5	Over Temperature Error	Inside temperature of drive exceeds 55°C
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 Connector in drive
10	In-Position Error	After operation is finished, a position error occurs
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is higher than 90° in motor stop state

Alarm LED Flash(ex : Position Tracking Error)

Connector

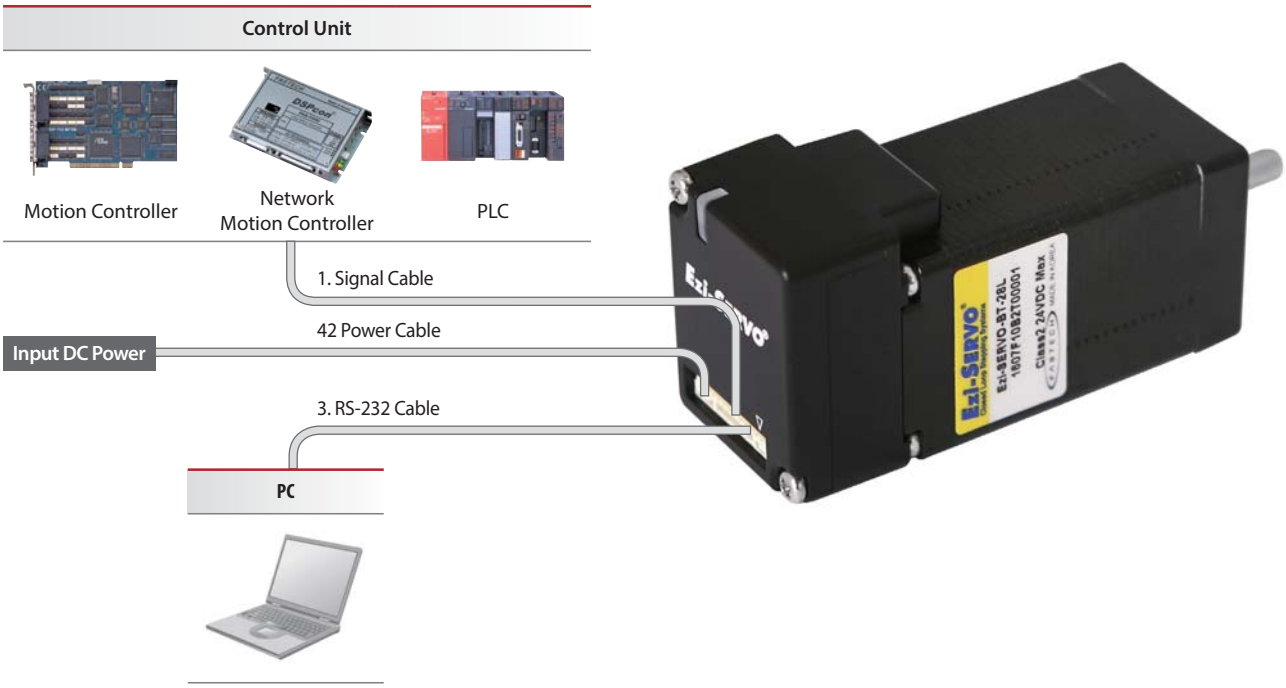
1. Input / Output Signal connector(CN 1)

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



System Configuration

(Ezi-SERVO BT-28 Series)



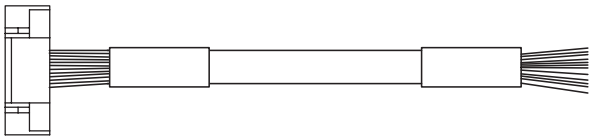
Pin No.	I/O Signal 5, 6, 7, 8, 9, 10, 11, 12	Power 1, 2	Parameter Setting 3, 4
Standard Length	-	-	-
Max. Length	20m	2m	3m

Cable

1. Signal Cable

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

※ This cable is Provided item as standard option.



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

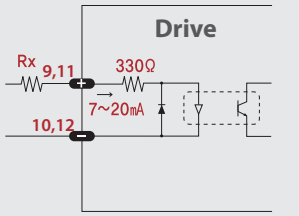
Control Signal Input / Output Description

(Ezi-SERVO BT-28 Series)

Input Signal

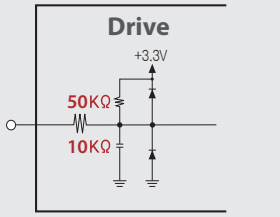
Input signals of the drive are all photocoupler protected.
The signal shows the status of internal photocouplers [ON : Conduction], [OFF : Non-conduction], not displaying the voltage levels of the signal.

CW(Pin:11,12), CCW(Pin:9,10)



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

Alarm Reset(Pin:8), Servo On/Off(Pin:7)



※ 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.

1. CW, CCW Input

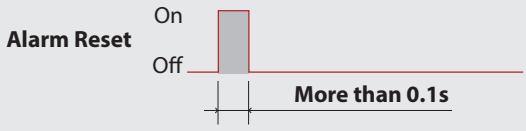
This signal can be used to receive a positioning pulse command from a user host motion controller. The user can select 1-Pulse Input mode or 2-Pulse Input mode(refer to switch No.1, SW 1). The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor 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.

2. 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 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 to the motor and recovers the holding torque. When driving a motor, one needs to set the signal [OFF].

3. Alarm Reset Input

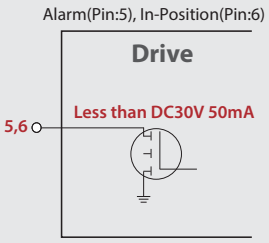
Release the alarm output of the drive where the protection function is activated. When the Alarm Reset input is set to [OFF], the alarm output is canceled. Remove the cause of the alarm before releasing the alarm output. If the cause of the alarm is not removed, the Alarm Reset input will not operate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

Output Signal

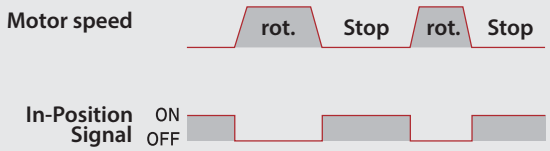
Alarm, In-Position of the drive operates by voltage level [ON : High] and [OFF : Low].



1. 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.

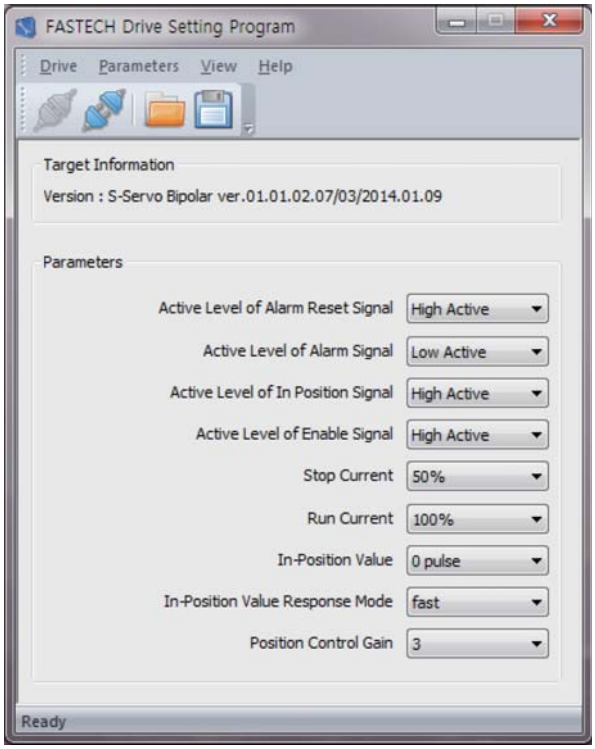
2. In-Position Output



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 Setting GUI [User Interface]

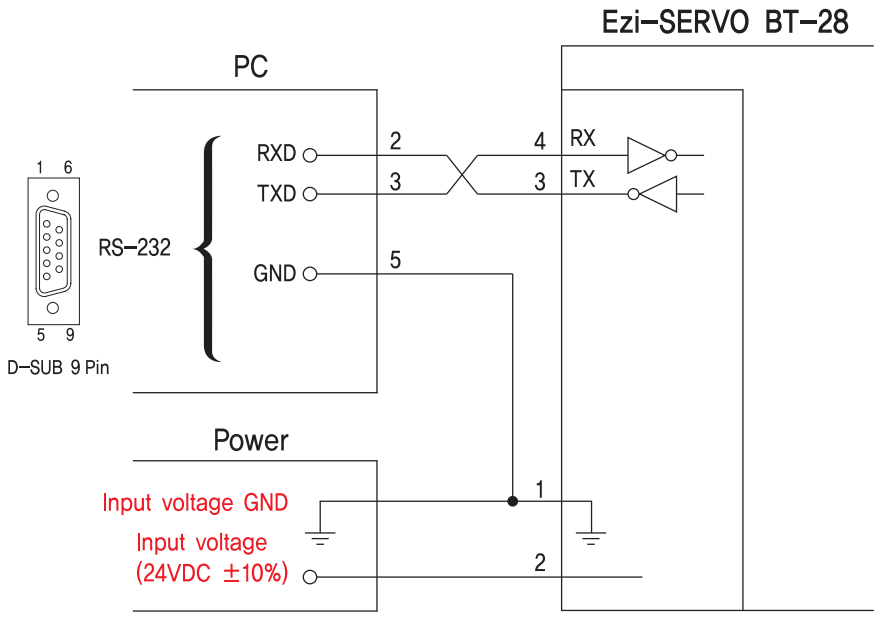
Ezi-SERVO BT drive utilizes various parameters for operation.
Some parameters need to be adjusted once users feel nconvenience to use or in order to maximize efficiency. Ezi-SERVO BT provides parameter modification program for convenience of product usage for users. The screen shot as below is computer 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 BT according to its own system. Please connect parameter setting GUI when Ezi-SERVO BT is Disable state. For safety reason, Ezi-SERVO BT can not be connected to setting GUI when it is Enable state.



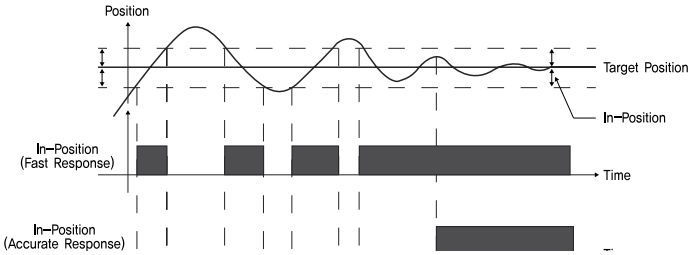
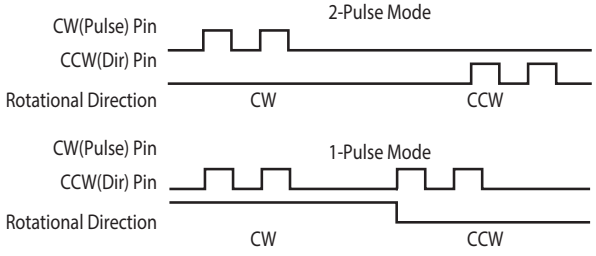
- Parameter setting program(GUI) can be downloaded from website (www.fastech.co.kr).
- Parameter setting program(GUI) support Windows XP/ 7 / 8 / 10 / Vista (32, 64bit).
- Parameter setting program(GUI) can be updated without warning to increase performance and convenience of user.

Parameter setting Wiring Diagram

Ezi-SERVO BT-28 Series



Below contents are descriptions of the parameters. Please refer to below when setting the parameters. The input and output of the drive are both photocoupler. The signal status is not the voltage level of the signal but the photocoupler [ON : Energized] and [OFF : Deactivated].

Parameter	Default value	Range	Function
Active Level of Alarm Signal	Low	Low, High	Set the level of alarm output signal. When set to Low, the alarm output is [ON] when it is in the normal state and [OFF] when the protection function is in operation.
Active Level of In Position Signal	High	Low, High	Sets the level of the in-position output signal. In-Position Sets the level of the output signal. When set to High, In-Position output is turned ON when motor movement is completed.
Active Level of Enable Signal	High	Low, High	Sets the level of the Servo on input signal. When set to High, if the Servo On input is set to [ON], the drive stops supplying current to the motor.
Stop Current	50%	20%~100%	Stop Current means the motor current which is set automatically after 0.1 second after the motor stops running. This parameter is used to reduce the heat when the motor is stopped for a long time. and If it is set more than 60%, the motor temperature can be increased.
Run Current	100%	50%~150%	Run Current is the value of the flowing current in the motor during operation(rotation) of the motor and is set based on the rated current of the motor. This value is related to the torque value during the operation(rotation) of the motor. If this value is large, the torque value during operation(rotation) increases. Therefore, if it is judged that the torque value during operation(rotation) is insufficient, increase the value of this parameter to raise the torque value during operation(rotation) of the motor. **Cautions** ① If the Run Current value is high, the motor's heat temperature may increase. Please be careful. ② Maximum setting value of Run Current(150%) is limited to 4A. Therefore, motors(56 angles, 60 angles) which is rated current value exceeds 2.7A will not increase by the set value even if the setting value is increased. ③ In case of Ezi-SERVO, Run Current is automatically adjusted according to load. Therefore, use only when the torque value during running is insufficient.
In-Position Value	0 pulse	0~63pulse	It Indicates the output condition of the positioning completion signal. When the position deviation from the target position is less than the set In-Position value after the end of the position command pulse, the positioning completion signal is output.
In-Position Value Response Mode	Fast	Fast, Accurate	Indicates the output condition of the positioning completion signal. 
Position Control Gain	3	0~63	It is used to adjust the motor response to the load on the motor when the motor stops. This value is relative value to used inside the drive not an actual value. For example, if this value is changed from 3 to 6, it does not mean the response time is to be double. If the value of this parameter is small, the operation of stopping the motor becomes sensitive, and it takes less time to stop the motor. If the value of this parameter is large, the operation of stopping the motor becomes insensitive and it takes a relatively long time to stop the motor. It is used as the factory default value under normal conditions. In particular, in case of the inertia moment of the load is bigger than the used motor and so the motor can not be stopped normally, if increasing the value of this parameter, motor will operate normally.
Motion Direction	Normal	Normal, Inverse	Sets the motor rotation direction. it is based on the CW(+ pulse) input to the drive. Normal: CW(+ direction, clockwise) / Inverse: CCW(- direction, counterclockwise)
Input pulse mode	2 pulse	1 pulse, 2 pulse	Set pulse input method. 
Reference Resolution	16,000	500~16,000	Set the resolution. It refers to the number of input pulses sent from the host controller per 1 revolution of motor.

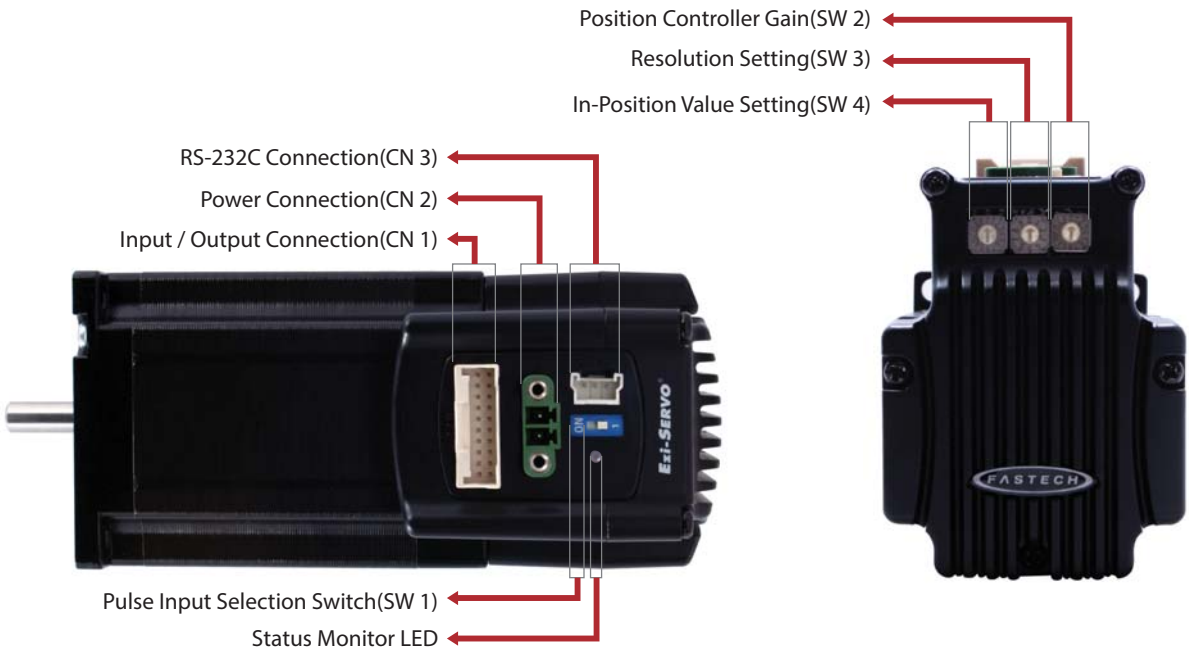
Drive Specification

(Ezi-SERVO BT-42, 56 Series)

Specifications

Input Voltage		24VDC ±10%
Control Method		Closed Loop Control with 32bit DSP
Current Consumption		Max. 500mA(Except Motor Current)
Operating Condition	**Ambient Temperature**	· In Use : 0 ~ 50˚C · In Storage : -20 ~ 70˚C
	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]	· 10,000[ppr] Encoder model : 500 / 1,000 / 1,600 / 2,000 / 3,600 / 5,000 / 6,400 / 7,200 / 10,000 · 20,000[ppr] 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	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, Motor Voltage Error, In-Position Error, System Error, ROM Error, Position Overflow Error
	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)
	Speed / Position Control Command	Pulse Train Input
I/O Signal	**Input Signal**	Position command pulse, Servo On / Off, Alarm reset(Photocoupler Input)
	Output Signal	In-Position, Alarm(Photocoupler Output) Encoder Signal(A+, A-, B+, B-, Z+, Z-, 26C31 of Equivalent)(Line Drive Output)

Setting and Operation



System Operation Manual

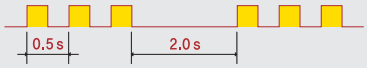
(Ezi-SERVO BT-42, 56 Series)

Status Monitor LED

1. Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the limit value
2	Over Speed Error	Motor speed exceed 3,000[rpm]
3	Position Tracking Error	Position error value is higher than 90° 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°C
6	Over Regenerative Voltage Error	Back-EMF more than 50V
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 Connector in 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 90° in motor stop state

Alarm LED Flash(ex : Position Tracking Error)

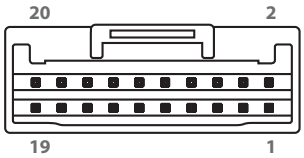


Connector

1. Input / Output Signal(CN 1)

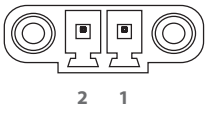
No.	Function	I/O
1	CW+(Pulse+)	Input
2	CW-(Pulse-)	Input
3	CCW+(Dir+)	Input
4	CCW-(Dir-)	Input
5	A+	Output
6	A-	Output
7	B+	Output
8	B-	Output
9	Z+	Output
10	Z-	Output

No.	Function	I/O
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	24VDC GND	Input
20	24VDC	Input



2. Power Connection(CN 2)

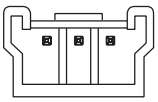
No.	Function
1	24VDC ±10%
2	GND



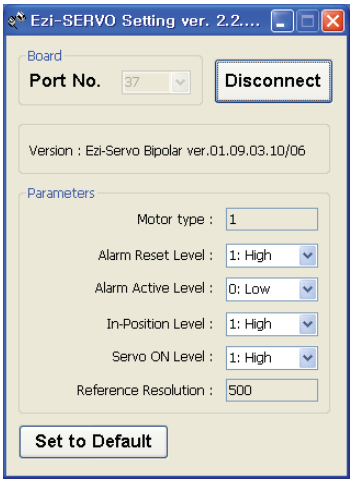
3. RS-232C Communication(CN 3)

Communication Port to set parameter by computer. Baud Rate is 115,200bps. To set parameter, please use included GUI program.

No.	Function
1	Rx
2	Tx
3	GND



4. GUI Program



Switch

1. Pulse Input Selection Switch(SW 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

2. In-Position Value Setting Switch(SW 2)

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
0 *1	0
1	1
2	2
3	3

Position	In-Position Value pulse Fast Response
4	4
5	5
6	6
7	7

Position	In-Position Value pulse Accurate Response
8	0
9	1
A	2
B	3

Position	In-Position Value pulse Accurate Response
C	4
D	5
E	6
F	7

***1** : Default = 0(Please refer to User Manual for setup)

3. Resolution Selection Switch(SW 3)

The Number of pulse per revolution.

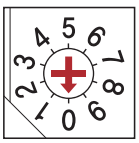
Position	Pulse/Revolution
0	500 *1
1	500

Position	Pulse/Revolution
2	1,000
3	1,600

Position	Pulse/Revolution
4	2,000
5	3,600

Position	Pulse/Revolution
6	5,000
7	6,400

Position	Pulse/Revolution
8	7,200
9	10,000 *2



***1** : Resolution value depend on encoder type.

***2** : Default = 10,000

4. Position Controller Gain Selection Switch(SW 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.

STEP 1.	STEP 2.	STEP 3.
Set the switch to "ON" position.	Start to rotate the switch until system becomes stable.	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

Position	Time Constant of the Integral part	Proportional Gain*1
4	1	5
5	1	6
6	2	1
7	2	2

Position	Time Constant of the Integral part	Proportional Gain*1
8	2	3
9	2	4
A	2	5
B	3	1

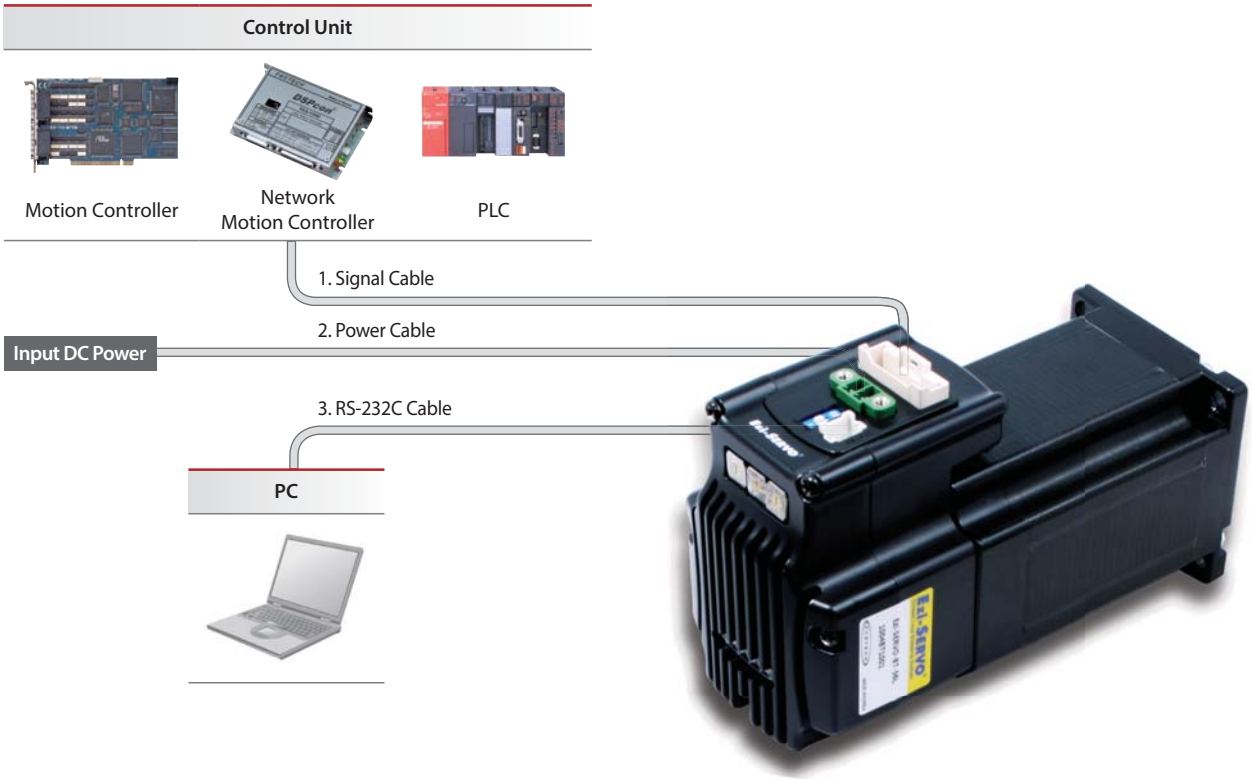
Position	Time Constant of the Integral part	Proportional Gain*1
C	3	2
D	3	3
E	3	4
F	3	5

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

***2** : Default = 3

System Configuration

(Ezi-SERVO BT-42, 56 Series)



Type	Power Cable	Signal Cable
Standard Length	-	-
Max. Length	2m	20m

Option Cable

1. Signal Cable

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

Model Name	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 BT.

Model Name	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-232C Cable

Cable to connect Ezi-SERVO BT series and computer.
Please use this cable to change parameter as like resolution of Drive and Stop current.

Model Name	Length[m]	Remark
CBTB-C-□□□F	□□□	Normal Cable

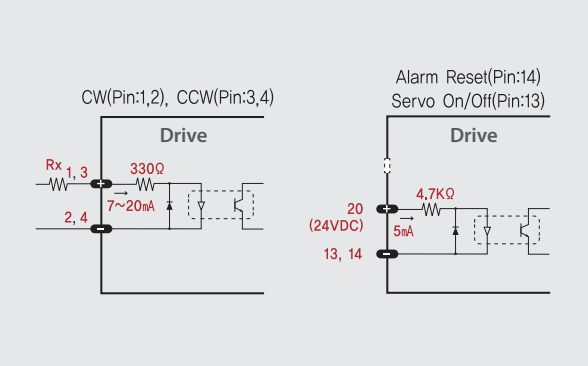
※ □□□ is for Cable Length. The unit is 1m and Max. 15m length.

Control Signal Input / Output Description

(Ezi-SERVO BT-42, 56 Series)

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.



1. CW, CCW Input

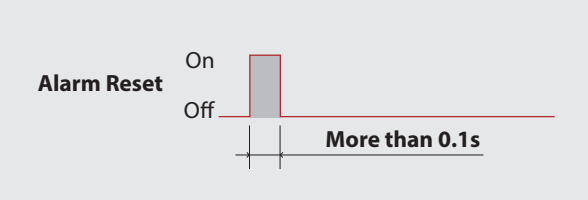
This signal can be used to receive a positioning pulse command from a user host motion controller. The user can select 1-Pulse Input mode or 2-Pulse Input mode(refer to switch No.1, SW 1). The input schematic of CW, CCW is designed for 5V TTL level. When using 5V level as an input signal, the resistor 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.

2. 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 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 to the motor and recovers the holding torque. When driving a motor, one needs to set the signal [OFF].

3. Alarm Reset Input

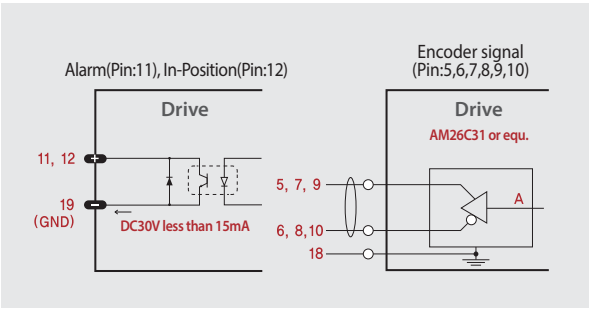
When a protection mode has been activated, a signal to this alarm reset input cancels the Alarm output.



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

Output Signal

Output signals from the drive are photocoupler protected: Alarm, In-Position and the Line Drive 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.

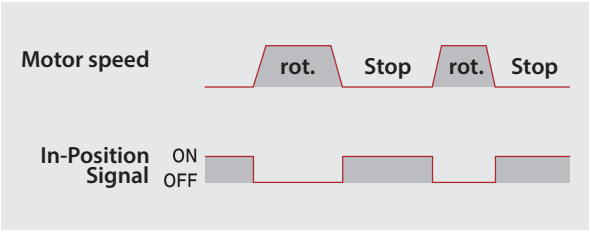


1. Alarm Output

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.

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

2. In-Position Output



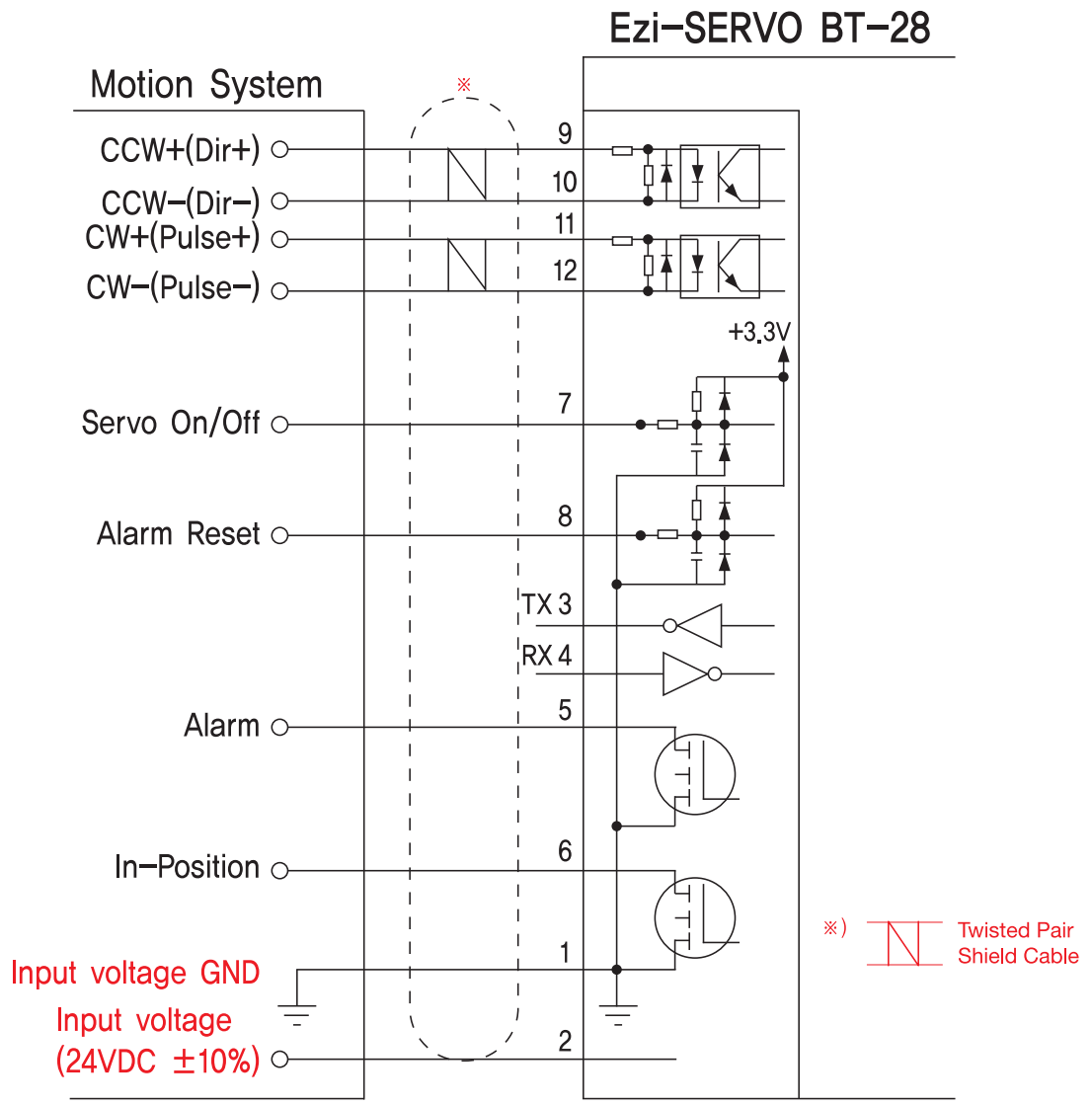
In-Position signal is [ON] when positioning is completed.
This signal is [ON] when the motor position error is within the value set by the switch SW 4.

3. Encoder Signal Output

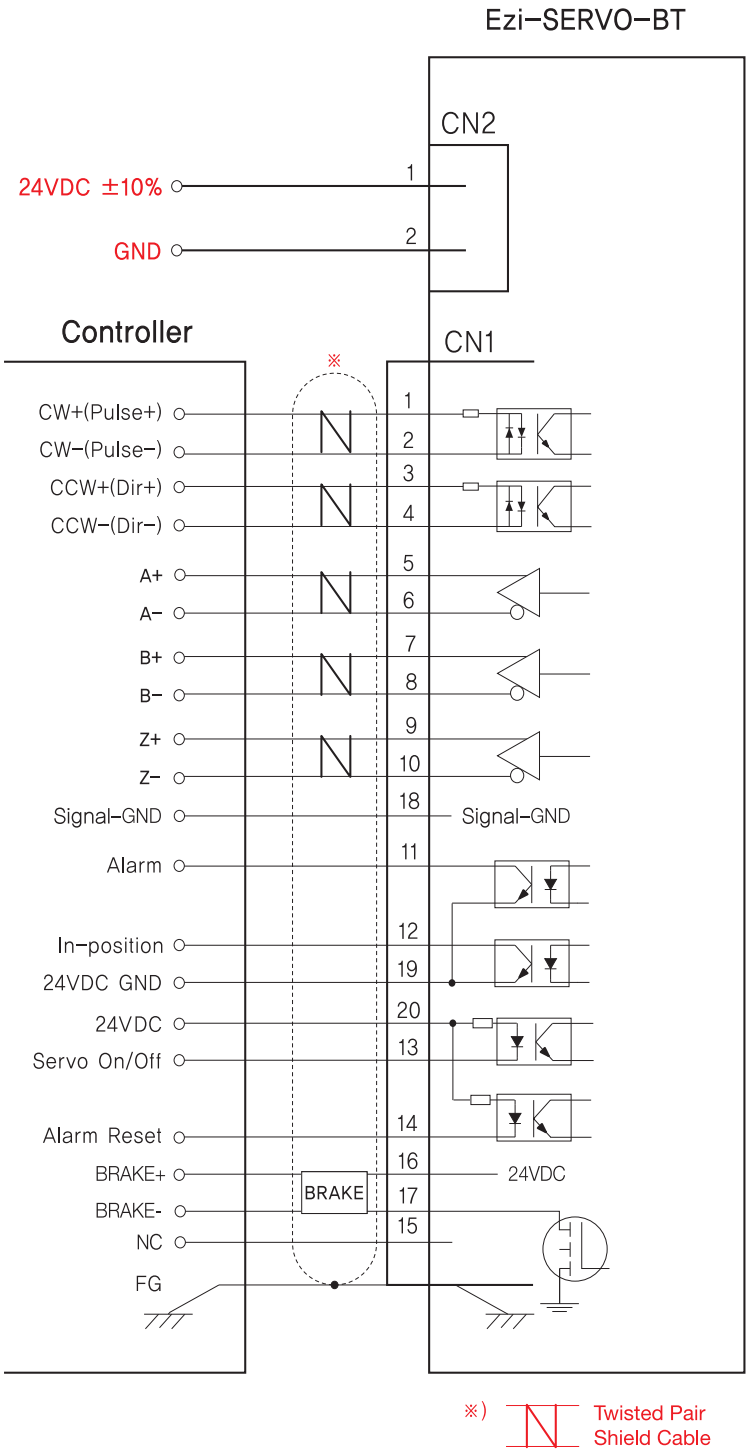
The encoder signal is a line drive output. This can be used to confirm the stop position.

External Wiring Diagram

Ezi-SERVO BT-28 Series



Ezi-SERVO BT-42, 56 Series



FASTECH

Fast, Accurate, Smooth Motion

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