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2020

Metasol Meta Solution

GIMAC-B

Energy Measuring Device

CE UL

LS ELECTRIC

GIMAC-B

The Metasol Energy Measuring Device by LS is a segment power surveillance meter for low-voltage switchgears and distribution boards in buildings and factories

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Energy Measuring Device GIMAC-B

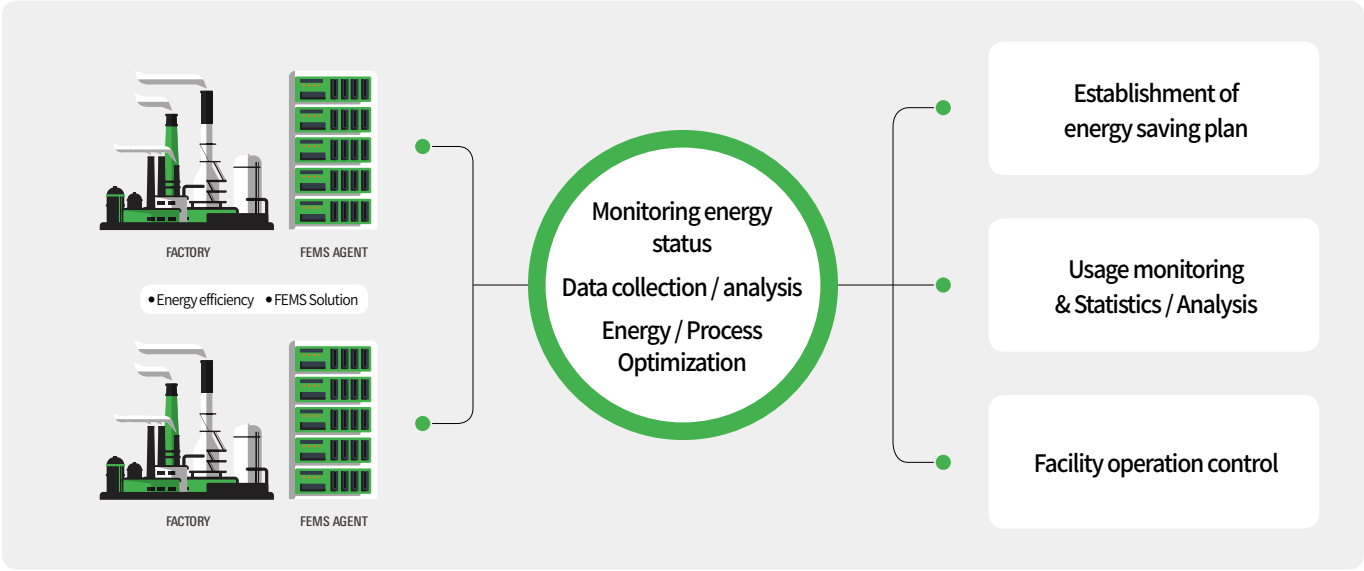
The Metasol Energy Measuring Device by LS is a segment power surveillance meter for low-voltage switchgears and distribution boards in buildings and factories, which offers stable and efficient power management capabilities to the user by integrating surveillance through high-speed Ethernet communication and power quality surveillance all into a single device.

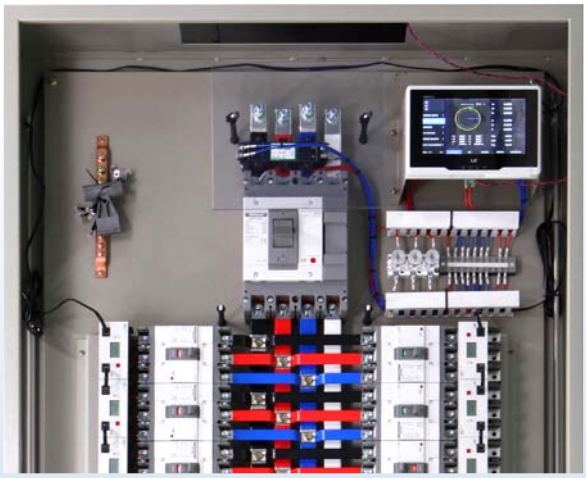
Contents

Energy Measuring Device GIMAC-B

LS 's Metasol Energy Meter is a meter for power monitoring of each branch circuit in low-voltage switchgears and distribution boards in buildings and factoriess. By integrated monitoring the load abnormality and the power quality through the high-speed Ethernet communication, it is possible to provide users with stable and efficient power operation management.

- Construction of FEMS and BEMS through power measurement by load
- Association with Building management system
- Association with Power monitoring unit





Building
Office, Commercial, Residential, School, Hospital

Industrial facilities
Petrochemical, Electronics, Glass, Steel, Semiconductor, Chemical, Pharmaceutical, Cement, Paint

The product consists of main and branch measuring instruments

- GIMAC-B MAIN module: 1 type
- GIMAC-B Branch module: 8 ratings for Busbar connection, 9 ratings for Tunnel connection

1. Single phase (4 ratings for each busbar/tunnel connection style: 30A, 100A, 125A, 250A)
2. Three phases [(4 ratings for busbar, 5 for tunnel style): 5A(tunnel only), 30A, 100A, 125A, 250A]
3. Leakage current measurement function as an option
4. Temperature measurement function (available when installing separate temperature module)

Providing standard communication function

- High-speed Ethernet provides load monitoring and power quality monitoring in real time
- Main module: Standard Ethernet, MODBUS RS-485
- Branch module: MODBUS RS-485
- Automatic ID allocation function for constructing a simple communication system
- Up to 50 branch modules can be connected per main module

Various measurement functions

- Phase (line) current, Phase (line) voltage, phase, unbalance rate, power factor, frequency, power, energy, THD, TDD, K-FACTOR, Harmonics, Demand, Load-ratio
- Provides useful information such as PQ (Sag, Swell, Interruption), demand power / current measurement

Various additional functions

- Provides statistical data, load factor calculation, PQ event, temperature measurement, DI, etc.
- Expansion of system quality monitoring function by storing PQ waveform
- Past load usage trend can be checked through statistical function
- Adopted an 8-inch Graphic LCD with touch screen as the main instrument ensuring visibility and convenience
- Ensures system scalability by connecting up to 50 branch instruments
- Branch module abnormality data is stored as event and provides transferring of each branch module information to main module through communication and storing and DO output function.
- Leakage current measurement using ZCT built in breaker by branch module (Optional)
- It is possible to monitor the ON, OFF, and Trip status of the breaker by receiving the AX and AL contacts of the MCCB to the branch module (Optional)

Busbar or Tunnel connection (module)

- Types of connection with MCCB can be selectable - Busbar or Tunnel

Provide high accuracy error

- Provides voltage / current accuracy error (0.2%) and provides various rated products according to customer's demand.
(The range of current measurement is different for each product rating)




Public facilities
Gas, Water and sewerage, Airport, Railway, Harbor

Features

GIMAC-B MAIN

8" TFT LCD touch screen

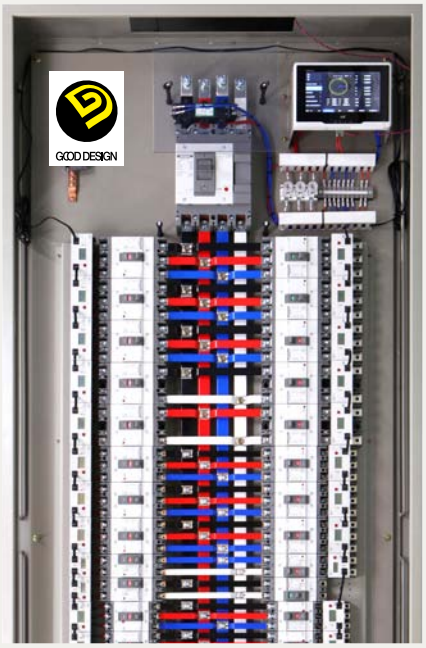
- Large touch screen provides ease of operation and use
- Diversification of display through graphic application (PQ waveform, Trend, Vector)
- Provides ease of analysis and maintenance
- Set the language in the GIMAC-B screen menu
  - Korean and English supported

Various measurement / Power quality monitoring function

- Voltage, current, power, energy, frequency, power factor, phase
- Provides convenience of on-site maintenance by providing Various Vector screens
- THD, Sag, Swell, Interruption function
- Suitable for high quality power system operation by providing power quality monitoring event

Provides optimal deployment of the system

- Easy wiring through direct connection of external CT (5A)
- Convenient system design with wide measurement voltage range
- D/I and D/O provide easy configuration of switchgear system
- Supports up to 50 branch monitoring
- Easy installation and commissioning through dedicated branch communication/power integrated supply cable
- Temperature monitoring in the inside of a panel by temperature measurement module



Supports various communication networks

- Support for redundancy via RS-485 and Ethernet
- Easy installation and commissioning through branch auto address support

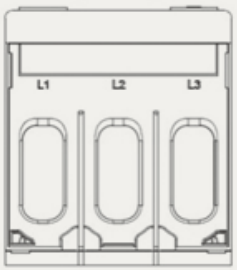
Good Design

- Awarded Good Design in 2015

GIMAC-B Branch Measurement Module

User-friendly structure

- Display of branch-specific measurement value by applying Customized LCD 4 Segment
- Convenient on-site installation through tunnel style long-hole structure



Various additional functions of branch circuit

- Displaying the status of the branch circuit (breaker) on the LED and signaling it to the main monitoring module
- Providing leakage current measurement when connected to MCCB with ZCT(Optional)

System / Operational reliability

- Short-circuit tested with MCCB
- Provides branch power stabilization solutions in harsh environments
- Various branch cables are provided

Breaker status monitoring function

- Monitoring AX, AL state using DI 2CH (Optional)
  - MCCB status(ON, OFF, Trip) monitoring function

Good Design

- Awarded Good Design in 2015

GOOD DESIGN

GIMAC-B Main Module

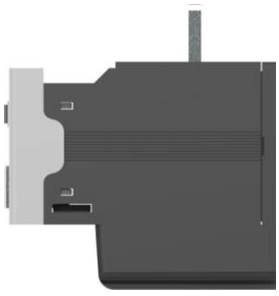
GIMAC-B MAIN

GIMAC-B Branch Module

100AF 2P

125AF 2P

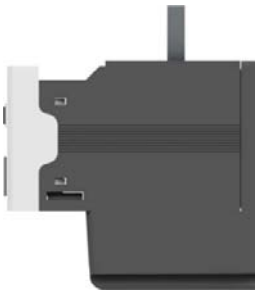
250AF 2P



100AF 3P

125AF 3P

250AF 3P



Standard Operating Environment

This product should be used under the following standard usage conditions.

1) Temperature
- Normal operating: -20 to 60°C
- Storage: -30 to 70°C

2) Humidity: 80% or less (no condensation)

3) Location
- Altitude: Below 2,000 meters above sea level.
- CT to abnormal vibration or shock.
- Where the ambient air pollution is not significant.

※ Caution: In the environment exposed to chemicals and gas, it may cause measurement hunting due to metal corrosion and control power failure. Therefore, product performance in the environment is not guaranteed.

Product rating

Item		Rating		Remarks
Rated frequency		50 or 60Hz (Input range: 50 or 60 ± 5Hz)		
Control Power	Power input range	Normal	~ 220VAC/DC	
		Min ~ Max	88 ~ 264VAC/DC	
	Power Consumption	Single use	MAX. 19 W	
		Branch connection	MAX. 40 W	With 50 branch connection
Measurement	Voltage input range	3 ch	9~452V (9 ~ 782V)	Phase voltage(between line voltage) basis
	Current input range	3 ch	0.05 ~ 6A	
	Input burden	Each phase	1VA or less	
Input contact		DI: 2CH (Dry Contact)		
Output contact		DO: 1CH (250VAC 5A, 30VDC 5A)		For resistive load
Temperature measurement range		-20°C ~ 70°C (°C/°F change)		Separate temperature module is required

Function & Rating

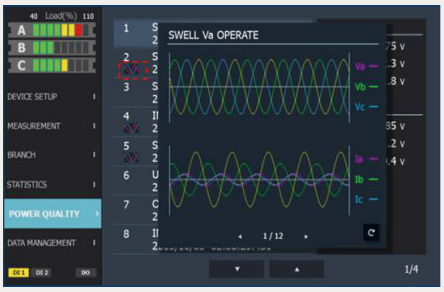
Measurement element

Item		Instant value	Peak Demand	3P4W	3P3W Y	3P3W OD	1P2W	Display range (Warranty range)	Accuracy
Phase voltage	Va, Vb, Vc	○	○	○	×	×	○	9 ~ 452V (30 ~ 452V)	0.20%
Phase angle of phase voltage	Va, Vb, Vc angle	○		○	×	×	○	0 ~ 359.9°	0.5°
Line voltage	Vab, Vbc, Vca	○	○	○	○	○	×	9 ~ 782V (30 ~ 452V)	0.20%
Phase angle of line voltage	Vab, Vbc, Vca angle	○		○	○	○	×	0 ~ 395.9°	0.5°
Current	Ia, Ib, Ic	○	○	○	○	○	○	0.050 ~ 6,000A	0.20%
Phase angle of current	Ia, Ib, Ic angle	○		○	○	○	○	0 ~ 359.9°	0.5°
Normal / reversephase voltage	V1/V2	○	○	○	○	×	×	0 ~ 452V	N.A
Zero phase voltage	V0	○	○					0 ~ 452V	
Normal / reversephase current	I1/I2	○	○	○	○	×	×	0 ~ 6,000A	
Zero phase current	I0	○	○					0 ~ 6,000A	
Unbalance	UBV	○	○	○	○	○	×	0 ~ 1,000%	
	UBA	○	○	○	○	○	×	0 ~ 1,000%	
Power factor	PF, PFa, PFb, PFc	○	○	○	○	○	○	0 ~ ±1,000	Subject to phase error
Frequency	Freq	○	○	○	○	○	○	45 ~ 65Hz	0.05Hz
Active power	Pa, Pb, Pc	○	○	○	○	○	○	0 ~ ±999999.9M	IEC 62053-22 Class 0.5S
Reactive power	Qa, Qb, Qc	○	○	○	○	○	○		
Apparent power	Sa, Sb, Sc	○	○	○	○	○	○		
Active energy	WH	○		○	○	○	○		
Reverse active energy	rWH	○		○	○	○	○		
Reactive energy	VARHb, VARHb, VARHc	○		○	○	○	○		
Phase voltage THD	THD Va, Vb, Vc	○	○	○	×	×	○	0 ~ 100%	N.A
Line voltage THD	THD Vab, Vbc, Vca	○	(○)	×	○	○	×		
Current THD	THD Ia, Ib, Ic	○	○	○	○	○	○		
Current TDD	TDD Ia, Ib, Ic	○	○	○	○	○	○		
Current K-factor	K-Factor Ia, Ib, Ic	○	○	○	○	○	○		
Phase voltage harmonic	Va 1~15 harmonic	○		○	×	×	○	6.6V ~ 452V (Within 30% THD)	N.A
	Vb 1~15 harmonic	○		○	×	×	×		
	Vc 1~15 harmonic	○		○	×	×	×		
Line voltage harmonic	Vab, Vbc, Vca 1~15 harmonic	○		×	○	○	×		
Current harmonic	Ia, Ib, Ic 1~15 harmonic	○		○	○	○	○	0.06 ~ 6A (Within 60% THD)	

Note 1: Previous value of Demand MAX / MIN / AVERAGE
Note 2: Line voltage THD is supported only in 3P3W.

1) PQ function

- Non-volatile memory storage for PQ events over ½ cycle
- Sag, Interruption, Swell PQ Event Detection
- PQ Event storage, waveform storage and LCD display up to 32 events



2) Statistics and trend graph function

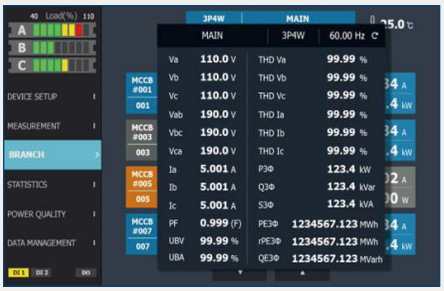
- Statistical functions for measuring and updating the maximum, minimum and average values during the demand cycle for the 32 measurement elements of the main instrument(phase voltage, line voltage, power factor, power, reactive power, apparent power, frequency, zero phase, normal, reverse voltage/current, voltage/ current THD, TDD, K-factor)
- Trend graphs using power statistics of the main and branch instruments

3) Connection up to 50 branch modules and measurement display

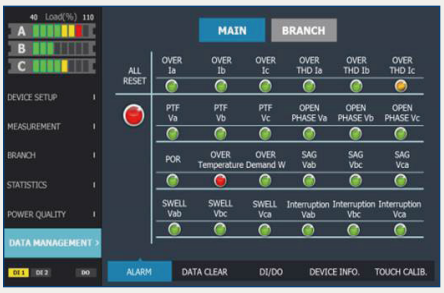
- Ability to configure the screen freely by designating branch instrument name and display position
- Convenient check through detailed display of branch measurement elements
- Improved intuitive awareness by displaying branch status
- Temperature measurement in the inside of a panel by temperature module

4) Various alarm function and alarm event storage

- Various alarm function and DO output such as PQ Event, overcurrent, PTF, open phase, POR, temperature over, Demand power over, current THD over of the main instrument
- Alarm indication and DO output for overcurrent, demand power over, current THD over, leakage current over of the branch instrument



5) Improved intuitiveness through load factor display



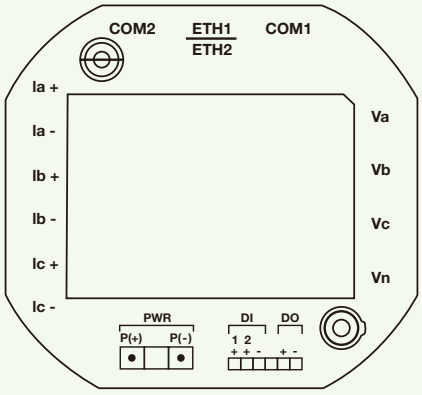
6) Free network configuration through implementation of Ethernet Switch function

Appearance

Appearance and Configuration

Name	Description	Remarks
POWER	The corresponding LED lights when the control power is normal	GREEN
BRANCH	When communication data is requested to branch instrument connected to COM1 or COM2 by RS-485, or when resonding to the upstream monitoring unit the corresponding LED blinks	GREEN
ETH	LED blinks when communication data is transmitted via Ethernet	GREEN
ALARM	When the alarm condition is satisfied and the DO becomes output status , the corresponding LED lights	GREEN
HOME	Press HOME key to move to main measurement screen	

I/O Terminal configuration



Terminal	Description	Remarks
P(+), P(-)	Control power input terminal	
Va, Vb, Vc, Vn	AC voltage input terminal	
Ia+, Ia-, Ib+, Ib-, Ic+, Ic-	AC current input terminal	
DI_1(+), DI_2(+), DI(-)	DI input terminal	2 port
DO(+), DO(-)	DO output terminal	1 port
ETH1, ETH2	Ethernet communication terminal (RJ-45)	
COM1, COM2	RS485 communication terminal (RJ-12)	

Accessories

Item	Cable	Quantity	Remarks
Connection between main and branch	RJ12 Cable, 3m	2ea	Basic Components of the Main Instrument
Connection between main and SCADA	RJ12-RS485 Cable, 1m	1ea	Basic Components of the Main Instrument (RS485)
Connection between main and SCADA	RJ45 Cable, Within 100m	-	Purchased separately (Ethernet)

※ Please use only RJ12 cable provided by LS Industrial Systems.

※ If the sum of the cables between the main instrument and the last connected branch instrument is more than 8m, a separate power boost module connection is required. (Power Boost module is sold separately, connection cable spec: RJ12, 10cm)

※ All cables necessary for product configuration are consumable parts. Therefore, it is recommended to replace the cable if any abnormality occurs or corrosion occurs.(Can be ordered in cable units)

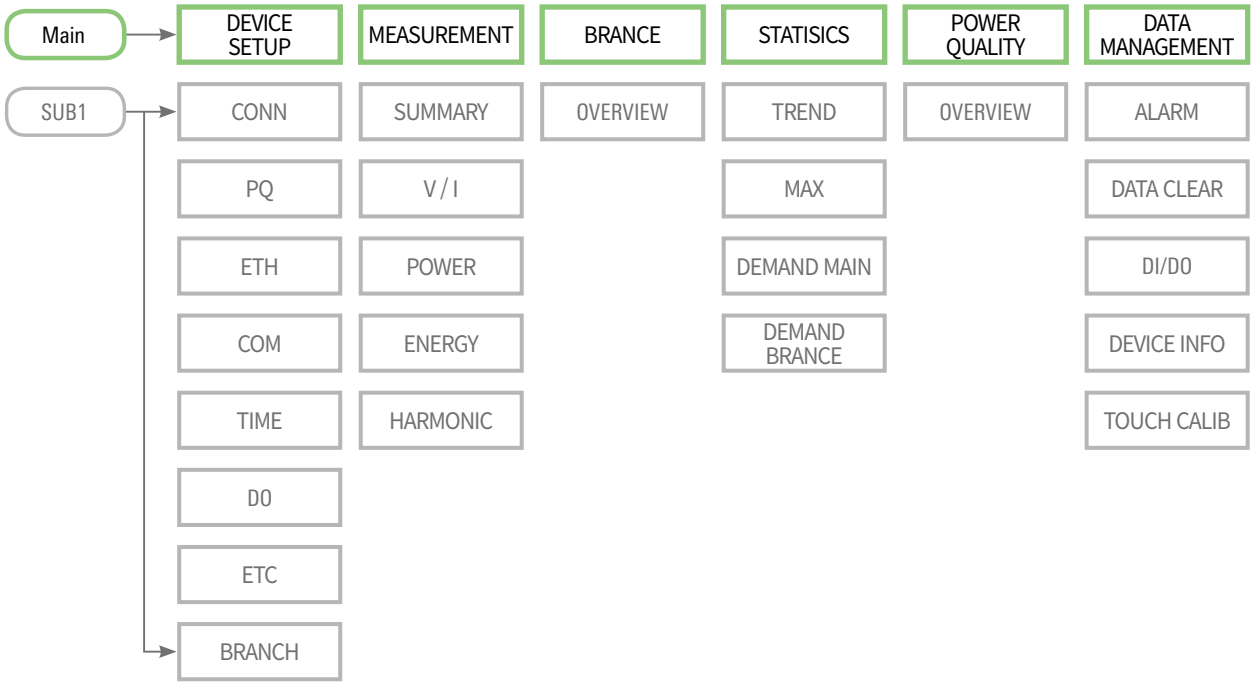
This product consists of a main body and a power module (SMPS) connected with connector and two screws.
When wiring unscrew the two screws fastened to the back of the product by a (+) screwdriver and remove the power module.

※ This product

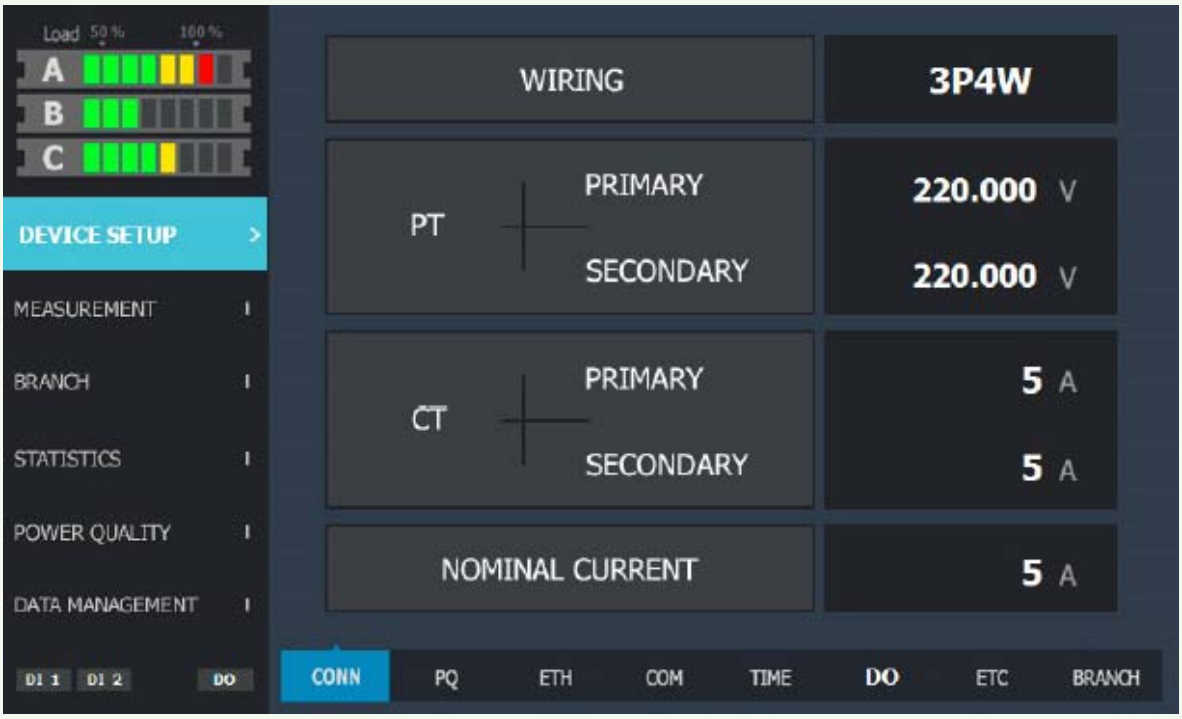
1) Be careful not to let foreign substances such as dust get into the connector of the power module that has been disconnected for terminal wiring.
2) Do not apply the power to DI input terminal because it is dry contact (no voltage type).
3) When reassembling the power module after finishing the connection, take special care not to apply excessive force or to prevent warping or displacement of the connector between the main body and power module.

Operation & Setting

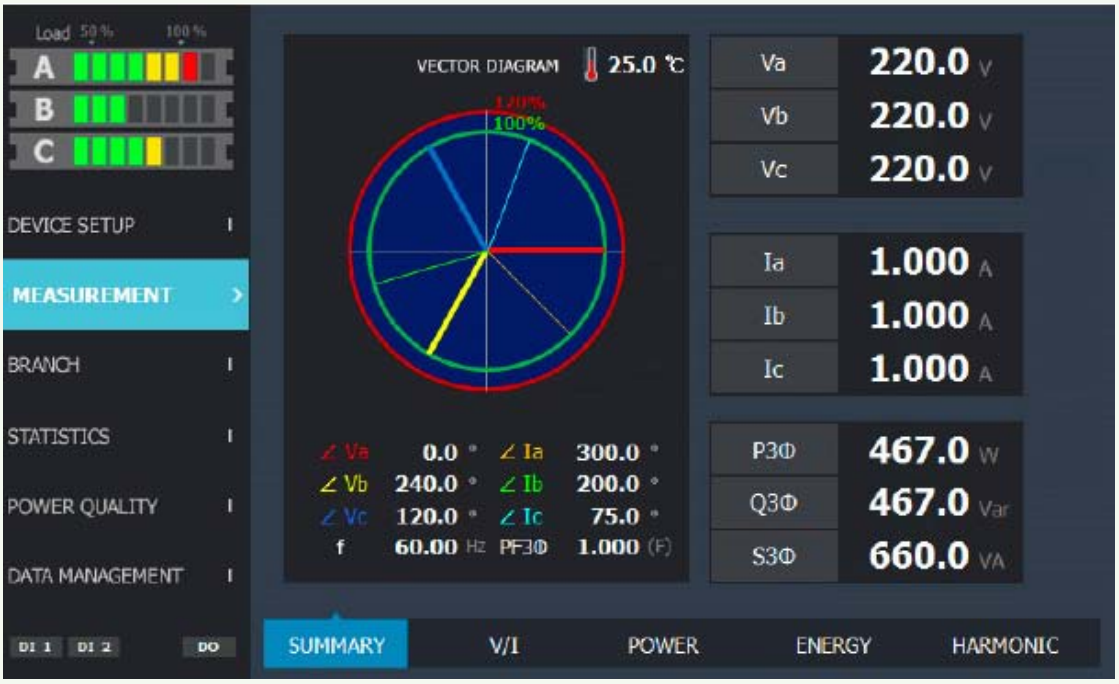
GMAC-B Main Menu Tree



DEVICE SETUP Screen



MEASUREMENT Screen

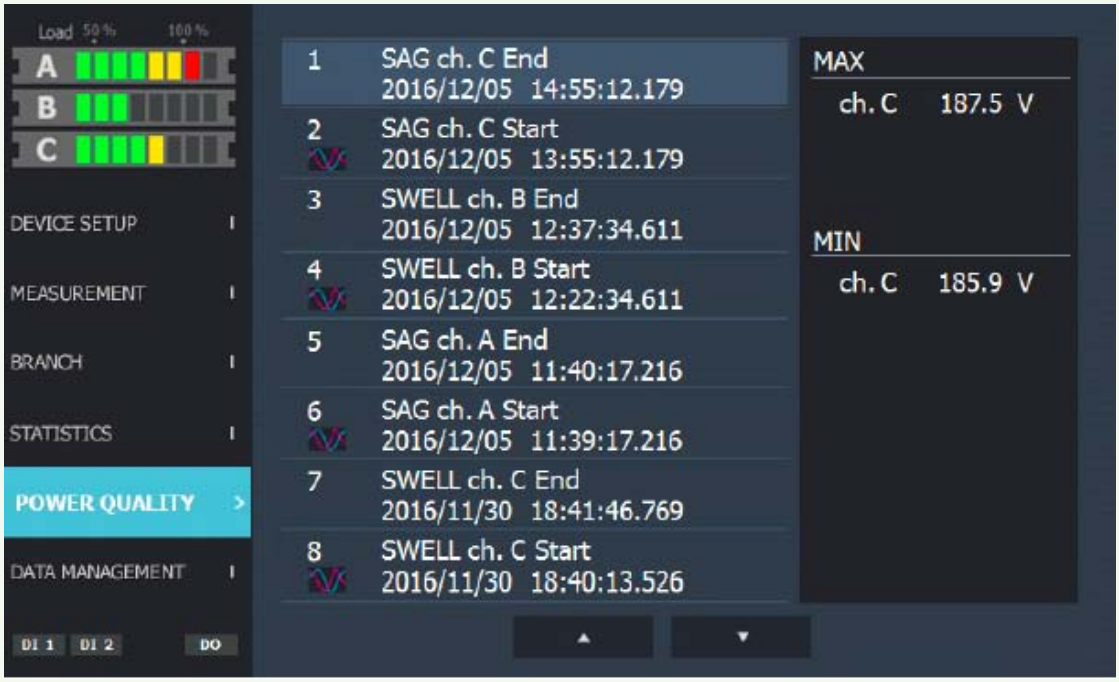


25.0 ℃ Temperature display is displayed only when there is a temperature module.

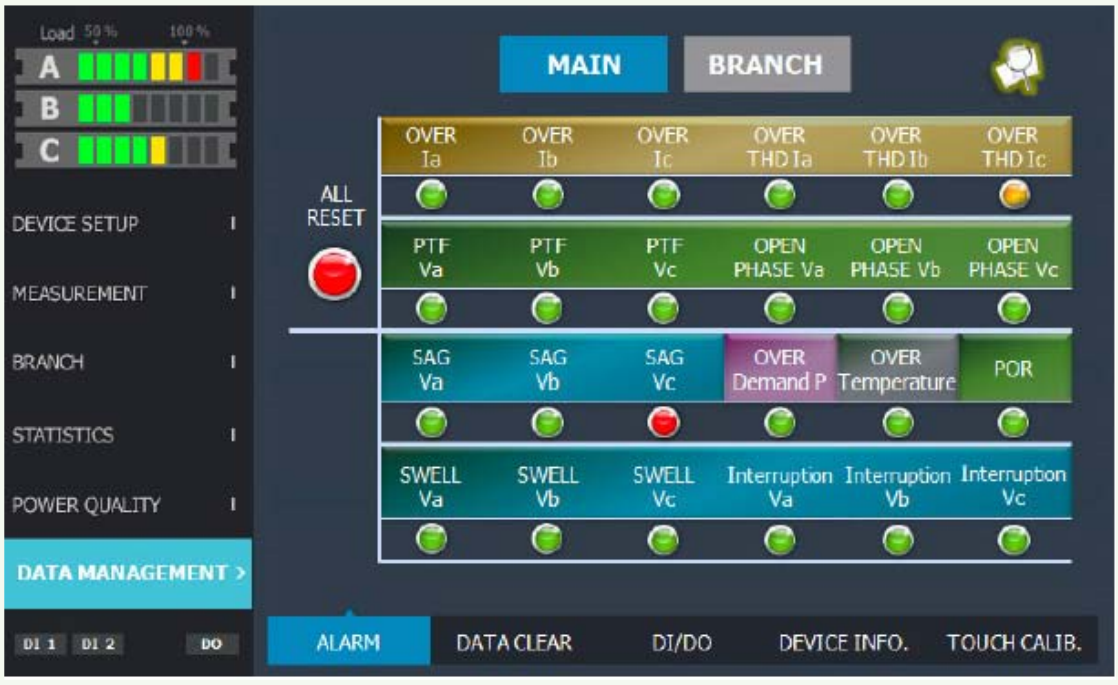
BRANCE Screen

Operation & Setting

POWER QUALITY Screen



DATA MANAGEMENT Screen



Communication Specifications

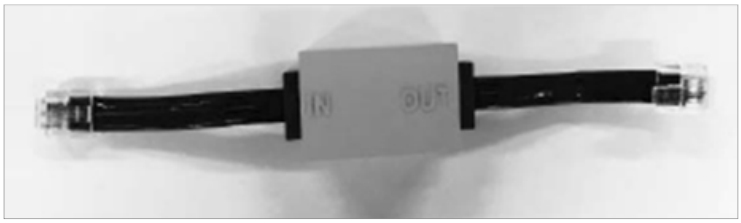
The GIMAC-B can be configured as an independent triple system using two built-in RS485 communication ports and two Ethernet communication ports.

1) RS485 communication specification

- Port specifications: RJ12, 2
- Communication speed: 9600, 19200, 38400 bps (Fixed to 38400 for Master)
- Topology: Multi-Drop (BUS)
- Maximum transmission distance: Upper communication (Slave) - Up to 1.2km (depending on transmission speed)
  Branch communication (Master) - Maximum 8m
- Protocol: MODBUS RTU
- Communication method: Master (branch module and communication mode) / Slave function
  Up to 25 branch modules can be connected per port when setting master

※ If the sum of the cables between the main instrument and the last connected branch instrument is more than 8m, a separate power boost module connection is required.
(Power Boost module is sold separately, connection cable spec: RJ12, 10cm)

* Power Boost Module (sold separately)



2) communication specification

- Port specifications: RJ45, 2
- Communication speed: 10 / 100Mbps
- Topology: STAR type, Daisy-chain type
- Maximum transmission distance: Up to 100m between the HUB and the main instrument (or between main modules)
- Protocol: MODBUS TCP
- Communication method: Server function (main and branch module information)

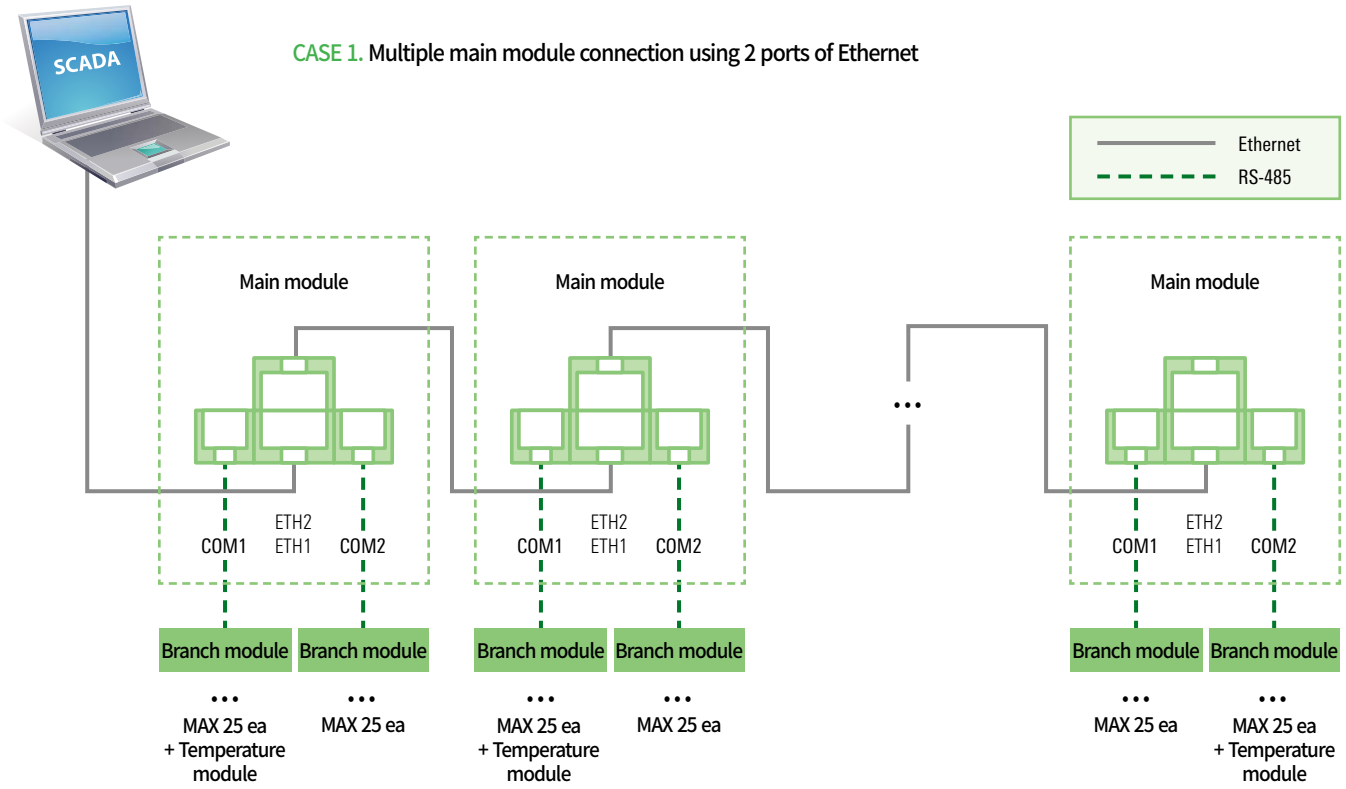
3) Branch communication function (RS485-Master-Branch value monitoring)

- Time delay for reflecting branch setting data: Within 1 sec.
- Main module time delay for branch measurement value: About 6 sec. when connecting 50 modules

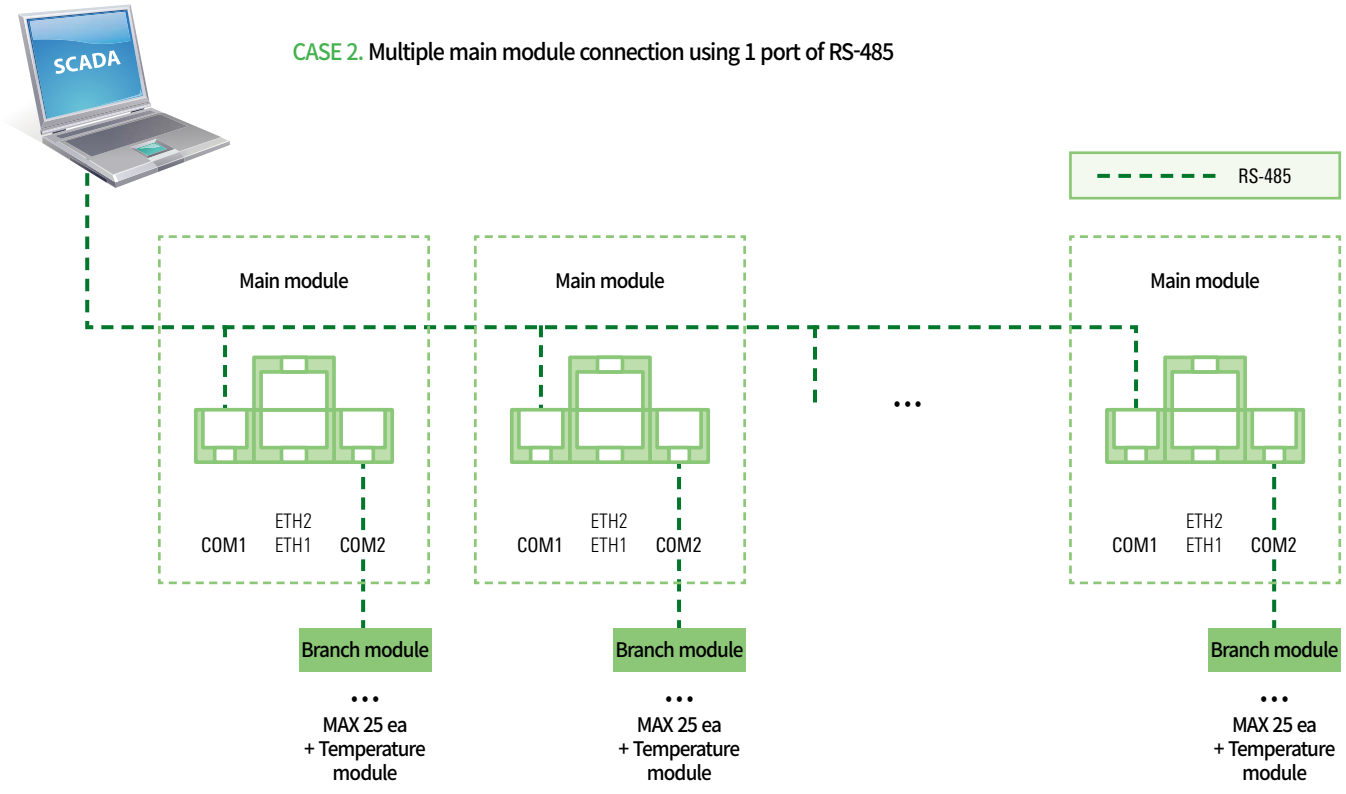
Communication

Communication configuration

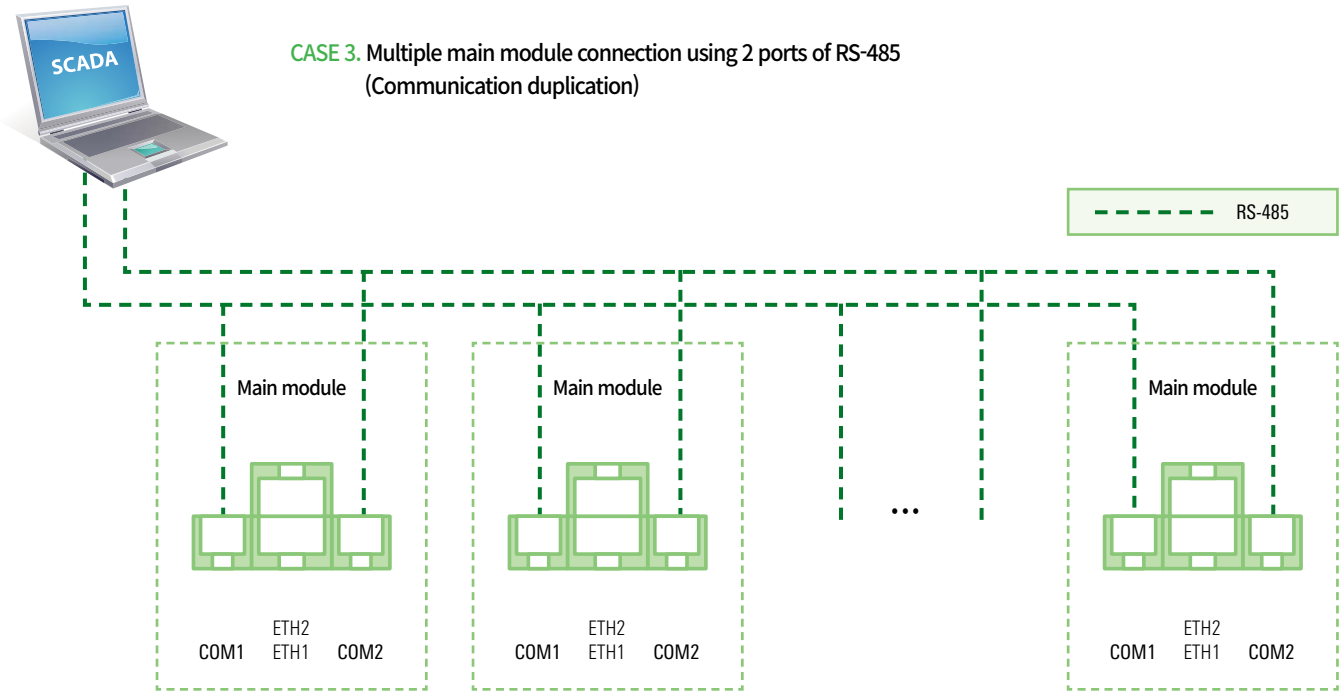
CASE 1. Multiple main module connection using 2 ports of Ethernet



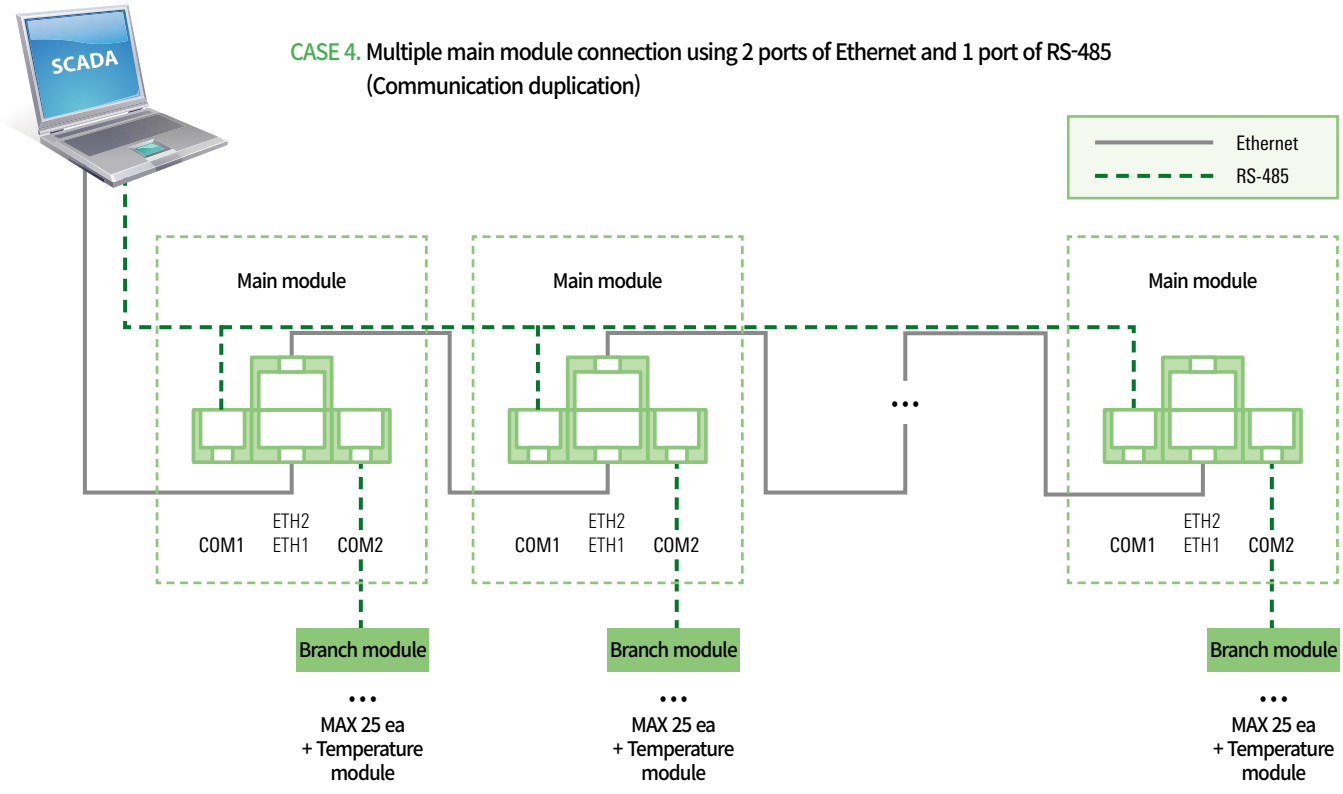
CASE 2. Multiple main module connection using 1 port of RS-485



CASE 3. Multiple main module connection using 2 ports of RS-485 (Communication duplication)



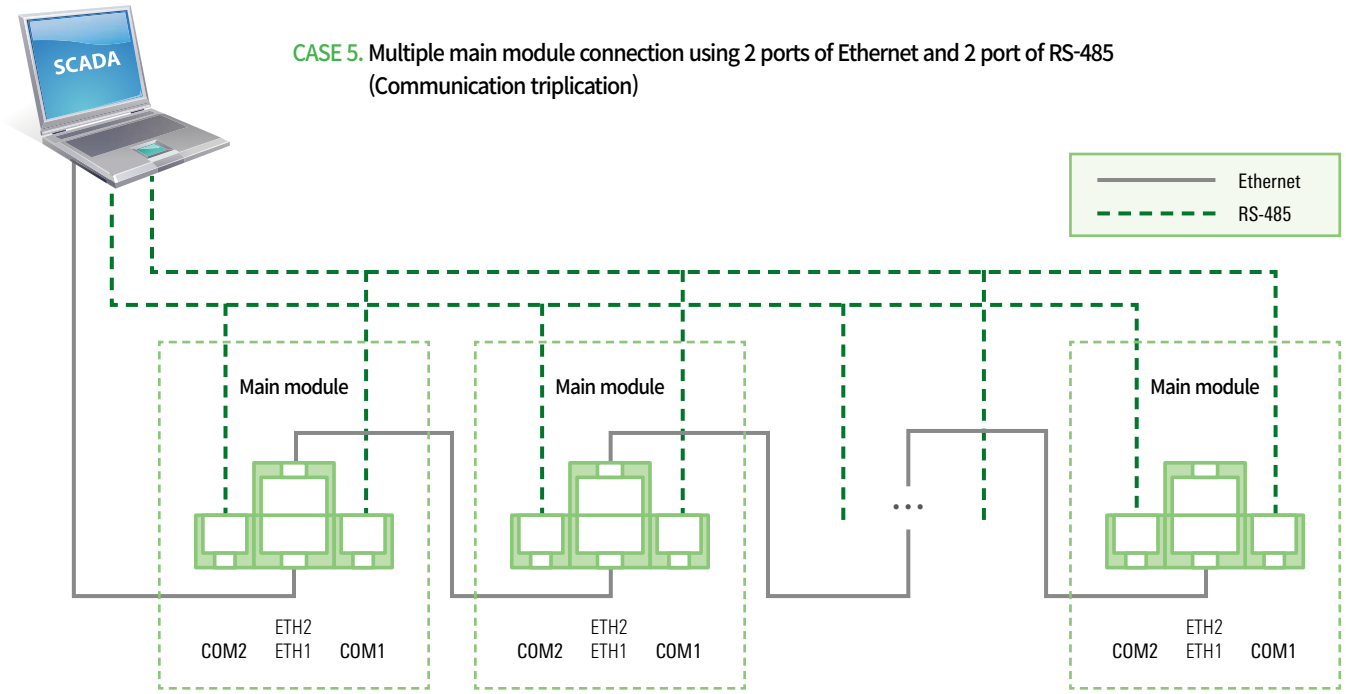
CASE 4. Multiple main module connection using 2 ports of Ethernet and 1 port of RS-485 (Communication duplication)



Communication

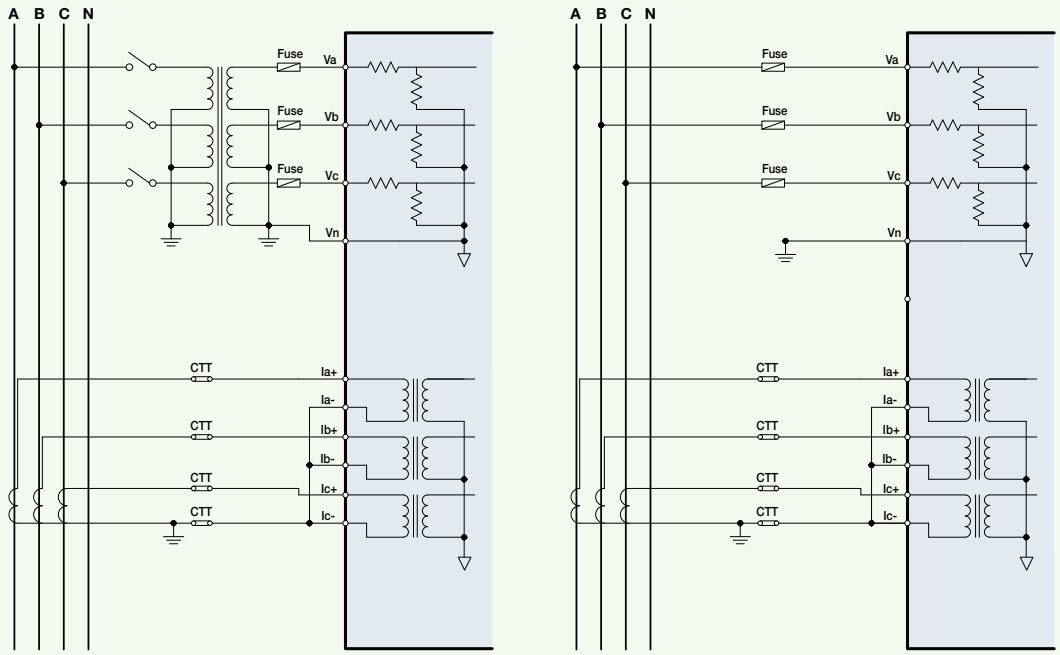
Communication configuration

CASE 5. Multiple main module connection using 2 ports of Ethernet and 2 port of RS-485 (Communication triplication)

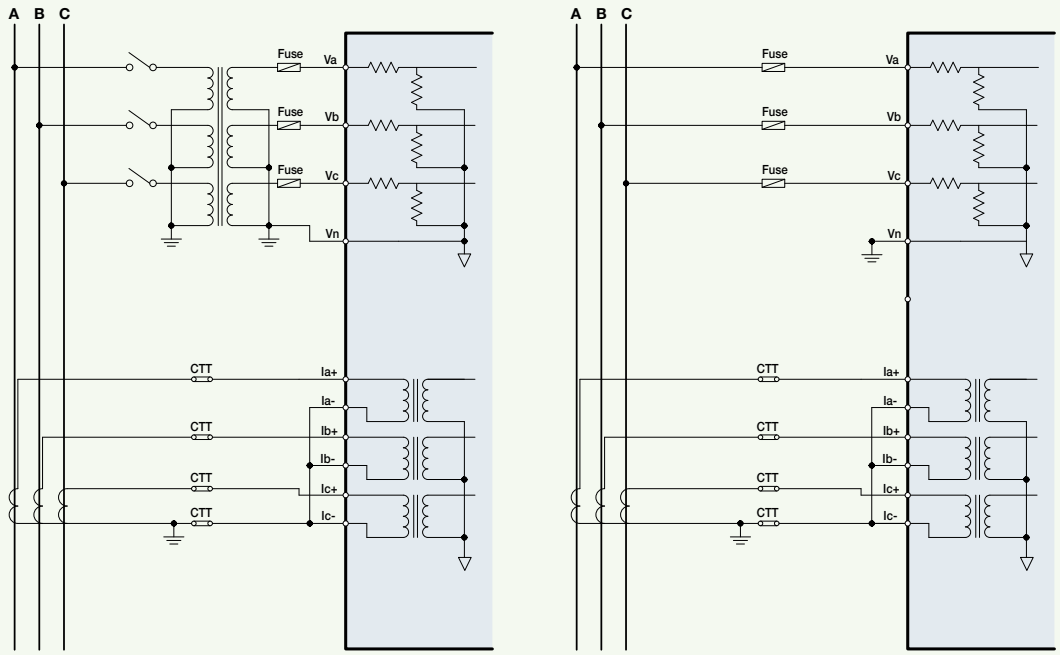


※ Please use Shield Twisted Cable for communication for RS485 communication line.
※ Please connect the shield line of RS485 communication line to the ground to prevent induction of communication line.
※ The maximum distance of RS485 communication is 1.2km, the maximum number of connections is 32 units.
※ The maximum distance of Ethernet communication is 100m, and the maximum number of connections is 20 units.
※ Communication maximum distance means the maximum length of connection cable between products.

3-phase 4-wire



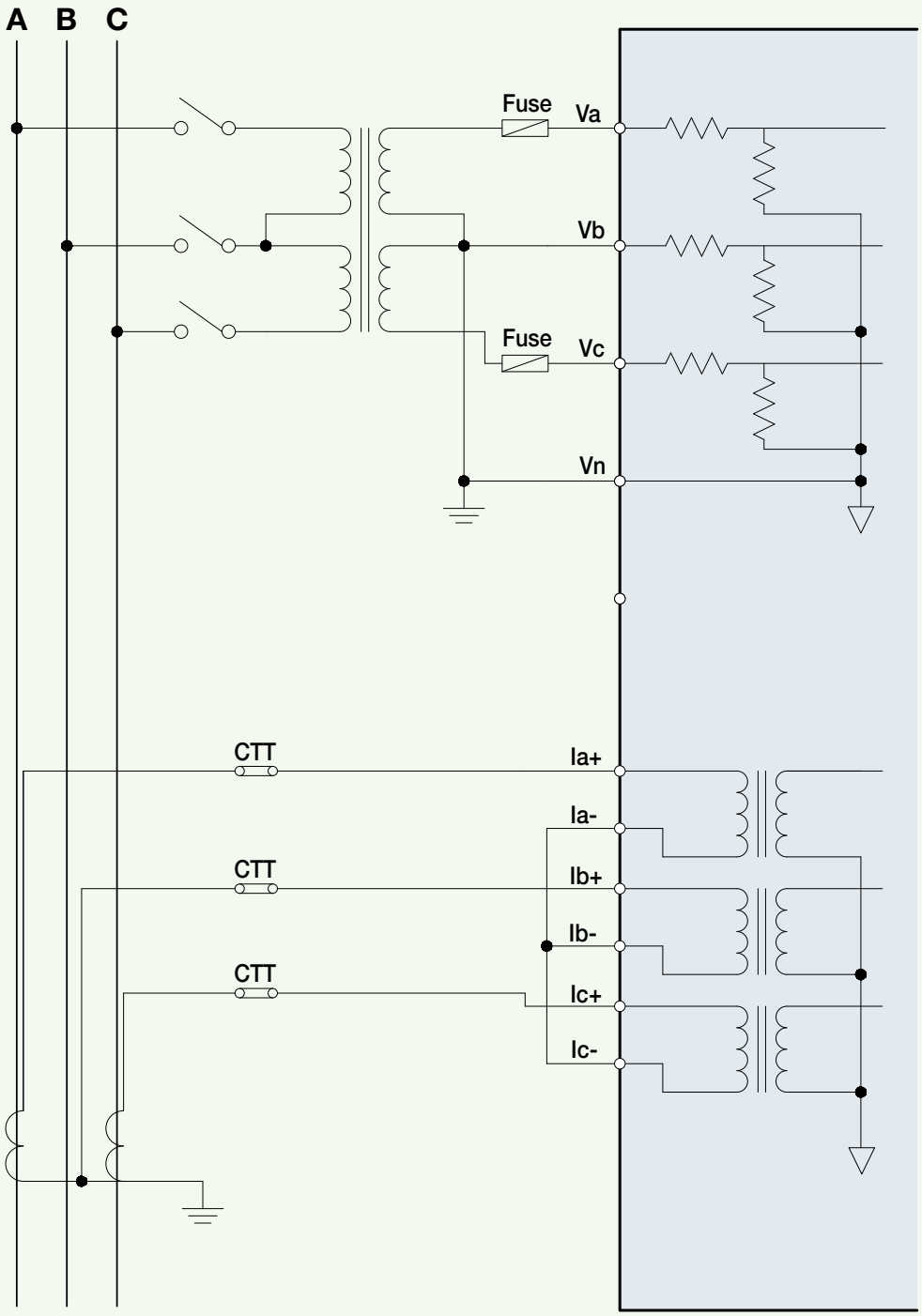
3-phase 3-wire Y connection



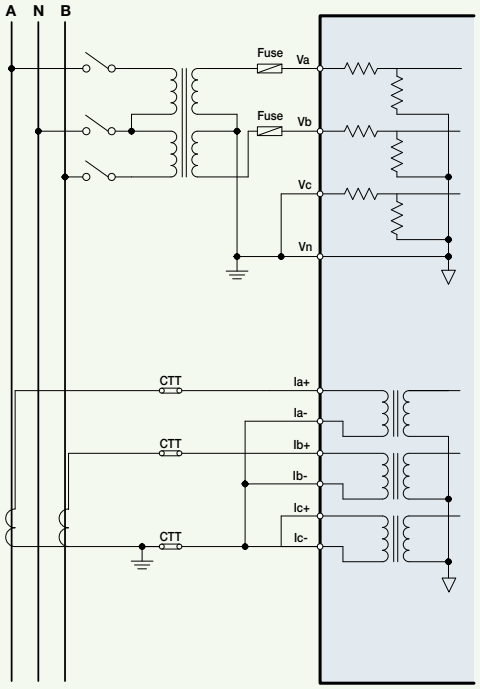
※ PT, CT secondary winding should be grounded. ※ Power Quality function monitors Va, Vb, Vc voltage. ※ Transformer should be used when Vn (phase voltage) is over 453V.
※ Unused terminals should be grounded.

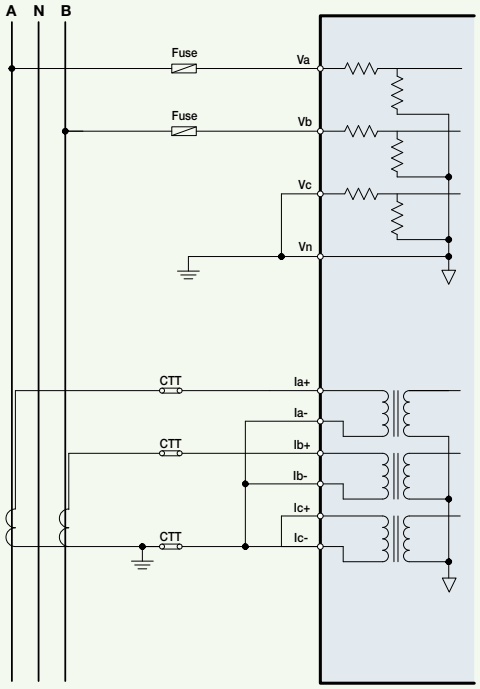
Wiring

3-phase 3-wire Open Delta

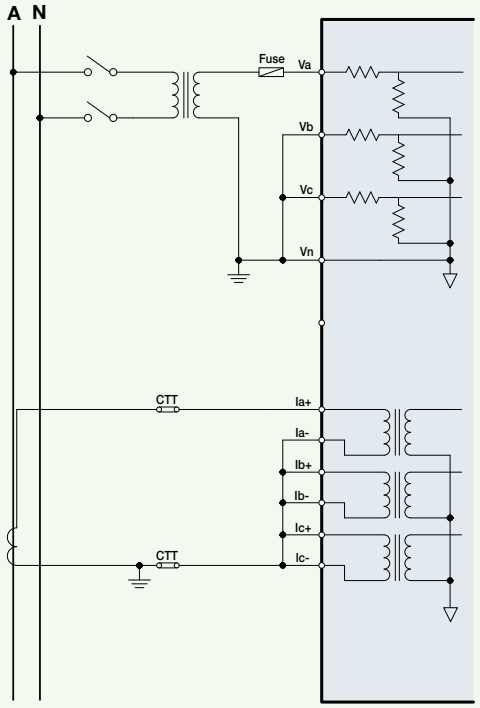


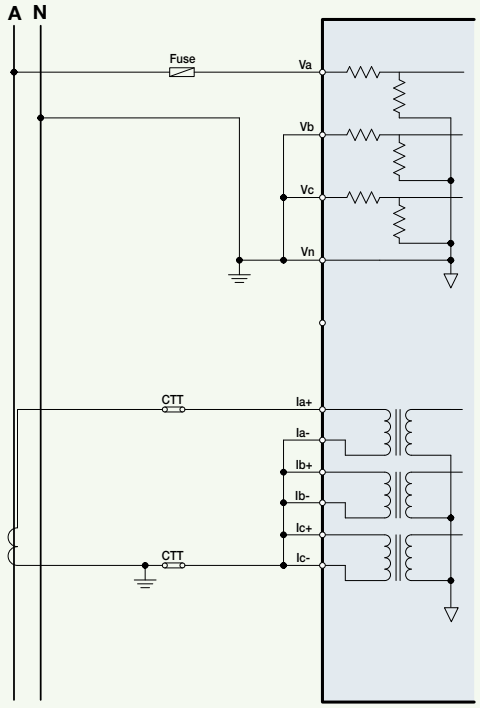
1-phase 3-wire





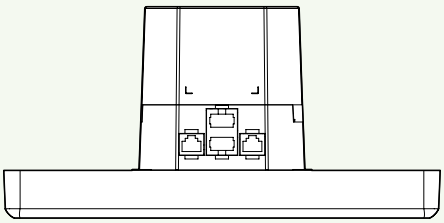
1-phase 2-wire



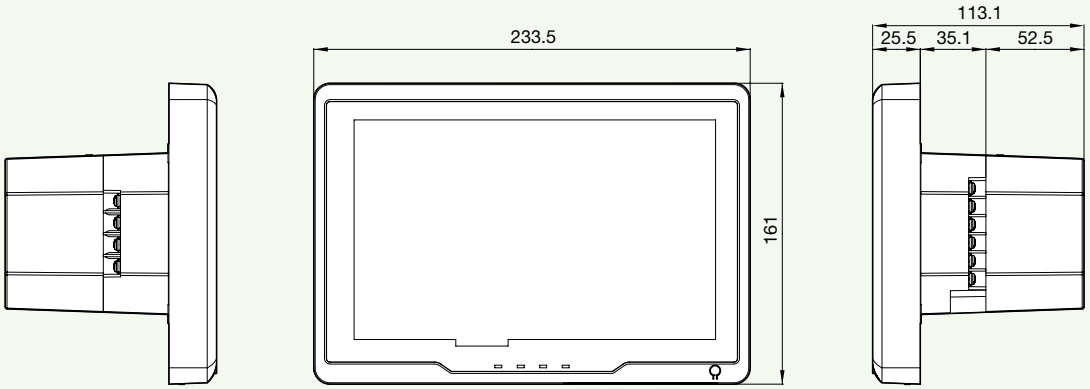


Dimensions

(Unit : mm)

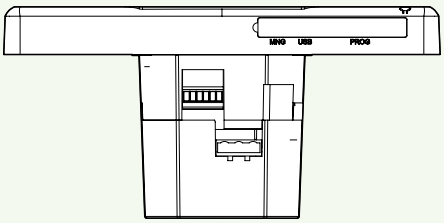


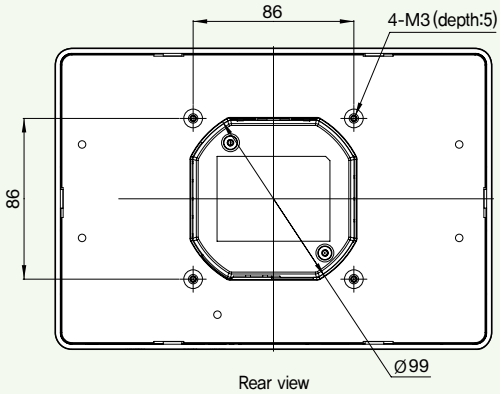
Top view



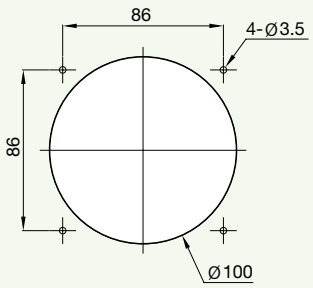
Front view

Side view





Rear view



Cut Size

GIMAC-B Branch Module

Product type (Normal type)

3Phase Branch Module (Direct connection)	3Phase Branch Module (Through type)	2Phase Branch Module (Direct connection)	2Phase Branch Module (Through type)
 M250AF 3P 250A TeM	 M250AF 3P 250A	 M250AF 2P 250A TeM	 M250AF 2P 250A
 M125AF 3P 125A TeM	 M125AF 3P 125A	 M125AF 2P 125A TeM	 M125AF 2P 125A
 M100AF 3P 100A TeM	 M100AF 3P 100A	 M100AF 2P 100A TeM	 M100AF 2P 100A
 M100AF 3P 30A TeM	 M100AF 3P 30A	 M100AF 2P 30A TeM	 M100AF 2P 30A
	 M100AF 3P 5A		 Temperature

GIMAC-B Branch Module

Product type (ZCT(MZ) / AxAl(MD) type)

3Phase Branch Module (Direct connection)	3Phase Branch Module (Through type)	2Phase Branch Module (Direct connection)	2Phase Branch Module (Through type)
 MZ250AF 3P 250A TeM	 MZ250AF 3P 250A	 MZ250AF 2P 250A TeM	 MZ250AF 2P 250A
 MZ125AF 3P 125A TeM	 MZ125AF 3P 125A	 MZ125AF 2P 125A TeM	 MZ125AF 2P 125A
 MZ100AF 3P 100A TeM MD100AF 3P 100A TeM	 MZ100AF 3P 100A MD100AF 3P 100A	 MZ100AF 2P 100A TeM MD100AF 2P 100A TeM	 MZ100AF 2P 100A MD100AF 2P 100A
 MZ100AF 3P 30A TeM MD100AF 3P 30A TeM	 MZ100AF 3P 30A MD100AF 3P 30A	 MZ100AF 2P 30A TeM MD100AF 2P 30A TeM	 MZ100AF 2P 30A MD100AF 2P 30A
	 MZ100AF 3P 5A MD100AF 3P 5A		 Temperature

Product configuration

Name	Description	Remarks
LCD	Display of setting and measurement value	
COMM LED	Lighting up when power is on, blinking when communicating with main module	Red
VD LED	Flashing when voltage is detected and blinking (when voltage is not detected in one or two phases in 3-phase type) (detection voltage: 9V)	Green
SET BUTTON	Button to change setting value or move the menu	
RJ12A / RJ12B	RJ12 type connector for device power and RS485 communication connection	
ZCT Input terminal	Input terminal for leakage current measurement, connectable with MCCB	Option
AxAl Input terminal	AxAl Connection Terminal to check the status of the MCCB	Option
BUSBAR T / B	For Busbar style only	Option

Product Rating

Standard Operating Environment

This product, except as otherwise stated, should be used under the following standard usage conditions.

1) Temperature

- Normal operating: -20 to 60°C
- Storage: -30 to 70°C

2) Humidity: 80% or less (no condensation)

3) Location

- Altitude: Below 2,000 meters above sea level.
- Do not subject to abnormal vibration or shock.
- Where the ambient air pollution is not significant.

※ Caution: In the environment exposed to chemicals and gas, it may cause measurement hunting due to metal corrosion and control power failure. Therefore, product performance in the environment is not guaranteed.

Ratings

Item		Rating		Remarks
Rated frequency		50 or 60Hz (Input range: 50 or 60 ± 5Hz)		
Voltage input range	Power input range	9 ~ 452V (9 ~ 782V)		phase voltage(between line voltage) basis
Current input range		30A	300mA ~ 36A	0.01In ~1.2In
		100A	600mA ~ 120A	
		125A	1.25A ~ 150A	
		250A	2.5A ~ 300A	
		5A	0.05A ~ 6A	
Input burden of PT & CT		1VA or less		
Leakage current input range		30mA ~ 3A		Using 200mA/100mV ZCT
DI(AX/AL) Status input		Dry Contact		2ch

Measurement element and Accuracy

Item	Measurement item		Description	Accuracy	Remarks
Voltage	Line voltage		Vab, Vbc, Vca	±0.2 % F/S	380V or less
				±0.2 % R/S	Above 380V
	Phase voltage		Va, Vb, Vc	±0.2 % F/S	100V or less
				±0.2 % R/S	Above 100V
Current	Each phase current		Ia, Ib, Ic	±0.2 % F/S	0.2In or less
				±0.2 % R/S	Above 0.2In
	Leakage current		Io	±15% F/S	30mA≤Io≤100mA
				±3% F/S	100mA<Io≤2.5A
				±10% R/S	2.5A<Io≤3A
Power	Active power		Pa(Pab), Pb(Pbc), Pc(Pca), P3Ø	Class 0.5	
	Reactive power		Qa(Qab), Qb(Qbc), Qc(Qca), Q3Ø	Class 0.5	
	Demand power	Max. value	MAX Pa(Pab), Pb(Pbc), Pc(Pca), P3Ø	Subject to active power error	
		Min. value	MIN Pa(Pab), Pb(Pbc), Pc(Pca), P3Ø		
		The average	AVG Pa(Pab), Pb(Pbc), Pc(Pca), P3Ø		
Energy	Active energy		PE3Ø	Class 0.5	
	Reactive energy		QE3Ø	Class 0.5	
Power factor	Power factor		PFa(PFab), PFb(PFbc), PFc(PFca), PF3Φ	Subject to phase error	
Frequency	Frequency		F	±0.05 Hz	
Harmonic	THD		THDVa(THDVab), THDVb(THDVbc), THDVc(THDVca), THDIa, THDIb, THDIc	10 %	
	TDD		Ia, Ib, Ic	10 %	
Temperature	Temperature		t	±5 °C	Convergence time 10 minutes

Display range by measurement element

Measurement		Display range
Voltage		0.000 ~ 999.9 V
Current		0.000 ~ 99.99 kA
Power	Effective / Reactive power	0.000 ~ 9.999 MW/MVar
Energy	Effective / Reactive energy	0.000 ~ 999.9 GWh/GVarh
Demand power	Max. / Min. / Average Active Power	0.000 ~ 9.999 MW
Frequency		45.00 ~ 65.00 Hz
Power factor		-1.00 ~ 0.00 ~ 1.00
Leakage current		0.000 ~ 9.999 A
THD	Current / Voltage THD	0.000 ~ 100.0 %
THD	Current / Voltage THD	0.000 ~ 100.0 %

GIMAC-B Branch Module

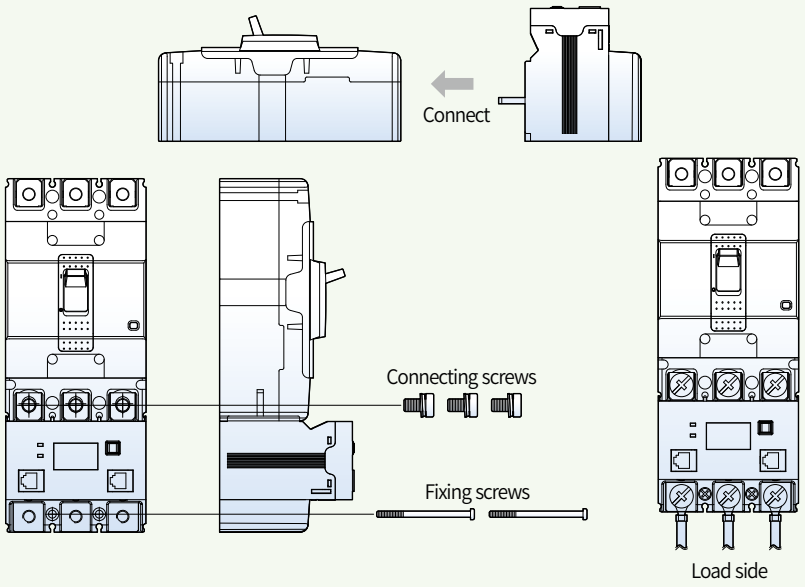
Spare Parts

Item	Power/Communication cable (10cm)	Fixing screws for Tunnel style	Fixing screws for Busbar style	Connecting bolt for 250A	Connecting screw
Appearance					
3P 250ATeM	1		2	3	
2P 250ATeM	1		2	2	
3P 125ATeM	1		2		3
2P 125ATeM	1		1		2
3P 100ATeM	1		2		3
2P 100ATeM	1		1		2
3P 30ATeM	1		2		3
2P 30ATeM	1		1		2
3P 250A	1	2			
2P 250A	1	2			
3P 125A	1	2			
2P 125A	1	2			
3P 100A	1	2			
2P 100A	1	2			
3P 30A	1	2			
2P 30A	1	2			
3P 5A	1	2			
Temperature	1	2			
Sub-Module Power-Booster (Option)			Application: 1. Providing long-term operation reliability against the voltage drop of the branch module due to environmental change. 2. When connecting a branch module in the distance		

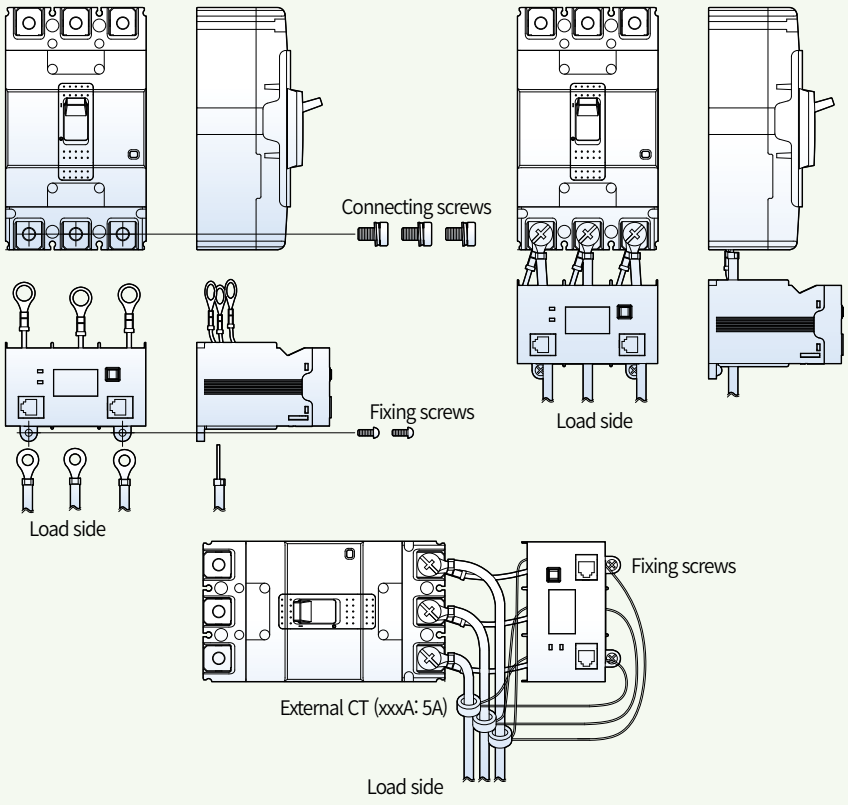
※ Please use only the bundled dedicated cable for power / communication cable.
※ If you need a specific length of power / communication cable, please contact us.

How to install

Installation of busbar style branch module

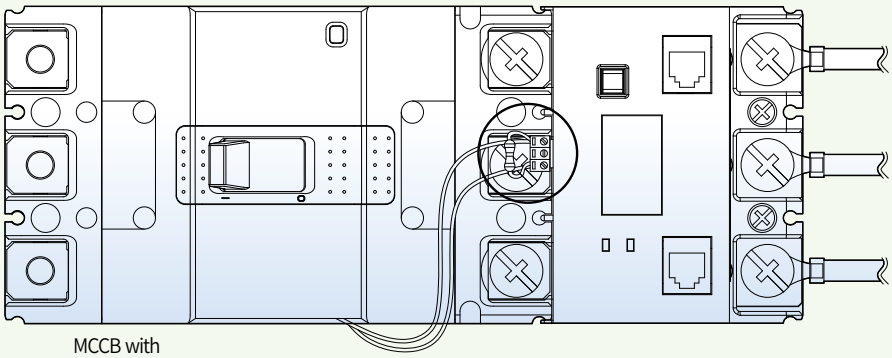


Installation of tunnel style branch module



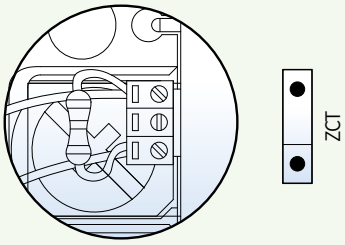
How to install

Connecting ZCT

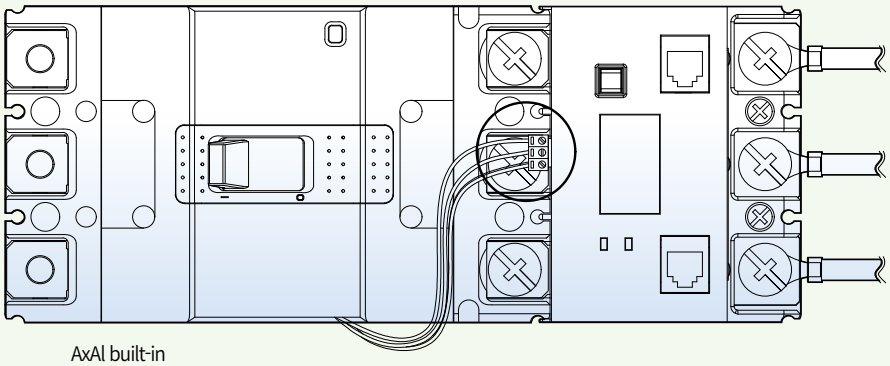


MCCB with
ZCT

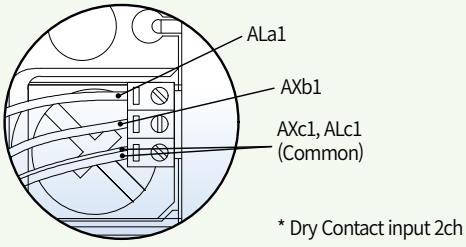
Connecting the resistor for ZCT



AxAl Wiring method

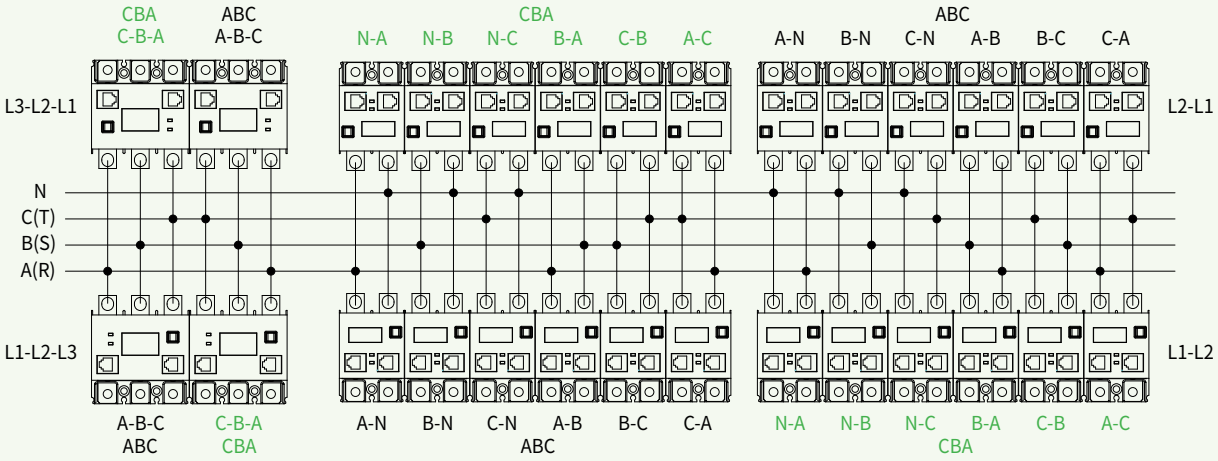


AxAl built-in
MCCB

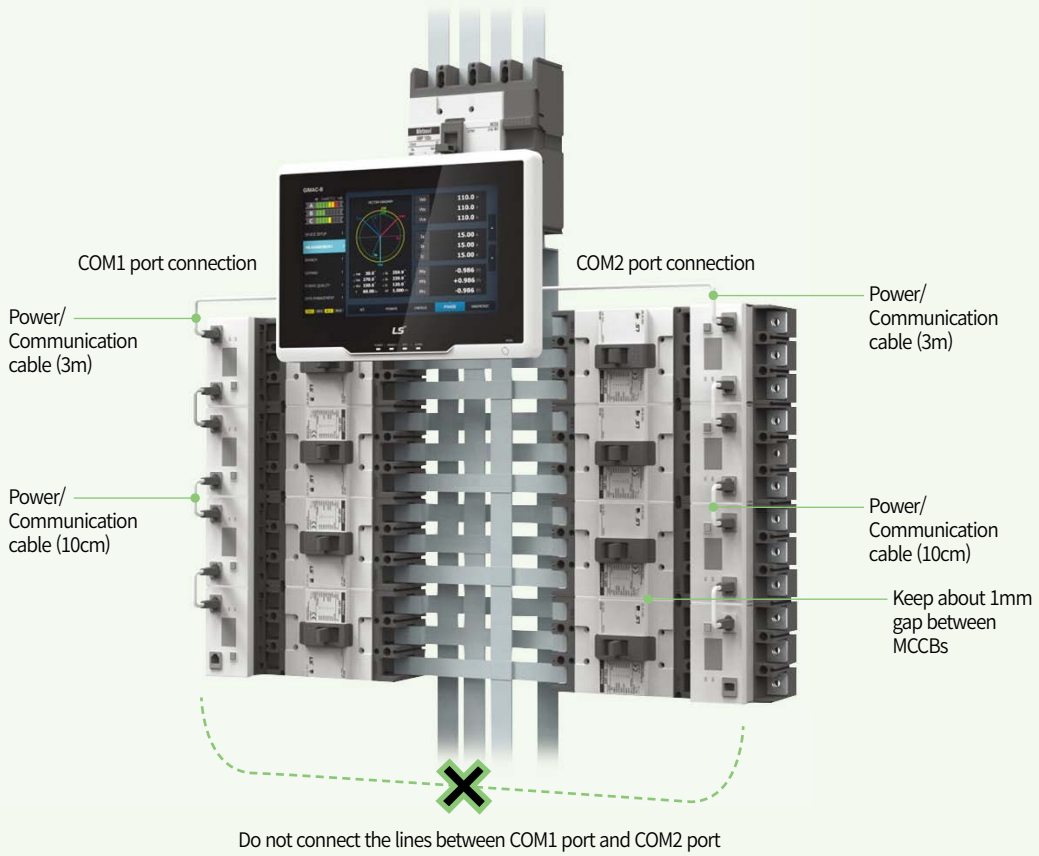


* Dry Contact input 2ch

Phase sequence



Connection and arrangement of communication cable



Operation/Setting

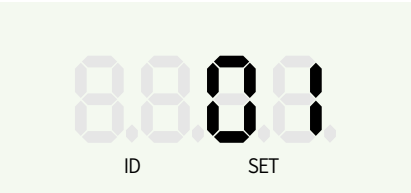
How to set up

Entering the setting display mode

• In automatic display mode, press SET key for more than 2 seconds (Long) to enter setting display mode.

< Automatic display mode status >

SET KEY Long operation



< Setting display mode status >

※ Setting display mode: Mode that displays preset values of various setting values for operating the branch module and allows the setting values to be changed and stored

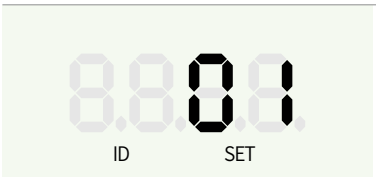
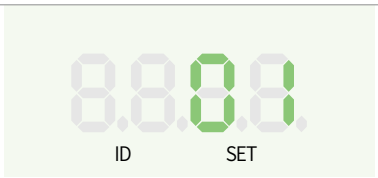
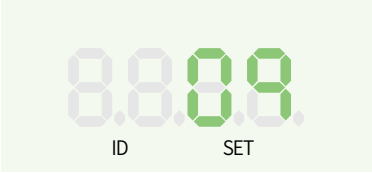
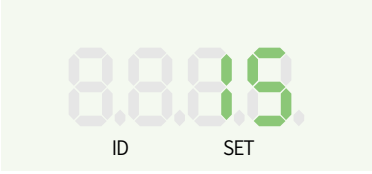
How to operate the KEY

- It operates as shown in the table below according to the operation mode at the time of pressing SET KEY and the time to press SET KEY. (Long is longer than 2 seconds and Short is shorter than 2 seconds.)

How to set details

Communication ID setting

Set the communication ID (station number) of the branch module for communication with the main module. It is possible to set communication ID between 1 ~ 50 and there should be no duplicate ID setting between connected branch instruments.

			
< Setting display mode status >	SET KEY Long operation	Communication ID number flashing	SET KEY Short operation
			
Communication ID number change (flashing)	SET KEY Short operation	Short operation to set communication ID (flashing)	SET KEY Short operation
			
Communication ID display to set (flashing)	SET KEY Long operation	Communication ID setting completed	

Phase sequence setting

It is used to match the phase of the switch board bus bar with the phase (input channel) of the branch module according to the direction connected to R, S, T on the switch board. Set as one of ABC(A ➡ B ➡ C order) /CBA(C ➡ B ➡ Aorder)

< Setting display mode status >

SET KEY Short operation

Move to Phase sequence setting screen

SET KEY Long operation

Connection method flashing

SET KEY Short operation

Changing Phase sequence (flashing)

SET KEY Long operation

Setting completed

Connection method setting (only for three-phase branch module)

A function to set the wiring method of the busbar to which the three-phase branch module is connected. Set as one of 3P3L / 3P4L

< Setting display mode status >

SET KEY Short operation

Move to the wiring method setting screen

SET KEY Long operation

Connection method flashing

SET KEY Short operation

Changing Wiring method (flashing)

SET KEY Long operation

Setting completed

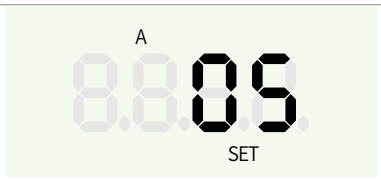
Operation/Setting

Rated current setting (only for 5A branch module)

It is the function to set the primary rated current when connecting the external CT to the 5A branch module.
(Set to one of 5/400/600/800. 30A/100A/125A/250A fixed)

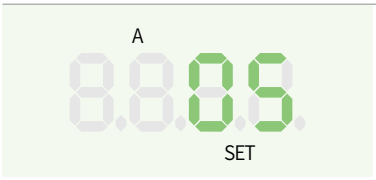
< Setting display mode status >

SET KEY Short operation



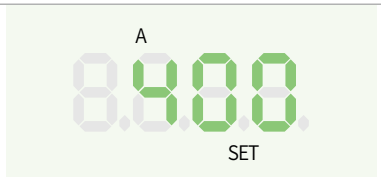
Move to the rated current setting screen

SET KEY Long operation



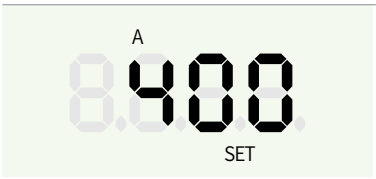
Rated current flashing

SET KEY Short operation



Changing rated current (flashing)

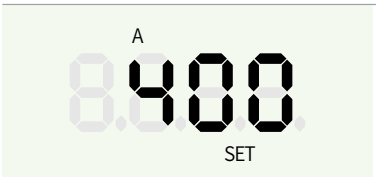
SET KEY Long operation



Setting completed

Unit for energy setting

The function to set the unit of the active energy / reactive energy of the branch module to be displayed on the LCD of the HMI part.
It represents the cumulative amount of energy in 4 restricted digits and is used to match the display unit.
Set to one of (active energy / reactive energy) (K (Kilo) / M (Mega) / G (Giga)



< Setting display mode status >

SET KEY Short operation

Move to Energy unit setting screen

SET KEY Long operation

Energy unit flashing

SET KEY Short operation

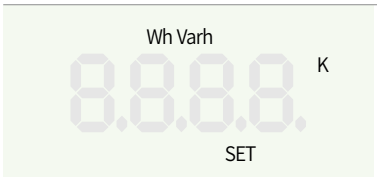
Changing Energy unit (flashing)

SET KEY Long operation

Setting completed

Leakage current setting (ZCT type module only)

Function to enable or disable the leakage current measurement function
by measuring the leakage current flowing to the branch module. Set to ON or OFF

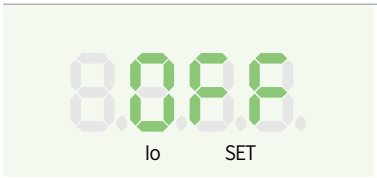


< Setting display mode status >

SET KEY Short operation

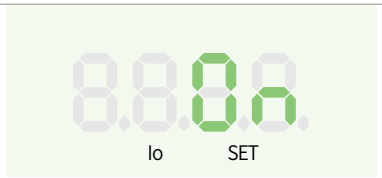
Move to Leakage current setting screen

SET KEY Long operation



Leakage current flashing

SET KEY Short operation



Changing Leakage current (flashing)

SET KEY Long operation

Setting completed

Energy initialization

The function to initialize the accumulated active energy/reactive energy value to zero
The current value of active energy/reactive energy stored in branch module is initialized to 0

< Setting display mode status >

SET KEY Short operation

Move to Energy initialization setting screen

SET KEY Long operation

Energy flashing

SET KEY Short operation

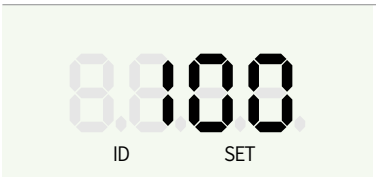
Energy initialization flashing

SET KEY Long operation

Setting completed

Operation/Setting

Setting the temperature unit (Temperature Module only)
Function to set temperature display unit of temperature branch module
Set to one of CEL (Celsius C) / Fah (Fahrenheit)



< Setting display mode status >

SET KEY Short operation

Move to Temperature unit setting screen

SET KEY Long operation

Temperature unit flashing

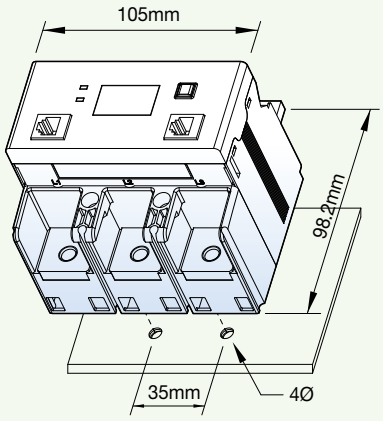
SET KEY Short operation

Changing Temperature unit (flashing)

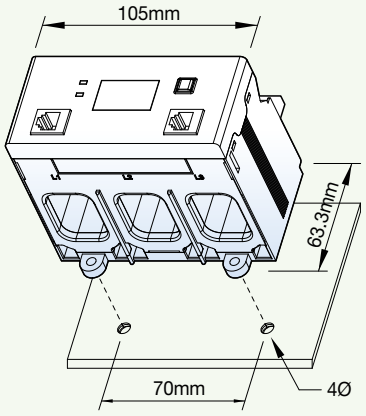
SET KEY Long operation

Setting completed

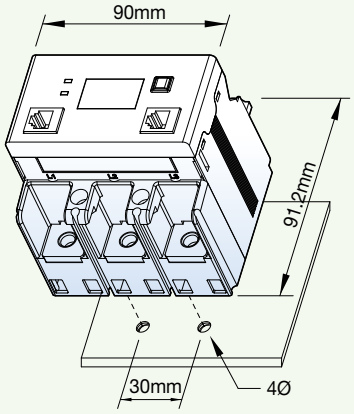
Dimensions and Installation Dimension



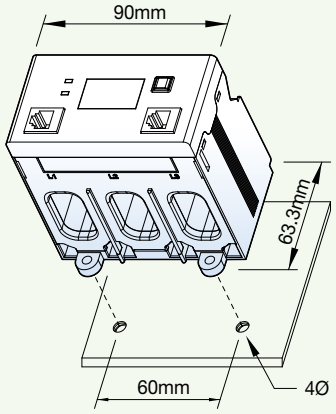
M(Z)250AF 3P 250A TeM



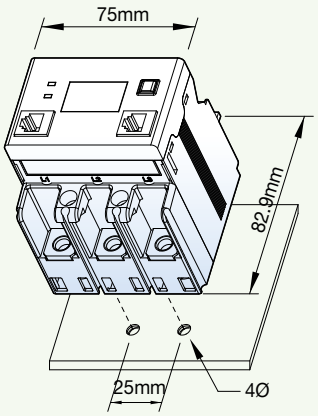
M(Z)250AF 3P 250A



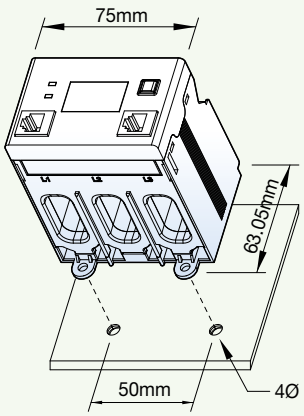
M(Z)125AF 3P 125A TeM



M(Z)125AF 3P 125A

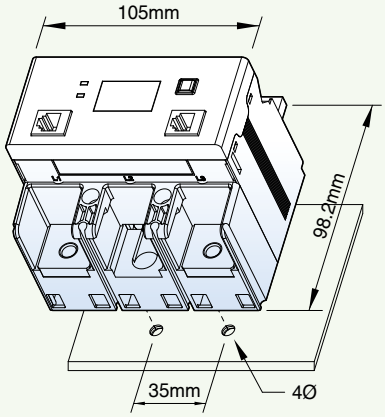


M(Z)100AF 3P 30A/100A TeM

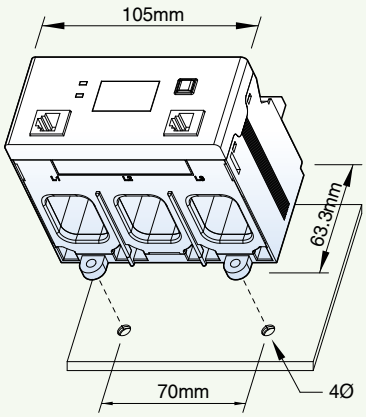


M(Z)100AF 3P 5A/30A/100A

Dimensions and Installation Dimension



M(Z)250AF 2P 250A TeM



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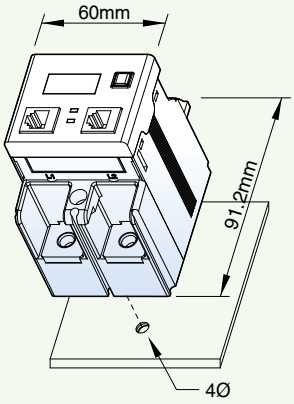
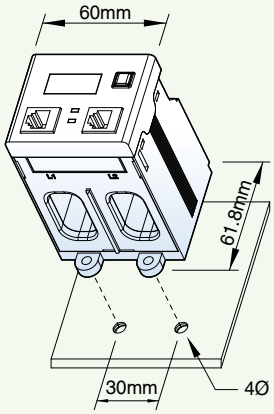
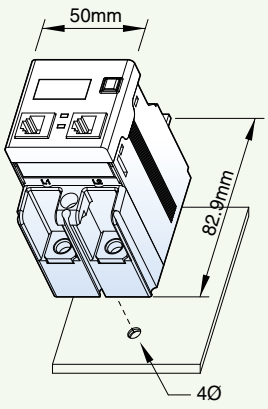


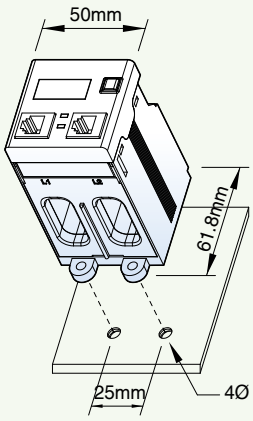
M(Z)125AF 2P 125A TeM



M(Z)125AF 2P 125A



M(Z)100AF 2P 30A/100A TeM



M(Z)100AF 2P 30A/100A / Temperature

Type Description

GIMAC-B Main

GIMAC - B

TE	M	5A	60Hz

Communication	
TE	Ethernet / RS485 1Port / 2Port

Modbus

Frequency	
60Hz	60Hz
50Hz	50Hz

GIMAC-B Branch module

GIMAC - B

MZ100AF	3P	100A	TeM	60Hz

Model	
M (Meter)	100AF
	125AF
	250AF
MZ (Meter + ZCT)	100AF
	125AF
	250AF
MD (Meter + AxAl)	100AF

Number of poles	
2P	2 Pole
3P	3 Pole

Rated current	
100AF	5A*
	30A
	100A
125AF	125A
250AF	250A

* 5A model is 3P poles There is only a model.

Terminal Block	
-	Penetration Standard length
TeM	Direct Coupling Type Metasol MCCB

Frequency	
60Hz	60Hz
50Hz	50Hz

GIMAC-B Accessories

GIMAC - B

Temperature

GIMAC-B Accessories

Item	Type	Remarks
GIMAC-B RJ12 Cable	3M Cable: Provide 2 basic when purchasing the main measuring Device 100M Cable: Provide 1 basic when purchasing the branch measuring Device	In addition to the basic offer you can purchase additional cables in various lengths. : 100/200/300/500mm, 1/1.3/1.5/2/2.5/ 3/5/7/10M
GIMAC-B Power Booster	Branch power boost module	

MEMO

FUTURING SMART ENERGY

We open up a brighter future through
efficient and convenient energy solutions.

Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.
  Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.

- According to The WEEE Directive, please do not discard the device with your household waste.

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Customer Center-Quick Responsive Service, Excellent technical support | **82-1644-5481**

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2020. 06 | Specifications in this catalog are subject to change without notice due to continuous product development and improvement.