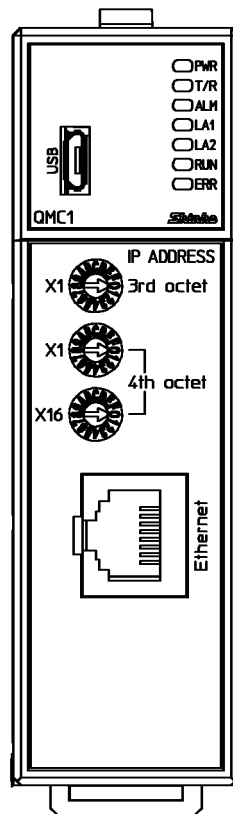


Communication Expansion Module

QMC1-MT

INSTRUCTION MANUAL



Shinko

Preface

Thank you for purchasing our communication expansion module [QMC1-MT] (hereinafter referred to as this instrument or QMC1-MT).

This instruction manual (hereinafter referred to as this manual) describes the mounting method, functions, operation method, and handling of this instrument.

Please read this manual carefully and fully understand it before using it.


Also, be sure to give this manual to users of this instrument to prevent accidents due to mishandling.

Notes

- This instrument should be used in accordance with the specifications described in the manual. If it is not used according to the specifications, it may malfunction or cause a fire.
- Be sure to follow the warnings, cautions and notices. If they are not observed, serious injury or malfunction may occur.
- The contents of this instruction manual are subject to change without notice.
- Care has been taken to ensure that the contents of this instruction manual are correct, but if there are any doubts, mistakes or questions, please inform our sales department.
- This instrument is designed to be installed on a DIN rail within a control panel indoors. If it is not, measures must be taken to ensure that the operator does not touch power terminals or other high voltage sections.
- Any unauthorized transfer or copying of this document, in part or in whole, is prohibited.
- Shinko Technos Co., Ltd. is not liable for any damage or secondary damage(s) incurred as a result of using this product, including any indirect damage.

SAFETY PRECAUTIONS (Be sure to read these precautions before using our products.)

The safety precautions are classified into categories: "Warning" and "Caution".

Depending on circumstances, procedures indicated by  Caution may result in serious consequences, so be sure to follow the directions for usage.



Warning

Procedures which may lead to dangerous conditions and cause death or serious injury, if not carried out properly.



Caution

Procedures which may lead to dangerous conditions and cause superficial to medium injury or physical damage or may degrade or damage the product, if not carried out properly.



Warning

- To prevent an electrical shock or fire, only Shinko or qualified service personnel may handle the inner assembly.
- To prevent an electrical shock, fire, or damage to instrument, parts replacement may only be undertaken by Shinko or qualified service personnel.



Safety Precautions

- To ensure safe and correct use, thoroughly read and understand this manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after purpose-of-use consultation with our agency or main office. (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protective equipment against excessive temperature rise, etc. must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Proper periodic maintenance is also required.
- This instrument must be used under the conditions and environment described in this manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in this manual.

Warning on Model Label

Caution

Failure to handle this instrument properly may result in minor or moderate injury or property damage due to fire, malfunction, malfunction, or electric shock. Please read this manual before using the product to ensure that you fully understand the product.

Caution with Respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument.

In the case of resale, ensure that this instrument is not illegally exported.

Precautions for Use

1. Installation Precautions

Caution

This instrument is intended to be used under the following environmental conditions (EN61010-1):

- Pollution degree 2

Ensure the mounting location corresponds to the following conditions:

- A minimum of dust, and an absence of corrosive gases
- No flammable, explosive gases
- No mechanical vibrations or shocks
- No exposure to direct sunlight, an ambient temperature of -10 to 50°C (14°F to 122°F) that does not change rapidly, and no icing
- An ambient non-condensing humidity of 35 to 85 %RH
- No large capacity electromagnetic switches or cables through which large current is flowing
- No water, oil or chemicals or the vapors of these substances can come into direct contact with the unit.
- When installing this unit within a control panel, please note that ambient temperature of this unit – not the ambient temperature of the control panel – must not exceed 50°C (122°F).

Otherwise the life of electronic components (especially electrolytic capacitor) may be shortened.

- * Avoid setting this instrument directly on or near flammable material even though the case of this instrument is made of flame-resistant resin.

2. Wiring Precautions

Caution

- Do not connect QTC1-2P (with power supply / communication option) (hereinafter referred to as QTC1-2P) or QTC1-4P (with power supply / communication option) (hereinafter referred to as QTC1-4P) in the same unit.
- When wiring, do not drop wire scraps into the ventilation window of this instrument. It may cause fire or malfunction.
- When wiring, use a crimping pliers and a solderless terminal with an insulation sleeve in which an M3 screw fits.
- Tighten the terminal screw using the specified torque. If excessive force is applied to the screw when tightening, the screw or case may be damaged.
- Do not pull or bend the lead wire with the terminal as the base point during or after wiring work. It may cause malfunction.
- This instrument does not have a built-in power switch, circuit breaker and fuse. It is necessary to install an appropriate power switch, circuit breaker and fuse near the instrument.
 - When wiring the power supply (24 V DC), do not confuse the polarities.
- Use copper wires AWG16 to 14 (1.31 to 2.08 mm²) for the FG terminal and Power supply terminal.

3. Operation and Maintenance Precautions



Caution

- Do not touch live terminals. This may cause electrical shock or problems in operation.
- Turn the power supply to the instrument OFF when retightening the terminal or cleaning.
Working on or touching the terminal with the power switched ON may result in severe injury or death due to electrical shock.
- Use a soft, dry cloth when cleaning the instrument.
(Alcohol based substances may tarnish or deface the unit.)
- As the display section is vulnerable, be careful not to put pressure on, scratch or strike it with a hard object.

4. Compliance with Safety Standards



Caution

- If the instrument is used in a manner not specified by the manufacturer, the protection provided by the instrument may be impaired.
- Use a device with reinforced insulation or double insulation for the external circuit connected to this product.
- When using this product as a UL certified product, use a power supply conforming to Class 2 or LIM for the external circuit connected to the product.

The following abbreviations are used in the text, figures, and tables of this manual.

Symbol	Term
PV	Process variable (PV)
SV	Desired value (SV)
MV	Output manipulated variable (MV)
AT	Auto-tuning (AT)
CT	Current transformer (CT) [for heater burnout alarm (option)]

About description of reference page

In the case of "Refer to page 2-2.", it is described as (P. 2-2).

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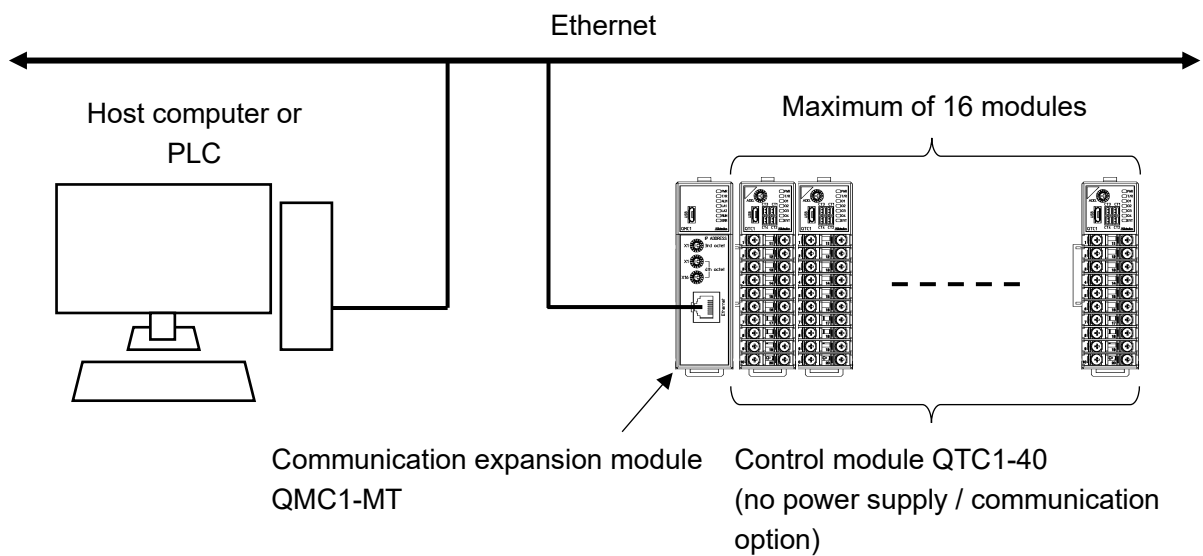
1 Overview

1.1 Overview of QMC1-MT

This instrument is a communication expansion module that connects to the control module (QTC1-□) for Ethernet communication.

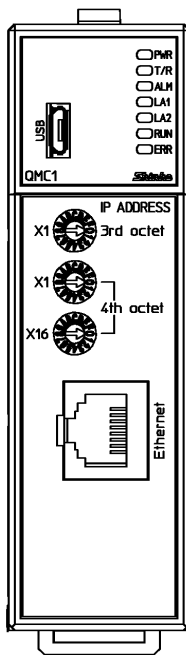
A maximum of 16 control modules QTC1-20 (no power supply / communication option) (hereinafter referred to as QTC1-20) or QTC1-40 (no power supply / communication option) (hereinafter referred to as QTC1-40) can be connected via BUS, and a maximum of 64 points can be controlled.

Connection example of QMC1-MT and QTC1-40



(Fig. 1.1-1)

1.2 Description of Module



(Fig. 1.2-1)

This instrument is the communication expansion module for communication translation and data management.

Connects to control module (QTC1-□) for Ethernet communication (MODBUS/TCP or SIF function).

MODBUS/TCP

Physical layer: 10BASE-T/100BASE-TX automatic recognition

User layer: MODBUS/TCP Number of connections: 1

SIF function

The SIF function (Smart InterFace, programless communication function) enables programless connection to the PLC.

User layer: TCP/IP

Mitsubishi Electric Corporation PLC MELSEC

Communication Protocol

Frame: QnA compatible 3E frame (SLMP 3E frame)

Code: Binary or ASCII

Connectable PLC: 1 unit

1.3 System Configuration



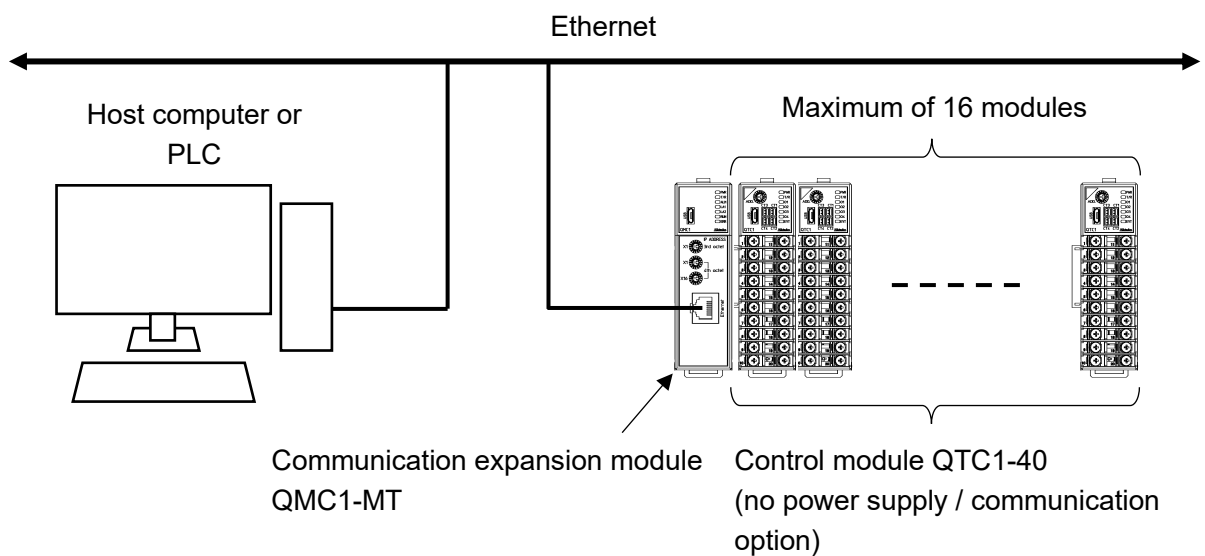
Caution

Do not connect QTC1-2P or QTC1-4P in the same unit.

1.3.1 Ethernet Communication with Host Computer [Console Selection (MODBUS/TCP)]

A maximum of 16 control modules QTC1-20 (no power supply / communication option) (hereinafter referred to as QTC1-20) or QTC1-40 (no power supply / communication option) (hereinafter referred to as QTC1-40) can be connected via BUS, and a maximum of 64 points can be controlled.

Connection example of QMC1-MT and QTC1-40



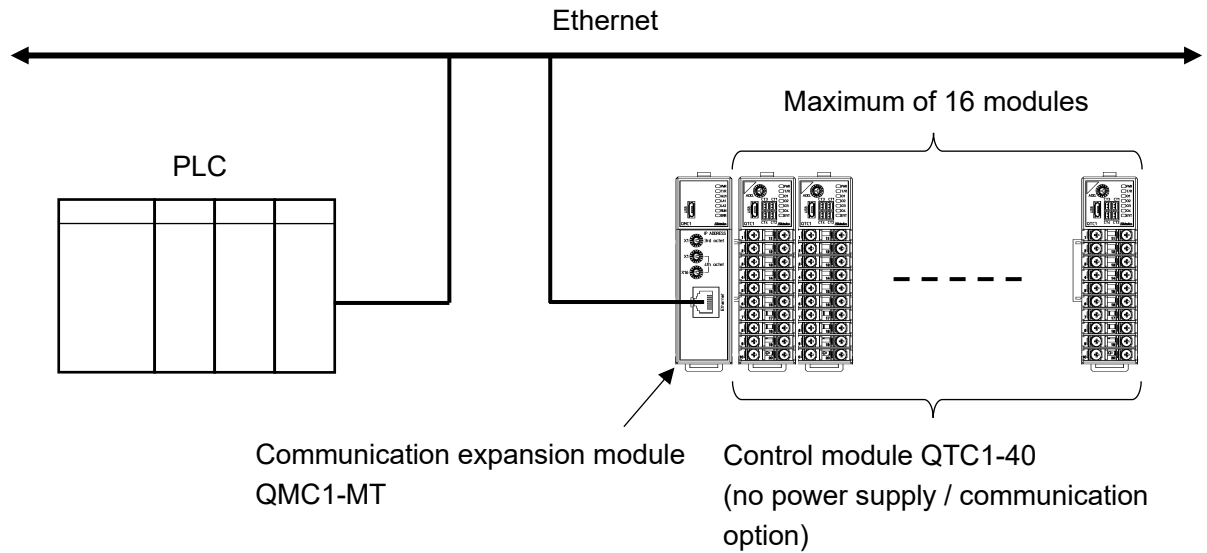
(Fig. 1.3.1-1)

1.3.2 Ethernet Communication with PLC [Console Selection (SLMP ASCII or SLMP BINARY)]

Program less connection to Mitsubishi Electric Corporation PLC MELSEC is possible.

A maximum of 16 control modules QTC1-20 (no power supply / communication option) (hereinafter referred to as QTC1-20) or QTC1-40 (no power supply / communication option) (hereinafter referred to as QTC1-40) can be connected via BUS, and a maximum of 64 points can be controlled.

Connection example of QMC1-MT and QTC1-40

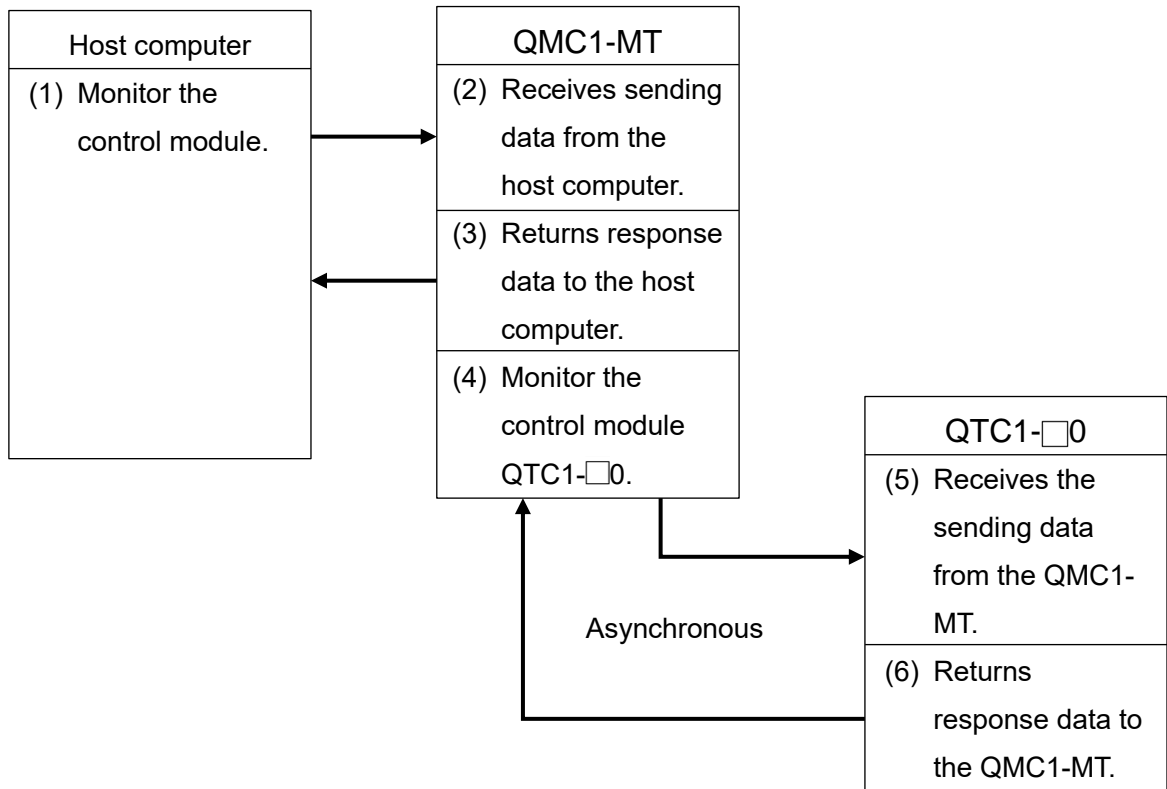


(Fig. 1.3.2-1)

1.4 Exchange of Parameters

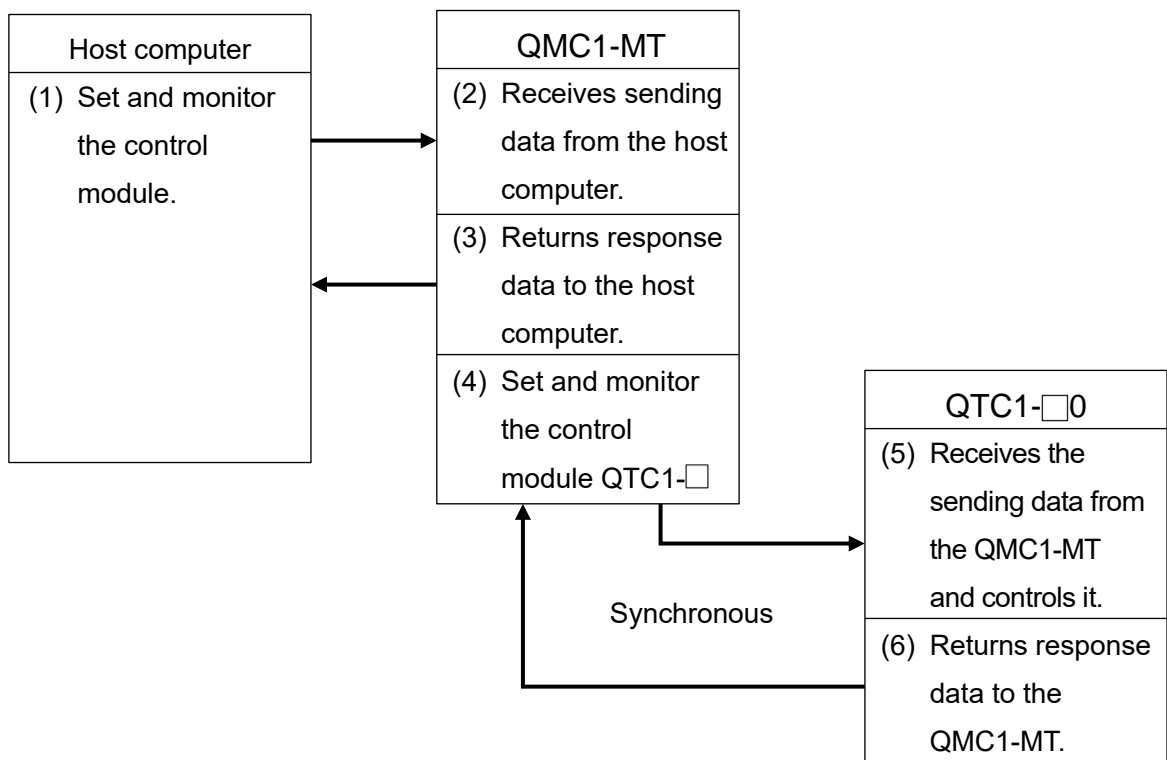
The parameter exchange is shown in the figure below.

For RO (read only)



(Fig. 1.4-1)

For R/W (read and write)



(Fig. 1.4-2)

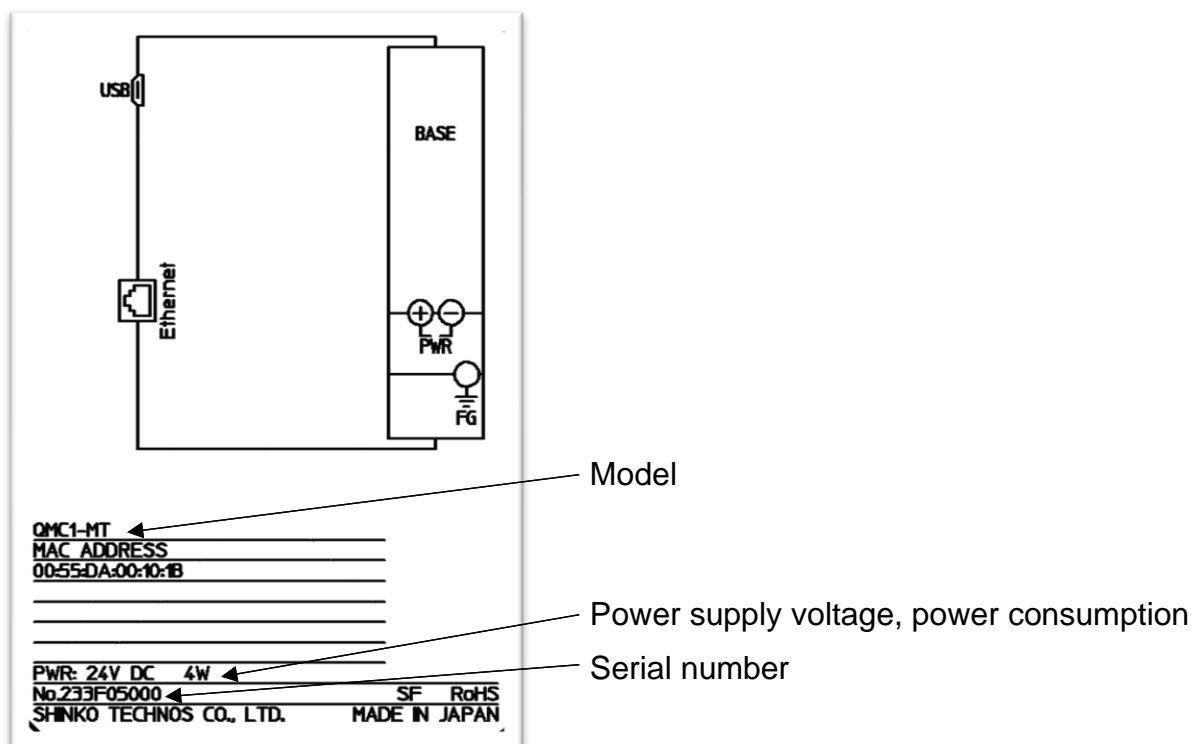
2 Model

2.1 Model

QMC1-MT

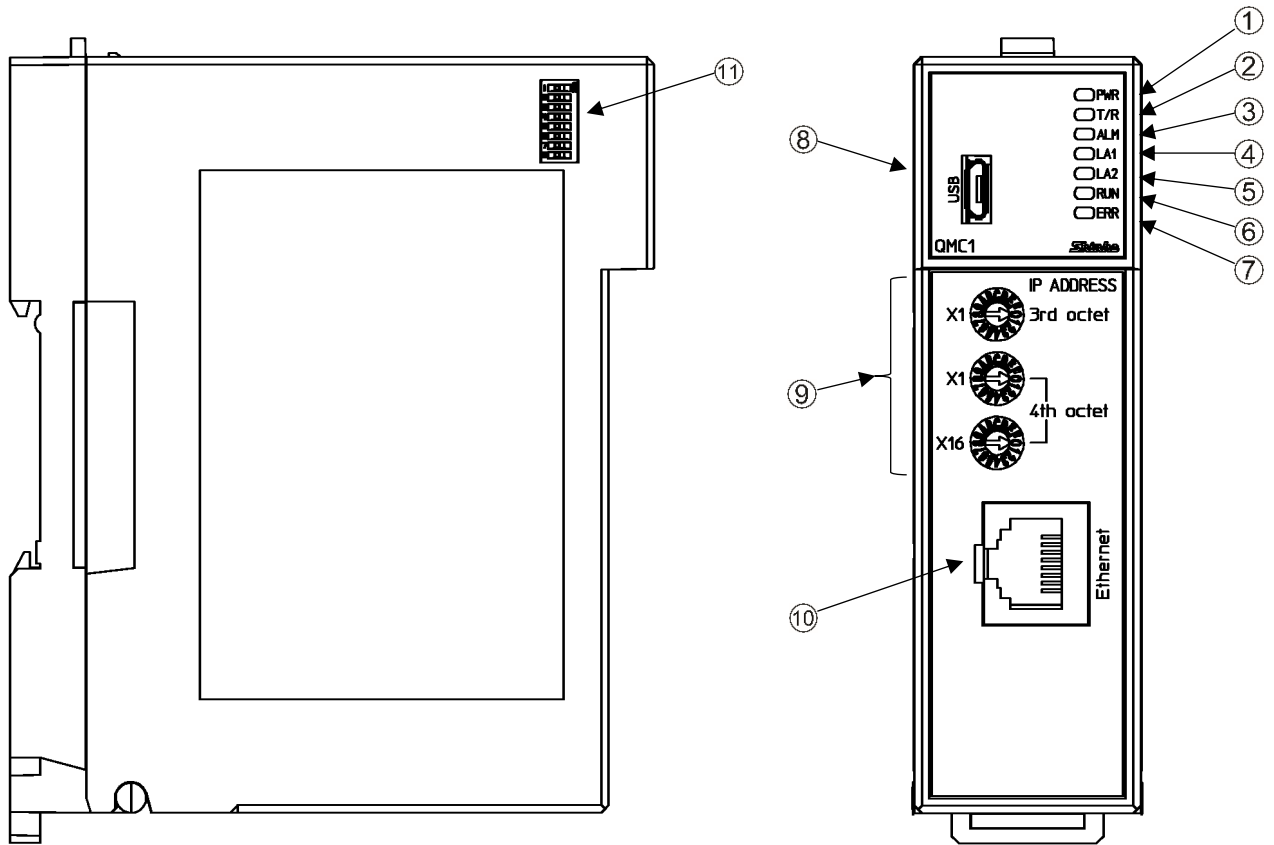
2.2 How to Read the Model Label

The model label is attached to the right side of this instrument.

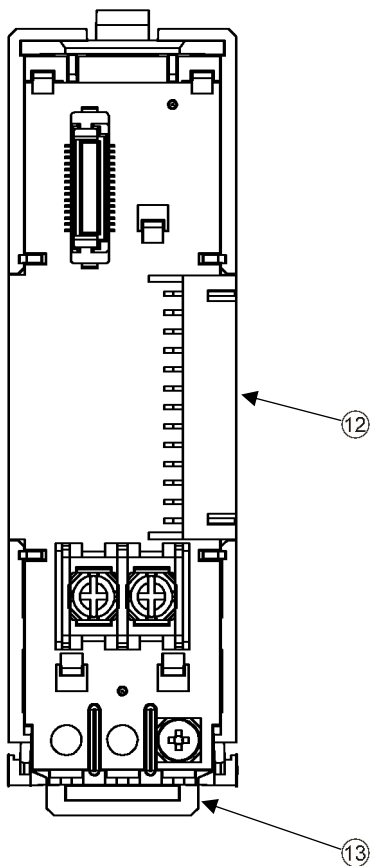


(Fig. 2.2-1)

3 Name and Functions



Base part



(Fig. 3-1)

Operation indicator

No.	Symbol (color)	Name and Function
①	PWR (Green)	Power indicator (*1) <ul style="list-style-type: none"> • Lights off (always): No power supply to the instrument. • Lights up (always): Power supply to the instrument. • Flashing (500 ms lights up/500 ms lights off): Non-volatile IC memory error.
②	T/R (Yellow)	Communication indicator (*1) <ul style="list-style-type: none"> • Lights off (always): Ethernet communication error (no response) or USB communication. • Flashing (slow): Ethernet communication error (reception error). • Flashing (fast): Ethernet communication is normal.
③	ALM (Red)	Alarm indicator (*1) <ul style="list-style-type: none"> • Lights up (1 sec.): When communication with the slave [control module (QTC1-□)] is error. (*2) • Flashing (250 ms lights up/250 ms lights off): When power is supplied from a PC via USB.
④	LA1 (Yellow)	Link indicator (LA1) <ul style="list-style-type: none"> • Lights up (always): When link is established. • Lights off (always): When link is not established.
⑤	LA2 (Yellow)	Link indicator (LA2) <ul style="list-style-type: none"> • Always lights off
⑥	RUN (Green)	Line connection indicator (*1) <ul style="list-style-type: none"> • Lights up: When Ethernet connection.
⑦	ERR (Red)	Communication error indicator (*1) <ul style="list-style-type: none"> • Lights off (always): No errors. • Lights up (1 sec.): When communication error occurs in SLMP communication (*3) of Ethernet. (e.g.) When data outside the setting range is sent from the PLC The ERR indicator lights up for 1 second in response to a negative-acknowledgement from the connected module.

(*1): Each operation indicator (except LA1 and LA2) lights up sequentially during warm-up after power-on.

(*2): Does not light up in the SIF function.

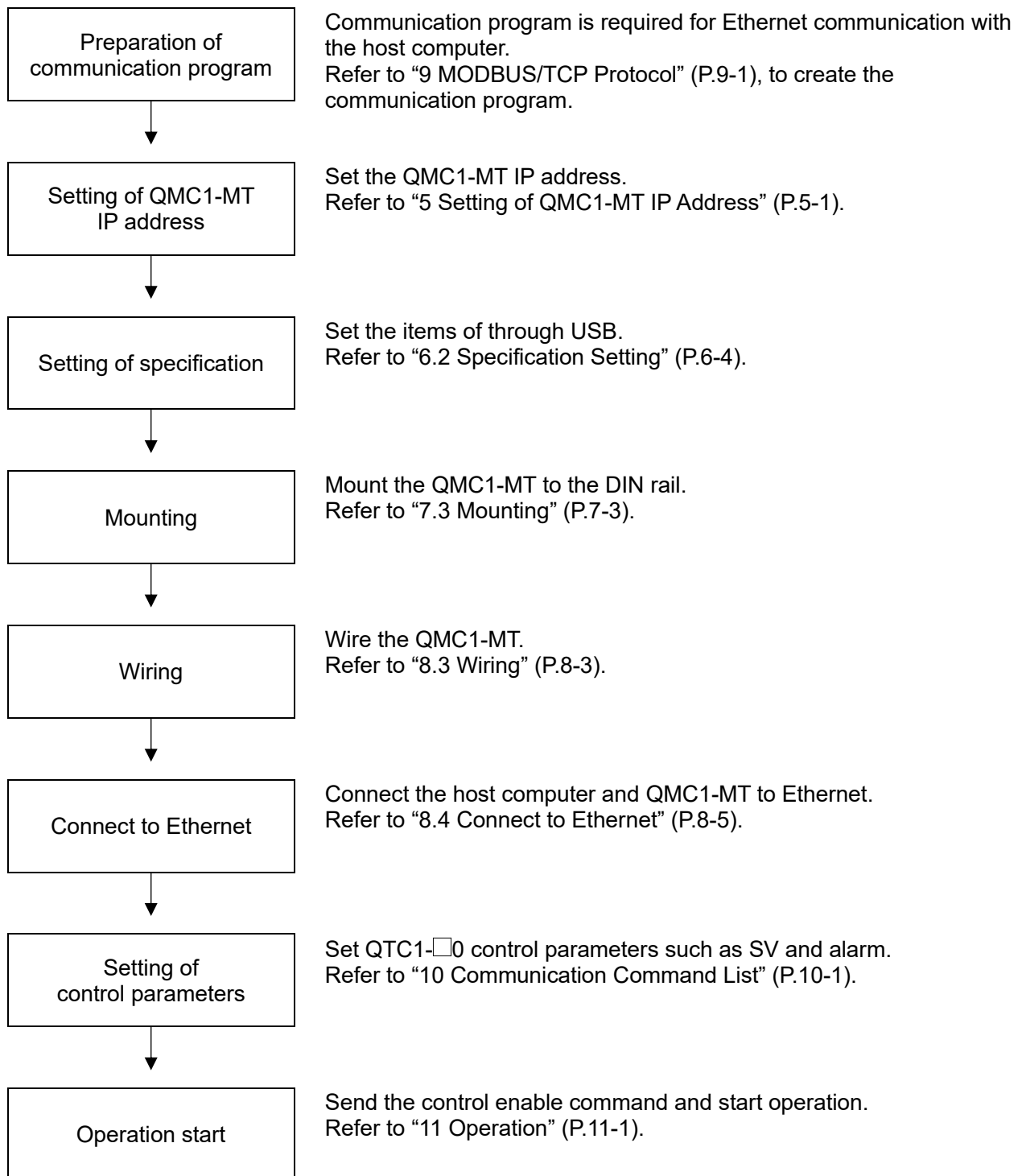
(*3) Communication protocol for Mitsubishi Electric Corporation PLC MELSEC.

Switch and connector

No.	Symbol	Name and Function
⑧	USB	Console communication connector Connector for console communication tool cable.
⑨	IP ADDRESS	QMC1-MT IP address setting rotary switch
⑩	Ethernet	Ethernet communication connector [Modular jack (RJ45)]
⑪		DIP switch Not used in this instrument. Please leave all switches OFF.
⑫		Connector Connector for connection to control module QTC1-□0.
⑬		Lock lever Lever for fixing or releasing when mounting or dismounting on a DIN rail.

4 Procedure Before Starting Operation

The flow up to the operation in case of Ethernet communication with the host computer is shown below.



(Fig. 4-1)

5 Setting of QMC1-MT IP Address

Caution

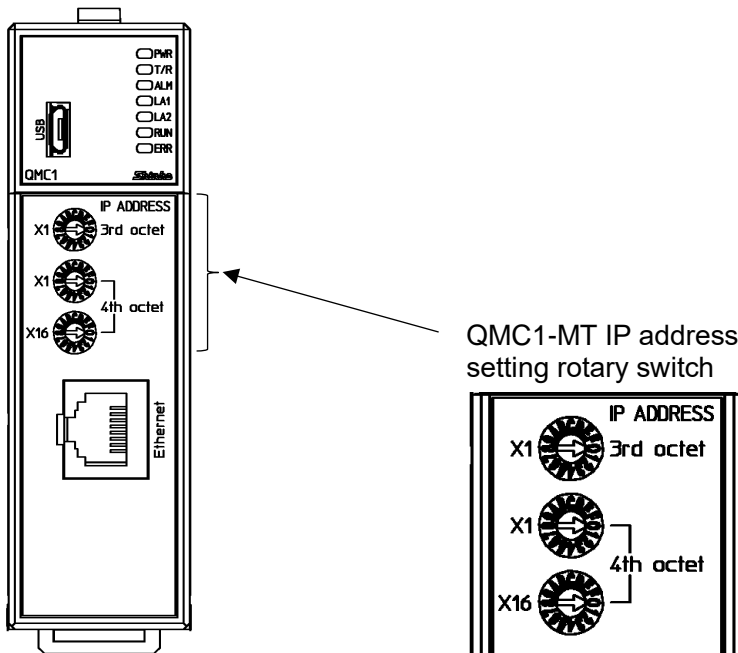
- The QMC1-MT IP address setting is required for Ethernet communication.
Selection of QTC1-20 or QTC1-40 module address is required to communicate with QMC1-MT.
- If the QMC1-MT IP address setting has been changed, turn the power OFF and ON.
The QMC1-MT IP address setting becomes effective by turning the power OFF and ON.

The 3rd (a) and 4th (b) bytes of the QMC1-MT IP address (e.g. 192.168.a.b) are set using the QMC1-MT IP address setting rotary switch or console software.

The factory default for the QMC1-MT IP address is 192.168.0.0.

When using the QMC1-MT IP address setting rotary switch

Use a small flat-blade screwdriver to set the QMC1-MT IP address.



(Fig. 12.2-1)

Rotary switch	Description and Setting range	Factory default
3rd octet	QMC1-MT IP address 3rd byte setting Setting range: 0 to 15 (0 to F)	0
4th octet	QMC1-MT IP address 4th byte setting Setting range: 0 to 255(0 to FF)	0

When using the console software

When the 4th octet of the rotary switch for setting the QMC1-MT IP address is set to "0," the setting values of the 3rd and 4th bytes of the console software set using USB communication become effective.

If necessary, set the 1st byte (192) and the 2nd byte (168). Refer to "6. Setting of Specification" (P.6-1) for details.

6 Setting of Specification

Set the specifications.

This section describes how to set specifications using console software (SWC-QMC101M).

6.1 Preparation

6.1.1 Preparation of USB Communication Cable and Console Software

Please prepare the USB communication cable and the console software.

- USB communication cable
USB-micro USB Type-B (commercial item)
- Console software (SWC-QMC101M)
Please download from our website and install.

Click <https://shinko-technos.co.jp/e/> → Support/Download → Software

6.1.2 Connecting to Host Computer

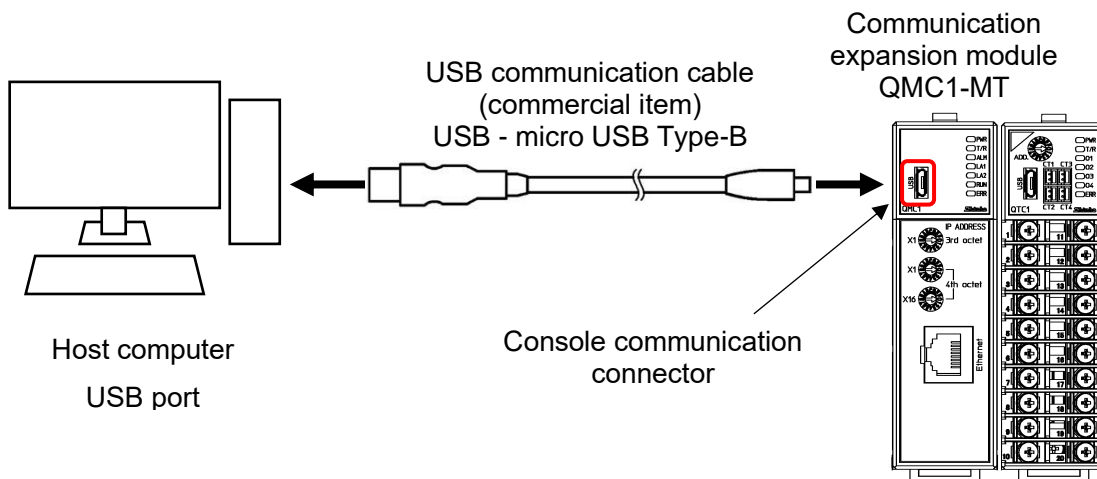


Caution

Disconnect the Ethernet cable (LAN cable) from the Ethernet communication connector when communicating by connecting the USB communication cable.

- (1) Connect the micro USB Type-B side of the USB communication cable to the console communication connector of this instrument.
- (2) Connect the USB plug of the USB communication cable to the USB port of the host computer.

Connection example of QMC1-MT and QTC1-40



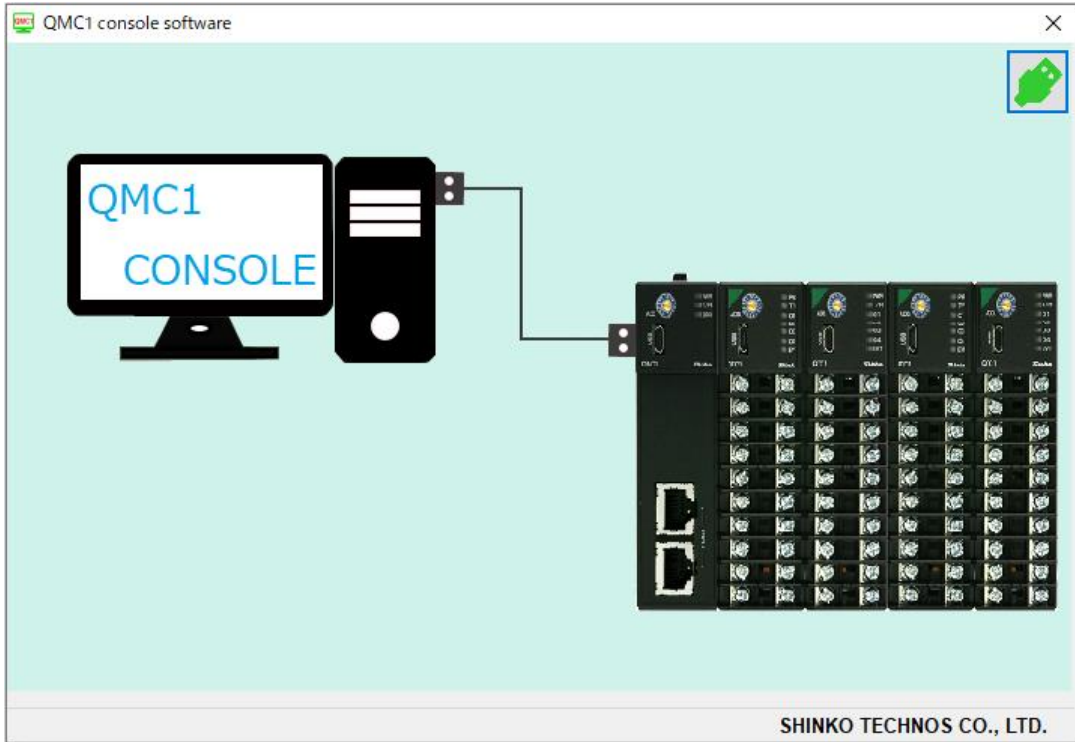
(3) Checking the COM port number

Follow the procedure below to check the COM port number.

- ① Right-click "Start" → Click "Device manager" from menu.
- ② When "USB Serial Port (COM3)" is displayed in "Port (COM and LPT)", the COM port is assigned to No. 3.

Check the COM port number, and then close "Device Manager".

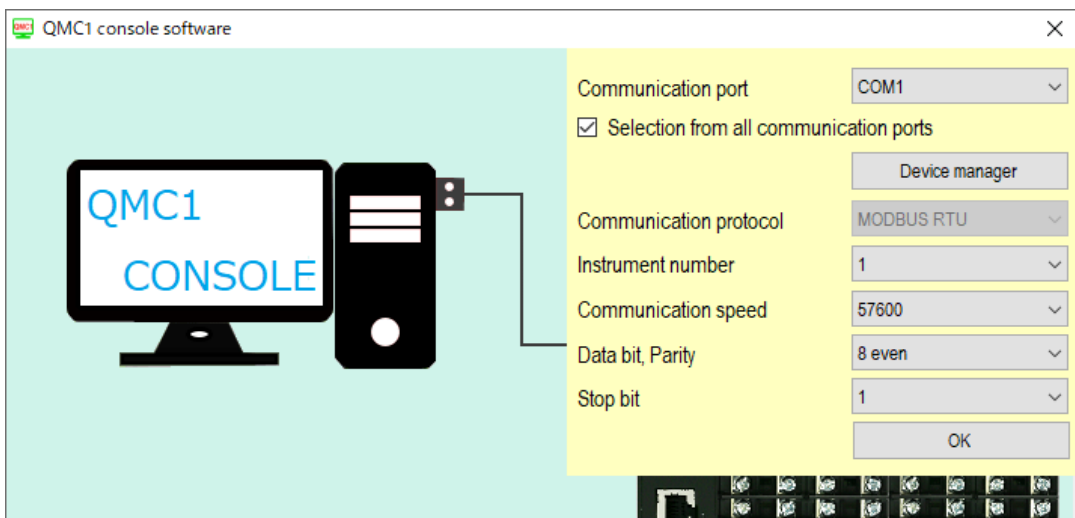
- ③ Start the console software (SWC-QMC101M).



(Fig. 6.1.2-2)

- ④ When start the console software for the first time, the communication condition setting screen is displayed.

If the communication condition settings have been completed, proceed to ⑦.



(Fig. 6.1.2-3)

- ⑤ Set the communication condition as shown below.

Setup Items	Setting Value
Communication port	Select the COM port number confirmed in ②.
Communication protocol	MODBUS RTU

- ⑥ Click [OK].

- ⑦ Display the Main screen.

Select "QMC1-MT" in the "Device selection".

QMC1 console display

File(F) User(U) Help(H) Default of read value

ONLINE/OFFLINE Device selection **QMC1-MT** Number of displays 2 /Number of connections 1

Main screen Graph display

Items	Device 1				Device 2			
	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4
PV reading (including difference)								
MV								
Heater current value								
Status 1								
Status 2								
SV								
Event input	0: OFF	0: OFF	0: OFF	0: OFF	0: OFF	0: OFF	0: OFF	0: OFF
Event output	0: OFF	0: OFF	0: OFF	0: OFF	0: OFF	0: OFF	0: OFF	0: OFF
PV reading (true value)								
Manual MV setting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sensor correction coefficient s...	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Sensor correction setting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OUT bias setting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OUT gain setting	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

PV reading (including difference)
 Communication address :
 Module 1:
 CH1 : 6000H, CH2 : 6001H, CH3 : 6002H, CH4 : 6003H
 Module 2:
 CH1 : 6004H, CH2 : 6005H, CH3 : 6006H, CH4 : 6007H
 Module 3:
 CH1 : 6008H, CH2 : 6009H, CH3 : 600AH, CH4 : 600BH
 Module 4:

(Fig. 6.1.2-4)

The specifications are ready.

6.2 Specification Setting

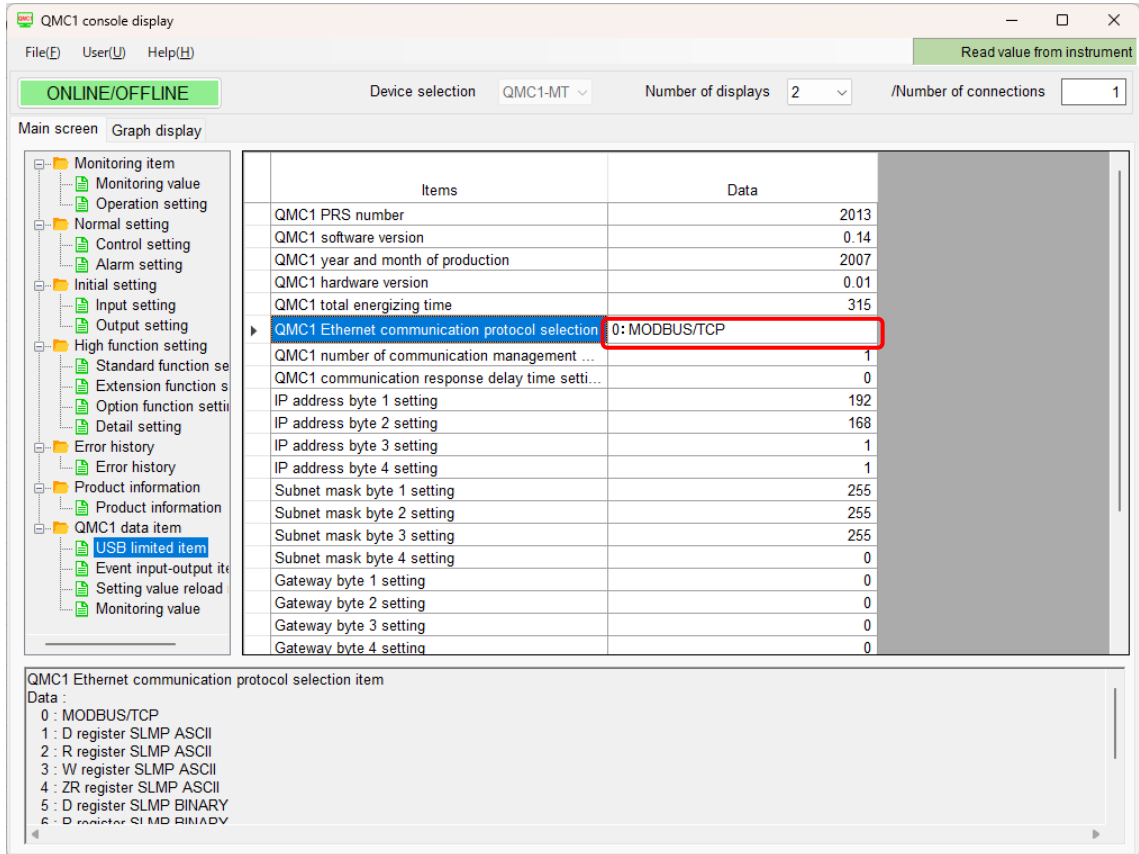
Basic operation of specification setting

Before setting the specifications, how to select the selection item and how to set the setting item are explained.

Select the selection item

The following is an explanation of how to select a selection item, using "QMC1 Ethernet communication protocol selection" as an example.

Click the selection item.

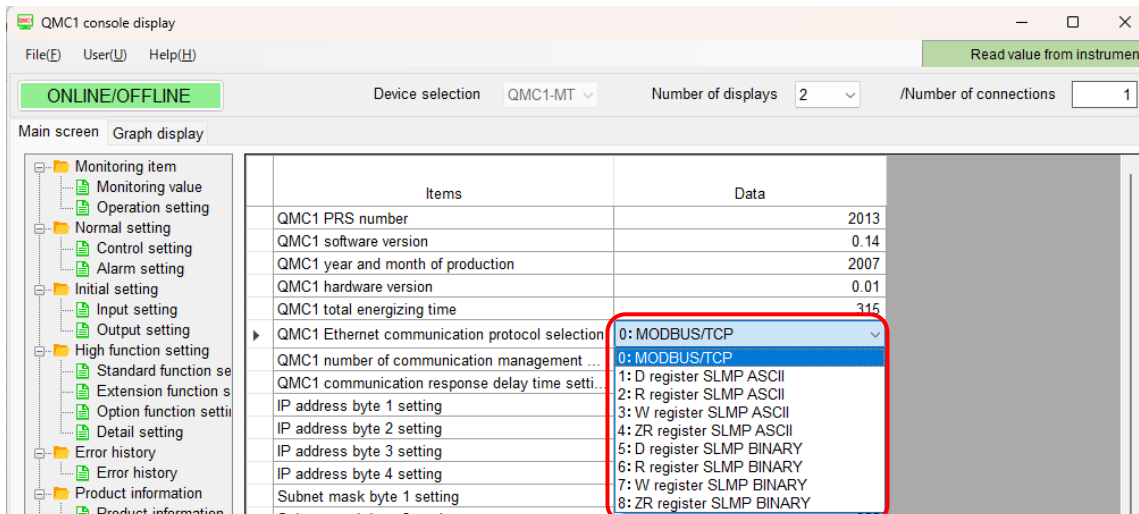


(Fig. 6.2-1)

Display the selection item list.

Click [0: MODBUS/TCP] to [8: ZR register SLMP BINARY].

After selecting, click "File" → "PC to Instrument (each instrument) (H)" or "PC to Instrument (all instruments) (D)" on the menu bar to transfer the selected contents to this instrument.

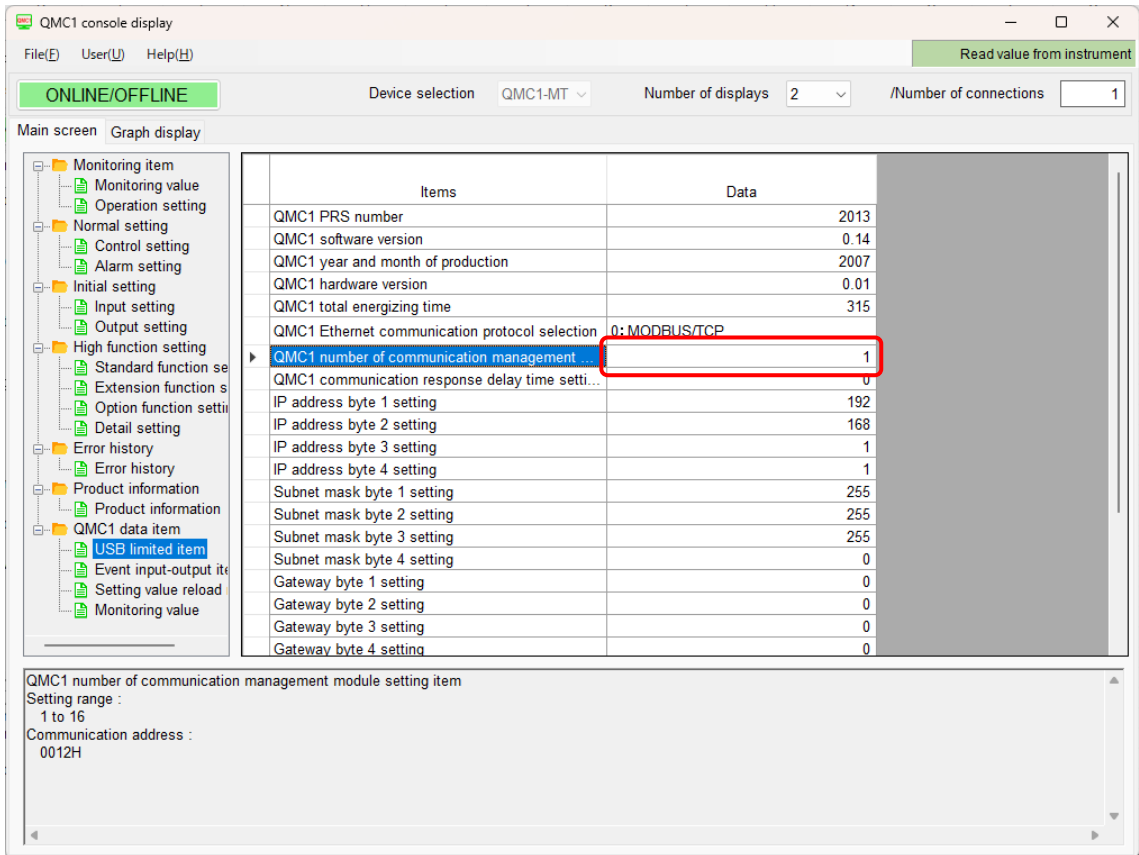


(Fig. 6.2-2)

Set the setting item

The following is an explanation of how to set the setting items, using "QMC1 number of communication management module setting item" as an example.

Click on the setting value.



(Fig. 6.2-3)

Display the numeric keypad screen.

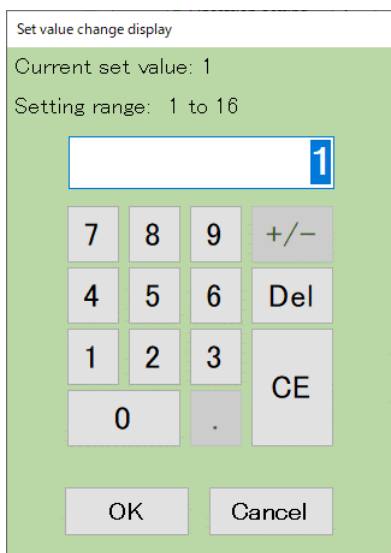
The current setting value and setting range are displayed on the numeric keypad screen.

Set within the setting range.

Input the setting value, and click [OK]. (*)

After setting, click "File" → "PC to Instrument (each instrument) (H)" or "PC to Instrument (all instruments) (D)" on the menu bar to transfer the selected contents to this instrument.

(*): The setting value can also be entered from the keyboard of the host computer.



(Fig. 6.2-4)

6.2.1 USB Limited Item Setting



Caution

If the Ethernet communication protocol, IP address, subnet mask, or gateway settings have been changed, turn the power OFF and ON.

The settings become effective by turning the power OFF and ON.

Set the Ethernet communication protocol, number of communication management modules, communication response delay time, IP address, subnet mask, and gateway.

Check with the system administrator before configuring these settings.

Click [Main screen] tab → [QMC1 data item] → [USB limited item].

Display the USB limited item screen.

Items	Data
QMC1 PRS number	
QMC1 software version	
QMC1 year and month of production	
QMC1 hardware version	
QMC1 total energizing time	
QMC1 Ethernet communication protocol selection	0: MODBUS/TCP
QMC1 number of communication management ...	1
QMC1 communication response delay time setti...	0
IP address byte 1 setting	192
IP address byte 2 setting	168
IP address byte 3 setting	1
IP address byte 4 setting	1
Subnet mask byte 1 setting	255
Subnet mask byte 2 setting	255
Subnet mask byte 3 setting	255
Subnet mask byte 4 setting	0
Gateway byte 1 setting	0
Gateway byte 2 setting	0
Gateway byte 3 setting	0
Gateway byte 4 setting	0

↑ Scroll to show hidden items.

PLC IP address byte 1 setting	192
PLC IP address byte 2 setting	168
PLC IP address byte 3 setting	1
PLC IP address byte 4 setting	2
PLC port number setting	4096
TCP connection timeout time setting	60

QMC1 communication response delay time setting item
 Setting range :
 0 to 1000 ms
 Communication address :
 0013H

(Fig. 6.2.1-1)

Item	Description	Product information example
QMC1 PRS number	This reading function does not operate.	
QMC1 software version	This reading function does not operate.	
QMC1 year and month of production	This reading function does not operate.	
QMC1 hardware version	This reading function does not operate.	
QMC1 total energizing time	This reading function does not operate.	

Setting item	Description and setting range	Factory default
QMC1 Ethernet communication protocol selection	Select the Ethernet communication protocol for this instrument. Selection item: 0: MODBUS/TCP 1: D register SLMP ASCII (*1) 2: R register SLMP ASCII (*1) 3: W register SLMP ASCII (*1) 4: ZR register SLMP ASCII (*1) 5: D register SLMP BINARY (*1) 6: R register SLMP BINARY (*1) 7: W register SLMP BINARY (*1) 8: ZR register SLMP BINARY (*1)	0: MODBUS/TCP
QMC1 number of communication management modules setting	Set the number of control modules (QTC1-□) managed by this instrument. Setting range: 1 to 16 modules	1 module
QMC1 communication response delay time setting	Set the delay time for this instrument to return a response after receiving a command from the host. Setting range: 0 to 1000 ms [Additional Explanation] Set the communication response delay time of the connected control module (QTC1-□) to 0 ms.	0 ms
IP address byte 1 setting	Set the 1st byte of the QMC1-MT IP address. Setting range: 0 to 255	192
IP address byte 2 setting	Set the 2nd byte of the QMC1-MT IP address. Setting range: 0 to 255	168
IP address byte 3 setting (*2)	Set the 3rd byte of the QMC1-MT IP address. Setting range: 0 to 255	1
IP address byte 4 setting (*2)	Set the 4th byte of the QMC1-MT IP address. Setting range: 0 to 255	1

(*1): Mitsubishi Electric Corporation MELSEC series

(*2): Effective when 4th octet of the QMC1-MT IP address setting rotary switch is set to "0".

If the QMC1-MT IP address has been changed, turn the power OFF and ON.

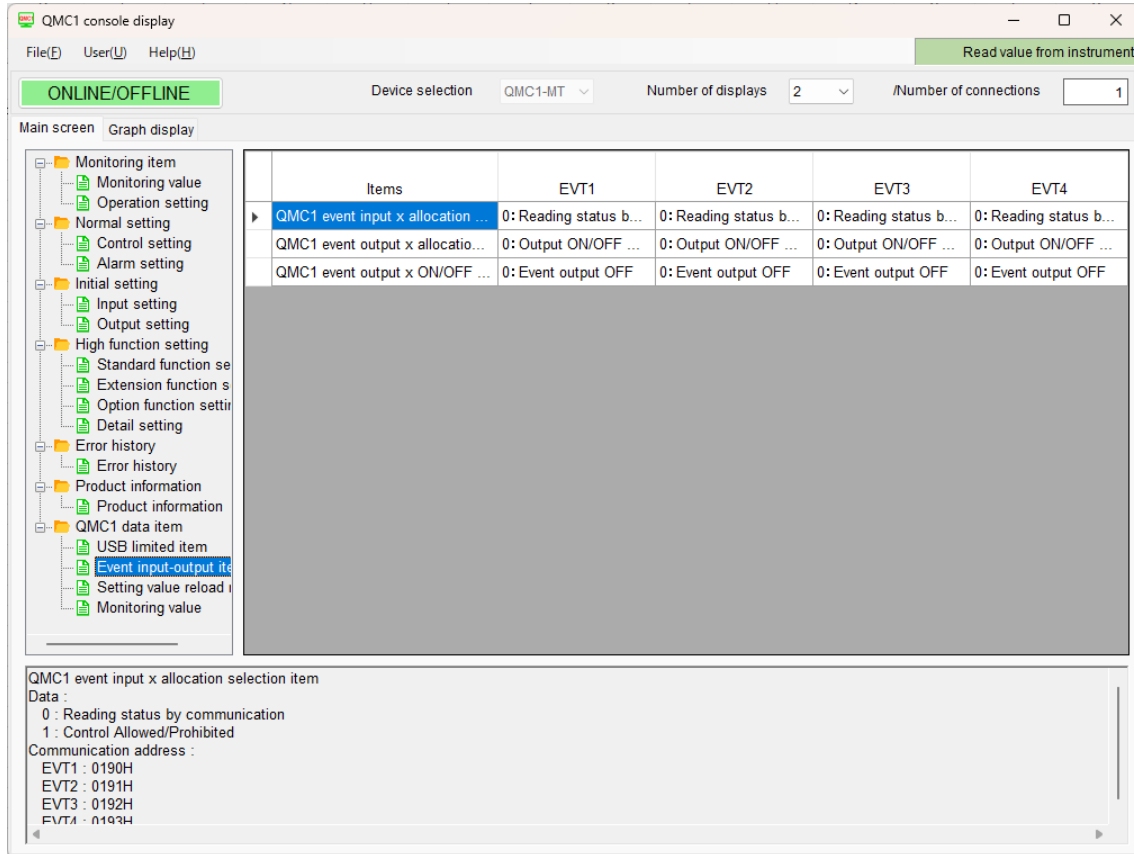
Setting item	Description and setting range	Factory default
Subnet mask byte 1 setting	Set the 1st byte of the subnet mask. Setting range: 0 to 255	255
Subnet mask byte 2 setting	Set the 2nd byte of the subnet mask. Setting range: 0 to 255	255
Subnet mask byte 3 setting	Set the 3rd byte of the subnet mask. Setting range: 0 to 255	255
Subnet mask byte 4 setting	Set the 4th byte of the subnet mask. Setting range: 0 to 255	0
Gateway byte 1 setting	Set the 1st byte of the gateway. Setting range: 0 to 255	0
Gateway byte 2 setting	Set the 2nd byte of the gateway. Setting range: 0 to 255	0
Gateway byte 3 setting	Set the 3rd byte of the gateway. Setting range: 0 to 255	0
Gateway byte 4 setting	Set the 4th byte of the gateway. Setting range: 0 to 255	0
Own port number setting	Set the QMC1-MT port number. Setting range: 0 to 65535	502
PLC IP address byte 1 setting (*3)	Set the 1st byte of the PLC's IP address. Setting range: 0 to 255	192
PLC IP address byte 2 setting (*3)	Set the 2nd byte of the PLC's IP address. Setting range: 0 to 255	168
PLC IP address byte 3 setting (*3)	Set the 3rd byte of the PLC's IP address. Setting range: 0 to 255	1
PLC IP address byte 4 setting (*3)	Set the 4th byte of the PLC's IP address. Setting range: 0 to 255	2
PLC port number setting	Set the PLC's port number. Setting range: 0 to 65535	4096
TCP connection timeout time setting(*4)	Sets the timeout time for the TCP connection. Setting range: 30 to 600 sec.	60 sec.

(*3): IP address of PLC for SLMP connection.

(*4): If there is no valid communication within the TCP connection timeout time after the line is connected, the connection is terminated.

6.2.2 Setting Event Input / Output Items

This instrument does not have this function.

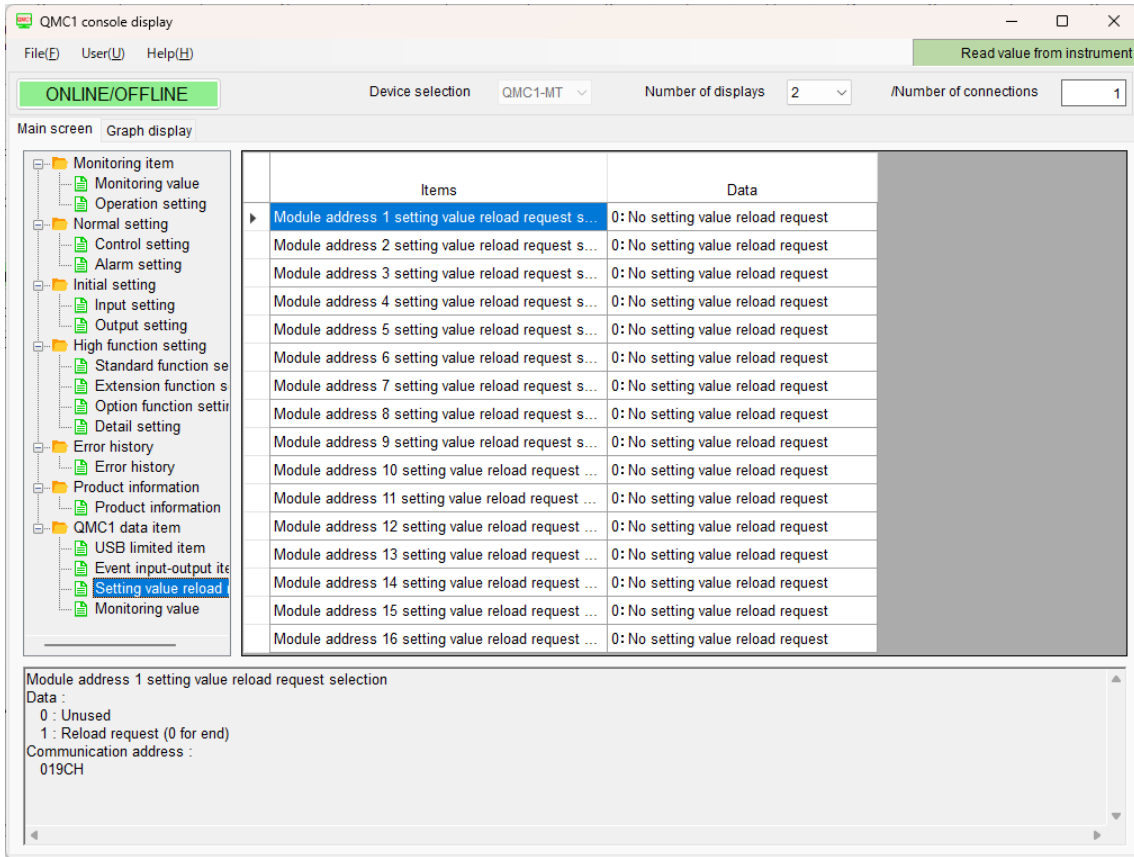


(Fig. 6.2.2-1)

6.2.3 Selecting Setting Value Reload Request

This function is not supported when "QMC1-MT" is selected for the device selection.

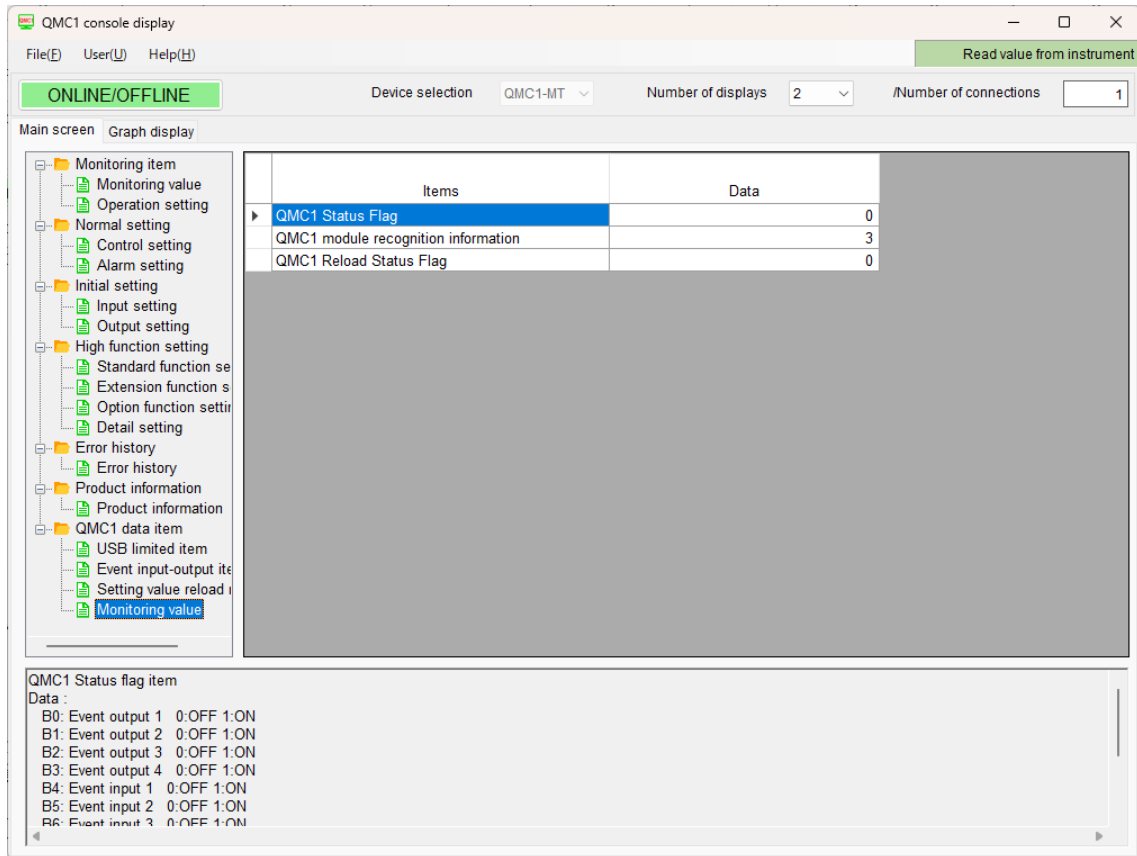
Even if selected, this function does not work.



(Fig. 6.2.3-1)

6.2.4 Reading Monitor Values

Reads the QMC1 Status Flag, module recognition information, and Reload Status Flag.



(Fig. 6.2.4-1)

Data Item	Data
QMC1 Status Flag	B0: Always 0
	B1: Always 0
	B2: Always 0
	B3: Always 0
	B4: Always 0
	B5: Always 0
	B6: Always 0
	B7: Always 0
	B8: Not used
	B9: Not used
	B10: Not used
	B11: Not used
	B12: Not used
	B13: Not used
	B14: Power supply identification (*3) 0: 24 V DC 1: USB bus power
B15: Non-volatile IC memory error 0: Normal 1: Error	

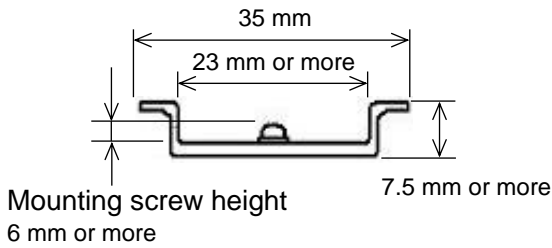
Data Item	Data
QMC1 module recognition information	B0: Module address 1 0: No connection 1: Connection
	B1: Module address 2 0: No connection 1: Connection
	B2: Module address 3 0: No connection 1: Connection
	B3: Module address 4 0: No connection 1: Connection
	B4: Module address 5 0: No connection 1: Connection
	B5: Module address 6 0: No connection 1: Connection
	B6: Module address 7 0: No connection 1: Connection
	B7: Module address 8 0: No connection 1: Connection
	B8: Module address 9 0: No connection 1: Connection
	B9: Module address 10 0: No connection 1: Connection
	B10: Module address 11 0: No connection 1: Connection
	B11: Module address 12 0: No connection 1: Connection
	B12: Module address 13 0: No connection 1: Connection
	B13: Module address 14 0: No connection 1: Connection
	B14: Module address 15 0: No connection 1: Connection
	B15: Module address 16 0: No connection 1: Connection

Data Item	Data
QMC1 Reload status flag	B0: Module address 1
	0: No setting value reload request
	1: Reloading setting value
	B1: Module address 2
	0: No setting value reload request
	1: Reloading setting value
	B2: Module address 3
	0: No setting value reload request
	1: Reloading setting value
	B3: Module address 4
	0: No setting value reload request
	1: Reloading setting value
	B4: Module address 5
	0: No setting value reload request
	1: Reloading setting value
	B5: Module address 6
0: No setting value reload request	
1: Reloading setting value	
B6: Module address 7	
0: No setting value reload request	
1: Reloading setting value	
B7: Module address 8	
0: No setting value reload request	
1: Reloading setting value	
B8: Module address 9	
0: No setting value reload request	
1: Reloading setting value	
B9: Module address 10	
0: No setting value reload request	
1: Reloading setting value	
B10: Module address 11	
0: No setting value reload request	
1: Reloading setting value	
B11: Module address 12	
0: No setting value reload request	
1: Reloading setting value	
B12: Module address 13	
0: No setting value reload request	
1: Reloading setting value	
B13: Module address 14	
0: No setting value reload request	
1: Reloading setting value	

7 Mounting

⚠ Caution

- Turn off the power supply to this instrument when mounting or removing it.
- Do not connect QTC1-2P or QTC1-4P in the same unit.
- Mount the DIN rail horizontally.
- This instrument fits the following DIN rails.
Top hat rail TH35 JIS C 2812-1988

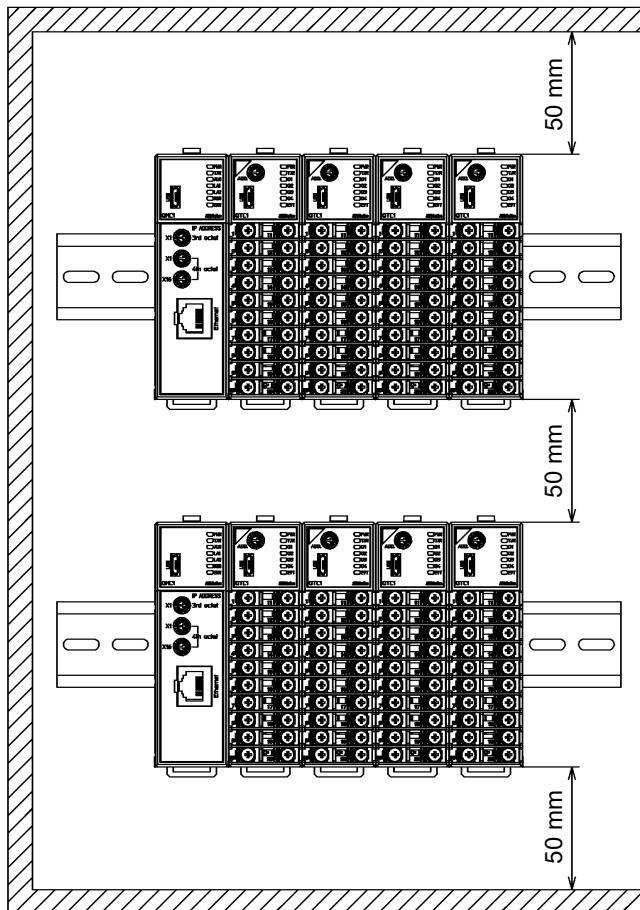


Width: 35 mm
Height: 7.5 mm or more
Groove width: 23 mm or more
DIN rail mounting screw height:
6 mm or more
(For DIN rail height 7.5 mm)

(Fig. 7-1)

- If this instrument is mounted in a position susceptible to vibration or shock, mount commercially available end plate at both ends of the instrument.
- When installing, make sure that the orientation (upper and lower) of this instrument is correct.
- When mounting or removing this instrument on the DIN rail, it must be tilted slightly.
Secure a space of 50 mm or more in the vertical direction of the instrument, considering the wiring space of the power supply/communication line and heat dissipation.

Spacing when QMC1-MT and QTC1-40 are connected



(Fig. 7-2)

7.1 Selection of Location

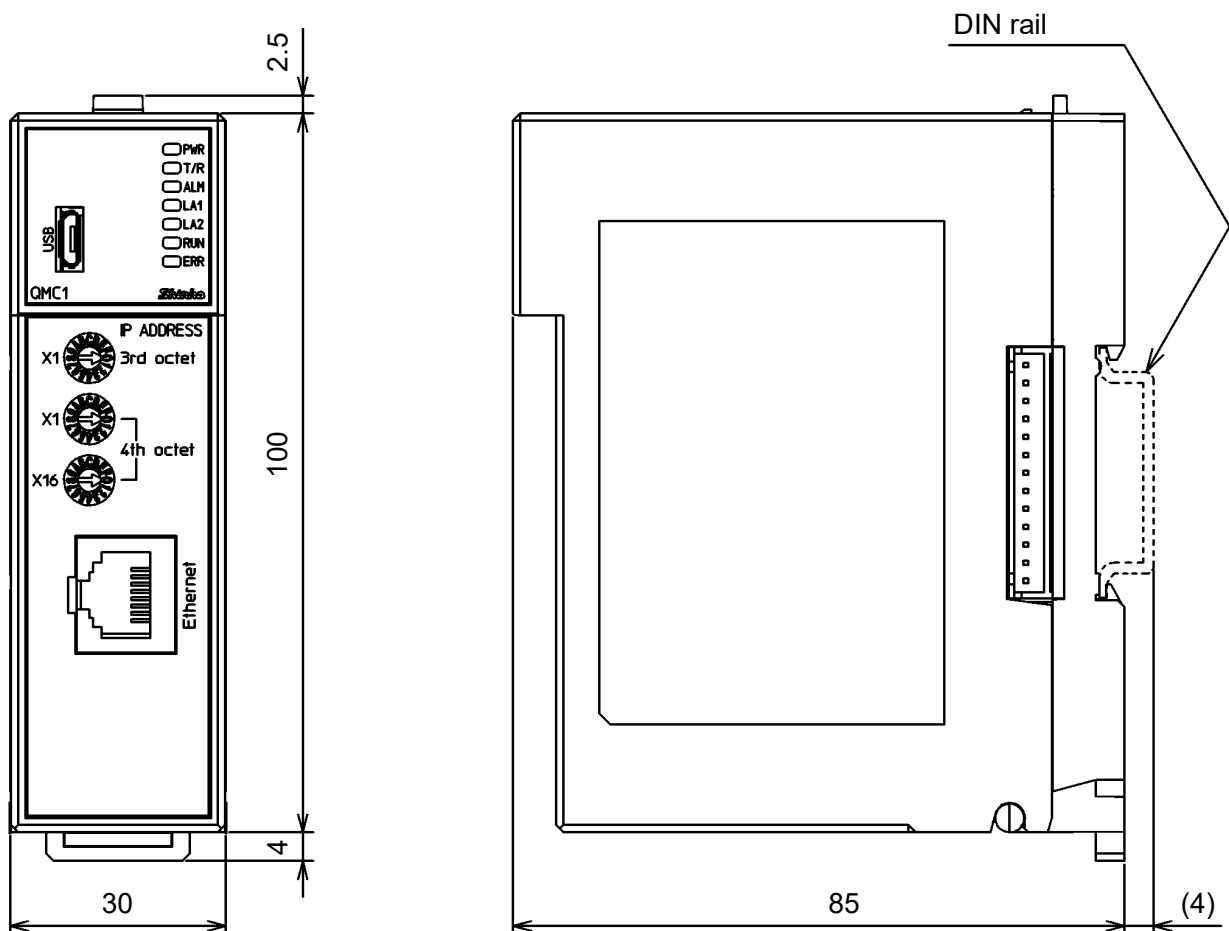
[Ensure the mounting location corresponds to the following conditions:]

- A minimum of dust, and an absence of corrosive gases
- No flammable, explosive gases
- No mechanical vibrations or shocks
- No exposure to direct sunlight, an ambient temperature of -10 to 50°C that does not change rapidly, and no icing
- An ambient non-condensing humidity of 35 to 85 %RH
- No large capacity electromagnetic switches or cables through which large current is flowing
- No water, oil or chemicals or the vapors of these substances can come into direct contact with the unit.
- When installing this unit within a control panel, please note that ambient temperature of this unit – not the ambient temperature of the control panel – must not exceed 50°C.

Otherwise the life of electronic components (especially electrolytic capacitor) may be shortened.

* Avoid setting this instrument directly on or near flammable material even though the case of this instrument is made of flame-resistant resin.

7.2 External Dimensions (Scale: mm)



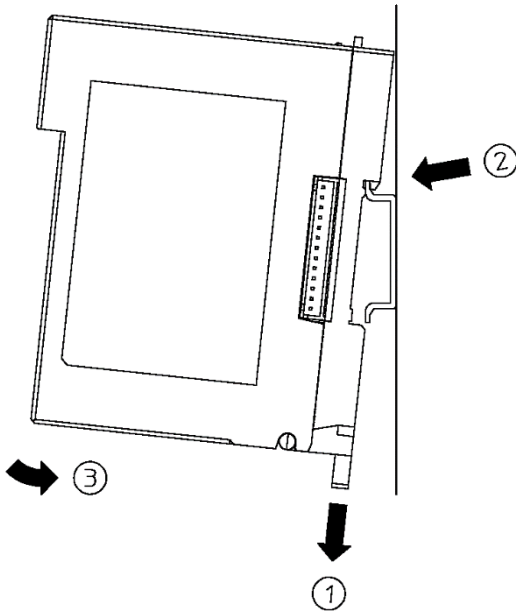
(Fig. 7.2-1)

7.3 Mounting

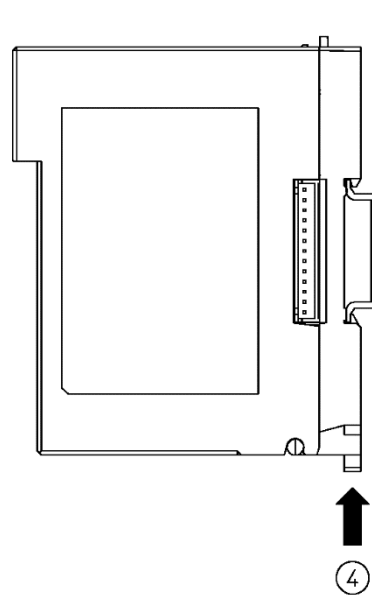
Mounting to the DIN rail

- ① Lower the lock lever of this instrument. (The lock lever of this instrument has a spring structure, but if lower it in the direction of the arrow until it stops, it will be locked in that position.)
- ② Hook the part ② of this instrument onto the top of the DIN rail.
- ③ Insert the lower part of this instrument with the part ② as a fulcrum.
- ④ Raise the lock lever of this instrument.

Make sure it is fixed to the DIN rail.



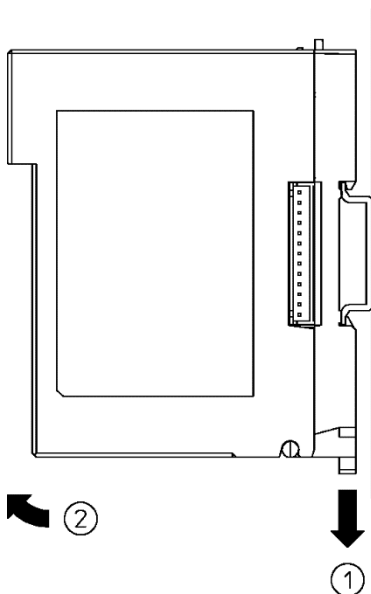
(Fig. 7.3-1)



(Fig. 7.3-2)

Removal from the DIN rail

- ① Insert a flat blade screwdriver into the lock lever of this instrument and lower the lock lever until it stops.
- ② Remove this instrument from the DIN rail by lifting it from below.

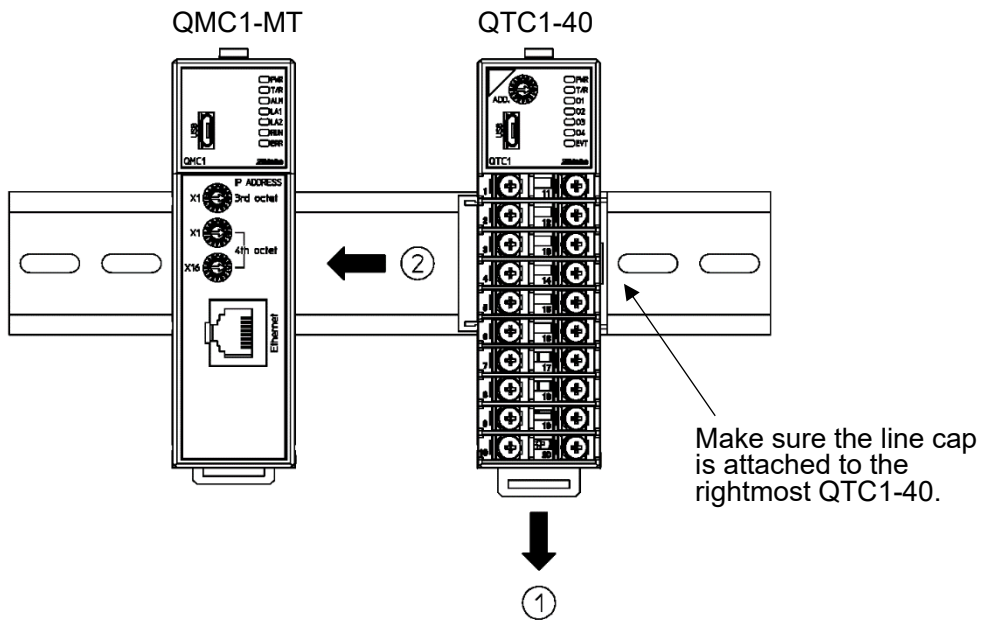


(Fig. 7.3-3)

Mounting multiple modules to the DIN rail

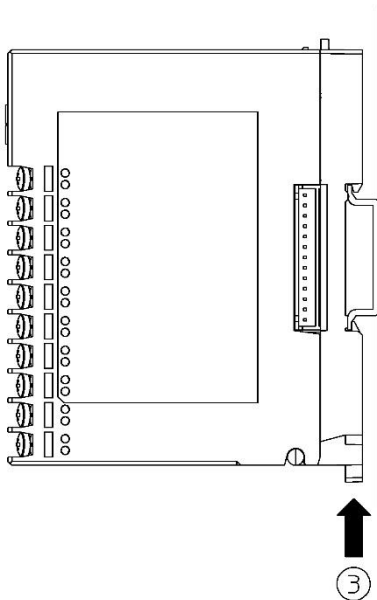
This section describes an example of mounting this instrument and QTC1-40 on the DIN rail.

- ① Lower the lock lever of the QTC1-40, and mounting the QTC1-40 to the DIN rail.
- ② Slide the QTC1-40 to the left and connect the connectors to each other.



(Fig. 7.3-4)

- ③ Raise the lock lever of the QTC1-40.
Make sure it is fixed to the DIN rail.

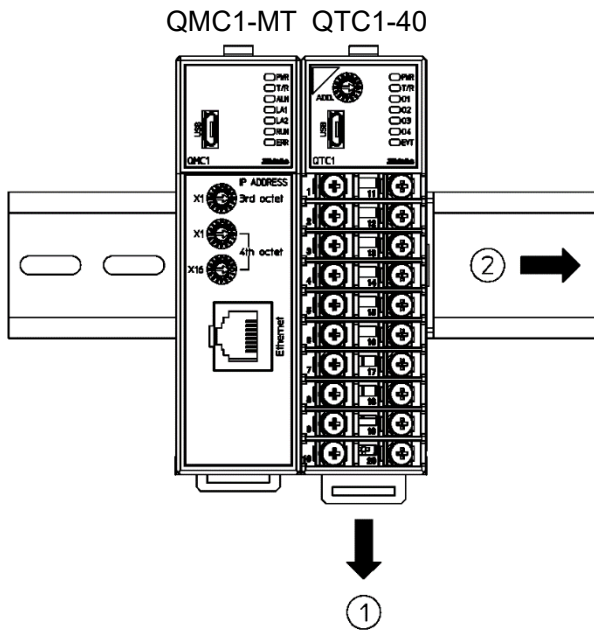


(Fig. 7.3-5)

Removal multiple modules from the DIN rail

This section describes an example of removing multiple QTC1-40 on the DIN rail.

- ① Insert a flat blade screwdriver into the lock lever of the QTC1-40 and lower the lock lever until it stops.
- ② Slide the QTC1-40 to the right side and disconnect it from the connector, then remove it from the DIN rail.



(Fig. 7.3-6)

8 Wiring

Warning

Turn off the power supply to this instrument before wiring.

If you work while the power is supplied, you may get an electric shock, which could result in an accident resulting in death or serious injury.

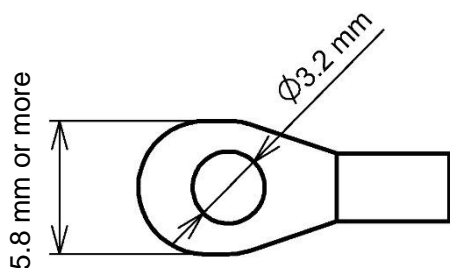
Caution

Do not connect QTC1-2P or QTC1-4P in the same unit.

8.1 Recommended Terminal

Use a solderless terminal with an insulation sleeve in which an M3 screw fits as shown below.

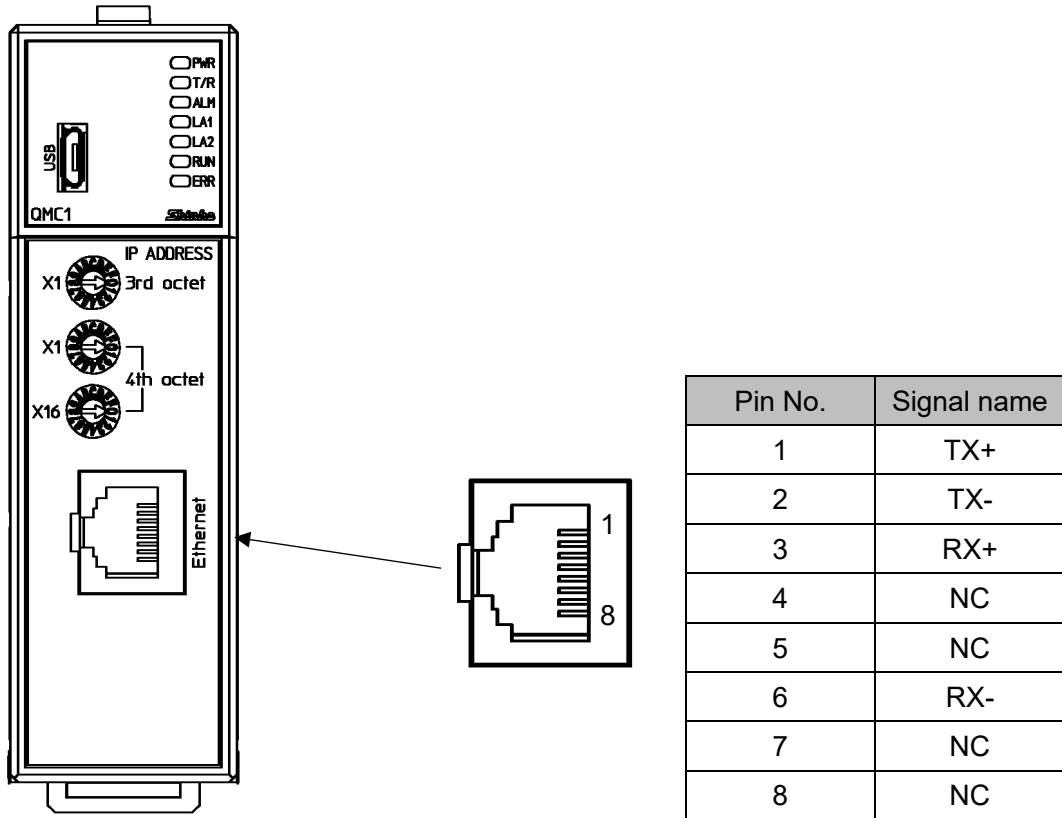
Solderless Terminal	Manufacturer	Model	Compatible wire size	Tightening torque
Ring-type	NICHIFU TERMINAL INDUSTRIES CO., LTD.	TMEX1.25-3	AWG22 to 16	Power supply terminal: 0.5 N•m FG terminal: 0.3 N•m
		TMEX2-3S	AWG16 to 14	
	J.S.T.MFG.CO.,LTD.	V1.25-3	AWG22 to 16	
		V2-MS3	AWG16 to 14	



(Fig. 8.1-1)

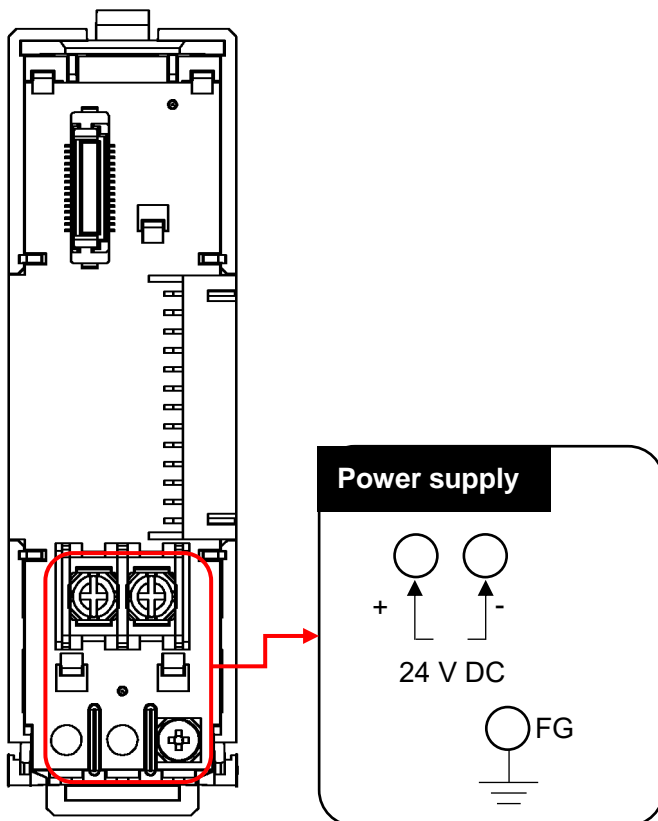
8.2 Pin Assignment and Terminal Arrangement

8.2.1 Pin Assignment of Ethernet Communication Connector



(Fig. 8.2.1-1)

8.2.2 Power supply terminal and FG terminal arrangement



(Fig. 8.2.2-1)

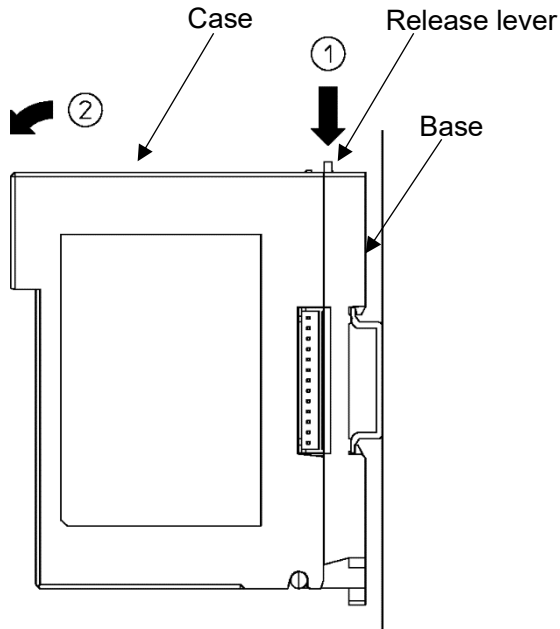
8.3 Wiring

8.3.1 Wiring for power supply and FG

The power and FG terminals are located on the base of this instrument.
Wiring by the following procedure.

(1) Case removal

- ① Push the release lever on the top of this instrument to unlock it.
- ② Remove the case.



(Fig. 8.3.1-1)

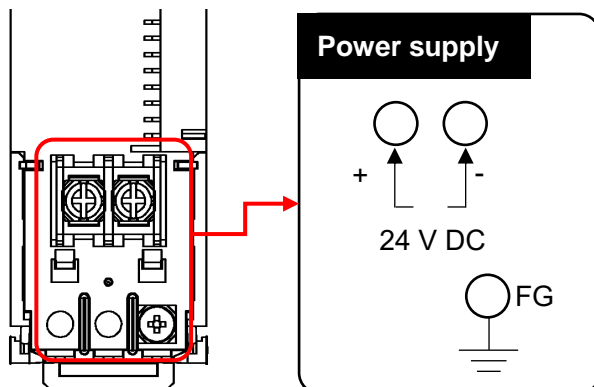
(2) Wiring

⚠ Caution

- Do not use the wrong polarity for the power supply voltage (24 V DC).
- Use copper wires AWG16 to 14 (1.31 to 2.08 mm²) for the FG terminal and Power supply terminal.
- Use round crimp terminals.
- The tightening torques for power terminals and FG terminals should be as follows.

Power supply terminal: 0.5 N•m

FG terminal: 0.3 N•m

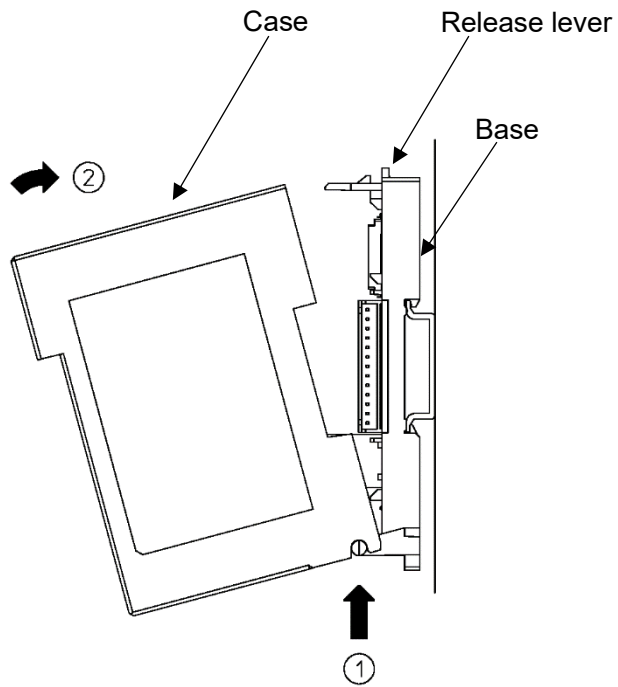


(Fig. 8.3.1-2)

(3) Case mounting

- ① Hook the case on the lower part ① of this instrument.
- ② Mount the case so that the lower part ① of this instrument is the fulcrum and covers the release lever.

There is a clicking sound.



(Fig. 8.3.1-3)

8.4 Connect to Ethernet



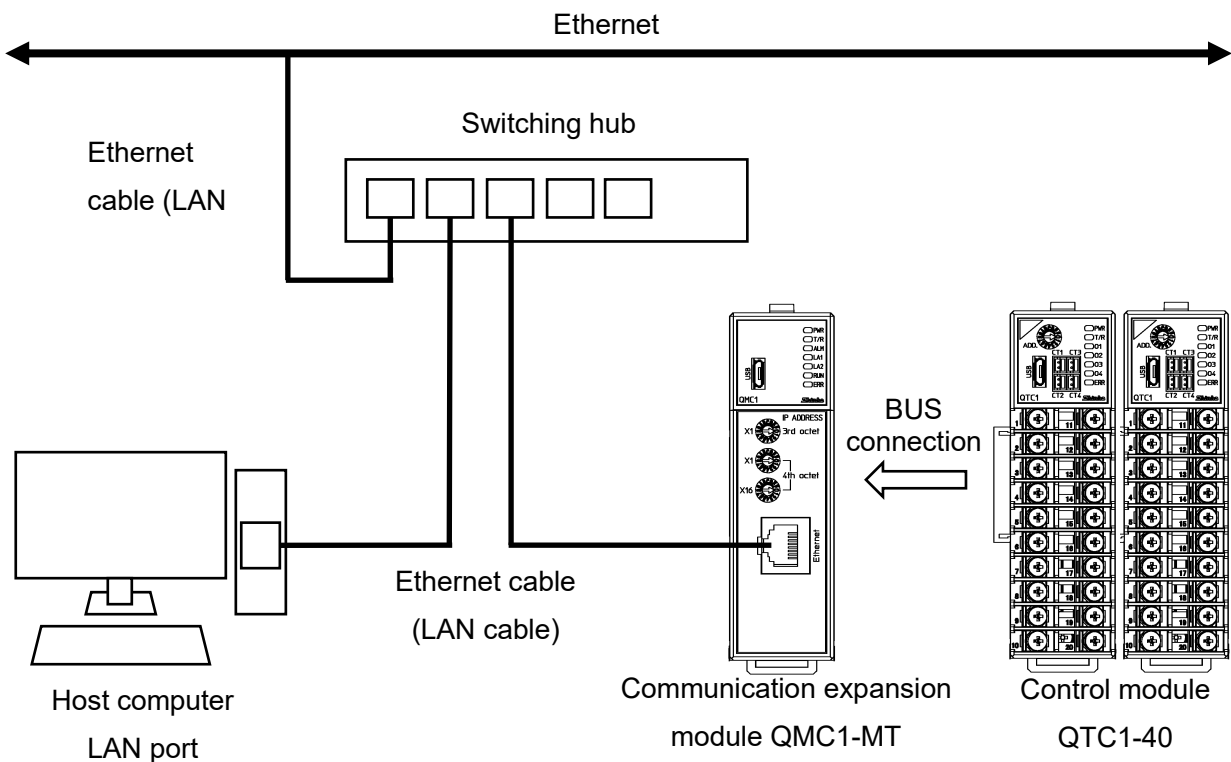
Caution

Do not connect QTC1-2P or QTC1-4P in the same unit.

Use a commercially available Ethernet cable (LAN cable) for connection to the Ethernet.
Either a straight cable or a crossover cable can be used for the Ethernet cable (LAN cable).

8.4.1 Example 1 of Connection to Ethernet

Connection example for using a switching hub



(Fig. 8.4.1-1)

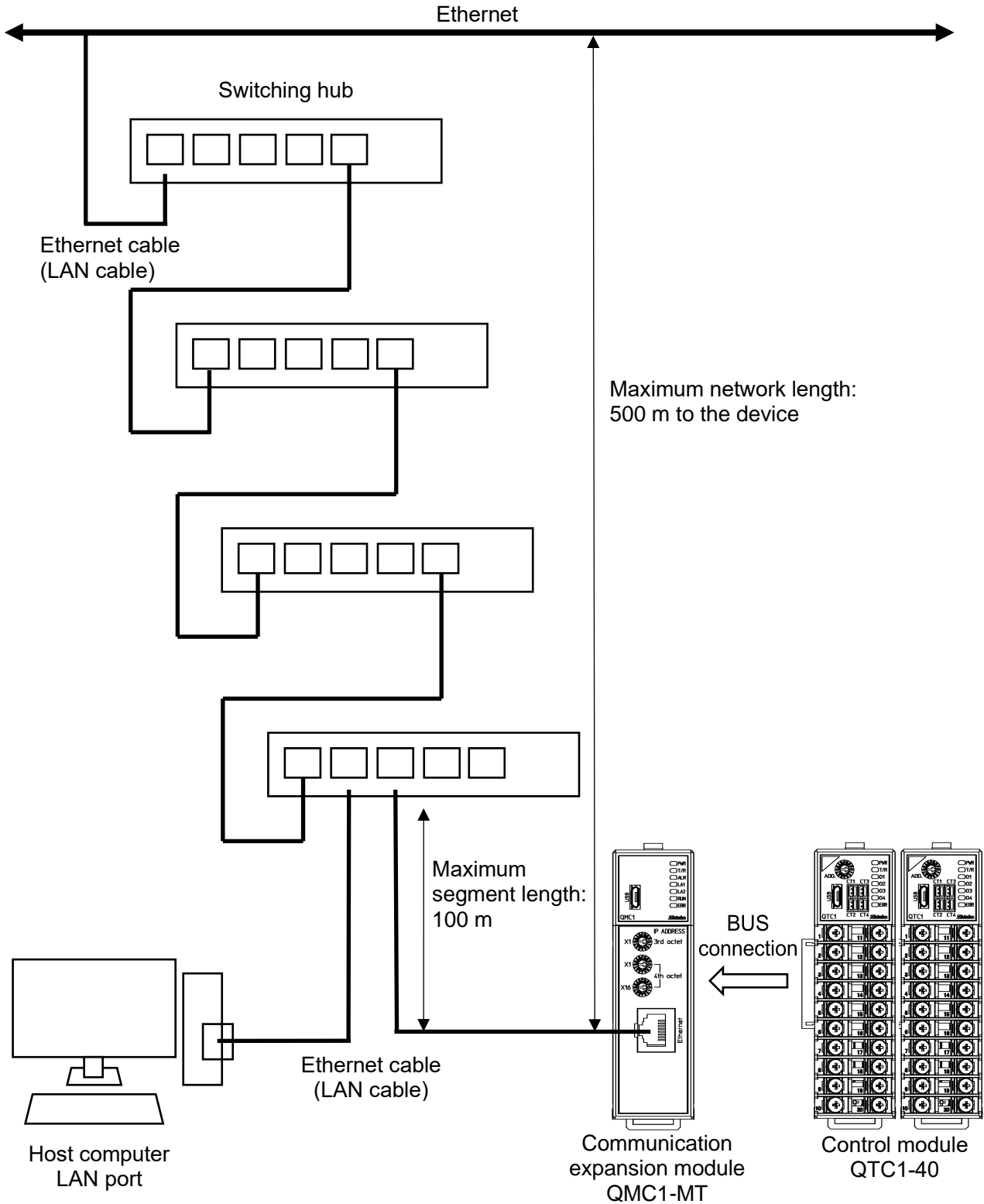
8.4.2 Example 2 of Connection to Ethernet

Network length can be extended by cascading switching hubs.

Maximum segment length: 100 m

Maximum network length: 500 m to the device (4 cascades)

Connection example when using 4 switching hubs.



(Fig. 8.4.2-1)

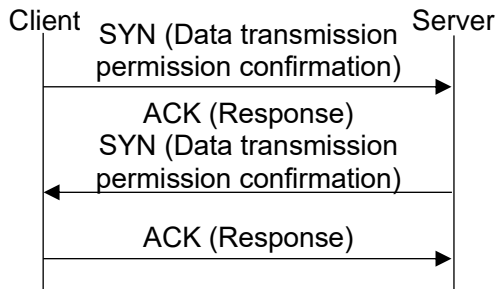
9 MODBUS/TCP Protocol

9.1 Communication Procedure

Once a TCP connection is established at the IP addresses of the client and server, MODBUS communication is performed at the application level.

The client is the MODBUS master and the server is the MODBUS slave.

(1) Establishing TCP connection



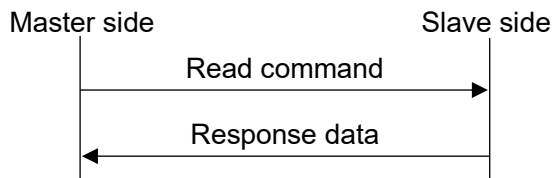
(Fig. 9.1-1)

Establish a connection before data communication.

Connection procedure

- ① The client sends a connection request TCP packet.
- ② The server sends a response and a connection request to the client, if acceptable.
- ③ The client responds to the connection request, if it is acceptable.

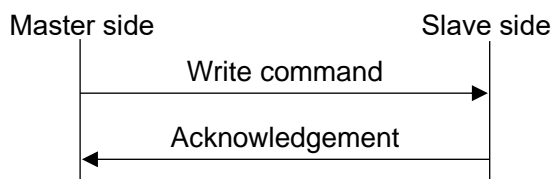
(2) Response with data (MODBUS communication)



(Fig. 9.1-2)

The slave side that receives the read command returns data such as the setting value or operating status corresponding to that command to the master side as a response.

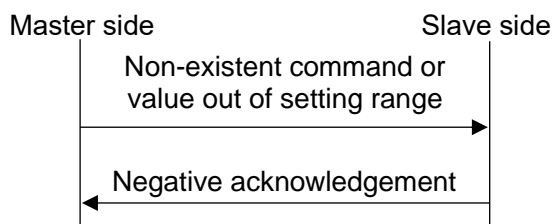
(3) Acknowledgement (MODBUS communication)



(Fig. 9.1-3)

The slave side that receives the write command normally returns the acknowledgement to the master side.

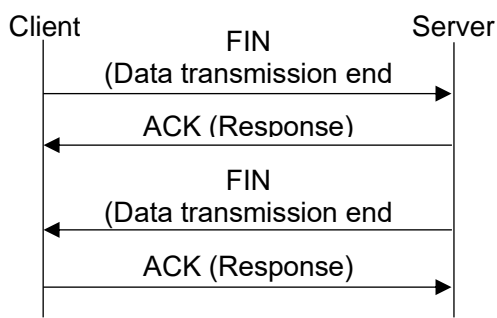
(4) Negative acknowledgement (MODBUS communication)



(Fig. 9.1-4)

When a non-existent command or value out of the setting range is received, the slave side returns a negative response to the master side.

(5) Disconnection of TCP connection



(Fig. 9.1-5)

Once the data communication is over, a disconnection procedure is performed.

Once connected, the disconnection procedure can be initiated from either the client or the server.

9.2 Port Number

The MODBUS protocol port number is 502 (TCP/UDP specified value).

9.3 Message Format

The message consists of a header block and a data block.

Header block: Transfer ID, protocol ID, data byte length, and unit ID

Data block: Function code, data item, and number of data

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (03H)	Data item (0001H)	Number of data (0001H)

(1) Transfer ID

Data added by the MODBUS master (TCP client) for management purposes.

The same numerical value as the request message is returned as a response message.

(2) Protocol ID

Fixed to 0(0000H).

(3) Data byte length

Total number of bytes in the unit ID and data block.

(4) Unit ID

Fixed to 1 (01H) with the individual device number on the slave side.

(5) Function code

This code specifies the type of operation for the slave side.

Type	Function code	Sub-function code	Description
Data access	03(03H)		Reading single or multiple data from the slave (max. 100 data)
	06(06H)		Writing single data to the slave
	16(10H)		Writing multiple data to the slave (max. 20 consecutive data)

The function code is used to indicate a normal response (acknowledgement) or some error (negative acknowledgement) when the slave side returns a response message to the master side.

Acknowledgement: The original function code is set and returned.

Negative acknowledgement: The most significant bit of the original function code is set to 1 and returned.

For example, if a request message is sent to the slave side with the function code incorrectly set to 13H, the most significant bit is set to 1 and 93H is returned, as that function code does not exist.

In addition, to inform the master side what kind of error has occurred, the following error codes are set in the data of the response message and returned.

Error code	Description
1(01H)	Illegal function (Non-existent function)
2(02H)	Illegal data address (Non-existent data address)
3(03H)	Illegal data value (Value out of the setting range)
17(11H)	Cannot be written (when the model name specification differs)

(6) Data

The data consists of different function codes.

The request message from the master side consists of data item, number of data and setting data.

The response message from the slave side consists of the number of bytes and data for the request and the error code in case of negative acknowledgement.

The valid range of data is -32768 to 32767 (8000H to 7FFFH).

Refer to "10 Communication Command List" (P.10-1).

9.4 Message Example

Numerals written below the command represent the number of characters.

(1) Read unit ID 1, CH1 control enable/disable (1040H)

- A request message from the master

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (03H)	Data item (1040H)	Number of data (0001H)
2	2	2	1	1	2	2

- Response message from the slave in normal status [When control disable (0000H)]

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0005H)	Unit ID (01H)	Function code (03H)	Number of response bytes (02H)	Data (0000H)
2	2	2	1	1	1	2

- Response message from the slave in exception (error) status (When data item is incorrect.)

The function code MSB is set to 1 for the response message in exception (error) status, and 83H is returned.

The exception code 02H (Non-existent data address) is returned (error).

Header block				Data block	
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0003H)	Unit ID (01H)	Function code (83H)	Error code (02H)
2	2	2	1	1	1

(2) Write unit ID 1, CH1 control enable/disable (1040H)

- A request message from the master [When writing control enable (0001H)]

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (03H)	Data item (1040H)	Data (0001H)
2	2	2	1	1	2	2

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (06H)	Data item (1040H)	Data (0001H)
2	2	2	1	1	2	2

- Response message from the slave in exception (error) status (When set to the value out of the setting range)

The function code MSB is set to 1 for the response message in exception (error) status, and 86H is returned.

The exception code 03H (Value out of the setting range) is returned (error).

Header block				Data block	
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0003H)	Unit ID (01H)	Function code (86H)	Error code (03H)
2	2	2	1	1	1

(3) Read Unit ID 1, CH1 SV (1180H)

- A request message from the master

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (03H)	Data item (1180H)	Number of data (0001H)
2	2	2	1	1	2	2

- Response message from the slave in normal status [When SV 600 °C (0258H)]

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0005H)	Unit ID (01H)	Function code (03H)	Number of response bytes (02H)	Data (0001H)
2	2	2	1	1	1	2

- Response message from the slave in exception (error) status (When data item is incorrect)

The function code MSB is set to 1 for the response message in exception (error) status, and 83H is returned.

The exception code 02H (Non-existent data address) is returned (error).

Header block				Data block	
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0003H)	Unit ID (01H)	Function code (83H)	Error code (02H)
2	2	2	1	1	1

(4) Write Unit ID1, CH1 SV to CH4 SV (Multiple data write)

The configuration of the data block is as follows.

Number of data : 4 (0004H)

Number of bytes : 8 (08H)

Data : Data is converted to Hexadecimal.

Data item		Data	Data (Converted to Hexadecimal)
1180H	CH1 SV setting	600 °C	0258H
1181H	CH2 SV setting	600 °C	0258H
1182H	CH3 SV setting	600 °C	0258H
1183H	CH4 SV setting	600 °C	0258H

- A request message from the master (When writing the above data)

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (000FH)	Unit ID (01H)	Function code (10H)	Data item (1180H)	
2	2	2	1	1	2	

Data block	
Data (0004080258025802580258H)	
11	

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (10H)	Data item (1180H)	Data (0004H)
2	2	2	1	1	2	2

(5) Write slave address 1, CH1 SV to CH4 SV (Multiple data write)

- A request message from the master (When reading the above data)

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (03H)	Data item (1180H)	Number of data (0004H)
2	2	2	1	1	2	2

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (000BH)	Unit ID (01H)	Function code (03H)	Number of response bytes (08H)	
2	2	2	1	1	2	

Data block	
	Data (0258025802580258H)
8	

The data block of the response message is as follows.

Data item		Data	Data (Converted to Hexadecimal)
1180H	CH1 SV setting	600 °C	0258H
1181H	CH2 SV setting	600 °C	0258H
1182H	CH3 SV setting	600 °C	0258H
1183H	CH4 SV setting	600 °C	0258H

10 Communication Command List

10.1 List of QMC1-MT Communication Commands (For Console Software)

This section explains each item of communication command.

- Data Item

This is a setting item for the QMC1-MT.

- Address [HEX (Hexadecimal)]

This is an each channel address of the QMC1-MT.

- Attribute

R/W: Read and write (Host ↔ QMC1-MT)

RO: Read only (Host ← QMC1-MT)

- Data

This is an explanation of the setting range and setting conditions for each data.

Data Item	Address (HEX)	Attribute	Data
QMC1-MT PRS Number	0000	RO	2013: QMC1-MT
QMC1-MT Software version	0001	RO	2: Ver. 0.02
Reservation (*)	0002		
QMC1-MT Manufacturing date	0003	RO	2209: 2022 年 9 月
QMC1-MT Hardware version	0004	RO	0: Ver. 0.00
Reservation (*)	0005 to 000F		
QMC1-MT Total energizing time	0010	RO	1 hour / 1 count
QMC1-MT Ethernet communication protocol selection	0011	R/W	0000H: MODBUS/TCP 0001H: D register SLMP ASCII (*2) 0002H: R register SLMP ASCII (*2) 0003H: W register SLMP ASCII (*2) 0004H: ZR register SLMP ASCII (*2) 0005H: D register SLMP BINARY (*2) 0006H: R register SLMP BINARY (*2) 0007H: W register SLMP BINARY (*2) 0008H: ZR register SLMP BINARY (*2)
QMC1-MT Number of communication management modules setting	0012	R/W	1 to 16 modules
QMC1-MT Communication response delay time setting	0013	R/W	0 to 1000 ms

(*1): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment. When writing single or multiple, Acknowledgement is returned and the data is discarded.

(*2): Mitsubishi Electric Corporation's MELSEC series.

Data Item	Address (HEX)	Attribute	Data
IP address byte 1 setting	0014	R/W	0 to 255
IP address byte 2 setting	0015	R/W	0 to 255
IP address byte 3 setting	0016	R/W	0 to 255
IP address byte 4 setting	0017	R/W	0 to 255
Subnet mask byte 1 setting	0018	R/W	0 to 255
Subnet mask byte 2 setting	0019	R/W	0 to 255
Subnet mask byte 3 setting	001A	R/W	0 to 255
Subnet mask byte 4 setting	001B	R/W	0 to 255
Gateway byte 1 setting	001C	R/W	0 to 255
Gateway byte 2 setting	001D	R/W	0 to 255
Gateway byte 3 setting	001E	R/W	0 to 255 (*3)
Gateway byte 4 setting	001F	R/W	0 to 255 (*3)
Own port number setting	0020	R/W	0 to 65535
PLC IP address byte 1 setting (*4)	0021	R/W	0 to 255
PLC IP address byte 2 setting (*4)	0022	R/W	0 to 255
PLC IP address byte 3 setting (*4)	0023	R/W	0 to 255
PLC IP address byte 4 setting (*4)	0024	R/W	0 to 255
PLC port number setting	0025	R/W	0 to 65535
TCP connection timeout time setting (*5)	0026	R/W	30 to 600
Not used (*6)	0027 to 0063		
Default setting of SIF function item	0064 to 0173		This is the initial setting item for PLC communication using the SIF function. Refer to "12. Communication with PLC Using SIF Function (P.12-1)".
Not used (*6)	0174 to 018F		

(*3): Only when the 4th octet of the rotary switch for setting the QMC1-MT IP address is set to "0", it can be set in the range of 0 to 255 from the console software.

(*4): IP address of PLC for SLMP connection.

(*5): If there is no valid communication within the TCP connection timeout time after the line is connected, the connection is terminated.

(*6): The Not used item returns error code 02H (non-existent data address) with negative acceptance when reading single or multiple data or writing single or multiple data.

10.2 List of QMC1-MT Communication Commands (For Communication Program)

This section explains each item of communication command.

- Data Item

This is a setting item for the QMC1-MT.

- Address [HEX (Hexadecimal)]

This is an each channel address of the QMC1-MT.

- Attribute

R/W: Read and write (Host ↔ QMC1-MT)

RO: Read only (Host ← QMC1-MT)

- Data

This is an explanation of the setting range and setting conditions for each data.

Data Item	Address (HEX)	Attribute	Data
QMC1 Event input 1 Allocation selection	0190	R/W	This function is not enable.
QMC1 Event input 2 Allocation selection	0191	R/W	
QMC1 Event input 3 Allocation selection	0192	R/W	
QMC1 Event input 4 Allocation selection	0193	R/W	
QMC1 Event output 1 Allocation selection	0194	R/W	This function is not enable.
QMC1 Event output 2 Allocation selection	0195	R/W	
QMC1 Event output 3 Allocation selection	0196	R/W	
QMC1 Event output 4 Allocation selection	0197	R/W	
QMC1 Event output 1 ON/OFF selection	0198	R/W	This function is not enable.
QMC1 Event output 2 ON/OFF selection	0199	R/W	
QMC1 Event output 3 ON/OFF selection	019A	R/W	
QMC1 Event output 4 ON/OFF selection	019B	R/W	

Data Item	Address (HEX)	Attribute	Data
Module address 1 Setting value reload request selection	019C	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 2 Setting value reload request selection	019D	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 3 Setting value reload request selection	019E	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 4 Setting value reload request selection	019F	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 5 Setting value reload request selection	01A0	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 6 Setting value reload request selection	01A1	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 7 Setting value reload request selection	01A2	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 8 Setting value reload request selection	01A3	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 9 Setting value reload request selection	01A4	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 10 Setting value reload request selection	01A5	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 11 Setting value reload request selection	01A6	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 12 Setting value reload request selection	01A7	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 13 Setting value reload request selection	01A8	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 14 Setting value reload request selection	01A9	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 15 Setting value reload request selection	01AA	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Module address 16 Setting value reload request selection	01AB	R/W	0000H: No setting value reload request 0001H: Setting value reload request (*1)
Not used (*2)	01AC to 01F3		

(*1): When the setting value reload finishes, it will be 0000H.

(*2): The Not used item returns error code 02H (non-existent data address) with negative acceptance when reading single or multiple data or writing single or multiple data.

Data Item	Address (HEX)	Attribute	Data
QMC1 Status flag	01F4	RO	B0: Always 0 B1: Always 0 B2: Always 0 B3: Always 0 B4: Always 0 B5: Always 0 B6: Always 0 B7: Always 0 B8: Not used B9: Not used B10: Not used B11: Not used B12: Not used B13: Not used B14: Power supply identification (*3) 0: 24 V DC 1: USB bus power B15: Non-volatile IC memory error 0: Normal 1: Error

(*3): When power is supplied from 24 V DC and USB bus power, 0: 24 V DC is returned.

Data Item	Address (HEX)	Attribute	Data
QMC1 Module recognition information	01F5	RO	B0: Module address 1 0: No connection 1: Connection B1: Module address 2 0: No connection 1: Connection B2: Module address 3 0: No connection 1: Connection B3: Module address 4 0: No connection 1: Connection B4: Module address 5 0: No connection 1: Connection B5: Module address 6 0: No connection 1: Connection B6: Module address 7 0: No connection 1: Connection B7: Module address 8 0: No connection 1: Connection B8: Module address 9 0: No connection 1: Connection B9: Module address 10 0: No connection 1: Connection B10: Module address 11 0: No connection 1: Connection B11: Module address 12 0: No connection 1: Connection B12: Module address 13 0: No connection 1: Connection B13: Module address 14 0: No connection 1: Connection B14: Module address 15 0: No connection 1: Connection B15: Module address 16 0: No connection 1: Connection

Data Item	Address (HEX)	Attribute	Data
QMC1 Setting value reload status flag	01F6	RO	<p>B0: Module address 1 0: No setting value reload request 1: Reloading setting value</p> <p>B1: Module address 2 0: No setting value reload request 1: Reloading setting value</p> <p>B2: Module address 3 0: No setting value reload request 1: Reloading setting value</p> <p>B3: Module address 4 0: No setting value reload request 1: Reloading setting value</p> <p>B4: Module address 5 0: No setting value reload request 1: Reloading setting value</p> <p>B5: Module address 6 0: No setting value reload request 1: Reloading setting value</p> <p>B6: Module address 7 0: No setting value reload request 1: Reloading setting value</p> <p>B7: Module address 8 0: No setting value reload request 1: Reloading setting value</p> <p>B8: Module address 9 0: No setting value reload request 1: Reloading setting value</p> <p>B9: Module address 10 0: No setting value reload request 1: Reloading setting value</p> <p>B10: Module address 11 0: No setting value reload request 1: Reloading setting value</p> <p>B11: Module address 12 0: No setting value reload request 1: Reloading setting value</p> <p>B12: Module address 13 0: No setting value reload request 1: Reloading setting value</p> <p>B13: Module address 14 0: No setting value reload request 1: Reloading setting value</p> <p>B14: Module address 15 0: No setting value reload request 1: Reloading setting value</p> <p>B15: Module address 16 0: No setting value reload request 1: Reloading setting value</p>

Data Item	Address (HEX)	Attribute	Data
Not used (*)	01F7 to 0FFF		

(*): The Not used item returns error code 02H (non-existent data address) with negative acceptance when reading single or multiple data or writing single or multiple data.

10.3 List of Communication Commands for Modules Connected to QMC1-MT



Caution

QMC1-MT does not check the setting range of the connected modules.

Perform the setting range restriction on the host side.

When QTC1-20 is connected, CH3 and CH4 of the setting items other than the heater burnout alarm setting do not work even if they are set.

This section explains each item of communication command, using the case of connecting QTC1-40 as an example.

- Data Item

This is a setting item for QTC1-40.

- Module

This is a module address of QTC1-40.

- Channel

This is a channel number of QTC1-40.

- Address [HEX (Hexadecimal), DEC (Decimal)]

This is an each channel address of QTC1-40.

- Attribute

R/W: Read and write (Host ↔ QMC1-MT ↔ QTC1-40)

RO: Read only (Host ← QMC1-MT ↔ QTC1-40)

- Data

This is an explanation of the setting range and setting conditions for each data.

Data Item	Address (HEX)					Attribute	Data
System	Channel					RO	This is a system item for internal processing. Please do not use.
	Module	CH1	CH2	CH3	CH4		
	1	1000	1001	1002	1003		
	2	1004	1005	1006	1007		
	3	1008	1009	100A	100B		
	4	100C	100D	100E	100F		
	5	1010	1011	1012	1013		
	6	1014	1015	1016	1017		
	7	1018	1019	101A	101B		
	8	101C	101D	101E	101F		
	9	1020	1021	1022	1023		
	10	1024	1025	1026	1027		
	11	1028	1029	102A	102B		
	12	102C	102D	102E	102F		
	13	1030	1031	1032	1033		
	14	1034	1035	1036	1037		
	15	1038	1039	103A	103B		
16	103C	103D	103E	103F			
Control Allowed/ Prohibited selection	Channel					R/W	0000H: Control Prohibited 0001H: Control Allowed
Module	CH1	CH2	CH3	CH4			
1	1040	1041	1042	1043			
2	1044	1045	1046	1047			
3	1048	1049	104A	104B			
4	104C	104D	104E	104F			
5	1050	1051	1052	1053			
6	1054	1055	1056	1057			
7	1058	1059	105A	105B			
8	105C	105D	105E	105F			
9	1060	1061	1062	1063			
10	1064	1065	1066	1067			
11	1068	1069	106A	106B			
12	106C	106D	106E	106F			
13	1070	1071	1072	1073			
14	1074	1075	1076	1077			
15	1078	1079	107A	107B			
16	107C	107D	107E	107F			

Data Item	Address (HEX)					Attribute	Data
AT Perform/ Cancel selection	Channel					R/W	0000H: AT Cancel 0001H: AT Perform
	Module	CH1	CH2	CH3	CH4		
	1	1080	1081	1082	1083		
	2	1084	1085	1088	1087		
	3	1088	1089	108A	108B		
	4	108C	108D	108E	108F		
	5	1090	1091	1092	1093		
	6	1094	1095	1096	1097		
	7	1098	1099	109A	109B		
	8	109C	109D	109E	109F		
	9	10A0	10A1	10A2	10A3		
	10	10A4	10A5	10A6	10A7		
	11	10A8	10A9	10AA	10AB		
	12	10AC	10AD	10AE	10AF		
	13	10B0	10B1	10B2	10B3		
	14	10B4	10B5	10B6	10B7		
	15	10B8	10B9	10BA	10BB		
16	10BC	10BD	10BE	10BF			
Event output ON/OFF selection	Channel					R/W	0000H: Event output OFF 0001H: Event output ON
	Module	CH1	CH2	CH3	CH4		
	1	10C0	10C1	10C2	10C3		
	2	10C4	10C5	10C6	10C7		
	3	10C8	10C9	10CA	10CB		
	4	10CC	10CD	10CE	10CF		
	5	10D0	10D1	10D2	10D3		
	6	10D4	10D5	10D6	10D7		
	7	10D8	10D9	10DA	10DB		
	8	10DC	10DD	10DE	10DF		
	9	10E0	10E1	10E2	10E3		
	10	10E4	10E5	10E6	10E7		
	11	10E8	10E9	10EA	10EB		
	12	10EC	10ED	10EE	10EF		
	13	10F0	10F1	10F2	10F3		
	14	10F4	10F5	10F6	10F7		
	15	10F8	10F9	10FA	10FB		
16	10FC	10FD	10FE	10FF			

Data Item	Address (HEX)					Attribute	Data
Auto/Manual selection	Channel					R/W	0000H: Auto control 0001H: Manual control
	Module	CH1	CH2	CH3	CH4		
	1	1100	1101	1102	1103		
	2	1104	1105	1106	1107		
	3	1108	1109	110A	110B		
	4	110C	110D	110E	110F		
	5	1110	1111	1112	1113		
	6	1114	1115	1116	1117		
	7	1118	1119	111A	111B		
	8	111C	111D	111E	111F		
	9	1120	1121	1122	1123		
	10	1124	1125	1126	1127		
	11	1128	1129	112A	112B		
	12	112C	112D	112E	112F		
	13	1130	1131	1132	1133		
	14	1134	1135	1136	1137		
	15	1138	1139	113A	113B		
16	113C	113D	113E	113F			
Manual MV (*)	Channel					R/W	-5.0 to 105.0 %
	Module	CH1	CH2	CH3	CH4		
	1	1140	1141	1142	1143		
	2	1144	1145	1146	1147		
	3	1148	1149	114A	114B		
	4	114C	114D	114E	114F		
	5	1150	1151	1152	1153		
	6	1154	1155	1156	1157		
	7	1158	1159	115A	115B		
	8	115C	115D	115E	115F		
	9	1160	1161	1162	1163		
	10	1164	1165	1166	1167		
	11	1168	1169	116A	116B		
	12	116C	116D	116E	116F		
	13	1170	1171	1172	1173		
	14	1174	1175	1176	1177		
	15	1178	1179	117A	117B		
16	117C	117D	117E	117F			

(*): Effective when the Manual control is selected in the Auto/Manual selection.
When the Auto control is selected, it returns the negative acknowledgement.

Data Item	Address (HEX)					Attribute	Data
Setting value (SV)	Channel					R/W	Scaling lower limit to Scaling high limit
	Module	CH1	CH2	CH3	CH4		
	1	1180	1181	1182	1183		
	2	1184	1185	1188	1187		
	3	1188	1189	118A	118B		
	4	118C	118D	118E	118F		
	5	1190	1191	1192	1193		
	6	1194	1195	1196	1197		
	7	1198	1199	119A	119B		
	8	119C	119D	119E	119F		
	9	11A0	11A1	11A2	11A3		
	10	11A4	11A5	11A6	11A7		
	11	11A8	11A9	11AA	11AB		
	12	11AC	11AD	11AE	11AF		
	13	11B0	11B1	11B2	11B3		
	14	11B4	11B5	11B6	11B7		
	15	11B8	11B9	11BA	11BB		
16	11BC	11BD	11BE	11BF			
Proportional band setting	Channel					R/W	1 to input span °C (°F) or 0.1 to input span °C (°F) when DC current and DC voltage input 0.10 to 100.00 %
	Module	CH1	CH2	CH3	CH4		
	1	11C0	11C1	11C2	11C3		
	2	11C4	11C5	11C6	11C7		
	3	11C8	11C9	11CA	11CB		
	4	11CC	11CD	11CE	11CF		
	5	11D0	11D1	11D2	11D3		
	6	11D4	11D5	11D6	11D7		
	7	11D8	11D9	11DA	11DB		
	8	11DC	11DD	11DE	11DF		
	9	11E0	11E1	11E2	11E3		
	10	11E4	11E5	11E6	11E7		
	11	11E8	11E9	11EA	11EB		
	12	11EC	11ED	11EE	11EF		
	13	11F0	11F1	11F2	11F3		
	14	11F4	11F5	11F6	11F7		
	15	11F8	11F9	11FA	11FB		
16	11FC	11FD	11FE	11FF			

Data Item	Address (HEX)					Attribute	Data
Integral time setting	Channel					R/W	0 to 3600 seconds or 0.0 to 2000.0 seconds When select "2: Slow-PID control" of control action selection 1 to 3600 seconds or 0.1 to 2000.0 seconds
	Module	CH1	CH2	CH3	CH4		
	1	1200	1201	1202	1203		
	2	1204	1205	1206	1207		
	3	1208	1209	120A	120B		
	4	120C	120D	120E	120F		
	5	1210	1211	1212	1213		
	6	1214	1215	1216	1217		
	7	1218	1219	121A	121B		
	8	121C	121D	121E	121F		
	9	1220	1221	1222	1223		
	10	1224	1225	1226	1227		
	11	1228	1229	122A	122B		
	12	122C	122D	122E	122F		
	13	1230	1231	1232	1233		
	14	1234	1235	1236	1237		
	15	1238	1239	123A	123B		
16	123C	123D	123E	123F			
Derivative time setting	Channel					R/W	0 to 3600 seconds or 0.0 to 2000.0 seconds
	Module	CH1	CH2	CH3	CH4		
	1	1240	1241	1242	1243		
	2	1244	1245	1246	1247		
	3	1248	1249	124A	124B		
	4	124C	124D	124E	124F		
	5	1250	1251	1252	1253		
	6	1254	1255	1256	1257		
	7	1258	1259	125A	125B		
	8	125C	125D	125E	125F		
	9	1260	1261	1262	1263		
	10	1264	1265	1266	1267		
	11	1268	1269	126A	126B		
	12	126C	126D	126E	126F		
	13	1270	1271	1272	1273		
	14	1274	1275	1276	1277		
	15	1278	1279	127A	127B		
16	127C	127D	127E	127F			

Data Item	Address (HEX)				Attribute	Data	
Proportional cycle setting	Channel				R/W	0.1 to 100.0 seconds	
	Module	CH1	CH2	CH3			CH4
	1	1280	1281	1282			1283
	2	1284	1285	1288			1287
	3	1288	1289	128A			128B
	4	128C	128D	128E			128F
	5	1290	1291	1292			1293
	6	1294	1295	1296			1297
	7	1298	1299	129A			129B
	8	129C	129D	129E			129F
	9	12A0	12A1	12A2			12A3
	10	12A4	12A5	12A6			12A7
	11	12A8	12A9	12AA			12AB
	12	12AC	12AD	12AE			12AF
	13	12B0	12B1	12B2			12B3
	14	12B4	12B5	12B6			12B7
	15	12B8	12B9	12BA			12BB
16	12BC	12BD	12BE	12BF			
ON/OFF hysteresis setting	Channel				R/W	0.1 to 1000.0 °C (0.1 to 1800.0 °F) when DC current and DC voltage input 1 to 10000	
	Module	CH1	CH2	CH3			CH4
	1	12C0	12C1	12C2			12C3
	2	12C4	12C5	12C6			12C7
	3	12C8	12C9	12CA			12CB
	4	12CC	12CD	12CE			12CF
	5	12D0	12D1	12D2			12D3
	6	12D4	12D5	12D6			12D7
	7	12D8	12D9	12DA			12DB
	8	12DC	12DD	12DE			12DF
	9	12E0	12E1	12E2			12E3
	10	12E4	12E5	12E6			12E7
	11	12E8	12E9	12EA			12EB
	12	12EC	12ED	12EE			12EF
	13	12F0	12F1	12F2			12F3
	14	12F4	12F5	12F6			12F7
	15	12F8	12F9	12FA			12FB
16	12FC	12FD	12FE	12FF			

Data Item	Address (HEX)					Attribute	Data
OUT high limit setting	Channel					R/W	OUT low limit setting to 100.0 % when current output OUT low limit setting to 105.0 %
	Module	CH1	CH2	CH3	CH4		
	1	1300	1301	1302	1303		
	2	1304	1305	1306	1307		
	3	1308	1309	130A	130B		
	4	130C	130D	130E	130F		
	5	1310	1311	1312	1313		
	6	1314	1315	1316	1317		
	7	1318	1319	131A	131B		
	8	131C	131D	131E	131F		
	9	1320	1321	1322	1323		
	10	1324	1325	1326	1327		
	11	1328	1329	132A	132B		
	12	132C	132D	132E	132F		
	13	1330	1331	1332	1333		
	14	1334	1335	1336	1337		
	15	1338	1339	133A	133B		
16	133C	133D	133E	133F			
OUT low limit setting	Channel					R/W	0.0 % to OUT high limit setting when current output -5.0 % to OUT high limit setting
	Module	CH1	CH2	CH3	CH4		
	1	1340	1341	1342	1343		
	2	1344	1345	1346	1347		
	3	1348	1349	134A	134B		
	4	134C	134D	134E	134F		
	5	1350	1351	1352	1353		
	6	1354	1355	1356	1357		
	7	1358	1359	135A	135B		
	8	135C	135D	135E	135F		
	9	1360	1361	1362	1363		
	10	1364	1365	1366	1367		
	11	1368	1369	136A	136B		
	12	136C	136D	136E	136F		
	13	1370	1371	1372	1373		
	14	1374	1375	1376	1377		
	15	1378	1379	137A	137B		
16	137C	137D	137E	137F			

Data Item	Address (HEX)					Attribute	Data
Alarm 1 action	Channel					R/W	0000H: No event 0001H: High limit alarm 0002H: Low limit alarm 0003H: High/Low limits alarm 0004H: High/Low limits range alarm 0005H: Process high alarm 0006H: Process low alarm 0007H: High limit with standby 0008H: Low limit with standby 0009H: High/Low limits alarm with standby 000AH: High/Low limits alarm individually 000BH: High/Low limits range alarm individually 000CH: High/Low limits alarm with standby individually
	Module	CH1	CH2	CH3	CH4		
	1	1380	1381	1382	1383		
	2	1384	1385	1388	1387		
	3	1388	1389	138A	138B		
	4	138C	138D	138E	138F		
	5	1390	1391	1392	1393		
	6	1394	1395	1396	1397		
	7	1398	1399	139A	139B		
	8	139C	139D	139E	139F		
	9	13A0	13A1	13A2	13A3		
	10	13A4	13A5	13A6	13A7		
	11	13A8	13A9	13AA	13AB		
	12	13AC	13AD	13AE	13AF		
	13	13B0	13B1	13B2	13B3		
	14	13B4	13B5	13B6	13B7		
	15	13B8	13B9	13BA	13BB		
16	13BC	13BD	13BE	13BF			
Alarm 2 action	Channel					R/W	0000H: No event 0001H: High limit alarm 0002H: Low limit alarm 0003H: High/Low limits alarm 0004H: High/Low limits range alarm 0005H: Process high alarm 0006H: Process low alarm 0007H: High limit with standby 0008H: Low limit with standby 0009H: High/Low limits alarm with standby 000AH: High/Low limits alarm individually 000BH: High/Low limits range alarm individually 000CH: High/Low limits alarm with standby individually
	Module	CH1	CH2	CH3	CH4		
	1	13C0	13C1	13C2	13C3		
	2	13C4	13C5	13C6	13C7		
	3	13C8	13C9	13CA	13CB		
	4	13CC	13CD	13CE	13CF		
	5	13D0	13D1	13D2	13D3		
	6	13D4	13D5	13D6	13D7		
	7	13D8	13D9	13DA	13DB		
	8	13DC	13DD	13DE	13DF		
	9	13E0	13E1	13E2	13E3		
	10	13E4	13E5	13E6	13E7		
	11	13E8	13E9	13EA	13EB		
	12	13EC	13ED	13EE	13EF		
	13	13F0	13F1	13F2	13F3		
	14	13F4	13F5	13F6	13F7		
	15	13F8	13F9	13FA	13FB		
16	13FC	13FD	13FE	13FF			

Data Item	Address (HEX)					Attribute	Data
Alarm 3 action	Channel					R/W	0000H: No event 0001H: High limit alarm 0002H: Low limit alarm 0003H: High/Low limits alarm 0004H: High/Low limits range alarm 0005H: Process high alarm 0006H: Process low alarm 0007H: High limit with standby 0008H: Low limit with standby 0009H: High/Low limits alarm with standby 000AH: High/Low limits alarm individually 000BH: High/Low limits range alarm individually 000CH: High/Low limits alarm with standby individually
	Module	CH1	CH2	CH3	CH4		
	1	1400	1401	1402	1403		
	2	1404	1405	1406	1407		
	3	1408	1409	140A	140B		
	4	140C	140D	140E	140F		
	5	1410	1411	1412	1413		
	6	1414	1415	1416	1417		
	7	1418	1419	141A	141B		
	8	141C	141D	141E	141F		
	9	1420	1421	1422	1423		
	10	1424	1425	1426	1427		
	11	1428	1429	142A	142B		
	12	142C	142D	142E	142F		
	13	1430	1431	1432	1433		
	14	1434	1435	1436	1437		
	15	1438	1439	143A	143B		
16	143C	143D	143E	143F			
Alarm 4 action	Channel					R/W	0000H: No event 0001H: High limit alarm 0002H: Low limit alarm 0003H: High/Low limits alarm 0004H: High/Low limits range alarm 0005H: Process high alarm 0006H: Process low alarm 0007H: High limit with standby 0008H: Low limit with standby 0009H: High/Low limits alarm with standby 000AH: High/Low limits alarm individually 000BH: High/Low limits range alarm individually 000CH: High/Low limits alarm with standby individually
	Module	CH1	CH2	CH3	CH4		
	1	1440	1441	1442	1443		
	2	1444	1445	1446	1447		
	3	1448	1449	144A	144B		
	4	144C	144D	144E	144F		
	5	1450	1451	1452	1453		
	6	1454	1455	1456	1457		
	7	1458	1459	145A	145B		
	8	145C	145D	145E	145F		
	9	1460	1461	1462	1463		
	10	1464	1465	1466	1467		
	11	1468	1469	146A	146B		
	12	146C	146D	146E	146F		
	13	1470	1471	1472	1473		
	14	1474	1475	1476	1477		
	15	1478	1479	147A	147B		
16	147C	147D	147E	147F			

Data Item	Address (HEX)					Attribute	Data
Alarm 1 hysteresis	Channel					R/W	0.1 to 1000.0 °C (0.1 to 1800.0°F) For DC current input and DC voltage input: 1 to 10000
	Module	CH1	CH2	CH3	CH4		
	1	1480	1481	1482	1483		
	2	1484	1485	1488	1487		
	3	1488	1489	148A	148B		
	4	148C	148D	148E	148F		
	5	1490	1491	1492	1493		
	6	1494	1495	1496	1497		
	7	1498	1499	149A	149B		
	8	149C	149D	149E	149F		
	9	14A0	14A1	14A2	14A3		
	10	14A4	14A5	14A6	14A7		
	11	14A8	14A9	14AA	14AB		
	12	14AC	14AD	14AE	14AF		
	13	14B0	14B1	14B2	14B3		
	14	14B4	14B5	14B6	14B7		
	15	14B8	14B9	14BA	14BB		
16	14BC	14BD	14BE	14BF			
Alarm 2 hysteresis	Channel					R/W	0.1 to 1000.0 °C (0.1 to 1800.0°F) For DC current input and DC voltage input: 1 to 10000
	Module	CH1	CH2	CH3	CH4		
	1	14C0	14C1	14C2	14C3		
	2	14C4	14C5	14C6	14C7		
	3	14C8	14C9	14CA	14CB		
	4	14CC	14CD	14CE	14CF		
	5	14D0	14D1	14D2	14D3		
	6	14D4	14D5	14D6	14D7		
	7	14D8	14D9	14DA	14DB		
	8	14DC	14DD	14DE	14DF		
	9	14E0	14E1	14E2	14E3		
	10	14E4	14E5	14E6	14E7		
	11	14E8	14E9	14EA	14EB		
	12	14EC	14ED	14EE	14EF		
	13	14F0	14F1	14F2	14F3		
	14	14F4	14F5	14F6	14F7		
	15	14F8	14F9	14FA	14FB		
16	14FC	14FD	14FE	14FF			

Data Item	Address (HEX)					Attribute	Data
Alarm 3 hysteresis	Channel					R/W	0.1 to 1000.0 °C (0.1 to 1800.0°F) For DC current input and DC voltage input: 1 to 10000
	Module	CH1	CH2	CH3	CH4		
	1	1500	1501	1502	1503		
	2	1504	1505	1506	1507		
	3	1508	1509	150A	150B		
	4	150C	150D	150E	150F		
	5	1510	1511	1512	1513		
	6	1514	1515	1516	1517		
	7	1518	1519	151A	151B		
	8	151C	151D	151E	151F		
	9	1520	1521	1522	1523		
	10	1524	1525	1526	1527		
	11	1528	1529	152A	152B		
	12	152C	152D	152E	152F		
	13	1530	1531	1532	1533		
	14	1534	1535	1536	1537		
	15	1538	1539	153A	153B		
16	153C	153D	153E	153F			
Alarm 4 hysteresis	Channel					R/W	0.1 to 1000.0 °C (0.1 to 1800.0°F) For DC current input and DC voltage input: 1 to 10000
	Module	CH1	CH2	CH3	CH4		
	1	1540	1541	1542	1543		
	2	1544	1545	1546	1547		
	3	1548	1549	154A	154B		
	4	154C	154D	154E	154F		
	5	1550	1551	1552	1553		
	6	1554	1555	1556	1557		
	7	1558	1559	155A	155B		
	8	155C	155D	155E	155F		
	9	1560	1561	1562	1563		
	10	1564	1565	1566	1567		
	11	1568	1569	156A	156B		
	12	156C	156D	156E	156F		
	13	1570	1571	1572	1573		
	14	1574	1575	1576	1577		
	15	1578	1579	157A	157B		
16	157C	157D	157E	157F			

Data Item	Address (HEX)					Attribute	Data
Alarm 1 value	Channel					R/W	Refer to "Alarm 1 to 4 value setting range table" (P.10-29).
	Module	CH1	CH2	CH3	CH4		
	1	1580	1581	1582	1583		
	2	1584	1585	1588	1587		
	3	1588	1589	158A	158B		
	4	158C	158D	158E	158F		
	5	1590	1591	1592	1593		
	6	1594	1595	1596	1597		
	7	1598	1599	159A	159B		
	8	159C	159D	159E	159F		
	9	15A0	15A1	15A2	15A3		
	10	15A4	15A5	15A6	15A7		
	11	15A8	15A9	15AA	15AB		
	12	15AC	15AD	15AE	15AF		
	13	15B0	15B1	15B2	15B3		
	14	15B4	15B5	15B6	15B7		
	15	15B8	15B9	15BA	15BB		
16	15BC	15BD	15BE	15BF			
Alarm 1 high limit value	Channel					R/W	Refer to "Alarm 1 to 4 value setting range table" (P.10-29).
	Module	CH1	CH2	CH3	CH4		
	1	15C0	15C1	15C2	15C3		
	2	15C4	15C5	15C6	15C7		
	3	15C8	15C9	15CA	15CB		
	4	15CC	15CD	15CE	15CF		
	5	15D0	15D1	15D2	15D3		
	6	15D4	15D5	15D6	15D7		
	7	15D8	15D9	15DA	15DB		
	8	15DC	15DD	15DE	15DF		
	9	15E0	15E1	15E2	15E3		
	10	15E4	15E5	15E6	15E7		
	11	15E8	15E9	15EA	15EB		
	12	15EC	15ED	15EE	15EF		
	13	15F0	15F1	15F2	15F3		
	14	15F4	15F5	15F6	15F7		
	15	15F8	15F9	15FA	15FB		
16	15FC	15FD	15FE	15FF			

Data Item	Address (HEX)					Attribute	Data
Alarm 2 value	Channel					R/W	Refer to "Alarm 1 to 4 value setting range table" (P.10-29).
	Module	CH1	CH2	CH3	CH4		
	1	1600	1601	1602	1603		
	2	1604	1605	1606	1607		
	3	1608	1609	160A	160B		
	4	160C	160D	160E	160F		
	5	1610	1611	1612	1613		
	6	1614	1615	1616	1617		
	7	1618	1619	161A	161B		
	8	161C	161D	161E	161F		
	9	1620	1621	1622	1623		
	10	1624	1625	1626	1627		
	11	1628	1629	162A	162B		
	12	162C	162D	162E	162F		
	13	1630	1631	1632	1633		
	14	1634	1635	1636	1637		
	15	1638	1639	163A	163B		
16	163C	163D	163E	163F			
Alarm 2 high limit value	Channel					R/W	Refer to "Alarm 1 to 4 value setting range table" (P.10-29).
	Module	CH1	CH2	CH3	CH4		
	1	1640	1641	1642	1643		
	2	1644	1645	1646	1647		
	3	1648	1649	164A	164B		
	4	164C	164D	164E	164F		
	5	1650	1651	1652	1653		
	6	1654	1655	1656	1657		
	7	1658	1659	165A	165B		
	8	165C	165D	165E	165F		
	9	1660	1661	1662	1663		
	10	1664	1665	1666	1667		
	11	1668	1669	166A	166B		
	12	166C	166D	166E	166F		
	13	1670	1671	1672	1673		
	14	1674	1675	1676	1677		
	15	1678	1679	167A	167B		
16	167C	167D	167E	167F			

Data Item	Address (HEX)					Attribute	Data
Alarm 3 value	Channel					R/W	Refer to "Alarm 1 to 4 value setting range table" (P.10-29).
	Module	CH1	CH2	CH3	CH4		
	1	1680	1681	1682	1683		
	2	1684	1685	1688	1687		
	3	1688	1689	168A	168B		
	4	168C	168D	168E	168F		
	5	1690	1691	1692	1693		
	6	1694	1695	1696	1697		
	7	1698	1699	169A	169B		
	8	169C	169D	169E	169F		
	9	16A0	16A1	16A2	16A3		
	10	16A4	16A5	16A6	16A7		
	11	16A8	16A9	16AA	16AB		
	12	16AC	16AD	16AE	16AF		
	13	16B0	16B1	16B2	16B3		
	14	16B4	16B5	16B6	16B7		
	15	16B8	16B9	16BA	16BB		
16	16BC	16BD	16BE	16BF			
Alarm 3 high limit value	Channel					R/W	Refer to "Alarm 1 to 4 value setting range table" (P.10-29).
	Module	CH1	CH2	CH3	CH4		
	1	16C0	16C1	16C2	16C3		
	2	16C4	16C5	16C6	16C7		
	3	16C8	16C9	16CA	16CB		
	4	16CC	16CD	16CE	16CF		
	5	16D0	16D1	16D2	16D3		
	6	16D4	16D5	16D6	16D7		
	7	16D8	16D9	16DA	16DB		
	8	16DC	16DD	16DE	16DF		
	9	16E0	16E1	16E2	16E3		
	10	16E4	16E5	16E6	16E7		
	11	16E8	16E9	16EA	16EB		
	12	16EC	16ED	16EE	16EF		
	13	16F0	16F1	16F2	16F3		
	14	16F4	16F5	16F6	16F7		
	15	16F8	16F9	16FA	16FB		
16	16FC	16FD	16FE	16FF			

Data Item	Address (HEX)					Attribute	Data
Alarm 4 value	Channel					R/W	Refer to "Alarm 1 to 4 value setting range table" (P.10-29).
	Module	CH1	CH2	CH3	CH4		
	1	1700	1701	1702	1703		
	2	1704	1705	1706	1707		
	3	1708	1709	170A	170B		
	4	170C	170D	170E	170F		
	5	1710	1711	1712	1713		
	6	1714	1715	1716	1717		
	7	1718	1719	171A	171B		
	8	171C	171D	171E	171F		
	9	1720	1721	1722	1723		
	10	1724	1725	1726	1727		
	11	1728	1729	172A	172B		
	12	172C	172D	172E	172F		
	13	1730	1731	1732	1733		
	14	1734	1735	1736	1737		
	15	1738	1739	173A	173B		
16	173C	173D	173E	173F			
Alarm 4 high limit value	Channel					R/W	Refer to "Alarm 1 to 4 value setting range table" (P.10-29).
	Module	CH1	CH2	CH3	CH4		
	1	1740	1741	1742	1743		
	2	1744	1745	1746	1747		
	3	1748	1749	174A	174B		
	4	174C	174D	174E	174F		
	5	1750	1751	1752	1753		
	6	1754	1755	1756	1757		
	7	1758	1759	175A	175B		
	8	175C	175D	175E	175F		
	9	1760	1761	1762	1763		
	10	1764	1765	1766	1767		
	11	1768	1769	176A	176B		
	12	176C	176D	176E	176F		
	13	1770	1771	1772	1773		
	14	1774	1775	1776	1777		
	15	1778	1779	177A	177B		
16	177C	177D	177E	177F			

Data Item	Address (HEX)					Attribute	Data
Heater burnout alarm	Channel					R/W	For 20 A is selected: 0.0 to 20.0 A For 100 A is selected: 0.0 to 100.0 A
	Module	CH1	CH2	CH3	CH4		
	1	1780	1781	1782	1783		
	2	1784	1785	1788	1787		
	3	1788	1789	178A	178B		
	4	178C	178D	178E	178F		
	5	1790	1791	1792	1793		
	6	1794	1795	1796	1797		
	7	1798	1799	179A	179B		
	8	179C	179D	179E	179F		
	9	17A0	17A1	17A2	17A3		
	10	17A4	17A5	17A6	17A7		
	11	17A8	17A9	17AA	17AB		
	12	17AC	17AD	17AE	17AF		
	13	17B0	17B1	17B2	17B3		
	14	17B4	17B5	17B6	17B7		
	15	17B8	17B9	17BA	17BB		
16	17BC	17BD	17BE	17BF			
Loop break alarm band	Channel					R/W	0 to 150 °C (0 to 270 °F) or 0.0 to 150.0 °C (0.0 to 270.0 °F) For DC current input and DC voltage input: 0 to 1500
	Module	CH1	CH2	CH3	CH4		
	1	17C0	17C1	17C2	17C3		
	2	17C4	17C5	17C6	17C7		
	3	17C8	17C9	17CA	17CB		
	4	17CC	17CD	17CE	17CF		
	5	17D0	17D1	17D2	17D3		
	6	17D4	17D5	17D6	17D7		
	7	17D8	17D9	17DA	17DB		
	8	17DC	17DD	17DE	17DF		
	9	17E0	17E1	17E2	17E3		
	10	17E4	17E5	17E6	17E7		
	11	17E8	17E9	17EA	17EB		
	12	17EC	17ED	17EE	17EF		
	13	17F0	17F1	17F2	17F3		
	14	17F4	17F5	17F6	17F7		
	15	17F8	17F9	17FA	17FB		
16	17FC	17FD	17FE	17FF			

Data Item	Address (HEX)					Attribute	Data
Loop break alarm time	Channel					R/W	0 to 200 minutes
	Module	CH1	CH2	CH3	CH4		
	1	1800	1801	1802	1803		
	2	1804	1805	1806	1807		
	3	1808	1809	180A	180B		
	4	180C	180D	180E	180F		
	5	1810	1811	1812	1813		
	6	1814	1815	1816	1817		
	7	1818	1819	181A	181B		
	8	181C	181D	181E	181F		
	9	1820	1821	1822	1823		
	10	1824	1825	1826	1827		
	11	1828	1829	182A	182B		
	12	182C	182D	182E	182F		
	13	1830	1831	1832	1833		
	14	1834	1835	1836	1837		
	15	1838	1839	183A	183B		
16	183C	183D	183E	183F			
Sensor correction factor	Channel					R/W	0.000 to 10.000
	Module	CH1	CH2	CH3	CH4		
	1	1840	1841	1842	1843		
	2	1844	1845	1846	1847		
	3	1848	1849	184A	184B		
	4	184C	184D	184E	184F		
	5	1850	1851	1852	1853		
	6	1854	1855	1856	1857		
	7	1858	1859	185A	185B		
	8	185C	185D	185E	185F		
	9	1860	1861	1862	1863		
	10	1864	1865	1866	1867		
	11	1868	1869	186A	186B		
	12	186C	186D	186E	186F		
	13	1870	1871	1872	1873		
	14	1874	1875	1876	1877		
	15	1878	1879	187A	187B		
16	187C	187D	187E	187F			

Data Item	Address (HEX)					Attribute	Data
Sensor correction	Channel					R/W	-100.0 to 100.0 °C (-180.0 to 180.0 °F) For DC current input and DC voltage input: -1000 to 1000
	Module	CH1	CH2	CH3	CH4		
	1	1880	1881	1882	1883		
	2	1884	1885	1888	1887		
	3	1888	1889	188A	188B		
	4	188C	188D	188E	188F		
	5	1890	1891	1892	1893		
	6	1894	1895	1896	1897		
	7	1898	1899	189A	189B		
	8	189C	189D	189E	189F		
	9	18A0	18A1	18A2	18A3		
	10	18A4	18A5	18A6	18A7		
	11	18A8	18A9	18AA	18AB		
	12	18AC	18AD	18AE	18AF		
	13	18B0	18B1	18B2	18B3		
	14	18B4	18B5	18B6	18B7		
	15	18B8	18B9	18BA	18BB		
16	18BC	18BD	18BE	18BF			
PV filter time constant	Channel					R/W	0.0 to 10.0 seconds
	Module	CH1	CH2	CH3	CH4		
	1	18C0	18C1	18C2	18C3		
	2	18C4	18C5	18C6	18C7		
	3	18C8	18C9	18CA	18CB		
	4	18CC	18CD	18CE	18CF		
	5	18D0	18D1	18D2	18D3		
	6	18D4	18D5	18D6	18D7		
	7	18D8	18D9	18DA	18DB		
	8	18DC	18DD	18DE	18DF		
	9	18E0	18E1	18E2	18E3		
	10	18E4	18E5	18E6	18E7		
	11	18E8	18E9	18EA	18EB		
	12	18EC	18ED	18EE	18EF		
	13	18F0	18F1	18F2	18F3		
	14	18F4	18F5	18F6	18F7		
	15	18F8	18F9	18FA	18FB		
16	18FC	18FD	18FE	18FF			

Data Item	Address (HEX)				Attribute	Data	
SV rise rate	Channel				R/W	0 to 10000 °C/min (0 to 18000 °F/min) or 0.0 to 1000.0 °C/min (0.0 to 1800.0 °F/min) For DC current input and DC voltage input: 0 to 10000/min	
	Module	CH1	CH2	CH3			CH4
	1	1900	1901	1902			1903
	2	1904	1905	1906			1907
	3	1908	1909	190A			190B
	4	190C	190D	190E			190F
	5	1910	1911	1912			1913
	6	1914	1915	1916			1917
	7	1918	1919	191A			191B
	8	191C	191D	191E			191F
	9	1920	1921	1922			1923
	10	1924	1925	1926			1927
	11	1928	1929	192A			192B
	12	192C	192D	192E			192F
	13	1930	1931	1932			1933
	14	1934	1935	1936			1937
	15	1938	1939	193A			193B
16	193C	193D	193E	193F			
SV fall rate	Channel				R/W	0 to 10000 °C/min (0 to 18000 °F/min) or 0.0 to 1000.0 °C/min (0.0 to 1800.0 °F/min) For DC current input and DC voltage input: 0 to 10000/min	
	Module	CH1	CH2	CH3			CH4
	1	1940	1941	1942			1943
	2	1944	1945	1946			1947
	3	1948	1949	194A			194B
	4	194C	194D	194E			194F
	5	1950	1951	1952			1953
	6	1954	1955	1956			1957
	7	1958	1959	195A			195B
	8	195C	195D	195E			195F
	9	1960	1961	1962			1963
	10	1964	1965	1966			1967
	11	1968	1969	196A			196B
	12	196C	196D	196E			196F
	13	1970	1971	1972			1973
	14	1974	1975	1976			1977
	15	1978	1979	197A			197B
16	197C	197D	197E	197F			

Data Item	Address (HEX)				Attribute	Data	
MV bias	Channel				R/W	0.0 to 100.0 %	
	Module	CH1	CH2	CH3			CH4
	1	1980	1981	1982			1983
	2	1984	1985	1988			1987
	3	1988	1989	198A			198B
	4	198C	198D	198E			198F
	5	1990	1991	1992			1993
	6	1994	1995	1996			1997
	7	1998	1999	199A			199B
	8	199C	199D	199E			199F
	9	19A0	19A1	19A2			19A3
	10	19A4	19A5	19A6			19A7
	11	19A8	19A9	19AA			19AB
	12	19AC	19AD	19AE			19AF
	13	19B0	19B1	19B2			19B3
	14	19B4	19B5	19B6			19B7
	15	19B8	19B9	19BA			19BB
16	19BC	19BD	19BE	19BF			
Reservation (*)	19C0 to 1FFF						

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Alarm 1 to 4 value setting range table

Alarm action	Setting range
No event	
High limit alarm	-(Input span) to Input span (*1)
Low limit alarm	-(Input span) to Input span (*1)
High/Low limits alarm	0 to Input span (*1)
High/Low limits range alarm	0 to Input span (*1)
Process high alarm	Input range low limit to Input range high limit (*2)
Process low alarm	Input range low limit to Input range high limit (*2)
High limit with standby	-(Input span) to Input span (*1)
Low limit with standby	-(Input span) to Input span (*1)
High/Low limits alarm with standby	0 to Input span (*1)
High/Low limits alarm individually	0 to Input span (*1)
High/Low limits range alarm individually	0 to Input span (*1)
High/Low limits alarm with standby individually	0 to Input span (*1)

(*1): For DC voltage, current input, the input span is the same as the scaling span.

(*2) For DC voltage, current input, input range low (or high) limit value is the same as scaling low (or high) limit value.

Data Item	Address (HEX)					Attribute	Data
Scaling high limit setting	Channel					R/W	Scaling lowh limit to Rated high limit
	Module	CH1	CH2	CH3	CH4		
	1	2080	2081	2082	2083		
	2	2084	2085	2088	2087		
	3	2088	2089	208A	208B		
	4	208C	208D	208E	208F		
	5	2090	2091	2092	2093		
	6	2094	2095	2096	2097		
	7	2098	2099	209A	209B		
	8	209C	209D	209E	209F		
	9	20A0	20A1	20A2	20A3		
	10	20A4	20A5	20A6	20A7		
	11	20A8	20A9	20AA	20AB		
	12	20AC	20AD	20AE	20AF		
	13	20B0	20B1	20B2	20B3		
	14	20B4	20B5	20B6	20B7		
	15	20B8	20B9	20BA	20BB		
16	20BC	20BD	20BE	20BF			
Scaling low limit setting	Channel					R/W	Rated low limit to Scaling high limit
	Module	CH1	CH2	CH3	CH4		
	1	20C0	20C1	20C2	20C3		
	2	20C4	20C5	20C6	20C7		
	3	20C8	20C9	20CA	20CB		
	4	20CC	20CD	20CE	20CF		
	5	20D0	20D1	20D2	20D3		
	6	20D4	20D5	20D6	20D7		
	7	20D8	20D9	20DA	20DB		
	8	20DC	20DD	20DE	20DF		
	9	20E0	20E1	20E2	20E3		
	10	20E4	20E5	20E6	20E7		
	11	20E8	20E9	20EA	20EB		
	12	20EC	20ED	20EE	20EF		
	13	20F0	20F1	20F2	20F3		
	14	20F4	20F5	20F6	20F7		
	15	20F8	20F9	20FA	20FB		
16	20FC	20FD	20FE	20FF			

Data Item	Address (HEX)					Attribute	Data
Input sampling selection	Channel					R/W	0000H: 125 ms 0001H: 50 ms 0002H: 20 ms It is fixed at 125 ms for thermocouple input and RTD input. If select a value other than 125 ms, it will be invalid.
	Module	CH1	CH2	CH3	CH4		
	1	2100	2101	2102	2103		
	2	2104	2105	2106	2107		
	3	2108	2109	210A	210B		
	4	210C	210D	210E	210F		
	5	2110	2111	2112	2113		
	6	2114	2115	2116	2117		
	7	2118	2119	211A	211B		
	8	211C	211D	211E	211F		
	9	2120	2121	2122	2123		
	10	2124	2125	2126	2127		
	11	2128	2129	212A	212B		
	12	212C	212D	212E	212F		
	13	2130	2131	2132	2133		
	14	2134	2135	2136	2137		
	15	2138	2139	213A	213B		
16	213C	213D	213E	213F			
Direct/reverse action selection	Channel					R/W	0000H: Reverse action 0001H: Direct action
	Module	CH1	CH2	CH3	CH4		
	1	2140	2141	2142	2143		
	2	2144	2145	2146	2147		
	3	2148	2149	214A	214B		
	4	214C	214D	214E	214F		
	5	2150	2151	2152	2153		
	6	2154	2155	2156	2157		
	7	2158	2159	215A	215B		
	8	215C	215D	215E	215F		
	9	2160	2161	2162	2163		
	10	2164	2165	2166	2167		
	11	2168	2169	216A	216B		
	12	216C	216D	216E	216F		
	13	2170	2171	2172	2173		
	14	2174	2175	2176	2177		
	15	2178	2179	217A	217B		
16	217C	217D	217E	217F			

Data Item	Address (HEX)				Attribute	Data	
AT action mode selection	Channel				R/W	0000H: Normal AT 0001H: Start-up AT	
	Module	CH1	CH2	CH3			CH4
	1	2180	2181	2182			2183
	2	2184	2185	2188			2187
	3	2188	2189	218A			218B
	4	218C	218D	218E			218F
	5	2190	2191	2192			2193
	6	2194	2195	2196			2197
	7	2198	2199	219A			219B
	8	219C	219D	219E			219F
	9	21A0	21A1	21A2			21A3
	10	21A4	21A5	21A6			21A7
	11	21A8	21A9	21AA			21AB
	12	21AC	21AD	21AE			21AF
	13	21B0	21B1	21B2			21B3
	14	21B4	21B5	21B6			21B7
	15	21B8	21B9	21BA			21BB
16	21BC	21BD	21BE	21BF			
AT bias setting	Channel				R/W	0 to 50 °C (0 to 90 °F) or 0.0 to 50.0 °C (0.0 to 90.0 °F)	
	Module	CH1	CH2	CH3			CH4
	1	21C0	21C1	21C2			21C3
	2	21C4	21C5	21C6			21C7
	3	21C8	21C9	21CA			21CB
	4	21CC	21CD	21CE			21CF
	5	21D0	21D1	21D2			21D3
	6	21D4	21D5	21D6			21D7
	7	21D8	21D9	21DA			21DB
	8	21DC	21DD	21DE			21DF
	9	21E0	21E1	21E2			21E3
	10	21E4	21E5	21E6			21E7
	11	21E8	21E9	21EA			21EB
	12	21EC	21ED	21EE			21EF
	13	21F0	21F1	21F2			21F3
	14	21F4	21F5	21F6			21F7
	15	21F8	21F9	21FA			21FB
16	21FC	21FD	21FE	21FF			

Data Item	Address (HEX)				Attribute	Data	
AT gain setting	Channel				R/W	0.1 to 10.0 times	
	Module	CH1	CH2	CH3			CH4
	1	2200	2201	2202			2203
	2	2204	2205	2206			2207
	3	2208	2209	220A			220B
	4	220C	220D	220E			220F
	5	2210	2211	2212			2213
	6	2214	2215	2216			2217
	7	2218	2219	221A			221B
	8	221C	221D	221E			221F
	9	2220	2221	2222			2223
	10	2224	2225	2226			2227
	11	2228	2229	222A			222B
	12	222C	222D	222E			222F
	13	2230	2231	2232			2233
	14	2234	2235	2236			2237
	15	2238	2239	223A			223B
16	223C	223D	223E	223F			
Alarm 1 value 0 Enabled/ Disabled selection	Channel				R/W	0000H: Disabled 0001H: Enabled	
	Module	CH1	CH2	CH3			CH4
	1	2240	2241	2242			2243
	2	2244	2245	2246			2247
	3	2248	2249	224A			224B
	4	224C	224D	224E			224F
	5	2250	2251	2252			2253
	6	2254	2255	2256			2257
	7	2258	2259	225A			225B
	8	225C	225D	225E			225F
	9	2260	2261	2262			2263
	10	2264	2265	2266			2267
	11	2268	2269	226A			226B
	12	226C	226D	226E			226F
	13	2270	2271	2272			2273
	14	2274	2275	2276			2277
	15	2278	2279	227A			227B
16	227C	227D	227E	227F			

Data Item	Address (HEX)				Attribute	Data	
Alarm 2 value 0 Enabled/ Disabled selection	Channel				R/W	0000H: Disabled 0001H: Enabled	
	Module	CH1	CH2	CH3			CH4
	1	2280	2281	2282			2283
	2	2284	2285	2288			2287
	3	2288	2289	228A			228B
	4	228C	228D	228E			228F
	5	2290	2291	2292			2293
	6	2294	2295	2296			2297
	7	2298	2299	229A			229B
	8	229C	229D	229E			229F
	9	22A0	22A1	22A2			22A3
	10	22A4	22A5	22A6			22A7
	11	22A8	22A9	22AA			22AB
	12	22AC	22AD	22AE			22AF
	13	22B0	22B1	22B2			22B3
	14	22B4	22B5	22B6			22B7
	15	22B8	22B9	22BA			22BB
16	22BC	22BD	22BE	22BF			
Alarm 3 value 0 Enabled/ Disabled selection	Channel				R/W	0000H: Disabled 0001H: Enabled	
	Module	CH1	CH2	CH3			CH4
	1	22C0	22C1	22C2			22C3
	2	22C4	22C5	22C6			22C7
	3	22C8	22C9	22CA			22CB
	4	22CC	22CD	22CE			22CF
	5	22D0	22D1	22D2			22D3
	6	22D4	22D5	22D6			22D7
	7	22D8	22D9	22DA			22DB
	8	22DC	22DD	22DE			22DF
	9	22E0	22E1	22E2			22E3
	10	22E4	22E5	22E6			22E7
	11	22E8	22E9	22EA			22EB
	12	22EC	22ED	22EE			22EF
	13	22F0	22F1	22F2			22F3
	14	22F4	22F5	22F6			22F7
	15	22F8	22F9	22FA			22FB
16	22FC	22FD	22FE	22FF			

Data Item	Address (HEX)					Attribute	Data
Alarm 4 value 0 Enabled/ Disabled selection	Channel					R/W	0000H: Disabled 0001H: Enabled
	Module	CH1	CH2	CH3	CH4		
	1	2300	2301	2302	2303		
	2	2304	2305	2306	2307		
	3	2308	2309	230A	230B		
	4	230C	230D	230E	230F		
	5	2310	2311	2312	2313		
	6	2314	2315	2316	2317		
	7	2318	2319	231A	231B		
	8	231C	231D	231E	231F		
	9	2320	2321	2322	2323		
	10	2324	2325	2326	2327		
	11	2328	2329	232A	232B		
	12	232C	232D	232E	232F		
	13	2330	2331	2332	2333		
	14	2334	2335	2336	2337		
	15	2338	2339	233A	233B		
16	233C	233D	233E	233F			
Event output allocation selection	Channel					R/W	0000H: No action Any value can be output by setting a value in the event output status flag from the host. Setting the event output status flag to 0 turns off the event output, and setting it to 1 turns on the event output. 0001H: Event output (CH alone) The event output turns ON when any of the selected channel's alarm, heater burnout alarm, or loop error alarm is activated. 0002H: Event output (CH interlock) The event output turns on when an alarm, heater burnout alarm, or loop error alarm occurs on all channels.
	Module	CH1	CH2	CH3	CH4		
	1	2340	2341	2342	2343		
	2	2344	2345	2346	2347		
	3	2348	2349	234A	234B		
	4	234C	234D	234E	234F		
	5	2350	2351	2352	2353		
	6	2354	2355	2356	2357		
	7	2358	2359	235A	235B		
	8	235C	235D	235E	235F		
	9	2360	2361	2362	2363		
	10	2364	2365	2366	2367		
	11	2368	2369	236A	236B		
	12	236C	236D	236E	236F		
	13	2370	2371	2372	2373		
	14	2374	2375	2376	2377		
	15	2378	2379	237A	237B		
16	237C	237D	237E	237F			

Data Item	Address (HEX)					Attribute	Data
Event input allocation selection	Channel					R/W	0000H: No action It can be used for any operation by reading the event input status flag. When the event input is turned off, the event input status flag is set to 0, and when the event input is turned on, the event input status flag is set to 1. 0001H: Control start/stop (CH alone) For the selected channel only, control will start when the event input turns ON, and control will stop when the event input turns OFF. 0002H: Control start/stop (CH interlock) For all channels, turning on the event input starts the control, and turning off the event input stops the control.
	Module	CH1	CH2	CH3	CH4		
	1	2380	2381	2382	2383		
	2	2384	2385	2388	2387		
	3	2388	2389	238A	238B		
	4	238C	238D	238E	238F		
	5	2390	2391	2392	2393		
	6	2394	2395	2396	2397		
	7	2398	2399	239A	239B		
	8	239C	239D	239E	239F		
	9	23A0	23A1	23A2	23A3		
	10	23A4	23A5	23A6	23A7		
	11	23A8	23A9	23AA	23AB		
	12	23AC	23AD	23AE	23AF		
	13	23B0	23B1	23B2	23B3		
	14	23B4	23B5	23B6	23B7		
	15	23B8	23B9	23BA	23BB		
16	23BC	23BD	23BE	23BF			
CH Enabled/ Disabled selection	Channel					R/W	0000H: Disabled 0001H: Enabled
	Module	CH1	CH2	CH3	CH4		
	1	23C0	23C1	23C2	23C3		
	2	23C4	23C5	23C6	23C7		
	3	23C8	23C9	23CA	23CB		
	4	23CC	23CD	23CE	23CF		
	5	23D0	23D1	23D2	23D3		
	6	23D4	23D5	23D6	23D7		
	7	23D8	23D9	23DA	23DB		
	8	23DC	23DD	23DE	23DF		
	9	23E0	23E1	23E2	23E3		
	10	23E4	23E5	23E6	23E7		
	11	23E8	23E9	23EA	23EB		
	12	23EC	23ED	23EE	23EF		
	13	23F0	23F1	23F2	23F3		
	14	23F4	23F5	23F6	23F7		
	15	23F8	23F9	23FA	23FB		
16	23FC	23FD	23FE	23FF			

Data Item	Address (HEX)					Attribute	Data
Number of moving average setting	Channel					R/W	1 to 10 times
	Module	CH1	CH2	CH3	CH4		
	1	2400	2401	2402	2403		
	2	2404	2405	2406	2407		
	3	2408	2409	240A	240B		
	4	240C	240D	240E	240F		
	5	2410	2411	2412	2413		
	6	2414	2415	2416	2417		
	7	2418	2419	241A	241B		
	8	241C	241D	241E	241F		
	9	2420	2421	2422	2423		
	10	2424	2425	2426	2427		
	11	2428	2429	242A	242B		
	12	242C	242D	242E	242F		
	13	2430	2431	2432	2433		
	14	2434	2435	2436	2437		
	15	2438	2439	243A	243B		
16	243C	243D	243E	243F			
Reservation (*)	2440 to 2FFF						

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)					Attribute	Data
Input math function selection	Channel					R/W	0000H: Standard 0001H: Difference input (*) [(CH1-CH2) or (CH3-CH4)] 0002H: Addition input (*) [(CH1+CH2) or (CH3+CH4)] (*): Select CH1 or CH3 for differential input and addition input. It is disabled when set with CH2 or CH4.
	Module	CH1	CH2	CH3	CH4		
	1	3000	3001	3002	3003		
	2	3004	3005	3006	3007		
	3	3008	3009	300A	300B		
	4	300C	300D	300E	300F		
	5	3010	3011	3012	3013		
	6	3014	3015	3016	3017		
	7	3018	3019	301A	301B		
	8	301C	301D	301E	301F		
	9	3020	3021	3022	3023		
	10	3024	3025	3026	3027		
	11	3028	3029	302A	302B		
	12	302C	302D	302E	302F		
	13	3030	3031	3032	3033		
	14	3034	3035	3036	3037		
	15	3038	3039	303A	303B		
16	303C	303D	303E	303F			
Input difference selection	Channel					R/W	0000H: Disable 0001H: CH1 0002H: CH2 0003H: CH3 0004H: CH4
	Module	CH1	CH2	CH3	CH4		
	1	3040	3041	3042	3043		
	2	3044	3045	3046	3047		
	3	3048	3049	304A	304B		
	4	304C	304D	304E	304F		
	5	3050	3051	3052	3053		
	6	3054	3055	3056	3057		
	7	3058	3059	305A	305B		
	8	305C	305D	305E	305F		
	9	3060	3061	3062	3063		
	10	3064	3065	3066	3067		
	11	3068	3069	306A	306B		
	12	306C	306D	306E	306F		
	13	3070	3071	3072	3073		
	14	3074	3075	3076	3077		
	15	3078	3079	307A	307B		
16	307C	307D	307E	307F			

Data Item	Address (HEX)					Attribute	Data
Input difference setting	Channel					R/W	1 to 1000 °C (1 to 1800 °F) or 0.1 to 1000.0 °C (0.1 to 1800.0 °F) when DC current and DC voltage input 1 to 10000
	Module	CH1	CH2	CH3	CH4		
	1	3080	3081	3082	3083		
	2	3084	3085	3088	3087		
	3	3088	3089	308A	308B		
	4	308C	308D	308E	308F		
	5	3090	3091	3092	3093		
	6	3094	3095	3096	3097		
	7	3098	3099	309A	309B		
	8	309C	309D	309E	309F		
	9	30A0	30A1	30A2	30A3		
	10	30A4	30A5	30A6	30A7		
	11	30A8	30A9	30AA	30AB		
	12	30AC	30AD	30AE	30AF		
	13	30B0	30B1	30B2	30B3		
	14	30B4	30B5	30B6	30B7		
	15	30B8	30B9	30BA	30BB		
16	30BC	30BD	30BE	30BF			
Control action selection	Channel					R/W	0000H: 2 DOF PID control 0001H: Fast-PID control 0002H: Slow-PID control 0003H: ON-OFF control 0004H: Gap-PID control This item can be selected only when Control Disable is set. When integral time is 0 or 0.0, if Slow- PID control is selected or control action is selected when control is enabled (during control execution), error code 17 (11H) is returned with negative acknowledgement.
	Module	CH1	CH2	CH3	CH4		
	1	30C0	30C1	30C2	30C3		
	2	30C4	30C5	30C6	30C7		
	3	30C8	30C9	30CA	30CB		
	4	30CC	30CD	30CE	30CF		
	5	30D0	30D1	30D2	30D3		
	6	30D4	30D5	30D6	30D7		
	7	30D8	30D9	30DA	30DB		
	8	30DC	30DD	30DE	30DF		
	9	30E0	30E1	30E2	30E3		
	10	30E4	30E5	30E6	30E7		
	11	30E8	30E9	30EA	30EB		
	12	30EC	30ED	30EE	30EF		
	13	30F0	30F1	30F2	30F3		
	14	30F4	30F5	30F6	30F7		
	15	30F8	30F9	30FA	30FB		
16	30FC	30FD	30FE	30FF			

Data Item	Address (HEX)					Attribute	Data
Proportional gain 2 DOF coefficient (α)	Channel					R/W	0.00 to 1.00 When select “1: Fast-PID control”, “2: Slow-PID control”, “3: ON-OFF control”, or “4: Gap-PID control” in control action, do not change this setting item.
	Module	CH1	CH2	CH3	CH4		
	1	3100	3101	3102	3103		
	2	3104	3105	3106	3107		
	3	3108	3109	310A	310B		
	4	310C	310D	310E	310F		
	5	3110	3111	3112	3113		
	6	3114	3115	3116	3117		
	7	3118	3119	311A	311B		
	8	311C	311D	311E	311F		
	9	3120	3121	3122	3123		
	10	3124	3125	3126	3127		
	11	3128	3129	312A	312B		
	12	312C	312D	312E	312F		
	13	3130	3131	3132	3133		
	14	3134	3135	3136	3137		
	15	3138	3139	313A	313B		
16	313C	313D	313E	313F			
Integral 2 DOF coefficient (β)	Channel					R/W	0.00 to 10.00 When select “1: Fast-PID control”, “2: Slow-PID control”, “3: ON-OFF control”, or “4: Gap-PID control” in control action, do not change this setting item.
	Module	CH1	CH2	CH3	CH4		
	1	3140	3141	3142	3143		
	2	3144	3145	3146	3147		
	3	3148	3149	314A	314B		
	4	314C	314D	314E	314F		
	5	3150	3151	3152	3153		
	6	3154	3155	3156	3157		
	7	3158	3159	315A	315B		
	8	315C	315D	315E	315F		
	9	3160	3161	3162	3163		
	10	3164	3165	3166	3167		
	11	3168	3169	316A	316B		
	12	316C	316D	316E	316F		
	13	3170	3171	3172	3173		
	14	3174	3175	3176	3177		
	15	3178	3179	317A	317B		
16	317C	317D	317E	317F			

Data Item	Address (HEX)				Attribute	Data	
Differential 2 DOF coefficient (γ)	Channel				R/W	0.00 to 1.00 Do not change this setting item.	
	Module	CH1	CH2	CH3			CH4
	1	3180	3181	3182			3183
	2	3184	3185	3188			3187
	3	3188	3189	318A			318B
	4	318C	318D	318E			318F
	5	3190	3191	3192			3193
	6	3194	3195	3196			3197
	7	3198	3199	319A			319B
	8	319C	319D	319E			319F
	9	31A0	31A1	31A2			31A3
	10	31A4	31A5	31A6			31A7
	11	31A8	31A9	31AA			31AB
	12	31AC	31AD	31AE			31AF
	13	31B0	31B1	31B2			31B3
	14	31B4	31B5	31B6			31B7
	15	31B8	31B9	31BA			31BB
16	31BC	31BD	31BE	31BF			
Desired value proportional coefficient (C_p)	Channel				R/W	0.00 to 1.00 Do not change this setting item.	
	Module	CH1	CH2	CH3			CH4
	1	31C0	31C1	31C2			31C3
	2	31C4	31C5	31C6			31C7
	3	31C8	31C9	31CA			31CB
	4	31CC	31CD	31CE			31CF
	5	31D0	31D1	31D2			31D3
	6	31D4	31D5	31D6			31D7
	7	31D8	31D9	31DA			31DB
	8	31DC	31DD	31DE			31DF
	9	31E0	31E1	31E2			31E3
	10	31E4	31E5	31E6			31E7
	11	31E8	31E9	31EA			31EB
	12	31EC	31ED	31EE			31EF
	13	31F0	31F1	31F2			31F3
	14	31F4	31F5	31F6			31F7
	15	31F8	31F9	31FA			31FB
16	31FC	31FD	31FE	31FF			

Data Item	Address (HEX)					Attribute	Data
Gap width	Channel					R/W	0.0 to 10.0 % Proportional band × Gap width
	Module	CH1	CH2	CH3	CH4		
	1	3200	3201	3202	3203		
	2	3204	3205	3206	3207		
	3	3208	3209	320A	320B		
	4	320C	320D	320E	320F		
	5	3210	3211	3212	3213		
	6	3214	3215	3216	3217		
	7	3218	3219	321A	321B		
	8	321C	321D	321E	321F		
	9	3220	3221	3222	3223		
	10	3224	3225	3226	3227		
	11	3228	3229	322A	322B		
	12	322C	322D	322E	322F		
	13	3230	3231	3232	3233		
	14	3234	3235	3236	3237		
	15	3238	3239	323A	323B		
16	323C	323D	323E	323F			
Gap coefficient	Channel					R/W	0.0 to 1.0
	Module	CH1	CH2	CH3	CH4		
	1	3240	3241	3242	3243		
	2	3244	3245	3246	3247		
	3	3248	3249	324A	324B		
	4	324C	324D	324E	324F		
	5	3250	3251	3252	3253		
	6	3254	3255	3256	3257		
	7	3258	3259	325A	325B		
	8	325C	325D	325E	325F		
	9	3260	3261	3262	3263		
	10	3264	3265	3266	3267		
	11	3268	3269	326A	326B		
	12	326C	326D	326E	326F		
	13	3270	3271	3272	3273		
	14	3274	3275	3276	3277		
	15	3278	3279	327A	327B		
16	327C	327D	327E	327F			

Data Item	Address (HEX)				Attribute	Data	
Output minimum ON/OFF time	Channel				R/W	0 to 1000 ms	
	Module	CH1	CH2	CH3			CH4
	1	3280	3281	3282			3283
	2	3284	3285	3288			3287
	3	3288	3289	328A			328B
	4	328C	328D	328E			328F
	5	3290	3291	3292			3293
	6	3294	3295	3296			3297
	7	3298	3299	329A			329B
	8	329C	329D	329E			329F
	9	32A0	32A1	32A2			32A3
	10	32A4	32A5	32A6			32A7
	11	32A8	32A9	32AA			32AB
	12	32AC	32AD	32AE			32AF
	13	32B0	32B1	32B2			32B3
	14	32B4	32B5	32B6			32B7
	15	32B8	32B9	32BA			32BB
16	32BC	32BD	32BE	32BF			
Integral/ differential decimal point position	Channel				R/W	0000H: Without decimal point 0001H: With decimal point	
	Module	CH1	CH2	CH3			CH4
	1	32C0	32C1	32C2			32C3
	2	32C4	32C5	32C6			32C7
	3	32C8	32C9	32CA			32CB
	4	32CC	32CD	32CE			32CF
	5	32D0	32D1	32D2			32D3
	6	32D4	32D5	32D6			32D7
	7	32D8	32D9	32DA			32DB
	8	32DC	32DD	32DE			32DF
	9	32E0	32E1	32E2			32E3
	10	32E4	32E5	32E6			32E7
	11	32E8	32E9	32EA			32EB
	12	32EC	32ED	32EE			32EF
	13	32F0	32F1	32F2			32F3
	14	32F4	32F5	32F6			32F7
	15	32F8	32F9	32FA			32FB
16	32FC	32FD	32FE	32FF			

Data Item	Address (HEX)					Attribute	Data
Power-on restore action	Channel					R/W	0000H: Stopped state 0001H: Continuous state (State before power OFF)
	Module	CH1	CH2	CH3	CH4		
	1	3300	3301	3302	3303		
	2	3304	3305	3306	3307		
	3	3308	3309	330A	330B		
	4	330C	330D	330E	330F		
	5	3310	3311	3312	3313		
	6	3314	3315	3316	3317		
	7	3318	3319	331A	331B		
	8	331C	331D	331E	331F		
	9	3320	3321	3322	3323		
	10	3324	3325	3326	3327		
	11	3328	3329	332A	332B		
	12	332C	332D	332E	332F		
	13	3330	3331	3332	3333		
	14	3334	3335	3336	3337		
	15	3338	3339	333A	333B		
16	333C	333D	333E	333F			
Reservation (*)	3340 to 3FFF						

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)					Attribute	Data
Control function	Channel					R/W	0000H: Standard 0001H: Heating/cooling control (*) 0002H: Cascade control (*) 0003H: Output selection function Selectable only when control is prohibited. (*): Select CH1 or CH3 for heating/cooling control and cascade control. It is disabled when CH2 or CH4 is selected.
	Module	CH1	CH2	CH3	CH4		
	1	4000	4001	4002	4003		
	2	4004	4005	4006	4007		
	3	4008	4009	400A	400B		
	4	400C	400D	400E	400F		
	5	4010	4011	4012	4013		
	6	4014	4015	4016	4017		
	7	4018	4019	401A	401B		
	8	401C	401D	401E	401F		
	9	4020	4021	4022	4023		
	10	4024	4025	4026	4027		
	11	4028	4029	402A	402B		
	12	402C	402D	402E	402F		
	13	4030	4031	4032	4033		
	14	4034	4035	4036	4037		
	15	4038	4039	403A	403B		
16	403C	403D	403E	403F			
Cooling P-band	Channel					R/W	0 to input span °C (°F) or 0.0 to input span °C (°F) For DC current input and DC voltage input: 0.00 to 100.00 % Set with CH1 or CH3. It is disabled when set with CH2 or CH4.
	Module	CH1	CH2	CH3	CH4		
	1	4040	4041	4042	4043		
	2	4044	4045	4046	4047		
	3	4048	4049	404A	404B		
	4	404C	404D	404E	404F		
	5	4050	4051	4052	4053		
	6	4054	4055	4056	4057		
	7	4058	4059	405A	405B		
	8	405C	405D	405E	405F		
	9	4060	4061	4062	4063		
	10	4064	4065	4066	4067		
	11	4068	4069	406A	406B		
	12	406C	406D	406E	406F		
	13	4070	4071	4072	4073		
	14	4074	4075	4076	4077		
	15	4078	4079	407A	407B		
16	407C	407D	407E	407F			

Data Item	Address (HEX)				Attribute	Data	
Cooling Integral time	Channel				R/W	0 to 3600 seconds or 0.0 to 2000.0 seconds When "2: Slow-PID control" is selected in control action: 1 to 3600 seconds or 0.1 to 2000.0 seconds Set with CH1 or CH3. It is disabled when set with CH2 or CH4.	
	Module	CH1	CH2	CH3			CH4
	1	4080	4081	4082			4083
	2	4084	4085	4088			4087
	3	4088	4089	408A			408B
	4	408C	408D	408E			408F
	5	4090	4091	4092			4093
	6	4094	4095	4096			4097
	7	4098	4099	409A			409B
	8	409C	409D	409E			409F
	9	40A0	40A1	40A2			40A3
	10	40A4	40A5	40A6			40A7
	11	40A8	40A9	40AA			40AB
	12	40AC	40AD	40AE			40AF
	13	40B0	40B1	40B2			40B3
	14	40B4	40B5	40B6			40B7
	15	40B8	40B9	40BA			40BB
16	40BC	40BD	40BE	40BF			
Cooling differential time	Channel				R/W	0 to 3600 seconds or 0.0 to 2000.0 seconds Set with CH1 or CH3. It is disabled when set with CH2 or CH4.	
	Module	CH1	CH2	CH3			CH4
	1	40C0	40C1	40C2			40C3
	2	40C4	40C5	40C6			40C7
	3	40C8	40C9	40CA			40CB
	4	40CC	40CD	40CE			40CF
	5	40D0	40D1	40D2			40D3
	6	40D4	40D5	40D6			40D7
	7	40D8	40D9	40DA			40DB
	8	40DC	40DD	40DE			40DF
	9	40E0	40E1	40E2			40E3
	10	40E4	40E5	40E6			40E7
	11	40E8	40E9	40EA			40EB
	12	40EC	40ED	40EE			40EF
	13	40F0	40F1	40F2			40F3
	14	40F4	40F5	40F6			40F7
	15	40F8	40F9	40FA			40FB
16	40FC	40FD	40FE	40FF			

Data Item	Address (HEX)				Attribute	Data	
Cooling proportional cycle	Channel				R/W	0.1 to 100.0 seconds Set with CH1 or CH3. It is disabled when set with CH2 or CH4.	
	Module	CH1	CH2	CH3			CH4
	1	4100	4101	4102			4103
	2	4104	4105	4106			4107
	3	4108	4109	410A			410B
	4	410C	410D	410E			410F
	5	4110	4111	4112			4113
	6	4114	4115	4116			4117
	7	4118	4119	411A			411B
	8	411C	411D	411E			411F
	9	4120	4121	4122			4123
	10	4124	4125	4126			4127
	11	4128	4129	412A			412B
	12	412C	412D	412E			412F
	13	4130	4131	4132			4133
	14	4134	4135	4136			4137
	15	4138	4139	413A			413B
16	413C	413D	413E	413F			
Cooling ON/OFF hysteresis	Channel				R/W	0.1 to 1000.0 °C (0.1 to 1800.0 °F) For DC current input and DC voltage input: 1 to 10000 Set with CH1 or CH3. It is disabled when set with CH2 or CH4.	
	Module	CH1	CH2	CH3			CH4
	1	4140	4141	4142			4143
	2	4144	4145	4146			4147
	3	4148	4149	414A			414B
	4	414C	414D	414E			414F
	5	4150	4151	4152			4153
	6	4154	4155	4156			4157
	7	4158	4159	415A			415B
	8	415C	415D	415E			415F
	9	4160	4161	4162			4163
	10	4164	4165	4166			4167
	11	4168	4169	416A			416B
	12	416C	416D	416E			416F
	13	4170	4171	4172			4173
	14	4174	4175	4176			4177
	15	4178	4179	417A			417B
16	417C	417D	417E	417F			

Data Item	Address (HEX)				Attribute	Data	
Overlap/Dead band	Channel				R/W	-100.0 to 100.0 °C (-180.0 to 180.0 °F) For DC current input and DC voltage input: -1000 to 1000 % Set with CH1 or CH3. It is disabled when set with CH2 or CH4.	
	Module	CH1	CH2	CH3			CH4
	1	4180	4181	4182			4183
	2	4184	4185	4188			4187
	3	4188	4189	418A			418B
	4	418C	418D	418E			418F
	5	4190	4191	4192			4193
	6	4194	4195	4196			4197
	7	4198	4199	419A			419B
	8	419C	419D	419E			419F
	9	41A0	41A1	41A2			41A3
	10	41A4	41A5	41A6			41A7
	11	41A8	41A9	41AA			41AB
	12	41AC	41AD	41AE			41AF
	13	41B0	41B1	41B2			41B3
	14	41B4	41B5	41B6			41B7
	15	41B8	41B9	41BA			41BB
16	41BC	41BD	41BE	41BF			
Cooling output high limit	Channel				R/W	Cooling output low limit to 100.0 % For current output: Cooling output low limit to 105.0 % Set with CH1 or CH3. It is disabled when set with CH2 or CH4.	
	Module	CH1	CH2	CH3			CH4
	1	41C0	41C1	41C2			41C3
	2	41C4	41C5	41C6			41C7
	3	41C8	41C9	41CA			41CB
	4	41CC	41CD	41CE			41CF
	5	41D0	41D1	41D2			41D3
	6	41D4	41D5	41D6			41D7
	7	41D8	41D9	41DA			41DB
	8	41DC	41DD	41DE			41DF
	9	41E0	41E1	41E2			41E3
	10	41E4	41E5	41E6			41E7
	11	41E8	41E9	41EA			41EB
	12	41EC	41ED	41EE			41EF
	13	41F0	41F1	41F2			41F3
	14	41F4	41F5	41F6			41F7
	15	41F8	41F9	41FA			41FB
16	41FC	41FD	41FE	41FF			

Data Item	Address (HEX)					Attribute	Data
Cooling output low limit	Channel					R/W	0.0 % to Cooling output high limit For current output: -5.0 % to Cooling output high limit Set with CH1 or CH3. It is disabled when set with CH2 or CH4.
	Module	CH1	CH2	CH3	CH4		
	1	4200	4201	4202	4203		
	2	4204	4205	4206	4207		
	3	4208	4209	420A	420B		
	4	420C	420D	420E	420F		
	5	4210	4211	4212	4213		
	6	4214	4215	4216	4217		
	7	4218	4219	421A	421B		
	8	421C	421D	421E	421F		
	9	4220	4221	4222	4223		
	10	4224	4225	4226	4227		
	11	4228	4229	422A	422B		
	12	422C	422D	422E	422F		
	13	4230	4231	4232	4233		
	14	4234	4235	4236	4237		
	15	4238	4239	423A	423B		
16	423C	423D	423E	423F			
Cooling action mode	Channel					R/W	0000H: Air cooling (Linear characteristics) 0001H: Oil cooling (1.5th power of the linear characteristics) 0002H: Water cooling (2nd power of the linear characteristics) Set with CH1 or CH3. It is disabled when set with CH2 or CH4.
	Module	CH1	CH2	CH3	CH4		
	1	4240	4241	4242	4243		
	2	4244	4245	4246	4247		
	3	4248	4249	424A	424B		
	4	424C	424D	424E	424F		
	5	4250	4251	4252	4253		
	6	4254	4255	4256	4257		
	7	4258	4259	425A	425B		
	8	425C	425D	425E	425F		
	9	4260	4261	4262	4263		
	10	4264	4265	4266	4267		
	11	4268	4269	426A	426B		
	12	426C	426D	426E	426F		
	13	4270	4271	4272	4273		
	14	4274	4275	4276	4277		
	15	4278	4279	427A	427B		
16	427C	427D	427E	427F			

Data Item	Address (HEX)				Attribute	Data	
Slave scale high limit	Channel				R/W	Slave scale low limit to Slave input range high limit Set with CH1 or CH3. It is disabled when set with CH2 or CH4.	
	Module	CH1	CH2	CH3			CH4
	1	4280	4281	4282			4283
	2	4284	4285	4288			4287
	3	4288	4289	428A			428B
	4	428C	428D	428E			428F
	5	4290	4291	4292			4293
	6	4294	4295	4296			4297
	7	4298	4299	429A			429B
	8	429C	429D	429E			429F
	9	42A0	42A1	42A2			42A3
	10	42A4	42A5	42A6			42A7
	11	42A8	42A9	42AA			42AB
	12	42AC	42AD	42AE			42AF
	13	42B0	42B1	42B2			42B3
	14	42B4	42B5	42B6			42B7
	15	42B8	42B9	42BA			42BB
16	42BC	42BD	42BE	42BF			
Slave scale low limit	Channel				R/W	Slave input range low limit to Slave scale high limit Set with CH1 or CH3. It is disabled when set with CH2 or CH4.	
	Module	CH1	CH2	CH3			CH4
	1	42C0	42C1	42C2			42C3
	2	42C4	42C5	42C6			42C7
	3	42C8	42C9	42CA			42CB
	4	42CC	42CD	42CE			42CF
	5	42D0	42D1	42D2			42D3
	6	42D4	42D5	42D6			42D7
	7	42D8	42D9	42DA			42DB
	8	42DC	42DD	42DE			42DF
	9	42E0	42E1	42E2			42E3
	10	42E4	42E5	42E6			42E7
	11	42E8	42E9	42EA			42EB
	12	42EC	42ED	42EE			42EF
	13	42F0	42F1	42F2			42F3
	14	42F4	42F5	42F6			42F7
	15	42F8	42F9	42FA			42FB
16	42FC	42FD	42FE	42FF			

Data Item	Address (HEX)					Attribute	Data
Output bias	Channel					R/W	0.0 to 100.0 %
	Module	CH1	CH2	CH3	CH4		
	1	4300	4301	4302	4303		
	2	4304	4305	4306	4307		
	3	4308	4309	430A	430B		
	4	430C	430D	430E	430F		
	5	4310	4311	4312	4313		
	6	4314	4315	4316	4317		
	7	4318	4319	431A	431B		
	8	431C	431D	431E	431F		
	9	4320	4321	4322	4323		
	10	4324	4325	4326	4327		
	11	4328	4329	432A	432B		
	12	432C	432D	432E	432F		
	13	4330	4331	4332	4333		
	14	4334	4335	4336	4337		
	15	4338	4339	433A	433B		
16	433C	433D	433E	433F			
Output gain	Channel					R/W	0.00 to 10.00 times
	Module	CH1	CH2	CH3	CH4		
	1	4340	4341	4342	4343		
	2	4344	4345	4346	4347		
	3	4348	4349	434A	434B		
	4	434C	434D	434E	434F		
	5	4350	4351	4352	4353		
	6	4354	4355	4356	4357		
	7	4358	4359	435A	435B		
	8	435C	435D	435E	435F		
	9	4360	4361	4362	4363		
	10	4364	4365	4366	4367		
	11	4368	4369	436A	436B		
	12	436C	436D	436E	436F		
	13	4370	4371	4372	4373		
	14	4374	4375	4376	4377		
	15	4378	4379	437A	437B		
16	437C	437D	437E	437F			

Data Item	Address (HEX)					Attribute	Data
Output channel	Channel					R/W	0000H: CH1 0001H: CH2 0002H: CH3 0003H: CH4 This is valid when "Output selection function" is selected in "Control function (P.11-46)".
	Module	CH1	CH2	CH3	CH4		
	1	4380	4381	4382	4383		
	2	4384	4385	4388	4387		
	3	4388	4389	438A	438B		
	4	438C	438D	438E	438F		
	5	4390	4391	4392	4393		
	6	4394	4395	4396	4397		
	7	4398	4399	439A	439B		
	8	439C	439D	439E	439F		
	9	43A0	43A1	43A2	43A3		
	10	43A4	43A5	43A6	43A7		
	11	43A8	43A9	43AA	43AB		
	12	43AC	43AD	43AE	43AF		
	13	43B0	43B1	43B2	43B3		
	14	43B4	43B5	43B6	43B7		
	15	43B8	43B9	43BA	43BB		
16	43BC	43BD	43BE	43BF			
Output rate-of-change	Channel					R/W	0.00 to 100.00 %/sec
	Module	CH1	CH2	CH3	CH4		
	1	43C0	43C1	43C2	43C3		
	2	43C4	43C5	43C6	43C7		
	3	43C8	43C9	43CA	43CB		
	4	43CC	43CD	43CE	43CF		
	5	43D0	43D1	43D2	43D3		
	6	43D4	43D5	43D6	43D7		
	7	43D8	43D9	43DA	43DB		
	8	43DC	43DD	43DE	43DF		
	9	43E0	43E1	43E2	43E3		
	10	43E4	43E5	43E6	43E7		
	11	43E8	43E9	43EA	43EB		
	12	43EC	43ED	43EE	43EF		
	13	43F0	43F1	43F2	43F3		
	14	43F4	43F5	43F6	43F7		
	15	43F8	43F9	43FA	43FB		
16	43FC	43FD	43FE	43FF			
Reservation (*)	4400 to 4FFF						

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)					Attribute	Data
Communication response delay time	Channel					R/W	0 to 1000 ms The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	5000	5001	5002	5003		
	2	5004	5005	5006	5007		
	3	5008	5009	500A	500B		
	4	500C	500D	500E	500F		
	5	5010	5011	5012	5013		
	6	5014	5015	5016	5017		
	7	5018	5019	501A	501B		
	8	501C	501D	501E	501F		
	9	5020	5021	5022	5023		
	10	5024	5025	5026	5027		
	11	5028	5029	502A	502B		
	12	502C	502D	502E	502F		
	13	5030	5031	5032	5033		
	14	5034	5035	5036	5037		
	15	5038	5039	503A	503B		
16	503C	503D	503E	503F			
Expanded function	Channel					R/W	0000H: Without expanded function 0001H: Peak power suppression function 0002H: Auto balance control function The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	5040	5041	5042	5043		
	2	5044	5045	5046	5047		
	3	5048	5049	504A	504B		
	4	504C	504D	504E	504F		
	5	5050	5051	5052	5053		
	6	5054	5055	5056	5057		
	7	5058	5059	505A	505B		
	8	505C	505D	505E	505F		
	9	5060	5061	5062	5063		
	10	5064	5065	5066	5067		
	11	5068	5069	506A	506B		
	12	506C	506D	506E	506F		
	13	5070	5071	5072	5073		
	14	5074	5075	5076	5077		
	15	5078	5079	507A	507B		
16	507C	507D	507E	507F			

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)					Attribute	Data
Total current setting	Channel					R/W	0.0 to 400.0 A The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	5080	5081	5082	5083		
	2	5084	5085	5088	5087		
	3	5088	5089	508A	508B		
	4	508C	508D	508E	508F		
	5	5090	5091	5092	5093		
	6	5094	5095	5096	5097		
	7	5098	5099	509A	509B		
	8	509C	509D	509E	509F		
	9	50A0	50A1	50A2	50A3		
	10	50A4	50A5	50A6	50A7		
	11	50A8	50A9	50AA	50AB		
	12	50AC	50AD	50AE	50AF		
	13	50B0	50B1	50B2	50B3		
	14	50B4	50B5	50B6	50B7		
	15	50B8	50B9	50BA	50BB		
16	50BC	50BD	50BE	50BF			
Current value setting	Channel					R/W	0.0 to 100.0 A
	Module	CH1	CH2	CH3	CH4		
	1	50C0	50C1	50C2	50C3		
	2	50C4	50C5	50C6	50C7		
	3	50C8	50C9	50CA	50CB		
	4	50CC	50CD	50CE	50CF		
	5	50D0	50D1	50D2	50D3		
	6	50D4	50D5	50D6	50D7		
	7	50D8	50D9	50DA	50DB		
	8	50DC	50DD	50DE	50DF		
	9	50E0	50E1	50E2	50E3		
	10	50E4	50E5	50E6	50E7		
	11	50E8	50E9	50EA	50EB		
	12	50EC	50ED	50EE	50EF		
	13	50F0	50F1	50F2	50F3		
	14	50F4	50F5	50F6	50F7		
	15	50F8	50F9	50FA	50FB		
16	50FC	50FD	50FE	50FF			

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)					Attribute	Data
Output ON delay setting	Channel					R/W	0 to 100 ms The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	5100	5101	5102	5103		
	2	5104	5105	5106	5107		
	3	5108	5109	510A	510B		
	4	510C	510D	510E	510F		
	5	5110	5111	5112	5113		
	6	5114	5115	5116	5117		
	7	5118	5119	511A	511B		
	8	511C	511D	511E	511F		
	9	5120	5121	5122	5123		
	10	5124	5125	5126	5127		
	11	5128	5129	512A	512B		
	12	512C	512D	512E	512F		
	13	5130	5131	5132	5133		
	14	5134	5135	5136	5137		
	15	5138	5139	513A	513B		
16	513C	513D	513E	513F			
Auto balance control Interlock/Single	Channel					R/W	0000H: Single 0001H: Interlock The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	5140	5141	5142	5143		
	2	5144	5145	5146	5147		
	3	5148	5149	514A	514B		
	4	514C	514D	514E	514F		
	5	5150	5151	5152	5153		
	6	5154	5155	5156	5157		
	7	5158	5159	515A	515B		
	8	515C	515D	515E	515F		
	9	5160	5161	5162	5163		
	10	5164	5165	5166	5167		
	11	5168	5169	516A	516B		
	12	516C	516D	516E	516F		
	13	5170	5171	5172	5173		
	14	5174	5175	5176	5177		
	15	5178	5179	517A	517B		
16	517C	517D	517E	517F			

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)					Attribute	Data
Auto balance control Master/Slave	Channel					R/W	0000H: Slave channel 0001H: CH1 master channel 0002H: CH2 master channel 0003H: CH3 master channel 0004H: CH4 master channel The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	5180	5181	5182	5183		
	2	5184	5185	5188	5187		
	3	5188	5189	518A	518B		
	4	518C	518D	518E	518F		
	5	5190	5191	5192	5193		
	6	5194	5195	5196	5197		
	7	5198	5199	519A	519B		
	8	519C	519D	519E	519F		
	9	51A0	51A1	51A2	51A3		
	10	51A4	51A5	51A6	51A7		
	11	51A8	51A9	51AA	51AB		
	12	51AC	51AD	51AE	51AF		
	13	51B0	51B1	51B2	51B3		
	14	51B4	51B5	51B6	51B7		
	15	51B8	51B9	51BA	51BB		
16	51BC	51BD	51BE	51BF			
Auto balance control Enable/Disable	Channel					R/W	0000H: Disable 0001H: Enable
	Module	CH1	CH2	CH3	CH4		
	1	51C0	51C1	51C2	51C3		
	2	51C4	51C5	51C6	51C7		
	3	51C8	51C9	51CA	51CB		
	4	51CC	51CD	51CE	51CF		
	5	51D0	51D1	51D2	51D3		
	6	51D4	51D5	51D6	51D7		
	7	51D8	51D9	51DA	51DB		
	8	51DC	51DD	51DE	51DF		
	9	51E0	51E1	51E2	51E3		
	10	51E4	51E5	51E6	51E7		
	11	51E8	51E9	51EA	51EB		
	12	51EC	51ED	51EE	51EF		
	13	51F0	51F1	51F2	51F3		
	14	51F4	51F5	51F6	51F7		
	15	51F8	51F9	51FA	51FB		
16	51FC	51FD	51FE	51FF			

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)				Attribute	Data	
Auto balance control start output	Channel				R/W	0.00 to 1.00 (corresponding to 0 to 100 %)	
	Module	CH1	CH2	CH3			CH4
	1	5200	5201	5202			5203
	2	5204	5205	5206			5207
	3	5208	5209	520A			520B
	4	520C	520D	520E			520F
	5	5210	5211	5212			5213
	6	5214	5215	5216			5217
	7	5218	5219	521A			521B
	8	521C	521D	521E			521F
	9	5220	5221	5222			5223
	10	5224	5225	5226			5227
	11	5228	5229	522A			522B
	12	522C	522D	522E			522F
	13	5230	5231	5232			5233
	14	5234	5235	5236			5237
	15	5238	5239	523A			523B
16	523C	523D	523E	523F			
Auto balance control cancel area	Channel				R/W	0 to Input span °C (°F) × 10 % or 0.0 to Input span °C (°F) × 10 % For DC current input and DC voltage input: 0 to Scaling span × 10 % If set to 0, the auto balance control cancel area is twice the proportional band of the master channel.	
	Module	CH1	CH2	CH3			CH4
	1	5240	5241	5242			5243
	2	5244	5245	5246			5247
	3	5248	5249	524A			524B
	4	524C	524D	524E			524F
	5	5250	5251	5252			5253
	6	5254	5255	5256			5257
	7	5258	5259	525A			525B
	8	525C	525D	525E			525F
	9	5260	5261	5262			5263
	10	5264	5265	5266			5267
	11	5268	5269	526A			526B
	12	526C	526D	526E			526F
	13	5270	5271	5272			5273
	14	5274	5275	5276			5277
	15	5278	5279	527A			527B
16	527C	527D	527E	527F			

Data Item	Address (HEX)					Attribute	Data
Number of communication management module setting	Channel					R/W	1 to 16 modules The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	5280	5281	5282	5283		
	2	5284	5285	5288	5287		
	3	5288	5289	528A	528B		
	4	528C	528D	528E	528F		
	5	5290	5291	5292	5293		
	6	5294	5295	5296	5297		
	7	5298	5299	529A	529B		
	8	529C	529D	529E	529F		
	9	52A0	52A1	52A2	52A3		
	10	52A4	52A5	52A6	52A7		
	11	52A8	52A9	52AA	52AB		
	12	52AC	52AD	52AE	52AF		
	13	52B0	52B1	52B2	52B3		
	14	52B4	52B5	52B6	52B7		
	15	52B8	52B9	52BA	52BB		
16	52BC	52BD	52BE	52BF			
Non-volatile IC memory save selection	Channel					R/W	0000H: Save 0001H: Not save The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	52C0	52C1	52C2	52C3		
	2	52C4	52C5	52C6	52C7		
	3	52C8	52C9	52CA	52CB		
	4	52CC	52CD	52CE	52CF		
	5	52D0	52D1	52D2	52D3		
	6	52D4	52D5	52D6	52D7		
	7	52D8	52D9	52DA	52DB		
	8	52DC	52DD	52DE	52DF		
	9	52E0	52E1	52E2	52E3		
	10	52E4	52E5	52E6	52E7		
	11	52E8	52E9	52EA	52EB		
	12	52EC	52ED	52EE	52EF		
	13	52F0	52F1	52F2	52F3		
	14	52F4	52F5	52F6	52F7		
	15	52F8	52F9	52FA	52FB		
16	52FC	52FD	52FE	52FF			

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)					Attribute	Data
Host setting value change flag clearing	Channel					R/W	0000H: Clear 0001H: Do not clear (Change setting value) The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	5300	5301	5302	5303		
	2	5304	5305	5306	5307		
	3	5308	5309	530A	530B		
	4	530C	530D	530E	530F		
	5	5310	5311	5312	5313		
	6	5314	5315	5316	5317		
	7	5318	5319	531A	531B		
	8	531C	531D	531E	531F		
	9	5320	5321	5322	5323		
	10	5324	5325	5326	5327		
	11	5328	5329	532A	532B		
	12	532C	532D	532E	532F		
	13	5330	5331	5332	5333		
	14	5334	5335	5336	5337		
	15	5338	5339	533A	533B		
16	533C	533D	533E	533F			
USB setting value change flag clearing	Channel					R/W	0000H: Clear 0001H: Do not clear (Change setting value) The addresses of CH2 to CH4 are reserved items. (*)
	Module	CH1	CH2	CH3	CH4		
	1	5340	5341	5342	5343		
	2	5344	5345	5346	5347		
	3	5348	5349	534A	534B		
	4	534C	534D	534E	534F		
	5	5350	5351	5352	5353		
	6	5354	5355	5356	5357		
	7	5358	5359	535A	535B		
	8	535C	535D	535E	535F		
	9	5360	5361	5362	5363		
	10	5364	5365	5366	5367		
	11	5368	5369	536A	536B		
	12	536C	536D	536E	536F		
	13	5370	5371	5372	5373		
	14	5374	5375	5376	5377		
	15	5378	5379	537A	537B		
16	537C	537D	537E	537F			
Reservation (*)	5380 to 5FFF						

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)				Attribute	Data	
PV reading	Channel				RO	Value of control range (*) Corresponding to Input calculation function (Difference input, Addition input) and Input difference detection. When power is supplied from the host computer by USB bus power, 0 is returned.	
	Module	CH1	CH2	CH3			CH4
	1	6000	6001	6002			6003
	2	6004	6005	6006			6007
	3	6008	6009	600A			600B
	4	600C	600D	600E			600F
	5	6010	6011	6012			6013
	6	6014	6015	6016			6017
	7	6018	6019	601A			601B
	8	601C	601D	601E			601F
	9	6020	6021	6022			6023
	10	6024	6025	6026			6027
	11	6028	6029	602A			602B
	12	602C	602D	602E			602F
	13	6030	6031	6032			6033
	14	6034	6035	6036			6037
	15	6038	6039	603A			603B
16	603C	603D	603E	603F			
MV reading	Channel				RO	Output low limit to Output high limit	
	Module	CH1	CH2	CH3			CH4
	1	6040	6041	6042			6043
	2	6044	6045	6046			6047
	3	6048	6049	604A			604B
	4	604C	604D	604E			604F
	5	6050	6051	6052			6053
	6	6054	6055	6056			6057
	7	6058	6059	605A			605B
	8	605C	605D	605E			605F
	9	6060	6061	6062			6063
	10	6064	6065	6066			6067
	11	6068	6069	606A			606B
	12	606C	606D	606E			606F
	13	6070	6071	6072			6073
	14	6074	6075	6076			6077
	15	6078	6079	607A			607B
16	607C	607D	607E	607F			

(*): Control range for thermocouple input (no decimal point)

Input range low limit - 50 °C (90°F) to Input range high limit + 50 °C (90°F)

Control range for thermocouple input (with decimal point) and RTD input

Input range low limit - (Input span × 1 %) °C (°F) to Input range high limit + 50.0 °C (90°F)

Control range for DC current input and DC voltage input

Scaling low limit - Scaling width × 1 % to Scaling high limit + Scaling width × 10 %

Data Item	Address (HEX)				Attribute	Data	
SV reading	Channel				RO	Scaling low limit to Scaling high limit	
	Module	CH1	CH2	CH3			CH4
	1	6080	6081	6082			6083
	2	6084	6085	6088			6087
	3	6088	6089	608A			608B
	4	608C	608D	608E			608F
	5	6090	6091	6092			6093
	6	6094	6095	6096			6097
	7	6098	6099	609A			609B
	8	609C	609D	609E			609F
	9	60A0	60A1	60A2			60A3
	10	60A4	60A5	60A6			60A7
	11	60A8	60A9	60AA			60AB
	12	60AC	60AD	60AE			60AF
	13	60B0	60B1	60B2			60B3
	14	60B4	60B5	60B6			60B7
	15	60B8	60B9	60BA			60BB
16	60BC	60BD	60BE	60BF			

Data Item	Address (HEX)				Attribute	Data	
Status flag 1 reading	Channel				RO	B0: Control Enable/Disable 0: Disable 1: Enable	
	Module	CH1	CH2	CH3		CH4	B1: AT Perform/Cancel 0: Cancel 1: Perform
	1	60C0	60C1	60C2		60C3	B2: Auto/Manual control 0: Automatic 1: Manual
	2	60C4	60C5	60C6		60C7	B3: Control output 0: OFF 1: ON
	3	60C8	60C9	60CA		60CB	B4: Input error (Overscale) 0: Normal 1: Error
	4	60CC	60CD	60CE		60CF	B5: Input Error (Underscale) 0: Normal 1: Error
	5	60D0	60D1	60D2		60D3	B6: Alarm 1 output 0: OFF 1: ON
	6	60D4	60D5	60D6		60D7	B7: Alarm 2 output 0: OFF 1: ON
	7	60D8	60D9	60DA		60DB	B8: Alarm 3 output 0: OFF 1: ON
	8	60DC	60DD	60DE		60DF	B9: Alarm 4 output 0: OFF 1: ON
	9	60E0	60E1	60E2		60E3	B10: Loop break alarm output 0: OFF 1: ON
	10	60E4	60E5	60E6		60E7	B11: Heater burnout alarm output 0: OFF 1: ON
	11	60E8	60E9	60EA		60EB	B12: Input difference 0: Within range 1: Without range
	12	60EC	60ED	60EE		60EF	B13: Not used
	13	60F0	60F1	60F2		60F3	B14: Power supply identification (*) 0: 24 V DC 1: USB bus power
	14	60F4	60F5	60F6		60F7	B15: Non-volatile IC memory error 0: Normal 1: Error
	15	60F8	60F9	60FA		60FB	
16	60FC	60FD	60FE	60FF			

(*): When power is supplied from 24 V DC and USB bus power, 0: 24 V DC is returned.

Data Item	Address (HEX)					Attribute	Data
Status flag 2 reading	Channel					RO	B0: Auto balance control 0: None 1: During auto balance control B1: Not used B2: Not used B3: Not used B4: Cold junction error 0: Normal 1: Error B5: Sensor error 0: Normal 1: Error B6: ADC error 0: Normal 1: Error B7: Host setting value change flag 0: Without flag 1: With flag B8: USB setting value change flag 0: Without flag 1: With flag B9: Not used B10: Not used B11: Not used B12 to B15: System bit for internal processing. Do not use.
	Module	CH1	CH2	CH3	CH4		
	1	6100	6101	6102	6103		
	2	6104	6105	6106	6107		
	3	6108	6109	610A	610B		
	4	610C	610D	610E	610F		
	5	6110	6111	6112	6113		
	6	6114	6115	6116	6117		
	7	6118	6119	611A	611B		
	8	611C	611D	611E	611F		
	9	6120	6121	6122	6123		
	10	6124	6125	6126	6127		
	11	6128	6129	612A	612B		
	12	612C	612D	612E	612F		
	13	6130	6131	6132	6133		
	14	6134	6135	6136	6137		
	15	6138	6139	613A	613B		
16	613C	613D	613E	613F			
Heater current value reading	Channel					RO	0.0 to 20.0 A or 0.0 to 100.0 A
	Module	CH1	CH2	CH3	CH4		
	1	6140	6141	6142	6143		
	2	6144	6145	6146	6147		
	3	6148	6149	614A	614B		
	4	614C	614D	614E	614F		
	5	6150	6151	6152	6153		
	6	6154	6155	6156	6157		
	7	6158	6159	615A	615B		
	8	615C	615D	615E	615F		
	9	6160	6161	6162	6163		
	10	6164	6165	6166	6167		
	11	6168	6169	616A	616B		
	12	616C	616D	616E	616F		
	13	6170	6171	6172	6173		
	14	6174	6175	6176	6177		
	15	6178	6179	617A	617B		
16	617C	617D	617E	617F			

Data Item	Address (HEX)					Attribute	Data
Event input reading	Channel					RO	0000H: OFF 0001H: ON
	Module	CH1	CH2	CH3	CH4		
	1	6180	6181	6182	6183		
	2	6184	6185	6188	6187		
	3	6188	6189	618A	618B		
	4	618C	618D	618E	618F		
	5	6190	6191	6192	6193		
	6	6194	6195	6196	6197		
	7	6198	6199	619A	619B		
	8	619C	619D	619E	619F		
	9	61A0	61A1	61A2	61A3		
	10	61A4	61A5	61A6	61A7		
	11	61A8	61A9	61AA	61AB		
	12	61AC	61AD	61AE	61AF		
	13	61B0	61B1	61B2	61B3		
	14	61B4	61B5	61B6	61B7		
	15	61B8	61B9	61BA	61BB		
16	61BC	61BD	61BE	61BF			
Event output reading	Channel					RO	0000H: OFF 0001H: ON
	Module	CH1	CH2	CH3	CH4		
	1	61C0	61C1	61C2	61C3		
	2	61C4	61C5	61C6	61C7		
	3	61C8	61C9	61CA	61CB		
	4	61CC	61CD	61CE	61CF		
	5	61D0	61D1	61D2	61D3		
	6	61D4	61D5	61D6	61D7		
	7	61D8	61D9	61DA	61DB		
	8	61DC	61DD	61DE	61DF		
	9	61E0	61E1	61E2	61E3		
	10	61E4	61E5	61E6	61E7		
	11	61E8	61E9	61EA	61EB		
	12	61EC	61ED	61EE	61EF		
	13	61F0	61F1	61F2	61F3		
	14	61F4	61F5	61F6	61F7		
	15	61F8	61F9	61FA	61FB		
16	61FC	61FD	61FE	61FF			

Data Item	Address (HEX)					Attribute	Data
PV (process variable) reading	Channel					RO	Value of control range (*) The input value of each channel is read regardless of the calculation function (Difference input, Addition input) and input difference detection. When power is supplied from the host computer by USB bus power, 0 is returned.
	Module	CH1	CH2	CH3	CH4		
	1	6200	6201	6202	6203		
	2	6204	6205	6206	6207		
	3	6208	6209	620A	620B		
	4	620C	620D	620E	620F		
	5	6210	6211	6212	6213		
	6	6214	6215	6216	6217		
	7	6218	6219	621A	621B		
	8	621C	621D	621E	621F		
	9	6220	6221	6222	6223		
	10	6224	6225	6226	6227		
	11	6228	6229	622A	622B		
	12	622C	622D	622E	622F		
	13	6230	6231	6232	6233		
	14	6234	6235	6236	6237		
	15	6238	6239	623A	623B		
16	623C	623D	623E	623F			
Ambient temperature reading	Channel					RO	Read the input terminal temperature of each channel. When thermocouple input, convert it to a value according to temperature unit selection. For the read value, the value of the first decimal place is returned regardless of the presence or absence of a decimal point in the input range. (Example) If 0.0 °C (32.0 °F), the read value will be 0 (320). When RTD input, DC current input, and DC voltage input, 0 is returned.
	Module	CH1	CH2	CH3	CH4		
	1	6240	6241	6242	6243		
	2	6244	6245	6246	6247		
	3	6248	6249	624A	624B		
	4	624C	624D	624E	624F		
	5	6250	6251	6252	6253		
	6	6254	6255	6256	6257		
	7	6258	6259	625A	625B		
	8	625C	625D	625E	625F		
	9	6260	6261	6262	6263		
	10	6264	6265	6266	6267		
	11	6268	6269	626A	626B		
	12	626C	626D	626E	626F		
	13	6270	6271	6272	6273		
	14	6274	6275	6276	6277		
	15	6278	6279	627A	627B		
16	627C	627D	627E	627F			
Reservation (*)	6280 to EFFF						

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

Data Item	Address (HEX)				Attribute	Data	
Alarm history 1 Error No.	Channel				RO	B0: Alarm 1 0: Normal 1: Error	
	Module	CH1	CH2	CH3		CH4	B1: Alarm 2 0: Normal 1: Error
	1	F000	F001	F002		F003	B2: Alarm 3 0: Normal 1: Error
	2	F004	F005	F006		F007	B3: Alarm 4 0: Normal 1: Error
	3	F008	F009	F00A		F00B	B4: Heater burnout alarm 0: Normal 1: Error
	4	F00C	F00D	F00E		F00F	B5: Not used
	5	F010	F011	F012		F013	B6: Loop break alarm 0: Normal 1: Error
	6	F014	F015	F016		F017	B7: Sensor error 0: Normal 1: Error
	7	F018	F019	F01A		F01B	B8: Input error (Overscale) 0: Normal 1: Error
	8	F01C	F01D	F01E		F01F	B9: Input error (Underscale) 0: Normal 1: Error
	9	F020	F021	F022		F023	B10: Cold junction error 0: Normal 1: Error
	10	F024	F025	F026		F027	B11: Non-volatile IC memory error 0: Normal 1: Error
	11	F028	F029	F02A		F02B	B12: ADC error 0: Normal 1: Error
	12	F02C	F02D	F02E		F02F	B13: Not used
	13	F030	F031	F032		F033	B14: Not used
	14	F034	F035	F036		F037	B15: Not used
	15	F038	F039	F03A		F03B	
16	F03C	F03D	F03E	F03F			
Alarm history 2 Error No.	Channel				RO		
	Module	CH1	CH2	CH3		CH4	
	1	F040	F041	F042		F043	
	2	F044	F045	F046		F047	
	3	F048	F049	F04A		F04B	
	4	F04C	F04D	F04E		F04F	
	5	F050	F051	F052		F053	
	6	F054	F055	F056		F057	
	7	F058	F059	F05A		F05B	
	8	F05C	F05D	F05E		F05F	
	9	F060	F061	F062		F063	
	10	F064	F065	F066		F067	
	11	F068	F069	F06A		F06B	
	12	F06C	F06D	F06E		F06F	
	13	F070	F071	F072		F073	
	14	F074	F075	F076		F077	
	15	F078	F079	F07A		F07B	
16	F07C	F07D	F07E	F07F			

Data Item	Address (HEX)				Attribute	Data	
Alarm history 3 Error No.	Channel				RO	B0: Alarm 1 0: Normal 1: Error	
	Module	CH1	CH2	CH3		CH4	B1: Alarm 2 0: Normal 1: Error
	1	F080	F081	F082		F083	B2: Alarm 3 0: Normal 1: Error
	2	F084	F085	F088		F087	B3: Alarm 4 0: Normal 1: Error
	3	F088	F089	F08A		F08B	B4: Heater burnout alarm 0: Normal 1: Error
	4	F08C	F08D	F08E		F08F	B5: Not used
	5	F090	F091	F092		F093	B6: Loop break alarm 0: Normal 1: Error
	6	F094	F095	F096		F097	B7: Sensor error 0: Normal 1: Error
	7	F098	F099	F09A		F09B	B8: Input error (Overscale) 0: Normal 1: Error
	8	F09C	F09D	F09E		F09F	B9: Input error (Underscale) 0: Normal 1: Error
	9	F0A0	F0A1	F0A2		F0A3	B10: Cold junction error 0: Normal 1: Error
	10	F0A4	F0A5	F0A6		F0A7	B11: Non-volatile IC memory error 0: Normal 1: Error
	11	F0A8	F0A9	F0AA		F0AB	B12: ADC error 0: Normal 1: Error
	12	F0AC	F0AD	F0AE		F0AF	B13: Not used
	13	F0B0	F0B1	F0B2		F0B3	B14: Not used
	14	F0B4	F0B5	F0B6		F0B7	B15: Not used
	15	F0B8	F0B9	F0BA		F0BB	
16	F0BC	F0BD	F0BE	F0BF			
Alarm history 4 Error No.	Channel				RO		
	Module	CH1	CH2	CH3		CH4	
	1	F0C0	F0C1	F0C2		F0C3	
	2	F0C4	F0C5	F0C6		F0C7	
	3	F0C8	F0C9	F0CA		F0CB	
	4	F0CC	F0CD	F0CE		F0CF	
	5	F0D0	F0D1	F0D2		F0D3	
	6	F0D4	F0D5	F0D6		F0D7	
	7	F0D8	F0D9	F0DA		F0DB	
	8	F0DC	F0DD	F0DE		F0DF	
	9	F0E0	F0E1	F0E2		F0E3	
	10	F0E4	F0E5	F0E6		F0E7	
	11	F0E8	F0E9	F0EA		F0EB	
	12	F0EC	F0ED	F0EE		F0EF	
	13	F0F0	F0F1	F0F2		F0F3	
	14	F0F4	F0F5	F0F6		F0F7	
	15	F0F8	F0F9	F0FA		F0FB	
16	F0FC	F0FD	F0FE	F0FF			

Data Item	Address (HEX)				Attribute	Data	
Alarm history 5 Error No.	Channel				RO	B0: Alarm 1 0: Normal 1: Error	
	Module	CH1	CH2	CH3		CH4	B1: Alarm 2 0: Normal 1: Error
	1	F100	F101	F102		F103	B2: Alarm 3 0: Normal 1: Error
	2	F104	F105	F106		F107	B3: Alarm 4 0: Normal 1: Error
	3	F108	F109	F10A		F10B	B4: Heater burnout alarm 0: Normal 1: Error
	4	F10C	F10D	F10E		F10F	B5: Not used
	5	F110	F111	F112		F113	B6: Loop break alarm 0: Normal 1: Error
	6	F114	F115	F116		F117	B7: Sensor error 0: Normal 1: Error
	7	F118	F119	F11A		F11B	B8: Input error (Overscale) 0: Normal 1: Error
	8	F11C	F11D	F11E		F11F	B9: Input error (Underscale) 0: Normal 1: Error
	9	F120	F121	F122		F123	B10: Cold junction error 0: Normal 1: Error
	10	F124	F125	F126		F127	B11: Non-volatile IC memory error 0: Normal 1: Error
	11	F128	F129	F12A		F12B	B12: ADC error 0: Normal 1: Error
	12	F12C	F12D	F12E		F12F	B13: Not used
	13	F130	F131	F132		F133	B14: Not used
	14	F134	F135	F136		F137	B15: Not used
	15	F138	F139	F13A		F13B	
16	F13C	F13D	F13E	F13F			
Alarm history 6 Error No.	Channel				RO		
	Module	CH1	CH2	CH3		CH4	
	1	F140	F141	F142		F143	
	2	F144	F145	F146		F147	
	3	F148	F149	F14A		F14B	
	4	F14C	F14D	F14E		F14F	
	5	F150	F151	F152		F153	
	6	F154	F155	F156		F157	
	7	F158	F159	F15A		F15B	
	8	F15C	F15D	F15E		F15F	
	9	F160	F161	F162		F163	
	10	F164	F165	F166		F167	
	11	F168	F169	F16A		F16B	
	12	F16C	F16D	F16E		F16F	
	13	F170	F171	F172		F173	
	14	F174	F175	F176		F177	
	15	F178	F179	F17A		F17B	
16	F17C	F17D	F17E	F17F			

Data Item	Address (HEX)				Attribute	Data	
Alarm history 7 Error No.	Channel				RO	B0: Alarm 1 0: Normal 1: Error	
	Module	CH1	CH2	CH3		CH4	B1: Alarm 2 0: Normal 1: Error
	1	F180	F181	F182		F183	B2: Alarm 3 0: Normal 1: Error
	2	F184	F185	F188		F187	B3: Alarm 4 0: Normal 1: Error
	3	F188	F189	F18A		F18B	B4: Heater burnout alarm 0: Normal 1: Error
	4	F18C	F18D	F18E		F18F	B5: Not used
	5	F190	F191	F192		F193	B6: Loop break alarm 0: Normal 1: Error
	6	F194	F195	F196		F197	B7: Sensor error 0: Normal 1: Error
	7	F198	F199	F19A		F19B	B8: Input error (Overscale) 0: Normal 1: Error
	8	F19C	F19D	F19E		F19F	B9: Input error (Underscale) 0: Normal 1: Error
	9	F1A0	F1A1	F1A2		F1A3	B10: Cold junction error 0: Normal 1: Error
	10	F1A4	F1A5	F1A6		F1A7	B11: Non-volatile IC memory error 0: Normal 1: Error
	11	F1A8	F1A9	F1AA		F1AB	B12: ADC error 0: Normal 1: Error
	12	F1AC	F1AD	F1AE		F1AF	B13: Not used
	13	F1B0	F1B1	F1B2		F1B3	B14: Not used
	14	F1B4	F1B5	F1B6		F1B7	B15: Not used
	15	F1B8	F1B9	F1BA		F1BB	
16	F1BC	F1BD	F1BE	F1BF			
Alarm history 8 Error No.	Channel				RO		
	Module	CH1	CH2	CH3		CH4	
	1	F1C0	F1C1	F1C2		F1C3	
	2	F1C4	F1C5	F1C6		F1C7	
	3	F1C8	F1C9	F1CA		F1CB	
	4	F1CC	F1CD	F1CE		F1CF	
	5	F1D0	F1D1	F1D2		F1D3	
	6	F1D4	F1D5	F1D6		F1D7	
	7	F1D8	F1D9	F1DA		F1DB	
	8	F1DC	F1DD	F1DE		F1DF	
	9	F1E0	F1E1	F1E2		F1E3	
	10	F1E4	F1E5	F1E6		F1E7	
	11	F1E8	F1E9	F1EA		F1EB	
	12	F1EC	F1ED	F1EE		F1EF	
	13	F1F0	F1F1	F1F2		F1F3	
	14	F1F4	F1F5	F1F6		F1F7	
	15	F1F8	F1F9	F1FA		F1FB	
16	F1FC	F1FD	F1FE	F1FF			

Data Item	Address (HEX)					Attribute	Data
Alarm history 9 Error No.	Channel					RO	B0: Alarm 1 0: Normal 1: Error
	Module	CH1	CH2	CH3	CH4		B1: Alarm 2 0: Normal 1: Error
	1	F200	F201	F202	F203		B2: Alarm 3 0: Normal 1: Error
	2	F204	F205	F206	F207		B3: Alarm 4 0: Normal 1: Error
	3	F208	F209	F20A	F20B		B4: Heater burnout alarm 0: Normal 1: Error
	4	F20C	F20D	F20E	F20F		B5: Not used
	5	F210	F211	F212	F213		B6: Loop break alarm 0: Normal 1: Error
	6	F214	F215	F216	F217		B7: Sensor error 0: Normal 1: Error
	7	F218	F219	F21A	F21B		B8: Input error (Overscale) 0: Normal 1: Error
	8	F21C	F21D	F21E	F21F		B9: Input error (Underscale) 0: Normal 1: Error
	9	F220	F221	F222	F223		B10: Cold junction error 0: Normal 1: Error
	10	F224	F225	F226	F227		B11: Non-volatile IC memory error 0: Normal 1: Error
	11	F228	F229	F22A	F22B		B12: ADC error 0: Normal 1: Error
	12	F22C	F22D	F22E	F22F		B13: Not used
	13	F230	F231	F232	F233		B14: Not used
	14	F234	F235	F236	F237		B15: Not used
	15	F238	F239	F23A	F23B		
16	F23C	F23D	F23E	F23F			
Alarm history 10 Error No.	Channel					RO	
	Module	CH1	CH2	CH3	CH4		
	1	F240	F241	F242	F243		
	2	F244	F245	F246	F247		
	3	F248	F249	F24A	F24B		
	4	F24C	F24D	F24E	F24F		
	5	F250	F251	F252	F253		
	6	F254	F255	F256	F257		
	7	F258	F259	F25A	F25B		
	8	F25C	F25D	F25E	F25F		
	9	F260	F261	F262	F263		
	10	F264	F265	F266	F267		
	11	F268	F269	F26A	F26B		
	12	F26C	F26D	F26E	F26F		
	13	F270	F271	F272	F273		
	14	F274	F275	F276	F277		
	15	F278	F279	F27A	F27B		
16	F27C	F27D	F27E	F27F			

Data Item	Address (HEX)				Attribute	Data	
Alarm history 1 Total energizing time	Channel				RO	Total energizing time when an error occurs	
	Module	CH1	CH2	CH3			CH4
	1	F280	F281	F282			F283
	2	F284	F285	F288			F287
	3	F288	F289	F28A			F28B
	4	F28C	F28D	F28E			F28F
	5	F290	F291	F292			F293
	6	F294	F295	F296			F297
	7	F298	F299	F29A			F29B
	8	F29C	F29D	F29E			F29F
	9	F2A0	F2A1	F2A2			F2A3
	10	F2A4	F2A5	F2A6			F2A7
	11	F2A8	F2A9	F2AA			F2AB
	12	F2AC	F2AD	F2AE			F2AF
	13	F2B0	F2B1	F2B2			F2B3
	14	F2B4	F2B5	F2B6			F2B7
	15	F2B8	F2B9	F2BA			F2BB
16	F2BC	F2BD	F2BE	F2BF			
Alarm history 2 Total energizing time	Channel				RO	Total energizing time when an error occurs	
	Module	CH1	CH2	CH3			CH4
	1	F2C0	F2C1	F2C2			F2C3
	2	F2C4	F2C5	F2C6			F2C7
	3	F2C8	F2C9	F2CA			F2CB
	4	F2CC	F2CD	F2CE			F2CF
	5	F2D0	F2D1	F2D2			F2D3
	6	F2D4	F2D5	F2D6			F2D7
	7	F2D8	F2D9	F2DA			F2DB
	8	F2DC	F2DD	F2DE			F2DF
	9	F2E0	F2E1	F2E2			F2E3
	10	F2E4	F2E5	F2E6			F2E7
	11	F2E8	F2E9	F2EA			F2EB
	12	F2EC	F2ED	F2EE			F2EF
	13	F2F0	F2F1	F2F2			F2F3
	14	F2F4	F2F5	F2F6			F2F7
	15	F2F8	F2F9	F2FA			F2FB
16	F2FC	F2FD	F2FE	F2FF			

Data Item	Address (HEX)				Attribute	Data
Alarm history 3 Total energizing time	Channel				RO	Total energizing time when an error occurs
Module	CH1	CH2	CH3	CH4		
1	F300	F301	F302	F303		
2	F304	F305	F306	F307		
3	F308	F309	F30A	F30B		
4	F30C	F30D	F30E	F30F		
5	F310	F311	F312	F313		
6	F314	F315	F316	F317		
7	F318	F319	F31A	F31B		
8	F31C	F31D	F31E	F31F		
9	F320	F321	F322	F323		
10	F324	F325	F326	F327		
11	F328	F329	F32A	F32B		
12	F32C	F32D	F32E	F32F		
13	F330	F331	F332	F333		
14	F334	F335	F336	F337		
15	F338	F339	F33A	F33B		
16	F33C	F33D	F33E	F33F		
Alarm history 4 Total energizing time	Channel				RO	Total energizing time when an error occurs
Module	CH1	CH2	CH3	CH4		
1	F340	F341	F342	F343		
2	F344	F345	F346	F347		
3	F348	F349	F34A	F34B		
4	F34C	F34D	F34E	F34F		
5	F350	F351	F352	F353		
6	F354	F355	F356	F357		
7	F358	F359	F35A	F35B		
8	F35C	F35D	F35E	F35F		
9	F360	F361	F362	F363		
10	F364	F365	F366	F367		
11	F368	F369	F36A	F36B		
12	F36C	F36D	F36E	F36F		
13	F370	F371	F372	F373		
14	F374	F375	F376	F377		
15	F378	F379	F37A	F37B		
16	F37C	F37D	F37E	F37F		

Data Item	Address (HEX)				Attribute	Data	
Alarm history 5 Total energizing time	Channel				RO	Total energizing time when an error occurs	
	Module	CH1	CH2	CH3			CH4
	1	F380	F381	F382			F383
	2	F384	F385	F388			F387
	3	F388	F389	F38A			F38B
	4	F38C	F38D	F38E			F38F
	5	F390	F391	F392			F393
	6	F394	F395	F396			F397
	7	F398	F399	F39A			F39B
	8	F39C	F39D	F39E			F39F
	9	F3A0	F3A1	F3A2			F3A3
	10	F3A4	F3A5	F3A6			F3A7
	11	F3A8	F3A9	F3AA			F3AB
	12	F3AC	F3AD	F3AE			F3AF
	13	F3B0	F3B1	F3B2			F3B3
	14	F3B4	F3B5	F3B6			F3B7
	15	F3B8	F3B9	F3BA			F3BB
16	F3BC	F3BD	F3BE	F3BF			
Alarm history 6 Total energizing time	Channel				RO	Total energizing time when an error occurs	
	Module	CH1	CH2	CH3			CH4
	1	F3C0	F3C1	F3C2			F3C3
	2	F3C4	F3C5	F3C6			F3C7
	3	F3C8	F3C9	F3CA			F3CB
	4	F3CC	F3CD	F3CE			F3CF
	5	F3D0	F3D1	F3D2			F3D3
	6	F3D4	F3D5	F3D6			F3D7
	7	F3D8	F3D9	F3DA			F3DB
	8	F3DC	F3DD	F3DE			F3DF
	9	F3E0	F3E1	F3E2			F3E3
	10	F3E4	F3E5	F3E6			F3E7
	11	F3E8	F3E9	F3EA			F3EB
	12	F3EC	F3ED	F3EE			F3EF
	13	F3F0	F3F1	F3F2			F3F3
	14	F3F4	F3F5	F3F6			F3F7
	15	F3F8	F3F9	F3FA			F3FB
16	F3FC	F3FD	F3FE	F3FF			

Data Item	Address (HEX)					Attribute	Data
Alarm history 7 Total energizing time	Channel					RO	Total energizing time when an error occurs
	Module	CH1	CH2	CH3	CH4		
	1	F400	F401	F402	F403		
	2	F404	F405	F406	F407		
	3	F408	F409	F40A	F40B		
	4	F40C	F40D	F40E	F40F		
	5	F410	F411	F412	F413		
	6	F414	F415	F416	F417		
	7	F418	F419	F41A	F41B		
	8	F41C	F41D	F41E	F41F		
	9	F420	F421	F422	F423		
	10	F424	F425	F426	F427		
	11	F428	F429	F42A	F42B		
	12	F42C	F42D	F42E	F42F		
	13	F430	F431	F432	F433		
	14	F434	F435	F436	F437		
	15	F438	F439	F43A	F43B		
	16	F43C	F43D	F43E	F43F		
Alarm history 8 Total energizing time	Channel					RO	Total energizing time when an error occurs
	Module	CH1	CH2	CH3	CH4		
	1	F440	F441	F442	F443		
	2	F444	F445	F446	F447		
	3	F448	F449	F44A	F44B		
	4	F44C	F44D	F44E	F44F		
	5	F450	F451	F452	F453		
	6	F454	F455	F456	F457		
	7	F458	F459	F45A	F45B		
	8	F45C	F45D	F45E	F45F		
	9	F460	F461	F462	F463		
	10	F464	F465	F466	F467		
	11	F468	F469	F46A	F46B		
	12	F46C	F46D	F46E	F46F		
	13	F470	F471	F472	F473		
	14	F474	F475	F476	F477		
	15	F478	F479	F47A	F47B		
	16	F47C	F47D	F47E	F47F		

Data Item	Address (HEX)				Attribute	Data	
Alarm history 9 Total energizing time	Channel				RO	Total energizing time when an error occurs	
	Module	CH1	CH2	CH3			CH4
	1	F480	F481	F482			F483
	2	F484	F485	F488			F487
	3	F488	F489	F48A			F48B
	4	F48C	F48D	F48E			F48F
	5	F490	F491	F492			F493
	6	F494	F495	F496			F497
	7	F498	F499	F49A			F49B
	8	F49C	F49D	F49E			F49F
	9	F4A0	F4A1	F4A2			F4A3
	10	F4A4	F4A5	F4A6			F4A7
	11	F4A8	F4A9	F4AA			F4AB
	12	F4AC	F4AD	F4AE			F4AF
	13	F4B0	F4B1	F4B2			F4B3
	14	F4B4	F4B5	F4B6			F4B7
	15	F4B8	F4B9	F4BA			F4BB
	16	F4BC	F4BD	F4BE	F4BF		
Alarm history 10 Total energizing time	Channel				RO	Total energizing time when an error occurs	
	Module	CH1	CH2	CH3			CH4
	1	F4C0	F4C1	F4C2			F4C3
	2	F4C4	F4C5	F4C6			F4C7
	3	F4C8	F4C9	F4CA			F4CB
	4	F4CC	F4CD	F4CE			F4CF
	5	F4D0	F4D1	F4D2			F4D3
	6	F4D4	F4D5	F4D6			F4D7
	7	F4D8	F4D9	F4DA			F4DB
	8	F4DC	F4DD	F4DE			F4DF
	9	F4E0	F4E1	F4E2			F4E3
	10	F4E4	F4E5	F4E6			F4E7
	11	F4E8	F4E9	F4EA			F4EB
	12	F4EC	F4ED	F4EE			F4EF
	13	F4F0	F4F1	F4F2			F4F3
	14	F4F4	F4F5	F4F6			F4F7
	15	F4F8	F4F9	F4FA			F4FB
	16	F4FC	F4FD	F4FE	F4FF		

Data Item	Address (HEX)				Attribute	Data	
Contact switching total number of times (High)	Channel				RO	Contact switching total number of times (High)	
	Module	CH1	CH2	CH3			CH4
	1	F500	F501	F502			F503
	2	F504	F505	F506			F507
	3	F508	F509	F50A			F50B
	4	F50C	F50D	F50E			F50F
	5	F510	F511	F512			F513
	6	F514	F515	F516			F517
	7	F518	F519	F51A			F51B
	8	F51C	F51D	F51E			F51F
	9	F520	F521	F522			F523
	10	F524	F525	F526			F527
	11	F528	F529	F52A			F52B
	12	F52C	F52D	F52E			F52F
	13	F530	F531	F532			F533
	14	F534	F535	F536			F537
	15	F538	F539	F53A			F53B
16	F53C	F53D	F53E	F53F			
Contact switching total number of times (Low)	Channel				RO	Contact switching total number of times (Low)	
	Module	CH1	CH2	CH3			CH4
	1	F540	F541	F542			F543
	2	F544	F545	F546			F547
	3	F548	F549	F54A			F54B
	4	F54C	F54D	F54E			F54F
	5	F550	F551	F552			F553
	6	F554	F555	F556			F557
	7	F558	F559	F55A			F55B
	8	F55C	F55D	F55E			F55F
	9	F560	F561	F562			F563
	10	F564	F565	F566			F567
	11	F568	F569	F56A			F56B
	12	F56C	F56D	F56E			F56F
	13	F570	F571	F572			F573
	14	F574	F575	F576			F577
	15	F578	F579	F57A			F57B
16	F57C	F57D	F57E	F57F			

Data Item	Address (HEX)				Attribute	Data	
Total energizing time (High, Low)	Channel				RO	Total energizing time CH1: Count value (High) CH2: Count value (Low) 1 count/10 mins Data for CH3 and CH4 are indefinite.	
	Module	CH1	CH2	CH3			CH4
	1	F580	F581	F582			F583
	2	F584	F585	F588			F587
	3	F588	F589	F58A			F58B
	4	F58C	F58D	F58E			F58F
	5	F590	F591	F592			F593
	6	F594	F595	F596			F597
	7	F598	F599	F59A			F59B
	8	F59C	F59D	F59E			F59F
	9	F5A0	F5A1	F5A2			F5A3
	10	F5A4	F5A5	F5A6			F5A7
	11	F5A8	F5A9	F5AA			F5AB
	12	F5AC	F5AD	F5AE			F5AF
	13	F5B0	F5B1	F5B2			F5B3
	14	F5B4	F5B5	F5B6			F5B7
	15	F5B8	F5B9	F5BA			F5BB
16	F5BC	F5BD	F5BE	F5BF			
Heater accumulated energizing time (High)	Channel				RO	Heater accumulated energizing time (High) 1 count/1 min	
	Module	CH1	CH2	CH3			CH4
	1	F5C0	F5C1	F5C2			F5C3
	2	F5C4	F5C5	F5C6			F5C7
	3	F5C8	F5C9	F5CA			F5CB
	4	F5CC	F5CD	F5CE			F5CF
	5	F5D0	F5D1	F5D2			F5D3
	6	F5D4	F5D5	F5D6			F5D7
	7	F5D8	F5D9	F5DA			F5DB
	8	F5DC	F5DD	F5DE			F5DF
	9	F5E0	F5E1	F5E2			F5E3
	10	F5E4	F5E5	F5E6			F5E7
	11	F5E8	F5E9	F5EA			F5EB
	12	F5EC	F5ED	F5EE			F5EF
	13	F5F0	F5F1	F5F2			F5F3
	14	F5F4	F5F5	F5F6			F5F7
	15	F5F8	F5F9	F5FA			F5FB
16	F5FC	F5FD	F5FE	F5FF			

Data Item	Address (HEX)				Attribute	Data	
Heater accumulated energizing time (Low)	Channel				RO	Heater accumulated energizing time (Low) 1 count/1 min	
	Module	CH1	CH2	CH3			CH4
	1	F600	F601	F602			F603
	2	F604	F605	F606			F607
	3	F608	F609	F60A			F60B
	4	F60C	F60D	F60E			F60F
	5	F610	F611	F612			F613
	6	F614	F615	F616			F617
	7	F618	F619	F61A			F61B
	8	F61C	F61D	F61E			F61F
	9	F620	F621	F622			F623
	10	F624	F625	F626			F627
	11	F628	F629	F62A			F62B
	12	F62C	F62D	F62E			F62F
	13	F630	F631	F632			F633
	14	F634	F635	F636			F637
	15	F638	F639	F63A			F63B
16	F63C	F63D	F63E	F63F			
Output form	Channel				RO	0000H: Relay contact output 0001H: Non-contact voltage (for SSR drive) output 0002H: Open collector output 0003H: Triac output 0004H: DC current output 4 to 20 mA DC 0005H: DC current output 0 to 20 mA DC 0006H: DC voltage output 0 to 1 V DC 0007H: DC voltage output 0 to 5 V DC 0008H: DC voltage output 1 to 5 V DC 0009H: DC voltage output 0 to 10 V DC	
	Module	CH1	CH2	CH3			CH4
	1	F640	F641	F642			F643
	2	F644	F645	F646			F647
	3	F648	F649	F64A			F64B
	4	F64C	F64D	F64E			F64F
	5	F650	F651	F652			F653
	6	F654	F655	F656			F657
	7	F658	F659	F65A			F65B
	8	F65C	F65D	F65E			F65F
	9	F660	F661	F662			F663
	10	F664	F665	F666			F667
	11	F668	F669	F66A			F66B
	12	F66C	F66D	F66E			F66F
	13	F670	F671	F672			F673
	14	F674	F675	F676			F677
	15	F678	F679	F67A			F67B
16	F67C	F67D	F67E	F67F			

Data Item	Address (HEX)				Attribute	Data	
Input form	Channel				RO	0000H: Input code M 0001H: Input code A 0002H: Input code V	
	Module	CH1	CH2	CH3			CH4
	1	F680	F681	F682			F683
	2	F684	F685	F688			F687
	3	F688	F689	F68A			F68B
	4	F68C	F68D	F68E			F68F
	5	F690	F691	F692			F693
	6	F694	F695	F696			F697
	7	F698	F699	F69A			F69B
	8	F69C	F69D	F69E			F69F
	9	F6A0	F6A1	F6A2			F6A3
	10	F6A4	F6A5	F6A6			F6A7
	11	F6A8	F6A9	F6AA			F6AB
	12	F6AC	F6AD	F6AE			F6AF
	13	F6B0	F6B1	F6B2			F6B3
	14	F6B4	F6B5	F6B6			F6B7
	15	F6B8	F6B9	F6BA			F6BB
16	F6BC	F6BD	F6BE	F6BF			
Product code	Channel				RO	Product code The data for CH2 to CH4 is indefinite.	
	Module	CH1	CH2	CH3			CH4
	1	F6C0	F6C1	F6C2			F6C3
	2	F6C4	F6C5	F6C6			F6C7
	3	F6C8	F6C9	F6CA			F6CB
	4	F6CC	F6CD	F6CE			F6CF
	5	F6D0	F6D1	F6D2			F6D3
	6	F6D4	F6D5	F6D6			F6D7
	7	F6D8	F6D9	F6DA			F6DB
	8	F6DC	F6DD	F6DE			F6DF
	9	F6E0	F6E1	F6E2			F6E3
	10	F6E4	F6E5	F6E6			F6E7
	11	F6E8	F6E9	F6EA			F6EB
	12	F6EC	F6ED	F6EE			F6EF
	13	F6F0	F6F1	F6F2			F6F3
	14	F6F4	F6F5	F6F6			F6F7
	15	F6F8	F6F9	F6FA			F6FB
16	F6FC	F6FD	F6FE	F6FF			

Data Item	Address (HEX)				Attribute	Data	
Presence of communication option	Channel				RO	0000H: No option 0001H: With power supply/upper communication function The data for CH2 to CH4 is indefinite.	
	Module	CH1	CH2	CH3			CH4
	1	F700	F701	F702			F703
	2	F704	F705	F706			F707
	3	F708	F709	F70A			F70B
	4	F70C	F70D	F70E			F70F
	5	F710	F711	F712			F713
	6	F714	F715	F716			F717
	7	F718	F719	F71A			F71B
	8	F71C	F71D	F71E			F71F
	9	F720	F721	F722			F723
	10	F724	F725	F726			F727
	11	F728	F729	F72A			F72B
	12	F72C	F72D	F72E			F72F
	13	F730	F731	F732			F733
	14	F734	F735	F736			F737
	15	F738	F739	F73A			F73B
16	F73C	F73D	F73E	F73F			
Wiring type	Channel				RO	0000H: Terminal type 0001H: Connector type The data for CH2 to CH4 is indefinite.	
	Module	CH1	CH2	CH3			CH4
	1	F740	F741	F742			F743
	2	F744	F745	F746			F747
	3	F748	F749	F74A			F74B
	4	F74C	F74D	F74E			F74F
	5	F750	F751	F752			F753
	6	F754	F755	F756			F757
	7	F758	F759	F75A			F75B
	8	F75C	F75D	F75E			F75F
	9	F760	F761	F762			F763
	10	F764	F765	F766			F767
	11	F768	F769	F76A			F76B
	12	F76C	F76D	F76E			F76F
	13	F770	F771	F772			F773
	14	F774	F775	F776			F777
	15	F778	F779	F77A			F77B
16	F77C	F77D	F77E	F77F			

Data Item	Address (HEX)					Attribute	Data
Presence of heater burnout alarm option	Channel					RO	0000H: No option 0001H: Single-phase 20 A 0002H: Single-phase 100 A The data for CH2 to CH4 is indefinite.
	Module	CH1	CH2	CH3	CH4		
	1	F780	F781	F782	F783		
	2	F784	F785	F788	F787		
	3	F788	F789	F78A	F78B		
	4	F78C	F78D	F78E	F78F		
	5	F790	F791	F792	F793		
	6	F794	F795	F796	F797		
	7	F798	F799	F79A	F79B		
	8	F79C	F79D	F79E	F79F		
	9	F7A0	F7A1	F7A2	F7A3		
	10	F7A4	F7A5	F7A6	F7A7		
	11	F7A8	F7A9	F7AA	F7AB		
	12	F7AC	F7AD	F7AE	F7AF		
	13	F7B0	F7B1	F7B2	F7B3		
	14	F7B4	F7B5	F7B6	F7B7		
	15	F7B8	F7B9	F7BA	F7BB		
16	F7BC	F7BD	F7BE	F7BF			
Presence of event option	Channel					RO	0000H: No option 0001H: Event input (4 points) 0002H: Event output (4 points) The data for CH2 to CH4 is indefinite.
	Module	CH1	CH2	CH3	CH4		
	1	F7C0	F7C1	F7C2	F7C3		
	2	F7C4	F7C5	F7C6	F7C7		
	3	F7C8	F7C9	F7CA	F7CB		
	4	F7CC	F7CD	F7CE	F7CF		
	5	F7D0	F7D1	F7D2	F7D3		
	6	F7D4	F7D5	F7D6	F7D7		
	7	F7D8	F7D9	F7DA	F7DB		
	8	F7DC	F7DD	F7DE	F7DF		
	9	F7E0	F7E1	F7E2	F7E3		
	10	F7E4	F7E5	F7E6	F7E7		
	11	F7E8	F7E9	F7EA	F7EB		
	12	F7EC	F7ED	F7EE	F7EF		
	13	F7F0	F7F1	F7F2	F7F3		
	14	F7F4	F7F5	F7F6	F7F7		
	15	F7F8	F7F9	F7FA	F7FB		
16	F7FC	F7FD	F7FE	F7FF			

Data Item	Address (HEX)				Attribute	Data
Software version	Channel				RO	Software version The data for CH2 to CH4 is indefinite.
Module	CH1	CH2	CH3	CH4		
1	F800	F801	F802	F803		
2	F804	F805	F806	F807		
3	F808	F809	F80A	F80B		
4	F80C	F80D	F80E	F80F		
5	F810	F811	F812	F813		
6	F814	F815	F816	F817		
7	F818	F819	F81A	F81B		
8	F81C	F81D	F81E	F81F		
9	F820	F821	F822	F823		
10	F824	F825	F826	F827		
11	F828	F829	F82A	F82B		
12	F82C	F82D	F82E	F82F		
13	F830	F831	F832	F833		
14	F834	F835	F836	F837		
15	F838	F839	F83A	F83B		
16	F83C	F83D	F83E	F83F		
Manufacturing date	Channel				RO	Manufacturing date The data for CH2 to CH4 is indefinite.
Module	CH1	CH2	CH3	CH4		
1	F840	F841	F842	F843		
2	F844	F845	F846	F847		
3	F848	F849	F84A	F84B		
4	F84C	F84D	F84E	F84F		
5	F850	F851	F852	F853		
6	F854	F855	F856	F857		
7	F858	F859	F85A	F85B		
8	F85C	F85D	F85E	F85F		
9	F860	F861	F862	F863		
10	F864	F865	F866	F867		
11	F868	F869	F86A	F86B		
12	F86C	F86D	F86E	F86F		
13	F870	F871	F872	F873		
14	F874	F875	F876	F877		
15	F878	F879	F87A	F87B		
16	F87C	F87D	F87E	F87F		

Data Item	Address (HEX)				Attribute	Data	
Hardware version	Channel				RO	Hardware version The data for CH2 to CH4 is indefinite.	
	Module	CH1	CH2	CH3			CH4
	1	F880	F881	F882			F883
	2	F884	F885	F888			F887
	3	F888	F889	F88A			F88B
	4	F88C	F88D	F88E			F88F
	5	F890	F891	F892			F893
	6	F894	F895	F896			F897
	7	F898	F899	F89A			F89B
	8	F89C	F89D	F89E			F89F
	9	F8A0	F8A1	F8A2			F8A3
	10	F8A4	F8A5	F8A6			F8A7
	11	F8A8	F8A9	F8AA			F8AB
	12	F8AC	F8AD	F8AE			F8AF
	13	F8B0	F8B1	F8B2			F8B3
	14	F8B4	F8B5	F8B6			F8B7
	15	F8B8	F8B9	F8BA			F8BB
16	F8BC	F8BD	F8BE	F8BF			
Maintenance mode	Channel				R/W	0000H: Normal mode 0001H: Maintenance mode The data for CH2 to CH4 is indefinite.	
	Module	CH1	CH2	CH3			CH4
	1	F8C0	F8C1	F8C2			F8C3
	2	F8C4	F8C5	F8C6			F8C7
	3	F8C8	F8C9	F8CA			F8CB
	4	F8CC	F8CD	F8CE			F8CF
	5	F8D0	F8D1	F8D2			F8D3
	6	F8D4	F8D5	F8D6			F8D7
	7	F8D8	F8D9	F8DA			F8DB
	8	F8DC	F8DD	F8DE			F8DF
	9	F8E0	F8E1	F8E2			F8E3
	10	F8E4	F8E5	F8E6			F8E7
	11	F8E8	F8E9	F8EA			F8EB
	12	F8EC	F8ED	F8EE			F8EF
	13	F8F0	F8F1	F8F2			F8F3
	14	F8F4	F8F5	F8F6			F8F7
	15	F8F8	F8F9	F8FA			F8FB
16	F8FC	F8FD	F8FE	F8FF			

Data Item	Address (HEX)				Attribute	Data	
Control output forced ON/OFF	Channel				R/W	0000H: Control output OFF 0001H: Control output ON	
	Module	CH1	CH2	CH3			CH4
	1	F900	F901	F902			F903
	2	F904	F905	F906			F907
	3	F908	F909	F90A			F90B
	4	F90C	F90D	F90E			F90F
	5	F910	F911	F912			F913
	6	F914	F915	F916			F917
	7	F918	F919	F91A			F91B
	8	F91C	F91D	F91E			F91F
	9	F920	F921	F922			F923
	10	F924	F925	F926			F927
	11	F928	F929	F92A			F92B
	12	F92C	F92D	F92E			F92F
	13	F930	F931	F932			F933
	14	F934	F935	F936			F937
	15	F938	F939	F93A			F93B
16	F93C	F93D	F93E	F93F			
Event output forced ON/OFF	Channel				R/W	0000H: Event output OFF 0001H: Event output ON	
	Module	CH1	CH2	CH3			CH4
	1	F940	F941	F942			F943
	2	F944	F945	F946			F947
	3	F948	F949	F94A			F94B
	4	F94C	F94D	F94E			F94F
	5	F950	F951	F952			F953
	6	F954	F955	F956			F957
	7	F958	F959	F95A			F95B
	8	F95C	F95D	F95E			F95F
	9	F960	F961	F962			F963
	10	F964	F965	F966			F967
	11	F968	F969	F96A			F96B
	12	F96C	F96D	F96E			F96F
	13	F970	F971	F972			F973
	14	F974	F975	F976			F977
	15	F978	F979	F97A			F97B
16	F97C	F97D	F97E	F97F			

Data Item	Address (HEX)				Attribute	Data	
Contact switching total number of times setting (High)	Channel				R/W	Contact switching total number of times (High)	
	Module	CH1	CH2	CH3			CH4
	1	F980	F981	F982			F983
	2	F984	F985	F988			F987
	3	F988	F989	F98A			F98B
	4	F98C	F98D	F98E			F98F
	5	F990	F991	F992			F993
	6	F994	F995	F996			F997
	7	F998	F999	F99A			F99B
	8	F99C	F99D	F99E			F99F
	9	F9A0	F9A1	F9A2			F9A3
	10	F9A4	F9A5	F9A6			F9A7
	11	F9A8	F9A9	F9AA			F9AB
	12	F9AC	F9AD	F9AE			F9AF
	13	F9B0	F9B1	F9B2			F9B3
	14	F9B4	F9B5	F9B6			F9B7
	15	F9B8	F9B9	F9BA			F9BB
16	F9BC	F9BD	F9BE	F9BF			
Contact switching total number of times setting (Low)	Channel				R/W	Contact switching total number of times (Low)	
	Module	CH1	CH2	CH3			CH4
	1	F9C0	F9C1	F9C2			F9C3
	2	F9C4	F9C5	F9C6			F9C7
	3	F9C8	F9C9	F9CA			F9CB
	4	F9CC	F9CD	F9CE			F9CF
	5	F9D0	F9D1	F9D2			F9D3
	6	F9D4	F9D5	F9D6			F9D7
	7	F9D8	F9D9	F9DA			F9DB
	8	F9DC	F9DD	F9DE			F9DF
	9	F9E0	F9E1	F9E2			F9E3
	10	F9E4	F9E5	F9E6			F9E7
	11	F9E8	F9E9	F9EA			F9EB
	12	F9EC	F9ED	F9EE			F9EF
	13	F9F0	F9F1	F9F2			F9F3
	14	F9F4	F9F5	F9F6			F9F7
	15	F9F8	F9F9	F9FA			F9FB
16	F9FC	F9FD	F9FE	F9FF			

Data Item	Address (HEX)				Attribute	Data	
Heater accumulated energizing time setting (High)	Channel				R/W	Heater accumulated energizing time (High) 1 count/1 min	
	Module	CH1	CH2	CH3			CH4
	1	FA00	FA01	FA02			FA03
	2	FA04	FA05	FA06			FA07
	3	FA08	FA09	FA0A			FA0B
	4	FA0C	FA0D	FA0E			FA0F
	5	FA10	FA11	FA12			FA13
	6	FA14	FA15	FA16			FA17
	7	FA18	FA19	FA1A			FA1B
	8	FA1C	FA1D	FA1E			FA1F
	9	FA20	FA21	FA22			FA23
	10	FA24	FA25	FA26			FA27
	11	FA28	FA29	FA2A			FA2B
	12	FA2C	FA2D	FA2E			FA2F
	13	FA30	FA31	FA32			FA33
	14	FA34	FA35	FA36			FA37
	15	FA38	FA39	FA3A			FA3B
16	FA3C	FA3D	FA3E	FA3F			
Heater accumulated energizing time setting (Low)	Channel				R/W	Heater accumulated energizing time (Low) 1 count/1 min	
	Module	CH1	CH2	CH3			CH4
	1	FA40	FA41	FA42			FA43
	2	FA44	FA45	FA46			FA47
	3	FA48	FA49	FA4A			FA4B
	4	FA4C	FA4D	FA4E			FA4F
	5	FA50	FA51	FA52			FA53
	6	FA54	FA55	FA56			FA57
	7	FA58	FA59	FA5A			FA5B
	8	FA5C	FA5D	FA5E			FA5F
	9	FA60	FA61	FA62			FA63
	10	FA64	FA65	FA66			FA67
	11	FA68	FA69	FA6A			FA6B
	12	FA6C	FA6D	FA6E			FA6F
	13	FA70	FA71	FA72			FA73
	14	FA74	FA75	FA76			FA77
	15	FA78	FA79	FA7A			FA7B
16	FA7C	FA7D	FA7E	FA7F			
Reservation (*)	FA80 to FFFF						

(*): A single or multiple data are read, the reserved item returns the initial value (0) in acknowledgment.

When writing single or multiple, Acknowledgement is returned and the data is discarded.

10.4 Data

10.4.1 Notes About Write/Read Command

- The data (set value, decimal) is converted to a hexadecimal number. Negative numbers are represented in 2's complement.
- Do not use undefined Data items. If they are used, negative acknowledgement will be returned or a random value will be written or read, resulting in malfunction.
- MODBUS protocol uses Holding Register addresses. The Holding Register addresses are created as follows.

A data item is converted to decimal number, and the offset of 40001 is added. The result is the Holding Register address.

(Example) When using the module 1 CH1 SV (1180H), the data item in the sending message is 1180H, however, MODBUS protocol Holding Register address is 44481(4480+40001).

10.4.2 Write Command

- The lifetime of the non-volatile IC memory is about 10 trillion writes. Do not change the set value frequently by communication, as the set value storage retention time may be shortened if the number of times is exceeded. (If the set value is the same as the value before setting, it is not written to the non-volatile IC memory.)
- When data (set value) has a decimal point, a whole number (hexadecimal) without a decimal point is used.
- If the operation is changed with Alarm 1 action to Alarm 4 action (1380H to 147FH), Alarm 1 value to Alarm 4 value (1580H to 177FH) will return to the factory default values. For the items to be initialized, refer to "10.7 Initialization Items by Changing Settings" (P.10-91).
- Even if options are not ordered, writing via software communication will be possible. However, their command contents will not function.
- Communication parameters such as module address and communication speed of this instrument cannot be written by software communication. Set it with the rotary switch for module address selection and the dip switch for selecting communication specifications.
- When Write is executed using the Broadcast address [(00H) MODBUS protocol] command, the command is sent to all the connected slaves. However, a response is not returned.

10.4.3 Read Command

- When the data (set value) has a decimal point, a whole number (hexadecimal) without a decimal point is used for a response.

10.5 Negative Acknowledgement

10.5.1 Error Code 2 (02H)

The slave will return Error code 2 (02H) in the following case.

- When non-existent data item is read or written.

10.5.2 Error Code 3(03H)

The slave will return Error code 3 (03H) in the following case.

- When a value out of the setting range is written.

10.5.3 Error Code 17(11H)

The slave will return Error code 17 (11H) in the following case.

- When AT execution (0001H) is written with AT execution/stop selection (1080H to 10BFH) during PI operation or ON/OFF operation.
- When AT execution (0001H) is written with AT execution/stop selection (1080H to 10BFH) during AT execution.

When the control enable/disable selection (1040H to 107FH) is written during AT execution.

- When manual control MV setting (1140H to 117FH) is written during automatic control.

10.6 Notes on Programming Monitoring Software

10.6.1 How to Speed up the Scan Time

When monitoring multiple this instrument, set the program so that the requisite minimum pieces of data such as PV (6000H to 603FH), MV (6040H to 607FH), Status flag 1 (60C0H to 60FFH) can be read.

For other data, set the program so that they can be read only when their set value has changed.

This will speed up the scan time.

10.6.2 How to Read PID Parameters after AT or Start-up AT Finishes

While AT or Start-up AT is performing, this instrument sets "B1: AT Perform/Cancel" of "Status flag 1 (60C0H to 60FFH)" to "1: AT Perform".

After AT or Start-up AT is finished, PID parameters are updated.

On the monitoring software side, check that "B1: AT Perform/Cancel" of "Status flag 1 (60C0H to 60FFH)" has been set to "0: AT Cancel", then read parameters such as P, I, D.

10.6.3 Notes on Batch Transmission of All Setting Values

- If the operation is changed with Alarm 1 action to Alarm 4 action (1380H to 147FH), Alarm 1 value to Alarm 4 value (1580H to 177FH) will return to the factory default values.

Send the Alarm action and then the Alarm value.

For the items to be initialized, refer to "10.7 Initialization Items by Changing Settings" (P.10-91).

- If the input type is changed with Input type (2000H to 203FH), the setting values such as SV, Proportional band, and Alarm 1 value are initialized.

Send the Input type and then the other setting values.

For the items to be initialized, refer to "10.7 Initialization Items by Changing Settings" (P.10-91).

10.7 Initialization Items by Changing Settings

The items that are initialized by changing the settings are shown below.

○: Initialize

—: Not initialize

Setting change item Initialized item	Input type (2000H to 203FH)	Temperature unit (2040H to 207FH)	Alarm 1 action (1380H to 13BFH)	Alarm 2 action (13C0H to 13FFH)	Alarm 3 action (1400H to 143FH)	Alarm 4 action (1440H to 147FH)
SV(1180H to 11BFH)	○	○	—	—	—	—
Proportional band (11C0H to 11FFH)	○	○	—	—	—	—
ON/OFF hysteresis (12C0H to 12FFH)	○	○	—	—	—	—
Alarm 1 hysteresis (1480H to 14BFH)	○	○	○	—	—	—
Alarm 2 hysteresis (14C0H to 14FFH)	○	○	—	○	—	—
Alarm 3 hysteresis (1500H to 153FH)	○	○	—	—	○	—
Alarm 4 hysteresis (1540H to 157FH)	○	○	—	—	—	○
Alarm 1 value (1580H to 15BFH)	○	○	○	—	—	—
Alarm 1 high limit value (15C0H to 15FFH)	○	○	○	—	—	—
Alarm 2 value (1600H to 163FH)	○	○	—	○	—	—
Alarm 2 high limit value (1640H to 167FH)	○	○	—	○	—	—
Alarm 3 value (1680H to 16BFH)	○	○	—	—	○	—
Alarm 3 high limit value (16C0H to 16FFH)	○	○	—	—	○	—
Alarm 4 value (1700H to 173FH)	○	○	—	—	—	○
Alarm 4 high limit value (1740H to 177FH)	○	○	—	—	—	○
Loop break alarm band (17C0H to 17FFH)	○	○	—	—	—	—
Loop break alarm time (1800H to 183FH)	○	○	—	—	—	—
Sensor correction factor (1840H to 187FH)	○	○	—	—	—	—
Sensor correction (1880H to 18BFH)	○	○	—	—	—	—
SV rise rate (1900H to 193FH)	○	○	—	—	—	—
SV fall rate (1940H to 197FH)	○	○	—	—	—	—
Scaling high limit (2080H to 20BFH)	○	○	—	—	—	—
Scaling low limit (20C0H to 20FFH)	○	○	—	—	—	—
AT bias (21C0H to 21FFH)	○	○	—	—	—	—
Input difference detection setting (3080H to 30BFH)	○	○	—	—	—	—
Cooling P-band (4040H to 407FH)	○	○	—	—	—	—
Slave scale high limit (4280H to 42BFH)	○	○	—	—	—	—
Slave scale low limit (42C0H to 42FFH)	○	○	—	—	—	—
Auto balance control cancel area (5240H to 527FH)	○	○	—	—	—	—

11 Operation

This section describes the operation when operating by Ethernet communicating with the host computer. Refer to “10 Communication Command List” (P.10-1) for setting the control parameters such as SV and alarm required for operation.

11.1 Control Permission

(1) Before turning the power ON

Check the following contents before turning the power ON to this instrument.

- Preparation of communication program
A communication program is required for Ethernet communication with the host computer. Refer to “9 MODBUS/TCP Protocol” (P.9-1) to create the communication program.
- QMC1-MT IP address setting
Set the IP address of QMC1-MT.
Refer to “5 Setting of QMC1-MT IP Address” (P.5-1).
- Specification setting
Set the specification of through USB.
Refer to “6.2 Specification Setting” (P.6-4).
- Mounting
Mount this instrument to the DIN rail.
Refer to “7.3 Mounting” (P.7-3).
- Wiring
Wire this instrument.
Refer to “8.3 Wiring” (P.8-3).
- Connect to Ethernet
Connect the host computer and QMC1-MT to Ethernet.
Refer to “8.4 Connect to Ethernet” (P.8-5).

(2) After turning the power ON

Check the following contents after turning the power ON to this instrument.

- Control parameters setting
Set the control parameters of QTC1-40 such as SV and alarm.
Refer to “10 Communication Command List” (P.10-1).

(3) Turn OFF → ON the power of QMC1-MT and OTC1-□0

Turn OFF → ON the power of QMC1-MT and QTC1-□0. The set value becomes effective.

(4) Turn ON the load circuit power

(5) Permission of control

Select "Control enabled" in "Control enable/disable".

The control operation starts so that the controlled object keeps CH1 SV.

Selecting control enabled for Unit ID 1, CH1 Control enable/disable (Single data writing)

- A request message from the master

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (06H)	Data item (1040H)	Data (0001H)
2	2	2	1	1	2	2

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (06H)	Data item (1040H)	Data (0001H)
2	2	2	1	1	2	2

Selecting control enable for Unit ID 1, CH1 control enable/disable (1040H) to Unit ID 5, CH4 control enable/disable (1053H) (multiple data writing for 20 commands)

Number of data : 20 (0014H)

Number of bytes : 40 (28H)

Data : Control enable (0001H)

- A request message from the master (When writing the above data)

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (002FH)	Unit ID (01H)	Function code (10H)	Data item (1040H)	
2	2	2	1	1	2	

Data block	
Data (001428000100010001...0001H)	
43	

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (10H)	Data item (1040H)	Data (0014H)
2	2	2	1	1	2	2

11.2 Set PID Constants (Execute AT)



Caution

- Perform the AT during the trial run.
- During AT, the all setting items can not be set.
- If a power failure occurs during AT execution, AT will be stopped.
- If AT is cancelled during the process, each setting values of P, I, D will revert to the values before AT was performed.
- If AT does not end about 4 hours after starting AT, AT is automatically stopped.
- If AT is executed near normal temperature, the temperature may not change and AT may not end normally.
- When AT is executed under Gap-PID control, D is calculated in 0 seconds.

Execute AT to set the PID constant.

There are two types of AT for this instrument, Normal AT and Start-up AT.

Refer to “AT action mode selection (00E0H to 00E3H) (P.10-33)” for AT action selection.

To perform AT, refer to “AT Perform/ Cancel selection (1080H to 10BFH) (P.10-11)” and select AT Perform.

Selecting AT perform for Unit ID 1, CH1 AT Perform/Cancel selection (Single data writing)

- A request message from the master

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (06H)	Data item (1080H)	Data (0001H)
2	2	2	1	1	2	2

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (06H)	Data item (1080H)	Data (0001H)
2	2	2	1	1	2	2

Selecting AT perform for Unit ID 1, CH1 AT Perform/Cancel selection (1080H) to Unit ID 5, CH4 AT Perform/Cancel selection (1093H) (multiple data writing for 20 commands)

Number of data : 20 (0014H)
 Number of bytes : 40 (28H)
 Data : AT perform (0001H)

- A request message from the master (When writing the above data)

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (002FH)	Unit ID (01H)	Function code (10H)	Data item (1080H)	
2	2	2	1	1	2	

Data block	
	Data (001428000100010001...0001H)
43	

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (10H)	Data item (1080H)	Data (0014H)
2	2	2	1	1	2	2

While AT is running, set "AT perform (1)" in B1: AT perform/cancel of status flag 1 (60C0H to 60FFH).
 At the end of AT, set "AT cancel (0)" in B1: AT perform/cancel of status flag 1 (60C0H to 60FFH) and takes control with the PID constant set by AT.

In addition, the data written by "AT Perform/Cancel (1080H to 10BFH)" is automatically cleared [AT Cancel (0000H)].

If the AT does not end after about 4 hours after the start of AT, the AT is automatically canceled.

11.3 Set Alarm

For Alarm output, the alarm value is set by deviation from the SV (excluding Process alarm), and if the PV goes outside the range, the Alarm output is turned ON (turned OFF for High/Low limit range alarm). It can select from High limit alarm, Low limit alarm, High/Low limits alarm, High/Low limit range alarm, Process high alarm, Process low alarm, High limit with standby alarm, Low limit with standby alarm, High/Low limits with standby alarm, High/Low limits alarm individually, High/Low limit range alarm individually, High/Low limits with standby alarm individually or no operation. Refer to the control module QTC1-□ instruction manual “14.5.3 Alarm Action (14-31)” for detail of alarm action.

Alarm settings are made using Alarm action and Alarm value. If the operation is changed with Alarm 1 action to Alarm 4 action (1380H to 147FH), Alarm 1 value to Alarm 4 value (1580H to 177FH) will return to the factory default values. Send the Alarm action and then the Alarm value.

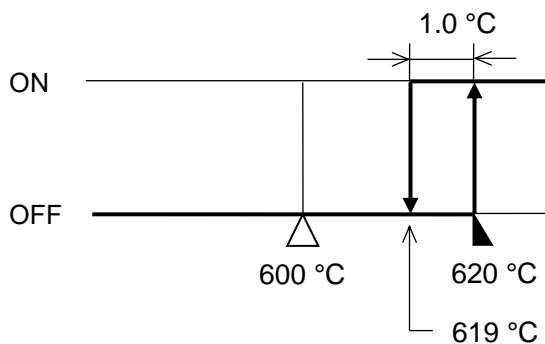
This section describes the CH1 alarm 1 setting example and alarm operation.

[Setting example]

Setting item	Setting value
SV	600 °C
Alarm 1 action	High limit alarm
Alarm 1 value	20 °C
Alarm 1 hysteresis	1.0 °C

[Alarm action]

When PV will be more than 620 °C, Alarm 1 output turns ON.
 When PV will be less than 619 °C, Alarm 1 output turns OFF.



(Fig. 11.3-1)

Selecting high limit alarm for Unit ID 1, CH1 Alarm 1 action selection (Single data writing)

- A request message from the master

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (06H)	Data item (1380H)	Data (0001H)
2	2	2	1	1	2	2

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (06H)	Data item (1380H)	Data (0001H)
2	2	2	1	1	2	2

Setting 20 °C (0014H) for Unit ID 1, CH1 Alarm 1 value (Single data writing)

- A request message from the master

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (06H)	Data item (1580H)	Data (0014H)
2	2	2	1	1	2	2

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (06H)	Data item (1580H)	Data (0014H)
2	2	2	1	1	2	2

Selecting high limit alarm for Unit ID 1, CH1 Alarm 1 action (1380H) to Unit ID 5, CH4 Alarm 1 action (1393H) (multiple data writing for 20 commands)

Number of data : 20 (0014H)

Number of bytes : 40 (28H)

Data : High limit alarm (0001H)

- A request message from the master (When writing the above data)

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (002FH)	Unit ID (01H)	Function code (10H)	Data item (1380H)	
2	2	2	1	1	2	

Data block	
Data (001428000100010001...0001H)	
43	

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (10H)	Data item (1380H)	Data (0014H)
2	2	2	1	1	2	2

Setting 20 °C (0014H) for Unit ID 1, CH1 Alarm 1 value (1580H) to Unit ID 5, CH4 Alarm 1 value (1593H) (multiple data writing for 20 commands)

Number of data : 20 (0014H)

Number of bytes : 40 (28H)

Data : 20 °C (0014H)

- A request message from the master (When writing the above data)

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (002FH)	Unit ID (01H)	Function code (10H)	Data item (1580H)	
2	2	2	1	1	2	

Data block	
	Data (001428001400140014...0014H)
43	

- Response message from the slave in normal status

Header block				Data block		
Transfer ID (0000H)	Protocol ID (0000H)	Data byte length (0006H)	Unit ID (01H)	Function code (10H)	Data item (1580H)	Data (0014H)
2	2	2	1	1	2	2

12 Communication with PLC Using SIF Function

The SIF function (Smart InterFace, programless communication function) is a function that reads and writes various data to the PLC register using the PLC communication protocol through the Ethernet connection with a Mitsubishi Electric PLC.

(1) PLC to PLC communication protocol

The following communication protocol is supported.

Mitsubishi Electric Corporation PLC MELSEC Communication Protocol

Frame: QnA compatible 3E frame (SLMP 3E frame)

Code: Binary or ASCII

Request destination network No.: 0 (fixed)

Request destination station No.: 255 (fixed)

(2) Specification setting for PLC to PLC communication

In the console software (SWC-QMC101M), select the PLC IP address, the PLC port number, the PLC register start number, the PLC register address, and the linked monitor item and setting item to set the specifications.

(3) PLC to PLC communication procedure

When communicating with the PLC using the SIF function, this instrument is the client and the PLC is the server.

The PLC automatically opens its port after the power is turned on if the SLMP setting has been completed.

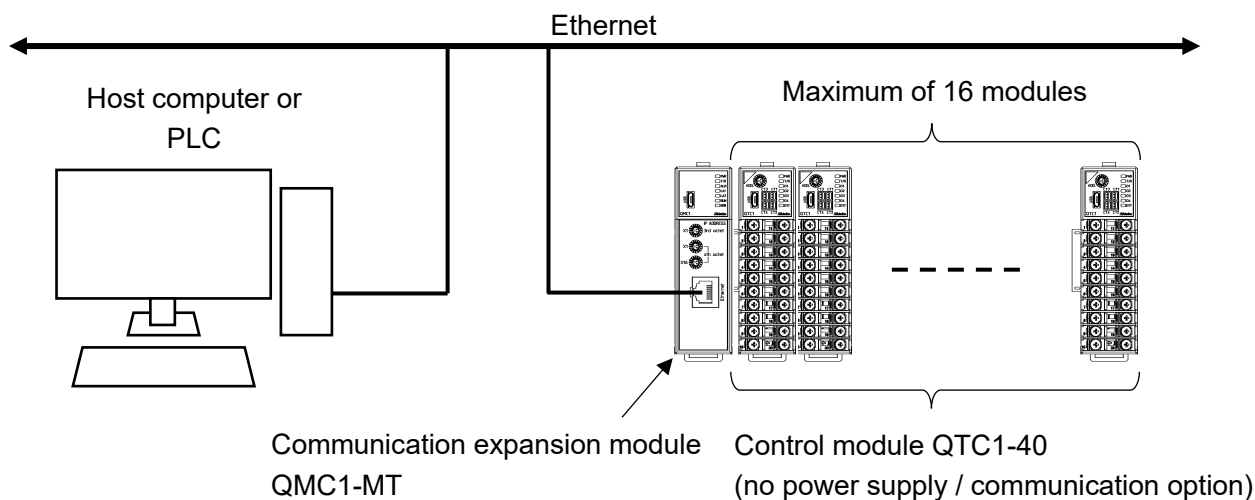
The connection is established when this instrument makes a connection request.

After the PLC communication start waiting time elapses, this instrument periodically writes the selected item to the PLC register using each communication command, and constantly updates the value of the PLC register.

In addition, the selected setting item is read from the PLC register by setting request using each communication command, and if the read data is changed, the setting value of QTC1-□0 is updated.

When QTC1-20 is connected, CH3 and CH4 do not function.

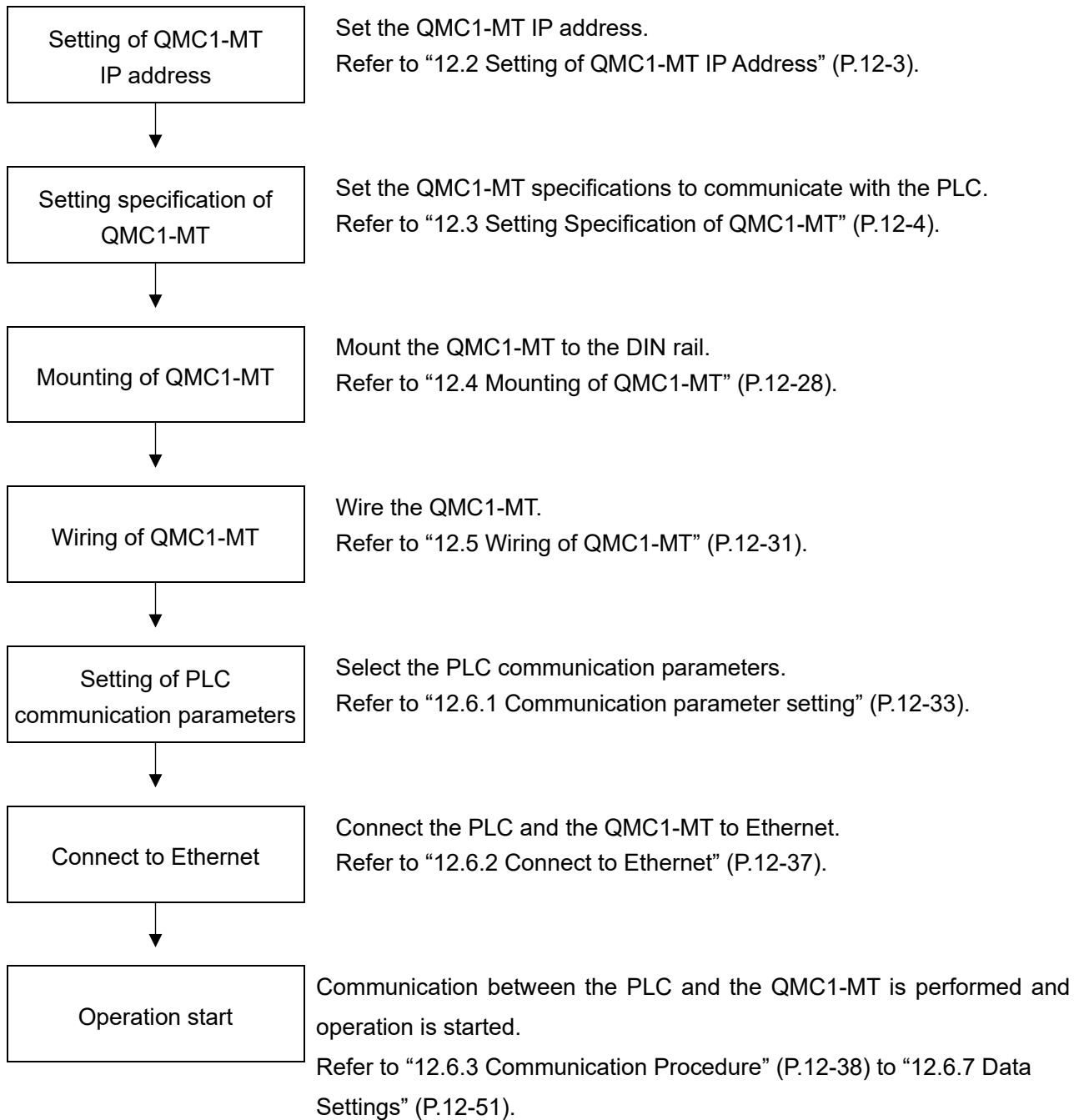
Connection example of QMC1-MT and QTC1-40



(Fig. 12-1)

12.1 Procedure Before Starting Operation

The procedure up to the start of operation when connecting to the PLC is shown below.



(Fig. 12.1-1)

12.2 Setting of QMC1-MT IP Address

Caution

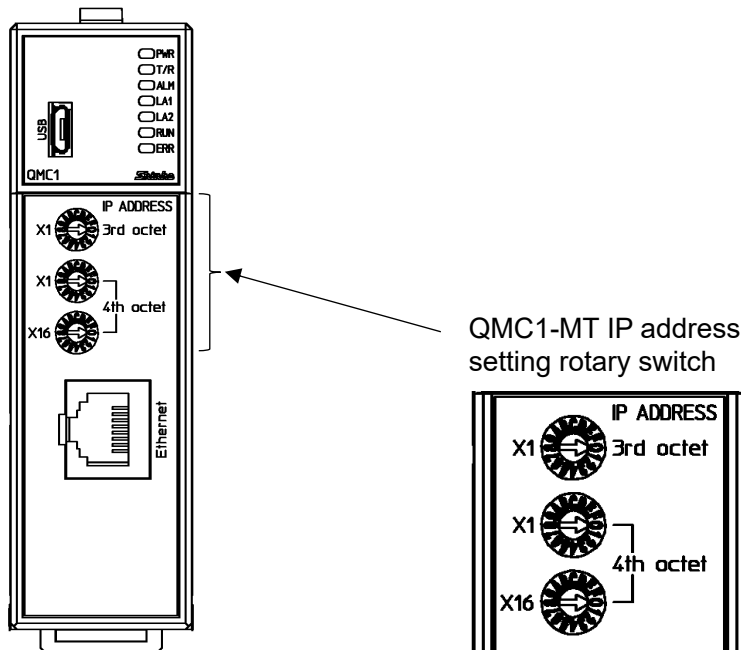
- The QMC1-MT QMC1-MT IP address setting is required for Ethernet communication. Selection of QTC1-20 or QTC1-40 module address is required to communicate with QMC1-MT.
- If the QMC1-MT IP address setting has been changed, turn the power OFF and ON. The QMC1-MT IP address setting becomes effective by turning the power OFF and ON.

The 3rd (a) and 4th (b) bytes of the QMC1-MT IP address (e.g. 192.168.a.b) are set using the QMC1-MT IP address setting rotary switch or console software.

The factory default for the QMC1-MT IP address is 192.168.1.1.

When using the QMC1-MT IP address setting rotary switch

Use a small flat-blade screwdriver to set the QMC1-MT IP address.



(Fig. 12.2-1)

Rotary switch	Description/Setting range	Factory default
3rd octet	QMC1-MT IP address 3rd byte setting Setting range: 0 to 15 (0 to F)	0
4th octet	QMC1-MT IP address 4th byte setting Setting range: 0 to 255(0 to FF)	0

When using the console software

When the 4th octet of the rotary switch for setting the QMC1-MT IP address is set to "0," the setting values of the 3rd and 4th bytes of the console software set using USB communication become effective.

If necessary, set the 1st byte (192) and the 2nd byte (168) using the console software via USB communication. Refer to "6. Setting of Specification" (P.6-1) for details.

12.3 Setting Specification of QMC1-MT

Set the specifications.

This section describes how to set specifications using console software (SWC-QMC101M).

12.3.1 Preparation of USB Communication Cable and Console Software

Please prepare the USB communication cable and the console software.

- USB communication cable
USB-micro USB Type-B (commercial item)
- Console software (SWC-QMC101M)
Please download from our website and install.

Click <https://shinko-technos.co.jp/e/> → Support/Download → Software

12.3.2 Connecting to Host Computer

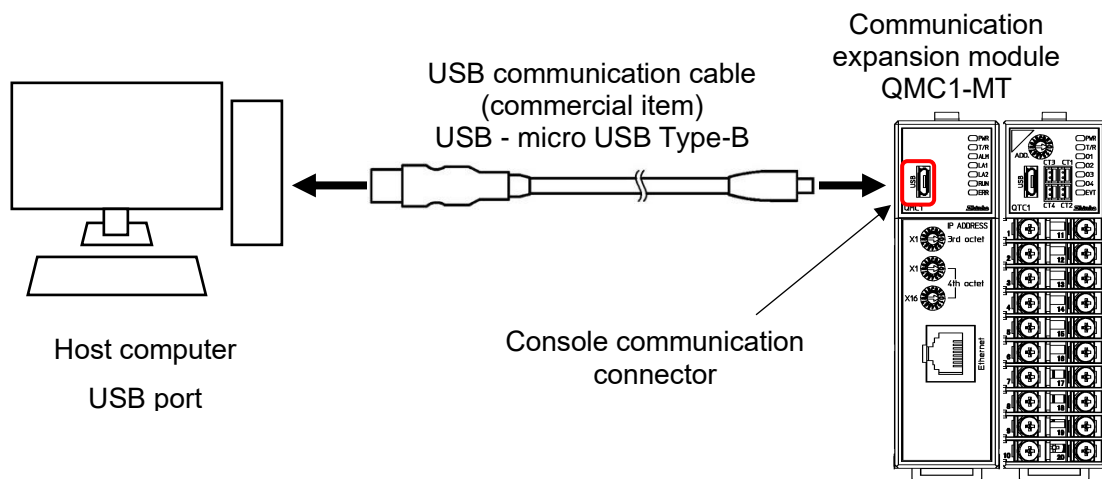


Caution

Disconnect the Ethernet cable (LAN cable) from the Ethernet communication connector when communicating by connecting the USB communication cable.

- (1) Connect the micro USB Type-B side of the USB communication cable to the console communication connector of this instrument.
- (2) Connect the USB plug of the USB communication cable to the USB port of the host computer.

Connection example of QMC1-MT and QTC1-40



(Fig. 12.3.2-1)

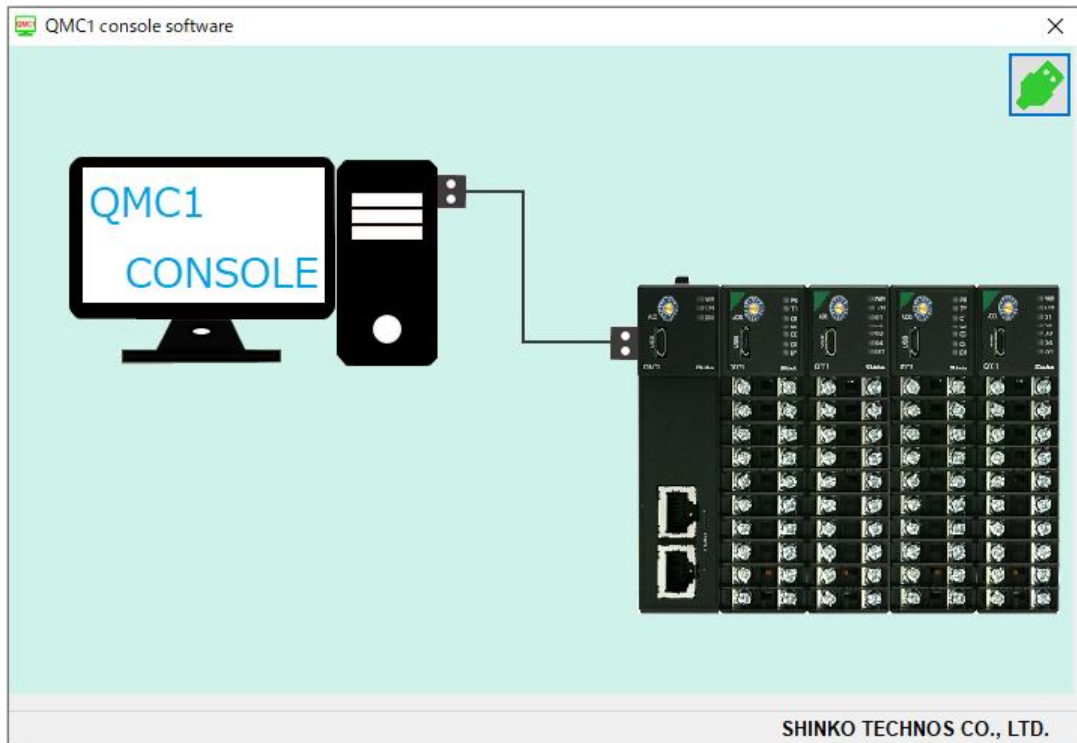
(3) Checking the COM port number

Follow the procedure below to check the COM port number.

- ① Right-click "Start" → Click "Device manager" from menu.
- ② When "USB Serial Port (COM3)" is displayed in "Port (COM and LPT)", the COM port is assigned to No. 3.

Check the COM port number, and then close "Device Manager".

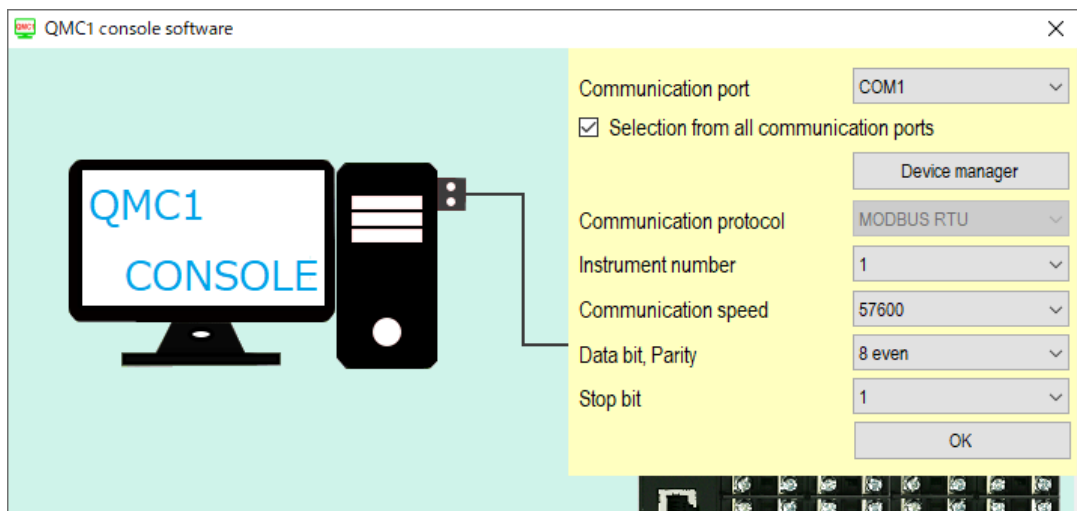
- ③ Start the console software (SWC-QMC101M).



(Fig. 12.3.2-2)

- ④ When start the console software for the first time, the communication condition setting screen is displayed.

If the communication condition settings have been completed, proceed to ⑦.



(Fig. 12.3.2-3)

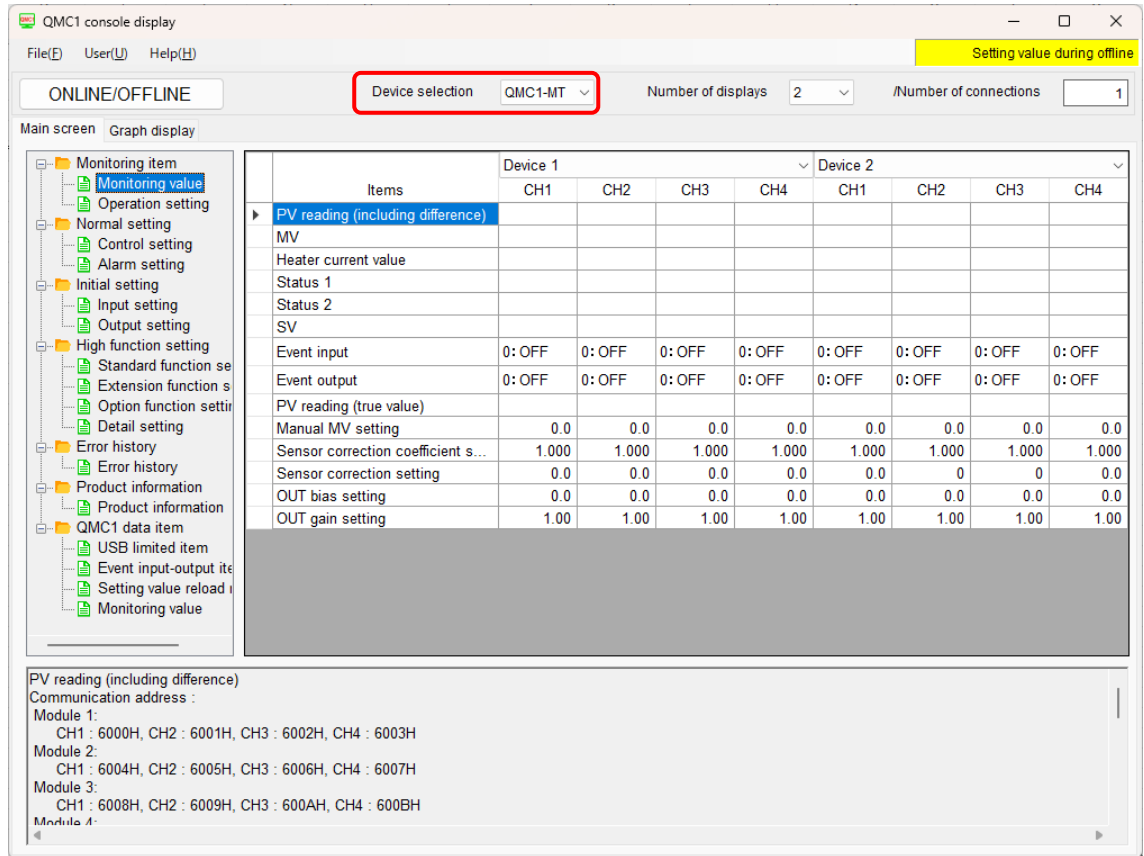
- ⑤ Set the communication condition as shown below.

Setup Items	Setting Value
Communication port	Select the COM port number confirmed in ②.
Communication protocol	MODBUS RTU

- ⑥ Click [OK].

- ⑦ Display the Main screen.

Select "QMC1-MT" in the "Device selection".



(Fig. 12.3.2-4)

The specifications are ready.

12.3.3 Specification Settings for QMC1-MT

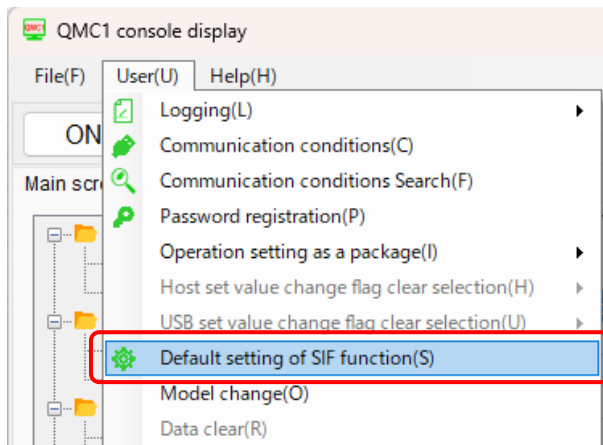
USB limited item setting

Refer to "6.2.1 USB Limited Item Setting" (P.6-6), to set the Ethernet communication protocol, number of communication management modules, communication response delay time, IP address, subnet mask, and gateway.

Check with the system administrator before configuring these settings.

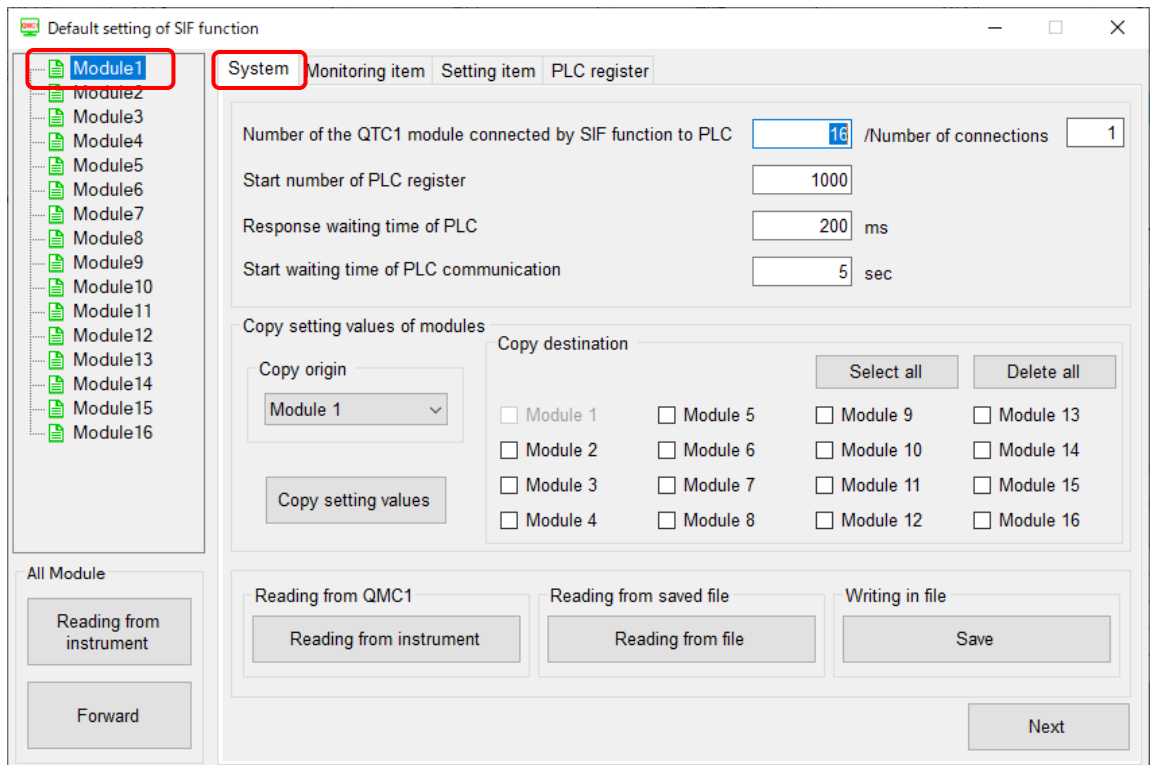
SIF function default setting

- ① Click "User (U)" in the menu bar → "Default setting of SIF function (S)".
Display "Default setting of SIF function" screen.



(Fig. 12.3.3-1)

- ② Select "Module 1" and click "System" tab.



(Fig. 12.3.3-2)

Please refer to the Default setting of SIF function item to set the specifications.

Default setting of SIF function item

Module 1

MODBUS address	Name	Setting and selection range	Factory default
5280	Number of the QTC1 module connected by SIF function to PLC	1 to 16 modules	1
0064	Start number of PLC register	0 to 65535	1000
0074	Response waiting time of PLC	100 to 3000 ms	200
0084	Start waiting time of PLC	1 to 255 seconds	5
0094	Reservation (Not used)		0
00A4	Reservation (Not used)		0
00B4	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00C4	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00D4	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00E4	Reservation (Not used)		0
00F4	Reservation (Not used)		0
0104	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
0114	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
0124	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
0134	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
0144	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
0154	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
0164	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

(1) Number of communication

Set the number of units to be managed by this instrument.

Set the number of control modules that are connected to this instrument.

(2) Start number of PLC register

Set the start number of the register used for PLC communication.

Set it in the range of 0 to 65535.

In the case of Mitsubishi Electric Corporation's PLC (A compatible 1C frame AnA/AnU), set the number in the range of 0 to 8191.

Initial value: Value of module 1 + {(module address - 1)×100}

For module 1: initial value=1000+{(1-1)×100}=1000

For module 2: initial value=1000+{(2-1)×100}=1100

For module 16: initial value=1000+{(16-1)×100}=2500

A maximum of 170 registers are used per control module. System area: 10 registers, monitoring items: 80 registers (20 x 4 ch), setting items: 80 registers (20 x 4 ch)]

When using multiple control modules, be careful not to duplicate them.

(3) Response waiting time of PLC

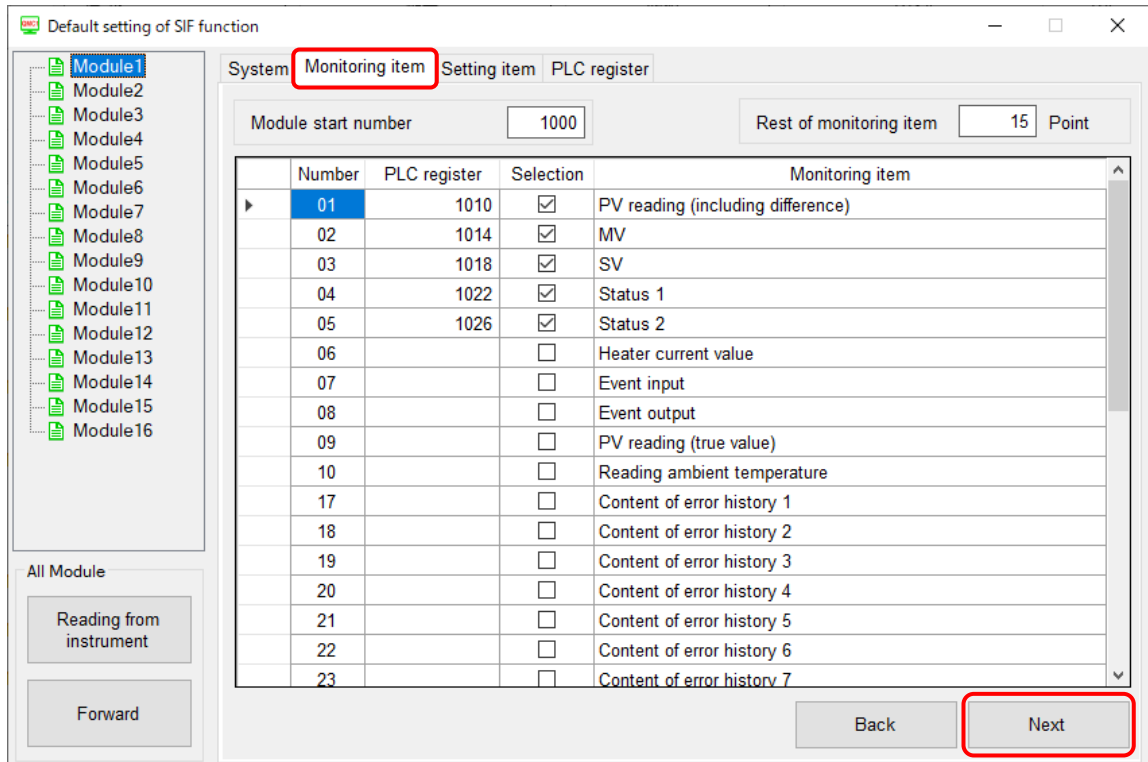
Sets the retransmission interval time when there is no response from the PLC.
Set it in the range of 100 to 3000 ms.

(4) Start waiting time of PLC

Set the time until communication with the PLC starts after this instrument is turned on.
Set it in the range of 1 to 255 seconds.

(5) Monitoring items 1 to 3 selection

Click “Monitoring Item” tab or [Next] button.
Display “Monitoring item” screen.



(Fig. 12.3.3-3)

Select any of the monitoring items 1 to 3.

1: Enable, 0: Disable.

The maximum number of items that can be selected is 20.

This is common for all channels in the control module, and excess data is invalid.

Monitoring item 1 selection (Initial value: 31)

Bit	Number	Selection	Description
0	01	1	PV resding (including difference)
1	02	1	MV
2	03	1	SV
3	04	1	Status 1
4	05	1	Status 2
5	06	0	Heater current value
6	07	0	Event input
7	08	0	Event output
8	09	0	PV resding (true value)
9	10	0	Reading ambient temperature
10	11	0	Not used
11	12	0	Not used
12	13	0	Not used
13	14	0	Not used
14	15	0	Not used
15	16	0	Not used

Monitoring item 2 selection (Initial value: 0)

Bit	Number	Selection	Description
0	17	0	Content of error history 1
1	18	0	Content of error history 2
2	19	0	Content of error history 3
3	20	0	Content of error history 4
4	21	0	Content of error history 5
5	22	0	Content of error history 6
6	23	0	Content of error history 7
7	24	0	Content of error history 8
8	25	0	Content of error history 9
9	26	0	Content of error history 10
10	27	0	Energizing integrated time of error history 1
11	28	0	Energizing integrated time of error history 2
12	29	0	Energizing integrated time of error history 3
13	30	0	Energizing integrated time of error history 4
14	31	0	Energizing integrated time of error history 5
15	32	0	Energizing integrated time of error history 6

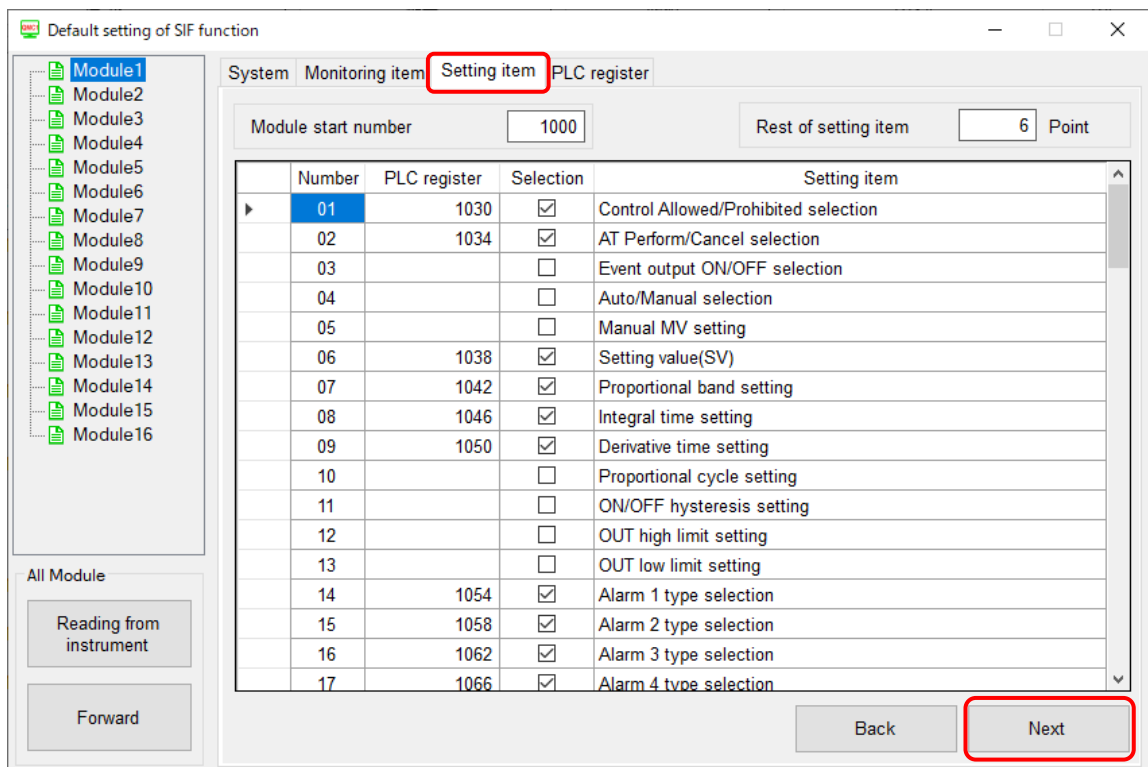
Monitoring item 3 selection (Initial value: 0)

Bit	Number	Selection	Description
0	33	0	Energizing integrated time of error history 7
1	34	0	Energizing integrated time of error history 8
2	35	0	Energizing integrated time of error history 9
3	36	0	Energizing integrated time of error history 10
4	37	0	Contact switching total number of times setting (High)
5	38	0	Contact switching total number of times setting (Low)
6	39	0	Total energizing time (High, Low)
7	40	0	Heater accumulated energizing time (High)
8	41	0	Heater accumulated energizing time (Low)
9	42	0	Not used
10	43	0	Not used
11	44	0	Not used
12	45	0	Not used
13	46	0	Not used
14	47	0	Not used
15	48	0	Not used

(6) Setting items 1 to 7 selection

Click "Setting Item" tab or [Next] button.

Display "Setting item" screen.



(Fig. 12.3.3-4)

Select any of the setting items 1 to 7.

1: Enable, 0: Disable.

The maximum number of items that can be selected is 20.

This is common for all channels in the control module, and excess data is invalid.

Setting item 1 selection (Initial value: 57827)

Bit	Setting request item number	Selection	Description
0	1	1	Control Allowed/Prohibited selection
1	2	1	AT Perform/Cancel selection
2	3	0	Event output ON/OFF selection
3	4	0	Auto/Manual selection
4	5	0	Manual MV setting
5	6	1	Setting value (SV)
6	7	1	Proportional band setting
7	8	1	Integral time setting
8	9	1	Derivative time setting
9	10	0	Proportional cycle setting
10	11	0	ON/OFF hysteresis setting
11	12	0	OUT high limit setting
12	13	0	OUT low limit setting
13	14	1	Alarm 1 type selection
14	15	1	Alarm 2 type selection
15	16	1	Alarm 3 type selection

Setting item 2 selection (Initial value: 2721)

Bit	Setting request item number	Selection	Description
0	17	1	Alarm 4 type selection
1	18	0	Alarm 1 hysteresis setting
2	19	0	Alarm 2 hysteresis setting
3	20	0	Alarm 3 hysteresis setting
4	21	0	Alarm 4 hysteresis setting
5	22	1	Alarm 1 value setting
6	23	0	Alarm 1 high limit value setting
7	24	1	Alarm 2 value setting
8	25	0	Alarm 2 high limit value setting
9	26	1	Alarm 3 value setting
10	27	0	Alarm 3 high limit value setting
11	28	1	Alarm 4 value setting
12	29	0	Alarm 4 high limit value setting
13	30	0	Heater burnout alarm setting
14	31	0	Loop break alarm band setting
15	32	0	Loop break alarm time setting

Setting item 3 selection (Initial value: 0)

Bit	Setting request item number	Selection	Description
0	33	0	Sensor correction factor setting
1	34	0	Sensor correction setting
2	35	0	PV filter time constant setting
3	36	0	SV rise rate setting
4	37	0	SV fall rate setting
5	38	0	MV bias setting
6	39	0	Not used
7	40	0	Not used
8	41	0	Not used
9	42	0	Not used
10	43	0	Not used
11	44	0	Not used
12	45	0	Not used
13	46	0	Not used
14	47	0	Not used
15	48	0	Not used

Setting item 4 selection (Initial value: 0)

Bit	Setting request item number	Selection	Description
0	49	0	Input type selection
1	50	0	Temperature unit selection
2	51	0	Scaling high limit setting
3	52	0	Scaling low limit setting
4	53	0	Input sampling selection
5	54	0	Direct/reverse action selection
6	55	0	AT action mode selection
7	56	0	AT bias setting
8	57	0	AT gain setting
9	58	0	Alarm 1 value 0 Enabled/ Disabled selection
10	59	0	Alarm 2 value 0 Enabled/ Disabled selection
11	60	0	Alarm 3 value 0 Enabled/ Disabled selection
12	61	0	Alarm 4 value 0 Enabled/ Disabled selection
13	62	0	Event output allocation selection
14	63	0	Event input allocation selection
15	64	0	CH Enabled/ Disabled selection

Setting item 5 selection (Initial value: 0)

Bit	Setting request item number	Selection	Description
0	65	0	Number of moving average setting
1	66	0	Input math function selection
2	67	0	Input difference selection
3	68	0	Input difference setting
4	69	0	Control action selection
5	70	0	Proportional gain 2 DOF coefficient setting (α)
6	71	0	Integral 2 DOF coefficient setting (β)
7	72	0	Differential 2 DOF coefficient setting (γ, C_d)
8	73	0	Desired value proportional coefficient setting (C_p)
9	74	0	Gap width setting
10	75	0	Gap coefficient setting
11	76	0	Output minimum ON/OFF time setting
12	77	0	Integral/ differential decimal point position selection
13	78	0	Power on restore action selection
14	79	0	Not used
15	80	0	Not used

Setting item 6 selection (Initial value: 0)

Bit	Setting request item number	Selection	Description
0	81	0	Control function selection
1	82	0	Cooling P-band setting
2	83	0	Cooling integral time setting
3	84	0	Cooling differential time setting
4	85	0	Cooling proportional cycle setting
5	86	0	Cooling ON/OFF hysteresis setting
6	87	0	Overlap/Dead band setting
7	88	0	Cooling output high limit setting
8	89	0	Cooling output low limit setting
9	90	0	Cooling action mode selection
10	91	0	Slave scale high limit setting
11	92	0	Slave scale low limit setting
12	93	0	Output bias setting
13	94	0	Output gain setting
14	95	0	Output channel selection
15	96	0	Output rate-of-change setting

Setting item 7 selection (Initial value: 0)

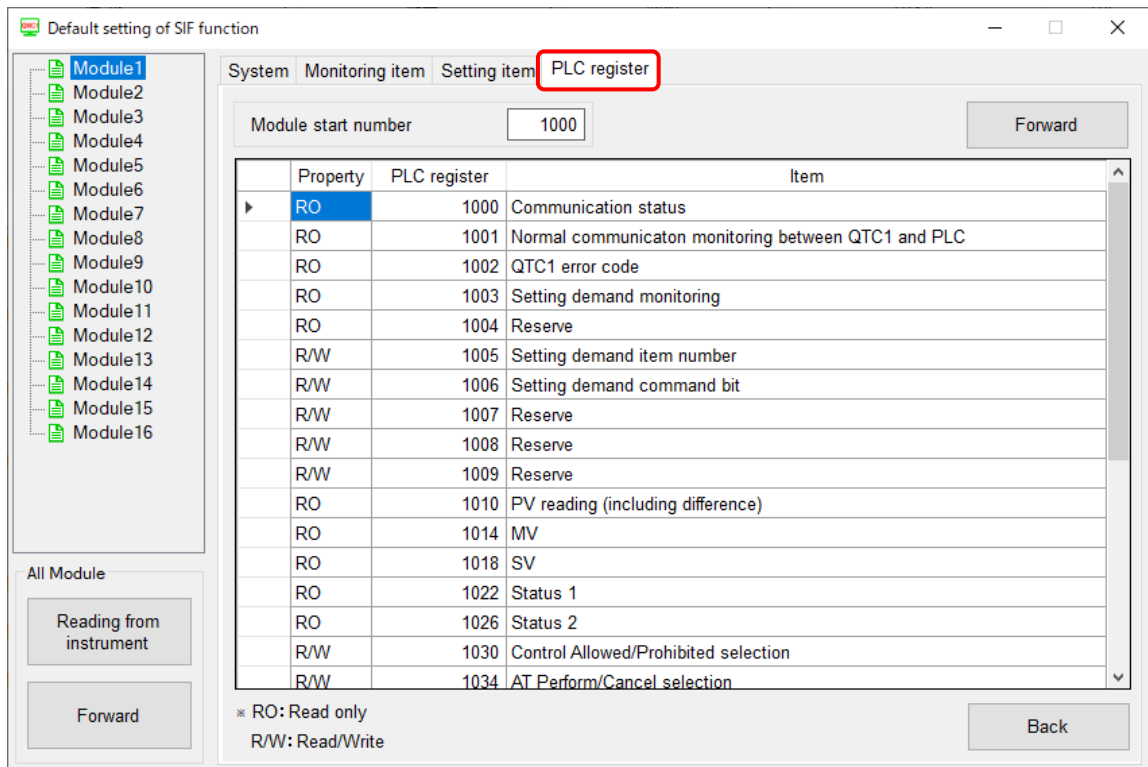
Bit	Setting request item number	Selection	Description
0	97	0	Communication response delay time setting
1	98	0	Expanded function selection
2	99	0	Total current setting
3	100	0	Current value setting
4	101	0	Output ON delay setting
5	102	0	Auto balance control Interlock/Single selection
6	103	0	Auto balance control Master/Slave selection
7	104	0	Auto balance control Enable/Disable selection
8	105	0	Auto balance control start output setting
9	106	0	Auto balance control cancel area setting
10	107	0	Number of communication management module setting
11	108	0	Non-volatile IC memory save selection
12	109	0	Not used
13	110	0	Not used
14	111	0	Not used
15	112	0	Not used

(7) PLC register check

Click “PLC register” tab or [Next] button.

Display “PLC register” screen.

Check the settings.

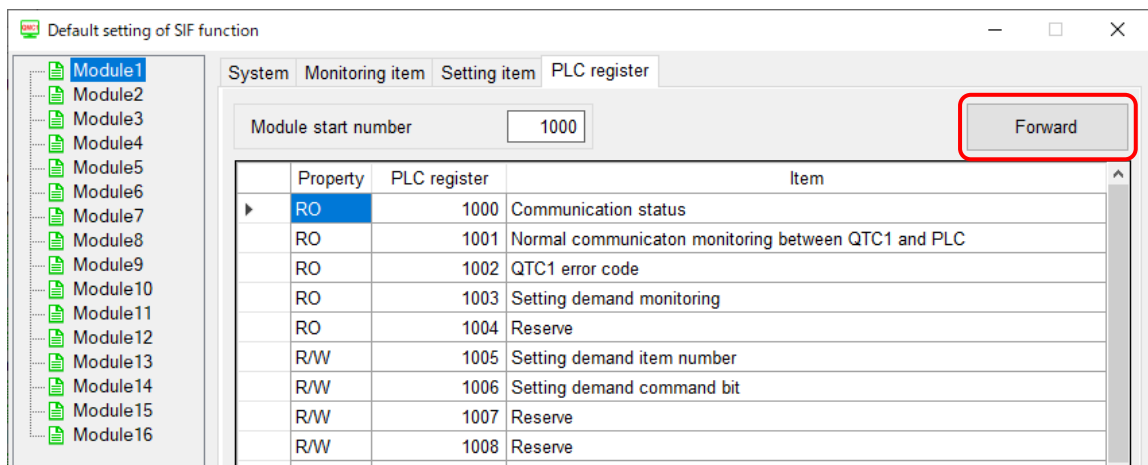


(Fig. 12.3.3-5)

(8) Transfer of setting values

Click [Forward] button.

Transfer the setting value to module 1.



(Fig. 12.3.3-6)

(9) Turn OFF → ON the QMC-1 power.

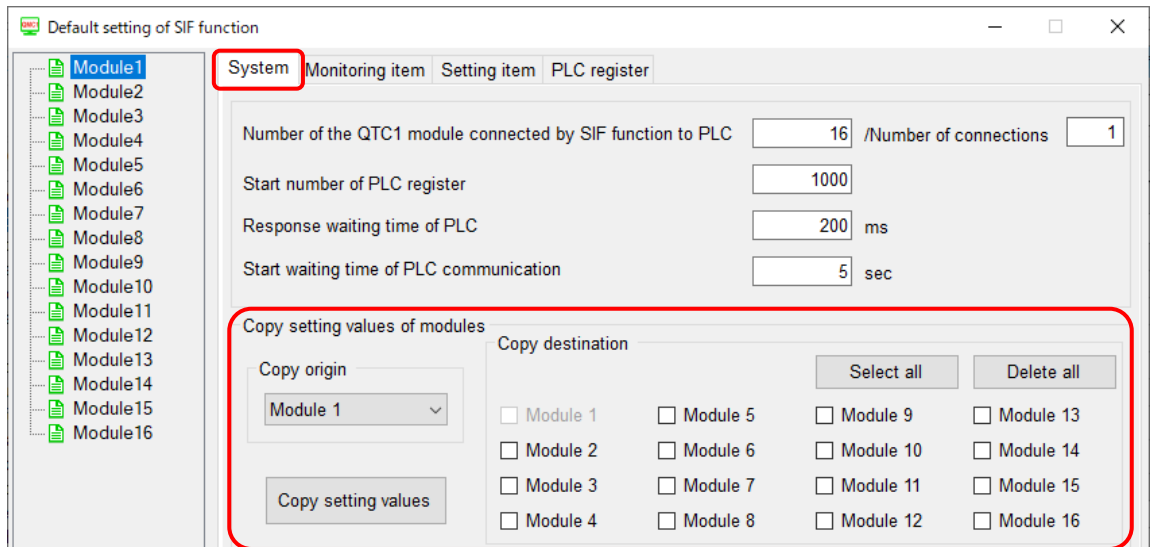
Turn OFF → ON the power of QMC-1. The set value will become effective.

This completes the specification setting.

[Useful Functions] Copying the set values of modules

When you select the source module and the destination module, and then click the Copy Setting Value button, the selected contents of the monitor items 1 to 3 and the setting items 1 to 7 can be copied by the Copy Setting Value of Module in the System tab of Module 1.

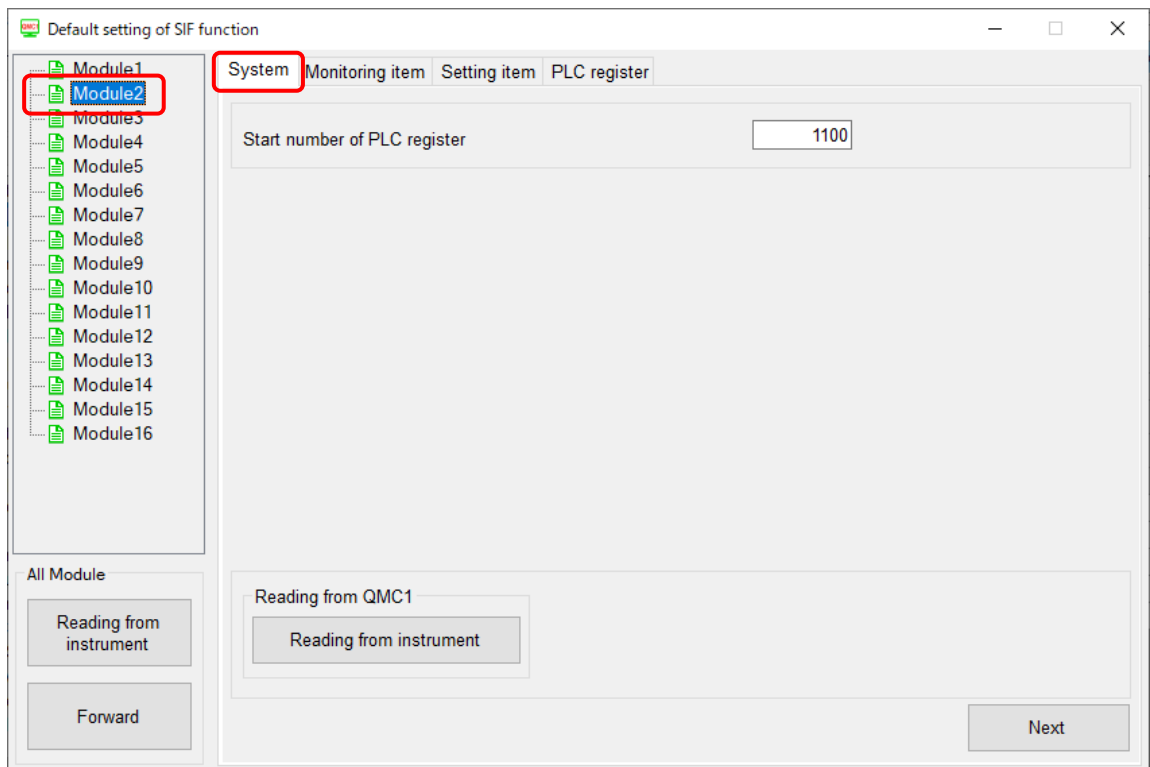
The module set value copy is a copy function on the console software screen.



(Fig. 12.3.3-7)

Specification settings when multiple control modules are connected

When multiple control modules are connected, select the connected module number (e.g. Module 2), and click the System tab.



(Fig. 12.3.3-8)

(10) Setting the specifications for Module 2

Set “(2) Start number of PLC register”, “(5) Monitoring items 1 to 3 selection”, “(6) Setting items 1 to 7 selection”, and then “(7) PLC register check”, “(8) Transfer of setting values”, “(9) Turn the QMC1-MT power OFF → ON”.

Module 2

MODBUS address	Name	Setting and selection range	Factory default
0065	Start number of PLC register	0 to 65535	1100
0075	Reservation (Not used)		0
0085	Reservation (Not used)		0
0095	Reservation (Not used)		0
00A5	Reservation (Not used)		0
00B5	Monitoring item 1 selection	See “Monitoring item 1 selection” table. (P.12-10)	31
00C5	Monitoring item 2 selection	See “Monitoring item 2 selection” table. (P.12-10)	0
00D5	Monitoring item 3 selection	See “Monitoring item 3 selection” table. (P.12-11)	0
00E5	Reservation (Not used)		0
00F5	Reservation (Not used)		0
0105	Setting item 1 selection	See “Setting item 1 selection” table. (P.12-12)	57827
0115	Setting item 2 selection	See “Setting item 2 selection” table. (P.12-13)	2721
0125	Setting item 3 selection	See “Setting item 3 selection” table. (P.12-13)	0
0135	Setting item 4 selection	See “Setting item 4 selection” table. (P.12-14)	0
0145	Setting item 5 selection	See “Setting item 5 selection” table. (P.12-14)	0
0155	Setting item 6 selection	See “Setting item 6 selection” table. (P.12-15)	0
0165	Setting item 7 selection	See “Setting item 7 selection” table. (P.12-15)	0

(11) Setting the specifications for Module 3 and later

The SIF function initial setting items for Module 3 and later are shown below.

If necessary, set the specifications in the same way.

Module 3

MODBUS address	Name	Setting and selection range	Factory default
0066	Start number of PLC register	0 to 65535	1200
0076	Reservation (Not used)		0
0086	Reservation (Not used)		0
0096	Reservation (Not used)		0
00A6	Reservation (Not used)		0
00B6	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00C6	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00D6	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00E6	Reservation (Not used)		0
00F6	Reservation (Not used)		0
0106	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
0116	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
0126	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
0136	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
0146	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
0156	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
0166	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 4

MODBUS address	Name	Setting and selection range	Factory default
0067	Start number of PLC register	0 to 65535	1300
0077	Reservation (Not used)		0
0087	Reservation (Not used)		0
0097	Reservation (Not used)		0
00A7	Reservation (Not used)		0
00B7	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00C7	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00D7	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00E7	Reservation (Not used)		0
00F7	Reservation (Not used)		0
0107	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
0117	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
0127	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
0137	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
0147	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
0157	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
0167	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 5

MODBUS address	Name	Setting and selection range	Factory default
0068	Start number of PLC register	0 to 65535	1400
0078	Reservation (Not used)		0
0088	Reservation (Not used)		0
0098	Reservation (Not used)		0
00A8	Reservation (Not used)		0
00B8	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00C8	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00D8	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00E8	Reservation (Not used)		0
00F8	Reservation (Not used)		0
0108	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
0118	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
0128	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
0138	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
0148	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
0158	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
0168	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 6

MODBUS address	Name	Setting and selection range	Factory default
0069	Start number of PLC register	0 to 65535	1500
0079	Reservation (Not used)		0
0089	Reservation (Not used)		0
0099	Reservation (Not used)		0
00A9	Reservation (Not used)		0
00B9	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00C9	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00D9	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00E9	Reservation (Not used)		0
00F9	Reservation (Not used)		0
0109	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
0119	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
0129	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
0139	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
0149	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
0159	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
0169	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 7

MODBUS address	Name	Setting and selection range	Factory default
006A	Start number of PLC register	0 to 65535	1600
007A	Reservation (Not used)		0
008A	Reservation (Not used)		0
009A	Reservation (Not used)		0
00AA	Reservation (Not used)		0
00BA	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00CA	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00DA	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00EA	Reservation (Not used)		0
00FA	Reservation (Not used)		0
010A	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
011A	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
012A	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
013A	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
014A	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
015A	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
016A	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 8

MODBUS address	Name	Setting and selection range	Factory default
006B	Start number of PLC register	0 to 65535	1700
007B	Reservation (Not used)		0
008B	Reservation (Not used)		0
009B	Reservation (Not used)		0
00AB	Reservation (Not used)		0
00BB	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00CB	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00DB	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00EB	Reservation (Not used)		0
00FB	Reservation (Not used)		0
010B	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
011B	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
012B	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
013B	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
014B	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
015B	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
016B	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 9

MODBUS address	Name	Setting and selection range	Factory default
006C	Start number of PLC register	0 to 65535	1800
007C	Reservation (Not used)		0
008C	Reservation (Not used)		0
009C	Reservation (Not used)		0
00AC	Reservation (Not used)		0
00BC	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00CC	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00DC	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00EC	Reservation (Not used)		0
00FC	Reservation (Not used)		0
010C	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
011C	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
012C	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
013C	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
014C	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
015C	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
016C	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 10

MODBUS address	Name	Setting and selection range	Factory default
006D	Start number of PLC register	0 to 65535	1900
007D	Reservation (Not used)		0
008D	Reservation (Not used)		0
009D	Reservation (Not used)		0
00AD	Reservation (Not used)		0
00BD	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00CD	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00DD	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00ED	Reservation (Not used)		0
00FD	Reservation (Not used)		0
010D	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
011D	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
012D	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
013D	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
014D	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
015D	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
016D	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 11

MODBUS address	Name	Setting and selection range	Factory default
006E	Start number of PLC register	0 to 65535	2000
007E	Reservation (Not used)		0
008E	Reservation (Not used)		0
009E	Reservation (Not used)		0
00AE	Reservation (Not used)		0
00BE	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00CE	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00DE	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00EE	Reservation (Not used)		0
00FE	Reservation (Not used)		0
010E	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
011E	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
012E	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
013E	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
014E	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
015E	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
016E	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 12

MODBUS address	Name	Setting and selection range	Factory default
006F	Start number of PLC register	0 to 65535	2100
007F	Reservation (Not used)		0
008F	Reservation (Not used)		0
009F	Reservation (Not used)		0
00AF	Reservation (Not used)		0
00BF	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00CF	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00DF	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00EF	Reservation (Not used)		0
00FF	Reservation (Not used)		0
010F	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
011F	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
012F	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
013F	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
014F	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
015F	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
016F	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 13

MODBUS address	Name	Setting and selection range	Factory default
0070	Start number of PLC register	0 to 65535	2200
0080	Reservation (Not used)		0
0090	Reservation (Not used)		0
00A0	Reservation (Not used)		0
00B0	Reservation (Not used)		0
00C0	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00D0	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00E0	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00F0	Reservation (Not used)		0
0100	Reservation (Not used)		0
0110	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
0120	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
0130	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
0140	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
0150	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
0160	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
0170	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 14

MODBUS address	Name	Setting and selection range	Factory default
0071	Start number of PLC register	0 to 65535	2300
0081	Reservation (Not used)		0
0091	Reservation (Not used)		0
00A1	Reservation (Not used)		0
00B1	Reservation (Not used)		0
00C1	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00D1	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00E1	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00F1	Reservation (Not used)		0
0101	Reservation (Not used)		0
0111	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
0121	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
0131	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
0141	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
0151	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
0161	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
0171	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 15

MODBUS address	Name	Setting and selection range	Factory default
0072	Start number of PLC register	0 to 65535	2400
0082	Reservation (Not used)		0
0092	Reservation (Not used)		0
00A2	Reservation (Not used)		0
00B2	Reservation (Not used)		0
00C2	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00D2	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00E2	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00F2	Reservation (Not used)		0
0102	Reservation (Not used)		0
0112	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
0122	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
0132	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
0142	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
0152	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
0162	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
0172	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

Module 16

MODBUS address	Name	Setting and selection range	Factory default
0073	Start number of PLC register	0 to 65535	2500
0083	Reservation (Not used)		0
0093	Reservation (Not used)		0
00A3	Reservation (Not used)		0
00B3	Reservation (Not used)		0
00C3	Monitoring item 1 selection	See "Monitoring item 1 selection" table. (P.12-10)	31
00D3	Monitoring item 2 selection	See "Monitoring item 2 selection" table. (P.12-10)	0
00E3	Monitoring item 3 selection	See "Monitoring item 3 selection" table. (P.12-11)	0
00F3	Reservation (Not used)		0
0103	Reservation (Not used)		0
0113	Setting item 1 selection	See "Setting item 1 selection" table. (P.12-12)	57827
0123	Setting item 2 selection	See "Setting item 2 selection" table. (P.12-13)	2721
0133	Setting item 3 selection	See "Setting item 3 selection" table. (P.12-13)	0
0143	Setting item 4 selection	See "Setting item 4 selection" table. (P.12-14)	0
0153	Setting item 5 selection	See "Setting item 5 selection" table. (P.12-14)	0
0163	Setting item 6 selection	See "Setting item 6 selection" table. (P.12-15)	0
0173	Setting item 7 selection	See "Setting item 7 selection" table. (P.12-15)	0

PLC data register layout

In the example of the initial setting of the SIF function, the layout of the PLC data registers is as follows.

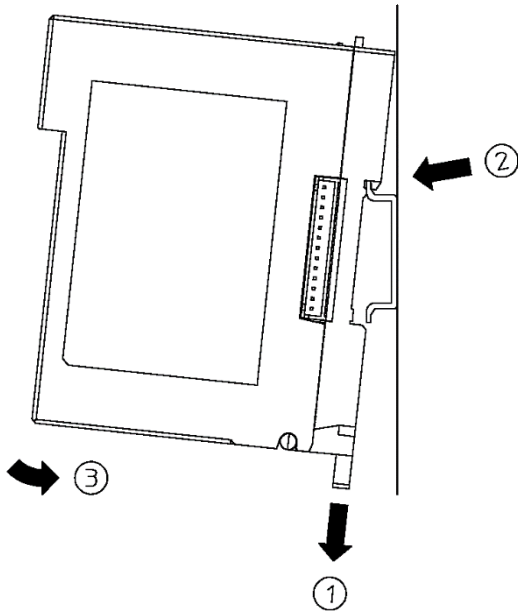
Module number	Information between QMC1-MT and PLC (System data)	Monitoring item	Setting item
Module 1	1000 to 1009	1010 to 1029	1030 to 1085
Module 2	1100 to 1109	1110 to 1129	1130 to 1185
Module 3	1200 to 1209	1210 to 1229	1230 to 1285
Module 4	1300 to 1309	1310 to 1329	1330 to 1385
Module 5	1400 to 1409	1410 to 1429	1430 to 1485
Module 6	1500 to 1509	1510 to 1529	1530 to 1585
Module 7	1600 to 1609	1610 to 1629	1630 to 1685
Module 8	1700 to 1709	1710 to 1729	1730 to 1785
Module 9	1800 to 1809	1810 to 1829	1830 to 1885
Module 10	1900 to 1909	1910 to 1929	1930 to 1985
Module 11	2000 to 2009	2010 to 2029	2030 to 2085
Module 12	2100 to 2109	2110 to 2129	2130 to 2185
Module 13	2200 to 2209	2210 to 2229	2230 to 2285
Module 14	2300 to 2309	2310 to 2329	2330 to 2385
Module 15	2400 to 2409	2410 to 2429	2430 to 2485
Module 16	2500 to 2509	2510 to 2529	2530 to 2585

12.4 Mounting of QMC1-MT

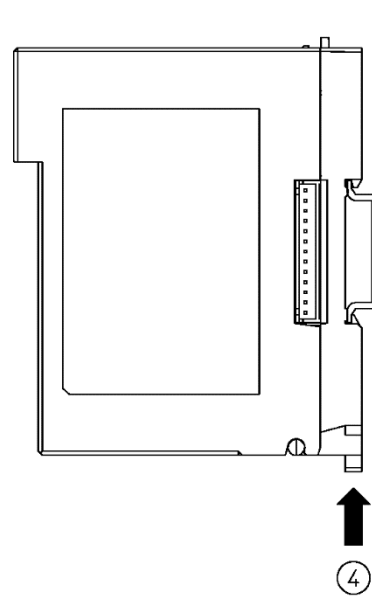
Mounting to the DIN rail

- ① Lower the lock lever of this instrument. (The lock lever of this instrument has a spring structure, but if lower it in the direction of the arrow until it stops, it will be locked in that position.)
- ② Hook the part ② of this instrument onto the top of the DIN rail.
- ③ Insert the lower part of this instrument with the part ② as a fulcrum.
- ④ Raise the lock lever of this instrument.

Make sure it is fixed to the DIN rail.



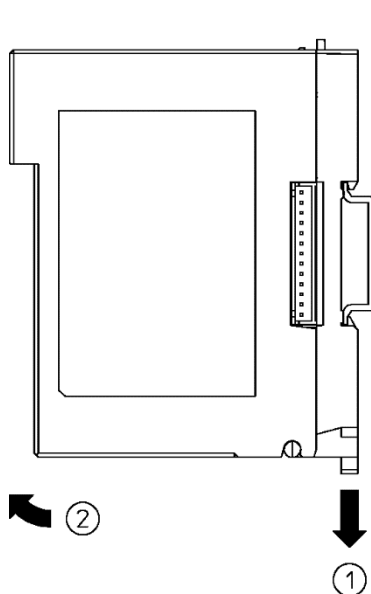
(Fig. 12.4-1)



(Fig. 12.4-2)

Removal from the DIN rail

- ① Insert a flat blade screwdriver into the lock lever of this instrument and lower the lock lever until it stops.
- ② Remove this instrument from the DIN rail by lifting it from below.

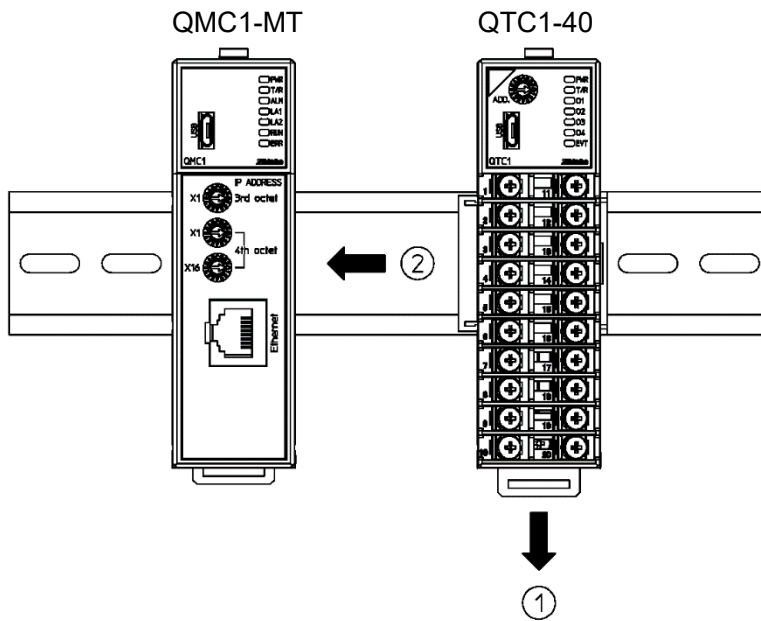


(Fig. 12.4-3)

Mounting multiple modules to the DIN rail

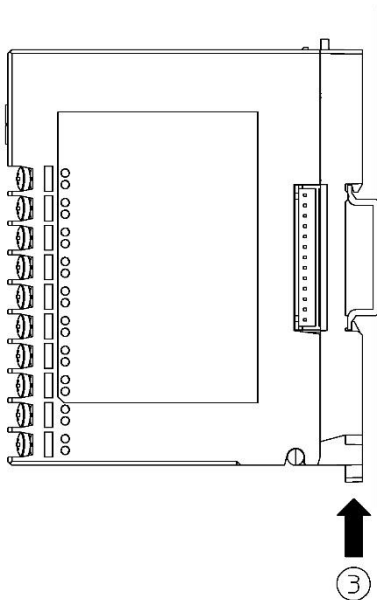
This section describes an example of mounting this instrument and QTC1-40 on the DIN rail.

- ① Lower the lock lever of the QTC1-40, and mounting the QTC1-40 to the DIN rail.
- ② Slide the QTC1-40 to the left and connect the connectors to each other.



(Fig. 12.4-4)

- ③ Raise the lock lever of the QTC1-40. Make sure it is fixed to the DIN rail.

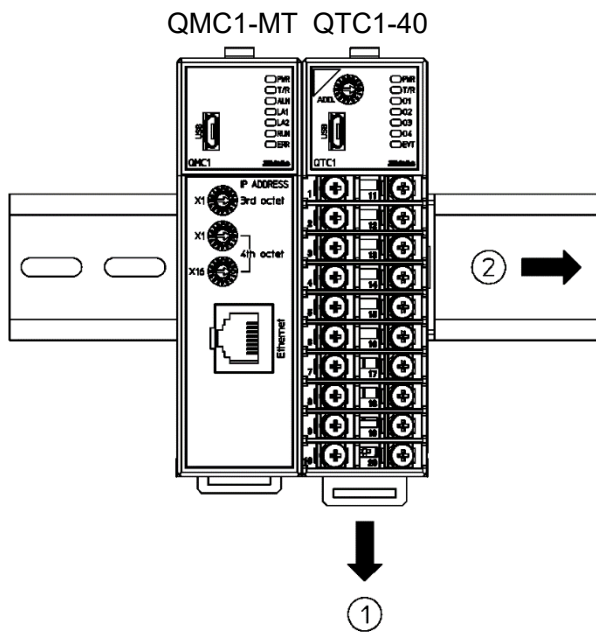


(Fig. 12.4-5)

Removal multiple modules from the DIN rail

This section describes an example of removing multiple QTC1-40 on the DIN rail.

- ① Insert a flat blade screwdriver into the lock lever of the QTC1-40 and lower the lock lever until it stops.
- ② Slide the QTC1-40 to the right side and disconnect it from the connector, then remove it from the DIN rail.



(Fig. 12.4-6)

12.5 Wiring of QMC1-MT

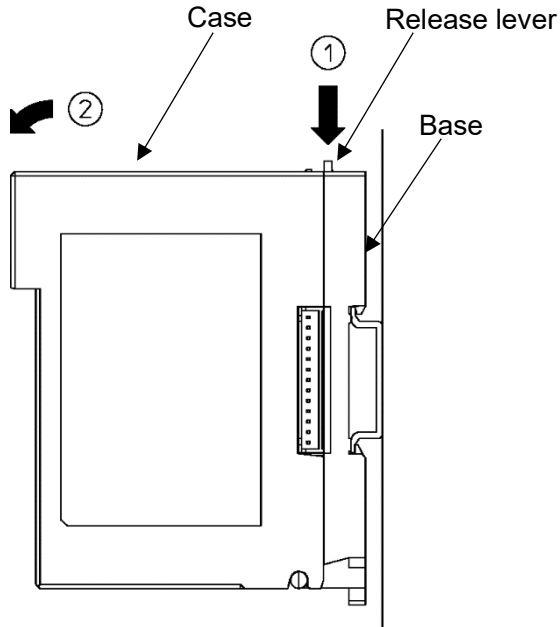
12.5.1 Wiring for Power Supply

The power terminal is located on the base of this instrument.

Wiring by the following procedure.

(1) Case removal

- ① Push the release lever on the top of this instrument to unlock it.
- ② Remove the case.



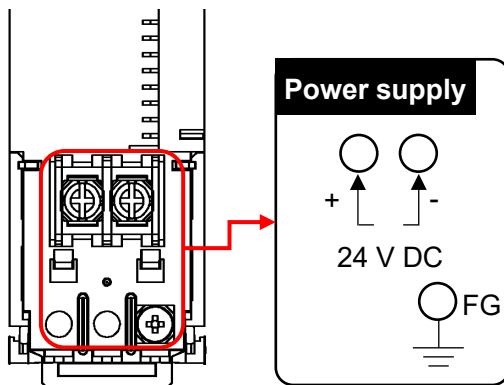
(Fig. 12.5.1-1)

(2) Wiring



Caution

- Do not use the wrong polarity for the power supply voltage (24 V DC).
- Use copper wires AWG16 to 14 (1.31 to 2.08 mm²) for the FG terminal and Power supply terminal.
- Use round crimp terminals.
- The tightening torques for power terminals and FG terminals should be as follows.
Power supply terminal: 0.5 N•m
FG terminal: 0.3 N•m

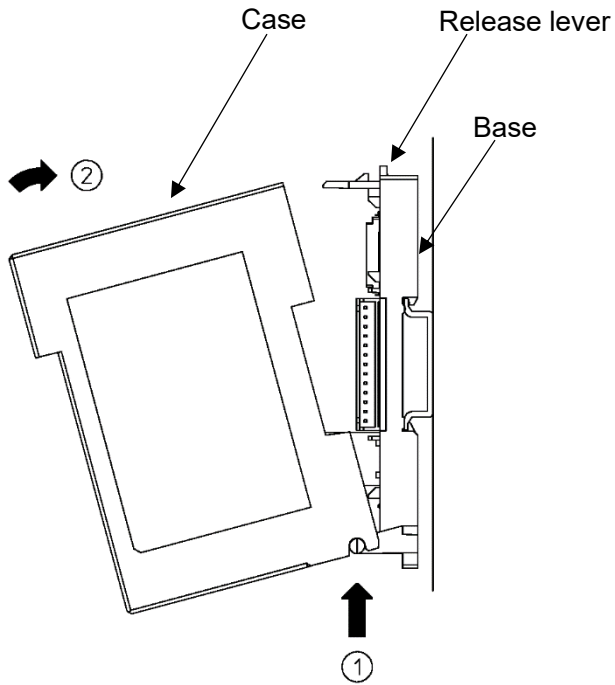


(Fig. 12.5.1-2)

(3) Case mounting

- ① Hook the case on the lower part ① of this instrument.
- ② Mount the case so that the lower part ① of this instrument is the fulcrum and covers the release lever.

There is a clicking sound.



(Fig. 12.5.1-3)

12.6 Communication with Mitsubishi Electric Corporation PLC

This section describes communication with the PLC manufactured by Mitsubishi Electric Corporation.

12.6.1 Communication parameter setting

Set the IP address, subnet mask, gateway, and port number of the PLC to be used. Check with the system administrator before setting these parameters.

For details, refer to the instruction manual of the PLC to be used.

The factory default values of the communication parameter setting items are as follows.

Communication parameter setting items	Setting range	Factory default
IP address	Each octet 0 to 255	192.168.1.2
Subnet mask	Each octet 0 to 255	255.255.255.0
Gateway	Each octet 0 to 255	0.0.0.0
Port number	0 to 65535	4096

The following communication protocol is supported.

Mitsubishi Electric Corporation PLC MELSEC Communication Protocol

Frame: QnA compatible 3E frame (SLMP 3E frame)

Code: Binary or ASCII

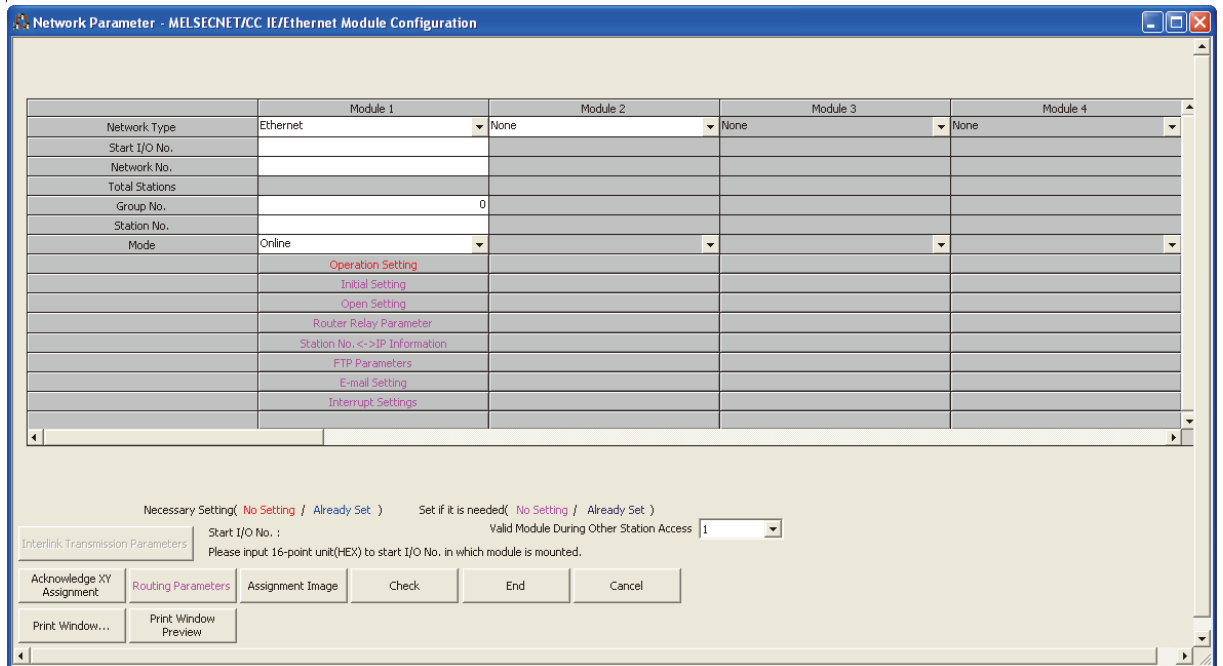
Request destination network No.: 0 (fixed)

Request destination station No.: 255 (fixed)

The following is an example procedure for setting communication parameters when using the Ethernet interface unit (QJ71E71-100).

(1) Network Parameter Setting

Click Project window → Parameter → Network Parameter → Ethernet / CC IE / MELSECNET.

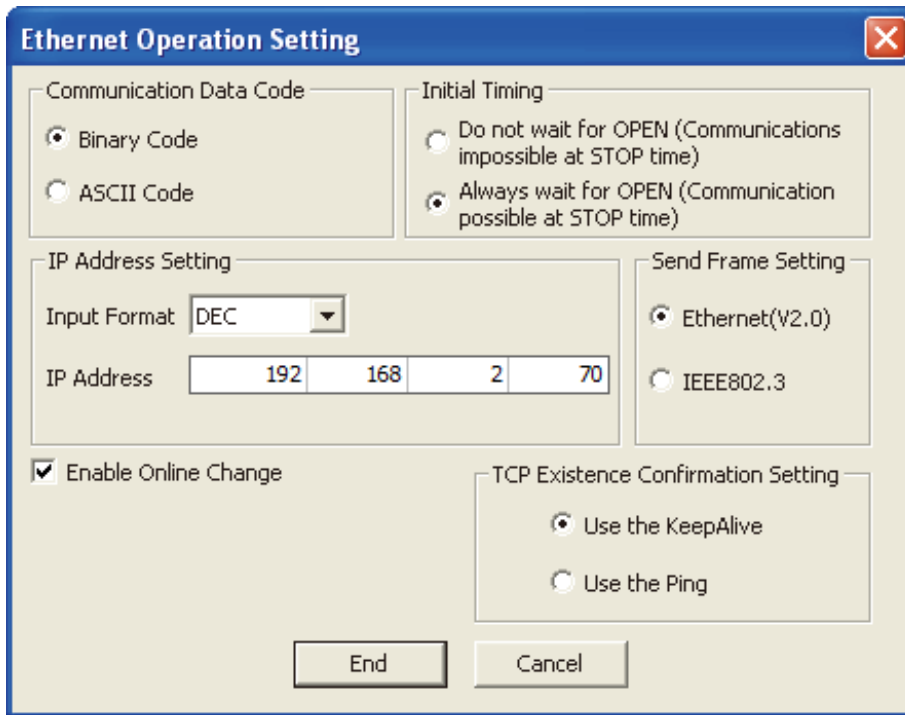


(Fig. 12.6.1-1)

Item	Setting example
Network Type	Ethernet
Start I/O No.	0000
Network No.	1
Group No.	0
Station No.	1
Mode	Online

(2) Ethernet Operation Setting

Click Project window → Parameter → Network Parameter → Ethernet / CC IE / MELSECNET
 → select "Ethernet" in Network Type → click "Operation Setting".

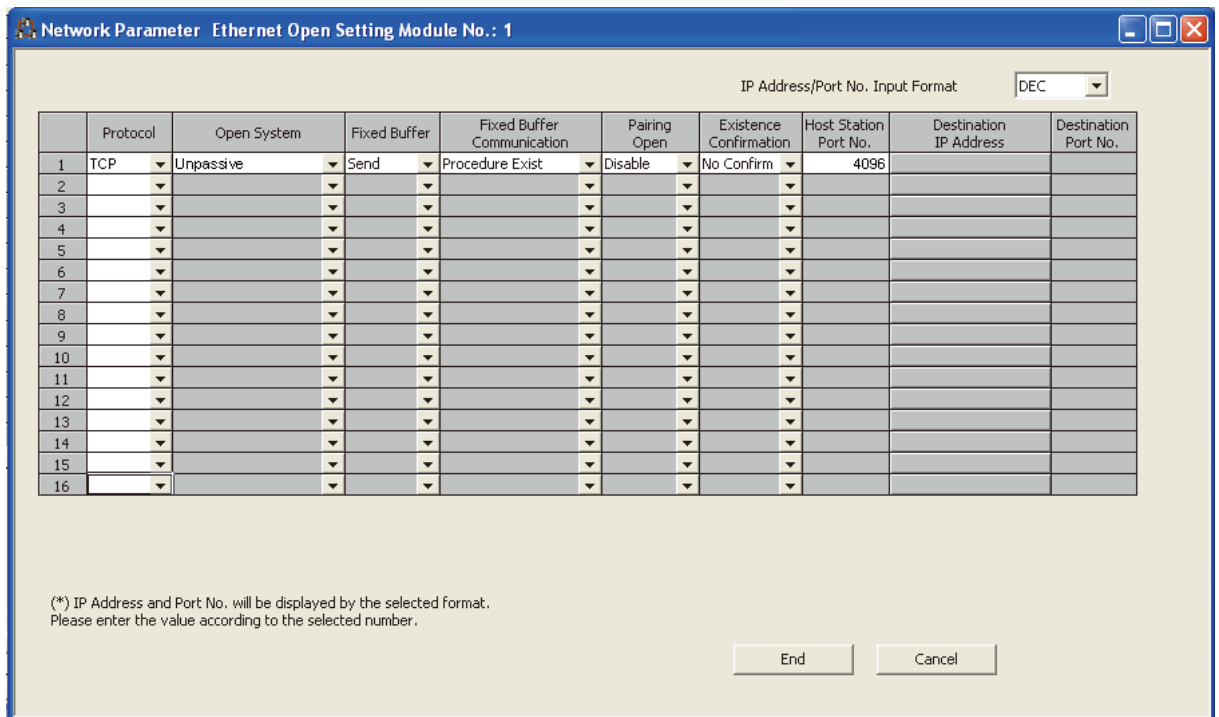


(Fig. 12.6.1-2)

Item		Setting example
Communication Data Code		Binary Code
Initial Timing		Always wait for OPEN (Communication possible at STOP time)
IP Address Setting	Input Format	DEC
	IP Address	192.168.2.70
Send Frame Setting		Ethernet(V2.0)
Enable Online Change		Enable (Select the check box.)
TCP Existence Confirmation Setting		Use the KeepAlive

(3) Ethernet Open Setting

Click Project window → Parameter → Network Parameter → Ethernet / CC IE / MELSECNET
 → select "Ethernet" in Network Type → click "Open Setting".



(Fig. 12.6.1-3)

Item	Setting example
IP Address/Port No. Input Format	DEC
Protocol	TCP
Open System	Unpassive
Fixed Buffer	Send
Fixed Buffer Communication	Procedure Exist
Pairing Open	Disable
Existence Confirmation	No Confirm
Host Station Port No.	4096

12.6.2 Connect to Ethernet

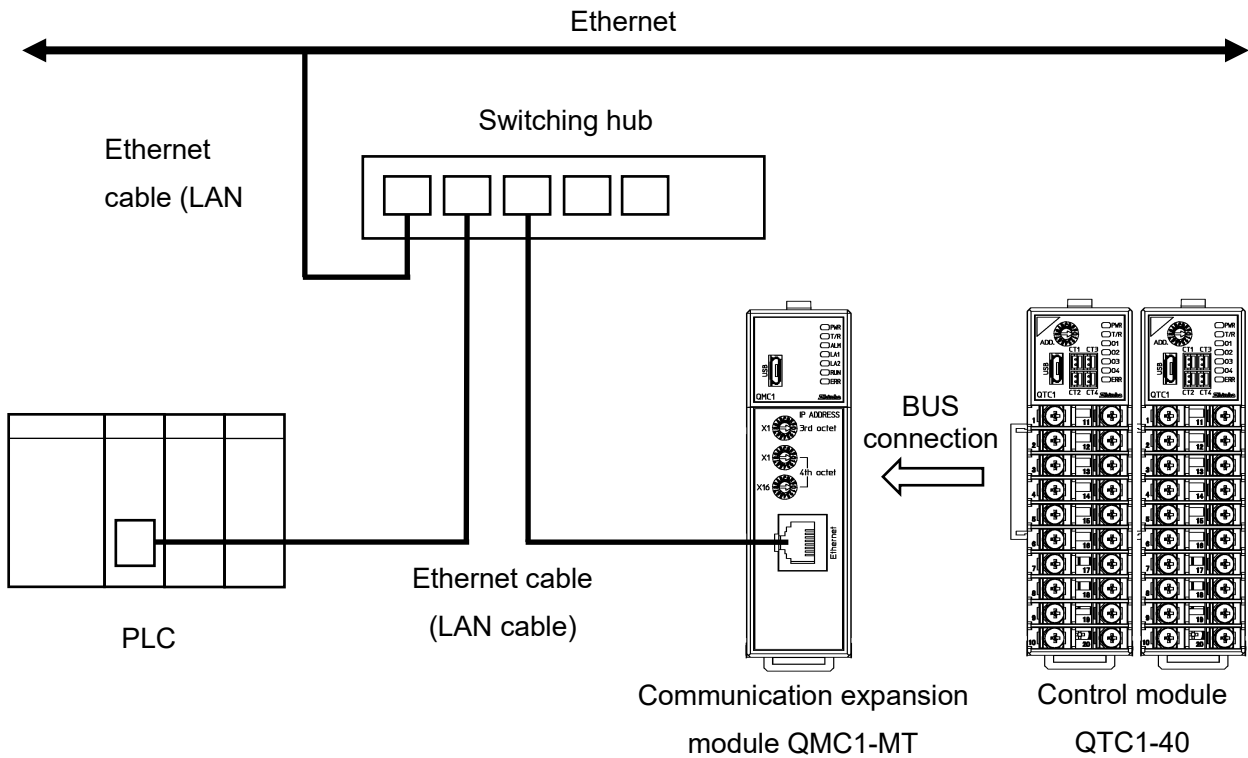


Caution

Do not connect QTC1-2P or QTC1-4P in the same unit.

Use a commercially available Ethernet cable (LAN cable) for connection to the Ethernet.
Either a straight cable or a crossover cable can be used for the Ethernet cable (LAN cable).

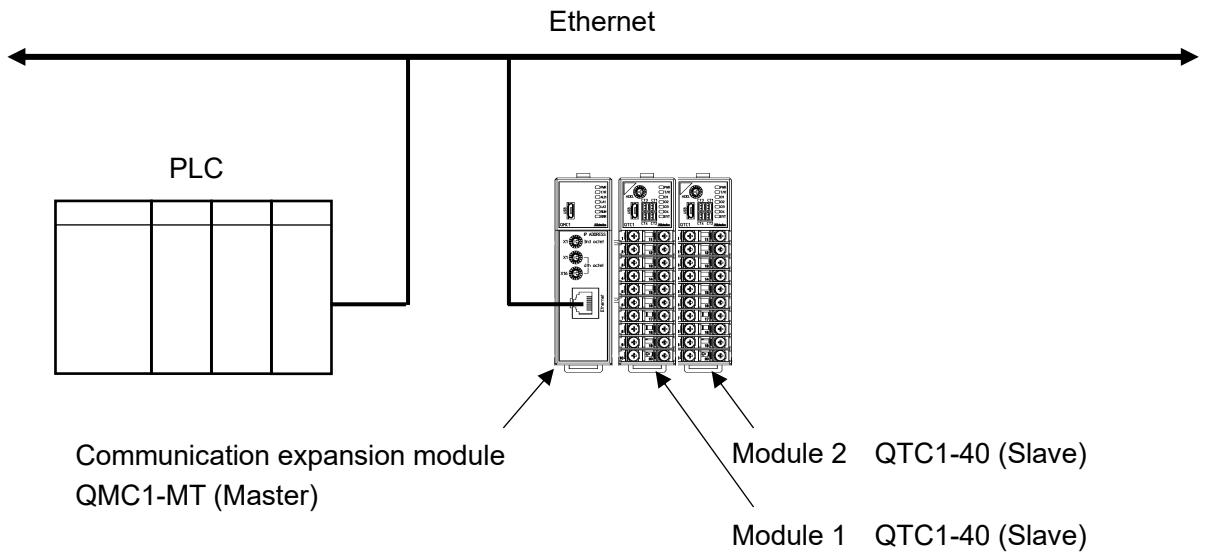
Connection example for using a switching hub



(Fig. 12.6.2-1)

12.6.3 Communication Procedure

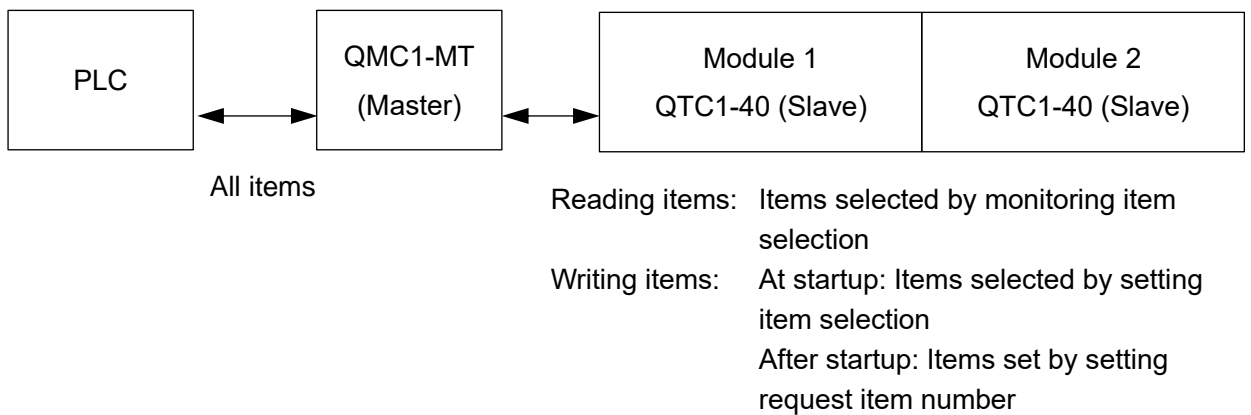
This section describes the case where this instrument and two QTC1-40 modules are connected to PLC.



(Fig. 12.6.3-1)

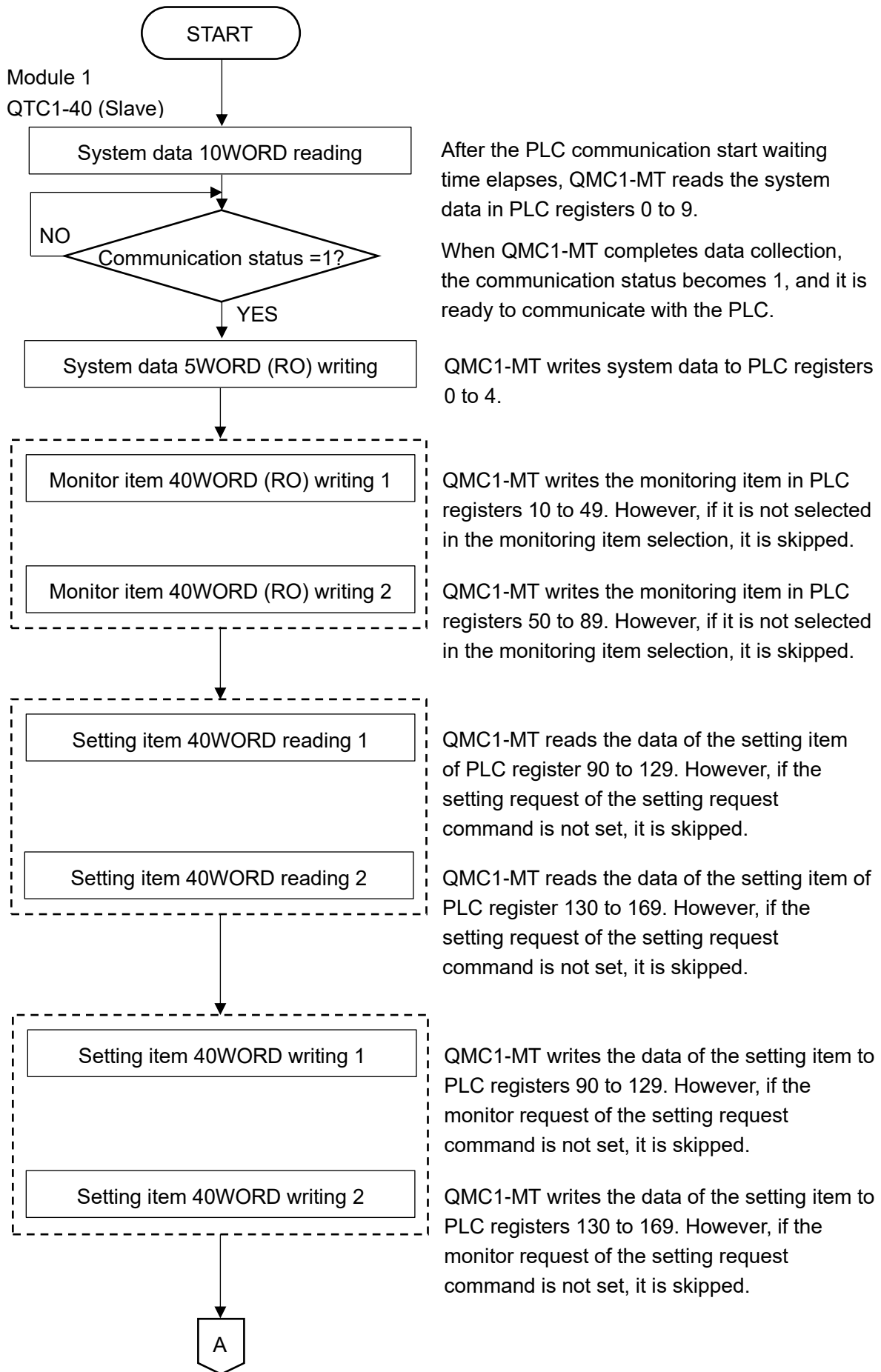
- (1) This instrument becomes the master and collects the valid monitor items and setting items of module 1 and module 2 [QTC1-40 (slave)].
- (2) After the PLC communication start waiting time elapses, this instrument periodically writes the item selected in the monitor item to the PLC register.

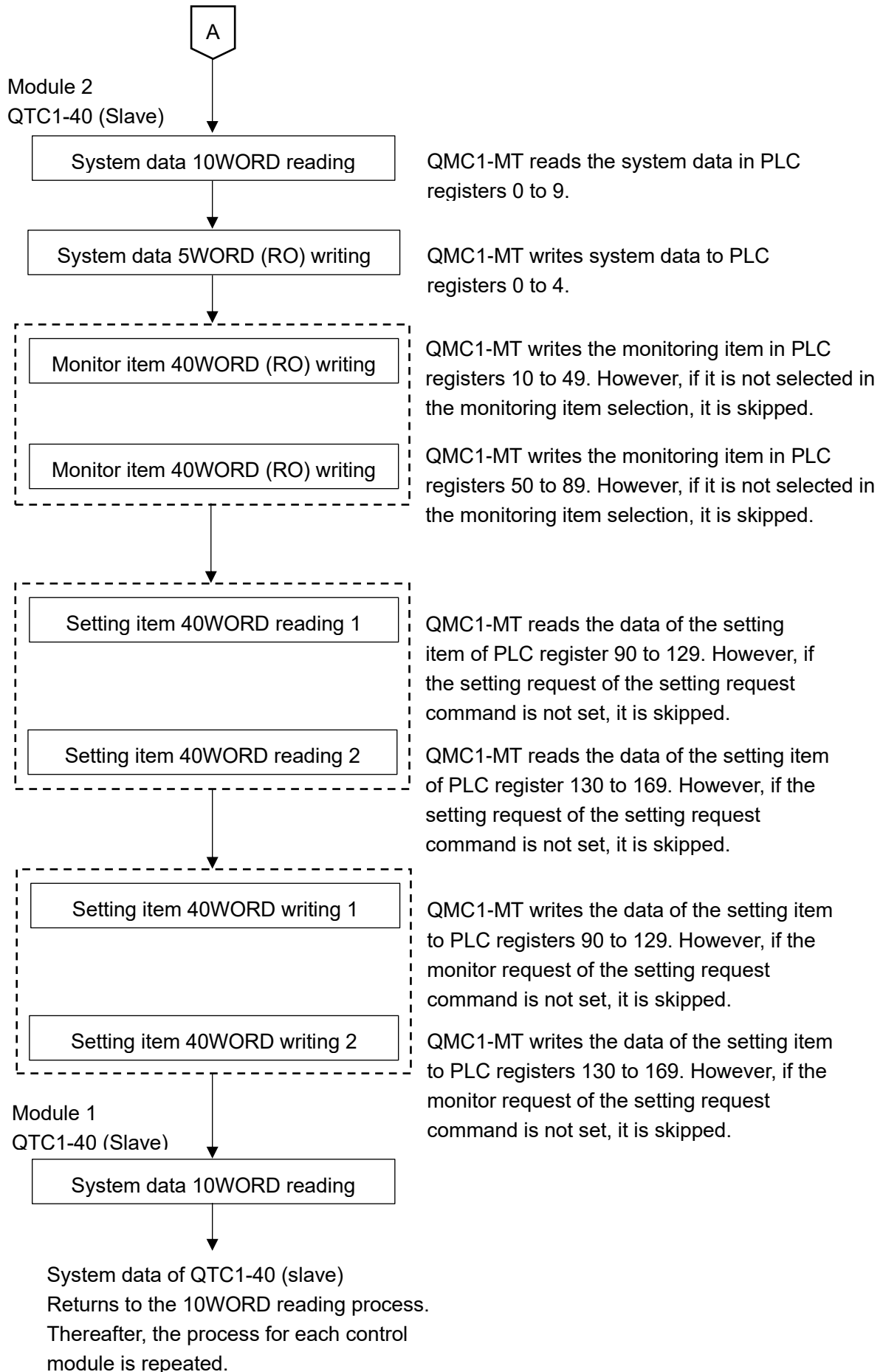
In addition, the item selected in the setting item is read from the PLC register by the setting request.



(Fig. 12.6.3-2)

12.6.4 Handshake between QMC1-MT and PLC





12.6.5 PLC communication data map

The following table shows the PLC communication data map when set with the SIF function initial setting example.

SIF function initial setting example

Name	Module 1 QTC1-40 (Slave)		Module 2 QTC1-40 (Slave)	
	MODBUS address	Setting value	MODBUS address	Setting value
Start number of PLC register	0064	1000	0065	1100
Response waiting time of PLC	0074	200	0075	200
Start waiting time of PLC	0084	5	0085	5
Reservation (Not used)	0094	0	0095	0
Reservation (Not used)	00A4	0	00A5	0
Monitoring item 1 selection	00B4	31	00B5	31
Monitoring item 2 selection	00C4	0	00C5	0
Monitoring item 3 selection	00D4	0	00D5	0
Reservation (Not used)	00E4	0	00E5	0
Reservation (Not used)	00F4	0	00F5	0
Setting item 1 selection	0104	57827	0105	57827
Setting item 2 selection	0114	2721	0115	2721
Setting item 3 selection	0124	0	0125	0
Setting item 4 selection	0134	0	0135	0
Setting item 5 selection	0144	0	0145	0
Setting item 6 selection	0154	0	0155	0
Setting item 7 selection	0164	0	0165	0

PLC data register layout

	Module 1 QTC1-40 (Slave)	Module 2 QTC1-40 (Slave)
Information between QMC1-MT and PLC (System data)	D1000 to D1009	D1100 to D1109
Monitor item	D1010 to D1029	D1110 to D1129
Setting item	D1030 to D1085	D1130 to D1185

Details of information between QMC1-MT and PLC (System data)

Module 1 QTC1-40 (Slave)

Data	PLC Data register	Attribute	Description
Communication status	D1000	RO	0: QMC1-MT is collecting data from QTC1-40. 1: QMC1-MT completed data collection for QTC1-40 (At startup: Initial setting values for each slave)
QMC1-MT - PLC Normal communication monitor	D1001	RO	Increment counter Repeat 0 to 65535 → 0 to 65535
QMC1-MT Error code	D1002	RO	B0: PLC register R/W error 0: Normal 1: Error B1: Between QMC1-MT and PLC communication error 0: Normal 1: Error B2: Negative acknowledgement when setting from QMC1-MT to QTC1-40 (Cleared at B0 clear of 1006) 0: Normal 1: Error
Setting request monitor	D1003	RO	B0: At setting (Reflect and set to B0 of 1006.) B1: At monitoring (Reflect and set until B1 of 1006 is cleared.)
Reservation	D1004	RO	
Setting request item number	D1005	R/W	0: All items selected in the setting item 1 to 7 selection 1 to 112: Item (1 data) selected in the setting item 1 to 7 selection Only the data (one data) of the selected item is read or written. However, since communication with the PLC is a batch process, all the selected items are read or written.
Setting request command (*)	D1006	R/W	B0: Setting request (PLC → QMC1-MT) QMC1-MT requests to read the data of the setting item of PLC register. B1: Monitoring request (QMC1-MT → PLC) QMC1-MT requests to write the data of the setting item to the PLC register. After the setting request or monitoring request is completed, QMC1-MT clears each bit.
Reservation	D1007	R/W	
Reservation	D1008	R/W	
Reservation	D1009	R/W	

(*): When setting request and monitoring request are set at the same time, processing is done in the order of setting request (reading PLC register data for QMC1-MT) and monitoring request (writing data to PLC register).

If the setting request is set during the monitoring request, the monitor request is discarded and the monitoring request is made again after the setting request.

Module 2 QTC1-40 (Slave)

Data	PLC Data register	Attribute	Description
Communication status	D1100	RO	0: QMC1-MT is collecting data from QTC1-40. 1: QMC1-MT completed data collection for QTC1-40 (At startup: Initial setting values for each slave)
QMC1-MT - PLC Normal communication monitor	D1101	RO	Increment counter Repeat 0 to 65535 → 0 to 65535
QMC1-MT Error code	D1102	RO	B0: PLC register R/W error 0: Normal 1: Error B1: Between QMC1-MT and PLC communication error 0: Normal 1: Error B2: Negative acknowledgement when setting from QMC1-MT to QTC1-40 (Cleared at B0 clear of 1006) 0: Normal 1: Error
Setting request monitor	D1103	RO	B0: At setting (Reflect and set to B0 of 1006.) B1: At monitoring (Reflect and set until B1 of 1006 is cleared.)
Reservation	D1104	RO	
Setting request item number	D1105	R/W	0: All items selected in the setting item 1 to 7 selection 1 to 112: Item (1 data) selected in the setting item 1 to 7 selection Only the data (one data) of the selected item is read or written. However, since communication with the PLC is a batch process, all the selected items are read or written.
Setting request command (*)	D1106	R/W	B0: Setting request (PLC → QMC1-MT) QMC1-MT requests to read the data of the setting item of PLC register. B1: Monitoring request (QMC1-MT → PLC) QMC1-MT requests to write the data of the setting item to the PLC register. After the setting request or monitoring request is completed, QMC1-MT clears each bit.
Reservation	D1107	R/W	
Reservation	D1108	R/W	
Reservation	D1109	R/W	

(*): When setting request and monitoring request are set at the same time, processing is done in the order of setting request (reading PLC register data for QMC1-MT) and monitoring request (writing data to PLC register).

If the setting request is set during the monitoring request, the monitor request is discarded and the monitoring request is made again after the setting request.

Module 1, Module 2 Details of monitoring item and setting item between QTC1-40 and PLC

Module 1 QTC1-40 (Slave)

Data item	Channel	PLC Data register	Attribute	Data
PV reading (including difference)	CH1	D1010	RO	Value of control range (*) Corresponding to Input calculation function (Difference input, Addition input) and Input difference detection
	CH2	D1011		
	CH3	D1012		
	CH4	D1013		
MV reading	CH1	D1014	RO	Output low limit to Output high limit
	CH2	D1015		
	CH3	D1016		
	CH4	D1017		
SV reading	CH1	D1018	RO	Scaling low limit to Scaling high limit
	CH2	D1019		
	CH3	D1020		
	CH4	D1021		

(*): Control range

Control range for thermocouple input (no decimal point)

Input range low limit 50 °C (90 °F) to Input range high limit + 50 °C (90 °F)

Control range for thermocouple input (with decimal point) and RTD input

Input range low limit (Input span × 1 %) °C (°F) to Input range high limit + 50.0 °C (90 °F)

Control range for DC current input and DC voltage input

Scaling low limit Scaling width × 1 % to Scaling high limit + Scaling width × 10 %

Data item	Channel	PLC Data register	Attribute	Data
Status flag 1	CH1	D1022	RO	B0: Control Enable/Diseble 0: Diseble 1: Enable
	CH2	D1023		B1: AT Perform/Cancel 0: Cancel 1: Perform
	CH3	D1024		B2: Auto/Manual control 0: Automatic 1: Manual
	CH4	D1025		B3: Control output 0: OFF 1: ON
				B4: Input error (Overscale) 0: Normal 1: Error
				B5: Input Error (Underscale) 0: Normal 1: Error
				B6: Alarm 1 output 0: OFF 1: ON
				B7: Alarm 2 output 0: OFF 1: ON
				B8: Alarm 3 output 0: OFF 1: ON
				B9: Alarm 4 output 0: OFF 1: ON
				B10: Loop break alarm output 0: OFF 1: ON
				B11: Heater burnout alarm output 0: OFF 1: ON
				B12: Input difference 0: Within range 1: Without range
				B13: Not used
				B14: Power supply identification 0: 24 V DC 1: USB bus power
				B15: Non-volatile IC memory error 0: Normal 1: Error

Data item	Channel	PLC Data register	Attribute	Data
Status flag 2	CH1 CH2 CH3 CH4	D1026 D1027 D1028 D1029	RO	B0: Auto balance control 0: None 1: During auto balance control B1: Not used B2: Not used B3: Not used B4: Cold junction error 0: Normal 1: Error B5: Sensor error 0: Normal 1: Error B6: ADC error 0: Normal 1: Error B7: Host setting value change flag 0: Without flag 1: With flag B8: USB setting value change flag 0: Without flag 1: With flag B9: Not used B10: Not used B11: Not used B12 to B15: System bit for internal processing. Do not use.
Control Allowed/Prohibited selection	CH1 CH2 CH3 CH4	D1030 D1031 D1032 D1033	R/W	0: Control prohibited 1: Control allowed
AT Perform/Cancel selection	CH1 CH2 CH3 CH4	D1034 D1035 D1036 D1037	R/W	0: AT cancel 1: AT perform
Setting value (SV)	CH1 CH2 CH3 CH4	D1038 D1039 D1040 D1041	R/W	Scaling lower limit to Scaling high limit
Proportional band setting	CH1 CH2 CH3 CH4	D1042 D1043 D1044 D1045	R/W	1 to input span °C (°F) or 0.1 to input span °C (°F) when DC current and DC voltage input 0.10 to 100.00 %
Integral time setting	CH1 CH2 CH3 CH4	D1046 D1047 D1048 D1049	R/W	0 to 3600 seconds or 0.0 to 2000.0 seconds When select "2: Slow PID control" of control action selection 1 to 3600 seconds or 0.1 to 2000.0 seconds
Derivative time setting	CH1 CH2 CH3 CH4	D1050 D1051 D1052 D1053	R/W	0 to 3600 seconds or 0.0 to 2000.0 seconds

Data item	Channel	PLC Data register	Attribute	Data
Alarm 1 action selection	CH1	D1054	R/W	0: No event 1: High limit alarm 2: Low limit alarm 3: High/Low limits alarm 4: High/Low limits range alarm 5: Process high alarm 6: Process low alarm 7: High limit with standby 8: Low limit with standby 9: High/Low limits alarm with standby 10: High/Low limits alarm individually 11: High/Low limits range alarm individually 12: High/Low limits alarm with standby individually
	CH2	D1055		
	CH3	D1056		
	CH4	D1057		
Alarm 2 action selection	CH1	D1058	R/W	
	CH2	D1059		
	CH3	D1060		
	CH4	D1061		
Alarm 3 action selection	CH1	D1062	R/W	
	CH2	D1063		
	CH3	D1064		
	CH4	D1065		
Alarm 4 action selection	CH1	D1066	R/W	
	CH2	D1067		
	CH3	D1068		
	CH4	D1069		
Alarm 1 value setting	CH1	D1070	R/W	Refer to "Alarm 1 to 4 value setting range table".
	CH2	D1071		
	CH3	D1072		
	CH4	D1073		
Alarm 2 value setting	CH1	D1074	R/W	
	CH2	D1075		
	CH3	D1076		
	CH4	D1077		
Alarm 3 value setting	CH1	D1078	R/W	
	CH2	D1079		
	CH3	D1080		
	CH4	D1081		
Alarm 4 value setting	CH1	D1082	R/W	
	CH2	D1083		
	CH3	D1084		
	CH4	D1085		

Alarm 1 to 4 value setting range table

Alarm action	Setting range
No event	
High limit alarm	-(Input span) to Input span (*1)
Low limit alarm	-(Input span) to Input span (*1)
High/Low limits alarm	0 to Input span (*1)
High/Low limits range alarm	0 to Input span (*1)
Process high alarm	Input range low limit to Input range high limit (*2)
Process low alarm	Input range low limit to Input range high limit (*2)
High limit with standby	-(Input span) to Input span (*1)
Low limit with standby	-(Input span) to Input span (*1)
High/Low limits alarm with standby	0 to Input span (*1)
High/Low limits alarm individually	0 to Input span (*1)
High/Low limits range alarm individually	0 to Input span (*1)
High/Low limits alarm with standby individually	0 to Input span (*1)

(*1): For DC voltage, current input, the input span is the same as the scaling span.

(*2) For DC voltage, current input, input range low (or high) limit value is the same as scaling low (or high) limit value.

Module 2 QTC1-40 (Slave)

Data item	Channel	PLC Data register	Attribute	Data
PV reading (including difference)	CH1	D1110	RO	QTC1-40 (Slave) Same as module address 1
	CH2	D1111		
	CH3	D1112		
	CH4	D1113		
MV reading	CH1	D1114	RO	QTC1-40 (Slave) Same as module address 1
	CH2	D1115		
	CH3	D1116		
	CH4	D1117		
SV reading	CH1	D1118	RO	QTC1-40 (Slave) Same as module address 1
	CH2	D1119		
	CH3	D1120		
	CH4	D1121		
Status flag 1	CH1	D1122	RO	QTC1-40 (Slave) Same as module address 1
	CH2	D1123		
	CH3	D1124		
	CH4	D1125		
Status flag 2	CH1	D1126	RO	QTC1-40 (Slave) Same as module address 1
	CH2	D1127		
	CH3	D1128		
	CH4	D1129		
Control Allowed/Prohibited selection	CH1	D1130	R/W	QTC1-40 (Slave) Same as module address 1
	CH2	D1131		
	CH3	D1132		
	CH4	D1133		
AT Perform/Cancel selection	CH1	D1134	R/W	QTC1-40 (Slave) Same as module address 1
	CH2	D1135		
	CH3	D1136		
	CH4	D1137		
Setting value (SV)	CH1	D1138	R/W	QTC1-40 (Slave) Same as module address 1
	CH2	D1139		
	CH3	D1140		
	CH4	D1141		
Proportional band setting	CH1	D1142	R/W	QTC1-40 (Slave) Same as module address 1
	CH2	D1143		
	CH3	D1144		
	CH4	D1145		
Integral time setting	CH1	D1146	R/W	QTC1-40 (Slave) Same as module address 1
	CH2	D1147		
	CH3	D1148		
	CH4	D1149		
Derivative time setting	CH1	D1150	R/W	QTC1-40 (Slave) Same as module address 1
	CH2	D1151		
	CH3	D1152		
	CH4	D1153		

Data item	Channel	PLC Data register	Attribute	Data
Alarm 1 action selection	CH1	D1154	R/W	QTC1-40 (Slave) Same as module address 1
	CH2	D1155		
	CH3	D1156		
	CH4	D1157		
Alarm 2 action selection	CH1	D1158	R/W	
	CH2	D1159		
	CH3	D1160		
	CH4	D1161		
Alarm 3 action selection	CH1	D1162	R/W	
	CH2	D1163		
	CH3	D1164		
	CH4	D1165		
Alarm 4 action selection	CH1	D1166	R/W	
	CH2	D1167		
	CH3	D1168		
	CH4	D1169		
Alarm 1 value setting	CH1	D1170	R/W	
	CH2	D1171		
	CH3	D1172		
	CH4	D1173		
Alarm 2 value setting	CH1	D1174	R/W	
	CH2	D1175		
	CH3	D1176		
	CH4	D1177		
Alarm 3 value setting	CH1	D1178	R/W	
	CH2	D1179		
	CH3	D1180		
	CH4	D1181		
Alarm 4 value setting	CH1	D1182	R/W	
	CH2	D1183		
	CH3	D1184		
	CH4	D1185		

12.6.6 Exchange of data between QMC1-MT and PLC

Data is exchanged between QMC1-MT and PLC by the setting request item number and setting request command.

(1) Setting request item number

Set whether to transfer the data of all items selected by setting items 1 to 7 or only the data (1 data) of the selected item.

0: The data of all items selected by setting items 1 to 7 is transferred.

1 to 112: Transfers only the data (1 data) of the item selected by setting items 1 to 7.

(2) Setting request command

The setting request command is a setting request and a monitoring request.

B0: Setting request (PLC → QMC1-MT)

This command requests QMC1-MT to read out the data of the setting item of PLC register.

B1: Monitoring request (QMC1-MT → PLC)

This command requests QMC1-MT to write the data of the setting item to the PLC register.

When setting request and monitoring request are set at the same time, processing is done in the order of setting request (reading PLC register data for QMC1-MT) and monitoring request (writing data to PLC register).

If the setting request is set during the monitoring request, the monitor request is discarded and the monitoring request is made again after the setting request.



Caution

When setting data, write all the data of the setting items to the PLC register first.

If you change the setting items of the QTC1-40 without writing all the data of the setting items, they may be rewritten to indefinite values and malfunction may occur.

Data setting procedure

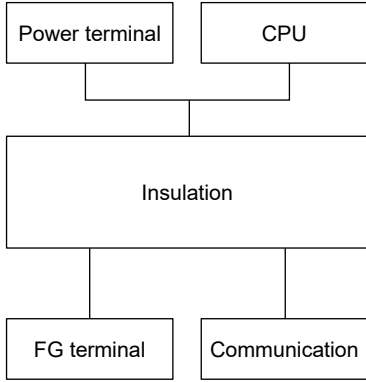
Module 1 When selecting "control allowed" in the control allowed/prohibited selection of QTC1-40.

- (1) Set 0 to the setting request item number
To write all the data of the setting items to the PLC register, set 0 to D1005 (setting request item number).
- (2) Set B1 (monitoring request) of setting request command
Set 1 (decimal: 2) to B1 (monitoring request) of D1006 (setting request command).
QMC1-MT starts to write the data of the setting item to the PLC register.
- (3) Check B1 (monitoring request) of setting request command
B1 (monitoring request) of D1006 (setting request command) is cleared when writing the data of the setting item to the PLC register is completed.
- (4) Data setting
Set 1 (control allowed) to D1030 to D1033 (control allowed/prohibited selection) in the PLC register.
- (5) Set 1 to the setting request item number
To read out the control allowed/prohibited selection data in the PLC register, set 1 to D1005 (setting request item number).
- (6) Set B0 (setting request) of setting request command
Set 1 (decimal: 1) to B0 (setting request) of D1006 (setting request command).
QMC1-MT starts to read the data of the setting item of PLC register.
- (7) Check B0 (setting request) of setting request command
B0 (setting request) of D1006 (setting request command) is cleared when reading the data of the setting item to the PLC register is completed.

13 Specifications

13.1 Standard Specifications

Power supply

Power supply voltage	24 V DC Allowable voltage fluctuation: 20 to 28 V DC
Power consumption	4 W or less
Inrush current	Max. 10 A
Circuit insulation configuration	 <pre> graph TD PT[Power terminal] --- I[Insulation] CPU[CPU] --- I I --- FT[FG terminal] I --- C[Communication] </pre> <p>(Fig. 13.1-1)</p>
Insulation resistance	500 V DC 10 MΩ or more
Dielectric strength	Between Power terminal – FG terminal: 1.5 kV AC for 1 minute Between Power terminal – Communication: 750 V AC for 1 minute

Communication interface

Ethernet communication	10BASE-T/100BASE-TX automatic recognition
Between modules	Internal bus

Recommended Environment

Ambient temperature	-10 to 50 °C (no condensation or freezing)
Ambient humidity	35 to 85 %RH (no condensation)
Altitude	2,000 m or less
Installation environment	Pollution Degree 2 (according to EN61010-1)
Memory protection	Non-volatile IC memory (Number of writes: 1 million times)
Environmental specification	RoHS directive compliant

General Structure

Weight	Approx. 140 g	
External dimensions	30 × 100 × 85 mm (W × H × D)	
Mounting type	DIN rail mounting type	
Case	Flame-resistant resin, Color: Black	
Panel	Polycarbonate sheet	
Applicable standard	EN	EN61010-1 (Pollution degree 2)
	EC Directive	EMI: EN61326 Radiated interference field strength: EN55011 Group1 ClassA EMS: EN61326

Setting Structure

QMC1-MT IP address setting	Set the third and fourth bytes of the QMC1-MT IP address using a rotary switch.
----------------------------	---

Standard Function

<p>Ethernet communication</p>	<p>Connects to the control module (QTC1-□) for Ethernet communication (MODBUS/TCP or SIF function).</p> <p>MODBUS/TCP</p> <table border="1" data-bbox="488 309 1465 405"> <tr> <td data-bbox="488 309 778 353">Physical layer</td> <td data-bbox="778 309 1465 353">10BASE-T/100BASE-TX automatic recognition</td> </tr> <tr> <td data-bbox="488 353 778 405">User layer</td> <td data-bbox="778 353 1465 405">MODBUS/TCP Number of connections: 1</td> </tr> </table>	Physical layer	10BASE-T/100BASE-TX automatic recognition	User layer	MODBUS/TCP Number of connections: 1						
Physical layer	10BASE-T/100BASE-TX automatic recognition										
User layer	MODBUS/TCP Number of connections: 1										
<p>SIF function</p>	<p>This function reads and writes various data to PLC registers using the communication protocol of Mitsubishi Electric Corporation's PLC MELSEC.</p> <table border="1" data-bbox="488 553 1465 842"> <tr> <td data-bbox="488 553 778 842">User layer</td> <td data-bbox="778 553 1465 842"> TCP/IP Mitsubishi Electric Corporation PLC MELSEC Communication Protocol Frame: QnA compatible 3E frame (SLMP 3E frame) Code: Binary or ASCII Connectable PLC: 1 unit </td> </tr> </table>	User layer	TCP/IP Mitsubishi Electric Corporation PLC MELSEC Communication Protocol Frame: QnA compatible 3E frame (SLMP 3E frame) Code: Binary or ASCII Connectable PLC: 1 unit								
User layer	TCP/IP Mitsubishi Electric Corporation PLC MELSEC Communication Protocol Frame: QnA compatible 3E frame (SLMP 3E frame) Code: Binary or ASCII Connectable PLC: 1 unit										
<p>Module-to-module communication</p>	<table border="1" data-bbox="488 954 1465 1294"> <tr> <td data-bbox="488 954 778 1003">Communication line</td> <td data-bbox="778 954 1465 1003">Internal Bus</td> </tr> <tr> <td data-bbox="488 1003 778 1052">Communication method</td> <td data-bbox="778 1003 1465 1052">Half-duplex communication</td> </tr> <tr> <td data-bbox="488 1052 778 1102">Synchronization method</td> <td data-bbox="778 1052 1465 1102">Start-stop synchronization</td> </tr> <tr> <td data-bbox="488 1102 778 1151">Communication speed</td> <td data-bbox="778 1102 1465 1151">57600 bps</td> </tr> <tr> <td data-bbox="488 1151 778 1294">Data bit/Parity/Stop bit</td> <td data-bbox="778 1151 1465 1294"> Data bit: 8 Parity: Even Stop bit: 1 </td> </tr> </table>	Communication line	Internal Bus	Communication method	Half-duplex communication	Synchronization method	Start-stop synchronization	Communication speed	57600 bps	Data bit/Parity/Stop bit	Data bit: 8 Parity: Even Stop bit: 1
Communication line	Internal Bus										
Communication method	Half-duplex communication										
Synchronization method	Start-stop synchronization										
Communication speed	57600 bps										
Data bit/Parity/Stop bit	Data bit: 8 Parity: Even Stop bit: 1										

Attached Function

Power failure countermeasure	The setting data is backed up in the non-volatile IC memory.						
Watchdog timer	The watchdog timer monitors runaway and halt of the program, and when an abnormality is detected, it resets the MCU and initializes the instrument.						
Warm up indication	After power-on, each operation indicator (except LA1 and LA2) lights up sequentially.						
Total energizing time measurement function	<p>It can check the time that the power is on.</p> <p>If the accumulated time exceeds 65535 hours, it will be added from 0 hours.</p> <p>It can grasp the approximate usage time from the accumulated time. However, since the save cycle is 1 hour, the time within 1 hour may not be saved due to a power failure.</p> <p>Total energizing time: 1 hour/count</p>						
Console communication	<p>Connect USB communication cable (commercial item) to the console communication connector, and the following operations can be performed from an external computer using the console software (SWC-QMC101M).</p> <p>(1) Reading and setting items required for Ethernet communication (protocol selection, QMC1-MT IP address setting, etc.)</p> <p>(2) Operation status reading</p> <p>(3) Read and set the each setting value of the SIF function</p> <p>(4) Change of function</p> <table border="1" data-bbox="488 1122 1461 1272"> <tr> <td>Communication protocol</td> <td>Shinko protocol</td> </tr> <tr> <td>Communication cable</td> <td>USB - micro USB Type-B (commercial item)</td> </tr> <tr> <td>Software</td> <td>Console software (SWC-QMC101M)</td> </tr> </table>	Communication protocol	Shinko protocol	Communication cable	USB - micro USB Type-B (commercial item)	Software	Console software (SWC-QMC101M)
Communication protocol	Shinko protocol						
Communication cable	USB - micro USB Type-B (commercial item)						
Software	Console software (SWC-QMC101M)						
Firmware update function	Connect USB communication cable (commercial item) to the console communication connector, and the following operations can be performed from an external computer using the console software (SWC-QMC101M).						

Other Item

Accessories	<p>Mounting and wiring instruction manual: 1</p> <p>Power supply terminal cover: 1</p>
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14 Troubleshooting

If any malfunctions occur, refer to the following items after checking that power is being supplied to the master module and slave module.

14.1 Operation indicator

Problem	Possible Cause	Solution
The power indicator (PWR) does not lights up.	Power is not supplied to this instrument.	Check the power supply.
		Refer to "8.3.1 Wiring for power supply and FG" (P.8-3) to check the wiring of the power supply terminals.
The power indicator (PWR) is flashing.	Nonvolatile IC memory failure.	Contact our agency or us.
The communication indicator (T/R) does not lights up.	Ethernet communication error (no response).	Check the Ethernet cable (LAN cable). Refer to "8.4 Connect to Ethernet" (P.8-5) to check the connection to Ethernet.
	Is the USB communication cable connected to the console communication connector?	Disconnect the USB communication cable from the console communication connector.
The communication indicator (T/R) is flashing slowly.	Ethernet communication error (receiving error).	In communication with the PLC using the SIF function, check whether a communication timeout state has occurred during reception.
The alarm indicator (ALM) lights up for 1 second.	Communication error with the slave [control module(QTC1-□)].	Check the control module(QTC1-□).
The link indicator (LA1) does not lights up.	No link has been established.	Check the Ethernet cable (LAN cable).
		Refer to "8.4 Connect to Ethernet" (P.8-5) to check the connection to Ethernet.
The line connection indicator (RUN) does not lights up.	Not connected to Ethernet.	Check the Ethernet cable (LAN cable).
		Refer to "8.4 Connect to Ethernet" (P.8-5) to check the connection to Ethernet.
The communication error indicator (ERR) lights up for 1 second.	Communication error in SLMP communication (*) of Ethernet.	Refer to "12 Communication with PLC Using SIF Function" (P.12-1) to check the specification settings of QMC1-MT and communication parameters of PLC.

(*): Communication protocol for Mitsubishi Electric Corporation PLC MELSEC.

14.2 Communication

Problem	Possible Cause	Solution
Cannot communicate.	Is the Ethernet cable (LAN cable) disconnected?	Check the Ethernet cable (LAN cable).
	Is the Ethernet cable (LAN cable) wiring correct?	Refer to "8.4 Connect to Ethernet" (P.8-5) to check the connection status to the Ethernet.
	Is there any disconnection or contact failure of the Ethernet cable (LAN cable)?	Check the Ethernet cable (LAN cable).
	Is the QMC1-MT IP address set correctly?	Refer to "5 Setting of QMC1-MT IP Address" (P.5-1)" to check the settings.
	Turned the power off → on after changing the QMC1-MT IP address setting?	The QMC1-MT IP address setting becomes valid when the power is turned off → on.
	Are the settings for the Ethernet communication protocol, IP address, subnet mask and gateway correct?	Refer to "6.2.1 USB Limited Item Setting" (P.6-6) to check the settings.
	Are the initial settings for the SIF function correct?	Refer to "12.3.3 Specification Settings for QMC1-MT" (P.12-7) to check the settings.
	Are the PLC communication parameters set correctly?	Refer to "12.6.1 Communication parameter setting" (P.12-33) to check the settings.
Communication is possible, but a negative acknowledgement is returned.	Are sending a command code that does not exist?	Refer to "10 Communication Command List" (P.10-1), and check the command code.
	Is the data of the write command exceeding the setting range?	Refer to "10 Communication Command List" (P.10-1), and check the setting range of write command.
	Is it not possible to write (Warming up when power is turned on)?	Check the state of the control module (QTC1-□).

14.3 Status Flag

Problem	Possible Cause	Solution
"1: Error" is set in B15: Non-volatile IC memory error.	The nonvolatile IC memory is defective.	Contact our agency or us.

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