MITSUBISHI ELECTRIC

General-Purpose AC Servo

MITSUBISHI SERVO AMPLIFIERS & MOTORS
MELSERVO

Sensing module INSTRUCTION MANUAL

-MR-MT2010
-MR-MT2100
-MR-MT2200
-MR-MT2300
-MR-MT2400

● Safety Instructions ●

Please read the instructions carefully before using the equipment.

To use the equipment correctly, do not attempt to install, operate, maintain, or inspect the equipment until you have read through this Instruction Manual, Installation guide, and appended documents carefully. Do not use the equipment until you have a full knowledge of the equipment, safety information and instructions.
In this Instruction Manual, the safety instruction levels are classified into "WARNING" and "CAUTION".

⚠ WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight injury to personnel or may cause physical damage.

Note that the ⚠ CAUTION level may lead to a serious consequence depending on conditions.
Please follow the instructions of both levels because they are important to personnel safety.
What must not be done and what must be done are indicated by the following diagrammatic symbols.

⃠	Indicates what must not be done. For example, "No Fire" is indicated by  .
●	Indicates what must be done. For example, grounding is indicated by  .

In this Instruction Manual, instructions at a lower level than the above, instructions for other functions, and so on are classified into "POINT".
After reading this Instruction Manual, keep it accessible to the operator.

1. To prevent electric shock, note the following

⚠ WARNING

- ●Ground the sensing module securely.
- ●Any person who is involved in wiring and inspection should be fully competent to do the work.
- ●Do not attempt to wire the sensing module until it has been installed. Otherwise, it may cause an electric shock.
- ●Do not operate switches with wet hands. Otherwise, it may cause an electric shock.
- ●The cables should not be damaged, stressed, loaded, or pinched. Otherwise, it may cause an electric shock.
- ●To avoid an electric shock, insulate the connections of the power supply terminals.

2. To prevent fire, note the following

⚠ CAUTION

- ●Install the sensing module on incombustible material. Installing them directly or close to combustibles will lead to smoke or a fire.
- ●Always connect a circuit protector between the power supply and the power supply (24 V(+)) of the sensing module, in order to configure a circuit that shuts down the power supply on the side of the sensing module power supply. If a circuit protector is not connected, a continuous flow of a large current may cause smoke or a fire when the sensing module malfunctions.
- ●Provide an adequate protection to prevent screws and other conductive matter, oil and other combustible matter from entering the sensing module.

3. To prevent injury, note the following

⚠ CAUTION

- ●Only the voltage specified in the Instruction Manual should be applied to each terminal. Otherwise, a burst, damage, etc. may occur.
- ●Connect cables to the correct terminals. Otherwise, a burst, damage, etc. may occur.
- ●Ensure that polarity (+/-) is correct. Otherwise, a burst, damage, etc. may occur.

4. Additional instructions

The following instructions should also be fully noted. Incorrect handling may cause a malfunction, injury, electric shock, fire, etc.

(1) Transportation and installation

⚠ CAUTION

- ●Transport the products correctly according to their mass.
- ●Stacking in excess of the specified number of product packages is not allowed.
- ●Install the sensing module in a load-bearing place in accordance with the Instruction Manual.
- ●Do not get on or put heavy load on the equipment.
- ●The equipment must be installed in the specified direction.

⚠ CAUTION

●Leave specified clearances between the sensing module and cabinet walls or other equipment.
●Do not install or operate the sensing module which has been damaged or has any parts missing.
●Do not block intake and exhaust areas of the sensing module. Otherwise, it may cause a malfunction.
●Do not drop or strike the sensing module. Isolate it from all impact loads.
●When you keep or use the equipment, please fulfill the following environment.

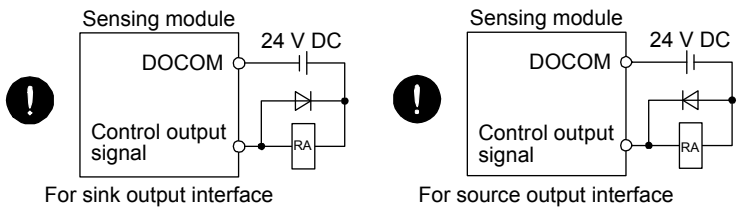
Item		Environment
Ambient temperature	Operation	0 °C to 60 °C (non-freezing)
	Storage	-20 ˚C to 65 ˚C (non-freezing)
Ambient humidity	Operation	5 %RH to 90 %RH (non-condensing)
	Storage	
Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust
Altitude		2000 m or less above sea level (When using the MR-MT2000 series at an altitude exceeding 1000 m and up to 2000 m above sea level, the ambient temperature must be 0 °C to 55 °C.)
Vibration resistance		5.9 m/s^2, at 10 Hz to 55 Hz (directions of X, Y and Z axes)

●When the product has been stored for an extended period of time, contact your local sales office.
●When handling the sensing module, be careful with the sharp edges of the sensing module.
●The sensing module must be installed in a metal cabinet.
●When fumigants that contain halogen materials, such as fluorine, chlorine, bromine, and iodine, are used for disinfecting and protecting wooden packaging from insects, they cause malfunction when entering our products. Please take necessary precautions to ensure that remaining materials from fumigant do not enter our products, or treat packaging with methods other than fumigation, such as heat treatment. Additionally, disinfect and protect wood from insects before packing the products.

(2) Wiring

⚠ CAUTION

●Wire the sensing module correctly and securely. Otherwise, the equipment may operate unexpectedly.
●The connection diagrams in this Instruction Manual are shown for sink interfaces, unless stated otherwise.
●The surge absorbing diode installed to the DC relay for control output signals of the sensing module should be fitted in the specified direction. Otherwise, the emergency stop and other protective circuits may not operate.



For sink output interface　　For source output interface

(3) Test run and adjustment

⚠ CAUTION

- Before operation, check and adjust the parameter settings. Improper settings may cause some machines to operate unexpectedly.

(4) Usage

⚠ CAUTION

- Immediately turn off the power if smoke, unusual noise, or strange odor is emitted from the sensing module.
- Do not disassemble, repair, or modify the equipment.
- Burning or breaking a sensing module may cause a toxic gas. Do not burn or break it.
- Connect the sensing module to the specified controller.

(5) Corrective actions

⚠ CAUTION

- Ensure safety by confirming the power off, etc. before performing corrective actions. Otherwise, it may cause an accident.
- When an alarm occurs, eliminate its cause, ensure safety, and deactivate the alarm to restart operation.
- Provide an adequate protection to prevent unexpected restart after an instantaneous power failure.

(6) Maintenance, inspection and parts replacement

⚠ CAUTION

- Do not touch the connector contacts.
- It is recommended that the sensing module be replaced every 10 years when it is used in general environment.
- When using the sensing module that has not been energized for an extended period of time, contact your local sales office.

(7) General instruction

- To illustrate details, the equipment in the diagrams of this Instruction Manual may have been drawn without covers and safety guards. When the equipment is operated, the covers and safety guards must be installed as specified. Operation must be performed in accordance with this Instruction Manual.

● DISPOSAL OF WASTE ●

Please dispose a sensing module and other options according to your local laws and regulations.

⚠ EEP-ROM life

The number of write times to the EEP-ROM, which stores parameter settings, etc., is limited to 100,000. If the total number of the following operations exceeds 100,000, the sensing module may malfunction when the EEP-ROM reaches the end of its useful life.

- Write to the EEP-ROM due to parameter setting changes

Compliance with global standards

Refer to app. 1 for the compliance with global standards.

«About the manual»

You must have this Instruction Manual and the following manual to use this sensing module. Ensure to prepare them to use the sensing module safely.

Relevant manuals

Manual name	Manual No.
MELSEC iQ-R Motion Controller Programming Manual (Common)	IB-0300237

«Cables used for wiring»

Wires mentioned in this Instruction Manual are selected based on an ambient temperature of 40 ˚C.

«U.S. customary units»

U.S. customary units are not shown in this manual. Convert the values if necessary according to the following table.

Quantity	SI (metric) unit	U.S. customary unit
Mass	1 [kg]	2.2046 [lb]
Length	1 [mm]	0.03937 [inch]
Torque	1 [N•m]	141.6 [oz•inch]
Moment of inertia	1 [(× 10^{-4} kg•m^2)]	5.4675 [oz•$inch^2$]
Load (thrust load/axial load)	1 [N]	0.2248 [lbf]
Temperature	N [°C] × 9/5 + 32	N [°F]

MEMO

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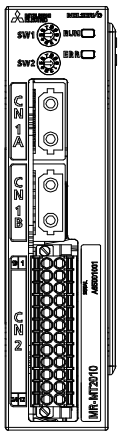
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1. INTRODUCTION

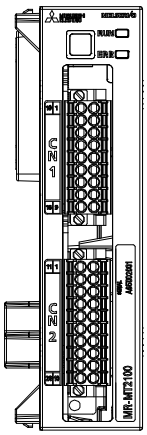
1.1 Summary

The sensing module MR-MT2000 series have four types of extension modules, the I/O module, pulse I/O module, analog I/O module, and encoder I/F module. Up to four extension modules can be connected to one SSCNET III/H head module. These modules are used to receive and output signals synchronized with SSCNET III/H communications.
These modules realize a high-accuracy, wire-saving system with their distributed installations.

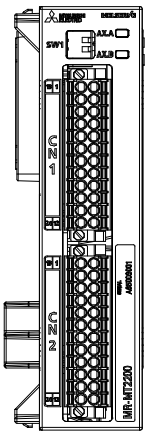
MR-MT2010
SSCNET III/H head module



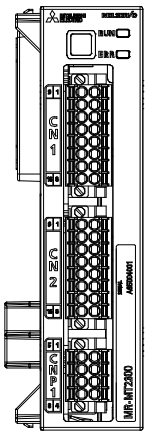
MR-MT2100
I/O module



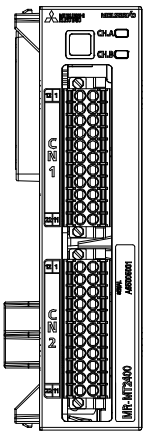
MR-MT2200
pulse I/O module



MR-MT2300
analog I/O module



MR-MT2400
encoder I/F module

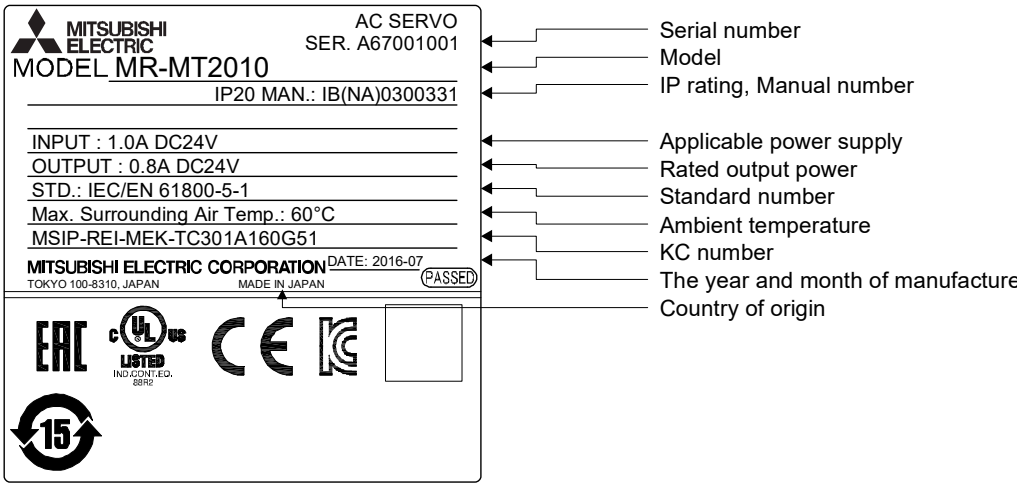


Model	Name	Description
MR-MT2010	SSCNET III/H head module	The SSCNET III/H head module is used for SSCNET III/H communications. This module is necessary to use a sensing module. Connect extension modules to this module. This module can be used alone because it has digital I/Os.
MR-MT2100	I/O module	Digital signals are inputted to and outputted from the I/O module. This module processes I/O signals synchronized with SSCNET III/H communications. MR-MT2010 is necessary to use this module.
MR-MT2200	Pulse I/O module	General-purpose pulse trains are inputted to and outputted from the pulse I/O module. This module outputs position commands in pulses through SSCNET III/H communications and performs position control by using general-purpose pulse train drivers and servo amplifiers. In addition, feedback pulses can also be inputted. This module processes general-purpose pulse train signals synchronized with SSCNET III/H communications. MR-MT2010 is necessary to use this module.
MR-MT2300	Analog I/O module	Analog signals are inputted to and outputted from the analog I/O module. This module processes I/O signals synchronized with SSCNET III/H communications. MR-MT2010 is necessary to use this module.
MR-MT2400	Encoder I/F module	The encoder I/F module supports open-standard encoder interfaces. This module processes signals synchronized with SSCNET III/H communications. MR-MT2010 is necessary to use this module.

1.2 Model designation

(1) Rating plate

The following shows an example of the rating plate for explanation of each item.



(2) Model

The following describes what each block of a model name indicates.

MR - MT 2010

Series

Module name

Symbol	Module name
2010	SSCNET III/H head module
2100	I/O module
2200	Pulse I/O module
2300	Analog I/O module
2400	Encoder I/F module

1.3 Common specifications

The following table lists the common specifications of the MR-MT2000 series.

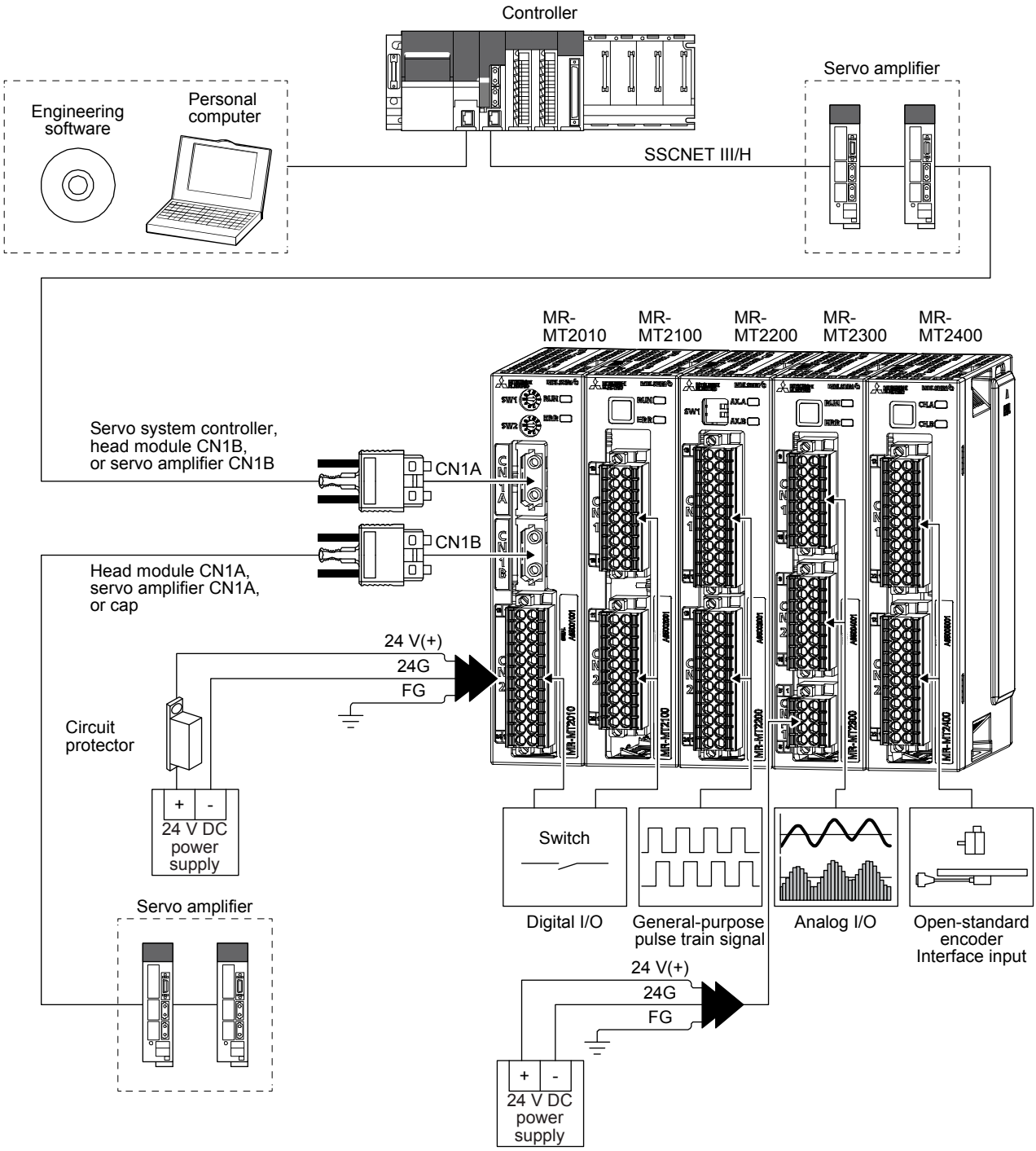
Item			Specification
Compliance to global standards	CE marking		EMC:EN 61800-3
	UL standard		UL 508C
Structure (IP rating)			Natural cooling, open (IP20)
Environment	Ambient temperature	Operation	0 °C to 60 °C (non-freezing) (Note)
		Storage	-20 ˚C to 65 ˚C (non-freezing)
	Ambient humidity	Operation	5 %RH to 90 %RH (non-condensing)
		Storage	
	Ambience		Indoors (no direct sunlight), free from corrosive gas, flammable gas, oil mist, dust, and dirt
	Altitude		2000 m or less above sea level (Note)
	Vibration resistance		5.9 m/s^2, at 10 Hz to 55 Hz (directions of X, Y and Z axes)

Note. When using the MR-MT2000 series at an altitude exceeding 1000 m and up to 2000 m above sea level, the ambient temperature must be 0 °C to 55 °C.

1.4 Configuration example including peripheral equipment

POINT
●This section describes a combination example of extension modules. Combinations other than the example are also available. For details, refer to chapter 2.
●Devices other than the sensing module are optional or recommended products.

The following figure shows a configuration including peripheral equipment as an example of when each MR-MT2010, MR-MT2100, MR-MT2200, MR-MT2300, and MR-MT2400 is used.



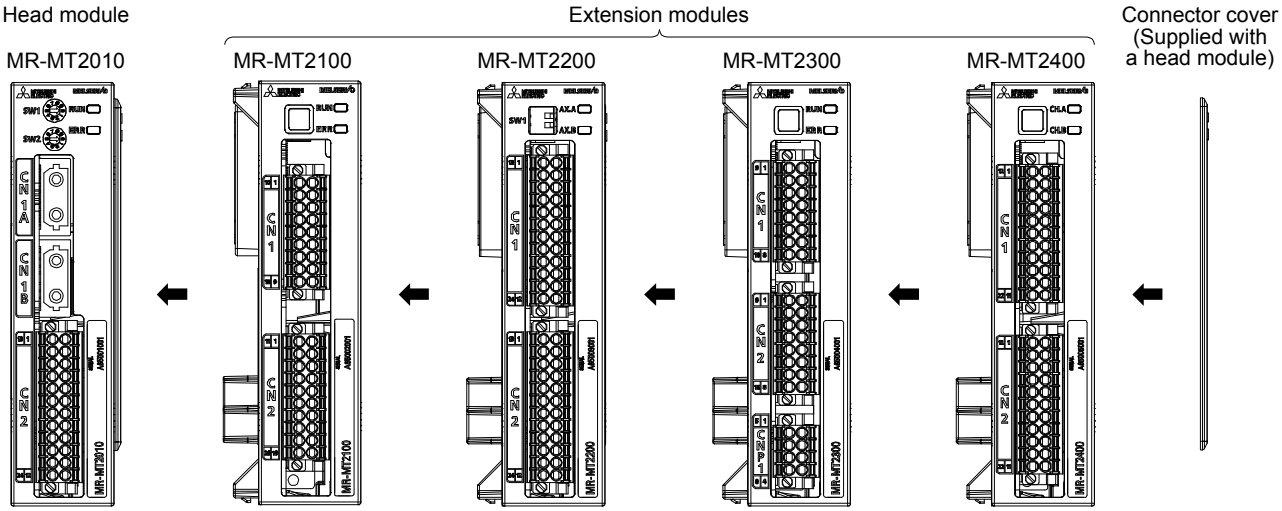
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2. SYSTEM CONFIGURATION

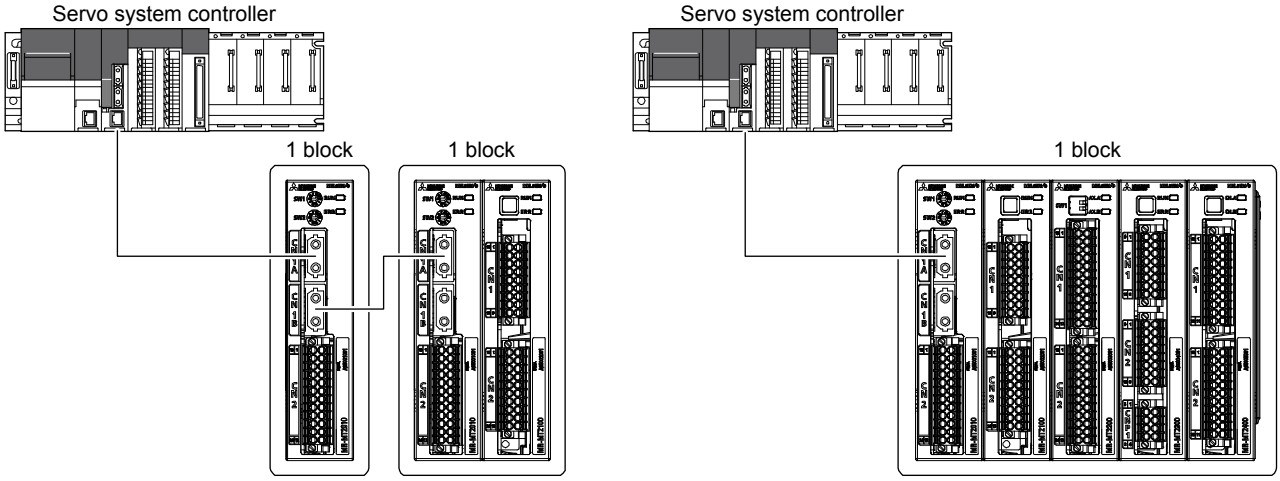
2.1 System configuration

POINT
●Attach a connector cover, which is supplied with a head module, to the rightmost extension module. Attach a connector cover to a head module when the head module is used alone.

For the module configuration of the sensing module, the head module must be connected at the leftmost side, and up to four extension modules can be connected at the right side of the head module. The head module can be used alone.



A module group consisting of one head module and extension modules connected at the right side of the head module is called one block. The following figure shows examples of blocks.



2.2 Station mode/axis mode

POINT

●Only when the MR-MT2200 pulse I/O module is connected to the head module, the station mode or axis mode can be selected. All other modules operate in the station mode, and the axis mode cannot be set.

When the MR-MT2200 series is used, two modes are available.

Mode	Description
Station mode	Select this mode to use the pulse I/O function for a purpose other than for driving motors. Servo amplifier axes are not occupied.
Axis mode	Select this mode to drive motors. Use this mode for driving stepping motors through general-purpose pulse train drivers just like servo amplifier axes by outputting position commands in general-purpose pulse train signals from a servo system controller. Axes are occupied by the number of motor axes connected to MR-MT2200. Axes are occupied in the same way as when MR-J4-B servo amplifiers are used.

2.3 Extension module connectable to the head module

⚠CAUTION

●Do not connect the extension modules exceeding the maximum number of connectable modules to the head module. Otherwise, the modules may malfunction.

(1) Connectable extension modules

The following table lists the extension modules connectable to the MR-MT2010 SSCNET III/H head module.

Model	Name
MR-MT2100	I/O module
MR-MT2200	Pulse I/O module
MR-MT2300	Analog I/O module
MR-MT2400	Encoder I/F module

(2) The connectable number of extension modules

The following describes the connectable number of extension modules.

- Up to four extension modules can be connected to one head module.
- No restrictions are applied to the connection order of extension modules.
- When MR-MT2400 is used, up to two MR-MT2400 modules can be connected to one head module.
- Do not connect the extension modules in the axis mode and station mode together to one head module.
  (When MR-MT2200 is used in the axis mode, other extension modules or MR-MT2200 modules in the station mode cannot be connected to one head module.)
- When the station mode is selected, refer to section 2.4.1 for the number of connectable stations.
- When the axis mode is selected, refer to section 2.4.2 for the number of connectable axes.

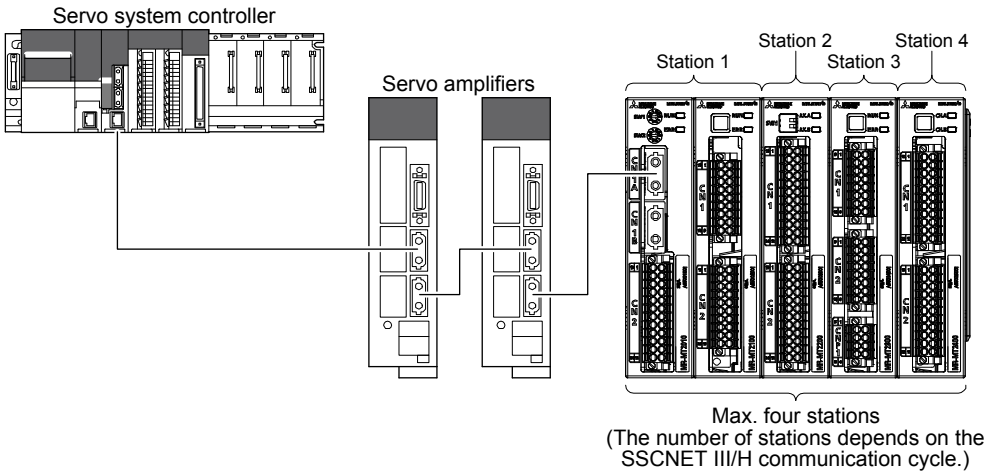
2.4 Maximum number of connections on a network

POINT
●When MR-MT2200 is used in the axis mode, no restrictions are applied to the number of connectable stations because one MR-MT2200 module is handled as an axis just like servo amplifiers.

2.4.1 Station mode

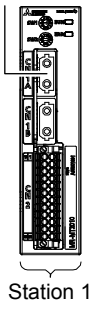
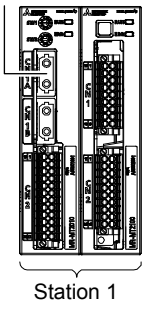
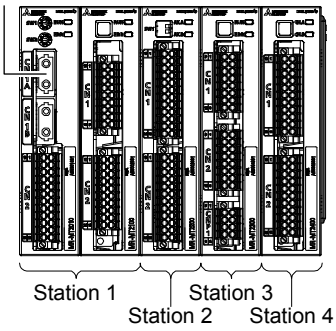
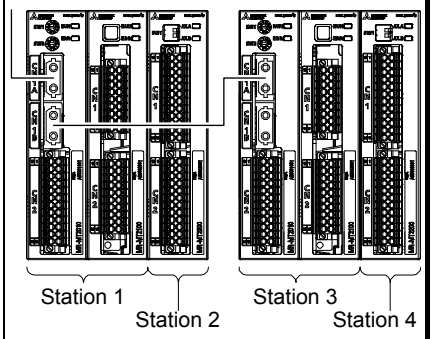
The following table lists the number of connectable stations of the sensing module in one SSCNET III/H system.

SSCNET III/H communication cycle [ms]	Number of connectable stations
0.888 or more	Max. 4
0.444	Max. 2
0.222	Max. 1

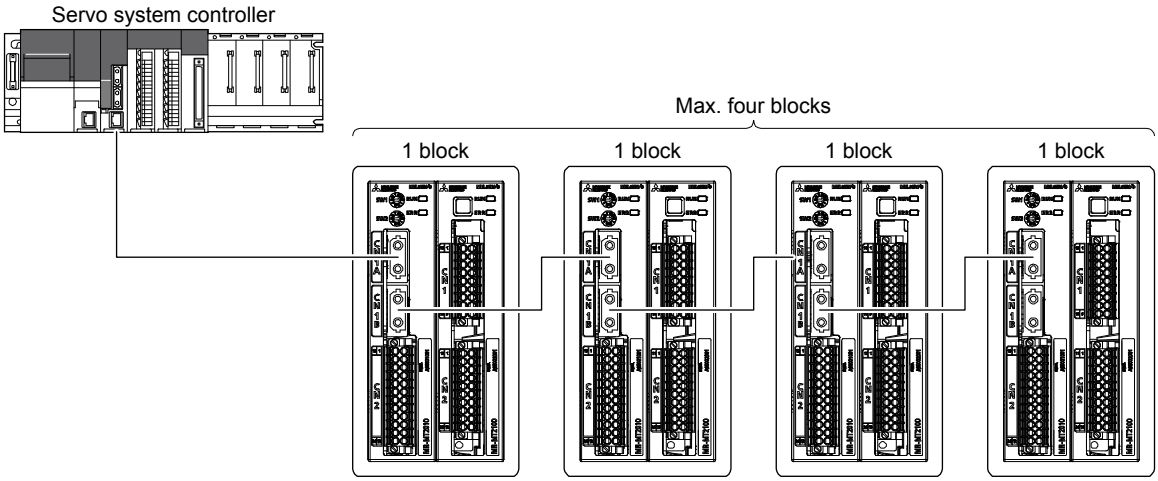


For the sensing module, each extension module occupies one station.
When the head module and an extension module are used together, one station is occupied by the combination of the head module and the extension module next to it. However, when the head module is used alone, the head module itself occupies one station. The following shows how stations are counted.

Examples of how stations are counted

	One head module	One head module + One extension module	One head module + Four extension modules	Two head modules + Two extension modules each for one head module (four extension modules in total)
Configuration diagram				
Number of occupied stations	1 station	1 station	4 stations	4 stations

One system allows up to four blocks to be connected.

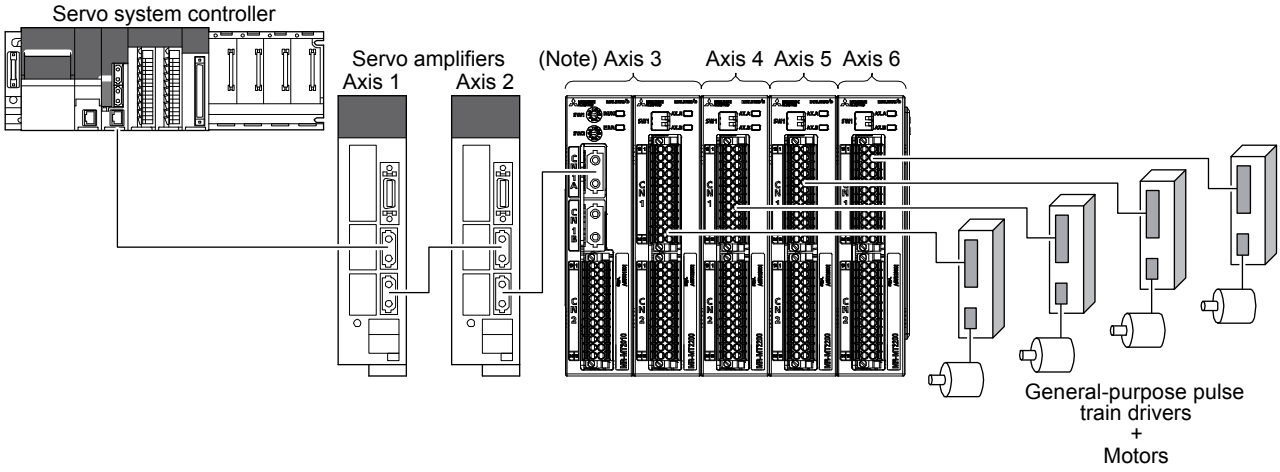


2.4.2 Axis mode (settable only when MR-MT2200 is connected)

POINT

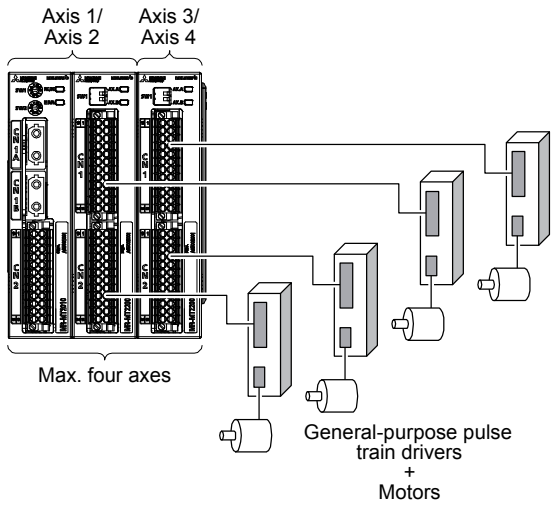
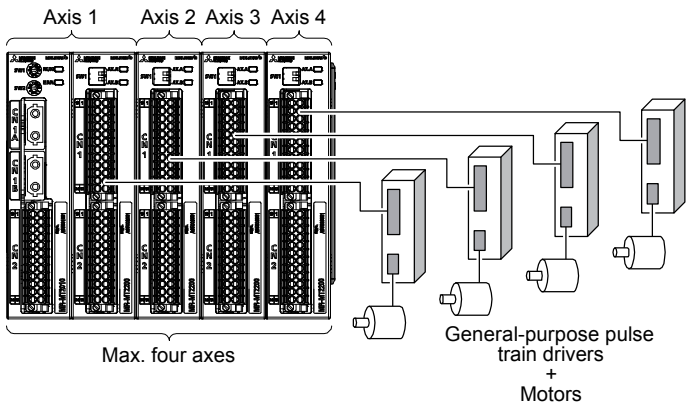
- When MR-MT2200 is used in the axis mode, up to four axes can be connected to one head module.
- Up to two axes can be connected to one MR-MT2200 module. However, when the feedback pulse input is used, only one axis can be connected to one MR-MT2200 module.
- The number of connectable axes in one system depends on the maximum number of axes of the controller. No restrictions are applied to the number of connectable head modules in one system.

The maximum number of connectable axes in one SSCNET III/H system is equal to the maximum number of connectable axes of the servo system controller. The number of axes per one system is the total number of axes of general-purpose pulse train drivers connected to MR-MT2200 modules and servo amplifiers.



Note. Set the start axis number with the station number selection rotary switches (SW1/SW2) of the head module.

When the MR-MT2200 pulse I/O module is used in the axis mode, up to four axes can be connected to one head module.

When feedback pulses are not inputted (When two axes are connected to one MR-MT2200 module)	When feedback pulses are inputted (When one axis is connected to one MR-MT2200 module)
	

2.5 Compatible servo system controller

POINT

●When the sensing module is connected to a servo system controller, set the communication type of the servo system controller to "SSCNET III/H". The sensing module cannot be connected to the servo system controller with "SSCNET III".

Product name	Model	OS	Software version
Motion CPU	R16MTCPU	SW10DNC-RMTFW	09 or later
	R32MTCPU		
	R64MTCPU		

2.6 Engineering software

POINT

●MELSOFT MT Works2 cannot be connected directly to the sensing module. Connect MELSOFT MT Works2 via the controller and execute settings and diagnoses.

MELSOFT MT Works2 is necessary for the settings and diagnoses of the sensing module.

Product name	Model	Software version
MELSOFT MT Works2	SW1DND-MTW2-_	1.128J or later

3. INSTALLATION

⚠WARNING	●To prevent electric shock, ground each equipment securely.

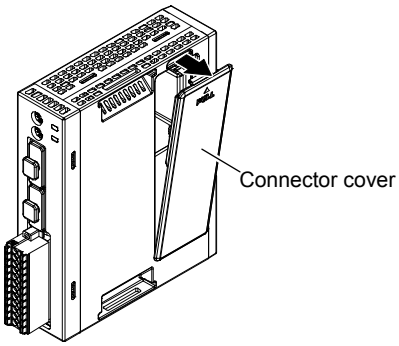
⚠CAUTION	●Do not connect extension modules exceeding the maximum number of connectable modules to the head module. Otherwise, the modules may malfunction. ●Install the sensing module on incombustible material. Installing it directly or close to combustibles will lead to a fire. ●Install the sensing module in a load-bearing place in accordance with the Instruction Manual. ●Do not get on or put heavy load on the equipment. Otherwise, it may cause injury. ●Use the sensing module within the specified environment. For the environment, refer to section 1.3. ●Provide an adequate protection to prevent screws and other conductive matter, oil and other combustible matter from entering the sensing module. ●Do not block intake and exhaust areas of the sensing module. Otherwise, it may cause a malfunction. ●Do not drop or strike the sensing module. Isolate it from all impact loads. ●Do not install or operate the sensing module which has been damaged or has any parts missing. ●When the sensing module has been stored for an extended period of time, contact your local sales office. ●When handling the sensing module, be careful about the edged parts such as corners of the sensing module. ●The sensing module must be installed in a metal cabinet. ●When fumigants that contain halogen materials, such as fluorine, chlorine, bromine, and iodine, are used for disinfecting and protecting wooden packaging from insects, they cause malfunction when entering our products. Please take necessary precautions to ensure that remaining materials from fumigant do not enter our products, or treat packaging with methods other than fumigation, such as heat treatment. Additionally, disinfect and protect wood from insects before packing the products.

3.1 Connection and removal of modules

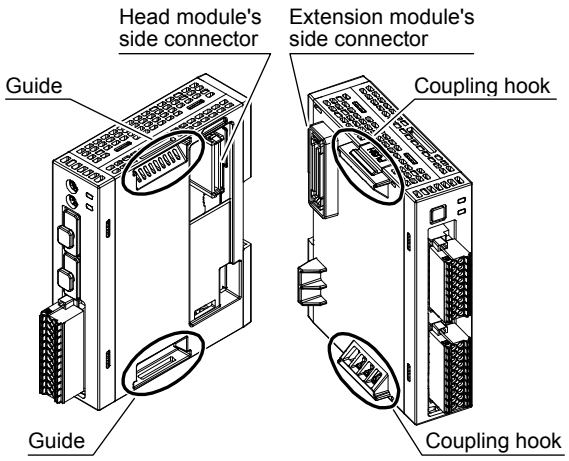
⚠CAUTION	●Check that coupling hooks at the top and bottom of a module have been securely locked. Otherwise, it may cause a malfunction, failure, and drop of the module. ●Do not directly touch conductive areas and electronic parts of modules. Otherwise, it may cause a malfunction and failure of the modules. ●The number of times to connect and remove a module must be 50 times or less after the beginning of use of the product (in accordance with IEC 61131-2). Otherwise, the module may malfunction. ●Shut off the external power supply used in the system before connecting and removing a module. Otherwise, it may cause an electric shock or a malfunction of the module.

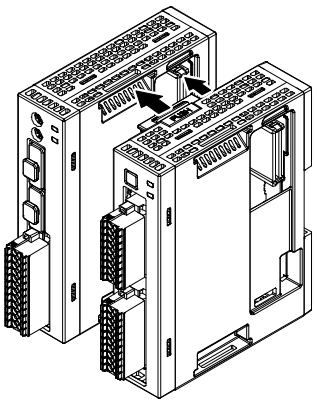
The following describes how to connect and remove each module of the sensing module.

(1) How to connect a module

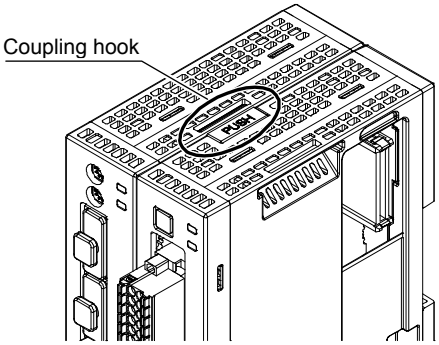


(a) Remove the connector cover of the head module.

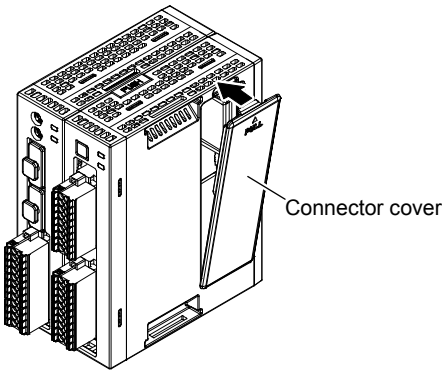




(b) Align the extension unit's coupling hook and the head unit's guide and connect the unit by connecting the connectors on the side.
When connecting multiple extension units, align the extension unit's coupling hook to the guide and connect the connectors on the side.

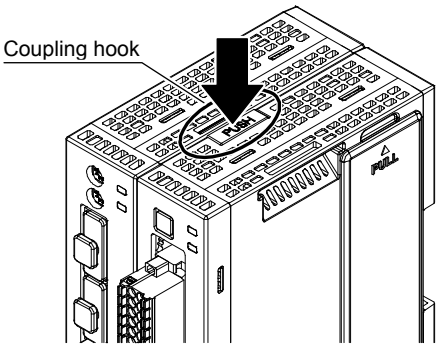


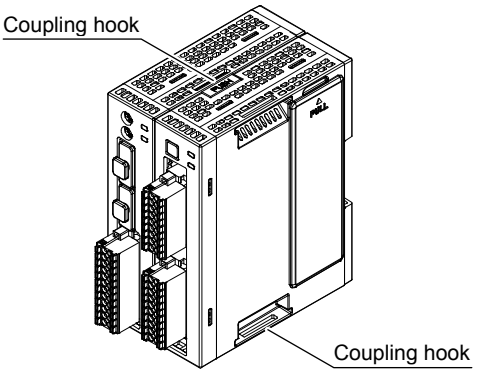
(c) Make sure that the clips of the two coupling hooks at the top and bottom are securely fit to the guides of the other module.



(d) Attach a connector cover to the rightmost extension module after connecting the necessary number of extension modules. The printed character string "PULL" should be at the top of the connector cover. Be careful in the attachment direction of the connector cover.

(2) How to remove a module





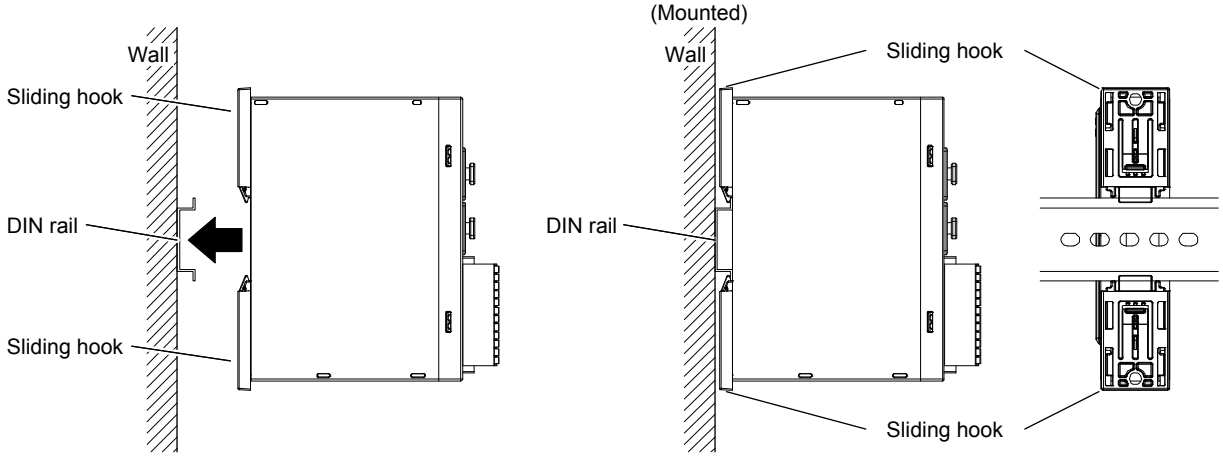
(a) Push the PUSH button of the coupling hooks at the top and bottom of the module to unlock them, and then remove the module.

3.2 How to mount a module

3.2.1 Mounting a module on a DIN rail

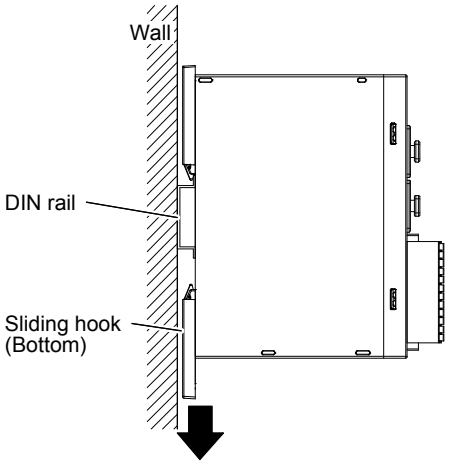
⚠CAUTION ●Check if the sliding hooks of the module have been securely locked on the DIN rail. Otherwise, it may cause a malfunction and drop of the module.

(1) How to mount a module on a DIN rail

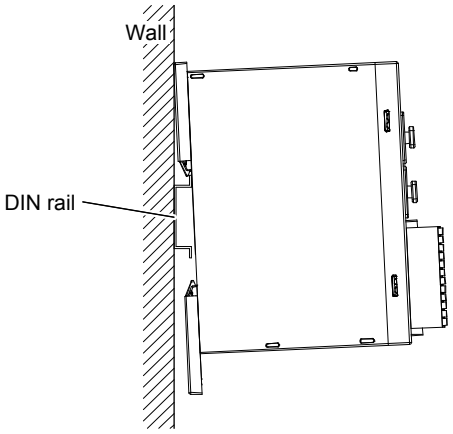


(a) Horizontally push the module against the DIN rail until the sliding hooks click.

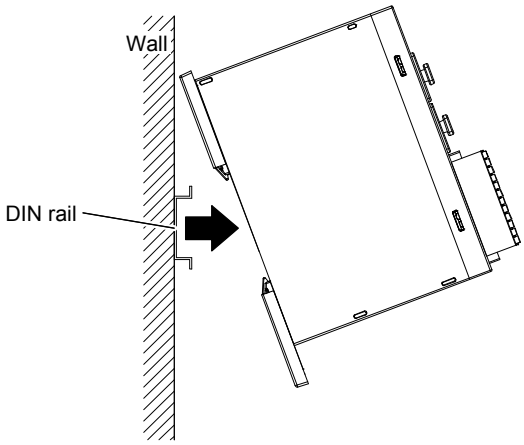
(2) How to remove a module from a DIN rail



(a) Pull down the bottom sliding hook.



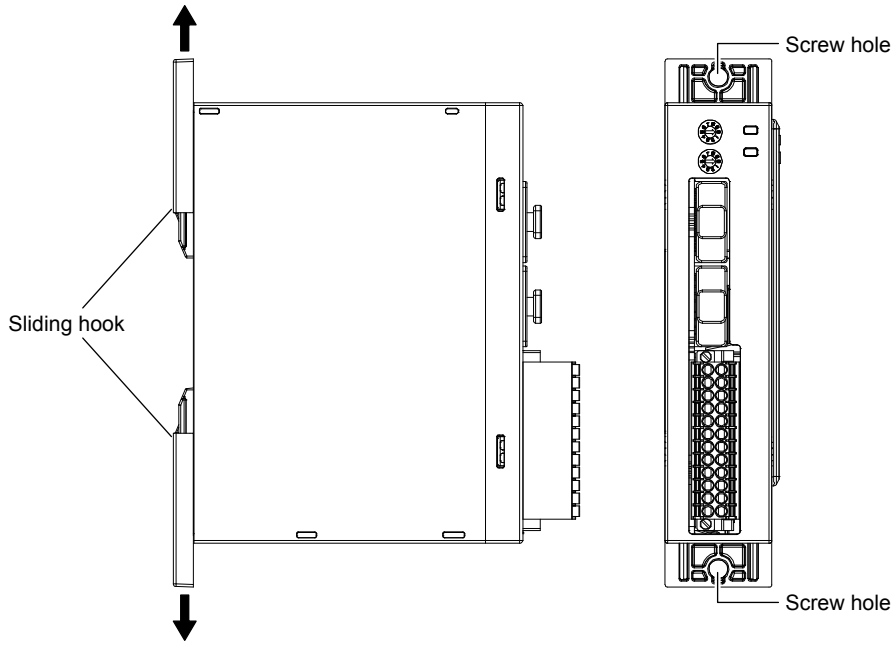
(b) Pull the module toward you.



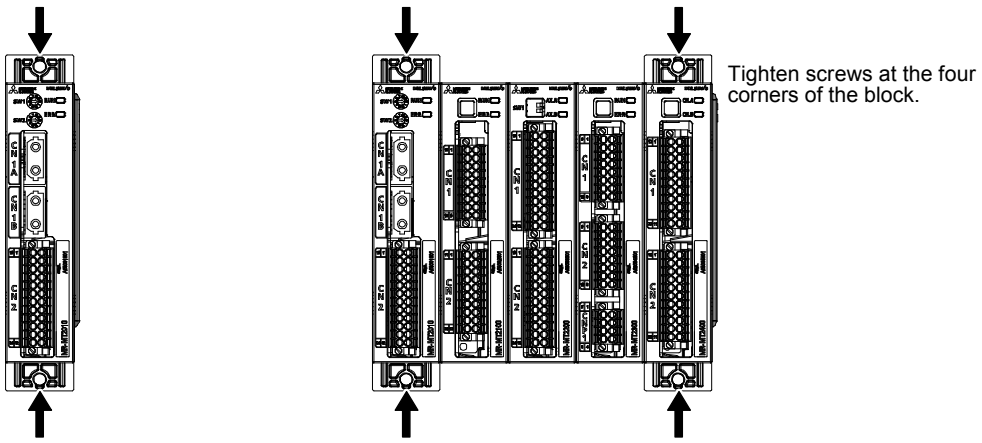
(c) Lift up and remove the module.

3.2.2 Mounting a module with screws

⚠CAUTION ●Securely pull out the sliding hooks at the top and bottom of a module until they click. Otherwise, it may cause a malfunction and drop of the module.



(1) Pull out the sliding hooks on the back of the module until they click and are fixed.



When the head module is used alone

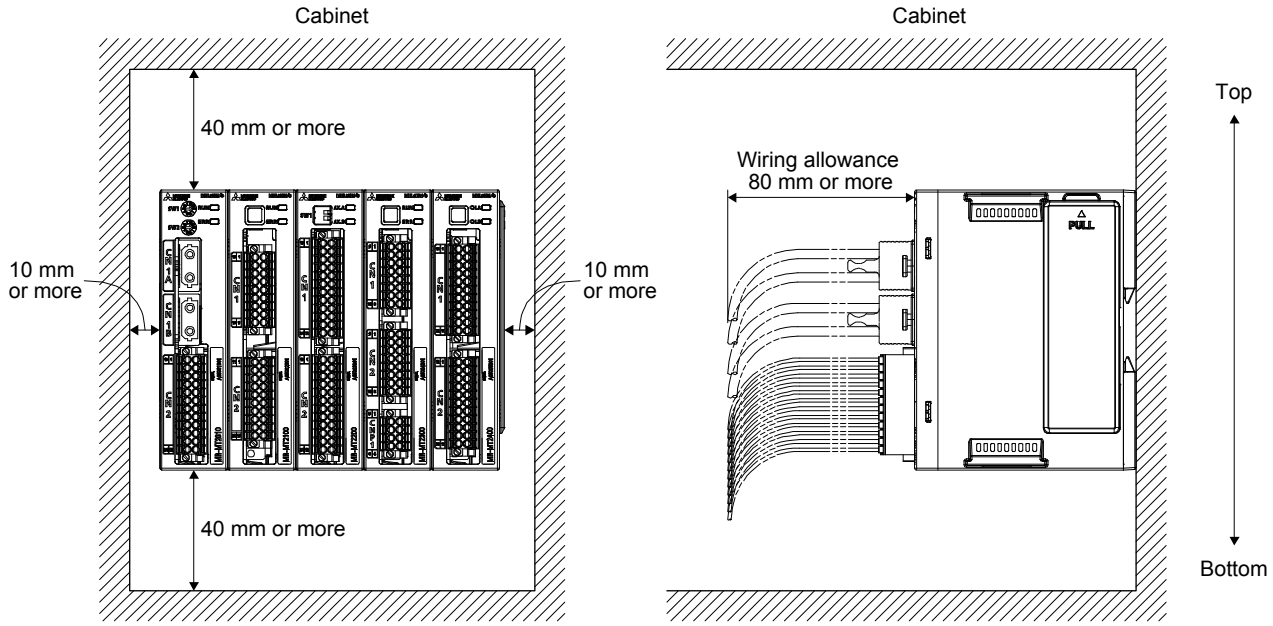
When the head module is used with extension modules connected

(2) Tighten the modules with screws. Tighten the modules with screws at the four corners of the block when the head module is used with extension modules connected.

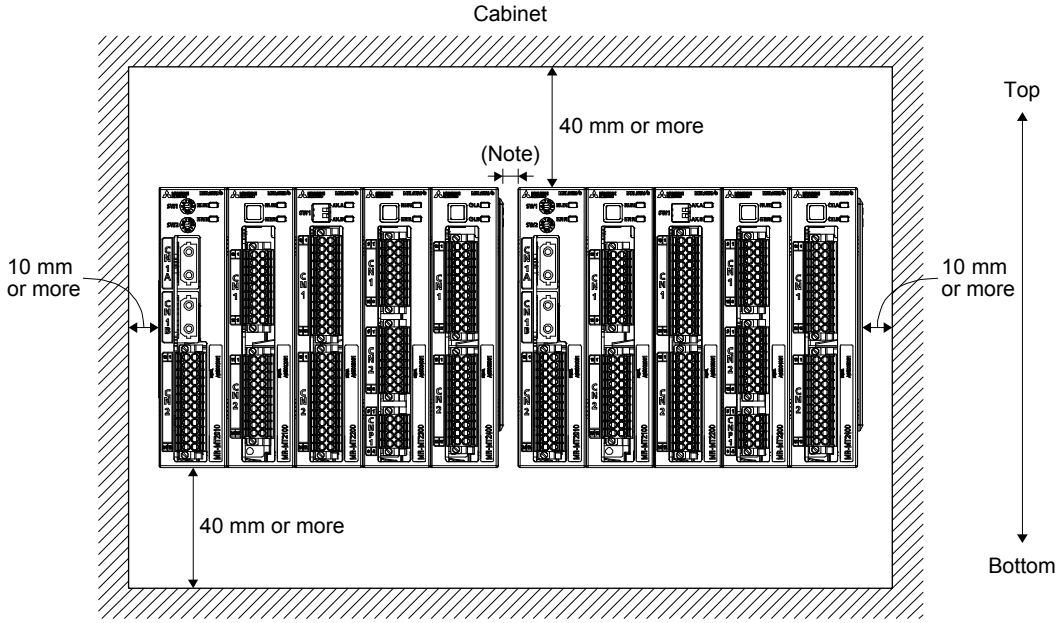
3.3 Installation direction and clearances

⚠CAUTION	●The equipment must be installed in the specified direction. Otherwise, it may cause a malfunction. ●Maintain specified clearances between the module and the inner surfaces of a control cabinet or other equipment. Otherwise, it may cause a malfunction.

(1) When one block is installed



(2) When two or more blocks are installed



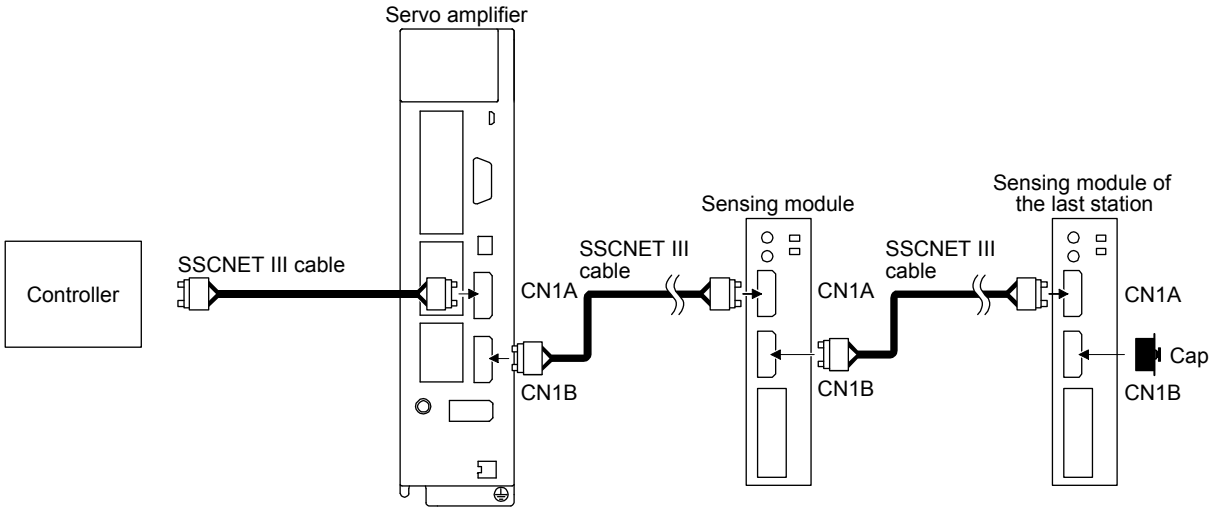
Note. Close mounting is possible.

3.4 SSCNET III cable connection

POINT
●Do not look directly at the light emitted from the CN1A and CN1B connectors of the MR-MT2010 and the end of the SSCNET III cable. The light can be a discomfort when it enters the eyes.

(1) SSCNET III cable connection

For the CN1A connector of MR-MT2010, connect the SSCNET III cable connected to a controller, a servo amplifier at the previous station, or the head module of the sensing module. Put an accessory cap to the CN1B connector of the servo amplifier or the head module of the sensing module in the final station.



(2) How to connect/disconnect cables

POINT

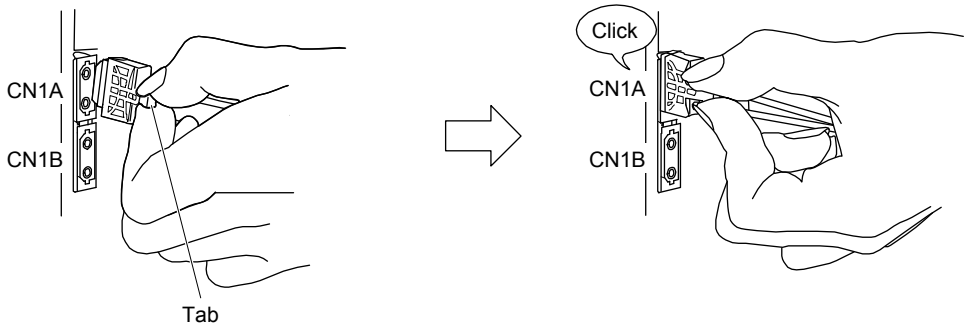
- The CN1A and CN1B connectors of MR-MT2010 are capped to protect light devices inside the connectors from dust. For this reason, do not remove a cap until just before connecting an SSCNET III cable. Be sure to put the cap when the SSCNET III cable is removed.
- While the SSCNET III cable is connected, keep the caps for the CN1A and CN1B connectors and protective tubes for the optical cord ends in a plastic bag with a slide fastener provided with the SSCNET III cable to protect them from dirt.
- When requesting repair of MR-MT2010 due to malfunctions, make sure to cap the CN1A and CN1B connectors. When the caps are not put on the connectors, the light device may be damaged in transit. The light device needs to be replaced for repair if damaged.

(a) Connecting cables

1) The SSCNET III cable is shipped with protective tubes on the optical cord ends of the connectors. Remove the tubes.

2) Remove the CN1A and CN1B connector caps of MR-MT2010.

3) While holding a tab on the SSCNET III cable connector, insert the connector to the CN1A and CN1B of MR-MT2010 until you hear a clicking sound. If the optical cord ends are dirty, optical transmission is interrupted, causing a malfunction. When they are dirty, wipe with a bonded textile, etc. Do not use a solvent such as alcohol.



(b) Disconnection

Pull out the SSCNET III cable connector while holding a tab on the connector. When the SSCNET III cable is removed from MR-MT2010, be sure to put caps on the connectors to protect them from dusts. Attach the protective tubes on the optical cord ends of the connectors.

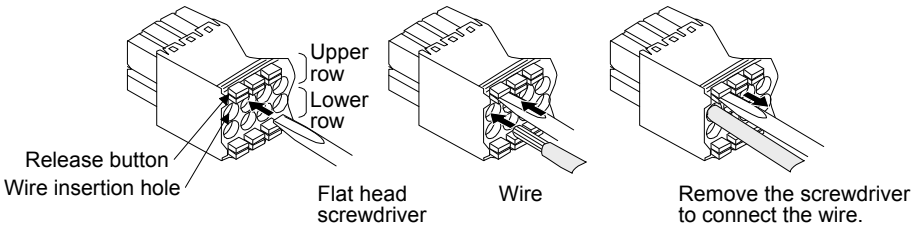
3.5 How to wire connectors

(1) Connecting and disconnecting cables
Use the accessory connectors for wiring.

Model	Accessory connector	
MR-MT2010	CN2	DFMC-1,5/12-STF-3,5 or equivalent (Phoenix Contact)
MR-MT2100	CN1	DFMC-1,5/9-STF-3,5 or equivalent (Phoenix Contact)
	CN2	DFMC-1,5/10-STF-3,5 or equivalent (Phoenix Contact)
MR-MT2200	CN1	DFMC-1,5/12-STF-3,5 or equivalent (Phoenix Contact)
	CN2	DFMC-1,5/12-STF-3,5 or equivalent (Phoenix Contact)
MR-MT2300	CN1	DFMC-1,5/8-STF-3,5 or equivalent (Phoenix Contact)
	CN2	DFMC-1,5/8-STF-3,5 or equivalent (Phoenix Contact)
	CNP1	DFMC-1,5/4-STF-3,5 or equivalent (Phoenix Contact)
MR-MT2400	CN1	DFMC-1,5/11-STF-3,5 or equivalent (Phoenix Contact)
	CN2	DFMC-1,5/11-STF-3,5 or equivalent (Phoenix Contact)

(a) Fabrication on cable insulator
Use wires with the size of AWG 24 to 16 and strip the wires to make the stripped length 10 mm ± 0.5 mm at the ends of the wires.

(b) Inserting wires
While pressing the release button with a flat head screwdriver with the blade edge width of 2.0 mm to 2.5 mm, insert a wire all the way in. Then, remove the screwdriver.
We recommend that you use the flat head screwdriver "model: SZS 0,4X2,5, product No.: 1205037" manufactured by Phoenix Contact.



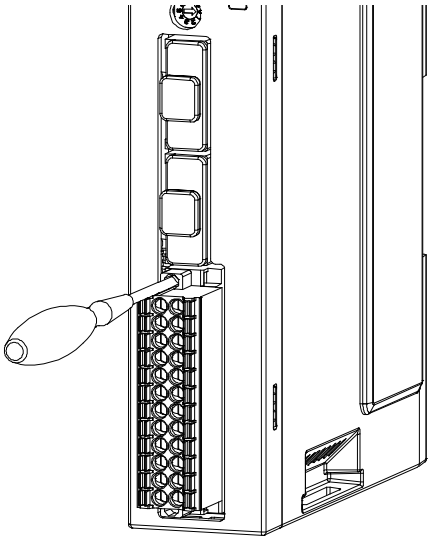
(c) Disconnecting wires
While pressing the release button with the flat head screwdriver, pull out the wire.

(2) Installing and removing a terminal block

Use a flat head screwdriver to loosen the terminal block installation screws and remove the terminal block.

Use the flat head screwdriver to tighten the terminal block installation screws and install the terminal block.

If the terminal block is not fixed securely, it may cause a drop, short-circuit, and malfunction.



3.6 Noise reduction techniques

(1) Grounding shield of shielded cables

The following shows measures against malfunctions of the sensing module when the sensing module is installed near a device which generates excessive noise. Ground a shield of the shielded cable near the sensing module, and be careful that the cable after grounding should not be affected by electromagnetic induction of the cable before grounding.

Partly remove the insulator of the shielded cable, and ground the exposed shielded part by making contact in a large area with the cabinet. You can also use clamp metal parts as shown in figure 5.2. Mask the painted internal wall of the cabinet that touches the clamp metal parts.

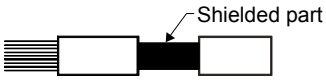


Figure 5.1 The shielded part to be exposed

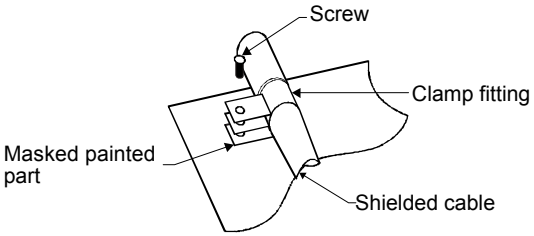
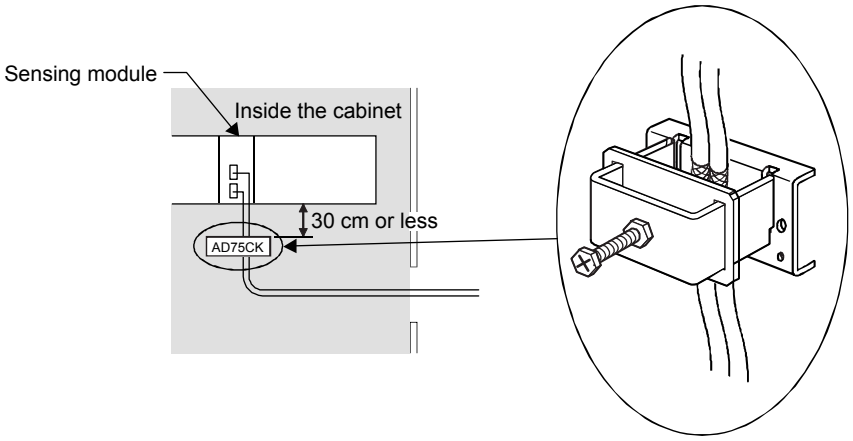


Figure 5.2 Grounding shields

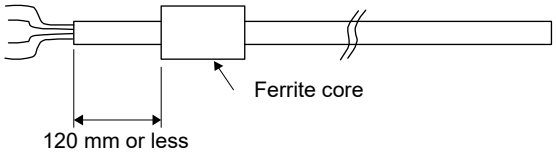
Ground the shield of the signal input cable as close as possible (30 cm or less) to the sensing module.



(2) Ferrite core

A ferrite core has the effect of reducing conduction noise in the band around 10 MHz and radiated noise in the bands between 30 MHz to 100 MHz. When the shield effect of the shielded cable drawn out from the cabinet is not obtained enough or when emission of conduction noise from a power supply line should be suppressed, we recommend that you install the ferrite core.

Install the ferrite core at the position of the cable shown in the following figure. If the installation position is incorrect, the ferrite core will not be effective.



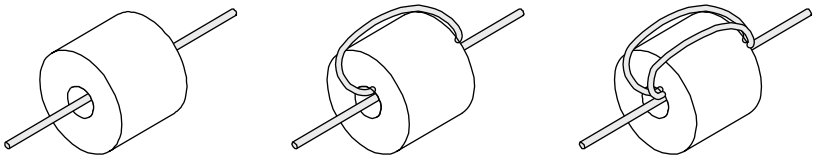
Installing ferrite cores to the signal input wires and cables will suppress more noise. The following table lists a ferrite core as an example.

Model	Impedance [Ω] (Note)	
ZCAT3035-1330 (TDK)	10 MHz to 100 MHz	100 MHz to 500 MHz
	80	150

Note. The values (reference values) are measured with wires connected and not guaranteed values.

ESD-SR-250 (TOKIN) and E04SRM563218 (SEIWA ELECTRIC) can also be used.

The effect of noise suppression rises as the number of passes though the ferrite core increases. Two or more passes are recommended.



One pass　　Two passes　　Three passes

MEMO

4. MR-MT2010 SSCNET III/H HEAD MODULE

4.1 Summary

The MR-MT2010 SSCNET III/H head module is used for SSCNET III/H communications.
This module is necessary to use a sensing module. Connect extension modules to this module. This module can be used alone because it has digital I/Os.

4.2 Standard specifications

Item			MR-MT2010 SSCNET III/H head module
Control circuit power supply	Voltage		24 V DC
	Permissible voltage fluctuation		24 V DC ± 10%
	Current capacity		1.0 A (Note 1)
Communication interface			SSCNET III/H
DI	Number of input points		12
	Insulation method		Photocoupler insulation
	On voltage/on current		21 V DC or more/3 mA or more
	Off voltage/off current		3 V DC or less/1 mA or less
	Input response time	Off → On	Within 1 μs
		On → Off	Within 1 μs
	Timing latch input	Number of simultaneously used points	Max. 12 (Note 2)
	Input form		Sink input/source input
DO	Number of output points		2
	Maximum load current		0.1 A/1 point
	Insulation method		Photocoupler insulation
	Output response time (Note 3)	Off → On	Within 1 μs
		On → Off	Within 1 μs
	Output form		Sink output
Interface power supply			24 V DC ± 10%
Compliance to global standards			Refer to section 1.3.
Structure (IP rating)			Refer to section 1.3.
Environment			Refer to section 1.3.
Mass [kg]			0.2

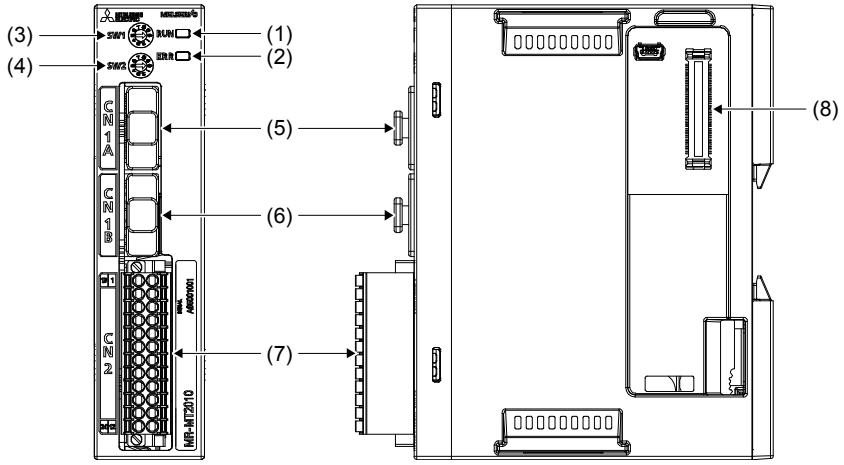
Note 1. This is the maximum value of when four extension modules are connected to a head module. The current capacity can be decreased by reducing the number of connected extension modules.
2. The number of the points will be four points when extension modules are connected.
3. This value is applicable when the output current is 50 mA or more.

4.3 Function list

The following table lists the functions of the MR-MT2010 SSCNET III/H head module. For details and usage of the functions, refer to the manuals for controllers.

Function	Description
Digital input function	This function sends the status of digital input signals to the controller.
Digital output function	This function turns on/off digital output signals using commands issued from the controller.
Timing-latch input function	This function sends the timing to input digital input signals to the controller.
Level output function	This function digitally outputs values depending on the level of each monitor value of the pulse I/O module, analog I/O module, and encoder I/F module. Values can be digitally output without the controller.
Output CLEAR/HOLD function	This function sets whether to hold or clear the preceding outputs when communications with the controller are interrupted.

4.4 Parts identification

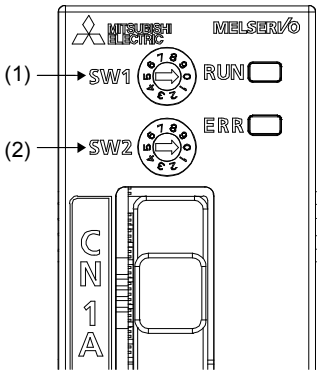


No.	Name/application	Detailed explanation
(1)	Status display LED (RUN) Indicates the operating state of the module.	Section 4.6
(2)	Status display LED (ERR) Indicates that an error has occurred in the module.	
(3)	Station number selection rotary switch (SW1) Use this switch and SW2 to set a start station number of the sensing module.	Section 4.5
(4)	Station number selection rotary switch (SW2) Use this switch and SW1 to set a start station number of the sensing module.	
(5)	SSCNET III cable connector (CN1A) Connect the servo system controller, previous axis servo amplifier, or head module.	Section 3.4
(6)	SSCNET III cable connector (CN1B) Connect the next axis servo amplifier or head module. Put a cap on this connector for the final module.	
(7)	Power supply and I/O signal connector (CN2) Connect the input power supply and digital I/O signals.	Section 4.7
(8)	Inter-module connection connector (CN3) Connect extension modules to be used.	

4.5 Station number selection rotary switch

POINT
●Cycling the control circuit power supply enables the settings of the rotary switches.

Use the rotary switches (SW1 and SW2) of the MR-MT2010 SSCNET III/H head module to set a start station number.
Starting from the station number of the head module set with the rotary switches, sequentially assign the station number to each extension module connected to the head module. Each of the extension modules occupies one station.



No.	Name/application
(1)	Station number selection rotary switch (SW1) Use this switch and SW2 to set a start station number of the sensing module.
(2)	Station number selection rotary switch (SW2) Use this switch and SW1 to set a start station number of the sensing module.

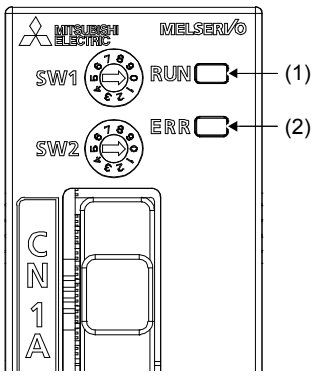
The following table lists the setting combinations of the rotary switches to set a station number.

Station number selection rotary switch		Start station No.	2nd station	3rd station	4th station
SW1	SW2				
0	0	Station No. 1	Station No. 2	Station No. 3	Station No. 4
	1	Station No. 2	Station No. 3	Station No. 4	Station No. 5
	2	Station No. 3	Station No. 4	Station No. 5	Station No. 6
	3	Station No. 4	Station No. 5	Station No. 6	Station No. 7
	4	Station No. 5	Station No. 6	Station No. 7	Station No. 8
	5	Station No. 6	Station No. 7	Station No. 8	Station No. 9
	6	Station No. 7	Station No. 8	Station No. 9	Station No. 10
	7	Station No. 8	Station No. 9	Station No. 10	Station No. 11
	8	Station No. 9	Station No. 10	Station No. 11	Station No. 12
	9	Station No. 10	Station No. 11	Station No. 12	Station No. 13
. . .	. . .	. . .	. . .	. . .	. . .
6	0	Station No. 61	Station No. 62	Station No. 63	Station No. 64
	1	Station No. 62	Station No. 63	Station No. 64	(Note)
	2	Station No. 63	Station No. 64	(Note)	
	3	Station No. 64	(Note)		
	4	(Note)			

Note. Set the station number of the sensing module in decimal numbers. When the station number is set to a value other than "0 (d)" to "63 (d)" or the 65th station or later is connected, [AL. 11.1 Station number setting error] will occur.

4.6 Status display LEDs

The module status is displayed by the following two LEDs.



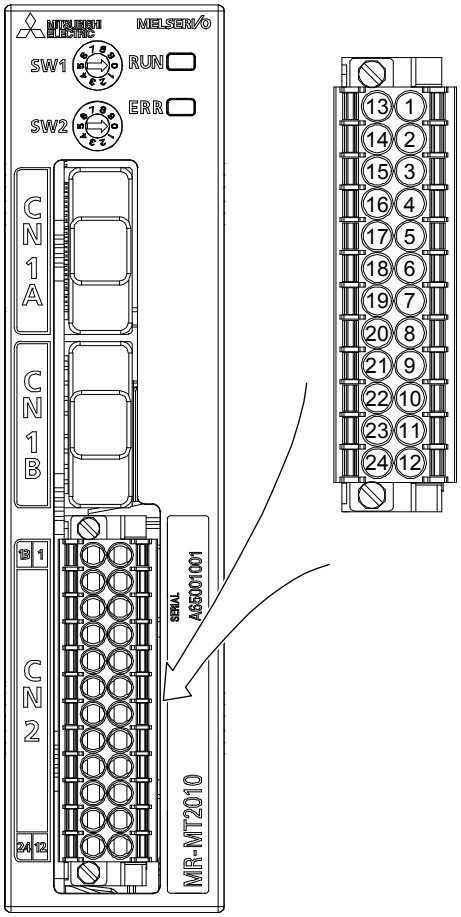
No.	Display	LED color	Status	Meaning
(1)	RUN	Green	Flickering	The module has been properly powered on and is waiting for a network connection.
			On	The module has been properly powered on and has a network connection.
			Off	The module has not been properly powered on.
(2)	ERR	Red	Flickering	A warning has occurred in the head module.
			On	An alarm has occurred in the head module.
			Off	The module normally operates at power-on.

- When the module is powered on
  When the module is powered on, both the RUN and ERR LEDs turn on. When the head module is ready to communicate with extension modules without any error, the ERR LED turns off.
- When a watchdog error has occurred
  When a watchdog error has occurred, the RUN LED turns off and the ERR LED turns on.

4.7 Signals and wiring

4.7.1 Pin assignment

(1) Power supply and I/O signal connector (CN2)



Pin assignment of CN2

No.	Symbol	Symbol	No.
13	DI1	DI2	1
14	DI3	DI4	2
15	DI5	DI6	3
16	DI7	DI8	4
17	DI9	DI10	5
18	DI11	DI12	6
19	DICOM	DICOM	7
20	DO1	DO2	8
21	DOCOM(-)	DOCOM(-)	9
22	CTL(+)	DOCOM(-)	10
23	24 V(+)	24G	11
24	FG	FG	12

4.7.2 Signal (device) explanations

(1) Input device

Device	Symbol	Connector pin No.	Function and application	I/O division
	DI1	CN2-13	External input signal with the timing-latch input function Input digital input signals.	DI-1
	DI2	CN2-1		
	DI3	CN2-14		
	DI4	CN2-2		
	DI5	CN2-15		
	DI6	CN2-3		
	DI7	CN2-16		
	DI8	CN2-4		
	DI9	CN2-17		
	DI10	CN2-5		
	DI11	CN2-18		
	DI12	CN2-6		

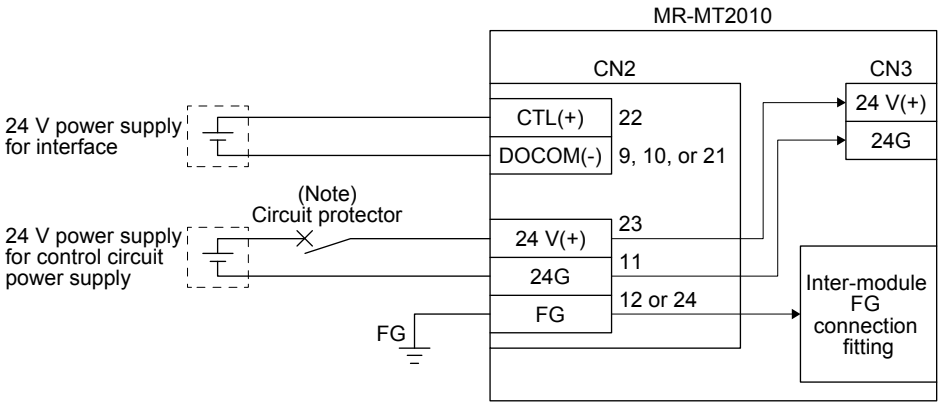
(2) Output device

Device	Symbol	Connector pin No.	Function and application	I/O division
	DO1	CN2-20	External output signal Digital output signals are outputted.	DO-1
	DO2	CN2-8		

(3) Power supply

Signal name	Symbol	Connector pin No.	Function and application
Common terminal for input signals	DICOM	CN2-7 CN2-19	Common terminals for input signals. Input 24 V DC (24 V DC ± 10%) for I/O interface. The power supply capacity changes depending on the number of I/O interface points to be used. For sink interface, connect + of 24 V DC external power supply. For source interface, connect - of the 24 V DC external power supply.
Interface power supply input	CTL(+)	CN2-22	Input 24 V DC (24 V DC ± 10%) for I/O interface. Connect + of the 24 V DC external power supply.
Common terminal for output signals	DOCOM (-)	CN2-9 CN2-10 CN2-21	Common terminals for output signals. Connect - of the 24 V DC external power supply.
Control circuit power supply	24 V(+)	CN2-23	Input 24 V DC (24 V DC ± 10%) for the control circuit power supply. Connect + of the 24 V DC external power supply.
	24G	CN2-11	Input 24 V DC (24 V DC ± 10%) for the control circuit power supply. Connect - of the 24 V DC external power supply.
Grounding	FG	CN2-12 CN2-24	Grounding terminal. Ground it.

4.7.3 Connections of the power circuit



Note. Circuit protectors are required for protecting power supplies, wires, sensing modules, and others. When not using circuit protectors, configure an external protective circuit such as a power supply with protective functions.

The following table lists a recommended circuit protector.

Circuit protector (Note)
CP30-BA 1P 1-MD 2A

Note. Use an inertia delay type circuit protector.

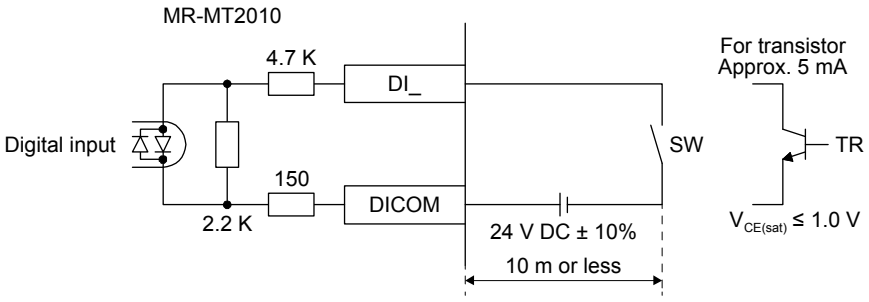
4.7.4 Detailed explanation of interfaces

This section provides the details of the I/O signal interfaces (refer to the I/O division in the table) given in section 4.7.2. Refer to this section and make connection with the external device.

(1) Digital input interface DI-1

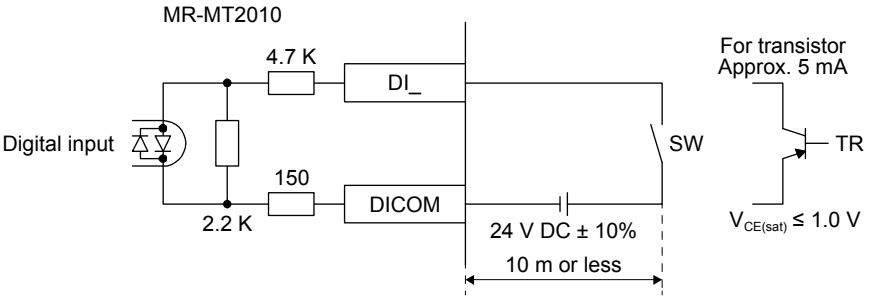
(a) Sink input interface

Transmit signals from sink (open-collector) type transistor output, relay switch, etc.



(b) Source input interface

Transmit signals from source (open-collector) type transistor outputs, relay switches, etc.

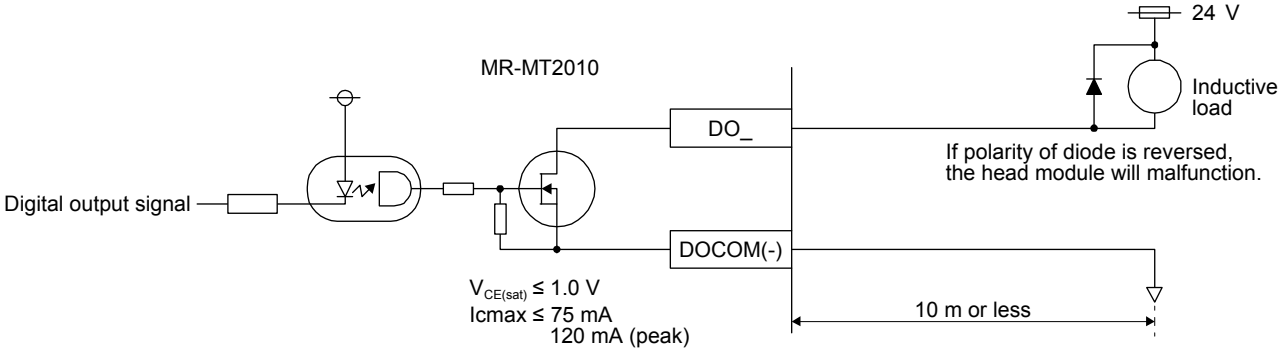


(2) Digital output interface DO-1

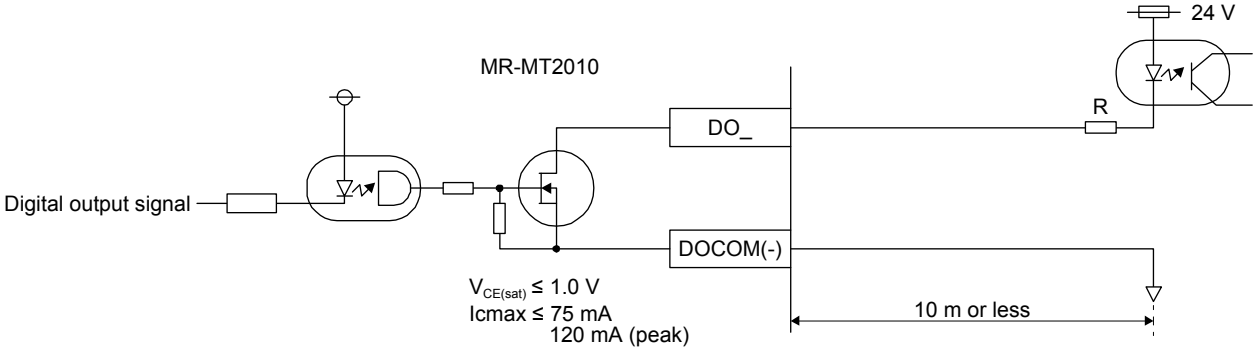
(a) Sink output interface

When the output FET is turned on, the current will flow to the drain terminal.
Lamps, relays, or photocouplers can be driven. Install a diode (D) for an inductive load, or install an inrush current suppressing resistor (R) for a lamp load.
(Rated current: 60 mA or less, maximum current: 75 mA or less, inrush current: 120 mA or less)

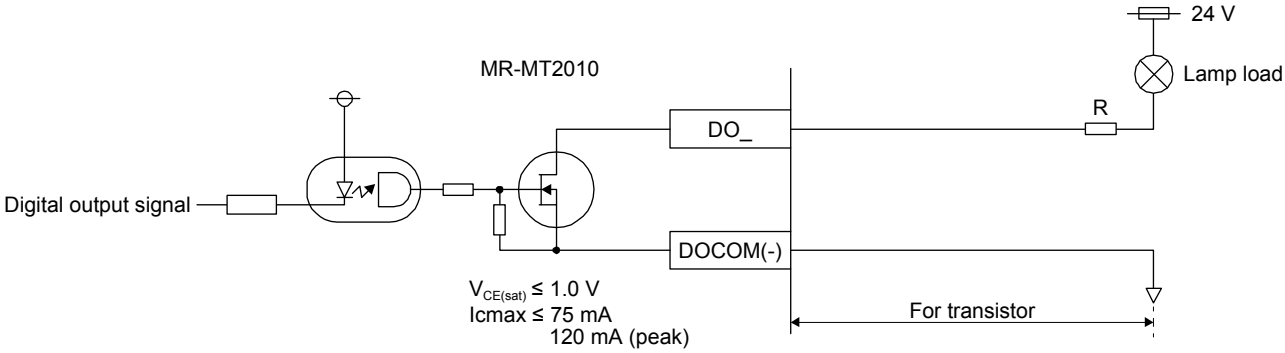
1) Inductive load



2) Photocoupler



3) Lamp load



MEMO

5. MR-MT2100 I/O MODULE

5.1 Summary

The MR-MT2100 I/O module has a highly accurate (within ± 1 μs) timing-latch input function.

5.2 Specification list

Item				MR-MT2100 I/O module
Control circuit power supply				Supplied from the head module (24 V DC ± 10%, 0.1 A)
DI	Number of input points			16 (Note 1)
	Insulation method			Photocoupler insulation
	On voltage/on current			21 V DC or more/3 mA or more
	Off voltage/off current			3 V DC or less/1 mA or less
	Input response time		Off → On	Within 1 μs
			On → Off	Within 1 μs
	Timing latch input		Number of simultaneously used points	Max. 16
	Input form			Sink input/source input
DO	Number of output points			16 (Note 1)
	Maximum load current			0.1 A/1 point
	Insulation method			Photocoupler insulation
	Output response time (Note 2)	Sink output	Off to On	Within 1 μs
			On to Off	Within 1 μs
		Source output (Note 3)	Off to On	Within 1 μs
			On to Off	Within 2 μs
	Output form			Sink output/Source output (Note 3)
Interface power supply				24 V DC ± 10%
Compliance to global standards				Refer to section 1.3.
Structure (IP rating)				Refer to section 1.3.
Environment				Refer to section 1.3.
Mass [kg]				0.2

Note 1. When the module is used at an ambient temperature exceeding 55 °C and up to 60 °C, the numbers of simultaneously on points must be 14 or less for each of DI and DO.

2. This value is applicable when the output current is 50 mA or more.

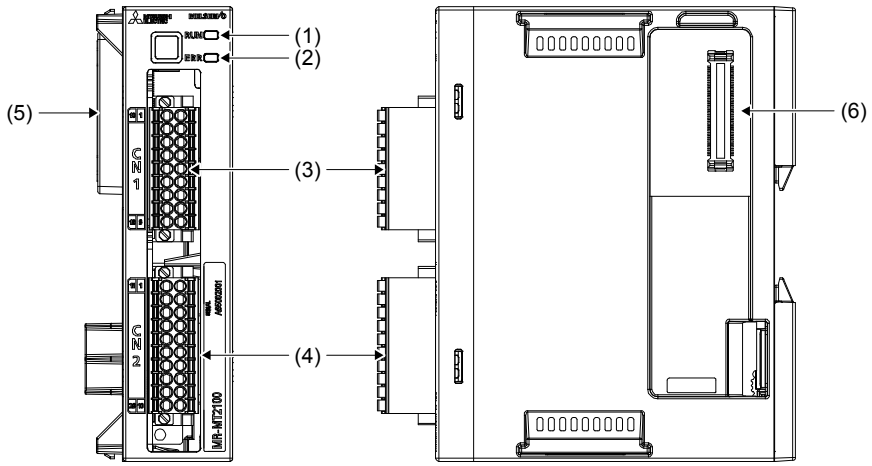
3. Source output is available when connecting with head modules with software version A1 or later. Set the output method for digital output with [Pr. PTB069].

5.3 Function list

The following lists the functions of the MR-MT2100 I/O module. For details and usage of the functions, refer to the manuals for controllers.

Function	Description
Digital input function	This function sends the status of digital input signals to the controller.
Digital output function	This function turns on/off digital output signals using commands issued from the controller.
Timing-latch input function	This function sends the timing to input digital input signals to the controller.
Level output function	This function digitally outputs values depending on the level of each monitor value of the pulse I/O module, analog I/O module, and encoder I/F module. Values can be digitally output without the controller.
Output CLEAR/HOLD function	This function sets whether to hold or clear the preceding outputs when communications with the controller are interrupted.

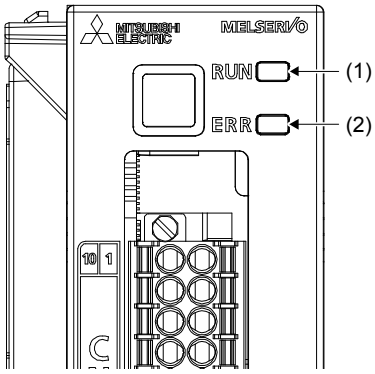
5.4 Parts identification



No.	Name/application	Detailed explanation
(1)	Status display LED (RUN) Indicates the operating status of the module.	Section 5.5
(2)	Status display LED (ERR) Indicates that an error has occurred in the module.	
(3)	Digital input signal connector (CN1) Connect the digital input signals.	Section 5.6
(4)	Digital output signal connector (CN2) Connect the digital output signals.	
(5)	Inter-module connection connector (CN3B) Connect with the head module or the preceding extension module.	
(6)	Inter-module connection connector (CN3A) Connect with the following extension module.	

5.5 Status display LEDs

The module status is displayed by the following two LEDs.

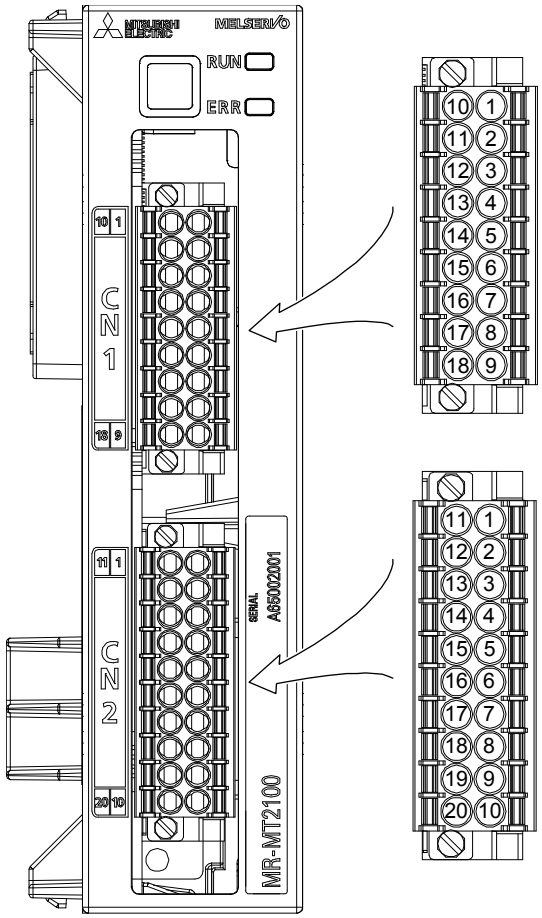


No.	Display	LED color	Status	Meaning
(1)	RUN	Green	On	The module has been properly powered on.
		Orange	On	Initializing
			Off	The module has not been properly powered on.
(2)	ERR	Red	Flickering	A warning has occurred.
			On	An alarm has occurred.
		Orange	On	Initializing
			Off	The module normally operates at power-on.

- When the module is powered on
  When the module is powered on, both the RUN and ERR LEDs turn on in orange and then show the status above after the initialization of MR-MT2100.
- When a watchdog error has occurred
  When a watchdog error has occurred, both the RUN and ERR LEDs turn on in red.

5.6 Signals and wiring

5.6.1 Pin assignment



Pin assignment of CN1

No.	Symbol	Symbol	No.
10	DI1	DI2	1
11	DI3	DI4	2
12	DI5	DI6	3
13	DI7	DI8	4
14	DI9	DI10	5
15	DI11	DI12	6
16	DI13	DI14	7
17	DI15	DI16	8
18	DICOM	DICOM	9

Pin assignment of CN2

No.	Symbol	Symbol	No.
11	DO1	DO2	1
12	DO3	DO4	2
13	DO5	DO6	3
14	DO7	DO8	4
15	DO9	DO10	5
16	DO11	DO12	6
17	DO13	DO14	7
18	DO15	DO16	8
19	DOCOM	DOCOM	9
20	CTL(-)	CTL(-)	10

5.6.2 Signal (device) explanations

(1) Input device

Device	Symbol	Connector pin No.	Function and application	I/O division
	DI1	CN1-10	External input signal with the timing-latch input function Input digital input signals.	DI-1
	DI2	CN1-1		
	DI3	CN1-11		
	DI4	CN1-2		
	DI5	CN1-12		
	DI6	CN1-3		
	DI7	CN1-13		
	DI8	CN1-4		
	DI9	CN1-14		
	DI10	CN1-5		
	DI11	CN1-15		
	DI12	CN1-6		
	DI13	CN1-16		
	DI14	CN1-7		
	DI15	CN1-17		
	DI16	CN1-8		

(2) Output device

Device	Symbol	Connector pin No.	Function and application	I/O division
	DO1	CN2-11	External output signal Digital output signals are outputted.	DO-1
	DO2	CN2-1		
	DO3	CN2-12		
	DO4	CN2-2		
	DO5	CN2-13		
	DO6	CN2-3		
	DO7	CN2-14		
	DO8	CN2-4		
	DO9	CN2-15		
	DO10	CN2-5		
	DO11	CN2-16		
	DO12	CN2-6		
	DO13	CN2-17		
	DO14	CN2-7		
	DO15	CN2-18		
	DO16	CN2-8		

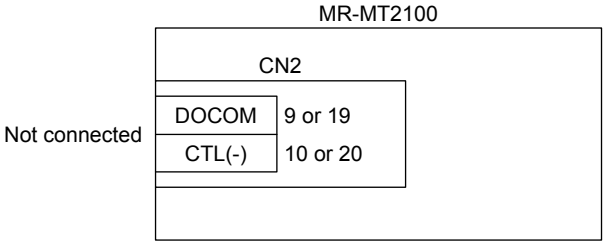
(3) Power supply

Signal name	Symbol	Connector pin No.	Function and application
Common terminal for input signals	DICOM	CN1-9 CN1-18	Common terminals for input signals. Input 24 V DC (24 V DC ± 10%) for I/O interface. The power supply capacity varies depending on the number of I/O interface points to be used. For sink interface, connect + of 24 V DC external power supply. For source interface, connect - of the 24 V DC external power supply.
Common terminal for output signals	DOCOM	CN2-9 CN2-19	Common terminals for output signals. Input 24 V DC (24 V DC ± 10%) for I/O interface. The power supply capacity varies depending on the number of I/O interface points to be used. For sink interface, connect - of the 24 V DC external power supply. For source interface, connect + of the 24 V DC external power supply.
Interface power supply for output signal	CTL(-)	CN2-10 CN2-20	Input 24 V DC (24 V DC ± 10%) for I/O interface. For sink interface, connection is unnecessary. For source interface, connect the - of the 24 V DC external power supply.

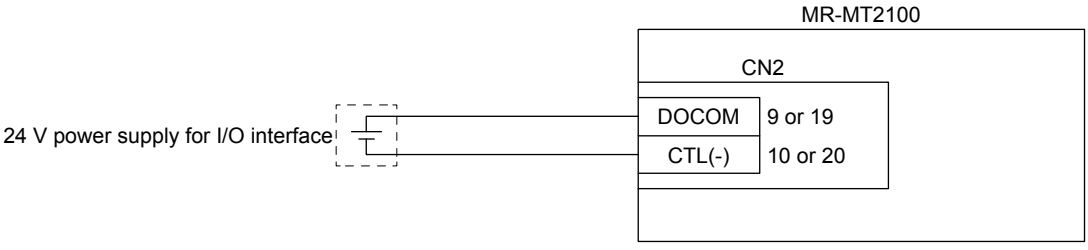
5.6.3 Connecting the interface power supply for output signal

⚠CAUTION ●Set [Pr. PTB069] to the connection method corresponding to the actual output wiring. Otherwise, it may cause the equipment to operate unpredictably.

(1) For sink output interface
DOCOM and CTL(-) are not connected.



(2) For source output interface
Connect the 24 V power supply for the I/O interface between DOCOM and CTL(-).



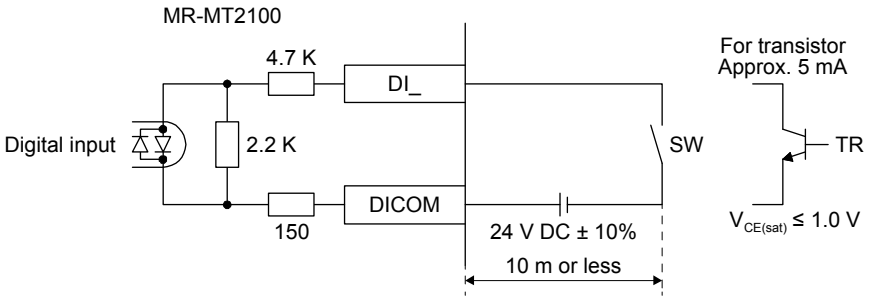
5.6.4 Detailed explanation of interfaces

This section provides the details of the I/O signal interfaces (refer to the I/O division in the table) given in section 5.6.2. Refer to this section and make connection with the external device.

(1) Digital input interface DI-1

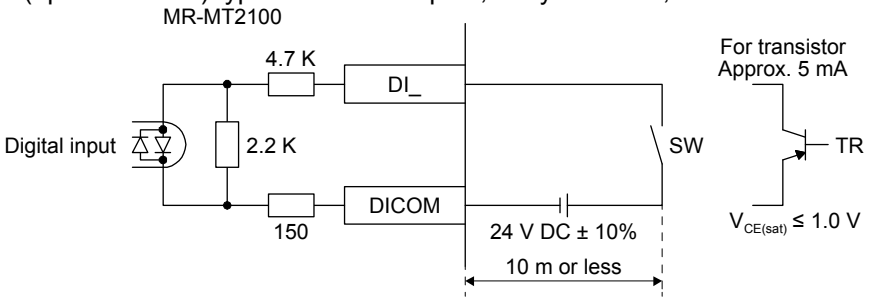
(a) Sink input interface

Transmit signals from sink (open-collector) type transistor output, relay switch, etc.



(b) Source input interface

Transmit signals from source (open-collector) type transistor outputs, relay switches, etc.

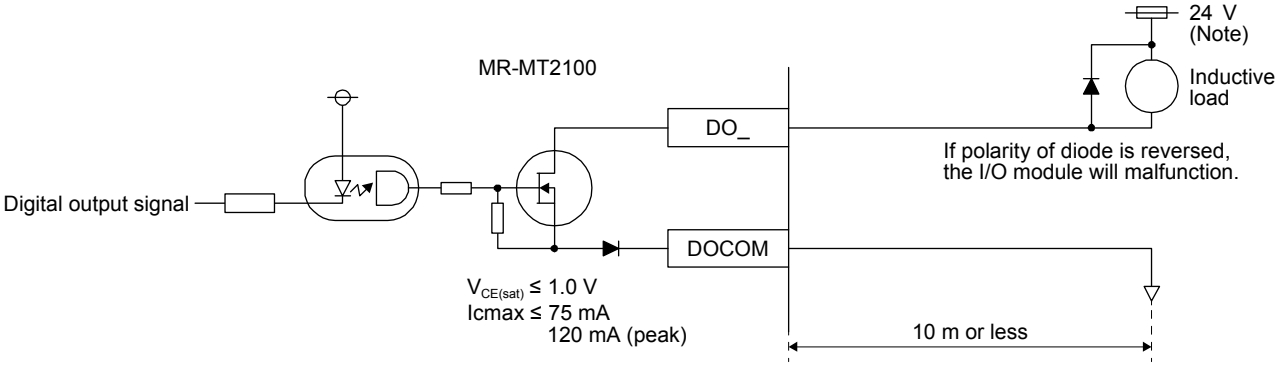


(2) Digital output interface DO-1

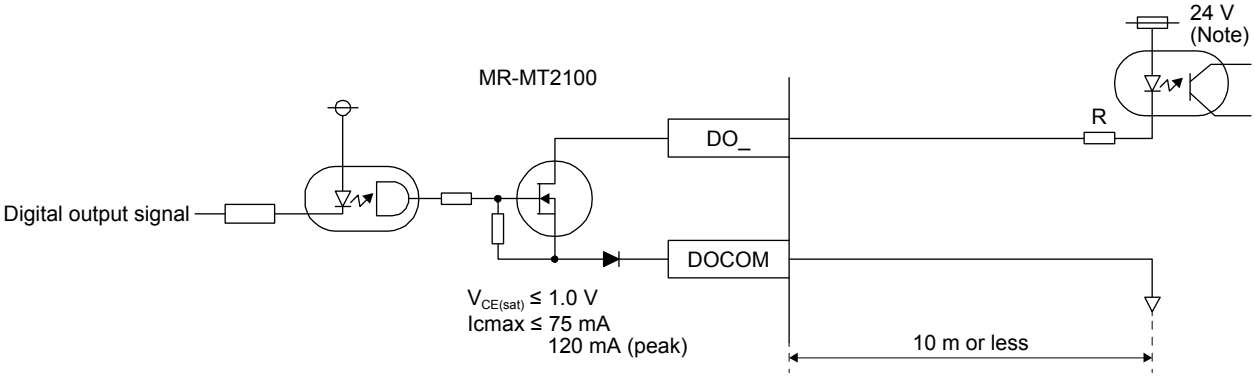
(a) Sink output interface

When the output FET is turned on, the current will flow to the drain terminal.
Lamps, relays, or photocouplers can be driven. Install a diode (D) for an inductive load, or install an inrush current suppressing resistor (R) for a lamp load.
(Rated current: 60 mA or less, maximum current: 75 mA or less, inrush current: 120 mA or less)
A maximum of 1.6 V voltage drop occurs in MR-MT2100.

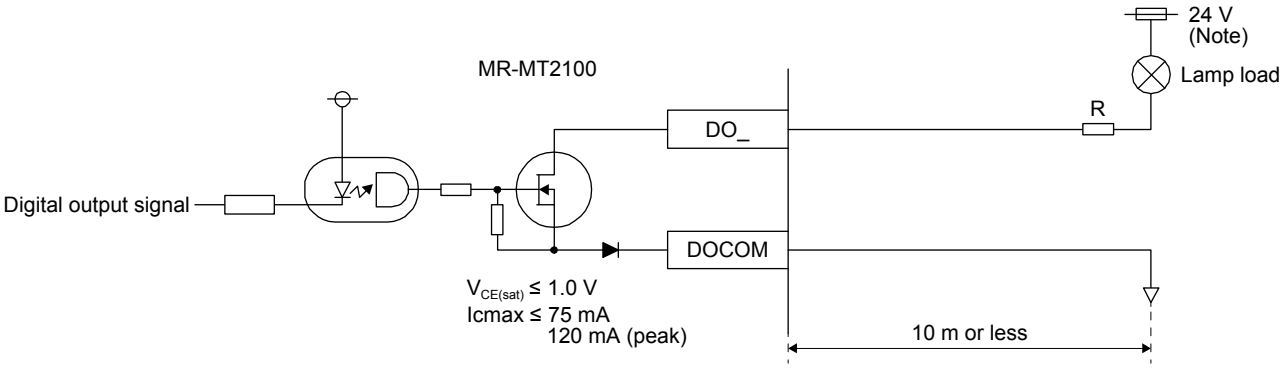
1) Inductive load



2) Photocoupler



3) Lamp load

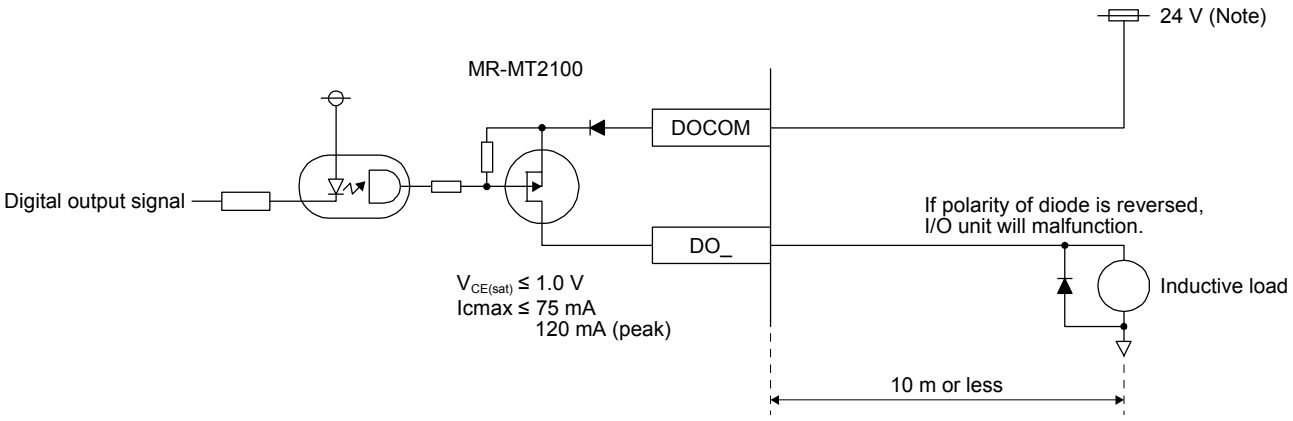


Note. If the voltage drop (maximum of 1.6 V) interferes with the relay operation, apply a high voltage (maximum of 26.4 V) from external source.

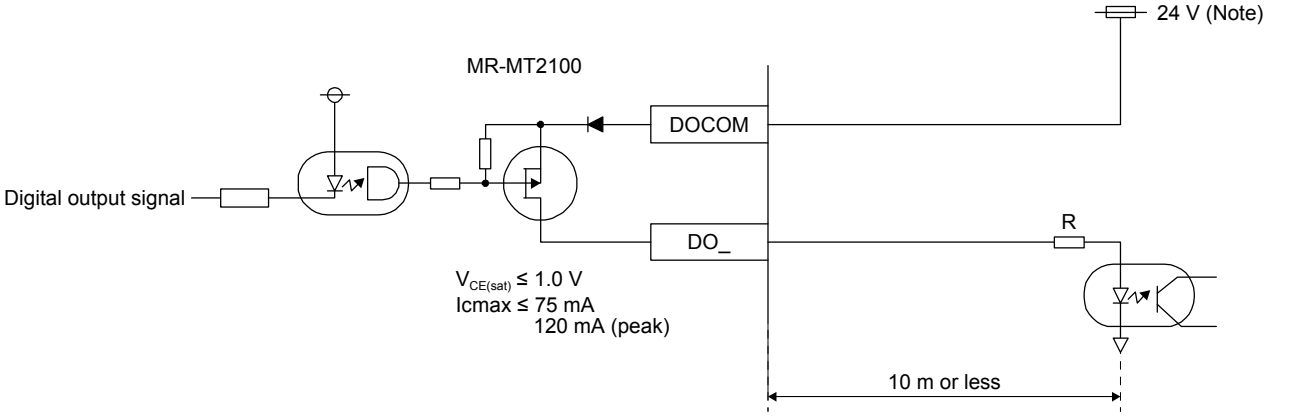
(b) Source output interface

When the output FET is turned on, the current will flow from the output terminal to a load.
A lamp, relay, or photocoupler can be driven. Install a diode (D) for an inductive load, or install an inrush current suppressing resistor (R) for a lamp load.
(Rated current: 60 mA or less, maximum current: 75 mA or less, inrush current: 120 mA or less)
A maximum of 1.6 V voltage drop occurs in MR-MT2100.

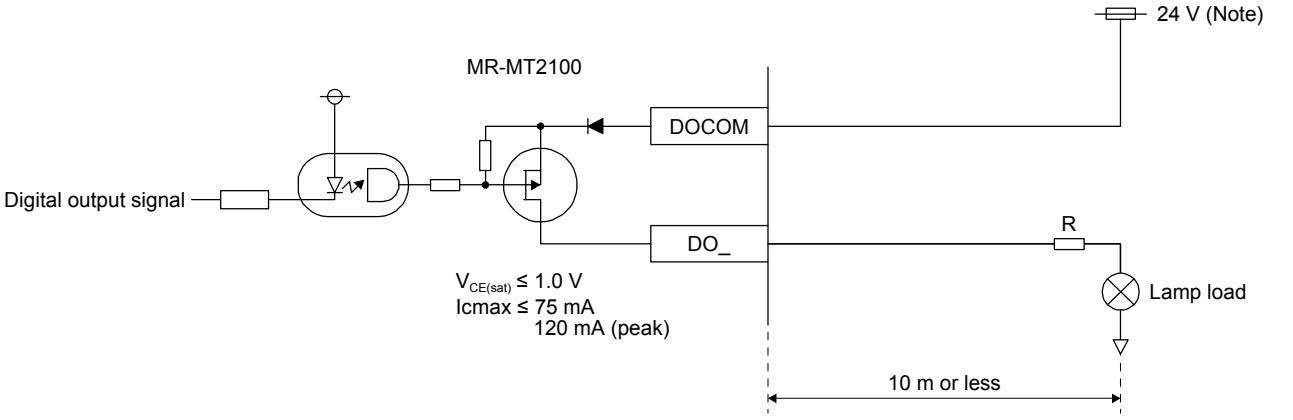
1) Inductive load



2) Photocoupler



3) Lamp load



Note. If the voltage drop (maximum of 1.6 V) interferes with the relay operation, apply a high voltage (maximum of 26.4 V) from an external source.

6. MR-MT2200 PULSE I/O MODULE

6.1 Summary

The MR-MT2200 pulse I/O module can input/output pulses in each input/output type (forward/reverse rotation pulse train, signed pulse train, and A-phase/B-phase pulse train). The MR-MT2200 pulse I/O module has two modes: axis mode and station mode. In the axis mode, stepping motors can be driven through general-purpose pulse train drivers just like servo amplifier axes.

6.2 Standard specifications

Item			MR-MT2200 pulse I/O module
Control circuit power supply			Supplied from the head module (24 V DC ± 10%, 0.2 A)
Number of pulse I/O channels			2 output channels/2 input channels/1 channel each for input/output (Select one.)
Pulse Output	Output signal		Differential line driver output or open-collector output
	Output form		Forward/reverse rotation pulse train, signed pulse train, A-phase/B-phase pulse train
	Maximum frequency (Note 2)	Differential line driver output	4 Mpulses/s (A-phase/B-phase pulse train (× 4)) 1 Mpulse/s (forward/reverse rotation pulse train, signed pulse train)
		Open-collector output	200 kpulses/s (A-phase/B-phase pulse train (× 4)) 50 kpulses/s (forward/reverse rotation pulse train, signed pulse train)
Pulse Input	Input signal		Differential line driver input
	Input form		Forward/reverse rotation pulse train, signed pulse train, A-phase/B-phase pulse train
	Maximum frequency	Differential line driver input	4 Mpulses/s (A-phase/B-phase pulse train (× 4)) 1 Mpulse/s (forward/reverse rotation pulse train, signed pulse train)
DI	Number of input points		7 points for each axis
	Insulation method		Photocoupler insulation
	On voltage/on current		21 V DC or more/3 mA or more
	Off voltage/off current		3 V DC or less/1 mA or less
	Input form		Sink input/source input
DO	Number of output points	Sink output	5 points for each axis (Two of the five points are shared with both the high-speed output and open-collector pulse.)
		Source output	3 points for each axis
	Maximum load current		0.1 A/1 point
	Insulation method		Photocoupler insulation
	High-speed output response time (Note 1)	Off → On	Within 1 μs
		On → Off	Within 1 μs
	Output form		Sink output/source output
Interface power supply			24 V DC ± 10%
Compliance to global standards			Refer to section 1.3.
Structure (IP rating)			Refer to section 1.3.
Environment			Refer to section 1.3.
Mass [kg]			0.2

Note 1. This is for when the output current is 50 mA or more.

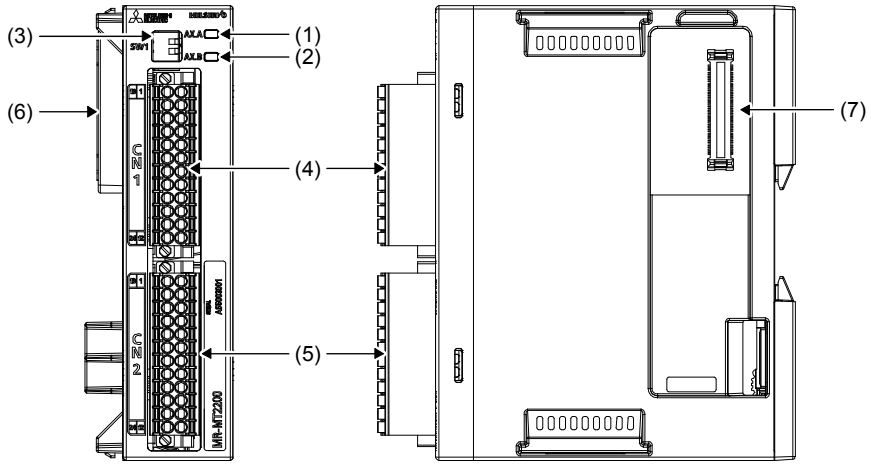
2. When using the electronic gear in axis mode, the maximum frequency of the pulse output is determined by the settings of [Pr. PA06], [Pr. PA07] and [Pr. PB01]. For details, refer to the Name and function column of [Pr. PA06] in section 9.2.2.

6.3 Function list

The following table lists the functions of the MR-MT2200 pulse I/O module. For details and usage of the functions, refer to the manuals for controllers.

Function	Description
Pulse output function	This function outputs specified pulses from the controller. Use parameters to set an output type (forward/reverse rotation pulse train, signed pulse train, or A-phase/B-phase pulse train).
Pulse input function	This function sends the input number of pulses to the controller. Use parameters to set an input type (forward/reverse rotation pulse train, signed pulse train, or A-phase/B-phase pulse train).
Digital input function	This function sends the status of digital input signals to the controller.
Digital output function	This function turns on/off digital output signals using commands issued from the controller.
Pulse coincidence output function	This function turns on digital output signals when a pulse output value is within a range specified by the controller.
Output CLEAR/HOLD function	This function sets whether to hold or clear the preceding outputs when communications with the controller are interrupted.

6.4 Parts identification



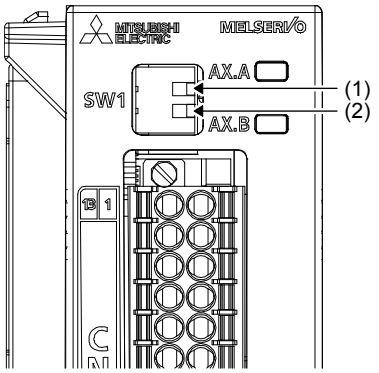
No.	Name/application	Detailed explanation
(1)	A-axis status display LED (AX.A) Indicates the status of A-axis.	Section 6.6
(2)	B-axis status display LED (AX.B) Indicates the status of B-axis.	
(3)	Mode select switch (SW1) The mode can be switched between axis and station.	Section 6.5.1
(4)	A-axis pulse I/O signal connector (CN1) Connect the pulse I/O signals and A-axis digital I/O signals to this connector.	Section 6.7
(5)	B-axis pulse I/O signal connector (CN2) Connect the pulse I/O signals and B-axis digital I/O signals to this connector.	
(6)	Inter-module connection connector (CN3B) Connect with the head module or the preceding extension module connected.	
(7)	Inter-module connection connector (CN3A) Connect with the following extension module.	

6.5 Switching the mode between the station mode and axis mode

6.5.1 Mode select switch (SW1)

POINT
●Cycling the control circuit power supply enables the settings of the switches.

Select the axis mode or station mode for the pulse I/O module, and set input/output status for the A/B-axis in the axis mode.



No.	Name/application
(1)	Mode selection switch (SW1-1) Select the axis mode or station mode for the pulse I/O module.
(2)	Mode selection switch (SW1-2) Select the axis mode or station mode for the pulse I/O module.

The following lists the setting combinations of the switches to set a mode.

Mode select switch		Mode	Number of occupied axes	Description
(SW1-1)	(SW1-2)			
Off	Off	Axis mode	2	A-axis and B-axis are used in the axis mode. Feedback pulse input is not used. (Default setting) CN1: A-axis pulse output CN2: B-axis pulse output
Off	On	Axis mode	1	A-axis is used in the axis mode. CN1: A-axis pulse output CN2: A-axis feedback pulse input
On	Off	Axis mode	1	B-axis is used in the axis mode. CN1: B-axis feedback pulse input CN2: B-axis pulse output
On	On	Station mode	0 (Note)	A-axis and B-axis are used in the station mode. Set the I/O switching settings of A-axis and B-axis with parameters ([Pr. PTC001] for A-axis and [Pr. PTC017] for B-axis). Refer to section 6.5.2 (1) for setting details.

Note. Axis is not occupied. One station is occupied.

6.5.2 Settings in the station mode

> **⚠CAUTION** ●The parameter setting should match with the actual I/O connections to operate properly. Otherwise, it may cause a malfunction.

(1) I/O switching setting

When the station mode is selected with SW1, set the parameters for A-axis (CN1) and B-axis (CN2) whether to input or output pulses.

Pulse I/O function selection

Select an I/O function with [Pr. PTC001] for A-axis and [Pr. PTC017] for B-axis.

[Pr. PTC001]/[Pr. PTC017]

0	0	0	

I/O function selection
0: Pulse input function
1: Pulse output function

(2) Open-collector pulse output terminal function switching setting

> POINT
>
> ●When the digital output is selected with [Pr. PTC005] for A-axis and [Pr. PTC021] for B-axis, digital output is executed according to the settings of [Pr. PTC071] to [Pr. PTC074] and [Pr. PTC081] to [Pr. PTC084].

When using the pulse I/O unit in station mode, the axis set to pulse output in I/O switching setting can be switched by setting the output function of the open collector pulse output terminal (CW_/CCW_) with the parameter.

Open-collector output function selection

Select a pulse output form with [Pr. PTC005] for A-axis and [Pr. PTC021] for B-axis.

[Pr. PTC005]/[Pr. PTC021]

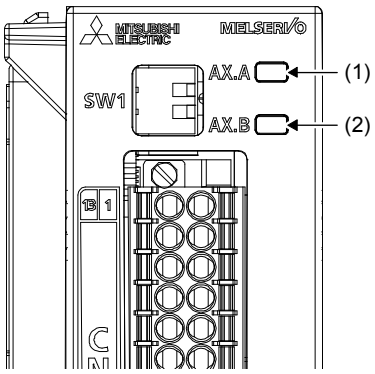
0	0	0	

Open-collector output function selection
0: Pulse output (A-axis: CWA and CCWA, B-axis: CWB and CCWB)
1: Digital output (A-axis: DO4 and DO5, B-axis: DO11 and DO12)

6.6 Status display LEDs

(1) In axis mode

The module status is displayed by the following two LEDs.

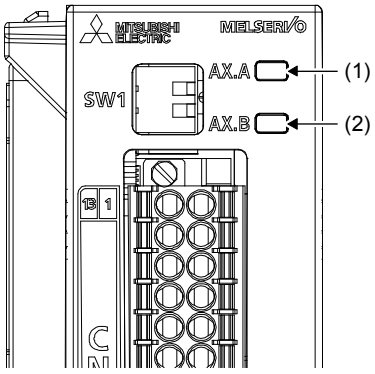


No.	Display	LED color	Status	Meaning
(1)	AX.A	Green	Flickering	The module has been properly powered on and A-axis is the servo-off status.
			On	The module has been properly powered on and A-axis is the servo-on status.
		Red	Flickering	A warning has occurred in A-axis.
			On	An alarm has occurred in A-axis.
		Orange	On	Initializing
			Off	The module has not been properly powered on.
(2)	AX.B	Green	Flickering	The module has been properly powered on and B-axis is the servo-off status.
			On	The module has been properly powered on and B-axis is the servo-on status.
		Red	Flickering	A warning has occurred in B-axis.
			On	An alarm has occurred in B-axis.
		Orange	On	Initializing
			Off	The module has not been properly powered on.

- When the module is powered on
  When the module is powered on, both the AX.A and AX.B LEDs turn on in orange and then show the status above after the initialization of MR-MT2200.
- When a watchdog error has occurred
  When a watchdog error has occurred, both the AX.A and AX.B LEDs turn on in red.

(2) In station mode

The module status is displayed by the following two LEDs.



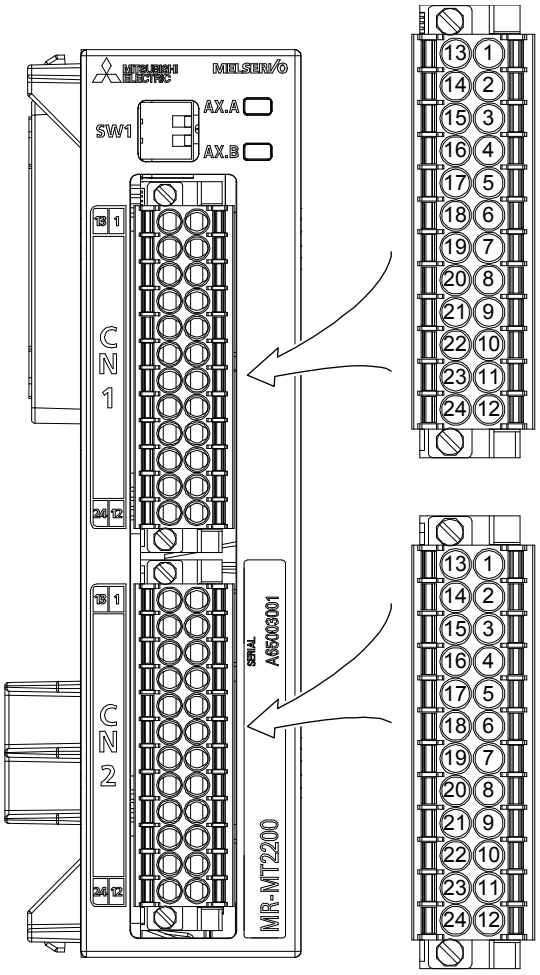
No.	Display	LED color	Status	Meaning
(1)	AX.A	Green	On	The module has been properly powered on.
		Red	Flickering	A warning has occurred in A-axis.
			On	An alarm has occurred in A-axis.
		Orange	On	Initializing
			Off	The module has not been properly powered on.
(2)	AX.B	Green	On	The module has been properly powered on.
		Red	Flickering	A warning has occurred in B-axis.
			On	An alarm has occurred in B-axis.
		Orange	On	Initializing
			Off	The module has not been properly powered on.

- When the module is powered on
  When the module is powered on, both the AX.A and AX.B LEDs turn on in orange and then show the status above after the initialization of MR-MT2200.
- When a watchdog error has occurred
  When a watchdog error has occurred, both the AX.A and AX.B LEDs turn on in red.

6.7 Signals and wiring

6.7.1 Pin assignment

(1) In axis mode



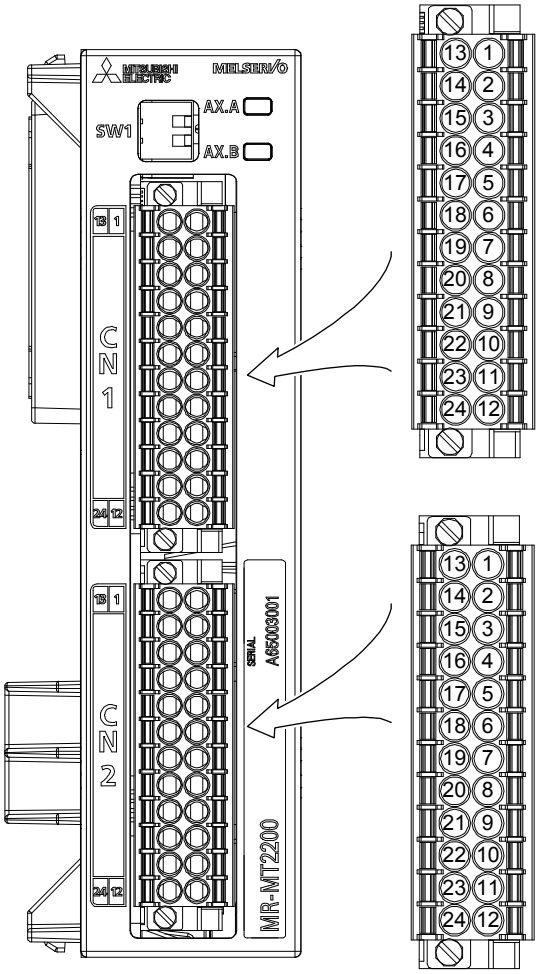
Pin assignment of CN1

No.	Symbol	Symbol	No.
13	CCWA	CWA	1
14	CCWGA	CWGA	2
15	CWNA/FANA	CWPA/FAPA	3
16	CCWNA/FBNA	CCWPA/FBPA	4
17	LG	ALM05A	5
18	DICOM05A	PG05A	6
19	INPA	ALM24A	7
20	RDA	PG24A	8
21	RLSA	FLSA	9
22	DICOMA	DOGA	10
23	CRA	SONA	11
24	DOCOMA	RESA	12

Pin assignment of CN2

No.	Symbol	Symbol	No.
13	CCWB	CWB	1
14	CCWGB	CWGB	2
15	CWNB/FANB	CWPB/FAPB	3
16	CCWNB/FBNB	CCWPB/FBPB	4
17	LG	ALM05B	5
18	DICOM05B	PG05B	6
19	INPB	ALM24B	7
20	RDB	PG24B	8
21	RLSB	FLSB	9
22	DICOMB	DOGB	10
23	CRB	SONB	11
24	DOCOMB	RESB	12

(2) In station mode



Pin assignment of CN1

No.	Symbol	Symbol	No.
13	CCWA/DO5A	CWA/DO4A	1
14	CCWGA/DO5GA	CWGA/DO4GA	2
15	CWNA/FANA	CWPA/FAPA	3
16	CCWNA/FBNA	CCWPA/FBPA	4
17	LG	DI105A	5
18	DICOM05A	DI205A	6
19	DI5A	DI1A	7
20	DI6A	DI2A	8
21	DI7A	DI3A	9
22	DICOMA	DI4A	10
23	DO3A	DO1A	11
24	DOCOMA	DO2A	12

Pin assignment of CN2

No.	Symbol	Symbol	No.
13	CCWB/DO5B	CWB/DO4B	1
14	CCWGB/DO5GB	CWGB/DO4GB	2
15	CWNB/FANB	CWPB/FAPB	3
16	CCWNB/FBNB	CCWPB/FBPB	4
17	LG	DI105B	5
18	DICOM05B	DI205B	6
19	DI5B	DI1B	7
20	DI6B	DI2B	8
21	DI7B	DI3B	9
22	DICOMB	DI4B	10
23	DO3B	DO1B	11
24	DOCOMB	DO2B	12

6.7.2 Signal (device) explanations

(1) In axis mode

(a) Input device

Device	Symbol	Connector pin No.		Function and application	I/O division
		A-axis	B-axis		
Feedback pulse	FAP_	CN1-3	CN2-3	Input feedback pulses. When using feedback pulses, set the mode select switch (SW1). The feedback pulse input form can be changed using [Pr. PB17].	DI-1
	FAN_	CN1-15	CN2-15		
	FBP_	CN1-4	CN2-4		
	FBN_	CN1-16	CN2-16		
Malfunction	ALM24_	CN1-7	CN2-7	Input the alarm output of the connected driver. When a driver alarm is detected, the pulse I/O module generates an alarm and stops the pulse output. When using this device, set [Pr. PB16].	DI-2
	ALM05_	CN1-5	CN2-5		
Zero-point signal	PG24_	CN1-8	CN2-8	Input the home position signal at home position return.	
	PG05_	CN1-6	CN2-6		
Ready	RD_	CN1-20	CN2-20	Input device for controlling a driver. Turn this signal on when the driver is ready to receive the pulse. Pulses are not outputted until RD_ (Ready) is turned on. When using this device, set [Pr. PB16].	DI-3
Upper stroke limit	FLS_	CN1-9	CN2-9	The upper stroke limit and lower stroke limit can be connected to the pulse I/O module and used. The signal is enabled by the controller-side setting. Input the upper stroke limit and lower stroke limit. For details, refer to the controller user's manual.	
Lower stroke limit	RLS_	CN1-21	CN2-21		
Proximity dog	DOG_	CN1-10	CN2-10	The proximity dog signal can be connected to the pulse I/O module and used. The signal is enabled by the controller-side setting. Input the proximity dog signal. For details, refer to the controller user's manual.	
In-position	INP_	CN1-19	CN2-19	Input device for controlling a driver. Input the in-position signal. The input information is used on the controller side. When using this device, set [Pr. PB16].	

(b) Output device

Device	Symbol	Connector pin No.		Function and application	I/O division
		A-axis	B-axis		
Command pulse	CW_	CN1-1	CN2-1	Outputs the command pulse. ・For open-collector type (max. output frequency of 500 kpulses/s) Forward rotation pulse train between CW and CWG Reverse rotation pulse train between CCW and CCWG Change the command pulse output form with [Pr. PB14]. Pulse output control is performed after SSCNET III/H communications are established.	DO-2
	CWG_	CN1-2	CN2-2		
	CCW_	CN1-13	CN2-13		
	CCWG_	CN1-14	CN2-14		
	CWP_	CN1-3	CN2-3	Outputs the command pulse. ・For differential line driver type (max. output frequency of 4 Mpulses/s) Forward rotation pulse train between CWP and CWN Reverse rotation pulse train between CCWP and CCWN Change the command pulse output form with [Pr. PB14]. Pulse output control is performed after SSCNET III/H communications are established.	DO-3
	CWN_	CN1-15	CN2-15		
	CCWP_	CN1-4	CN2-4		
	CCWN_	CN1-16	CN2-16		
Reset	RES_	CN1-12	CN2-12	Outputs the alarm reset command from the controller.	DO-1
Servo-on	SON_	CN1-11	CN2-11	Output device for controlling a driver. Outputs the servo-on command from the controller. By connecting this device to the servo-on input of the driver, servo-on control is possible from the controller.	
Clear	CR_	CN1-23	CN2-23	Output device for controlling a driver. Outputs the clear command from the controller. Clears the droop pulses of the servo amplifier at home position return.	

(c) Power supply

Signal name	Symbol	Connector pin No.	Function and application
Common terminal for input signals	DICOM05_	CN1-18 CN2-18	Common terminals for input signals. When DI-2 of I/O division is used, input the I/O interface power supply. The power supply capacity varies depending on the number of I/O interface points to be used. For 24 V input (24 V DC ± 10%) For sink interface, connect + of 24 V DC external power supply. For source interface, connect - of the 24 V DC external power supply. For 5 V input (5 V DC ± 10%) For sink interface, connect + of 5 V DC external power supply. For source interface, connect - of the 5 V DC external power supply.
	DICOM_	CN1-22 CN2-22	Common terminals for input signals. When DI-3 of I/O division is used, input 24 V DC (24 V DC ± 10%) for I/O interface. The power supply capacity varies depending on the number of I/O interface points to be used. For sink interface, connect + of 24 V DC external power supply. For source interface, connect - of the 24 V DC external power supply.
Common terminal for output signals	DOCOM_	CN1-24 CN2-24	Common terminals for output signals. When DO-1 of I/O division is used, input 24 V DC (24 V DC ± 10%) for I/O interface. The power supply capacity varies depending on the number of I/O interface points to be used. For sink interface, connect - of the 24 V DC external power supply. For source interface, connect + of the 24 V DC external power supply.

(2) In station mode

(a) Input device

Device	Symbol	Connector pin No.		Function and application	I/O division
		A-axis	B-axis		
Pulse input	FAP_	CN1-3	CN2-3	Input pulses to be counted.	DI-1
	FAN_	CN1-15	CN2-15		
	FBP_	CN1-4	CN2-4		
	FBN_	CN1-16	CN2-16		
	DI1_	CN1-7	CN2-7	External (5 V/24 V) input signal For 24 V input, use DI1_ and DI2_. For 5 V input, use DI105_ and DI205_. Refer to section 6.7.3 (2) for details.	DI-2
	DI2_	CN1-8	CN2-8		
	DI105_	CN1-5	CN2-5		
	DI205_	CN1-6	CN2-6		
	DI3_	CN1-10	CN2-10	External (24 V) input signal	DI-3
	DI4_	CN1-19	CN2-19		
	DI5_	CN1-9	CN2-9		
	DI6_	CN1-20	CN2-20		
	DI7_	CN1-21	CN2-21		

(b) Output device

Device	Symbol	Connector pin No.		Function and application	I/O division
		A-axis	B-axis		
	DO1_	CN1-11	CN2-11	External output signal	DO-1
	DO2_	CN1-12	CN2-12		
	DO3_	CN1-23	CN2-23		
	DO4_	CN1-1	CN2-1	External output signals supporting the pulse coincidence output. These signals are mutually exclusive with the pulse output (CW_ and CCW_).	DO-2
	DO4G_	CN1-2	CN2-2		
	DO5_	CN1-13	CN2-13		
	DO5G_	CN1-14	CN2-14		
Pulse output	CW_	CN1-1	CN2-1	Outputs the command pulse. ・For open-collector type (max. output frequency of 500 kpulses/s) Forward rotation pulse train between CW and CWG Reverse rotation pulse train between CCW and CCWG Change the command pulse output form with [Pr. PTC004] and [Pr. PTC020]. Pulse output control is performed after SSCNET III/H communications are established.	
	CWG_	CN1-2	CN2-2		
	CCW_	CN1-13	CN2-13		
	CCWG_	CN1-14	CN2-14		
	CWP_	CN1-3	CN2-3	Outputs the command pulse. ・For differential line driver type (max. output frequency of 4 Mpulses/s) Forward rotation pulse train between CWP and CWN Reverse rotation pulse train between CCWP and CCWN Change the command pulse output form with [Pr. PTC004] and [Pr. PTC020]. Pulse output control is performed after SSCNET III/H communications are established.	DO-3
	CWN_	CN1-15	CN2-15		
	CCWP_	CN1-4	CN2-4		
	CCWN_	CN1-16	CN2-16		

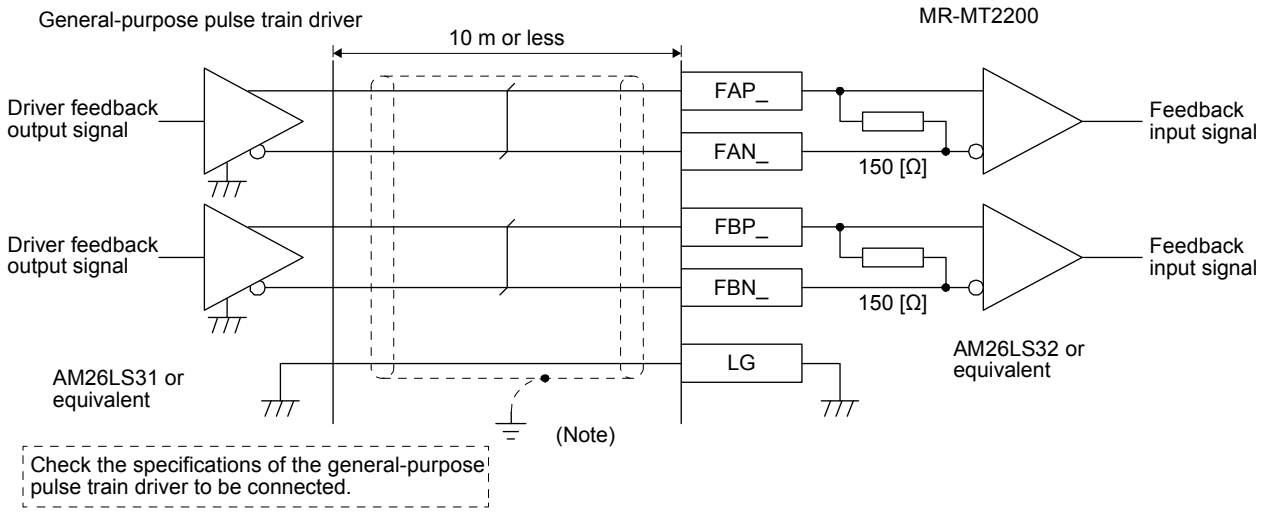
(c) Power supply

Signal name	Symbol	Connector pin No.	Function and application
Common terminal for input signals	DICOM05_	CN1-18 CN2-18	Common terminals for input signals. When DI-2 of I/O division is used, input the I/O interface power supply. The power supply capacity varies depending on the number of I/O interface points to be used. For 24 V input (24 V DC ± 10%) For sink interface, connect + of 24 V DC external power supply. For source interface, connect - of the 24 V DC external power supply. For 5 V input (5 V DC ± 10%) For sink interface, connect + of 5 V DC external power supply. For source interface, connect - of the 5 V DC external power supply.
	DICOM_	CN1-22 CN2-22	Common terminals for input signals. When DI-3 of I/O division is used, input 24 V DC (24 V DC ± 10%) for I/O interface. The power supply capacity varies depending on the number of I/O interface points to be used. For sink interface, connect + of 24 V DC external power supply. For source interface, connect - of the 24 V DC external power supply.
Common terminal for output signals	DOCOM_	CN1-24 CN2-24	Common terminals for output signals. When DO-1 of I/O division is used, input 24 V DC (24 V DC ± 10%) for I/O interface. The power supply capacity varies depending on the number of I/O interface points to be used. For sink interface, connect - of the 24 V DC external power supply. For source interface, connect + of the 24 V DC external power supply.

6.7.3 Detailed explanation of interfaces

This section provides the details of the I/O signal interfaces (refer to the I/O division in the table) given in section 6.7.2. Refer to this section and make connection with the external device.

(1) Feedback pulse input interface DI-1



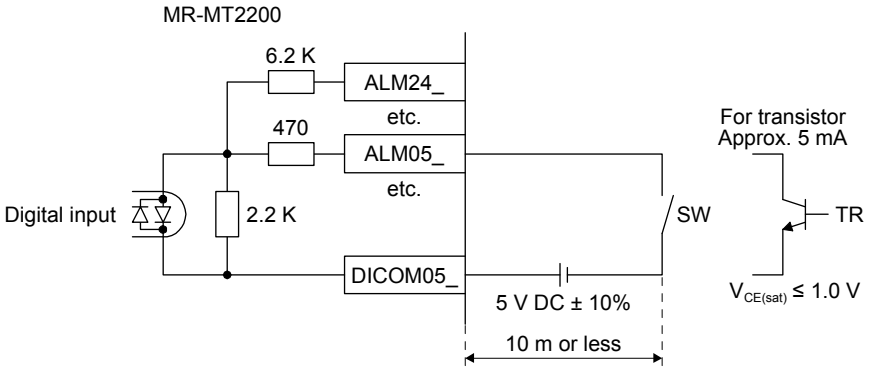
Note. Connect the cable shield directly to FG.

(2) Digital (24 V/5 V) input interface DI-2

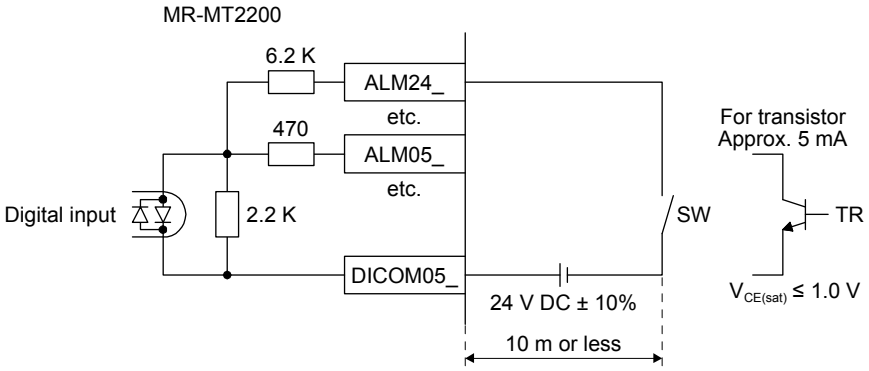
(a) Sink input interface

Transmit signals from sink (open-collector) type transistor output, relay switch, etc.

1) For 5 V



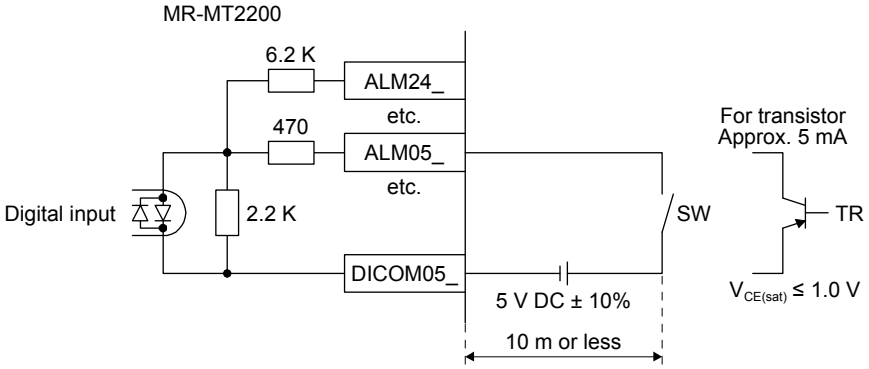
2) For 24 V



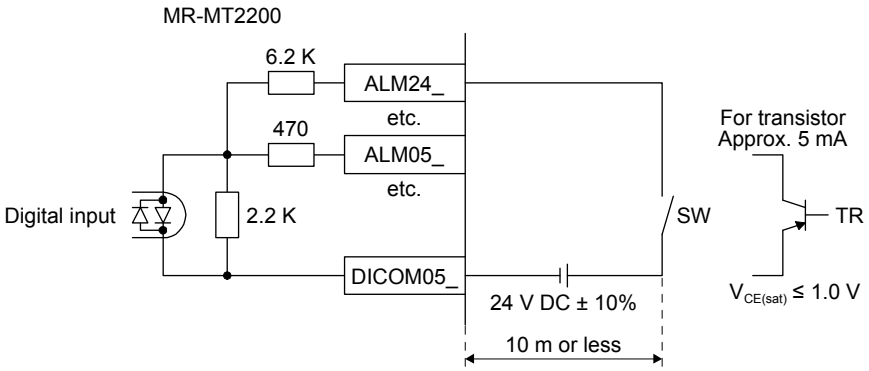
(b) Source input interface

Transmit signals from source (open-collector) type transistor outputs, relay switches, etc.

1) For 5 V



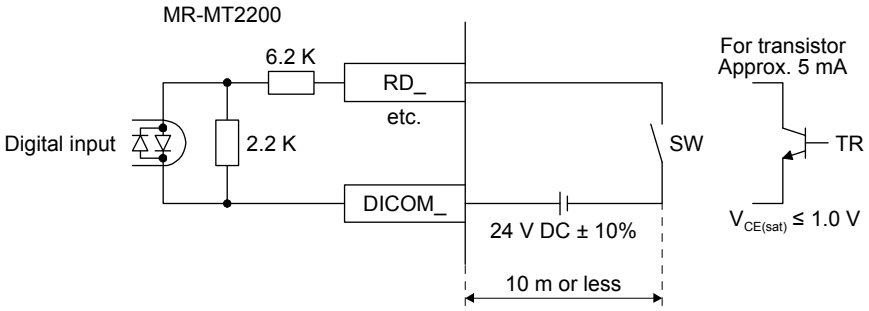
2) For 24 V



(3) Digital (24 V) input interface DI-3

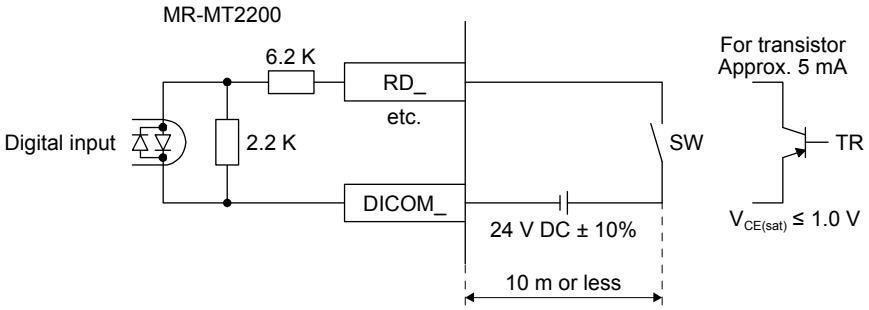
(a) Sink input interface

Transmit signals from sink (open-collector) type transistor output, relay switch, etc.



(b) Source input interface

Transmit signals from source (open-collector) type transistor outputs, relay switches, etc.

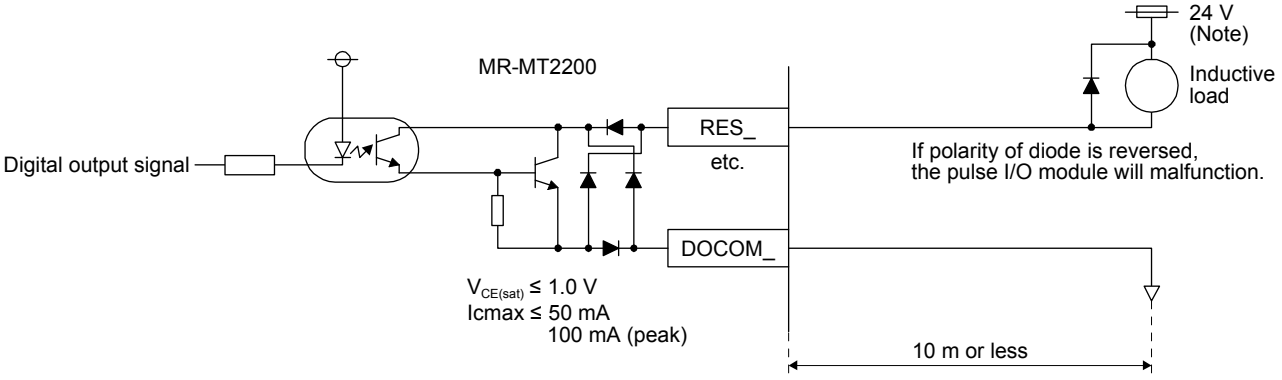


(4) Digital (24 V) output interface DO-1

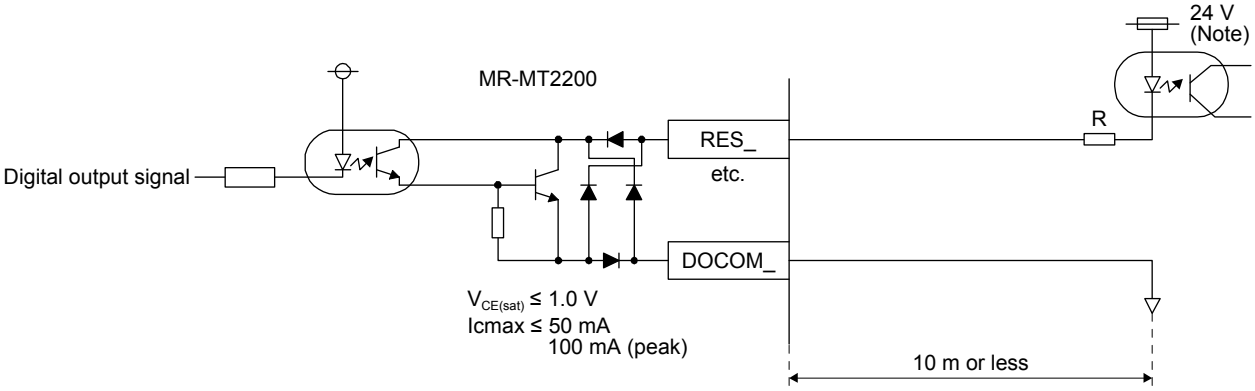
(a) Sink output interface

When the output transistor is turned on, the current will flow to the collector terminal.
Lamps, relays, or photocouplers can be driven. Install a diode (D) for an inductive load, or install an inrush current suppressing resistor (R) for a lamp load.
(Rated current: 40 mA or less, maximum current: 50 mA or less, inrush current: 100 mA or less)
A maximum of 2.6 V voltage drop occurs in MR-MT2200.

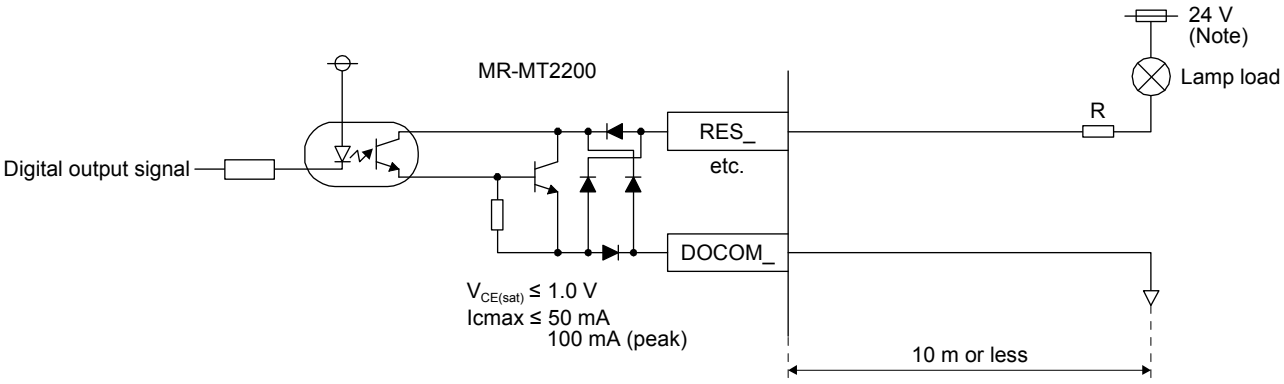
1) Inductive load



2) Photocoupler



3) Lamp load

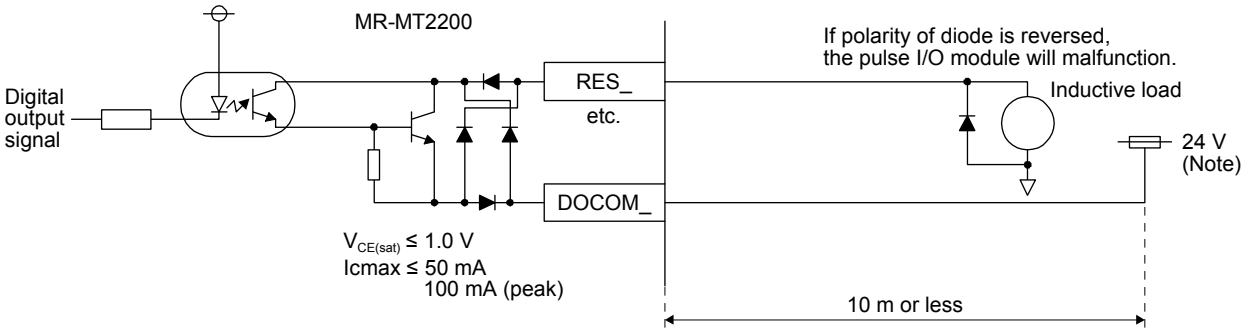


Note. If the voltage drop (maximum of 2.6 V) interferes with the relay operation, apply a high voltage (maximum of 26.4 V) from external source.

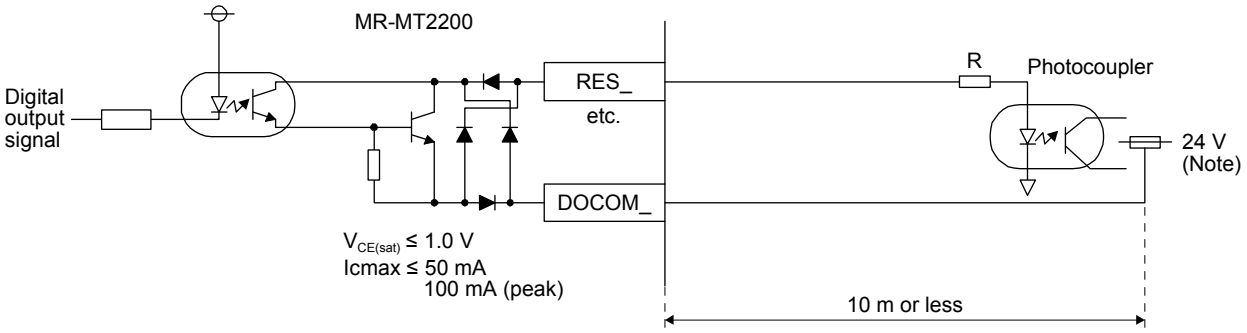
(b) Source output interface

When the output transistor is turned on, the current will flow from the output terminal to a load. Lamps, relays, or photocouplers can be driven. Install a diode (D) for an inductive load, or install an inrush current suppressing resistor (R) for a lamp load.
(Rated current: 40 mA or less, maximum current: 50 mA or less, inrush current: 100 mA or less)
A maximum of 2.6 V voltage drop occurs in MR-MT2200.

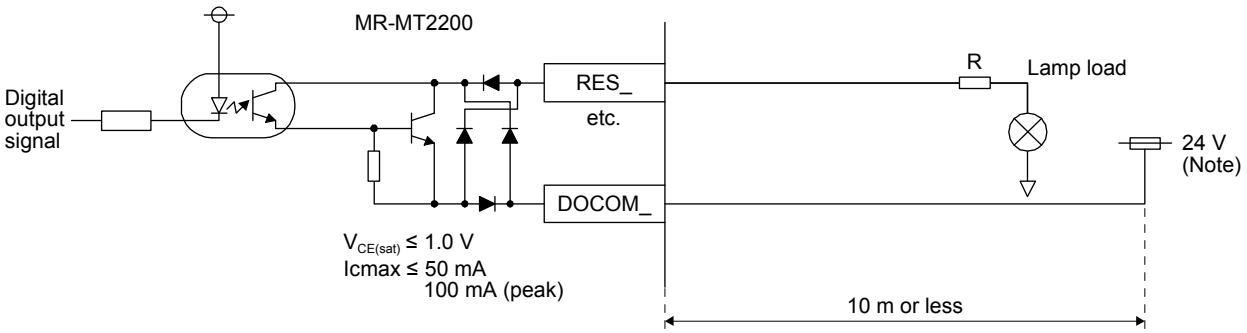
1) Inductive load



2) Photocoupler



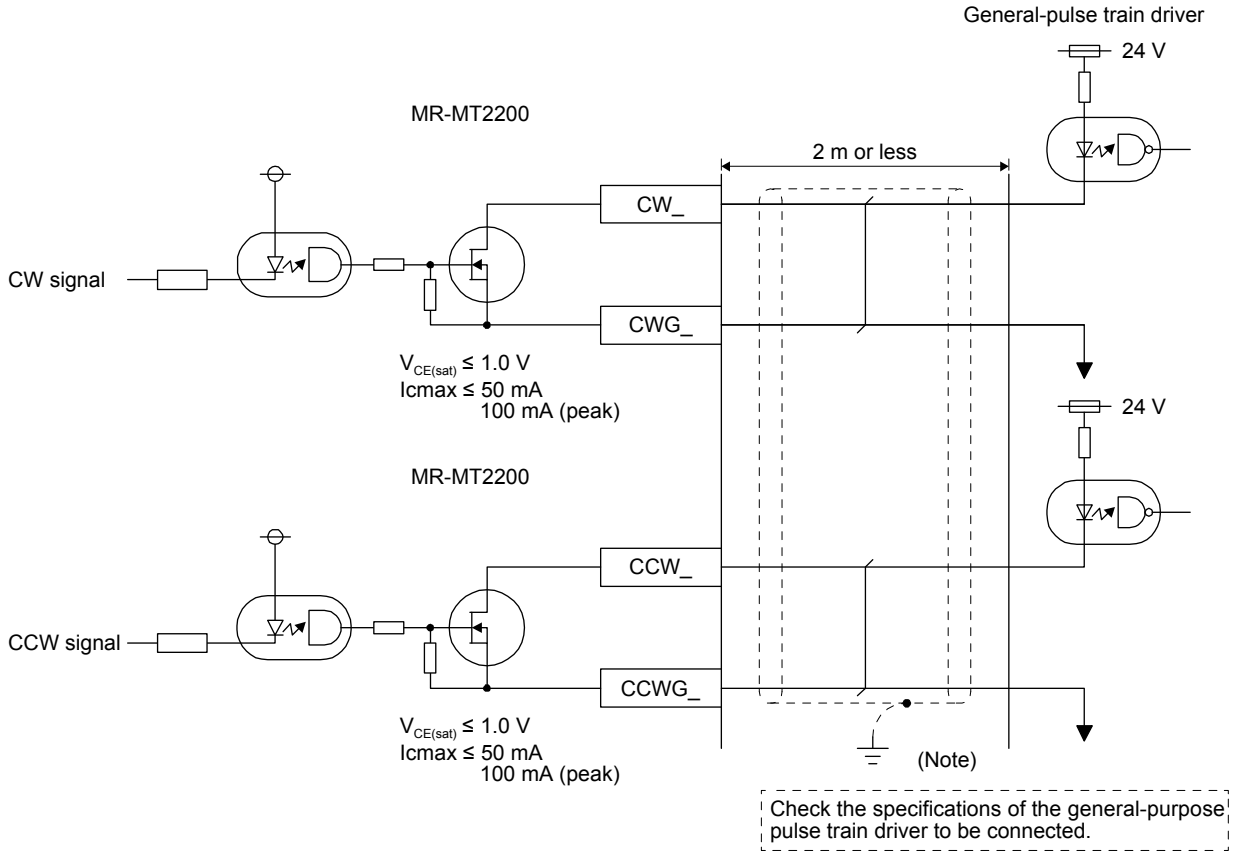
3) Lamp load



Note. If the voltage drop (maximum of 2.6 V) interferes with the relay operation, apply a high voltage (maximum of 26.4 V) from external source.

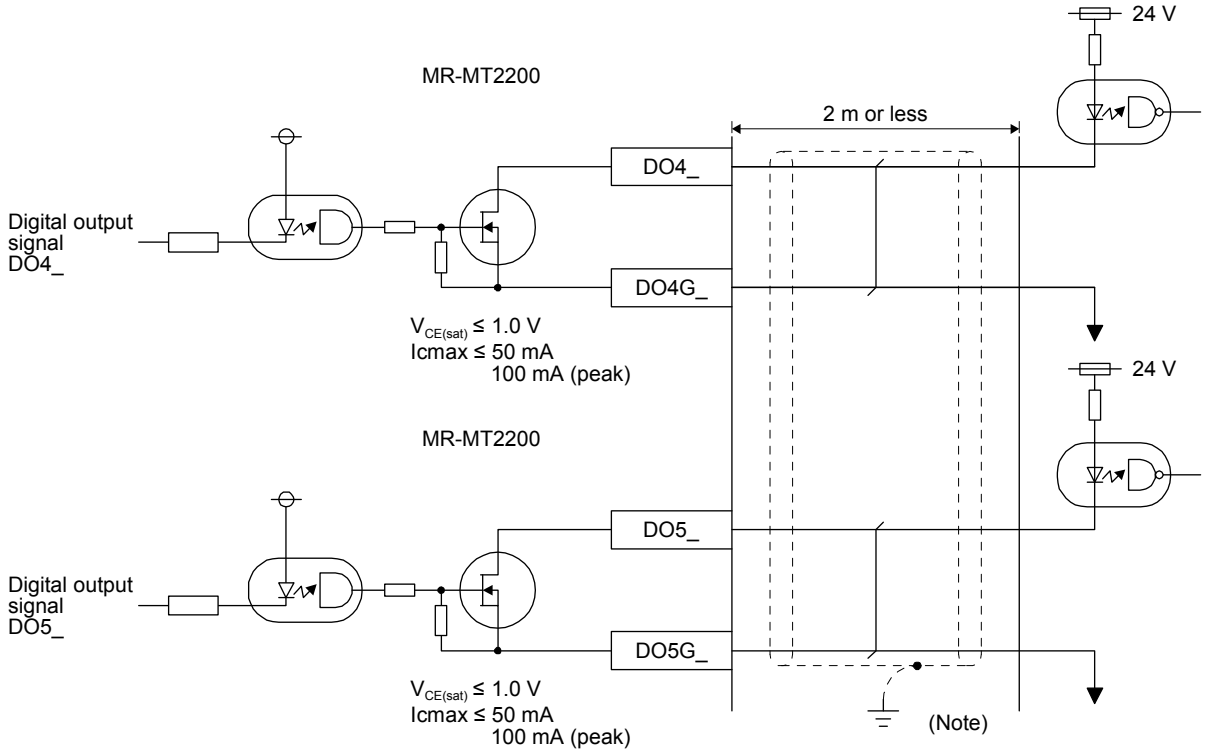
(5) Output interface DO-2

(a) Command pulse (open-collector) output interface



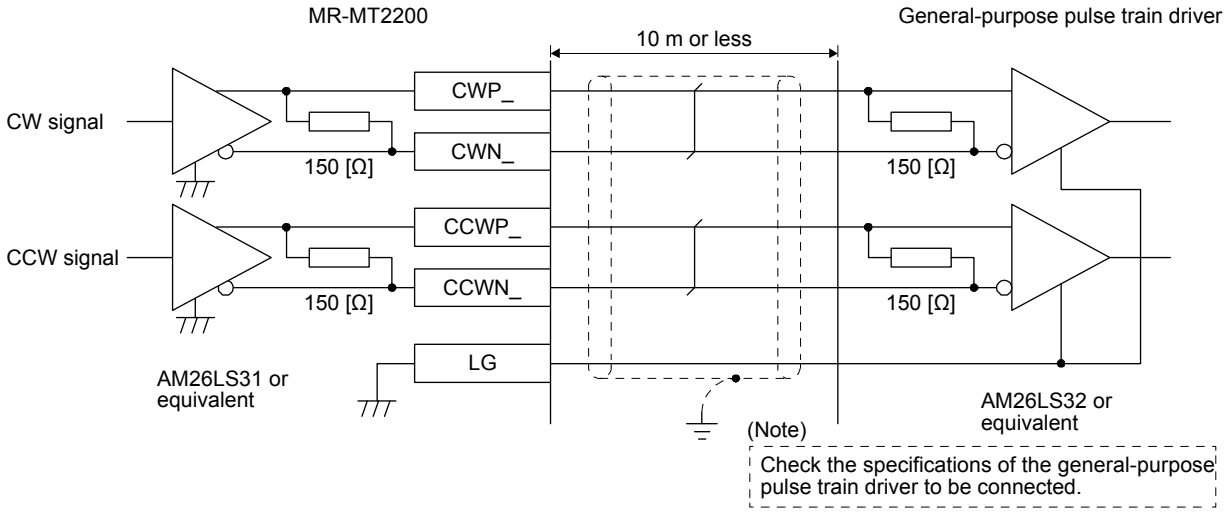
Note. Connect the cable shield directly to FG.

(b) High-speed output (DO4_/DO_5) interface



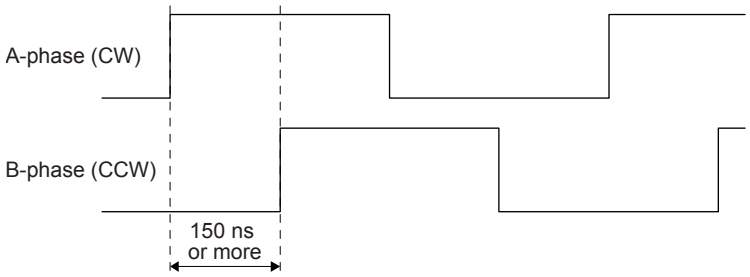
Note. Connect the cable shield directly to FG.

(6) Command pulse (differential) output interface DO-3



Note. Connect the cable shield directly to FG.

The following shows the minimum pulse width of command pulse (differential) output.



(When a differential line driver is used and the cable length is 1 m or less)

6.7.4 Command pulse output form

The following three different types of output pulse commands are available.

Connection form	Signal name	Forward/reverse rotation pulse train	Signed pulse train	A-phase/B-phase pulse train
Differential line driver connection	CWP, CWN	CW (forward rotation pulse train)	PULSE (pulse train)	A (A-phase)
Open-collector connection	CW, CWG			
Differential line driver connection	CCWP, CCWN	CCW (reverse rotation pulse train)	SIGN (sign)	B (B-phase)
Open-collector connection	CCW, CCWG			

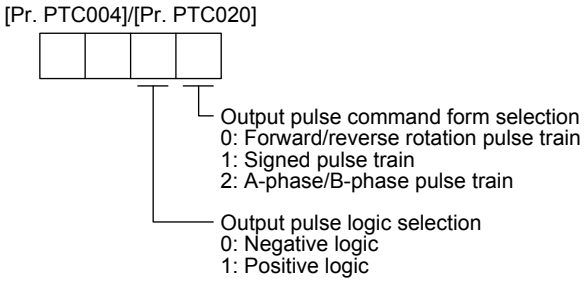
Normally, the driver of the stepping motor, etc. has restrictions on the timing (interval time) of command pulse for switching the motor rotation direction. Considering the restrictions of the driver, set the dwell time (time when pulse is not outputted) to the controller for switching the motor rotation direction.

An output change equivalent to when the command pulses are outputted may occur at the following timing of the pulse I/O module. (e.g. at initial setting of polarity and setting of output polarity)

- When the pulse I/O module is on
- When the pulse I/O module is off
- At the first connection to SSCNET III/H communications
- At the reconnection to SSCNET III/H communications

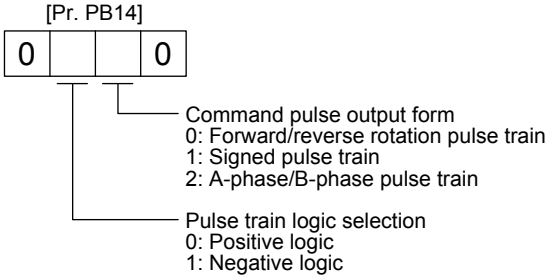
(1) In station mode

Select the output functions with [Pr. PTC004] for A-axis and [Pr. PTC020] for B-axis.



(2) In axis mode

Select the output functions with [Pr. PB14].



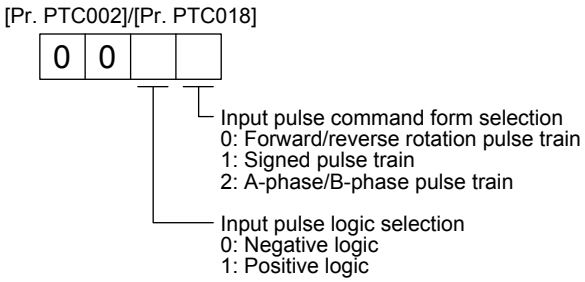
6.7.5 Input pulse form

The following three different types of input pulses are available.

Connection form	Signal name	Forward/reverse rotation pulse train	Signed pulse train	A-phase/B-phase pulse train
Differential line driver connection	FAP, FAN	CW (forward rotation pulse train)	PULSE (pulse train)	A (A-phase)
	FBP, FBN	CCW (reverse rotation pulse train)	SIGN (sign)	B (B-phase)

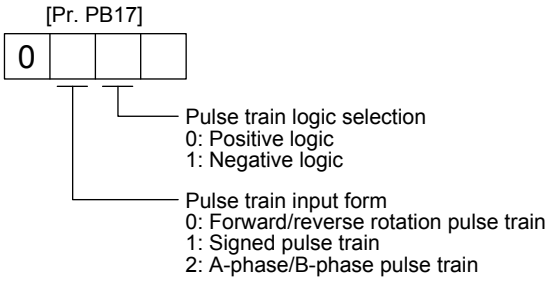
(1) In station mode

Select the input functions with [Pr. PTC002] for A-axis and [Pr. PTC018] for B-axis.



(2) In axis mode

Select the input functions with [Pr. PB17].



7. MR-MT2300 ANALOG I/O MODULE

7.1 Summary

The MR-MT2300 analog I/O module allows analog input/output at resolution of 16 bits.

7.2 Standard specifications

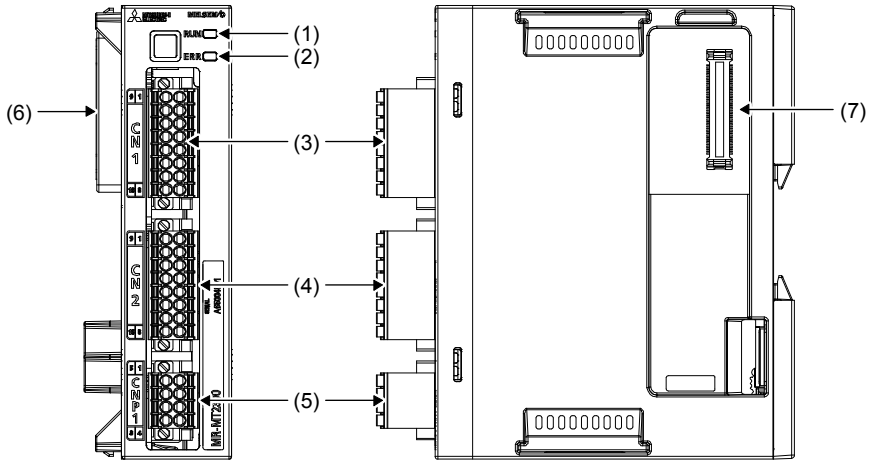
Item		MR-MT2300 analog I/O module
Control circuit power supply		Supplied from the head module (24 V DC ± 10%, 0.1 A)
Analog input	Number of input channels	4
	Input voltage range	-10 V DC to +10 V DC/-5 V DC to +5 V DC
	Resolution	±10 V range: 0.334 mV ±5 V range: 0.167 mV
	Conversion accuracy	±0.1% (25 °C) / ±0.3% (0 °C to 60 °C)
	Conversion speed	20 μs
Analog output	Number of output channels	4
	Output voltage range	-10 V DC to +10 V DC
	Resolution	0.319 mV
	Conversion accuracy	±0.4% (25 °C) / ±0.5% (0 °C to 60 °C)
	Conversion speed	40 μs
Analog power supply	Voltage	24 V DC
	Permissible voltage fluctuation	24 V DC ± 10%
	Current capacity [A]	0.1
Compliance to global standards		Refer to section 1.3.
Structure (IP rating)		Refer to section 1.3.
Environment		Refer to section 1.3.
Mass [kg]		0.2

7.3 Function list

The following lists the functions of the MR-MT2300 analog I/O module. For details and usage of the functions, refer to the manual for the controller.

Function	Description
Analog input function	This function sends analog data of analog input signals to the controller.
Analog output function	This function outputs specified analog values from the controller.
Analog input averaging function	This function averages the analog data of multiple analog input signals and sends it to the controller.
Maximum/minimum value holding function	This function sends analog data of analog input signals with the maximum and minimum values held.

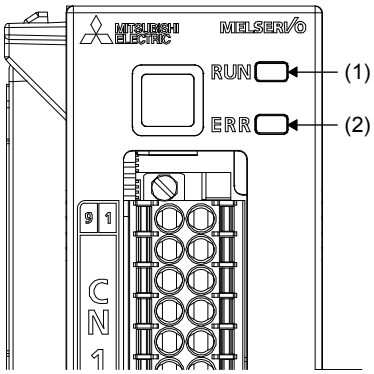
7.4 Parts identification



No.	Name/application	Detailed explanation
(1)	Status display LED (RUN) Indicates the operating status of the module.	Section 7.5
(2)	Status display LED (ERR) Indicates that an error has occurred in the module.	
(3)	Analog input signal connector (CN1) Used to connect analog input signals.	Section 7.6
(4)	Analog output signal connector (CN2) Connect the analog output signals.	
(5)	Analog signal power connector (CNP1) Connect the input power supply (24 V) for analog signals.	
(6)	Inter-module connection connector (CN3B) Connect with the head module or the preceding extension module.	
(7)	Inter-module connection connector (CN3A) Connect with the following extension module.	

7.5 Status display LEDs

The module status is displayed by the following two LEDs.



No.	Display	LED color	Status	Meaning
(1)	RUN	Green	On	The module has been properly powered on.
		Orange	On	Initializing
			Off	The module has not been properly powered on.
(2)	ERR	Red	Flickering	A warning has occurred.
			On	An alarm has occurred.
		Orange	On	Initializing
			Off	The module normally operates at power-on.

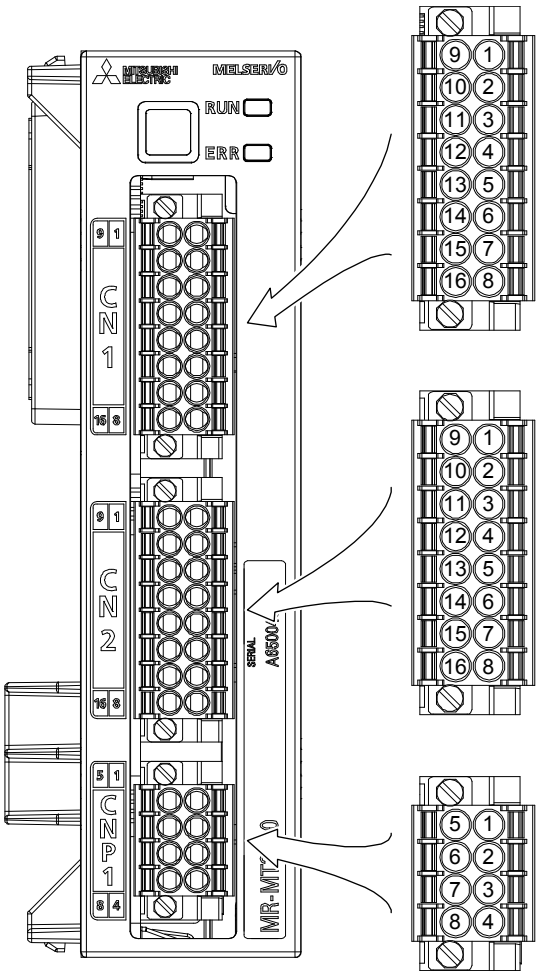
- When the module is powered on
  When the module is powered on, both the RUN and ERR LEDs turn on in orange and then show the status above after the initialization of MR-MT2300.
- When a watchdog error has occurred
  When a watchdog error has occurred, both the RUN and ERR LEDs turn on in red.

7.6 Signals and wiring

POINT

- The analog I/O module cannot execute A/D conversion or D/A conversion unless the analog power 24 V DC is supplied. Make sure to connect the analog power supply 24 V DC.
- The analog output may be unstable at power-on or shut-off.
- Turn on the analog power of the analog I/O module before turning on the control circuit power supply for the head module. Incorrect order of power-on generates [AL. 10.4].

7.6.1 Pin assignment



Pin assignment of CN1 (analog input)

No.	Symbol	Symbol	No.
9	AIN2P	AIN1P	1
10	AIN2N	AIN1N	2
11	SHD	SHD	3
12	AG	AG	4
13	AIN4P	AIN3P	5
14	AIN4N	AIN3N	6
15	SHD	SHD	7
16	AG	AG	8

Pin assignment of CN2 (analog output)

No.	Symbol	Symbol	No.
9	AOUT2P	AOUT1P	1
10	AOUT2N	AOUT1N	2
11	SHD	SHD	3
12	AG	AG	4
13	AOUT4P	AOUT3P	5
14	AOUT4N	AOUT3N	6
15	SHD	SHD	7
16	AG	AG	8

Pin assignment of CNP1 (analog power supply)

No.	Symbol	Symbol	No.
5	24 V(+)	24 V(+)	1
6	24G	24G	2
7			3
8	FG	FG	4

7.6.2 Signal (device) explanations

(1) Input device

Device	Symbol	Connector pin No.	Function/application	I/O division
Analog input ch. 1	AIN1P AIN1N	CN1-1 CN1-2	Input analog signals. Apply a voltage of -10 V DC to +10 V DC or -5 V DC to +5 V DC between AIN_P and AIN_N. Use [Pr. PTD001] to select an input voltage range (-10 V DC to +10 V DC or -5 V DC to +5 V DC).	Analog input
Analog input ch. 2	AIN2P AIN2N	CN1-9 CN1-10		
Analog input ch. 3	AIN3P AIN3N	CN1-5 CN1-6		
Analog input ch. 4	AIN4P AIN4N	CN1-13 CN1-14		

(2) Output device

Device	Symbol	Connector pin No.	Function/application	I/O division
Analog output ch. 1	AOUT1P AOUT1N	CN2-1 CN2-2	Outputs analog signals. A voltage is outputted between AOUT_P and AOUT_N. Output voltage: ±10 V	Analog output
Analog output ch. 2	AOUT2P AOUT2N	CN2-9 CN2-10		
Analog output ch. 3	AOUT3P AOUT3N	CN2-5 CN2-6		
Analog output ch. 4	AOUT4P AOUT4N	CN2-13 CN2-14		

(3) Power supply

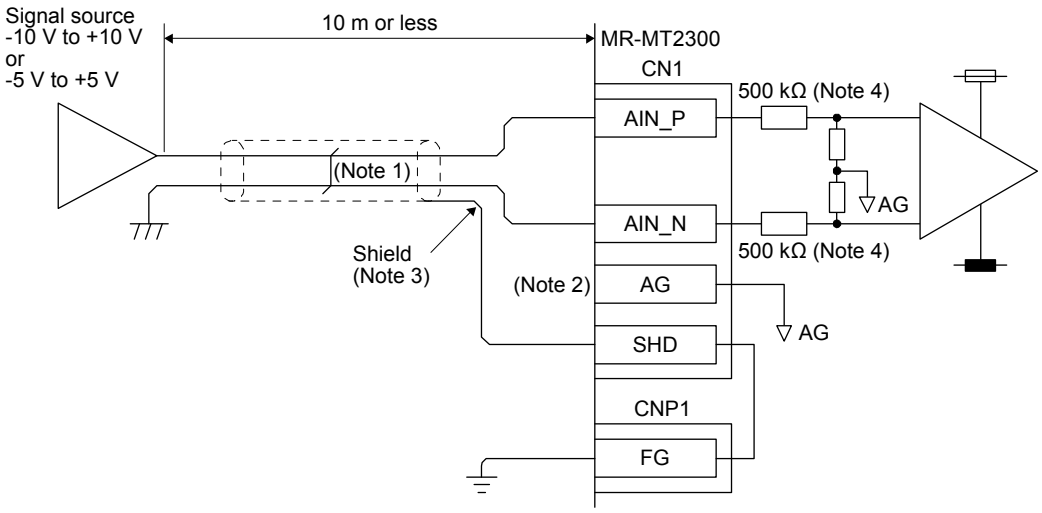
Signal name	Symbol	Connector pin No.	Function/application
Analog power supply input	24 V(+)	CNP1-1 CNP1-5	Analog power supply terminals. Input the 24 V DC (24 V DC ± 10%). Connect + of the 24 V DC external power supply.
	24G	CNP1-2 CNP1-6	Analog power supply terminals. Connect - of the 24 V DC external power supply.
Grounding	FG	CNP1-4 CNP1-8	Grounding terminals. Use them for grounding.

7.6.3 Description of interfaces

This section provides the details of the I/O signal interfaces (refer to the I/O division in the table) given in section 7.6.2. Refer to this section and make connection with the external device.

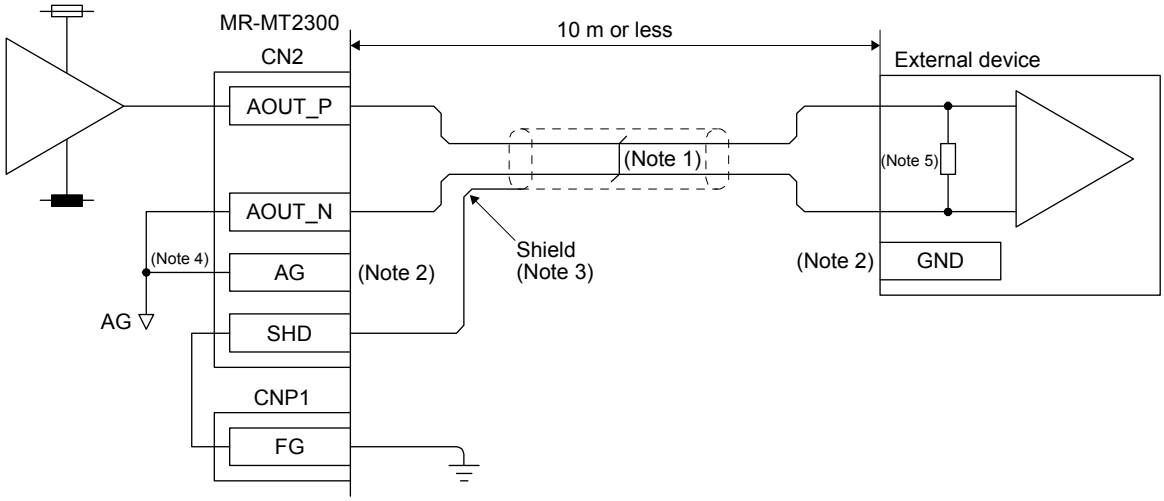
(1) Analog input

POINT
●If the circuit between terminals of unused channels remains open, an unstable voltage value will be inputted. Short-circuit the input terminals "AIN_P" and "AIN_N" of unused channels to prevent this problem.



Note 1. Use a two-core twisted cable for wiring.
2. When there is a potential difference between the AG terminal and the GND of an external device, connect the AG terminal and the GND of the external device.
3. Be sure to connect the shielded wire of each channel to the SHD terminal and ground the FG terminal.
4. This value is the input resistance of analog input.

(2) Analog output



Note 1. Use a two-core twisted cable for wiring.
2. When there is a potential difference between the AG terminal and the GND of an external device, connect the AG terminal and the GND of the external device.
3. Be sure to connect the shielded wire of each channel to the SHD terminal and ground the FG terminal.
4. The AG terminal and the AOUT_N terminal of each channel are connected inside the module.
5. The load resistance of external device must be 1 kΩ or higher.

MEMO

8. MR-MT2400 ENCODER I/F MODULE

8.1 Summary

The MR-MT2400 encoder I/F module sends position data received from an encoder to the servo system controller through SSCNET III/H communications.
The servo system controller performs the position management and fully closed loop control by using the position data obtained through SSCNET III/H communications.

8.2 Standard specifications

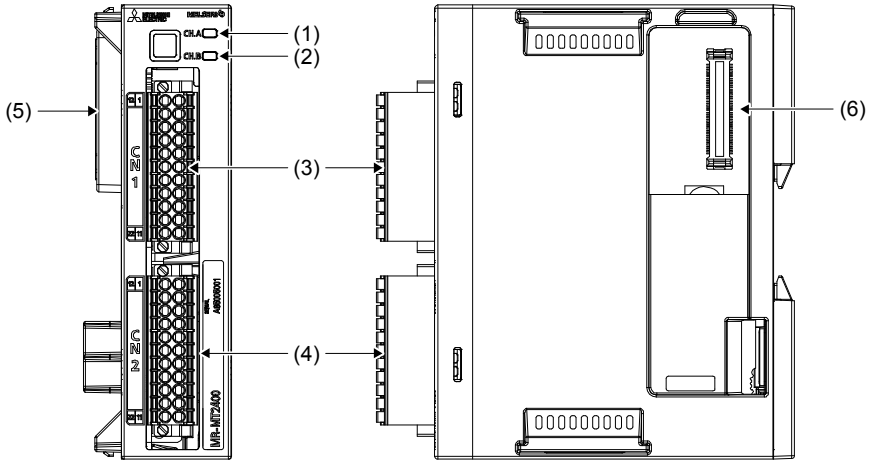
Item	MR-MT2400 encoder I/F module
Control circuit power supply	Supplied from the head module (24 V DC ± 10%, 0.2 A)
Number of encoder channels	2
Supported encoder communication	SSI Transmission speed: 100 kbps/200 kbps
Compliance to global standards	Refer to section 1.3.
Structure (IP rating)	Refer to section 1.3.
Environment	Refer to section 1.3.
Mass [kg]	0.2

8.3 Function list

The following table lists the functions of the MR-MT2400 encoder I/F module. For details and usage of the functions, refer to the manual for the controller.

Function	Description
Encoder input function	This function sends position data received from the encoder to the controller. This function supports the open-standard encoder interface.

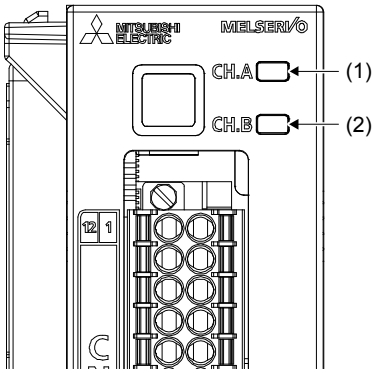
8.4 Parts identification



No.	Name/application	Detailed explanation
(1)	Status display LED (CH.A) Indicates the status of ch. A.	Section 8.5
(2)	Status display LED (CH.B) Indicates the status of ch. B.	
(3)	Encoder signal input connector (CN1) Input SSI signals.	Section 8.6
(4)	Encoder signal input connector (CN2)	
(5)	Inter-module connection connector (CN3B) Connect with the head module or the preceding extension module.	
(6)	Inter-module connection connector (CN3A) Connect with the following extension module.	

8.5 Status display LEDs

The module status is displayed by the following two LEDs.

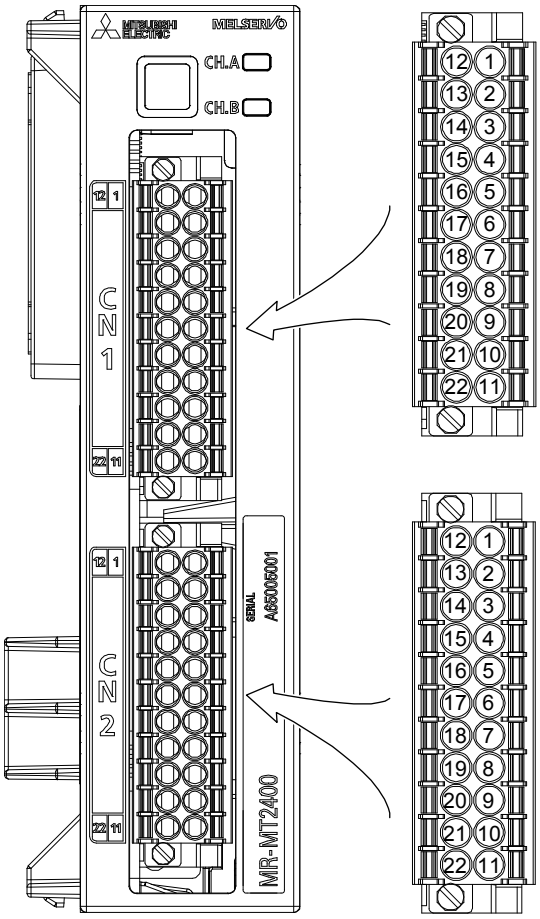


No.	Display	LED color	Status	Meaning
(1)	CH.A	Green	On	The module has been properly powered on and is waiting for Ch. A operation to be enabled.
		Red	Flickering	A warning has occurred in Ch. A.
			On	An alarm has occurred in Ch. A.
		Orange	On	Initializing
			Off	The module has not been properly powered on.
(2)	CH.B	Green	On	The module has been properly powered on and is waiting for Ch. B operation to be enabled.
		Red	Flickering	A warning has occurred in Ch. B.
			On	An alarm has occurred in Ch. B.
		Orange	On	Initializing
			Off	The module has not been properly powered on.

- When the module is powered on
  When the module is powered on, both the CH.A and CH.B LEDs turn on in orange and then show the status above when the communications with the head module are established and the runtime is started.
- When a watchdog error has occurred
  When a watchdog error has occurred, both the CH.A and CH.B LEDs turn on in red.

8.6 Signals and wiring

8.6.1 Pin assignment



Pin assignment of CN1

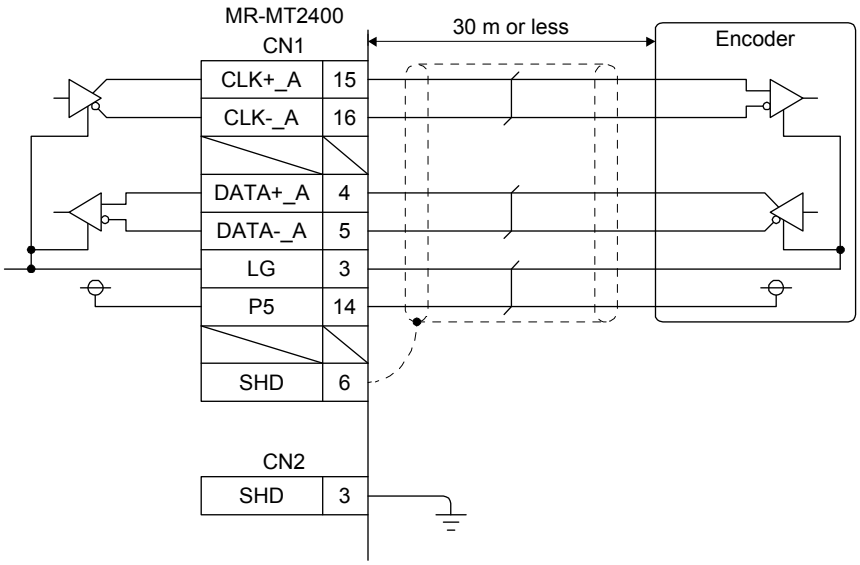
No.	Symbol	Symbol	No.
12			1
13			2
14	P5	LG	3
15	CLK+_A	DATA+_A	4
16	CLK-_A	DATA-_A	5
17	SHD	SHD	6
18			7
19			8
20	P5	LG	9
21	CLK+_B	DATA+_B	10
22	CLK-_B	DATA-_B	11

Pin assignment of CN2

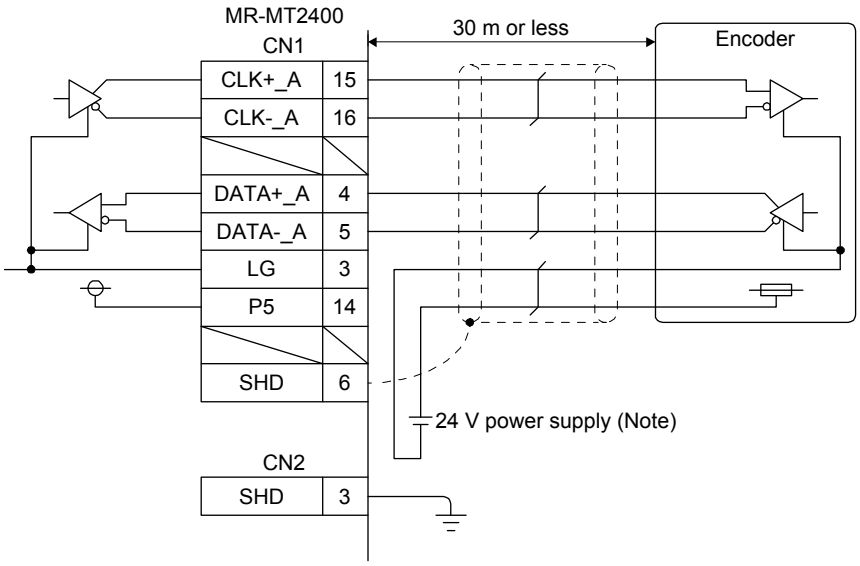
No.	Symbol	Symbol	No.
12			1
13			2
14	SHD	SHD	3
15			4
16			5
17			6
18			7
19			8
20			9
21			10
22			11

8.6.2 Connecting SSI-compatible encoders

(1) 5 V power supply specifications



(2) 24 V power supply specifications



Note. Supply the power to the encoder externally if the power supplied to the encoder is other than 5 V.

9. PARAMETERS

⚠CAUTION	●Never make a drastic adjustment or change to the parameter values as doing so will make the operation unstable. ●Do not change the parameter settings as described below. Doing so may cause an unexpected condition such as failing to start up the sensing module. ・Changing the values of the parameters for manufacturer setting ・Setting a value outside the range ・Changing the fixed values in the digits of a parameter ●When writing parameters from the controller, check that the station number or axis number of the sensing module is set correctly. If the set station number or axis number is incorrect, the parameter setting values of a different station or axis will be written, leading to unexpected operations of the sensing module.

POINT

●When you connect the sensing module to a servo system controller, parameter values of the servo system controller will be written to each parameter.
●Setting may not be made to some parameters and their ranges depending on the servo system controller model, sensing module, and MELSOFT MT Works2 software version. For details, refer to the servo system controller user's manual. Check the software version of the sensing module using MELSOFT MT Works2.

9.1 Station mode

9.1.1 Parameter list

POINT

●The parameter whose symbol is preceded by * is enabled with the following conditions:
*: After setting the parameter, cycle the power or reset the controller.
**: After setting the parameter, cycle the power.

(1) MR-MT2010 SSCNET III/H head module

No.	Symbol	Name	Initial value	Unit
PTA001	*HDI11	DI1 (CN2-13) setting 1	0000h	
PTA002	*HDI12	DI1 (CN2-13) setting 2	0000h	
PTA003	*HDI21	DI2 (CN2-1) setting 1	0000h	
PTA004	*HDI22	DI2 (CN2-1) setting 2	0000h	
PTA005	*HDI31	DI3 (CN2-14) setting 1	0000h	
PTA006	*HDI32	DI3 (CN2-14) setting 2	0000h	
PTA007	*HDI41	DI4 (CN2-2) setting 1	0000h	
PTA008	*HDI42	DI4 (CN2-2) setting 2	0000h	
PTA009	*HDI51	DI5 (CN2-15) setting 1	0000h	
PTA010	*HDI52	DI5 (CN2-15) setting 2	0000h	
PTA011	*HDI61	DI6 (CN2-3) setting 1	0000h	
PTA012	*HDI62	DI6 (CN2-3) setting 2	0000h	
PTA013	*HDI71	DI7 (CN2-16) setting 1	0000h	
PTA014	*HDI72	DI7 (CN2-16) setting 2	0000h	
PTA015	*HDI81	DI8 (CN2-4) setting 1	0000h	
PTA016	*HDI82	DI8 (CN2-4) setting 2	0000h	
PTA017	*HDI91	DI9 (CN2-17) setting 1	0000h	
PTA018	*HDI92	DI9 (CN2-17) setting 2	0000h	
PTA019	*HDIA1	DI10 (CN2-5) setting 1	0000h	
PTA020	*HDIA2	DI10 (CN2-5) setting 2	0000h	
PTA021	*HDIB1	DI11 (CN2-18) setting 1	0000h	
PTA022	*HDIB2	DI11 (CN2-18) setting 2	0000h	
PTA023	*HDIC1	DI12 (CN2-6) setting 1	0000h	
PTA024	*HDIC2	DI12 (CN2-6) setting 2	0000h	
PTA025		For manufacturer setting	0000h	
PTA026			0003h	
PTA027	*HDO11	DO1 (CN2-20) setting 1	0000h	
PTA028	*HDO12	DO1 (CN2-20) setting 2	0000h	
PTA029	*HDO21	DO2 (CN2-8) setting 1	0000h	
PTA030	*HDO22	DO2 (CN2-8) setting 2	0000h	
PTA031		For manufacturer setting	0000h	
PTA032	*AOP1	Function selection A-1	0000h	
PTA033	*LO1	Level output function - Setting group 1 - Detailed setting 1	0000h	
PTA034	LONL1	Level output function - Setting group 1 - Lower limit setting - Lower	0000h	
PTA035	LONH1	Level output function - Setting group 1 - Lower limit setting - Upper	0000h	
PTA036	LOFL1	Level output function - Setting group 1 - Upper limit setting - Lower	0000h	
PTA037	LOFH1	Level output function - Setting group 1 - Upper limit setting - Upper	0000h	
PTA038	*LO2	Level output function - Setting group 2 - Detailed setting 1	0000h	
PTA039	LONL2	Level output function - Setting group 2 - Lower limit setting - Lower	0000h	
PTA040	LONH2	Level output function - Setting group 2 - Lower limit setting - Upper	0000h	
PTA041	LOFL2	Level output function - Setting group 2 - Upper limit setting - Lower	0000h	
PTA042	LOFH2	Level output function - Setting group 2 - Upper limit setting - Upper	0000h	
PTA043		For manufacturer setting	0000h	
PTA044			0000h	
PTA045			0000h	
PTA046			0000h	
PTA047			0000h	
PTA048			0000h	
PTA049			0000h	
PTA050			0000h	

No.	Symbol	Name	Initial value	Unit
PTA051		For manufacturer setting	0000h	
PTA052			0000h	
PTA053			0000h	
PTA054			0000h	
PTA055			0000h	
PTA056			0000h	
PTA057			0000h	
PTA058			0000h	
PTA059			0000h	
PTA060			0000h	
PTA061			0000h	
PTA062			0000h	
PTA063			0000h	
PTA064			0000h	
PTA065			0000h	
PTA066			0000h	
PTA067			0000h	
PTA068			0000h	
PTA069			0000h	
PTA070			0000h	
PTA071			0000h	
PTA072			0000h	
PTA073			0000h	
PTA074			0000h	
PTA075			0000h	
PTA076			0000h	
PTA077			0000h	
PTA078			0000h	
PTA079			0000h	
PTA080			0000h	
PTA081			0000h	
PTA082			0000h	
PTA083			0000h	
PTA084			0000h	
PTA085			0000h	
PTA086			0000h	
PTA087			0000h	
PTA088			0000h	
PTA089			0000h	
PTA090			0000h	
PTA091			0000h	
PTA092			0000h	
PTA093			0000h	
PTA094			0000h	
PTA095			0000h	
PTA096			0000h	
PTA097			0000h	
PTA098			0000h	
PTA099			0000h	
PTA100			0000h	
PTA101			0000h	
PTA102			0000h	
PTA103			0000h	
PTA104			0000h	
PTA105			0000h	

No.	Symbol	Name	Initial value	Unit
PTA106		For manufacturer setting	0000h	
PTA107			0000h	
PTA108			0000h	
PTA109			0000h	
PTA110			0000h	
PTA111			0000h	
PTA112			0000h	
PTA113			0000h	
PTA114			0000h	
PTA115			0000h	
PTA116			0000h	
PTA117			0000h	
PTA118			0000h	
PTA119			0000h	
PTA120			0000h	
PTA121			0000h	
PTA122			0000h	
PTA123			0000h	
PTA124			0000h	
PTA125			0000h	
PTA126			0000h	
PTA127			0000h	
PTA128			0000h	

(2) MR-MT2100 I/O module

No.	Symbol	Name	Initial value	Unit
PTB001	*IDI11	DI1 (CN1-10) setting 1	0000h	
PTB002	*IDI12	DI1 (CN1-10) setting 2	0000h	
PTB003	*IDI21	DI2 (CN1-1) setting 1	0000h	
PTB004	*IDI22	DI2 (CN1-1) setting 2	0000h	
PTB005	*IDI31	DI3 (CN1-11) setting 1	0000h	
PTB006	*IDI32	DI3 (CN1-11) setting 2	0000h	
PTB007	*IDI41	DI4 (CN1-2) setting 1	0000h	
PTB008	*IDI42	DI4 (CN1-2) setting 2	0000h	
PTB009	*IDI51	DI5 (CN1-12) setting 1	0000h	
PTB010	*IDI52	DI5 (CN1-12) setting 2	0000h	
PTB011	*IDI61	DI6 (CN1-3) setting 1	0000h	
PTB012	*IDI62	DI6 (CN1-3) setting 2	0000h	
PTB013	*IDI71	DI7 (CN1-13) setting 1	0000h	
PTB014	*IDI72	DI7 (CN1-13) setting 2	0000h	
PTB015	*IDI81	DI8 (CN1-4) setting 1	0000h	
PTB016	*IDI82	DI8 (CN1-4) setting 2	0000h	
PTB017	*IDI91	DI9 (CN1-14) setting 1	0000h	
PTB018	*IDI92	DI9 (CN1-14) setting 2	0000h	
PTB019	*IDIA1	DI10 (CN1-5) setting 1	0000h	
PTB020	*IDIA2	DI10 (CN1-5) setting 2	0000h	
PTB021	*IDIB1	DI11 (CN1-15) setting 1	0000h	
PTB022	*IDIB2	DI11 (CN1-15) setting 2	0000h	
PTB023	*IDIC1	DI12 (CN1-6) setting 1	0000h	
PTB024	*IDIC2	DI12 (CN1-6) setting 2	0000h	
PTB025	*IDID1	DI13 (CN1-16) setting 1	0000h	
PTB026	*IDID2	DI13 (CN1-16) setting 2	0000h	
PTB027	*IDIE1	DI14 (CN1-7) setting 1	0000h	
PTB028	*IDIE2	DI14 (CN1-7) setting 2	0000h	
PTB029	*IDIF1	DI15 (CN1-17) setting 1	0000h	
PTB030	*IDIF2	DI15 (CN1-17) setting 2	0000h	
PTB031	*IDIG1	DI16 (CN1-8) setting 1	0000h	
PTB032	*IDIG2	DI16 (CN1-8) setting 2	0000h	
PTB033		For manufacturer setting	0000h	
PTB034			0003h	
PTB035			0000h	
PTB036			0000h	
PTB037	*IDO11	DO1 (CN2-11) setting 1	0000h	
PTB038	*IDO12	DO1 (CN2-11) setting 2	0000h	
PTB039	*IDO21	DO2 (CN2-1) setting 1	0000h	
PTB040	*IDO22	DO2 (CN2-1) setting 2	0000h	
PTB041	*IDO31	DO3 (CN2-12) setting 1	0000h	
PTB042	*IDO32	DO3 (CN2-12) setting 2	0000h	
PTB043	*IDO41	DO4 (CN2-2) setting 1	0000h	
PTB044	*IDO42	DO4 (CN2-2) setting 2	0000h	
PTB045	*IDO51	DO5 (CN2-13) setting 1	0000h	
PTB046	*IDO52	DO5 (CN2-13) setting 2	0000h	
PTB047	*IDO61	DO6 (CN2-3) setting 1	0000h	
PTB048	*IDO62	DO6 (CN2-3) setting 2	0000h	
PTB049	*IDO71	DO7 (CN2-14) setting 1	0000h	
PTB050	*IDO72	DO7 (CN2-14) setting 2	0000h	

No.	Symbol	Name	Initial value	Unit
PTB051	*IDO81	DO8 (CN2-4) setting 1	0000h	
PTB052	*IDO82	DO8 (CN2-4) setting 2	0000h	
PTB053	*IDO91	DO9 (CN2-15) setting 1	0000h	
PTB054	*IDO92	DO9 (CN2-15) setting 2	0000h	
PTB055	*IDOA1	DO10 (CN2-5) setting 1	0000h	
PTB056	*IDOA2	DO10 (CN2-5) setting 2	0000h	
PTB057	*IDOB1	DO11 (CN2-16) setting 1	0000h	
PTB058	*IDOB2	DO11 (CN2-16) setting 2	0000h	
PTB059	*IDOC1	DO12 (CN2-6) setting 1	0000h	
PTB060	*IDOC2	DO12 (CN2-6) setting 2	0000h	
PTB061	*IDOD1	DO13 (CN2-17) setting 1	0000h	
PTB062	*IDOD2	DO13 (CN2-17) setting 2	0000h	
PTB063	*IDOE1	DO14 (CN2-7) setting 1	0000h	
PTB064	*IDOE2	DO14 (CN2-7) setting 2	0000h	
PTB065	*IDOF1	DO15 (CN2-18) setting 1	0000h	
PTB066	*IDOF2	DO15 (CN2-18) setting 2	0000h	
PTB067	*IDOG1	DO16 (CN2-8) setting 1	0000h	
PTB068	*IDOG2	DO16 (CN2-8) setting 2	0000h	
PTB069	*IDO	Digital output connection setting	0000h	
PTB070		For manufacturer setting	0000h	
PTB071			0000h	
PTB072			0000h	
PTB073	*ILO1	Level output function - Setting group 1 - Detailed setting 1	0000h	
PTB074	ILONL1	Level output function - Setting group 1 - Lower limit setting - Lower	0000h	
PTB075	ILONH1	Level output function - Setting group 1 - Lower limit setting - Upper	0000h	
PTB076	ILOFL1	Level output function - Setting group 1 - Upper limit setting - Lower	0000h	
PTB077	ILOFH1	Level output function - Setting group 1 - Upper limit setting - Upper	0000h	
PTB078	*ILO2	Level output function - Setting group 2 - Detailed setting 1	0000h	
PTB079	ILONL2	Level output function - Setting group 2 - Lower limit setting - Lower	0000h	
PTB080	ILONH2	Level output function - Setting group 2 - Lower limit setting - Upper	0000h	
PTB081	ILOFL2	Level output function - Setting group 2 - Upper limit setting - Lower	0000h	
PTB082	ILOFH2	Level output function - Setting group 2 - Upper limit setting - Upper	0000h	
PTB083	*ILO3	Level output function - Setting group 3 - Detailed setting 1	0000h	
PTB084	ILONL3	Level output function - Setting group 3 - Lower limit setting - Lower	0000h	
PTB085	ILONH3	Level output function - Setting group 3 - Lower limit setting - Upper	0000h	
PTB086	ILOFL3	Level output function - Setting group 3 - Upper limit setting - Lower	0000h	
PTB087	ILOFH3	Level output function - Setting group 3 - Upper limit setting - Upper	0000h	
PTB088	*ILO4	Level output function - Setting group 4 - Detailed setting 1	0000h	
PTB089	ILONL4	Level output function - Setting group 4 - Lower limit setting - Lower	0000h	
PTB090	ILONH4	Level output function - Setting group 4 - Lower limit setting - Upper	0000h	
PTB091	ILOFL4	Level output function - Setting group 4 - Upper limit setting - Lower	0000h	
PTB092	ILOFH4	Level output function - Setting group 4 - Upper limit setting - Upper	0000h	
PTB093	*ILO5	Level output function - Setting group 5 - Detailed setting 1	0000h	
PTB094	ILONL5	Level output function - Setting group 5 - Lower limit setting - Lower	0000h	
PTB095	ILONH5	Level output function - Setting group 5 - Lower limit setting - Upper	0000h	
PTB096	ILOFL5	Level output function - Setting group 5 - Upper limit setting - Lower	0000h	
PTB097	ILOFH5	Level output function - Setting group 5 - Upper limit setting - Upper	0000h	
PTB098	*ILO6	Level output function - Setting group 6 - Detailed setting 1	0000h	
PTB099	ILONL6	Level output function - Setting group 6 - Lower limit setting - Lower	0000h	
PTB100	ILONH6	Level output function - Setting group 6 - Lower limit setting - Upper	0000h	

No.	Symbol	Name	Initial value	Unit
PTB101	ILOFL6	Level output function - Setting group 6 - Upper limit setting - Lower	0000h	
PTB102	ILOFH6	Level output function - Setting group 6 - Upper limit setting - Upper	0000h	
PTB103	*ILO7	Level output function - Setting group 7 - Detailed setting 1	0000h	
PTB104	ILONL7	Level output function - Setting group 7 - Lower limit setting - Lower	0000h	
PTB105	ILONH7	Level output function - Setting group 7 - Lower limit setting - Upper	0000h	
PTB106	ILOFL7	Level output function - Setting group 7 - Upper limit setting - Lower	0000h	
PTB107	ILOFH7	Level output function - Setting group 7 - Upper limit setting - Upper	0000h	
PTB108	*ILO8	Level output function - Setting group 8 - Detailed setting 1	0000h	
PTB109	ILONL8	Level output function - Setting group 8 - Lower limit setting - Lower	0000h	
PTB110	ILONH8	Level output function - Setting group 8 - Lower limit setting - Upper	0000h	
PTB111	ILOFL8	Level output function - Setting group 8 - Upper limit setting - Lower	0000h	
PTB112	ILOFH8	Level output function - Setting group 8 - Upper limit setting - Upper	0000h	
PTB113		For manufacturer setting	0000h	
PTB114			0000h	
PTB115			0000h	
PTB116			0000h	
PTB117			0000h	
PTB118			0000h	
PTB119			0000h	
PTB120			0000h	
PTB121			0000h	
PTB122			0000h	
PTB123			0000h	
PTB124			0000h	
PTB125			0000h	
PTB126			0000h	
PTB127			0000h	
PTB128			0000h	
PTB129			0000h	
PTB130			0000h	
PTB131			0000h	
PTB132			0000h	
PTB133			0000h	
PTB134			0000h	
PTB135			0000h	
PTB136			0000h	
PTB137			0000h	
PTB138			0000h	
PTB139			0000h	
PTB140			0000h	
PTB141			0000h	
PTB142			0000h	
PTB143			0000h	
PTB144			0000h	
PTB145			0000h	
PTB146			0000h	
PTB147			0000h	
PTB148			0000h	
PTB149			0000h	
PTB150			0000h	

No.	Symbol	Name	Initial value	Unit
PTB151		For manufacturer setting	0000h	
PTB152			0000h	
PTB153			0000h	
PTB154			0000h	
PTB155			0000h	
PTB156			0000h	
PTB157			0000h	
PTB158			0000h	
PTB159			0000h	
PTB160			0000h	
PTB161			0000h	
PTB162			0000h	
PTB163			0000h	
PTB164			0000h	
PTB165			0000h	
PTB166			0000h	
PTB167			0000h	
PTB168			0000h	
PTB169			0000h	
PTB170			0000h	
PTB171			0000h	
PTB172			0000h	
PTB173			0000h	
PTB174			0000h	
PTB175			0000h	
PTB176			0000h	
PTB177			0000h	
PTB178			0000h	
PTB179			0000h	
PTB180			0000h	
PTB181			0000h	
PTB182			0000h	
PTB183			0000h	
PTB184			0000h	
PTB185			0000h	
PTB186			0000h	
PTB187			0000h	
PTB188			0000h	
PTB189			0000h	
PTB190			0000h	
PTB191			0000h	
PTB192			0000h	
PTB193			0000h	
PTB194			0000h	
PTB195			0000h	
PTB196			0000h	
PTB197			0000h	
PTB198			0000h	
PTB199			0000h	
PTB200			0000h	
PTB201			0000h	
PTB202			0000h	
PTB203			0000h	
PTB204			0000h	
PTB205			0000h	

No.	Symbol	Name	Initial value	Unit
PTB206		For manufacturer setting	0000h	
PTB207			0000h	
PTB208			0000h	
PTB209			0000h	
PTB210			0000h	
PTB211			0000h	
PTB212			0000h	
PTB213			0000h	
PTB214			0000h	
PTB215			0000h	
PTB216			0000h	
PTB217			0000h	
PTB218			0000h	
PTB219			0000h	
PTB220			0000h	
PTB221			0000h	
PTB222			0000h	
PTB223			0000h	
PTB224			0000h	
PTB225			0000h	
PTB226			0000h	
PTB227			0000h	
PTB228			0000h	
PTB229			0000h	
PTB230			0000h	
PTB231			0000h	
PTB232			0000h	
PTB233			0000h	
PTB234			0000h	
PTB235			0000h	
PTB236			0000h	
PTB237			0000h	
PTB238			0000h	
PTB239			0000h	
PTB240			0000h	
PTB241			0000h	
PTB242			0000h	
PTB243			0000h	
PTB244			0000h	
PTB245			0000h	
PTB246			0000h	
PTB247			0000h	
PTB248			0000h	
PTB249			0000h	
PTB250			0000h	
PTB251			0000h	
PTB252			0000h	
PTB253			0000h	
PTB254			0000h	
PTB255			0000h	
PTB256			0000h	

(3) MR-MT2200 pulse I/O module

No.	Symbol	Name	Initial value	Unit
PTC001	*PFSA	A-axis setting	0000h	
PTC002	*PIFA1	A-axis input function setting 1	0000h	
PTC003	*PIFA2	A-axis input function setting 2	0000h	
PTC004	*POFA1	A-axis output function selection 1	0000h	
PTC005	*POFA2	A-axis output function selection 2	0000h	
PTC006		For manufacturer setting	0000h	
PTC007	*CMXA	A-axis input-side electronic gear setting	0000h	
PTC008	*CDVA	A-axis output-side electronic gear setting	0000h	
PTC009		For manufacturer setting	0000h	
PTC010			0000h	
PTC011			0000h	
PTC012			0000h	
PTC013			0000h	
PTC014			0000h	
PTC015			0000h	
PTC016			0000h	
PTC017	*PFSB	B-axis setting	0000h	
PTC018	*PIFB1	B-axis input function setting 1	0000h	
PTC019	*PIFB2	B-axis input function setting 2	0000h	
PTC020	*POFB1	B-axis output function selection 1	0000h	
PTC021	*POFB2	B-axis output function selection 2	0000h	
PTC022		For manufacturer setting	0000h	
PTC023	*CMXB	B-axis input-side electronic gear setting	0000h	
PTC024	*CDVB	B-axis input-side electronic gear setting	0000h	
PTC025		For manufacturer setting	0000h	
PTC026			0000h	
PTC027			0000h	
PTC028			0000h	
PTC029			0000h	
PTC030			0000h	
PTC031			0000h	
PTC032			0000h	
PTC033	*IDI1A1	DI1A (CN1-8) setting 1	0000h	
PTC034		For manufacturer setting	0000h	
PTC035	*IDI2A1	DI2A (CN1-10) setting 1	0000h	
PTC036		For manufacturer setting	0000h	
PTC037	*IDI3A1	DI3A (CN1-7) setting 1	0000h	
PTC038		For manufacturer setting	0000h	
PTC039	*IDI4A1	DI4A (CN1-9) setting 1	0000h	
PTC040		For manufacturer setting	0000h	
PTC041	*IDI5A1	DI5A (CN1-19) setting 1	0000h	
PTC042		For manufacturer setting	0000h	
PTC043	*IDI6A1	DI6A (CN1-20) setting 1	0000h	
PTC044		For manufacturer setting	0000h	
PTC045	*IDI7A1	DI7A (CN1-21) setting 1	0000h	
PTC046		For manufacturer setting	0000h	
PTC047	*IDI1B1	DI1B (CN2-8) setting 1	0000h	
PTC048		For manufacturer setting	0000h	
PTC049	*IDI2B1	DI2B (CN2-10) setting 1	0000h	
PTC050		For manufacturer setting	0000h	

No.	Symbol	Name	Initial value	Unit
PTC051	*IDI3B1	DI3B (CN2-7) setting 1	0000h	
PTC052		For manufacturer setting	0000h	
PTC053	*IDI4B1	DI4B (CN2-9) setting 1	0000h	
PTC054		For manufacturer setting	0000h	
PTC055	*IDI5B1	DI5B (CN2-19) setting 1	0000h	
PTC056		For manufacturer setting	0000h	
PTC057	*IDI6B1	DI6B (CN2-20) setting 1	0000h	
PTC058		For manufacturer setting	0000h	
PTC059	*IDI7B1	DI7B (CN2-21) setting 1	0000h	
PTC060		For manufacturer setting	0000h	
PTC061			0000h	
PTC062			0003h	
PTC063			0000h	
PTC064			0000h	
PTC065	*IDO1A1	DO1A (CN1-11) setting 1	0000h	
PTC066	*IDO1A2	DO1A (CN1-11) setting 2	0000h	
PTC067	*IDO2A1	DO2A (CN1-12) setting 1	0000h	
PTC068	*IDO2A2	DO2A (CN1-12) setting 2	0000h	
PTC069	*IDO3A1	DO3A (CN1-23) setting 1	0000h	
PTC070	*IDO3A2	DO3A (CN1-23) setting 2	0000h	
PTC071	*IDO4A1	DO4A (CN1-1) setting 1	0000h	
PTC072	*IDO4A2	DO4A (CN1-1) setting 2	0000h	
PTC073	*IDO5A1	DO5A (CN1-13) setting 1	0000h	
PTC074	*IDO5A2	DO5A (CN1-13) setting 2	0000h	
PTC075	*IDO1B1	DO1B (CN2-11) setting 1	0000h	
PTC076	*IDO1B2	DO1B (CN2-11) setting 2	0000h	
PTC077	*IDO2B1	DO2B (CN2-12) setting 1	0000h	
PTC078	*IDO2B2	DO2B (CN2-12) setting 2	0000h	
PTC079	*IDO3B1	DO3B (CN2-23) setting 1	0000h	
PTC080	*IDO3B2	DO3B (CN2-23) setting 2	0000h	
PTC081	*IDO4B1	DO4B (CN2-1) setting 1	0000h	
PTC082	*IDO4B2	DO4B (CN2-1) setting 2	0000h	
PTC083	*IDO5B1	DO5B (CN2-13) setting 1	0000h	
PTC084	*IDO5B2	DO5B (CN2-13) setting 2	0000h	
PTC085		For manufacturer setting	0000h	
PTC086			0000h	
PTC087			0000h	
PTC088			0000h	
PTC089			0000h	
PTC090			0000h	
PTC091			0000h	
PTC092			0000h	
PTC093			0000h	
PTC094			0000h	
PTC095			0000h	
PTC096			0000h	
PTC097			0000h	
PTC098			0000h	
PTC099			0000h	
PTC100			0000h	
PTC101			0000h	
PTC102			0000h	
PTC103			0000h	
PTC104			0000h	
PTC105			0000h	

No.	Symbol	Name	Initial value	Unit
PTC106		For manufacturer setting	0000h	
PTC107			0000h	
PTC108			0000h	
PTC109			0000h	
PTC110			0000h	
PTC111			0000h	
PTC112			0000h	
PTC113			0000h	
PTC114			0000h	
PTC115			0000h	
PTC116			0000h	
PTC117			0000h	
PTC118			0000h	
PTC119			0000h	
PTC120			0000h	
PTC121			0000h	
PTC122			0000h	
PTC123			0000h	
PTC124			0000h	
PTC125			0000h	
PTC126			0000h	
PTC127			0000h	
PTC128			0000h	

(4) MR-MT2300 analog I/O module

No.	Symbol	Name	Initial value	Unit
PTD001	*AIF1	Analog input function selection 1	0000h	
PTD002	*AI1F2	Analog input ch. 1 - Function selection 2	0000h	
PTD003	*AI1FT	Analog input ch. 1 - Primary delay filter time constant	0	[ms]
PTD004	AI1OF	Analog input ch. 1 - Offset voltage setting	0	[mV]
PTD005	*AI1SH	Analog input ch. 1 - Scaling function - Upper limit setting	20000	
PTD006	*AI1SL	Analog input ch. 1 - Scaling function - Lower limit setting	-20000	
PTD007	*AI1SF	Analog input ch. 1 - Scaling function - Shift amount setting	0	
PTD008		For manufacturer setting	0000h	
PTD009			0000h	
PTD010	*AI2F2	Analog input ch. 2 - Function selection 2	0000h	
PTD011	*AI2FT	Analog input ch. 2 - Primary delay filter time constant	0	[ms]
PTD012	AI2OF	Analog input ch. 2 - Offset voltage setting	0	[mV]
PTD013	*AI2SH	Analog input ch. 2 - Scaling function - Upper limit setting	20000	
PTD014	*AI2SL	Analog input ch. 2 - Scaling function - Lower limit setting	-20000	
PTD015	*AI2SF	Analog input ch. 2 - Scaling function - Shift amount setting	0	
PTD016		For manufacturer setting	0000h	
PTD017			0000h	
PTD018	*AI3F2	Analog input ch. 3 - Function selection 2	0000h	
PTD019	*AI3FT	Analog input ch. 3 - Primary delay filter time constant	0	[ms]
PTD020	AI3OF	Analog input ch. 3 - Offset voltage setting	0	[mV]
PTD021	*AI3SH	Analog input ch. 3 - Scaling function - Upper limit setting	20000	
PTD022	*AI3SL	Analog input ch. 3 - Scaling function - Lower limit setting	-20000	
PTD023	*AI3SF	Analog input ch. 3 - Scaling function - Shift amount setting	0	
PTD024		For manufacturer setting	0000h	
PTD025			0000h	
PTD026	*AI4F2	Analog input ch. 4 - Function selection 2	0000h	
PTD027	*AI4FT	Analog input ch. 4 - Primary delay filter time constant	0	[ms]
PTD028	AI4OF	Analog input ch. 4 - Offset voltage setting	0	[mV]
PTD029	*AI4SH	Analog input ch. 4 - Scaling function - Upper limit setting	20000	
PTD030	*AI4SL	Analog input ch. 4 - Scaling function - Lower limit setting	-20000	
PTD031	*AI4SF	Analog input ch. 4 - Scaling function - Shift amount setting	0	
PTD032		For manufacturer setting	0000h	
PTD033			0000h	
PTD034	AO1OF	Analog output ch. 1 - Offset	0	[mV]
PTD035	*AO1SH	Analog output ch. 1 - Scaling function - Upper limit setting	20000	
PTD036	*AO1SL	Analog output ch. 1 - Scaling function - Lower limit setting	-20000	
PTD037	*AO1SF	Analog output ch. 1 - Scaling function - Shift amount setting	0	
PTD038		For manufacturer setting	0000h	
PTD039			0000h	
PTD040			0000h	
PTD041			0000h	
PTD042	AO2OF	Analog output ch. 2 - Offset	0	[mV]
PTD043	*AO2SH	Analog output ch. 2 - Scaling function - Upper limit setting	20000	
PTD044	*AO2SL	Analog output ch. 2 - Scaling function - Lower limit setting	-20000	
PTD045	*AO2SF	Analog output ch. 2 - Scaling function - Shift amount setting	0	
PTD046		For manufacturer setting	0000h	
PTD047			0000h	
PTD048			0000h	
PTD049			0000h	
PTD050	AO3OF	Analog output ch. 3 - Offset	0	[mV]

No.	Symbol	Name	Initial value	Unit
PTD051	*AO3SH	Analog output ch. 3 - Scaling function - Upper limit setting	20000	
PTD052	*AO3SL	Analog output ch. 3 - Scaling function - Lower limit setting	-20000	
PTD053	*AO3SF	Analog output ch. 3 - Scaling function - Shift amount setting	0	
PTD054		For manufacturer setting	0000h	
PTD055			0000h	
PTD056			0000h	
PTD057			0000h	
PTD058	AO4OF	Analog output ch. 4 - Offset	0	[mV]
PTD059	*AO4SH	Analog output ch. 4 - Scaling function - Upper limit setting	20000	
PTD060	*AO4SL	Analog output ch. 4 - Scaling function - Lower limit setting	-20000	
PTD061	*AO4SF	Analog output ch. 4 - Scaling function - Shift amount setting	0	
PTD062		For manufacturer setting	0000h	
PTD063			0000h	
PTD064			0000h	
PTD065	*AIAVF	Analog input averaging - Signal selection	0000h	
PTD066		For manufacturer setting	0000h	
PTD067	*AIAV1C1	Analog input average 1 - Ch. 1 weighting	1	
PTD068	*AIAV1C2	Analog input average 1 - Ch. 2 weighting	1	
PTD069	*AIAV1C3	Analog input average 1 - Ch. 3 weighting	1	
PTD070	*AIAV1C4	Analog input average 1 - Ch. 4 weighting	1	
PTD071	*AIAV2C1	Analog input average 2 - Ch. 1 weighting	1	
PTD072	*AIAV2C2	Analog input average 2 - Ch. 2 weighting	1	
PTD073	*AIAV2C3	Analog input average 2 - Ch. 3 weighting	1	
PTD074	*AIAV2C4	Analog input average 2 - Ch. 4 weighting	1	
PTD075		For manufacturer setting	0000h	
PTD076			0000h	
PTD077			0000h	
PTD078			0000h	
PTD079			0000h	
PTD080			0000h	
PTD081			0000h	
PTD082			0000h	
PTD083			0000h	
PTD084			0000h	
PTD085			0000h	
PTD086			0000h	
PTD087			0000h	
PTD088			0000h	
PTD089			0000h	
PTD090			0000h	
PTD091			0000h	
PTD092			0000h	
PTD093			0000h	
PTD094			0000h	
PTD095			0000h	
PTD096			0000h	
PTD097			0000h	
PTD098			0000h	
PTD099			0000h	
PTD100			0000h	

No.	Symbol	Name	Initial value	Unit
PTD101		For manufacturer setting	0000h	
PTD102			0000h	
PTD103			0000h	
PTD104			0000h	
PTD105			0000h	
PTD106			0000h	
PTD107			0000h	
PTD108			0000h	
PTD109			0000h	
PTD110			0000h	
PTD111			0000h	
PTD112			0000h	
PTD113			0000h	
PTD114			0000h	
PTD115			0000h	
PTD116			0000h	
PTD117			0000h	
PTD118			0000h	
PTD119			0000h	
PTD120			0000h	
PTD121			0000h	
PTD122			0000h	
PTD123			0000h	
PTD124			0000h	
PTD125			0000h	
PTD126			0000h	
PTD127			0000h	
PTD128			0000h	

(5) MR-MT2400 encoder I/F module

No.	Symbol	Name	Initial value	Unit
PTE001		For manufacturer setting	0003h	
PTE002			0000h	
PTE003			0000h	
PTE004			0000h	
PTE005			0000h	
PTE006			0000h	
PTE007			0000h	
PTE008			0000h	
PTE009	**ENCA	Ch. A function selection	0000h	
PTE010		For manufacturer setting	0000h	
PTE011			0000h	
PTE012			0000h	
PTE013			0000h	
PTE014			0000h	
PTE015			0000h	
PTE016			0000h	
PTE017			0000h	
PTE018			0000h	
PTE019			0000h	
PTE020			0000h	
PTE021			0000h	
PTE022			0000h	
PTE023			0000h	
PTE024			0000h	
PTE025			0000h	
PTE026			0000h	
PTE027			0000h	
PTE028			0000h	
PTE029			0000h	
PTE030			0000h	
PTE031			0000h	
PTE032			0000h	
PTE033			0000h	
PTE034			0000h	
PTE035			0000h	
PTE036			0000h	
PTE037	**SECA1	SSI - Ch. A function setting 1	2000h	
PTE038	**SECA2	SSI - Ch. A function setting 2	0000h	
PTE039	**SECA3	SSI - Ch. A function setting 3	0000h	
PTE040	**SECA4	SSI - Ch. A function setting 4	0000h	
PTE041	**SECA5	SSI - Ch. A function setting 5	0000h	
PTE042	**SECA6	SSI - Ch. A function setting 6	0000h	
PTE043	**SDPLA	Ch. A position variation error threshold - Lower	0000h	
PTE044	**SDPHA	Ch. A position variation error threshold - Upper	0000h	
PTE045		For manufacturer setting	0000h	
PTE046			0000h	
PTE047			0000h	
PTE048			0000h	
PTE049			0000h	
PTE050			0000h	

No.	Symbol	Name	Initial value	Unit
PTE051		For manufacturer setting	0000h	
PTE052			0000h	
PTE053			0000h	
PTE054			0000h	
PTE055			0000h	
PTE056			0000h	
PTE057			0000h	
PTE058			0000h	
PTE059			0000h	
PTE060			0000h	
PTE061			0000h	
PTE062			0000h	
PTE063			0000h	
PTE064			0000h	
PTE065	**ENCB	Ch. B function selection	0000h	
PTE066		For manufacturer setting	0000h	
PTE067			0000h	
PTE068			0000h	
PTE069			0000h	
PTE070			0000h	
PTE071			0000h	
PTE072			0000h	
PTE073			0000h	
PTE074			0000h	
PTE075			0000h	
PTE076			0000h	
PTE077			0000h	
PTE078			0000h	
PTE079			0000h	
PTE080			0000h	
PTE081			0000h	
PTE082			0000h	
PTE083			0000h	
PTE084			0000h	
PTE085			0000h	
PTE086			0000h	
PTE087			0000h	
PTE088			0000h	
PTE089			0000h	
PTE090			0000h	
PTE091			0000h	
PTE092			0000h	
PTE093	**SECB1	SSI - Ch. B function setting 1	2000h	
PTE094	**SECB2	SSI - Ch. B function setting 2	0000h	
PTE095	**SECB3	SSI - Ch. B function setting 3	0000h	
PTE096	**SECB4	SSI - Ch. B function setting 4	0000h	
PTE097	**SECB5	SSI - Ch. B function setting 5	0000h	
PTE098	**SECB6	SSI - Ch. B function setting 6	0000h	
PTE099	**SDPLB	Ch. B position variation error threshold - Lower	0000h	
PTE100	**SDPHB	Ch. B position variation error threshold - Upper	0000h	

No.	Symbol	Name	Initial value	Unit
PTE101		For manufacturer setting	0000h	
PTE102			0000h	
PTE103			0000h	
PTE104			0000h	
PTE105			0000h	
PTE106			0000h	
PTE107			0000h	
PTE108			0000h	
PTE109			0000h	
PTE110			0000h	
PTE111			0000h	
PTE112			0000h	
PTE113			0000h	
PTE114			0000h	
PTE115			0000h	
PTE116			0000h	
PTE117			0000h	
PTE118			0000h	
PTE119			0000h	
PTE120			0000h	
PTE121			0000h	
PTE122			0000h	
PTE123			0000h	
PTE124			0000h	
PTE125			0000h	
PTE126			0000h	
PTE127			0000h	
PTE128			0000h	

9.1.2 Detailed list of parameters

POINT
●Set a value to each "x" in the "Setting digit" columns.

(1) MR-MT2010 SSCNET III/H head module

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA001</td><td>*HDI11</td><td>DI1 (CN2-13) setting 1
Set a function for the input signal DI1 (CN2-13).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA002</td><td>*HDI12</td><td>DI1 (CN2-13) setting 2
Set a function for the input signal DI1 (CN2-13).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA003</td><td>*HDI21</td><td>DI2 (CN2-1) setting 1
Set a function for the input signal DI2 (CN2-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA004</td><td>*HDI22</td><td>DI2 (CN2-1) setting 2
Set a function for the input signal DI2 (CN2-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA005</td><td>*HDI31</td><td>DI3 (CN2-14) setting 1
Set a function for the input signal DI3 (CN2-14).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA006</td><td>*HDI32</td><td>DI3 (CN2-14) setting 2
Set a function for the input signal DI3 (CN2-14).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA007</td><td>*HDI41</td><td>DI4 (CN2-2) setting 1
Set a function for the input signal DI4 (CN2-2).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA008</td><td>*HDI42</td><td>DI4 (CN2-2) setting 2
Set a function for the input signal DI4 (CN2-2).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA009</td><td>*HDI51</td><td>DI5 (CN2-15) setting 1
Set a function for the input signal DI5 (CN2-15).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA010</td><td>*HDI52</td><td>DI5 (CN2-15) setting 2
Set a function for the input signal DI5 (CN2-15).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA011</td><td>*HDI61</td><td>DI6 (CN2-3) setting 1
Set a function for the input signal DI6 (CN2-3).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA012</td><td>*HDI62</td><td>DI6 (CN2-3) setting 2
Set a function for the input signal DI6 (CN2-3).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA013</td><td>*HDI71</td><td>DI7 (CN2-16) setting 1
Set a function for the input signal DI7 (CN2-16).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA014</td><td>*HDI72</td><td>DI7 (CN2-16) setting 2
Set a function for the input signal DI7 (CN2-16).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA015</td><td>*HDI81</td><td>DI8 (CN2-4) setting 1
Set a function for the input signal DI8 (CN2-4).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA016</td><td>*HDI82</td><td>DI8 (CN2-4) setting 2
Set a function for the input signal DI8 (CN2-4).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA017</td><td>*HDI91</td><td>DI9 (CN2-17) setting 1
Set a function for the input signal DI9 (CN2-17).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA018</td><td>*HDI92</td><td>DI9 (CN2-17) setting 2
Set a function for the input signal DI9 (CN2-17).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA019</td><td>*HDIA1</td><td>DI10 (CN2-5) setting 1
Set a function for the input signal DI10 (CN2-5).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA020</td><td>*HDIA2</td><td>DI10 (CN2-5) setting 2
Set a function for the input signal DI10 (CN2-5).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA021</td><td>*HDIB1</td><td>DI11 (CN2-18) setting 1
Set a function for the input signal DI11 (CN2-18).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA022</td><td>*HDIB2</td><td>DI11 (CN2-18) setting 2
Set a function for the input signal DI11 (CN2-18).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA023</td><td>*HDIC1</td><td>DI12 (CN2-6) setting 1
Set a function for the input signal DI12 (CN2-6).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA024</td><td>*HDIC2</td><td>DI12 (CN2-6) setting 2
Set a function for the input signal DI12 (CN2-6).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA027</td><td>*HDO11</td><td>DO1 (CN2-20) setting 1
Set a function for the output signal DO1 (CN2-20).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA028</td><td>*HDO12</td><td>DO1 (CN2-20) setting 2
Set a function for the output signal DO1 (CN2-20).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA029</td><td>*HDO21</td><td>DO2 (CN2-8) setting 1
Set a function for the output signal DO2 (CN2-8).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA030</td><td>*HDO22</td><td>DO2 (CN2-8) setting 2
Set a function for the output signal DO2 (CN2-8).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA032</td><td>*AOP1</td><td>Function selection A-1
Select a detection method for [AL. 10.3].
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>[AL. 10.3] detection selection
Select enabled/disabled for detecting [AL. 10.3].
0: Enabled
1: Disabled
Select "1" when not using the digital output of the head module.</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA033</td><td>*LO1</td><td>Level output function - Setting group 1 - Detailed setting 1
Select a signal for the setting group 1 of the level output function.

<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.1 according to the module to be used.</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table>

Table 9.1 Level output function channel selection
<table>
<tr><th rowspan="2">Setting value</th><th colspan="3">Module (Note)</th></tr>
<tr><th>MR-MT2200
pulse I/O module</th><th>MR-MT2300
analog I/O module</th><th>MR-MT2400
encoder I/F module</th></tr>
<tr><td>0</td><td>AX.A</td><td>Analog input ch. 1</td><td>Ch. A</td></tr>
<tr><td>1</td><td>AX.B</td><td>Analog input ch. 2</td><td>Ch. B</td></tr>
<tr><td>2</td><td></td><td>Analog input ch. 3</td><td></td></tr>
<tr><td>3</td><td></td><td>Analog input ch. 4</td><td></td></tr>
<tr><td>8</td><td></td><td>Analog output ch. 1</td><td></td></tr>
<tr><td>9</td><td></td><td>Analog output ch. 2</td><td></td></tr>
<tr><td>A</td><td></td><td>Analog output ch. 3</td><td></td></tr>
<tr><td>B</td><td></td><td>Analog output ch. 4</td><td></td></tr>
</table>

Note. The digital output will be off if an alarm is generated in the selected module.</td><td>Refer to the Name and function column.</td><td></td></tr>
<tr><td>PTA034</td><td>LONL1</td><td>Level output function - Setting group 1 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTA035] and lower [Pr. PTA034].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTA035</td><td>LONH1</td><td>Level output function - Setting group 1 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTA035] and lower [Pr. PTA034].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTA036</td><td>LOFL1</td><td>Level output function - Setting group 1 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTA037] and lower [Pr. PTA036].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTA037</td><td>LOFH1</td><td>Level output function - Setting group 1 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTA037] and lower [Pr. PTA036].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTA038</td><td>*LO2</td><td>Level output function - Setting group 2 - Detailed setting 1
Select a signal for the setting group 2 of the level output function.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.1 in [Pr. PTA033] according to the module to be used.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTA039</td><td>LONL2</td><td>Level output function - Setting group 2 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTA040] and lower [Pr. PTA039].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTA040</td><td>LONH2</td><td>Level output function - Setting group 2 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTA040] and lower [Pr. PTA039].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTA041</td><td>LOFL2</td><td>Level output function - Setting group 2 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTA042] and lower [Pr. PTA041].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTA042</td><td>LOFH2</td><td>Level output function - Setting group 2 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTA042] and lower [Pr. PTA041].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
</table>

(2) MR-MT2100 I/O module

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB001</td><td>*IDI11</td><td>DI1 (CN1-10) setting 1
Set a function for the input signal DI1 (CN1-10).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB002</td><td>*IDI12</td><td>DI1 (CN1-10) setting 2
Set a function for the input signal DI1 (CN1-10).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB003</td><td>*IDI21</td><td>DI2 (CN1-1) setting 1
Set a function for the input signal DI2 (CN1-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB004</td><td>*IDI22</td><td>DI2 (CN1-1) setting 2
Set a function for the input signal DI2 (CN1-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB005</td><td>*IDI31</td><td>DI3 (CN1-11) setting 1
Set a function for the input signal DI3 (CN1-11).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB006</td><td>*IDI32</td><td>DI3 (CN1-11) setting 2
Set a function for the input signal DI3 (CN1-11).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB007</td><td>*IDI41</td><td>DI4 (CN1-2) setting 1
Set a function for the input signal DI4 (CN1-2).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB008</td><td>*IDI42</td><td>DI4 (CN1-2) setting 2
Set a function for the input signal DI4 (CN1-2).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB009</td><td>*IDI51</td><td>DI5 (CN1-12) setting 1
Set a function for the input signal DI5 (CN1-12).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB010</td><td>*IDI52</td><td>DI5 (CN1-12) setting 2
Set a function for the input signal DI5 (CN1-12).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB011</td><td>*IDI61</td><td>DI6 (CN1-3) setting 1
Set a function for the input signal DI6 (CN1-3).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB012</td><td>*IDI62</td><td>DI6 (CN1-3) setting 2
Set a function for the input signal DI6 (CN1-3).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB013</td><td>*IDI71</td><td>DI7 (CN1-13) setting 1
Set a function for the input signal DI7 (CN1-13).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB014</td><td>*IDI72</td><td>DI7 (CN1-13) setting 2
Set a function for the input signal DI7 (CN1-13).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB015</td><td>*IDI81</td><td>DI8 (CN1-4) setting 1
Set a function for the input signal DI8 (CN1-4).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB016</td><td>*IDI82</td><td>DI8 (CN1-4) setting 2
Set a function for the input signal DI8 (CN1-4).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB017</td><td>*IDI91</td><td>DI9 (CN1-14) setting 1
Set a function for the input signal DI9 (CN1-14).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB018</td><td>*IDI92</td><td>DI9 (CN1-14) setting 2
Set a function for the input signal DI9 (CN1-14).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB019</td><td>*IDIA1</td><td>DI10 (CN1-5) setting 1
Set a function for the input signal DI10 (CN1-5).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB020</td><td>*IDIA2</td><td>DI10 (CN1-5) setting 2
Set a function for the input signal DI10 (CN1-5).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB021</td><td>*IDIB1</td><td>DI11 (CN1-15) setting 1
Set a function for the input signal DI11 (CN1-15).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB022</td><td>*IDIB2</td><td>DI11 (CN1-15) setting 2
Set a function for the input signal DI11 (CN1-15).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB023</td><td>*IDIC1</td><td>DI12 (CN1-6) setting 1
Set a function for the input signal DI12 (CN1-6).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB024</td><td>*IDIC2</td><td>DI12 (CN1-6) setting 2
Set a function for the input signal DI12 (CN1-6).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB025</td><td>*IDID1</td><td>DI13 (CN1-16) setting 1
Set a function for the input signal DI13 (CN1-16).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB026</td><td>*IDID2</td><td>DI13 (CN1-16) setting 2
Set a function for the input signal DI13 (CN1-16).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB027</td><td>*IDIE1</td><td>DI14 (CN1-7) setting 1
Set a function for the input signal DI14 (CN1-7).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB028</td><td>*IDIE2</td><td>DI14 (CN1-7) setting 2
Set a function for the input signal DI14 (CN1-7).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB029</td><td>*IDIF1</td><td>DI15 (CN1-17) setting 1
Set a function for the input signal DI15 (CN1-17).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB030</td><td>*IDIF2</td><td>DI15 (CN1-17) setting 2
Set a function for the input signal DI15 (CN1-17).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB031</td><td>*IDIG1</td><td>DI16 (CN1-8) setting 1
Set a function for the input signal DI16 (CN1-8).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB032</td><td>*IDIG2</td><td>DI16 (CN1-8) setting 2
Set a function for the input signal DI16 (CN1-8).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital input signal.
0: Digital input
1: Timing latch input</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Digital input signal edge selection
Select an edge for the timing latch input.
0: Rising edge
1: Falling edge</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB037</td><td>*IDO11</td><td>DO1 (CN2-11) setting 1
Set a function for the output signal DO1 (CN2-11).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB038</td><td>*IDO12</td><td>DO1 (CN2-11) setting 2
Set a function for the output signal DO1 (CN2-11).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB039</td><td>*IDO21</td><td>DO2 (CN2-1) setting 1
Set a function for the output signal DO2 (CN2-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB040</td><td>*IDO22</td><td>DO2 (CN2-1) setting 2
Set a function for the output signal DO2 (CN2-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB041</td><td>*IDO31</td><td>DO3 (CN2-12) setting 1
Set a function for the output signal DO3 (CN2-12).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB042</td><td>*IDO32</td><td>DO3 (CN2-12) setting 2
Set a function for the output signal DO3 (CN2-12).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB043</td><td>*IDO41</td><td>DO4 (CN2-2) setting 1
Set a function for the output signal DO4 (CN2-2).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB044</td><td>*IDO42</td><td>DO4 (CN2-2) setting 2
Set a function for the output signal DO4 (CN2-2).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB045</td><td>*IDO51</td><td>DO5 (CN2-13) setting 1
Set a function for the output signal DO5 (CN2-13).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB046</td><td>*IDO52</td><td>DO5 (CN2-13) setting 2
Set a function for the output signal DO5 (CN2-13).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB047</td><td>*IDO61</td><td>DO6 (CN2-3) setting 1
Set a function for the output signal DO6 (CN2-3).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB048</td><td>*IDO62</td><td>DO6 (CN2-3) setting 2
Set a function for the output signal DO6 (CN2-3).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB049</td><td>*IDO71</td><td>DO7 (CN2-14) setting 1
Set a function for the output signal DO7 (CN2-14).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB050</td><td>*IDO72</td><td>DO7 (CN2-14) setting 2
Set a function for the output signal DO7 (CN2-14).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB051</td><td>*IDO81</td><td>DO8 (CN2-4) setting 1
Set a function for the output signal DO8 (CN2-4).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB052</td><td>*IDO82</td><td>DO8 (CN2-4) setting 2
Set a function for the output signal DO8 (CN2-4).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB053</td><td>*IDO91</td><td>DO9 (CN2-15) setting 1
Set a function for the output signal DO9 (CN2-15).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB054</td><td>*IDO92</td><td>DO9 (CN2-15) setting 2
Set a function for the output signal DO9 (CN2-15).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB055</td><td>*IDOA1</td><td>DO10 (CN2-5) setting 1
Set a function for the output signal DO10 (CN2-5).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB056</td><td>*IDOA2</td><td>DO10 (CN2-5) setting 2
Set a function for the output signal DO10 (CN2-5).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB057</td><td>*IDOB1</td><td>DO11 (CN2-16) setting 1
Set a function for the output signal DO11 (CN2-16).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB058</td><td>*IDOB2</td><td>DO11 (CN2-16) setting 2
Set a function for the output signal DO11 (CN2-16).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB059</td><td>*IDOC1</td><td>DO12 (CN2-6) setting 1
Set a function for the output signal DO12 (CN2-6).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB060</td><td>*IDOC2</td><td>DO12 (CN2-6) setting 2
Set a function for the output signal DO12 (CN2-6).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB061</td><td>*IDOD1</td><td>DO13 (CN2-17) setting 1
Set a function for the output signal DO13 (CN2-17).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB062</td><td>*IDOD2</td><td>DO13 (CN2-17) setting 2
Set a function for the output signal DO13 (CN2-17).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB063</td><td>*IDOE1</td><td>DO14 (CN2-7) setting 1
Set a function for the output signal DO14 (CN2-7).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB064</td><td>*IDOE2</td><td>DO14 (CN2-7) setting 2
Set a function for the output signal DO14 (CN2-7).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB065</td><td>*IDOF1</td><td>DO15 (CN2-18) setting 1
Set a function for the output signal DO15 (CN2-18).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB066</td><td>*IDOF2</td><td>DO15 (CN2-18) setting 2
Set a function for the output signal DO15 (CN2-18).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB067</td><td>*IDOG1</td><td>DO16 (CN2-8) setting 1
Set a function for the output signal DO16 (CN2-8).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB068</td><td>*IDOG2</td><td>DO16 (CN2-8) setting 2
Set a function for the output signal DO16 (CN2-8).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
2: Level output
The digital output will be always off when other than above is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Level output function - Setting group selection
Select a setting group for using the level output function.
0: Setting group 1
1: Setting group 2
2: Setting group 3
3: Setting group 4
4: Setting group 5
5: Setting group 6
6: Setting group 7
7: Setting group 8</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB069</td><td>*IDO</td><td>Digital output connection setting
Set a connection method for digital output.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Connection method selection
Set a connection method for digital output.
0: Sink connection
1: Source connection
This parameter setting is available when connecting with head modules with software version A1 or later.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB073</td><td>*ILO1</td><td>Level output function - Setting group 1 - Detailed setting 1
Select a signal for the setting group 1 of the level output function.

<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.2 according to the module to be used.</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table>

Table 9.2 Level output function channel selection
<table>
<tr><th rowspan="2">Setting value</th><th colspan="3">Module (Note)</th></tr>
<tr><th>MR-MT2200
pulse I/O module</th><th>MR-MT2300
analog I/O module</th><th>MR-MT2400
encoder I/F module</th></tr>
<tr><td>0</td><td>AX.A</td><td>Analog input ch. 1</td><td>Ch. A</td></tr>
<tr><td>1</td><td>AX.B</td><td>Analog input ch. 2</td><td>Ch. B</td></tr>
<tr><td>2</td><td></td><td>Analog input ch. 3</td><td></td></tr>
<tr><td>3</td><td></td><td>Analog input ch. 4</td><td></td></tr>
<tr><td>8</td><td></td><td>Analog output ch. 1</td><td></td></tr>
<tr><td>9</td><td></td><td>Analog output ch. 2</td><td></td></tr>
<tr><td>A</td><td></td><td>Analog output ch. 3</td><td></td></tr>
<tr><td>B</td><td></td><td>Analog output ch. 4</td><td></td></tr>
</table>

Note. The digital output will be off if an alarm is generated in the selected module.</td><td>Refer to the Name and function column.</td><td></td></tr>
<tr><td>PTB074</td><td>ILONL1</td><td>Level output function - Setting group 1 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB075] and lower [Pr. PTB074].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB075</td><td>ILONH1</td><td>Level output function - Setting group 1 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB075] and lower [Pr. PTB074].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB076</td><td>ILOFL1</td><td>Level output function - Setting group 1 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB077] and lower [Pr. PTB076].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB077</td><td>ILOFH1</td><td>Level output function - Setting group 1 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB077] and lower [Pr. PTB076].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB078</td><td>*ILO2</td><td>Level output function - Setting group 2 - Detailed setting 1
Select a signal for the setting group 2 of the level output function.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.2 in [Pr. PTB073] according to the module to be used.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB079</td><td>ILONL2</td><td>Level output function - Setting group 2 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB080] and lower [Pr. PTB079].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB080</td><td>ILONH2</td><td>Level output function - Setting group 2 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB080] and lower [Pr. PTB079].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB081</td><td>ILOFL2</td><td>Level output function - Setting group 2 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB082] and lower [Pr. PTB081].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB082</td><td>ILOFH2</td><td>Level output function - Setting group 2 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB082] and lower [Pr. PTB081].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB083</td><td>*ILO3</td><td>Level output function - Setting group 3 - Detailed setting 1
Select a signal for the setting group 3 of the level output function.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.2 in [Pr. PTB073] according to the module to be used.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB084</td><td>ILONL3</td><td>Level output function - Setting group 3 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB085] and lower [Pr. PTB084].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB085</td><td>ILONH3</td><td>Level output function - Setting group 3 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB085] and lower [Pr. PTB084].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB086</td><td>ILOFL3</td><td>Level output function - Setting group 3 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB087] and lower [Pr. PTB086].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB087</td><td>ILOFH3</td><td>Level output function - Setting group 3 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB087] and lower [Pr. PTB086].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB088</td><td>*ILO4</td><td>Level output function - Setting group 4 - Detailed setting 1
Select a signal for the setting group 4 of the level output function.
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.2 in [Pr. PTB073] according to the module to be used.</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB089</td><td>ILONL4</td><td>Level output function - Setting group 4 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB090] and lower [Pr. PTB089].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB090</td><td>ILONH4</td><td>Level output function - Setting group 4 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB090] and lower [Pr. PTB089].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB091</td><td>ILOFL4</td><td>Level output function - Setting group 4 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB092] and lower [Pr. PTB091].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB092</td><td>ILOFH4</td><td>Level output function - Setting group 4 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB092] and lower [Pr. PTB091].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB093</td><td>*ILO5</td><td>Level output function - Setting group 5 - Detailed setting 1
Select a signal for the setting group 5 of the level output function.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.2 in [Pr. PTB073] according to the module to be used.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB094</td><td>ILONL5</td><td>Level output function - Setting group 5 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB095] and lower [Pr. PTB094].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB095</td><td>ILONH5</td><td>Level output function - Setting group 5 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB095] and lower [Pr. PTB094].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB096</td><td>ILOFL5</td><td>Level output function - Setting group 5 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB097] and lower [Pr. PTB096].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB097</td><td>ILOFH5</td><td>Level output function - Setting group 5 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB097] and lower [Pr. PTB096].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB098</td><td>*ILO6</td><td>Level output function - Setting group 6 - Detailed setting 1
Select a signal for the setting group 6 of the level output function.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.2 in [Pr. PTB073] according to the module to be used.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB099</td><td>ILONL6</td><td>Level output function - Setting group 6 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB100] and lower [Pr. PTB099].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB100</td><td>ILONH6</td><td>Level output function - Setting group 6 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB100] and lower [Pr. PTB099].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB101</td><td>ILOFL6</td><td>Level output function - Setting group 6 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB102] and lower [Pr. PTB101].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB102</td><td>ILOFH6</td><td>Level output function - Setting group 6 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB102] and lower [Pr. PTB101].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB103</td><td>*ILO7</td><td>Level output function - Setting group 7 - Detailed setting 1
Select a signal for the setting group 7 of the level output function.
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.2 in [Pr. PTB073] according to the module to be used.</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB104</td><td>ILONL7</td><td>Level output function - Setting group 7 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB105] and lower [Pr. PTB104].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB105</td><td>ILONH7</td><td>Level output function - Setting group 7 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB105] and lower [Pr. PTB104].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB106</td><td>ILOFL7</td><td>Level output function - Setting group 7 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB107] and lower [Pr. PTB106].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB107</td><td>ILOFH7</td><td>Level output function - Setting group 7 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB107] and lower [Pr. PTB106].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTB108</td><td>*ILO8</td><td>Level output function - Setting group 8 - Detailed setting 1
Select a signal for the setting group 8 of the level output function.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Module selection
Select a module to be used for the level output function.
0: Unused
1: 1st extension module
2: 2nd extension module
3: 3rd extension module
4: 4th extension module</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Channel selection
Select a channel to be used.
Set as shown in Table 9.2 in [Pr. PTB073] according to the module to be used.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTB109</td><td>ILONL8</td><td>Level output function - Setting group 8 - Lower limit setting - Lower
Set the lower digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB110] and lower [Pr. PTB109].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB110</td><td>ILONH8</td><td>Level output function - Setting group 8 - Lower limit setting - Upper
Set the upper digits for the lower limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB110] and lower [Pr. PTB109].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB111</td><td>ILOFL8</td><td>Level output function - Setting group 8 - Upper limit setting - Lower
Set the lower digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB112] and lower [Pr. PTB111].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
<tr><td>PTB112</td><td>ILOFH8</td><td>Level output function - Setting group 8 - Upper limit setting - Upper
Set the upper digits for the upper limit with the level output function.
Set with 32-bit signed hexadecimal values by combining upper [Pr. PTB112] and lower [Pr. PTB111].</td><td>0000h</td><td>0000h
to
FFFFh</td></tr>
</table>

(3) MR-MT2200 pulse I/O module

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC001</td><td>*PFSA</td><td>A-axis setting
Select an I/O function for A-axis of the pulse I/O module.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>I/O function selection
Select a function for A-axis of the pulse I/O module.
0: Pulse input function
1: Pulse output function</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC002</td><td>*PIFA1</td><td>A-axis input function setting 1
Select a pulse command form and logic when the pulse input function is selected with A-axis of the pulse I/O module.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input pulse command form selection
Select a pulse command form for input pulse.
0: Forward/reverse rotation pulse train
1: Signed pulse train
2: A-phase/B-phase pulse train (The pulse I/O module imports input pulses after multiplying by four.)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Input pulse logic selection
Select a logic for input pulse.
0: Negative logic
1: Positive logic</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC003</td><td>*PIFA2</td><td>A-axis input function setting 2
Select a filter for the input pulses of A-axis of the pulse I/O module.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input pulse train filter selection
Noise tolerance is improved when an appropriate filter for the input pulse frequency is selected.
0: Input pulse train is 4 Mpulses/s or less.
1: Input pulse train is 1 Mpulse/s or less.
2: Input pulse train is 500 kpulses/s or less.
3: Input pulse train is 200 kpulses/s or less.
1 Mpulse/s or lower input is supported by "1". When inputting pulses exceeding 1 Mpulse/s and up to 4 Mpulses/s, set "0".
Incorrect setting may cause the following malfunctions.
・The noise tolerance will be lower when a value higher than the actual input pulses is set.
・The pulses cannot be inputted correctly when a value lower than the actual input pulses is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC004</td><td>*POFA1</td><td>A-axis output function selection 1
Set for A-axis of the pulse I/O module when the pulse output function is used.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Output pulse command form selection
Select an output pulse command form for output pulse.
0: Forward/reverse rotation pulse train
1: Signed pulse train
2: A-phase/B-phase pulse train (The pulse I/O module outputs pulses after multiplying by four.)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output pulse logic selection
Select a logic for output pulse.
0: Negative logic
1: Positive logic</td><td>0h</td></tr><tr><td>_ x _ _</td><td>Output pulse rotation direction selection
Select the rotation direction of output pulse.
0: CCW when commands are increasing (forward rotation pulse output)
1: CW when commands are increasing (reverse rotation pulse output)</td><td>0h</td></tr><tr><td>x _ _ _</td><td>Connection form selection
Select a connection form for outputting pulses.
0: Differential line driver connection
1: Open-collector connection</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC005</td><td>*POFA2</td><td>A-axis output function selection 2
Set for A-axis of the pulse I/O module when the output function is used.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Open-collector output function selection
Select open-collector output function.
0: Pulse output (CWA, CCWA)
1: Digital output (DO4, DO5)</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC007</td><td>*CMXA</td><td>A-axis input-side electronic gear setting
Set an electronic gear when the pulse input function is selected. The electronic gear is applied for the pulses inputted to the pulse I/O module, and the pulses are returned to the controller.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input-side electronic gear
Set an electronic gear for the input side.
0: × 1
1: × 2
2: × 4
3: × 8</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC008</td><td>*CDVA</td><td>A-axis output-side electronic gear setting
Set an electronic gear when the pulse output function is selected. The electronic gear is applied for the output command pulses from the controller.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Output-side electronic gear
Set an electronic gear for the output side.
0: × 1
1: × 1/2
2: × 1/4
3: × 1/8</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC017</td><td>*PFSB</td><td>B-axis setting
Select an I/O function for B-axis of the pulse I/O module.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>I/O function selection
Select a function for B-axis of the pulse I/O module.
0: Pulse input function
1: Pulse output function</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC018</td><td>*PIFB1</td><td>B-axis input function setting 1
Select a pulse command form and logic when the pulse input function is selected with B-axis of the pulse I/O module.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input pulse command form selection
Select a pulse command form for input pulse.
0: Forward/reverse rotation pulse train
1: Signed pulse train
2: A-phase/B-phase pulse train (The pulse I/O module imports input pulses after multiplying by four.)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Input pulse logic selection
Select a logic for input pulse.
0: Negative logic
1: Positive logic</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC019</td><td>*PIFB2</td><td>B-axis input function setting 2
Select a filter for the input pulses of B-axis of the pulse I/O module.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input pulse train filter selection
Noise tolerance is improved when an appropriate filter for the input pulse frequency is selected.
0: Input pulse train is 4 Mpulses/s or less.
1: Input pulse train is 1 Mpulse/s or less.
2: Input pulse train is 500 kpulses/s or less.
3: Input pulse train is 200 kpulses/s or less.
1 Mpulse/s or lower input is supported by "1". When inputting pulses exceeding 1 Mpulse/s and up to 4 Mpulses/s, set "0".
Incorrect setting may cause the following malfunctions.
▪ The noise tolerance will be lower when a value higher than the actual input pulses is set.
▪ The pulses cannot be inputted correctly when a value lower than the actual input pulses is set.</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC020</td><td>*POFB1</td><td>B-axis output function selection 1
Set for B-axis of the pulse I/O module when the pulse output function is used.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Output pulse command form selection
Select an output pulse command form for output pulse.
0: Forward/reverse rotation pulse train
1: Signed pulse train
2: A-phase/B-phase pulse train (The pulse I/O module outputs pulses after multiplying by four.)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output pulse logic selection
Select a logic for output pulse.
0: Negative logic
1: Positive logic</td><td>0h</td></tr><tr><td>_ x _ _</td><td>Output pulse rotation direction selection
Select the rotation direction of output pulse.
0: CCW when commands are increasing (forward rotation pulse output)
1: CW when commands are increasing (reverse rotation pulse output)</td><td>0h</td></tr><tr><td>x _ _ _</td><td>Connection form selection
Select a connection form for outputting pulses.
0: Differential line driver connection
1: Open-collector connection</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC021</td><td>*POFB2</td><td>B-axis output function selection 2
Set for B-axis of the pulse I/O module when the output function is used.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Open-collector output function selection
Select open-collector output function.
0: Pulse output (CWB, CCWB)
1: Digital output (DO11, DO12)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC023</td><td>*CMXB</td><td>B-axis input-side electronic gear setting
Set an electronic gear when the pulse input function is selected. The electronic gear is applied for the pulses inputted to the pulse I/O module, and the pulses are returned to the controller.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input-side electronic gear
Set an electronic gear for the input side.
0: × 1
1: × 2
2: × 4
3: × 8</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC024</td><td>*CDVB</td><td>B-axis input-side electronic gear setting
Set an electronic gear when the pulse output function is selected. The electronic gear is applied for the output command pulses from the controller.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Output-side electronic gear
Set an electronic gear for the output side.
0: × 1
1: × 1/2
2: × 1/4
3: × 1/8</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC033</td><td>*IDI1A1</td><td>DI1A (CN1-8) setting 1
Set a function for the input signal DI1A (CN1-8).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC035</td><td>*IDI2A1</td><td>DI2A (CN1-10) setting 1
Set a function for the input signal DI2A (CN1-10).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC037</td><td>*IDI3A1</td><td>DI3A (CN1-7) setting 1
Set a function for the input signal DI3A (CN1-7).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC039</td><td>*IDI4A1</td><td>DI4A (CN1-9) setting 1
Set a function for the input signal DI4A (CN1-9).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC041</td><td>*IDI5A1</td><td>DI5A (CN1-19) setting 1
Set a function for the input signal DI5A (CN1-19).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC043</td><td>*IDI6A1</td><td>DI6A (CN1-20) setting 1
Set a function for the input signal DI6A (CN1-20).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC045</td><td>*IDI7A1</td><td>DI7A (CN1-21) setting 1
Set a function for the input signal DI7A (CN1-21).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC047</td><td>*IDI1B1</td><td>DI1B (CN2-8) setting 1
Set a function for the input signal DI1B (CN2-8).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC049</td><td>*IDI2B1</td><td>DI2B (CN2-10) setting 1
Set a function for the input signal DI2B (CN2-10).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC051</td><td>*IDI3B1</td><td>DI3B (CN2-7) setting 1
Set a function for the input signal DI3B (CN2-7).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC053</td><td>*IDI4B1</td><td>DI4B (CN2-9) setting 1
Set a function for the input signal DI4B (CN2-9).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC055</td><td>*IDI5B1</td><td>DI5B (CN2-19) setting 1
Set a function for the input signal DI5B (CN2-19).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC057</td><td>*IDI6B1</td><td>DI6B (CN2-20) setting 1
Set a function for the input signal DI6B (CN2-20).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC059</td><td>*IDI7B1</td><td>DI7B (CN2-21) setting 1
Set a function for the input signal DI7B (CN2-21).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC065</td><td>*IDO1A1</td><td>DO1A (CN1-11) setting 1
Set a function for the output signal DO1A (CN1-11).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC066], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC066</td><td>*IDO1A2</td><td>DO1A (CN1-11) setting 2
Set a function for the output signal DO1A (CN1-11).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC001], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC067</td><td>*IDO2A1</td><td>DO2A (CN1-12) setting 1
Set a function for the output signal DO2A (CN1-12).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC068], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC068</td><td>*IDO2A2</td><td>DO2A (CN1-12) setting 2
Set a function for the output signal DO2A (CN1-12).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC001], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC069</td><td>*IDO3A1</td><td>DO3A (CN1-23) setting 1
Set a function for the output signal DO3A (CN1-23).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC070], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC070</td><td>*IDO3A2</td><td>DO3A (CN1-23) setting 2
Set a function for the output signal DO3A (CN1-23).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC001], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC071</td><td>*IDO4A1</td><td>DO4A (CN1-1) setting 1
Set a function for the output signal DO4A (CN1-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC072], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC072</td><td>*IDO4A2</td><td>DO4A (CN1-1) setting 2
Set a function for the output signal DO4A (CN1-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC001], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC073</td><td>*IDO5A1</td><td>DO5A (CN1-13) setting 1
Set a function for the output signal DO5A (CN1-13).
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC074], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td></td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC074</td><td>*IDO5A2</td><td>DO5A (CN1-13) setting 2
Set a function for the output signal DO5A (CN1-13).
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC001], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td></td><td>0h</td></tr>
<tr><td>x _ _ _</td><td></td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC075</td><td>*IDO1B1</td><td>DO1B (CN2-11) setting 1
Set a function for the output signal DO1B (CN2-11).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC076], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC076</td><td>*IDO1B2</td><td>DO1B (CN2-11) setting 2
Set a function for the output signal DO1B (CN2-11).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC017], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC077</td><td>*IDO2B1</td><td>DO2B (CN2-12) setting 1
Set a function for the output signal DO2B (CN2-12).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC078], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC078</td><td>*IDO2B2</td><td>DO2B (CN2-12) setting 2
Set a function for the output signal DO2B (CN2-12).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC017], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC079</td><td>*IDO3B1</td><td>DO3B (CN2-23) setting 1
Set a function for the output signal DO3B (CN2-23).

<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC080], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC080</td><td>*IDO3B2</td><td>DO3B (CN2-23) setting 2
Set a function for the output signal DO3B (CN2-23).

<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC017], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC081</td><td>*IDO4B1</td><td>DO4B (CN2-1) setting 1
Set a function for the output signal DO4B (CN2-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC082], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC082</td><td>*IDO4B2</td><td>DO4B (CN2-1) setting 2
Set a function for the output signal DO4B (CN2-1).
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC017], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTC083</td><td>*IDO5B1</td><td>DO5B (CN2-1) setting 1
Set a function for the output signal DO5B (CN2-13).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.
When "Pulse coincidence output (_ _ _ 1)" is selected with "function selection" of [Pr. PTC084], this digit will be always set to "CLEAR" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTC084</td><td>*IDO5B2</td><td>DO5B (CN2-13) setting 2
Set a function for the output signal DO5B (CN2-13).

<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Function selection
Select a function for the digital output signal.
0: Digital output
1: Pulse coincidence output
When "Pulse input function (_ _ _ 0)" is selected with "I/O function selection" of [Pr. PTC017], this digit will be always set to "digital output" regardless of the setting value.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

(4) MR-MT2300 analog I/O module

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTD001</td><td>*AIF1</td><td>Analog input function selection 1
Set a function of analog input.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Analog input sampling cycle
Select an analog input sampling cycle.
0: 55 μs
1: 111 μs
2: 222 μs
3: 444 μs
4: 888 μs
5: 1.7 ms</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Analog input voltage selection
Set a voltage range of analog input.
0: ± 10 V DC
1: ± 5 V DC</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTD002</td><td>*AI1F2</td><td>Analog input ch. 1 - Function selection 2
Set a function of analog input ch. 1.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input filter selection
Select a filter for analog input.
0: Non-filter
1: Count average
2: Moving average
3: Primary delay filter (Set the time constant with [Pr. PTD003].)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Count setting for when the count average or moving average is selected
Select the average number of processing times when the count average or moving average is selected.
0: None
1: 2 times
2: 4 times
3: 8 times
4: 16 times</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value
[Unit]</th><th>Setting
range</th></tr>
<tr><td>PTD003</td><td>*AI1FT</td><td>Analog input ch. 1 - Primary delay filter time constant
Set a primary delay filter time constant of analog input ch. 1.
This parameter will be enabled when "Primary delay filter (_ _ _ 3)" is selected with "Input filter selection" of [Pr. PTD002].
The setting range depends on "Analog input sampling cycle" of [Pr. PTD001]. The following shows the setting range. Setting over the range will trigger [AL. 37.2].
<table><tr><th>[Pr. PTD001]</th><th>Setting range</th></tr><tr><td>_ _ _ 0 (55 μs)</td><td>0 to 3</td></tr><tr><td>_ _ _ 1 (111 μs)</td><td>0 to 6</td></tr><tr><td>_ _ _ 2 (222 μs)</td><td>0 to 12</td></tr><tr><td>_ _ _ 3 (444 μs)</td><td>0 to 25</td></tr><tr><td>_ _ _ 4 (888 μs)</td><td>0 to 50</td></tr><tr><td>_ _ _ 5 (1.7 ms)</td><td>0 to 100</td></tr></table></td><td>0
[ms]</td><td>Refer to the Name and function column.</td></tr>
<tr><td>PTD004</td><td>AI1OF</td><td>Analog input ch. 1 - Offset voltage setting
Set the offset voltage of analog input ch. 1.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD004] to [Pr. PTD007]. In this case, perform the following.
・An alarm may occur when the difference in the setting of [Pr. PTD005 Analog input ch. 1 - Scaling function - Upper limit setting] and [Pr. PTD006 Analog input ch. 1 - Scaling function - Lower limit setting] is small. In this case, make the difference larger.
・An alarm may occur when the setting of [Pr. PTD007 Analog input ch. 1 - Scaling function - Shift amount setting] is large. In this case, set the value smaller.</td><td>0
[mV]</td><td>-10000
to
10000</td></tr>
<tr><td>PTD005</td><td>*AI1SH</td><td>Analog input ch. 1 - Scaling function - Upper limit setting
Set the upper limit of the internal value when +10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD004] to [Pr. PTD007]. Refer to [Pr. PTD004] for details.</td><td>20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD006</td><td>*AI1SL</td><td>Analog input ch. 1 - Scaling function - Lower limit setting
Set the lower limit of the internal value when -10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD004] to [Pr. PTD007]. Refer to [Pr. PTD004] for details.</td><td>-20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD007</td><td>*AI1SF</td><td>Analog input ch. 1 - Scaling function - Shift amount setting
Set the shift amount of the analog input signal for the scaling function.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD004] to [Pr. PTD007]. Refer to [Pr. PTD004] for details.</td><td>0</td><td>-32768
to
32767</td></tr>
<tr><td>PTD010</td><td>*AI2F2</td><td>Analog input ch. 2 - Function selection 2
Set a function of analog input ch. 2.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input filter selection
Select a filter for analog input.
0: Non-filter
1: Count average
2: Moving average
3: Primary delay filter (Set the time constant with [Pr. PTD011].)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Count setting for when the count average or moving average is selected
Select the average number of processing times when the count average or moving average is selected.
0: None
1: 2 times
2: 4 times
3: 8 times
4: 16 times</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value
[Unit]</th><th>Setting
range</th></tr>
<tr><td>PTD011</td><td>*AI2FT</td><td>Analog input ch. 2 - Primary delay filter time constant
Set a primary delay filter time constant of analog input ch. 2.
This parameter will be enabled when "Primary delay filter (_ _ _ 3)" is selected with "Input filter selection" of [Pr. PTD010].
The setting range depends on "Analog input sampling cycle" of [Pr. PTD001]. The following shows the setting range. Setting over the range will trigger [AL. 37.2].
<table><tr><th>[Pr. PTD001]</th><th>Setting range</th></tr><tr><td>_ _ _ 0 (55 μs)</td><td>0 to 3</td></tr><tr><td>_ _ _ 1 (111 μs)</td><td>0 to 6</td></tr><tr><td>_ _ _ 2 (222 μs)</td><td>0 to 12</td></tr><tr><td>_ _ _ 3 (444 μs)</td><td>0 to 25</td></tr><tr><td>_ _ _ 4 (888 μs)</td><td>0 to 50</td></tr><tr><td>_ _ _ 5 (1.7 ms)</td><td>0 to 100</td></tr></table></td><td>0
[ms]</td><td>Refer to the Name and function column.</td></tr>
<tr><td>PTD012</td><td>AI2OF</td><td>Analog input ch. 2 - Offset voltage setting
Set the offset voltage of analog input ch. 2.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD012] to [Pr. PTD015]. In this case, perform the following.
・An alarm may occur when the difference in the setting of [Pr. PTD013 Analog input ch. 2 - Scaling function - Upper limit setting] and [Pr. PTD014 Analog input ch. 2 - Scaling function - Lower limit setting] is small. In this case, make the difference larger.
・An alarm may occur when the setting of [Pr. PTD015 Analog input ch. 2 - Scaling function - Shift amount setting] is large. In this case, set the value smaller.</td><td>0
[mV]</td><td>-10000
to
10000</td></tr>
<tr><td>PTD013</td><td>*AI2SH</td><td>Analog input ch. 2 - Scaling function - Upper limit setting
Set the upper limit of the internal value when +10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD012] to [Pr. PTD015]. Refer to [Pr. PTD012] for details.</td><td>20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD014</td><td>*AI2SL</td><td>Analog input ch. 2 - Scaling function - Lower limit setting
Set the lower limit of the internal value when -10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD012] to [Pr. PTD015]. Refer to [Pr. PTD012] for details.</td><td>-20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD015</td><td>*AI2SF</td><td>Analog input ch. 2 - Scaling function - Shift amount setting
Set the shift amount of the analog input signal for the scaling function.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD012] to [Pr. PTD015]. Refer to [Pr. PTD012] for details.</td><td>0</td><td>-32768
to
32767</td></tr>
<tr><td>PTD018</td><td>*AI3F2</td><td>Analog input ch. 3 - Function selection 2
Set a function of analog input ch. 3.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input filter selection
Select a filter for analog input.
0: Non-filter
1: Count average
2: Moving average
3: Primary delay filter (Set the time constant with [Pr. PTD019].)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Count setting for when the count average or moving average is selected
Select the average number of processing times when the count average or moving average is selected.
0: None
1: 2 times
2: 4 times
3: 8 times
4: 16 times</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value
[Unit]</th><th>Setting range</th></tr>
<tr><td>PTD019</td><td>*AI3FT</td><td>Analog input ch. 3 - Primary delay filter time constant
Set a primary delay filter time constant of analog input ch. 3.
This parameter will be enabled when "Primary delay filter (_ _ _ 3)" is selected with "Input filter selection" of [Pr. PTD018].
The setting range depends on "Analog input sampling cycle" of [Pr. PTD001]. The following shows the setting range. Setting over the range will trigger [AL. 37.2].
<table><tr><th>[Pr. PTD001]</th><th>Setting range</th></tr><tr><td>_ _ _ 0 (55 μs)</td><td>0 to 3</td></tr><tr><td>_ _ _ 1 (111 μs)</td><td>0 to 6</td></tr><tr><td>_ _ _ 2 (222 μs)</td><td>0 to 12</td></tr><tr><td>_ _ _ 3 (444 μs)</td><td>0 to 25</td></tr><tr><td>_ _ _ 4 (888 μs)</td><td>0 to 50</td></tr><tr><td>_ _ _ 5 (1.7 ms)</td><td>0 to 100</td></tr></table></td><td>0
[ms]</td><td>Refer to the Name and function column.</td></tr>
<tr><td>PTD020</td><td>AI3OF</td><td>Analog input ch. 3 - Offset voltage setting
Set the offset voltage of analog input ch. 3.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD020] to [Pr. PTD023]. In this case, perform the following.
・An alarm may occur when the difference in the setting of [Pr. PTD021 Analog input ch. 3 - Scaling function - Upper limit setting] and [Pr. PTD022 Analog input ch. 3 - Scaling function - Lower limit setting] is small. In this case, make the difference larger.
・An alarm may occur when the setting of [Pr. PTD023 Analog input ch. 3 - Scaling function - Shift amount setting] is large. In this case, set the value smaller.</td><td>0
[mV]</td><td>-10000
to
10000</td></tr>
<tr><td>PTD021</td><td>*AI3SH</td><td>Analog input ch. 3 - Scaling function - Upper limit setting
Set the upper limit of the internal value when +10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD020] to [Pr. PTD023]. Refer to [Pr. PTD020] for details.</td><td>20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD022</td><td>*AI3SL</td><td>Analog input ch. 3 - Scaling function - Lower limit setting
Set the lower limit of the internal value when -10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD020] to [Pr. PTD023]. Refer to [Pr. PTD020] for details.</td><td>-20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD023</td><td>*AI3SF</td><td>Analog input ch. 3 - Scaling function - Shift amount setting
Set the shift amount of the analog input signal for the scaling function.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD020] to [Pr. PTD023]. Refer to [Pr. PTD020] for details.</td><td>0</td><td>-32768
to
32767</td></tr>
<tr><td>PTD026</td><td>*AI4F2</td><td>Analog input ch. 4 - Function selection 2
Set a function of analog input ch. 4.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Input filter selection
Select a filter for analog input.
0: Non-filter
1: Count average
2: Moving average
3: Primary delay filter (Set the time constant with [Pr. PTD027].)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Count setting for when the count average or moving average is selected
Select the average number of processing times when the count average or moving average is selected.
0: None
1: 2 times
2: 4 times
3: 8 times
4: 16 times</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value
[Unit]</th><th>Setting range</th></tr>
<tr><td>PTD027</td><td>*AI4FT</td><td>Analog input ch. 4 - Primary delay filter time constant
Set a primary delay filter time constant of analog input ch. 4.
This parameter will be enabled when "Primary delay filter (_ _ _ 3)" is selected with "Input filter selection" of [Pr. PTD026].
The setting range depends on "Analog input sampling cycle" of [Pr. PTD001]. The following shows the setting range. Setting over the range will trigger [AL. 37.2].
<table><tr><th>[Pr. PTD001]</th><th>Setting range</th></tr><tr><td>_ _ _ 0 (55 μs)</td><td>0 to 3</td></tr><tr><td>_ _ _ 1 (111 μs)</td><td>0 to 6</td></tr><tr><td>_ _ _ 2 (222 μs)</td><td>0 to 12</td></tr><tr><td>_ _ _ 3 (444 μs)</td><td>0 to 25</td></tr><tr><td>_ _ _ 4 (888 μs)</td><td>0 to 50</td></tr><tr><td>_ _ _ 5 (1.7 ms)</td><td>0 to 100</td></tr></table></td><td>0
[ms]</td><td>Refer to the Name and function column.</td></tr>
<tr><td>PTD028</td><td>AI4OF</td><td>Analog input ch. 4 - Offset voltage setting
Set the offset voltage of analog input ch. 4.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD028] to [Pr. PTD031]. In this case, perform the following.
・An alarm may occur when the difference in the setting of [Pr. PTD029 Analog input ch. 4 - Scaling function - Upper limit setting] and [Pr. PTD030 Analog input ch. 4 - Scaling function - Lower limit setting] is small. In this case, make the difference larger.
・An alarm may occur when the setting of [Pr. PTD031 Analog input ch. 4 - Scaling function - Shift amount setting] is large. In this case, set the value smaller.</td><td>0
[mV]</td><td>-10000
to
10000</td></tr>
<tr><td>PTD029</td><td>*AI4SH</td><td>Analog input ch. 4 - Scaling function - Upper limit setting
Set the upper limit of the internal value when +10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD028] to [Pr. PTD031]. Refer to [Pr. PTD028] for details.</td><td>20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD030</td><td>*AI4SL</td><td>Analog input ch. 4 - Scaling function - Lower limit setting
Set the lower limit of the internal value when -10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD028] to [Pr. PTD031]. Refer to [Pr. PTD028] for details.</td><td>-20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD031</td><td>*AI4SF</td><td>Analog input ch. 4 - Scaling function - Shift amount setting
Set the shift amount of the analog input signal for the scaling function.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD028] to [Pr. PTD031]. Refer to [Pr. PTD028] for details.</td><td>0</td><td>-32768
to
32767</td></tr>
<tr><td>PTD034</td><td>AO1OF</td><td>Analog output ch. 1 - Offset
Set the offset of analog output ch. 1.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD034] to [Pr. PTD037]. In this case, perform the following.
・An alarm may occur when the difference in the setting of [Pr. PTD035 Analog output ch. 1 - Scaling function - Upper limit setting] and [Pr. PTD036 Analog output ch. 1 - Scaling function - Lower limit setting] is small. In this case, make the difference larger.
・An alarm may occur when the setting of [Pr. PTD037 Analog output ch. 1 - Scaling function - Shift amount setting] is large. In this case, set the value smaller.</td><td>0
[mV]</td><td>-10000
to
10000</td></tr>
<tr><td>PTD035</td><td>*AO1SH</td><td>Analog output ch. 1 - Scaling function - Upper limit setting
Set the internal value when +10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD034] to [Pr. PTD037]. Refer to [Pr. PTD034] for details.</td><td>20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD036</td><td>*AO1SL</td><td>Analog output ch. 1 - Scaling function - Lower limit setting
Set the internal value when -10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD034] to [Pr. PTD037]. Refer to [Pr. PTD034] for details.</td><td>-20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD037</td><td>*AO1SF</td><td>Analog output ch. 1 - Scaling function - Shift amount setting
Set the shift amount of the analog output signal for the scaling function.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD034] to [Pr. PTD037]. Refer to [Pr. PTD034] for details.</td><td>0</td><td>-32768
to
32767</td></tr>
</table>

No.	Symbol	Name and function	Initial value [Unit]	Setting range
PTD042	AO2OF	Analog output ch. 2 - Offset Set the offset of analog output ch. 2. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD042] to [Pr. PTD045]. In this case, perform the following. ・An alarm may occur when the difference in the setting of [Pr. PTD043 Analog output ch. 2 - Scaling function - Upper limit setting] and [Pr. PTD044 Analog output ch. 2 - Scaling function - Lower limit setting] is small. In this case, make the difference larger. ・An alarm may occur when the setting of [Pr. PTD045 Analog output ch. 2 - Scaling function - Shift amount setting] is large. In this case, set the value smaller.	0 [mV]	-10000 to 10000
PTD043	*AO2SH	Analog output ch. 2 - Scaling function - Upper limit setting Set the internal value when +10 V is inputted. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD042] to [Pr. PTD045]. Refer to [Pr. PTD042] for details.	20000	-32768 to 32767
PTD044	*AO2SL	Analog output ch. 2 - Scaling function - Lower limit setting Set the internal value when -10 V is inputted. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD042] to [Pr. PTD045]. Refer to [Pr. PTD042] for details.	-20000	-32768 to 32767
PTD045	*AO2SF	Analog output ch. 2 - Scaling function - Shift amount setting Set the shift amount of the analog output signal for the scaling function. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD042] to [Pr. PTD045]. Refer to [Pr. PTD042] for details.	0	-32768 to 32767
PTD050	AO3OF	Analog output ch. 3 - Offset Set the offset of analog output ch. 3. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD050] to [Pr. PTD053]. In this case, perform the following. ・An alarm may occur when the difference in the setting of [Pr. PTD051 Analog output ch. 3 - Scaling function - Upper limit setting] and [Pr. PTD052 Analog output ch. 3 - Scaling function - Lower limit setting] is small. In this case, make the difference larger. ・An alarm may occur when the setting of [Pr. PTD053 Analog output ch. 3 - Scaling function - Shift amount setting] is large. In this case, set the value smaller.	0 [mV]	-10000 to 10000
PTD051	*AO3SH	Analog output ch. 3 - Scaling function - Upper limit setting Set the internal value when +10 V is inputted. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD050] to [Pr. PTD053]. Refer to [Pr. PTD050] for details.	20000	-32768 to 32767
PTD052	*AO3SL	Analog output ch. 3 - Scaling function - Lower limit setting Set the internal value when -10 V is inputted. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD050] to [Pr. PTD053]. Refer to [Pr. PTD050] for details.	-20000	-32768 to 32767
PTD053	*AO3SF	Analog output ch. 3 - Scaling function - Shift amount setting Set the shift amount of the analog output signal for the scaling function. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD050] to [Pr. PTD053]. Refer to [Pr. PTD050] for details.	0	-32768 to 32767
PTD058	AO4OF	Analog output ch. 4 - Offset Set the offset of analog output ch. 4. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD058] to [Pr. PTD061]. In this case, perform the following. ・An alarm may occur when the difference in the setting of [Pr. PTD059 Analog output ch. 4 - Scaling function - Upper limit setting] and [Pr. PTD060 Analog output ch. 4 - Scaling function - Lower limit setting] is small. In this case, make the difference larger. ・An alarm may occur when the setting of [Pr. PTD061 Analog output ch. 4 - Scaling function - Shift amount setting] is large. In this case, set the value smaller.	0 [mV]	-10000 to 10000
PTD059	*AO4SH	Analog output ch. 4 - Scaling function - Upper limit setting Set the internal value when +10 V is inputted. [AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD058] to [Pr. PTD061]. Refer to [Pr. PTD058] for details.	20000	-32768 to 32767

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTD060</td><td>*AO4SL</td><td>Analog output ch. 4 - Scaling function - Lower limit setting
Set the internal value when -10 V is inputted.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD058] to [Pr. PTD061]. Refer to [Pr. PTD058] for details.</td><td>-20000</td><td>-32768
to
32767</td></tr>
<tr><td>PTD061</td><td>*AO4SF</td><td>Analog output ch. 4 - Scaling function - Shift amount setting
Set the shift amount of the analog output signal for the scaling function.
[AL. 37 Parameter error] may occur depending on the setting combination of [Pr. PTD058] to [Pr. PTD061]. Refer to [Pr. PTD058] for details.</td><td>0</td><td>-32768
to
32767</td></tr>
<tr><td>PTD065</td><td>*AIAVF</td><td>Analog input averaging - Signal selection
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Analog input average 1 - Signal selection
Select the input signal for averaging.
Enable the bit corresponding to each channel of the analog input to be averaged.
When "0 is set to disable all the channels, "0" will be sent to the controller.
<table><tr><td>Bit</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>Input signal</td><td>Ch. 4</td><td>Ch. 3</td><td>Ch. 2</td><td>Ch. 1</td></tr></table>0: Disabled
1: Enabled
Set the weighting for each channel with [Pr. PTD67] to [Pr. PTD70].</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Analog input average 2 - Signal selection
Select an input to be used.
Enable the bit corresponding to each channel of the analog input to be averaged.
When "0 is set to disable all the channels, "0" will be sent to the controller.
<table><tr><td>Bit</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>Input signal</td><td>Ch. 4</td><td>Ch. 3</td><td>Ch. 2</td><td>Ch. 1</td></tr></table>0: Disabled
1: Enabled
Set the weighting for each channel with [Pr. PTD71] to [Pr. PTD74].</td><td>0h</td></tr><tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td>Refer to the Name and function column.</td><td></td></tr>
<tr><td>PTD067</td><td>*AIAV1C1</td><td>Analog input average 1 - Ch. 1 weighting
Set the weighting for channel 1.</td><td>1</td><td>1
to
10000</td></tr>
<tr><td>PTD068</td><td>*AIAV1C2</td><td>Analog input average 1 - Ch. 2 weighting
Set the weighting for channel 2.</td><td>1</td><td>1
to
10000</td></tr>
<tr><td>PTD069</td><td>*AIAV1C3</td><td>Analog input average 1 - Ch. 3 weighting
Set the weighting for channel 3.</td><td>1</td><td>1
to
10000</td></tr>
<tr><td>PTD070</td><td>*AIAV1C4</td><td>Analog input average 1 - Ch. 4 weighting
Set the weighting for channel 4.</td><td>1</td><td>1
to
10000</td></tr>
<tr><td>PTD071</td><td>*AIAV2C1</td><td>Analog input average 2 - Ch. 1 weighting
Set the weighting for channel 1.</td><td>1</td><td>1
to
10000</td></tr>
</table>

No.	Symbol	Name and function	Initial value [Unit]	Setting range
PTD072	*AIAV2C2	Analog input average 2 - Ch. 2 weighting Set the weighting for channel 2.	1	1 to 10000
PTD073	*AIAV2C3	Analog input average 2 - Ch. 3 weighting Set the weighting for channel 3.	1	1 to 10000
PTD074	*AIAV2C4	Analog input average 2 - Ch. 4 weighting Set the weighting for channel 4.	1	1 to 10000

(5) MR-MT2400 encoder I/F module

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTE009</td><td>**ENCA</td><td>Ch. A function selection
Select enable/disable and a polarity for Ch. A function.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity of the encoder.
0: Encoder pulses increase when the encoder moves in a positive direction.
1: Encoder pulses increase when the encoder moves in a negative direction.</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>Enable/disable ch. A selection
Enable/disable ch. A.
0: Disable (disuse)
1: Enable (use)</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE037</td><td>**SECA1</td><td>SSI - Ch. A function setting 1
Set the communication data rate for ch. A when SSI is connected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Communication data rate setting
Set the communication data rate when SSI is connected.
0: 100 kbps
1: 200 kbps</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>Encoder data conversion waiting time setting
Set the data communication conversion time of the encoder.
0: T (Communication data rate setting cycle)/2
1: 0.5 µs
2: 1 µs
3: 1.5 µs
4: 2 µs
5: 4 µs
6: 8 µs
7: 10 µs</td><td>0h</td></tr><tr><td>x _ _ _</td><td>Code conversion function setting
Set the code conversion function of the encoder data.
0: No conversion
1: Binary code output
2: Gray code → Binary Conversion</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTE038</td><td>**SECA2</td><td>SSI - Ch. A function setting 2
Set basic information of ch. A encoder when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Effective data length setting
Set the effective data length of the encoder.
A value of 20h or over will be fixed to 20h.
Set the effective data length converted to hexadecimal value. For example, set "0Ch" when the effective data length is 12 bits. Set "19h" when the effective data length is 25 bits.
Setting range: 0h to 2Fh</td><td>0h</td></tr><tr><td>x x _ _</td><td>Bit shift amount setting
Set a bit shift amount from the start of the encoder data.
Setting range: 0h to 1Fh</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE039</td><td>**SECA3</td><td>SSI - Ch. A function setting 3
Set multi-turn data of ch. A when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Multi-turn data - Data length
Set the data length of the multi-turn data.
A value of 20h or over will be fixed to 20h.
Setting range: 0h to 2Fh</td><td>0h</td></tr><tr><td>x x _ _</td><td>Multi-turn data - Start bit position setting
Set the start bit position of the multi-turn data.
Setting range: 0h to 1Fh</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE040</td><td>**SECA4</td><td>SSI - Ch. A function setting 4
Set single-turn data of ch. A when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Single-turn data - Data length setting
Set the data length of the single-turn data.
A value of 20h or over will be fixed to 20h.
Setting range: 0h to 2Fh</td><td>0h</td></tr><tr><td>x x _ _</td><td>Single-turn data - Start bit position setting
Set the start bit position of the single-turn data.
Setting range: 0h to 1Fh</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE041</td><td>**SECA5</td><td>SSI - Ch. A function setting 5
Set the status data of ch. A when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Status data - Data length setting
Set the data length of the status data.
A value of 20h or over will be fixed to 20h.
Setting range: 0h to 2Fh</td><td>0h</td></tr><tr><td>x x _ _</td><td>Status data - Start bit position setting
Set the start bit position of the status data.
Setting range: 0h to 1Fh</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTE042</td><td>**SECA6</td><td>SSI - Ch. A function setting 6
Set the error check method of ch. A when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Status data - Check function setting
Select enable/disable of alarm detection with status data.
0: Disable alarm detection with status data
1: Enable alarm detection with status data.
When "1" is set, also set " _ x_ _" of [Pr. PTE042].</td><td>0h</td></tr><tr><td>_ x _ _</td><td>Status data - Check polarity setting
Select a condition for alarm detection with status data.
0: [AL. 20.2] occurs when the logical sum of the status data is "1".
1: [AL. 20.2] occurs when the logical multiply of the status data is "0".</td><td>0h</td></tr><tr><td>x _ _ _</td><td>For manufacturer setting</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE043</td><td>**SDPLA</td><td>Ch. A position variation error threshold - Lower
Set the threshold (lower 16 bits) for detecting position variation error of ch. A when SSI is selected.
Ch. A position variation error threshold [pulse] = Setting value of [Pr. PTE044] × 65536 + the setting value of [Pr. PTE043]
[AL. 20.5] will occur when the position variation within the data update cycle exceeds the position variation error threshold.
Note that ch. A position variation error detection will be disabled in the following cases:
・Both [Pr. PTE043] and [Pr. PTE044] are set to "0".
・The threshold for the position variation error is equal to or larger than "2^(Multi-turn data length + Single-turn data length - 1)".
・[Pr. PTE037] = "0 _ _ _" (code conversion function setting: non-conversion)
[Precautions]
・When using this function, set the threshold for the position variation error smaller than "2^(Multi-turn data length + Single-turn data length - 1)".
・When the position variation within the data update cycle is equal to or larger than "2^(Multi-turn data length + Single-turn data length - 1)", the alarm may not be detected.
・When the data update cycle is doubled, the position variation within the data update cycle will be doubled. Set the parameter according to the data update cycle.
・When the position variation error threshold is small, an error is more likely to be detected. However, an error caused by external factor such as noise is also more likely to be detected.
・When the position variation error threshold is large, an error is less likely to be detected. However, an error caused by external factor such as noise is also less likely to be detected.
・Set the parameter according to the system and environment.</td><td>0000h [pulse]</td><td>0000h to FFFFh</td></tr>
<tr><td>PTE044</td><td>**SDPHA</td><td>Ch. A position variation error threshold - Upper
Set the threshold (upper 16 bits) for detecting position variation error of ch. A when SSI is selected.
Set this parameter together with [Pr. PTE043].</td><td>0000h [pulse]</td><td>0000h to 7FFFh</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTE065</td><td>**ENCB</td><td>Ch. B function selection
Select enable/disable and a polarity for Ch. B function.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity of the encoder.
0: Encoder pulse increases with the movement in the positive direction (CCW)
1: Encoder pulse increases with the movement in the negative direction (CW)</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td>Enable/disable ch. B selection
Enable/disable ch. B.
0: Disable (disuse)
1: Enable (use)</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE093</td><td>**SECB1</td><td>SSI - Ch. B function setting 1
Set the communication data rate for ch. B when SSI is connected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Communication data rate setting
Set the communication data rate when SSI is connected.
0: 100 kbps
1: 200 kbps</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>Encoder data conversion waiting time setting
Set the data communication conversion time of the encoder.
0: T (Communication data rate setting cycle)/2
1: 0.5 µs
2: 1 µs
3: 1.5 µs
4: 2 µs
5: 4 µs
6: 8 µs
7: 10 µs</td><td>0h</td></tr><tr><td>x _ _ _</td><td>Code conversion function setting
Set the code conversion function of the encoder data.
0: No conversion
1: Binary code output
2: Gray code → Binary Conversion</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTE094</td><td>**SECB2</td><td>SSI - Ch. B function setting 2
Set basic information of ch. B encoder when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Effective data length setting
Set the effective data length of the encoder.
A value of 20h or over will be fixed to 20h.
Set the effective data length converted to hexadecimal value. For example, set "0Ch" when the effective data length is 12 bits. Set "19h" when the effective data length is 25 bits.
Setting range: 0h to 2Fh</td><td>0h</td></tr><tr><td>x x _ _</td><td>Bit shift amount setting
Set a bit shift amount from the start of the encoder data.
Setting range: 0h to 1Fh</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE095</td><td>**SECB3</td><td>SSI - Ch. B function setting 3
Set multi-turn data of ch. B when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Multi-turn data - Data length
Set the data length of the multi-turn data.
A value of 20h or over will be fixed to 20h.
Setting range: 0h to 2Fh</td><td>0h</td></tr><tr><td>x x _ _</td><td>Multi-turn data - Start bit position setting
Set the start bit position of the multi-turn data.
Setting range: 0h to 1Fh</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE096</td><td>**SECB4</td><td>SSI - Ch. B function setting 4
Set single-turn data of ch. B when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Single-turn data - Data length setting
Set the data length of the single-turn data.
A value of 20h or over will be fixed to 20h.
Setting range: 0h to 2Fh</td><td>0h</td></tr><tr><td>x x _ _</td><td>Single-turn data - Start bit position setting
Set the start bit position of the single-turn data.
Setting range: 0h to 1Fh</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE097</td><td>**SECB5</td><td>SSI - Ch. B function setting 5
Set the status data of ch. B when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Status data - Data length setting
Set the data length of the status data.
A value of 20h or over will be fixed to 20h.
Setting range: 0h to 2Fh</td><td>0h</td></tr><tr><td>x x _ _</td><td>Status data - Start bit position setting
Set the start bit position of the status data.
Setting range: 0h to 1Fh</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PTE098</td><td>**SECB6</td><td>SSI - Ch. B function setting 6
Set the error check method of ch. B when SSI is selected.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Status data - Check function setting
Select enable/disable of alarm detection with status data.
0: Disable alarm detection with status data
1: Enable alarm detection with status data.
When "1" is set, also set " _ x_ _" of [Pr. PTE098].</td><td>0h</td></tr><tr><td>_ x _ _</td><td>Status data - Check polarity setting
Select a condition for alarm detection with status data.
0: [AL. 71.2] occurs when the logical sum of the status data is "1".
1: [AL. 71.2] occurs when the logical multiply of the status data is "0".</td><td>0h</td></tr><tr><td>x _ _ _</td><td>For manufacturer setting</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PTE099</td><td>**SDPLB</td><td>Ch. B position variation error threshold - Lower
Set the threshold (lower 16 bits) for detecting position variation error of ch. B when SSI is selected.
Ch. B position variation error threshold [pulse] = Setting value of [Pr. PTE100] × 65536 + the setting value of [Pr. PTE099]
[AL. 71.5] will occur when the position variation within the data update cycle exceeds the position variation error threshold.
Note that ch. B position variation error detection will be disabled in the following cases:
・Both [Pr. PTE099] and [Pr. PTE100] are set to "0".
・The threshold for the position variation error is equal to or larger than "2^(Multi-turn data length + Single-turn data length - 1)".
・[Pr. PTE093] = "0 _ _ _" (code conversion function setting: non-conversion)
[Precautions]
・When using this function, set the threshold for the position variation error smaller than "2^(Multi-turn data length + Single-turn data length - 1)".
・When the position variation within the data update cycle is equal to or larger than "2^(Multi-turn data length + Single-turn data length - 1)", the alarm may not be detected.
・When the data update cycle is doubled, the position variation within the data update cycle will be doubled. Set the parameter according to the data update cycle.
・When the position variation error threshold is small, an error is more likely to be detected. However, an error caused by external factor such as noise is also more likely to be detected.
・When the position variation error threshold is large, an error is less likely to be detected. However, an error caused by external factor such as noise is also less likely to be detected.
・Set the parameter according to the system and environment.</td><td>0000h [pulse]</td><td>0000h to FFFFh</td></tr>
<tr><td>PTE100</td><td>**SDPHB</td><td>Ch. B position variation error threshold - Upper
Set the threshold (upper 16 bits) for detecting position variation error of ch. B when SSI is selected.
Set this parameter together with [Pr. PTE099].</td><td>0000h [pulse]</td><td>0000h to 7FFFh</td></tr>
</table>

9.2 Axis mode

9.2.1 Parameter list

POINT

●The parameter whose symbol is preceded by * is enabled with the following conditions:
*: After setting the parameter, cycle the power or reset the controller.
**: After setting the parameter, cycle the power.

(1) Basic setting parameters ([Pr. PA_ _])

No.	Symbol	Name	Initial value	Unit
PA01		For manufacturer setting	0000h	
PA02			0000h	
PA03			0000h	
PA04			0000h	
PA05			0	
PA06	*EGM	Output-side electronic gear multiplication	1	
PA07	*EGS	Input-side electronic gear multiplication	1	
PA08		For manufacturer setting	0	
PA09			0	
PA10			0	
PA11			0	
PA12			0	
PA13			0000h	
PA14	*POL	Rotation direction selection	0	
PA15	*PRL	Number of pulses per revolution setting Lower	4000	[pulse/rev]
PA16	*PRH	Number of pulses per revolution setting Upper	0	[10000 pulses/rev]
PA17	*DIL	Input signal logic selection	0000h	
PA18	*DOL	Output signal logic selection	0000h	
PA19		For manufacturer setting	000Bh	
PA20			0000h	
PA21			0000h	
PA22			0000h	
PA23			0000h	
PA24			0000h	
PA25			0000h	
PA26			0000h	
PA27			0000h	
PA28			0000h	
PA29			0000h	
PA30			0000h	
PA31			0000h	
PA32			0000h	

(2) Gain/filter setting parameters ([Pr. PB_ _])

No.	Symbol	Name	Initial value	Unit
PB01	*DEL	[AL. 35 I/O pulse frequency error] alarm level selection	0000h	
PB02		For manufacturer setting	0000h	
PB03			0	
PB04			0	
PB05			0	
PB06			0	
PB07			0	
PB08			0	
PB09	*TOP	Motor maximum speed	6000	r/min
PB10		For manufacturer setting	0	
PB11	RDT	Virtual RD signal delay time	0	ms
PB12	CRT	Clear signal output pulse width time	10	ms
PB13		For manufacturer setting	0	
PB14	*PLSO	Command pulse output form	0000h	
PB15		For manufacturer setting	0	
PB16	*IOP	Input function selection	0000h	
PB17	*FPI	Feedback pulse input form	0000h	
PB18	*BAS	Motor rated speed	3000	r/min
PB19		For manufacturer setting	0	
PB20			0	
PB21			0	
PB22			0	
PB23			0000h	
PB24			0000h	
PB25			0000h	
PB26	*LIS	Home position return input setting	0000h	
PB27		For manufacturer setting	0	
PB28			0	
PB29			0	
PB30			0	
PB31			0	
PB32			0	
PB33			0	
PB34			0	
PB35			0	
PB36			0	
PB37			0	
PB38			0	
PB39			0	
PB40			0	
PB41			0	
PB42			0	
PB43			0004h	
PB44			0	
PB45			0000h	
PB46			0000h	
PB47			0000h	
PB48			0000h	
PB49			0000h	
PB50			0000h	

No.	Symbol	Name	Initial value	Unit
PB51		For manufacturer setting	0000h	
PB52			0000h	
PB53			0000h	
PB54			0000h	
PB55			0000h	
PB56			0000h	
PB57			0000h	
PB58			0000h	
PB59			0000h	
PB60			0000h	
PB61			0000h	
PB62			0000h	
PB63			0000h	
PB64			0000h	

(3) Extension setting parameters ([Pr. PC_ _])

No.	Symbol	Name	Initial value	Unit
PC01		For manufacturer setting	0	
PC02			0	
PC03			0000h	
PC04			0000h	
PC05			0000h	
PC06			0000h	
PC07			0	
PC08			0	
PC09			0000h	
PC10			0000h	
PC11			0	
PC12			0	
PC13			0	
PC14			0	
PC15			0	
PC16			0000h	
PC17			0000h	
PC18			0000h	
PC19			0000h	
PC20			0000h	
PC21			0000h	
PC22			0000h	
PC23			0000h	
PC24			0000h	
PC25			0000h	
PC26			0000h	
PC27			0000h	
PC28			0000h	
PC29			0000h	
PC30			0000h	
PC31			0000h	
PC32			0000h	
PC33	*HDI1	Head module DI1 (CN2-13) setting	0000h	
PC34	*HDI2	Head module DI2 (CN2-1) setting	0000h	
PC35	*HDI3	Head module DI3 (CN2-14) setting	0000h	
PC36	*HDI4	Head module DI4 (CN2-2) setting	0000h	
PC37	*HDI5	Head module DI5 (CN2-15) setting	0000h	
PC38	*HDI6	Head module DI6 (CN2-3) setting	0000h	
PC39	*HDI7	Head module DI7 (CN2-16) setting	0000h	
PC40	*HDI8	Head module DI8 (CN2-4) setting	0000h	
PC41	*HDI9	Head module DI9 (CN2-17) setting	0000h	
PC42	*HDI10	Head module DI10 (CN2-5) setting	0000h	
PC43	*HDI11	Head module DI11 (CN2-18) setting	0000h	
PC44	*HDI12	Head module DI12 (CN2-6) setting	0000h	
PC45		For manufacturer setting	0000h	
PC46			0003h	
PC47	*HDO1	Head module DO1 (CN2-20) setting	0000h	
PC48	*HDO2	Head module DO2 (CN2-8) setting	0000h	
PC49	*COP2	Function selection C-2	0000h	

No.	Symbol	Name	Initial value	Unit
PC50		For manufacturer setting	0000h	
PC51			0000h	
PC52			0000h	
PC53			0000h	
PC54			0000h	
PC55			0000h	
PC56			0000h	
PC57			0000h	
PC58			0000h	
PC59			0000h	
PC60			0000h	
PC61			0000h	
PC62			0000h	
PC63			0000h	
PC64			0000h	

9.2.2 Detailed list of parameters

POINT

●Set a value to each "x" in the "Setting digit" columns.

(1) Basic setting parameters ([Pr. PA_ _])

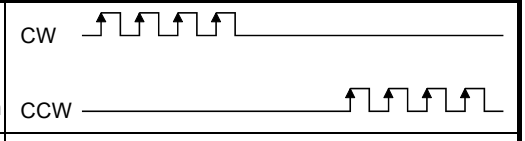
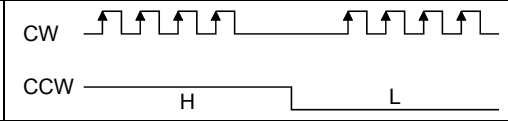
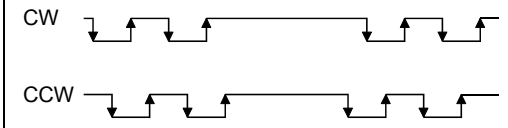
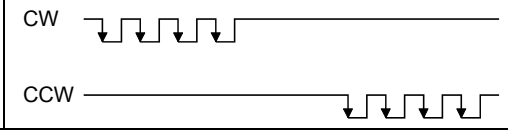
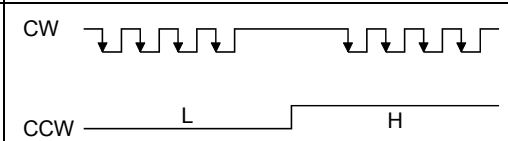
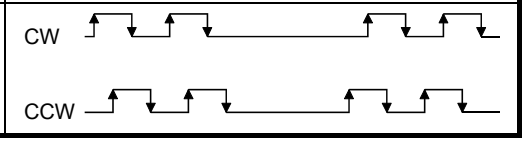
<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PA06</td><td>*EGM</td><td>Output-side electronic gear multiplication
Set an electronic gear multiplication for the output side.
1: × 1
2: × 1/2
3: × 1/4
4: × 1/8
When using the electronic gear in axis mode, the maximum frequency of the pulse output is determined by the settings of [Pr. PA06], [Pr. PA07] and [Pr. PB01]. Refer to the following table for details.
<table>
<tr><th rowspan="2">Output-side electronic gear multiplication</th><th rowspan="2">[AL. 35 I/O pulse frequency error] alarm level selection</th><th colspan="3">Maximum frequency of pulse output (when electronic gear is used)</th></tr>
<tr><th>A-phase/B-phase pulse train (multiplied by four)</th><th>Forward/reverse rotation pulse train</th><th>Signed pulse train</th></tr>
<tr><td rowspan="2">× 1/2
[Pr. PA06]: 2
[Pr. PA07]: 1</td><td>Differential driver output
[Pr. PB01]: _ _ _ 0</td><td>2 Mpulses/s</td><td>1 Mpulse/s</td><td>1 Mpulse/s</td></tr>
<tr><td>Open-collector output
[Pr. PB01]: _ _ _ 1</td><td>200 kpulses/s</td><td>50 kpulses/s</td><td>50 kpulses/s</td></tr>
<tr><td rowspan="2">× 1/4
[Pr. PA06]: 3
[Pr. PA07]: 1</td><td>Differential driver output
[Pr. PB01]: _ _ _ 0</td><td>1 Mpulse/s</td><td>500 kpulses/s</td><td>500 kpulses/s</td></tr>
<tr><td>Open-collector output
[Pr. PB01]: _ _ _ 1</td><td>200 kpulses/s</td><td>50 kpulses/s</td><td>50 kpulses/s</td></tr>
<tr><td rowspan="2">× 1/8
[Pr. PA06]: 4
[Pr. PA07]: 1</td><td>Differential driver output
[Pr. PB01]: _ _ _ 0</td><td>500 kpulses/s</td><td>200 kpulses/s</td><td>200 kpulses/s</td></tr>
<tr><td>Open-collector output
[Pr. PB01]: _ _ _ 1</td><td>200 kpulses/s</td><td>50 kpulses/s</td><td>50 kpulses/s</td></tr>
</table></td><td>1</td><td>1
to
4</td></tr>
<tr><td>PA07</td><td>*EGS</td><td>Input-side electronic gear multiplication
Set the multiplication of the electronic gear and feedback counter in the input side.
1: Reciprocal of the output-side electronic gear multiplication
2: × 1
When using the electronic gear in axis mode, the maximum frequency of the pulse output is determined by the settings of [Pr. PA06], [Pr. PA07] and [Pr. PB01]. Refer to [Pr. PA06] for details.</td><td>1</td><td>1
to
2</td></tr>
<tr><td>PA14</td><td>*POL</td><td>Rotation direction selection
Select the rotation direction of command pulse output.
<table>
<tr><th rowspan="2">Setting digit</th><th colspan="2">Motor rotation direction</th></tr>
<tr><th>When current position increase is commanded</th><th>When current position decrease is commanded</th></tr>
<tr><td>0</td><td>CW (forward rotation pulse output)</td><td>CCW (reverse rotation pulse output)</td></tr>
<tr><td>1</td><td>CCW (reverse rotation pulse output)</td><td>CW (forward rotation pulse output)</td></tr>
</table>
The actual rotation direction of the motor (CW/CCW) depends on the combination of the general pulse train driver setting.</td><td>0</td><td>0
to
1</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PA15</td><td>*PRL</td><td>Number of pulses per revolution setting Lower
Set the number of command pulses per motor revolution.
Set the lower four digits of the number of pulses per revolution in decimal numbers in this parameter.</td><td>4000
[pulse/rev]</td><td>0
to
9999</td></tr>
<tr><td>PA16</td><td>*PRH</td><td>Number of pulses per revolution setting Upper
Set the number of command pulses per motor revolution.
Set the higher four digits of the number of pulses per revolution in decimal numbers in this parameter.</td><td>0
[10000 pulses/rev]</td><td>0
to
9999</td></tr>
<tr><td>PA17</td><td>*DIL</td><td>Input signal logic selection
Select a logic for the input signal.
<table>
<tr><th>Setting digit</th><th>Bit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td rowspan="4">_ _ _ x</td><td>_ _ _ x</td><td>Bit 0: ALM (Malfunction)
0: Negative logic
1: Positive logic</td><td rowspan="4">0h</td></tr>
<tr><td>_ _ x _</td><td>For manufacturer setting</td></tr>
<tr><td>_ x _ _</td><td>Bit 2: RD (Ready)
0: Negative logic
1: Positive logic</td></tr>
<tr><td>x _ _ _</td><td>Bit 3: INP (In-position)
0: Negative logic
1: Positive logic</td></tr>
<tr><td rowspan="4">_ _ x _</td><td>_ _ _ x</td><td>Bit 4: FLS (Upper stroke limit)
0: Negative logic
1: Positive logic</td><td rowspan="4">0h</td></tr>
<tr><td>_ _ x _</td><td>Bit 5: RLS (Lower stroke limit)
0: Negative logic
1: Positive logic</td></tr>
<tr><td>_ x _ _</td><td>Bit 6: DOG (Proximity dog)
0: Negative logic
1: Positive logic</td></tr>
<tr><td>x _ _ _</td><td>For manufacturer setting</td></tr>
<tr><td rowspan="4">_ x _ _</td><td>_ _ _ x</td><td rowspan="4">For manufacturer setting</td><td rowspan="4">0h</td></tr>
<tr><td>_ _ x _</td></tr>
<tr><td>_ x _ _</td></tr>
<tr><td>x _ _ _</td></tr>
<tr><td rowspan="4">x _ _ _</td><td>_ _ _ x</td><td>Bit C: PG (zero-point signal)
0: Positive logic
1: Negative logic
This parameter setting is available when connecting with head modules with software version A1 or later.</td><td rowspan="4">0h</td></tr>
<tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td></tr>
<tr><td>_ x _ _</td></tr>
<tr><td>x _ _ _</td></tr>
</table></td><td>Refer to the Name and function column.</td><td></td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PA18</td><td>*DOL</td><td>Output signal logic selection
Select a logic for the output signal.
<table><tr><th>Setting digit</th><th>Bit</th><th>Explanation</th><th>Initial value</th></tr><tr><td rowspan="5">_ _ _ x</td><td>_ _ _ x</td><td>Bit 0: SON (Servo-on)
0: Negative logic
1: Positive logic</td><td rowspan="5">0h</td></tr><tr><td>_ _ x _</td><td>Bit 1: CR (Clear)
0: Negative logic
1: Positive logic</td></tr><tr><td>_ x _ _</td><td>Bit 2: RES (Reset)
0: Negative logic
1: Positive logic</td></tr><tr><td>x _ _ _</td><td>For manufacturer setting</td></tr><tr><td rowspan="4">_ _ x _</td><td>_ _ _ x</td><td rowspan="4">For manufacturer setting</td><td rowspan="4">0h</td></tr><tr><td>_ _ x _</td></tr><tr><td>_ x _ _</td></tr><tr><td>x _ _ _</td></tr><tr><td rowspan="4">_ x _ _</td><td>_ _ _ x</td><td rowspan="4">For manufacturer setting</td><td rowspan="4">0h</td></tr><tr><td>_ _ x _</td></tr><tr><td>_ x _ _</td></tr><tr><td>x _ _ _</td></tr><tr><td rowspan="4">x _ _ _</td><td>_ _ _ x</td><td rowspan="4">For manufacturer setting</td><td rowspan="4">0h</td></tr><tr><td>_ _ x _</td></tr><tr><td>_ x _ _</td></tr><tr><td>x _ _ _</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

(2) Gain/filter setting parameters ([Pr. PB_ _])

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PB01</td><td>*DEL</td><td>[AL. 35 I/O pulse frequency error] alarm level selection
Select the alarm level for [AL. 35 I/O pulse frequency error].
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>[AL. 35 I/O pulse frequency error] alarm level selection
0: Differential line driver output alarm level (1.5 times of the maximum frequency)
Note that when "A-phase/B-phase pulse train (_ _ 2 _)" is set with [Pr. PB14], a value of A-phase/B-phase pulse multiplied by four is applied.
1: Open-collector output alarm level (1.5 times of the maximum frequency)</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table>When using the electronic gear in axis mode, the maximum frequency of the pulse output is determined by the settings of [Pr. PA06], [Pr. PA07] and [Pr. PB01]. Refer to [Pr. PA06] for details.</td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PB09</td><td>*TOP</td><td>Motor maximum speed
Set the maximum speed of the motor to be used.</td><td>6000 [r/min]</td><td>20 to 10000</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PB11</td><td>RDT</td><td>Virtual RD signal delay time
Set the delay time until the virtual RD signal turns on after the servo-on output turns on.</td><td>0
[ms]</td><td>0
to
1000</td></tr>
<tr><td>PB12</td><td>CRT</td><td>Clear signal output pulse width time
Set the minimum time for the clear output to be on.
1 ms is set when "0" is set.</td><td>10
[ms]</td><td>0
to
100</td></tr>
<tr><td>PB14</td><td>*PLSO</td><td>Command pulse output form
Select the command pulse signal output form.
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>For manufacturer setting</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>Command pulse output form
0: Forward/reverse rotation pulse train
1: Signed pulse train
2: A-phase/B-phase pulse train (The pulse I/O module outputs pulses after multiplying by four.)</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td>Pulse train logic selection
0: Positive logic
1: Negative logic</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>For manufacturer setting</td><td>0h</td></tr>
</table>
<table>
<tr><th>Setting value</th><th colspan="2">Pulse train form</th><th>Forward rotation command</th><th>Reverse rotation command</th></tr>
<tr><td>0000h</td><td rowspan="3">Positive logic</td><td>Forward/ reverse rotation pulse train</td><td colspan="2"></td></tr>
<tr><td>0010h</td><td>Signed pulse train</td><td colspan="2"></td></tr>
<tr><td>0020h</td><td>A-phase/ B-phase pulse train</td><td colspan="2"></td></tr>
<tr><td>0100h</td><td rowspan="3">Negative logic</td><td>Forward/ reverse rotation pulse train</td><td colspan="2"></td></tr>
<tr><td>0110h</td><td>Signed pulse train</td><td colspan="2"></td></tr>
<tr><td>0120h</td><td>A-phase/ B-phase pulse train</td><td colspan="2"></td></tr>
</table></td><td>Refer to the Name and function column.</td><td></td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PB16</td><td>*IOP</td><td>Input function selection
Select an input function.

<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>ALM (Malfunction) input setting
0: Disable the alarm detection
1: Enable the alarm detection</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>RD (Ready) input setting
0: Disuse (Use the virtual RD signal.)
1: Use (Use the signal from the connected module.)

The virtual RD signal is created in the module after the servo-on command is received.

<table>
<tr><th>Virtual RD</th><th>Determination condition</th></tr>
<tr><td>On</td><td>When the time set in [Pr. PB11] has elapsed after servo-on</td></tr>
<tr><td>Off</td><td>Servo-off</td></tr>
</table></td><td>0h</td></tr>
<tr><td>_ x _ _</td><td>INP (In-position) input setting
0: Disuse (Use the virtual INP signal.)
1: Use (Use the signal from the connected module.)

The virtual INP signal is created in the module when the command frequency is equal to "0".

<table>
<tr><th>Virtual INP</th><th>Determination condition</th></tr>
<tr><td>On</td><td>When the command frequency is equal to "0"</td></tr>
<tr><td>Off</td><td>When the command frequency is not equal to "0"</td></tr>
</table></td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>For manufacturer setting</td><td>0h</td></tr>
</table></td><td>Refer to the Name and function column.</td><td></td></tr>
<tr><td>PB17</td><td>*FPI</td><td>Feedback pulse input form
Select the input format of the feedback pulse input signal.

<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Feedback pulse filter selection
0: 0.02 μs
1: 0.04 μs
2: 0.08 μs
3: 0.16 μs
4: 0.32 μs
5: 0.64 μs</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>Pulse train logic selection
0: Positive logic
1: Negative logic</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td>Pulse train input form
0: Forward/reverse rotation pulse train
1: Signed pulse train
2: A-phase/B-phase pulse train (The pulse I/O module imports input pulses after multiplying by four.)</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>For manufacturer setting</td><td>0h</td></tr>
</table></td><td>Refer to the Name and function column.</td><td></td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PB18</td><td>*BAS</td><td>Motor rated speed
Set the rated speed of the motor to be used.
When the rated speed of the motor is unknown, set a value equal to or less than [Pr. PB09 Motor maximum speed].</td><td>3000
[r/min]</td><td>20
to
10000</td></tr>
<tr><td>PB26</td><td>*LIS</td><td>Home position return input setting
Set the function of the input signal at home position return.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Operation edge selection
0: Falling edge
1: Rising edge
This parameter setting is available when connecting with head modules with software version A1 or later.</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

(3) Extension setting parameters ([Pr. PC_ _])

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PC33</td><td>*HDI1</td><td>Head module DI1 (CN2-13) setting
Set a function for the head module input signal DI1 (CN2-13). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC34</td><td>*HDI2</td><td>Head module DI2 (CN2-1) setting
Set a function for the head module input signal DI2 (CN2-1). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC35</td><td>*HDI3</td><td>Head module DI3 (CN2-14) setting
Set a function for the head module input signal DI3 (CN2-14). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC36</td><td>*HDI4</td><td>Head module DI4 (CN2-2) setting
Set a function for the head module input signal DI4 (CN2-2). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PC37</td><td>*HDI5</td><td>Head module DI5 (CN2-15) setting
Set a function for the head module input signal DI5 (CN2-15). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC38</td><td>*HDI6</td><td>Head module DI6 (CN2-3) setting
Set a function for the head module input signal DI6 (CN2-3). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC39</td><td>*HDI7</td><td>Head module DI7 (CN2-16) setting
Set a function for the head module input signal DI7 (CN2-16). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC40</td><td>*HDI8</td><td>Head module DI8 (CN2-4) setting
Set a function for the head module input signal DI8 (CN2-4). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PC41</td><td>*HDI9</td><td>Head module DI9 (CN2-17) setting
Set a function for the head module input signal DI9 (CN2-17). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC42</td><td>*HDI10</td><td>Head module DI10 (CN2-5) setting
Set a function for the head module input signal DI10 (CN2-5). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC43</td><td>*HDI11</td><td>Head module DI11 (CN2-18) setting
Set a function for the head module input signal DI11 (CN2-18). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC44</td><td>*HDI12</td><td>Head module DI12 (CN2-6) setting
Set a function for the head module input signal DI12 (CN2-6). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the input signal.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td rowspan="3">For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td>0h</td></tr><tr><td>x _ _ _</td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [Unit]</th><th>Setting range</th></tr>
<tr><td>PC47</td><td>*HDO1</td><td>Head module DO1 (CN2-20) setting
Set a function for the head module output signal DO1 (CN2-20). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC48</td><td>*HDO2</td><td>Head module DO2 (CN2-8) setting
Set a function for the head module output signal DO2 (CN2-8). This parameter is enabled only for the first axis of one block. The setting is not valid for the other axes.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Polarity selection
Select a polarity for the digital output.
0: Positive polarity
1: Negative polarity</td><td>0h</td></tr><tr><td>_ _ x _</td><td>Output CLEAR/HOLD function selection
Set the output status of the digital output signal for a communication shut-off.
0: CLEAR
The digital output signal will be in the initial status when the communication is shut off.
1: HOLD
The previous digital output signal status will be held even when the communication is shut off.</td><td>0h</td></tr><tr><td>_ x _ _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
<tr><td>PC49</td><td>*COP2</td><td>Function selection C-2
Select a detection method for [AL. 10.3].
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>[AL. 10.3] detection selection
Select enabled/disabled for detecting [AL. 10.3].
0: Enabled
1: Disabled
Select "1" when not using the digital output of the head module.</td><td>0h</td></tr><tr><td>_ _ x _</td><td>For manufacturer setting</td><td>0h</td></tr><tr><td>_ x _ _</td><td></td><td>0h</td></tr><tr><td>x _ _ _</td><td></td><td>0h</td></tr></table></td><td colspan="2">Refer to the Name and function column.</td></tr>
</table>

MEMO

10. TROUBLESHOOTING

POINT
●An alarm No. will not be shown on the module LED. Check the alarm No. of the sensing module by starting MELSOFT MR Configurator2 via MELSOFT MT Works2. ●[AL. 37 Parameter error] and warnings are not recorded in the alarm history. ●The symbols in the target column mean as follows. [MT2010]: MR-MT2010 [MT2100]: MR-MT2100 [MT2200]: MR-MT2200 [MT2300]: MR-MT2300 [MT2400]: MR-MT2400

When an error occurs during operation, the corresponding alarm or warning is displayed on the status display LED.
If an alarm is displayed, refer to section 10.4 and take the appropriate action.
If any warning occurs, refer to section 10.5 and take the appropriate action.

10.1 Explanations of the lists

(1) No./Name/Detail No./Detail name
Indicates the alarm or warning No., name, detail No., and detail name.

(2) Alarm deactivation
After the alarm cause has been removed, the alarm can be deactivated in any of the methods marked ○ in the alarm deactivation column. Warnings are automatically canceled after the cause of occurrence is removed. Alarms are deactivated by alarm reset, CPU reset, or power cycling.

Alarm deactivation	Explanation
Alarm reset	1. Error reset command from the controller 2. Click the "Occurred Alarm Reset" in the "Alarm Display" window of MR Configurator2.
CPU reset	Reset the controller.
Cycling the power	Cycle the power.

(3) Stop method
This indicates a module to be stopped when an alarm occurs.
Each module: Only module with an alarm will stop.
All modules: All modules will stop.

(4) Target module
This indicates a module which detects an alarm.
The alarm occurs on the target module with ○.

10.2 Alarm list

	No.	Name	Detail No.	Detail name	Alarm deactivation			Stop method	Target module				
					Alarm reset	CPU reset	Cycling the power		MR-MT2010	MR-MT2100	MR-MT2200	MR-MT2300	MR-MT2400
Alarm	10	Undervoltage	10.1	Voltage drop in the control circuit power			○	All modules	○				
			10.3	Head module Voltage drop in the external input power supply			○	All modules	○				
			10.4	Analog I/O module Voltage drop in the external input power supply			○	Each unit				○	
	11	Switch setting error	11.1	Rotary switch setting error			○	All modules	○				
			11.2	Axis mode setting error			○	All modules		○	○	○	○
	12	Memory error 1 (RAM)	12.1	RAM error 1			○	All modules	○				
			12.2	RAM error 2			○	All modules					
			12.3	RAM error 3			○	All modules					
			12.4	RAM error 4			○	All modules					
	13	Clock error	13.1	Clock error 1			○	All modules	○				
			13.2	Clock error 2			○	All modules					
	14	Control process error	14.1	Control process error 1			○	All modules	○				
			14.2	Control process error 2			○	All modules					
			14.3	Control process error 3			○	All modules					
			14.7	Control process error 7			○	All modules					
			14.C	Control process error 12			○	All modules	○	○	○	○	○
	15	Memory error 2 (EEP-ROM)	15.1	EEP-ROM error at power on			○	All modules	○				
			15.2	EEP-ROM error during operation			○	All modules					
	17	Board error	17.4	Board error 4			○	All modules	○	○	○	○	○
			17.A	Board error 10			○	All modules		○	○		
	19	Memory error 3 (Flash-ROM)	19.1	Flash-ROM error 1			○	All modules	○				
			19.2	Flash-ROM error 2			○	All modules					
	1A	Incorrect combination of extension modules	1A.1	Abnormal number of extension modules connected			○	All modules	○	○	○	○	○
			1A.2	Abnormal number of encoder I/F modules connected			○	All modules					○
	1B	Driver error	1B.1	Driver error 1	○	○	○	Each unit			○		
			1B.2	Driver error 2	○	○	○	Each unit					
	1E	Encoder I/F module - Initial communication error 2	1E.1	Encoder I/F module - Ch. A encoder malfunction			○	Each unit					○
			1E.2	Encoder I/F module - Ch. B encoder malfunction			○	Each unit					
	1F	Encoder I/F module - Initial communication error 3	1F.1	Encoder I/F module - Ch. A encoder not supported			○	Each unit					○
			1F.2	Encoder I/F module - Ch. B encoder not supported			○	Each unit					

	No.	Name	Detail No.	Detail name	Alarm deactivation			Stop method	Target module				
					Alarm reset	CPU reset	Cycling the power		MR-MT2010	MR-MT2100	MR-MT2200	MR-MT2300	MR-MT2400
Alarm	20	Encoder I/F module - Ch. A Normal communication error 1	20.1	Encoder I/F module - Ch. A Normal communication - Receive data error 1			○	Each unit					○
			20.2	Encoder I/F module - Ch. A Normal communication - Receive data error 2			○	Each unit					
			20.3	Encoder I/F module - Ch. A Normal communication - Receive data error 3			○	Each unit					
			20.5	Encoder I/F module - Ch. A Normal communication - Transmission data error 1			○	Each unit					
			20.6	Encoder I/F module - Ch. A Normal communication - Transmission data error 2			○	Each unit					
			20.7	Encoder I/F module - Ch. A Normal communication - Transmission data error 3			○	Each unit					
	21	Encoder I/F module - Ch. A Normal communication error 2	21.1	Encoder I/F module - Ch. A Data error 1			○	Each unit					○
			21.2	Encoder I/F module - Ch. A Data update error			○	Each unit					
			21.3	Encoder I/F module - Ch. A Data waveform error			○	Each unit					
			21.4	Encoder I/F module - Ch. A Non-signal error			○	Each unit					
			21.5	Encoder I/F module - Ch. A Hardware error 1			○	Each unit					
			21.6	Encoder I/F module - Ch. A Hardware error 2			○	Each unit					
	28	Encoder I/F module - Linear encoder error 2	28.1	Encoder I/F module - Ch. A Linear encoder environmental error			○	Each unit					○
			28.2	Encoder I/F module - Ch. B Linear encoder environmental error			○	Each unit					
	2A	Encoder I/F module - Ch. A Linear encoder error 1	2A.1	Encoder I/F module - Ch. A Linear encoder error 1-1			○	Each unit					○
			2A.2	Encoder I/F module - Ch. A Linear encoder error 1-2			○	Each unit					
			2A.3	Encoder I/F module - Ch. A Linear encoder error 1-3			○	Each unit					
			2A.4	Encoder I/F module - Ch. A Linear encoder error 1-4			○	Each unit					
			2A.5	Encoder I/F module - Ch. A Linear encoder error 1-5			○	Each unit					
			2A.6	Encoder I/F module - Ch. A Linear encoder error 1-6			○	Each unit					
			2A.7	Encoder I/F module - Ch. A Linear encoder error 1-7			○	Each unit					
			2A.8	Encoder I/F module - Ch. A Linear encoder error 1-8			○	Each unit					
	34	SSCNET receive error 1	34.1	SSCNET receive data error	○	○ (Note 1)	○	All modules	○				
			34.2	SSCNET connector connection error	○	○	○	All modules					
			34.3	SSCNET communication data error	○	○	○	Each unit					
			34.4	Hardware error signal detection	○	○	○	All modules					

	No.	Name	Detail No.	Detail name	Alarm deactivation			Stop method	Target module				
					Alarm reset	CPU reset	Cycling the power		MR-MT2010	MR-MT2100	MR-MT2200	MR-MT2300	MR-MT2400
Alarm	35	I/O pulse frequency error	35.1	Pulse I/O module - Ch. A Output pulse frequency error	○	○	○	Each unit			○		
			35.2	Pulse I/O module - Ch. B Output pulse frequency error	○	○	○	Each unit					
			35.3	Pulse I/O module - Ch. A Input pulse frequency error	○	○	○	Each unit					
			35.4	Pulse I/O module - Ch. B Input pulse frequency error	○	○	○	Each unit					
	36	SSCNET receive error 2	36.1	Continuous communication data error	○	○	○	Each unit	○				
	37	Parameter error	37.1	Parameter setting range error			○	Each unit	○	○	○	○	○
			37.2	Parameter combination error			○	Each unit					
	71	Encoder I/F module - Ch. B Normal communication error 1	71.1	Encoder I/F module - Ch. B Normal communication - Receive data error 1			○	Each unit					○
			71.2	Encoder I/F module - Ch. B Normal communication - Receive data error 2			○	Each unit					
			71.3	Encoder I/F module - Ch. B Normal communication - Receive data error 3			○	Each unit					
			71.5	Encoder I/F module - Ch. B Normal communication - Transmission data error 1			○	Each unit					
			71.6	Encoder I/F module - Ch. B Normal communication - Transmission data error 2			○	Each unit					
			71.7	Encoder I/F module - Ch. B Normal communication - Transmission data error 3			○	Each unit					
	72	Encoder I/F module - Ch. B Normal communication error 2	72.1	Encoder I/F module - Ch. B Data error 1			○	Each unit					○
			72.2	Encoder I/F module - Ch. B Data update error			○	Each unit					
			72.3	Encoder I/F module - Ch. B Data waveform error			○	Each unit					
			72.4	Encoder I/F module - Ch. B Non-signal error			○	Each unit					
			72.5	Encoder I/F module - Ch. B Hardware error 1			○	Each unit					
			72.6	Encoder I/F module - Ch. B Hardware error 2			○	Each unit					
	75	Extension module error	75.1	Reset signal error			○	Each unit		○	○	○	○
			75.3	Output pulse error 1			○	Each unit			○		
			75.4	Output pulse error 2			○	Each unit			○		
	76	Encoder I/F module - Ch. B Linear encoder error 1	76.1	Encoder I/F module - Ch. B Linear encoder error 1-1			○	Each unit					○
			76.2	Encoder I/F module - Ch. B Linear encoder error 1-2			○	Each unit					
			76.3	Encoder I/F module - Ch. B Linear encoder error 1-3			○	Each unit					
			76.4	Encoder I/F module - Ch. B Linear encoder error 1-4			○	Each unit					
			76.5	Encoder I/F module - Ch. B Linear encoder error 1-5			○	Each unit					
			76.6	Encoder I/F module - Ch. B Linear encoder error 1-6			○	Each unit					
			76.7	Encoder I/F module - Ch. B Linear encoder error 1-7			○	Each unit					
			76.8	Encoder I/F module - Ch. B Linear encoder error 1-8			○	Each unit					

	No.	Name	Detail No.	Detail name	Alarm deactivation			Stop method	Target module				
					Alarm reset	CPU reset	Cycling the power		MR-MT2010	MR-MT2100	MR-MT2200	MR-MT2300	MR-MT2400
Alarm	8E	Serial communication error	8E.4	Serial communication command error	○	○	○	All modules	○				
			8E.5	Serial communication data number error	○	○	○	All modules					
	(Note 2)	Watchdog	(Note 2)	Watchdog			○	All modules	○	○	○	○	○

Note 1. In some controller communication status, the alarm factor may not be removed.
2. The alarm No. will not be shown. Check the status display LED of each sensing module.

10.3 Warning list

	No.	Name	Detail No.	Detail name	Stop method	Target module				
						MR-MT2010	MR-MT2100	MR-MT2200	MR-MT2300	MR-MT2400
Warning	E4	Parameter warning	E4.1	Parameter setting range error warning		○	○	○	○	○
	E7	Controller forced stop warning	E7.1	Controller forced stop input warning	All modules	○				

10.4 Remedies for alarms

CAUTION ●When an alarm occurs, eliminate its cause, ensure safety, and deactivate the alarm to restart operation. Otherwise, it may cause injury.

POINT

●[AL. 37 Parameter error] is not recorded in the alarm history.

The alarm No. will not be shown on the module LED. Check the alarm No. of the sensing module by starting MELSOFT MR Configurator2 via MELSOFT MT Works2.
The cause of alarm occurrence can also be checked using MELSOFT MR Configurator2.

Alarm No.: 10		Name: Undervoltage					
Alarm content		・The voltage of the control circuit power supply has dropped. ・The voltage in the external input power supply has dropped.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
10.1	Voltage drop in the control circuit power	(1)	Connection of the control circuit power supply is incorrect.	Check the connection of the control circuit power supply.	It has a failure.	Connect it correctly.	[MT2010]
					It has no failure.	Check (2).	
		(2)	The voltage of the control circuit power supply is low.	Check if the voltage of the control circuit power supply is lower than prescribed value. Prescribed value: 17 V DC	The voltage is the prescribed value or lower.	Review the voltage of the control circuit power supply.	
					The voltage is higher than the prescribed value.	Check (3).	
		(3)	The power was cycled before the internal control circuit power supply stopped.	Check the power-on method if it has a problem.	It has a problem.	Turn on the power supply again after making sure that the sensing module LED has turned off.	
					It has no problem.	Check (4).	
		(4)	An instantaneous power failure has occurred for more than 15 ms.	Check if the power has a problem.	It has a problem.	Review the power.	
10.3	Voltage drop in the external input power supply of the head module	(1)	The external input power supply of the head module is not connected.	Check the usage of the digital output function of the head module.	The digital output function is not used.	Disable the detection of [AL. 10.3] with a parameter. Station mode: [Pr. PTA032] Axis mode: [Pr. PC49]	[MT2010]
					The digital output function is used.	Check (2).	
		(2)	Connection error is found in the external input power supply of the head module.	Check the connection of the external input power supply.	It has a failure.	Connect it correctly.	
					It has no failure.	Check (3).	
		(3)	Low voltage in the external input power supply of the head module	Check if the voltage of the external input power supply is lower than prescribed value. Prescribed value: 16 V DC	The voltage is the prescribed value or lower.	Review the external input power supply.	
					The voltage is higher than the prescribed value.	Check (4).	
		(4)	An instantaneous power failure has occurred.	Check if the power has a problem.	It has a problem.	Review the power.	
					It has no problem.	Check (5).	
		(5)	The module is malfunctioning.	Replace the module and check again.	It is malfunctioning.	Replace the head module.	

Alarm No.: 10		Name: Undervoltage					
Alarm content		・The voltage of the control circuit power supply has dropped. ・The voltage in the external input power supply has dropped.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
10.4	Voltage drop in the external input power supply of the analog I/O module	(1)	Connection error is found in the external input power supply of the analog I/O module.	Check the connection of the external input power supply.	It has a failure.	Connect it correctly.	[MT2300]
					It has no failure.	Check (2).	
		(2)	Low voltage in the external input power supply of the analog I/O module	Check if the voltage of the external input power supply is lower than prescribed value. Prescribed value: 20 VDC	The voltage is the prescribed value or lower.	Review the external input power supply.	
					The voltage is higher than the prescribed value.	Check (3).	
		(3)	An instantaneous power failure has occurred.	Check if the power has a problem.	It has a problem.	Review the power.	
					It has no problem.	Check (4).	
		(4)	The module is malfunctioning.	Replace the module and check again.	It is malfunctioning.	Replace the analog I/O module.	

Alarm No.: 11		Name: Switch setting error					
Alarm content		・The setting of the station number selection rotary switch of the head module is incorrect. ・The setting of the mode selection switch (SW1) of the pulse I/O module is incorrect.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
11.1	Rotary switch setting error	(1)	The setting of the station number selection rotary switch of the head module is incorrect.	Check the number of modules connected and the setting of the rotary switch. For the axis mode, the setting of the last axis should be 64 or lower. For the station mode, the setting of the last station should be 64 or lower.	The setting is incorrect.	Set it correctly and cycle the power.	[MT2010]
					The setting is correct.	Check (2).	
		(2)	The module is malfunctioning.	Replace the module and check again.	It is malfunctioning.	Replace the head module.	
11.2	Axis mode setting error	(1)	In the axis mode, an extension module other than the pulse I/O module has been connected.	Check if an extension module other than the pulse I/O module has been connected.	Connected	Other than the pulse I/O module cannot be used in the axis mode. Use the station mode, or remove the module to use the axis mode.	[MT2100] [MT2200] [MT2300] [MT2400]
					Not connected	Check (2).	
		(2)	The setting of the mode selection switch (SW1) of the pulse I/O module is incorrect.	Check the setting of the axis mode/station mode selection switch of the pulse I/O module.	The module is in the station mode.	Set the axis mode and cycle the power.	
					The module is in the axis mode.	Check (3).	
		(3)	Five or more axes are set per one block in the axis mode.	Check the setting of the mode selection switch (SW1) of the pulse I/O module.	Five or more axes are set per one block.	Use four or less axes per one block.	
					Four or less axes are set per one block.	Replace the pulse I/O module.	

Alarm No.: 12		Name: Memory error 1 (RAM)						
Alarm content		・A part (RAM) in the head module failed.						
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
12.1	RAM error 1	(1)	A part in the head module failed.	Disconnect the cables except for the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the head module.	[MT2010]
					It is not repeatable.	Check (2).	
		(2)	Problem with the surrounding.	Check the power supply for noise.	It has a failure.	Take countermeasures against its cause.	
12.2	RAM error 2	Check it with the check method for [AL. 12.1].					
12.3	RAM error 3						
12.4	RAM error 4						

Alarm No.: 13		Name: Clock error					
Alarm content		・A part in the head module failed. ・An error occurred in the clock transmitted from the controller.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
13.1	Clock error 1	(1)	A part in the head module failed.	Disconnect the cables except for the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the head module.	[MT2010]
					It is not repeatable.	Check (2).	
		(2)	An error occurred with the clock transmitted from the controller.	Check if the alarm occurs when you connect the sensing module to the controller.	It occurs.	Replace the controller.	
					It does not occur.	Check (3).	
		(3)	The next module axis is malfunctioning.	Check if the next module axis is malfunctioning.	It is malfunctioning.	Replace the module of the next axis.	
					It is not malfunctioning.	Check (4).	
		(4)	Problem with the surrounding.	Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	
13.2	Clock error 2	Check it with the check method for [AL. 13.1].					

Alarm No.: 14		Name: Control process error					
Alarm content		▪ The process did not complete within the specified time.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
14.1	Control process error 1	(1)	The parameter setting is incorrect.	Check if the parameter setting is incorrect.	It is incorrect.	Set it correctly.	[MT2010]
					It is correct.	Check (2).	
		(2)	Problem with the surrounding.	Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	
					It has no failure.	Check (3).	
		(3)	The head module is malfunctioning.	Replace the head module, and then check the repeatability.	It is not repeatable.	Replace the head module.	
14.2	Control process error 2	(1)	An error occurred in the synchronous signal transmitted from the controller.	Replace the controller, and then check the repeatability.	It is not repeatable.	Replace the controller.	[MT2010]
					It is repeatable.	Check (2).	
		(2)	The parameter setting is incorrect.	Check if the parameter setting is incorrect.	It is incorrect.	Set it correctly.	
					It is correct.	Check (3).	
		(3)	Problem with the surrounding.	Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	
					It has no failure.	Check (4).	
		(4)	The head module is malfunctioning.	Replace the head module, and then check the repeatability.	It is not repeatable.	Replace the head module.	
14.3	Control process error 3	Check it with the check method for [AL. 14.1].					
14.7	Control process error 7						
14.C	Control process error 12	(1)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	[MT2010] [MT2100] [MT2200] [MT2300] [MT2400]
					It has no failure.	Check (2).	
		(2)	The extension module is malfunctioning.	Remove the extension modules one by one, and then check the repeatability.	It is not repeatable.	Replace the corresponding extension module.	
					It is repeatable.	Check (3).	
		(3)	The head module is malfunctioning.	Replace the head module, and then check the repeatability.	It is not repeatable.	Replace the head module.	

Alarm No.: 15		Name: Memory error 2 (EEP-ROM)						
Alarm content		・A part (EEP-ROM) in the head module failed.						
Detail No.	Detail name	Cause			Check method	Check result	Action	Target
15.1	EEP-ROM error at power on	(1)	EEP-ROM is malfunctioning at power on.		Disconnect the cables except for the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the head module.	[MT2010]
						It is not repeatable.	Check (2).	
		(2)	Problem with the surrounding.		Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	
						It has no failure.	Check (3).	
		(3)	The number of write times exceeded 100,000.		Check if parameters have been changed very frequently.	They have been changed.	Replace the head module. Change the process to change parameters less frequently after replacement.	
15.2	EEP-ROM error during operation	(1)	EEP-ROM is malfunctioning during normal operation.		Check if the error occurs when you change parameters during normal operation.	It occurs.	Replace the head module.	[MT2010]
						It does not occur.	Check (2).	
		(2)	Problem with the surrounding.		Check the power supply for noise. Check if the connector is shorted.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 17		Name: Board error						
Alarm content		・A part in the sensing module is malfunctioning.						
Detail No.	Detail name	Cause			Check method	Check result	Action	Target
17.4	Board error 4	(1)	Recognition signal of each module was not read properly.		Disconnect the cables except for the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the module.	[MT2010] [MT2100] [MT2200] [MT2300] [MT2400]
						It is not repeatable.	Check (2).	
		(2)	Problem with the surrounding.		Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
17.A	Board error 10	(1)	The internal power supply circuit is malfunctioning.		Disconnect the cables except for the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the module.	[MT2100] [MT2200]
						It is not repeatable.	Check (2).	
		(2)	The wiring of the control circuit power supply is incorrect.		Check the wiring of the control circuit power supply.	The wiring is incorrect.	Wire it correctly.	
						The wiring is correct.	Check (3).	
		(3)	Problem with the surrounding.		Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 19		Name: Memory error 3 (Flash-ROM)					
Alarm content		・A part (Flash-ROM) in the head module failed.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
19.1	Flash-ROM error 1	(1)	The Flash-ROM is malfunctioning.	Disconnect the cables except for the control circuit power supply, and then check the repeatability.	It is repeatable.	Replace the head module.	[MT2010]
					It is not repeatable.	Check (2).	
		(2)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
19.2	Flash-ROM error 2	Check it with the check method for [AL. 19.1].					

Alarm No.: 1A		Name: Incorrect combination of extension modules					
Alarm content		・The number of connected extension modules exceeded the specified number.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
1A.1	Abnormal number of extension modules connected	(1)	The number of connected extension modules exceeded the maximum number.	Check if five or more extension modules have been connected.	Connected	Connect four or less extension modules.	[MT2010] [MT2100] [MT2200] [MT2300] [MT2400]
					Not connected	Check (2).	
		(2)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
1A.2	Abnormal number of encoder I/F modules connected	(1)	The number of connected encoder I/F modules exceeded the maximum number.	Check if three or more encoder I/F modules have been connected.	Connected	Connect two or less encoder I/F modules.	[MT2400]
					Not connected	Check (2).	
		(2)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 1B		Name: Driver error					
Alarm content		・An error signal is outputted from a general-purpose pulse train driver.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
1B.1	Driver error 1	(1)	ALM (Malfunction) is inputted from a general-purpose pulse train driver.	Check if the general-purpose pulse train driver is malfunctioning.	It has a failure.	Clear the failure of the general-purpose pulse train driver.	[MT2200]
					It has no failure.	Check (2).	
		(2)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
1B.2	Driver error 2	(1)	RD (Ready) of a general-purpose pulse train driver turns off while command pulses are outputted from the pulse I/O module.	Check RD (Ready) of the general-purpose pulse train driver.	RD (Ready) is off.	Remove the cause that turns off RD (Ready) on the general-purpose pulse train driver side.	[MT2200]
					RD (Ready) is on.	Check (2).	
		(2)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 1E		Name: Encoder I/F module - Initial communication error 2					
Alarm content		▪ The encoder connected to the encoder I/F module is malfunctioning.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
1E.1	Encoder I/F module - Ch. A encoder malfunction	(1)	The encoder connected to ch. A is malfunctioning.	Replace the encoder connected to ch. A, and then check the repeatability.	It is not repeatable.	Replace the encoder.	[MT2400]
					It is repeatable.	Check (2).	
		(2)	Problem with the surrounding.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
1E.2	Encoder I/F module - Ch. B encoder malfunction	(1)	The encoder connected to ch. B is malfunctioning.	Replace the encoder connected to ch. B, and then check the repeatability.	It is not repeatable.	Replace the encoder.	[MT2400]
					It is repeatable.	Check (2).	
		(2)	Problem with the surrounding.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 1F		Name: Encoder I/F module - Initial communication error 3					
Alarm content		▪ The encoder connected to the encoder I/F module is not supported.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
1F.1	Encoder I/F module - Ch. A encoder not supported	(1)	The connected encoder is not supported by ch. A of the encoder I/F module.	Check the model of the encoder connected to ch. A.	The encoder is not supported.	Replace it with a supported encoder.	[MT2400]
					The encoder is compatible with the module.	Check (2).	
		(2)	The encoder connected to ch. A is not supported by the software version of the sensing module.	Check the software version of the sensing module and if it supports the connected encoder.	It does not support.	Replace it with the head module with software version which supports the connected encoder.	
					It supports.	Check (3).	
		(3)	The encoder connected to ch. A is malfunctioning.	Replace the encoder connected to ch. A, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
					It is repeatable.	Replace the encoder I/F module.	
1F.2	Encoder I/F module - Ch. B encoder not supported	(1)	The connected encoder is not supported by ch. B of the encoder I/F module.	Check the model of the encoder connected to ch. B.	The encoder is not compatible with the module.	Replace it with a compatible encoder.	[MT2400]
					The encoder is compatible with the module.	Check (2).	
		(2)	The encoder connected to ch. B is not supported by the software version of the sensing module.	Check the software version of the sensing module and check if it is compatible with the connected encoder.	It does not support.	Replace it with the head module with software version which supports the connected encoder.	
					It supports.	Check (3).	
		(3)	The encoder connected to ch. B is malfunctioning.	Replace the encoder connected to ch. B, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
					It is repeatable.	Replace the encoder I/F module.	

Alarm No.: 20		Name: Encoder I/F module - Ch. A Normal communication error 1						
Alarm content		▪ A communication error has occurred between the encoder connected to ch. A and the encoder I/F module.						
Detail No.	Detail name	Cause			Check method	Check result	Action	Target
20.1	Encoder I/F module - Ch. A Normal communication - Receive data error 1	(1)	The encoder cable is malfunctioning.		Check if the encoder cable is disconnected or shorted.	It has a failure.	Repair or replace the cable.	[MT2400]
						It has no failure.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	The encoder I/F module is malfunctioning.		Replace the encoder I/F module, and then check the repeatability.	It is not repeatable.	Replace the encoder I/F module.	
						It is repeatable.	Check (4).	
		(4)	The encoder is malfunctioning.		Replace the encoder connected to ch. A, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
						It is repeatable.	Check (5).	
		(5)	Problem with the surrounding.		Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
20.2	Encoder I/F module - Ch. A Normal communication - Receive data error 2	(1)	The encoder cable is malfunctioning.		Check if the encoder cable is disconnected or shorted.	It has a failure.	Repair or replace the cable.	[MT2400]
						It has no failure.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	When an SSI-compatible encoder is used, error information is obtained from received status data.		Check the details of the error described in the specifications of the encoder used.	The error information corresponds to the details described in the specifications.	Remove the error cause.	
						The error information does not correspond to the details described in the specifications.	Check (4).	
		(4)	The encoder I/F module is malfunctioning.		Replace the encoder I/F module, and then check the repeatability.	It is not repeatable.	Replace the encoder I/F module.	
						It is repeatable.	Check (5).	
		(5)	The encoder is malfunctioning.		Replace the encoder connected to ch. A, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
						It is repeatable.	Check (6).	
		(6)	Problem with the surrounding.		Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
20.3	Encoder I/F module - Ch. A Normal communication - Receive data error 3	Check it with the check method for [AL. 20.1].						

Alarm No.: 20		Name: Encoder I/F module - Ch. A Normal communication error 1						
Alarm content		▪ A communication error has occurred between the encoder connected to ch. A and the encoder I/F module.						
Detail No.	Detail name	Cause			Check method	Check result	Action	Target
20.5	Encoder I/F module - Ch. A Normal communication - Transmission data error 1	(1)	The encoder cable is malfunctioning.		Check if the encoder cable is disconnected or shorted.	It has a failure.	Repair or replace the cable.	[MT2400]
						It has no failure.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	The parameter setting is incorrect.		Check if a value smaller than its actual operation pattern is set in [Pr. PTE043] and [Pr. PTE044].	It is set.	Set the parameters according to the actual operation pattern.	
						It is not set.	Check (4).	
		(4)	An excessive speed has occurred.		Check if an excessive speed has occurred in a machine where the encoder is installed.	It has not occurred.	Remove the cause for the excessive speed.	
						It occurred.	Check (5).	
		(5)	The encoder I/F module is malfunctioning.		Replace the encoder I/F module, and then check the repeatability.	It is not repeatable.	Replace the encoder I/F module.	
						It is repeatable.	Check (6).	
		(6)	The encoder is malfunctioning.		Replace the encoder connected to ch. A, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
						It is repeatable.	Check (7).	
		(7)	Problem with the surrounding.		Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
20.6	Encoder I/F module - Ch. A Normal communication - Transmission data error 2	Check it with the check method for [AL. 20.1].						
20.7	Encoder I/F module - Ch. A Normal communication - Transmission data error 3							

Alarm No.: 21		Name: Encoder I/F module - Ch. A Normal communication error 2						
Alarm content		▪ The encoder connected to ch. A detected an error signal.						
Detail No.	Detail name	Cause			Check method	Check result	Action	Target
21.1	Encoder I/F module - Ch. A Data error 1	(1)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	[MT2400]
						Connected	Check (2).	
		(2)	The encoder is malfunctioning.		Replace the encoder, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
						It is repeatable.	Check (3).	
		(3)	Problem with the surrounding.		Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
21.2	Encoder I/F module - Ch. A Data update error	(1)	The encoder is malfunctioning.		Replace the encoder, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
						It is repeatable.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	Problem with the surrounding.		Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
21.3	Encoder I/F module - Ch. A Data waveform error	Check it with the check method for [AL. 21.2].						
21.4	Encoder I/F module - Ch. A Non-signal error	(1)	A signal of the encoder connected to ch. A has not been input.		Check if the encoder cable is connected correctly.	It has a failure.	Review the wiring.	[MT2400]
						It has no failure.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	Problem with the surrounding.		Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
21.5	Encoder I/F module - Ch. A Hardware error 1	Check it with the check method for [AL. 21.2].						
21.6	Encoder I/F module - Ch. A Hardware error 2							

Alarm No.: 28		Name: Encoder I/F module - Linear encoder error 2						
Alarm content		・The working environment of the encoder connected to the encoder I/F module is not normal.						
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
28.1	Encoder I/F module - Ch. A Linear encoder environmental error	(1)	The ambient temperature of the linear encoder connected to ch. A is out of specifications.	Check the ambient temperature of the linear encoder connected to ch. A.	It is out of specifications.	Lower the temperature. Contact the linear encoder manufacturer.	[MT2400]
					It is within specifications.	Check (2).	
		(2)	The signal level of the linear encoder connected to ch. A has dropped.	Check the installation condition of the linear encoder connected to ch. A.	It has a failure.	Install it correctly.	
28.2	Encoder I/F module - Ch. B Linear encoder environmental error	(1)	The ambient temperature of the linear encoder connected to ch. B is out of specifications.	Check the ambient temperature of the linear encoder connected to ch. B.	It is out of specifications.	Lower the temperature. Contact the linear encoder manufacturer.	
					It is within specifications.	Check (2).	
		(2)	The signal level of the linear encoder connected to ch. B has dropped.	Check the installation condition of the linear encoder connected to ch. B.	It has a failure.	Install it correctly.	

Alarm No.: 2A		Name: Encoder I/F module - Ch. A Linear encoder error 1						
Alarm content		・An error was detected in the linear encoder connected to ch. A of the encoder I/F module. (The details vary depending on the linear encoder manufacturer.)						
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
2A.1	Encoder I/F module - Ch. A Linear encoder error 1-1	(1)	Installation error exists in the head of the linear encoder connected to ch. A.	Adjust the positions of the scale and head, and then check the repeatability.	It is not repeatable.	Use the linear encoder at the adjusted position.	[MT2400]
					It is repeatable.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.	Check if it is connected.	Not connected	Connect it correctly.	
					Connected	Check (3).	
		(3)	Problem with the surrounding.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
					It has no failure.	Check (4).	
		(4)	An alarm was detected in the linear encoder connected to ch. A.	Refer to the alarm detail list of the "Linear Encoder Instruction Manual".	Remove its cause described in the instruction manual.	Contact each encoder manufacturer for how to deal with it.	
2A.2	Encoder I/F module - Ch. A Linear encoder error 1-2	Check it with the check method for [AL. 2A.1].						
2A.3	Encoder I/F module - Ch. A Linear encoder error 1-3							
2A.4	Encoder I/F module - Ch. A Linear encoder error 1-4							
2A.5	Encoder I/F module - Ch. A Linear encoder error 1-5							

Alarm No.: 2A		Name: Encoder I/F module - Ch. A Linear encoder error 1				
Alarm content		・An error was detected in the linear encoder connected to ch. A of the encoder I/F module. (The details vary depending on the linear encoder manufacturer.)				
Detail No.	Detail name	Cause	Check method	Check result	Action	Target
2A.6	Encoder I/F module - Ch. A Linear encoder error 1-6	Check it with the check method for [AL. 2A.1].				
2A.7	Encoder I/F module - Ch. A Linear encoder error 1-7					
2A.8	Encoder I/F module - Ch. A Linear encoder error 1-8					

Alarm No.: 34		Name: SSCNET receive error 1					
Alarm content		・An error occurred in SSCNET III/H communications. (continuous communication error with 3.5 ms interval)					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
34.1	SSCNET receive data error	(1)	The SSCNET III cable is disconnected.	Check the SSCNET III cable connection.	Disconnected	Turn off the control circuit power supply of the head module, and then connect the SSCNET III cable.	[MT2010]
					Connected	Check (2).	
		(2)	The SSCNET III cable ends are dirty.	Wipe off the dirt from the cable ends, and then check the repeatability.	It is not repeatable.	Take measures to keep the cable ends clean.	
					It is repeatable.	Check (3).	
		(3)	The SSCNET III cable is broken or cut.	Check if the SSCNET III cable is malfunctioning.	It has a failure.	Replace the SSCNET III cable.	
					It has no failure.	Check (4).	
		(4)	A vinyl tape is adhered to the SSCNET III cable, or the cable is in contact with a wire insulator containing migrating plasticizer.	Check if a vinyl tape is used. Check if the SSCNET III cable is in contact with other wires.	It is used. It is in contact.	Take countermeasures against its cause.	
					It is not used. It is not in contact.	Check (5).	
		(5)	The head module is malfunctioning.	Replace the head module, and then check the repeatability.	It is not repeatable.	Replace the head module.	
					It is repeatable.	Check (6).	
		(6)	The previous or next axis module to the head module where the alarm has occurred is malfunctioning.	Replace the previous or next axis module to the head module where the alarm has occurred, and then check the repeatability.	It is not repeatable.	Replace the module.	
					It is repeatable.	Check (7).	
		(7)	The controller is malfunctioning.	Replace the controller, and then check the repeatability.	It is not repeatable.	Replace the controller.	
					It is repeatable.	Check (8).	
		(8)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 34		Name: SSCNET receive error 1				
Alarm content		・An error occurred in SSCNET III/H communications. (continuous communication error with 3.5 ms interval)				
Detail No.	Detail name	Cause	Check method	Check result	Action	Target
34.2	SSCNET connector connection error	Check it with the check method for [AL. 34.1].				
34.3	SSCNET communication data error					
34.4	Hardware error signal detection					

Alarm No.: 35		Name: I/O pulse frequency error					
Alarm content		・The pulse frequency to be input to the pulse I/O module is too high. ・The pulse frequency to be output from the pulse I/O module is too high.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
35.1	Pulse I/O module - Ch. A Output pulse frequency error	(1)	The pulse frequency to be output from ch. A is high.	Check the pulse frequency to be output from the controller.	The output pulse frequency is high.	Review the pulse frequency to be output.	[MT2200]
					The output pulse frequency is low.	Check (2).	
		(2)	When using the electronic gear in axis mode, the pulse frequency to be output from Ch. A is high compared to the maximum frequency of the pulse output. [Pr. PA06], [Pr. PA07] and [Pr. PB01]	Check the output pulse frequency from the controller.	The output pulse frequency is high.	Review the frequency of the output pulse.	
					The output pulse frequency is low.	Check (3).	
		(3)	The parameter setting is incorrect when the pulse I/O module is used in the axis mode.	Check the connection form of the pulse that is actually output and the setting value of [Pr. PB01].	They are not matched.	Change the setting according to the connection form of the pulse to be output.	
					They are matched.	Check (4).	
		(4)	The controller is malfunctioning.	Replace the controller, and then check the repeatability.	It is not repeatable.	Replace the controller.	
					It is repeatable.	Check (5).	
		(5)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 35		Name: I/O pulse frequency error					
Alarm content		・The pulse frequency to be input to the pulse I/O module is too high. ・The pulse frequency to be output from the pulse I/O module is too high.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
35.2	Pulse I/O module - Ch. B Output pulse frequency error	(1)	The pulse frequency to be output from ch. B is high.	Check the pulse frequency to be output from the controller.	The output pulse frequency is high.	Review the pulse frequency to be output.	[MT2200]
					The output pulse frequency is low.	Check (2).	
		(2)	When using electronic gear in axis mode, the pulse frequency to be output from Ch. B is high compared to the maximum frequency of the pulse output. [Pr. PA06], [Pr. PA07] and [Pr. PB01]	Check the output pulse frequency from the controller.	The output pulse frequency is high.	Review the frequency of the output pulse.	
					The output pulse frequency is low.	Check (3).	
		(3)	The parameter setting is incorrect when the pulse I/O module is used in the axis mode.	Check the connection form of the pulse that is actually output and the setting value of [Pr. PB01].	They are not matched.	Change the setting according to the connection form of the pulse to be output.	
					They are matched.	Check (4).	
		(4)	The controller is malfunctioning.	Replace the controller, and then check the repeatability.	It is not repeatable.	Replace the controller.	
					It is repeatable.	Check (5).	
		(5)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
35.3	Pulse I/O module - Ch. A Input pulse frequency error	(1)	The pulse frequency to be input to ch. A is high.	Check the pulse frequency to be input to ch. A.	The input pulse frequency is high.	Reduce the input pulse frequency.	[MT2200]
					The input pulse frequency is low.	Check (2).	
		(2)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
35.4	Pulse I/O module - Ch. B Input pulse frequency error	(1)	The pulse frequency to be input to ch. B is high.	Check the pulse frequency to be input to ch. B.	The input pulse frequency is high.	Reduce the input pulse frequency.	[MT2200]
					The input pulse frequency is low.	Check (2).	
		(2)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 36		Name: SSCNET receive error 2					
Alarm content		・An error occurred in SSCNET III/H communications. (intermittent communication error with about 70 ms interval)					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
36.1	Continuous communication data error	(1)	The SSCNET III cable is disconnected.	Check the SSCNET III cable connection.	Disconnected	Turn off the control circuit power supply of the head module, and then connect the SSCNET III cable.	[MT2010]
					Connected	Check (2).	
		(2)	The SSCNET III cable ends are dirty.	Wipe off the dirt from the cable ends, and then check the repeatability.	It is not repeatable.	Take measures to keep the cable ends clean.	
					It is repeatable.	Check (3).	
		(3)	The SSCNET III cable is broken or cut.	Check if the SSCNET III cable is malfunctioning.	It has a failure.	Replace the SSCNET III cable.	
					It has no failure.	Check (4).	
		(4)	A vinyl tape is adhered to the SSCNET III cable, or the cable is in contact with a wire insulator containing migrating plasticizer.	Check if a vinyl tape is used. Check if the SSCNET III cable is in contact with other wires.	It is used. It is in contact.	Take countermeasures against its cause.	
					It is not used. It is not in contact.	Check (5).	
		(5)	The head module is malfunctioning.	Replace the head module, and then check the repeatability.	It is not repeatable.	Replace the head module.	
					It is repeatable.	Check (6).	
		(6)	The previous or next axis module to the head module where the alarm has occurred is malfunctioning.	Replace the previous or next axis module to the head module where the alarm has occurred, and then check the repeatability.	It is not repeatable.	Replace the module.	
					It is repeatable.	Check (7).	
		(7)	The controller is malfunctioning.	Replace the controller, and then check the repeatability.	It is not repeatable.	Replace the controller.	
					It is repeatable.	Check (8).	
		(8)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 37		Name: Parameter error					
Alarm content		▪ The parameter setting is incorrect.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
37.1	Parameter setting range error	(1)	A parameter was set out of setting range.	Check the parameter error No. and setting value.	It is out of setting range.	Set it within the range.	[MT2010] [MT2100] [MT2200] [MT2300] [MT2400]
					It is within the setting range.	Check (2).	
		(2)	A parameter setting contradicts another.	Check the parameter error No. and setting value.	A setting value is incorrect.	Correct the setting value.	
					The setting value is correct.	Check (3).	
		(3)	The parameter setting has changed due to a head module malfunction.	Replace the head module, and then check the repeatability.	It is not repeatable.	Replace the head module.	
37.2	Parameter combination error	(1)	A parameter setting contradicts another.	Check the parameter error No. and setting value.	A setting value is incorrect.	Correct the setting value.	

Alarm No.: 71		Name: Encoder I/F module - Ch. B Initial communication error 1					
Alarm content		▪ A communication error has occurred between the encoder connected to ch. B and the encoder I/F module.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
71.1	Encoder I/F module - Ch. B Normal communication - Receive data error 1	(1)	The encoder cable is malfunctioning.	Check if the encoder cable is disconnected or shorted.	It has a failure.	Repair or replace the cable.	[MT2400]
					It has no failure.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.	Check if it is connected.	Not connected	Connect it correctly.	
					Connected	Check (3).	
		(3)	The encoder I/F module is malfunctioning.	Replace the encoder I/F module, and then check the repeatability.	It is not repeatable.	Replace the encoder I/F module.	
					It is repeatable.	Check (4).	
		(4)	The encoder is malfunctioning.	Replace the encoder connected to ch. B, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
					It is repeatable.	Check (5).	
		(5)	Problem with the surrounding.	Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	

Alarm No.: 71		Name: Encoder I/F module - Ch. B Initial communication error 1						
Alarm content		▪ A communication error has occurred between the encoder connected to ch. B and the encoder I/F module.						
Detail No.	Detail name	Cause			Check method	Check result	Action	Target
71.2	Encoder I/F module - Ch. B Normal communication - Receive data error 2	(1)	The encoder cable is malfunctioning.		Check if the encoder cable is disconnected or shorted.	It has a failure.	Repair or replace the cable.	[MT2400]
						It has no failure.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	When an SSI-compatible encoder is used, error information is obtained from received status data.		Check the details of the error described in the specifications of the encoder used.	The error information corresponds to the details described in the specifications.	Remove the error cause.	
						The error information does not correspond to the details described in the specifications.	Check (4).	
		(4)	The encoder I/F module is malfunctioning.		Replace the encoder I/F module, and then check the repeatability.	It is not repeatable.	Replace the encoder I/F module.	
						It is repeatable.	Check (5).	
		(5)	The encoder is malfunctioning.		Replace the encoder connected to ch. B, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
						It is repeatable.	Check (6).	
		(6)	Problem with the surrounding.		Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
71.3	Encoder I/F module - Ch. B Normal communication - Receive data error 3	Check it with the check method for [AL. 71.1].						

Alarm No.: 71		Name: Encoder I/F module - Ch. B Initial communication error 1						
Alarm content		▪ A communication error has occurred between the encoder connected to ch. B and the encoder I/F module.						
Detail No.	Detail name	Cause			Check method	Check result	Action	Target
71.5	Encoder I/F module - Ch. B Normal communication - Transmission data error 1	(1)	The encoder cable is malfunctioning.		Check if the encoder cable is disconnected or shorted.	It has a failure.	Repair or replace the cable.	[MT2400]
						It has no failure.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	The parameter setting is incorrect.		Check if a value smaller than its actual operation pattern is set in [Pr. PTE099] or [Pr. PTE100].	It is set.	Set the parameters according to the actual operation pattern.	
						It is not set.	Check (4).	
		(4)	An excessive speed has occurred.		Check if an excessive speed has occurred in a machine where the encoder is installed.	It does not occur.	Remove the cause for the excessive speed.	
						It occurred.	Check (5).	
		(5)	The encoder I/F module is malfunctioning.		Replace the encoder I/F module, and then check the repeatability.	It is not repeatable.	Replace the encoder I/F module.	
						It is repeatable.	Check (6).	
		(6)	The encoder is malfunctioning.		Replace the encoder connected to ch. B, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
						It is repeatable.	Check (7).	
		(7)	Problem with the surrounding.		Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
71.6	Encoder I/F module - Ch. B Normal communication - Transmission data error 2	Check it with the check method for [AL. 71.1].						
71.7	Encoder I/F module - Ch. B Normal communication - Transmission data error 3							

Alarm No.: 72		Name: Encoder I/F module - Ch. B Normal communication error 2						
Alarm content		▪ The encoder connected to ch. B detected an error signal.						
Detail No.	Detail name	Cause			Check method	Check result	Action	Target
72.1	Encoder I/F module - Ch. B Data error 1	(1)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	[MT2400]
						Connected	Check (2).	
		(2)	The encoder is malfunctioning.		Replace the encoder, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
						It is repeatable.	Check (3).	
		(3)	Problem with the surrounding.		Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
72.2	Encoder I/F module - Ch. B Data update error	(1)	The encoder is malfunctioning.		Replace the encoder, and then check the repeatability.	It is not repeatable.	Replace the encoder.	
						It is repeatable.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	Problem with the surrounding.		Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
72.3	Encoder I/F module - Ch. B Data waveform error	Check it with the check method for [AL. 21.2].						
72.4	Encoder I/F module - Ch. B Non-signal error	(1)	A signal of the encoder connected to ch. B has not been input.		Check if the encoder cable is connected correctly.	It has a failure.	Review the wiring.	[MT2400]
						It has no failure.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	Problem with the surrounding.		Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
72.5	Encoder I/F module - Ch. B Hardware error 1	Check it with the check method for [AL. 72.2].						
72.6	Encoder I/F module - Ch. B Hardware error 2							

Alarm No.: 75		Name: Extension module error					
Alarm content		・An extension module is malfunctioning.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
75.1	Reset signal error	(1)	A module is malfunctioning.	Replace the corresponding module, and then check the repeatability.	It is not repeatable.	Replace the module.	[MT2100] [MT2200] [MT2300] [MT2400]
					It is repeatable.	Check (2).	
		(2)	A connection error is found in the module.	Remove and connect the corresponding module, and then check the repeatability.	It is repeatable.	Replace the module previous and next to the corresponding module.	
					It is not repeatable.	Check (3).	
		(3)	Problem with the surrounding.	Check the noise, ambient temperature, etc.	It has a failure.	Take countermeasures against its cause.	
75.3	Output pulse error 1	(1)	A module is malfunctioning.	Replace the corresponding module, and then check the repeatability.	It is not repeatable.	Replace the pulse I/O module.	[MT2200]
75.4	Output pulse error 2	(1)	A module is malfunctioning.	Replace the corresponding module, and then check the repeatability.	It is not repeatable.	Replace the pulse I/O module.	

Alarm No.: 76		Name: Encoder I/F module - Ch. B Linear encoder error 1						
Alarm content		・An error was detected in the linear encoder connected to ch. B of the encoder I/F module. (The details vary depending on the linear encoder manufacturer.)						
Detail No.	Detail name	Cause			Check method	Check result	Action	Target
76.1	Encoder I/F module - Ch. B Linear encoder error 1-1	(1)	Installation error exists in the head of the linear encoder connected to ch. B.		Adjust the positions of the scale and head, and then check the repeatability.	It is not repeatable.	Use the linear encoder at the adjusted position.	[MT2400]
						It is repeatable.	Check (2).	
		(2)	The external conductor of the encoder cable is not connected to an SHD pin of the connector.		Check if it is connected.	Not connected	Connect it correctly.	
						Connected	Check (3).	
		(3)	Problem with the surrounding.		Check the noise, ambient temperature, vibration, etc.	It has a failure.	Take countermeasures against its cause.	
						It has no failure.	Check (4).	
		(4)	An alarm was detected in the linear encoder connected to ch. B.		Refer to the alarm detail list of the "Linear Encoder Instruction Manual".	Remove its cause described in the instruction manual.	Contact each encoder manufacturer for how to deal with it.	
76.2	Encoder I/F module - Ch. B Linear encoder error 1-2	Check it with the check method for [AL. 76.1].						
76.3	Encoder I/F module - Ch. B Linear encoder error 1-3							
76.4	Encoder I/F module - Ch. B Linear encoder error 1-4							
76.5	Encoder I/F module - Ch. B Linear encoder error 1-5							
76.6	Encoder I/F module - Ch. B Linear encoder error 1-6							
76.7	Encoder I/F module - Ch. B Linear encoder error 1-7							
76.8	Encoder I/F module - Ch. B Linear encoder error 1-8							

Alarm No.: 8E		Name: Serial communication error					
Alarm content		・A communication error occurred between the head module and controller. ・An error occurred in the serial communication (Mitsubishi Electric general-purpose AC servo protocol).					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
8E.4	Serial communication command error	(1)	The transmitted command is out of specifications.	Check the command at the time of transmission.	The transmitted command is out of specifications.	Correct the transmission data.	[MT2010]
					The transmitted command is within specifications.	Check (2).	
		(2)	The communication protocol is failure.	Check if transmission data conforms to the communication protocol.	It is not conforming.	Modify the transmission data according to the communication protocol.	
8E.5	Serial communication data number error	(1)	The transmitted data number is out of specifications.	Check the data number at the time of transmission.	The transmitted data number is out of specifications.	Correct the transmission data.	
					The transmitted data number is within specifications.	Check (2).	
		(2)	The communication protocol is failure.	Check if transmission data conforms to the communication protocol.	It is not conforming.	Modify the transmission data according to the communication protocol.	

Alarm No.: (Note)		Name: Watchdog					
Alarm content		・A part such as CPU is malfunctioning.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
(Note)	Watchdog	(1)	A part in the sensing module failed.	Replace the module, and then check the repeatability.	It is not repeatable.	Replace the unit.	[MT2010] [MT2100] [MT2200] [MT2300] [MT2400]

Note. The alarm No. will not be shown. Check the status display LED of each sensing module.

10.5 Remedies for warnings

An operation will be stopped with [AL. E7]. If any other warning occurs, the operation can be continued, but an alarm may occur, causing improper operation.
A warning No. will not be shown on the module LED. Check the warning No. of the sensing module by starting MELSOFT MR Configurator2 via MELSOFT MT Works2.
Remove the cause of warning according to this section. Use MR Configurator2 to refer to the cause of warning occurrence.

Alarm No.: E4		Name: Parameter warning					
Alarm content		・Out of the setting range was attempted to write during parameter writing.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
E4.1	Parameter setting range error warning	(1)	A parameter was set to out of range with the servo system controller.	Check the parameter setting value set with the servo system controller.	It is out of setting range.	Set it within the range.	[MT2010] [MT2100] [MT2200] [MT2300] [MT2400]

Alarm No.: E7		Name: Controller forced stop warning					
Alarm content		・The forced stop signal of the controller or servo system controller was enabled.					
Detail No.	Detail name	Cause		Check method	Check result	Action	Target
E7.1	Controller forced stop input warning	(1)	The forced stop signal of the servo system controller was inputted.	Check if the servo system controller is a forced stop status.	It is the forced stop status.	Ensure safety and cancel the forced stop signal of the controller.	[MT2010]

10.6 Trouble which does not trigger an alarm/warning

POINT
●When the sensing module malfunctions, the following status may occur.

The following shows some examples of possible causes which do not trigger an alarm or warning. Remove each cause by referring to this section.

10.6.1 MR-MT2010 SSCNET III/H head module

LED display status		Possible cause	Check result	Action
RUN	ERR			
Off	Off	The external I/O terminal is shorted.	When the error is solved by the extension module removed, check if the extension module is malfunctioning.	Replace the extension module.
			Check if the power supply cable to CN2 of the head module is not shorted.	Review the wiring of the power supply cable.
		Power has not been input.	Check if the power is turned off.	Turn on the power.
		The voltage in the power supply has dropped.	Check if the power supply voltage dropped.	Increase the power supply voltage.
Off	On in red	The head module is malfunctioning.	Replace the head module, and then check the repeatability.	Replace the head module.
On in green	On in red	The head module is malfunctioning.	Replace the head module, and then check the repeatability.	Replace the head module.
		An error occurred in SSCNET III/H communication.	Check it with the check method for [AL. 34.1].	

10.6.2 MR-MT2100 I/O module

LED display status		Possible cause	Check result	Action
RUN	ERR			
On in red	On in red	Modules are connected incorrectly.	Check if connections between modules are correct.	Connect the modules correctly.
		The I/O module is malfunctioning.	Replace the I/O module, and then check the repeatability.	Replace the I/O module.
		The head module is malfunctioning.	Replace the head module, and then check the repeatability.	Replace the head module.
Remains on in orange.	Remains on in orange.	The number of extension modules connected to the head module exceeded the maximum number.	Check if five or more extension modules have been connected to one head module.	Connect four or less extension modules to one head module.
		The I/O module is malfunctioning.	Replace the I/O module, and then check the repeatability.	Replace the I/O module.

10.6.3 MR-MT2200 pulse I/O module

LED display status		Possible cause	Check result	Action
AX.A	AX.B			
On in red	On in red	An alarm has occurred in A-axis or B-axis.	Check if an alarm has occurred.	Take actions following the remedies for the alarm.
		Modules are connected incorrectly.	Check if connections between modules are correct.	Connect the modules correctly.
		The pulse I/O module is malfunctioning.	Replace the pulse I/O module, and then check the repeatability.	Replace the pulse I/O module.
		The head module is malfunctioning.	Replace the head module, and then check the repeatability.	Replace the head module.
Remains on in orange.	Remains on in orange.	The number of extension modules connected to the head module exceeded the maximum number.	Check if five or more extension modules have been connected to one head module.	Connect four or less extension modules to one head module.
		The pulse I/O module is malfunctioning.	Replace the pulse I/O module, and then check the repeatability.	Replace the pulse I/O module.

10.6.4 MR-MT2300 analog I/O module

LED display status		Possible cause	Check result	Action
RUN	ERR			
On in red	On in red	Modules are connected incorrectly.	Check if connections between modules are correct.	Connect the modules correctly.
		The analog I/O module is malfunctioning.	Replace the analog I/O module, and then check the repeatability.	Replace the analog I/O module.
		The head module is malfunctioning.	Replace the head module, and then check the repeatability.	Replace the head module.
Remains on in orange.	Remains on in orange.	The number of extension modules connected to the head module exceeded the maximum number.	Check if five or more extension modules have been connected to one head module.	Connect four or less extension modules to one head module.
		The analog I/O module is malfunctioning.	Replace the analog I/O module, and then check the repeatability.	Replace the analog I/O module.

10.6.5 MR-MT2400 encoder I/F module

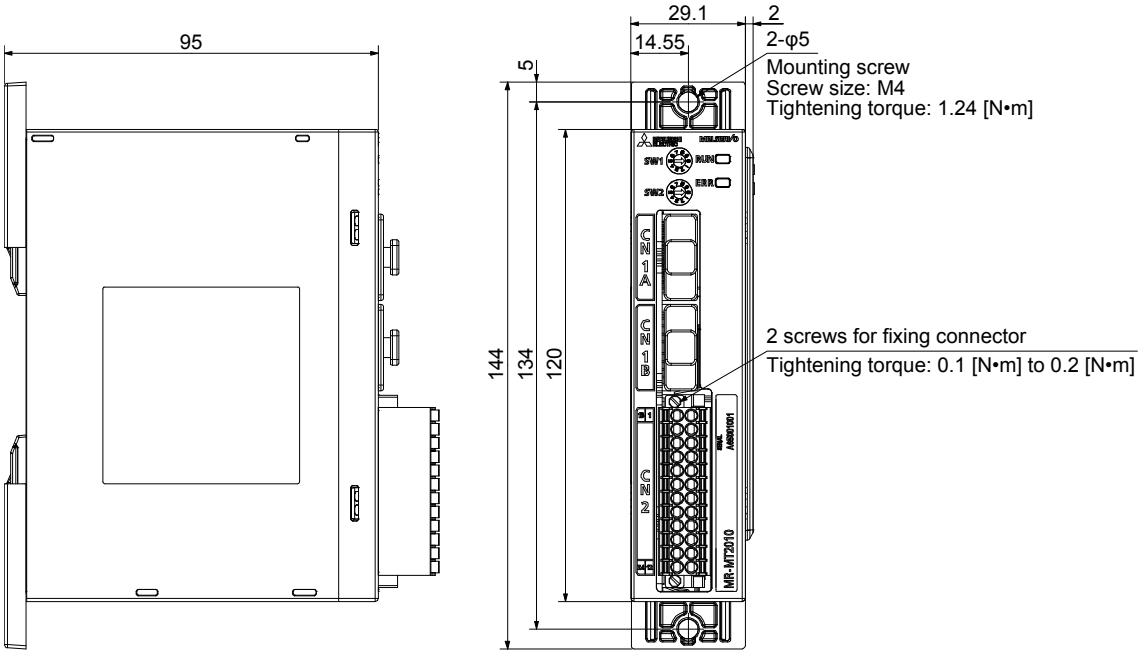
LED display status		Possible cause	Check result	Action
CH.A	CH.B			
On in red	On in red	An alarm has occurred in A-axis or B-axis.	Check if an alarm has occurred.	Take actions following the remedies for the alarm.
		Modules are connected incorrectly.	Check if connections between modules are correct.	Connect the modules correctly.
		The head module is malfunctioning.	Replace the head module, and then check the repeatability.	Replace the head module.
		The encoder I/F module is malfunctioning.	Replace the encoder I/F module, and then check the repeatability.	Replace the encoder I/F module.
Remains on in orange.	Remains on in orange.	The number of extension modules connected to the head module exceeded the maximum number.	Check if five or more extension modules have been connected to one head module.	Connect four or less extension modules to one head module.
		The encoder I/F module is malfunctioning.	Replace the encoder I/F module, and then check the repeatability.	Replace the encoder I/F module.

MEMO

11. DIMENSIONS

(1) MR-MT2010

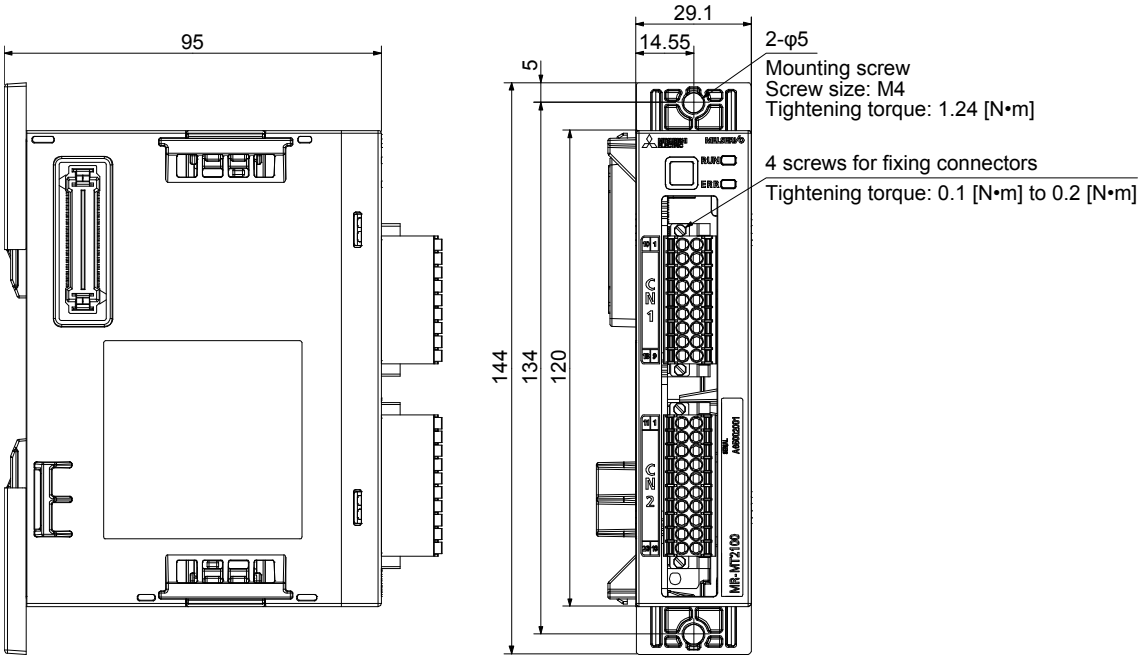
[Unit: mm]



Mass: 0.2 [kg]

(2) MR-MT2100

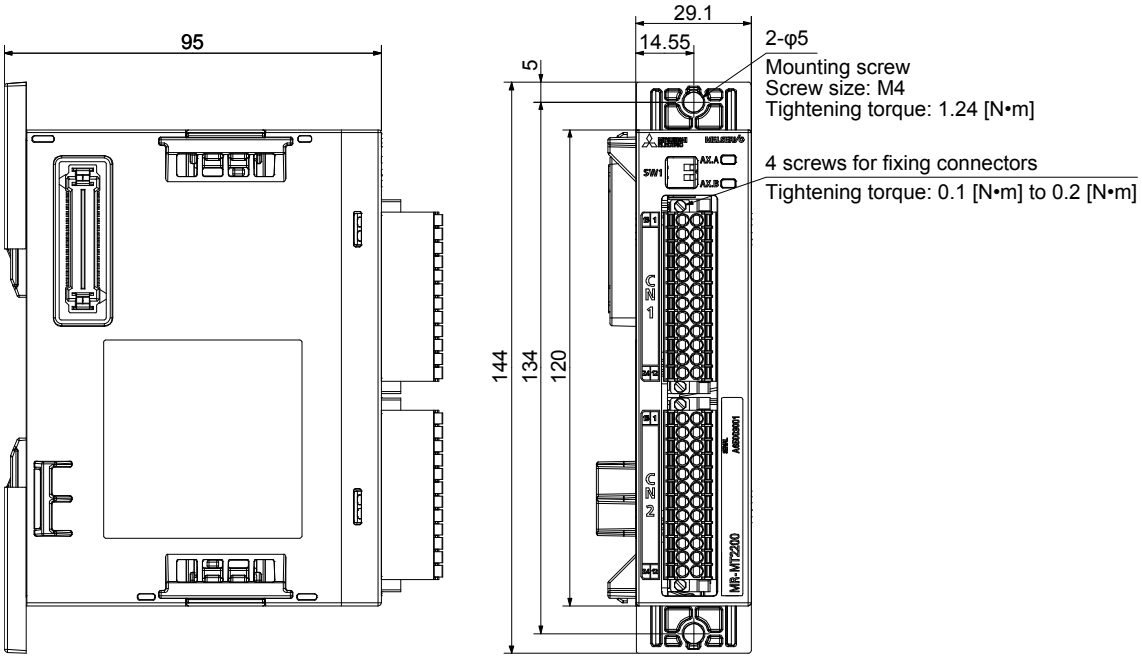
[Unit: mm]



Mass: 0.2 [kg]

(3) MR-MT2200

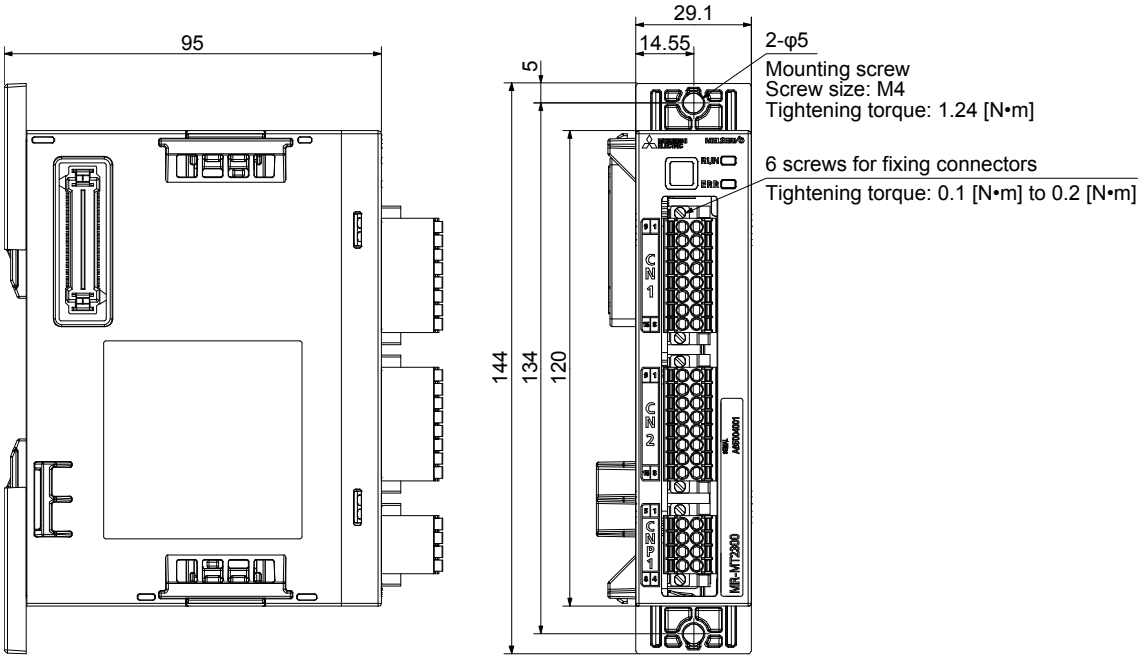
[Unit: mm]



Mass: 0.2 [kg]

(4) MR-MT2300

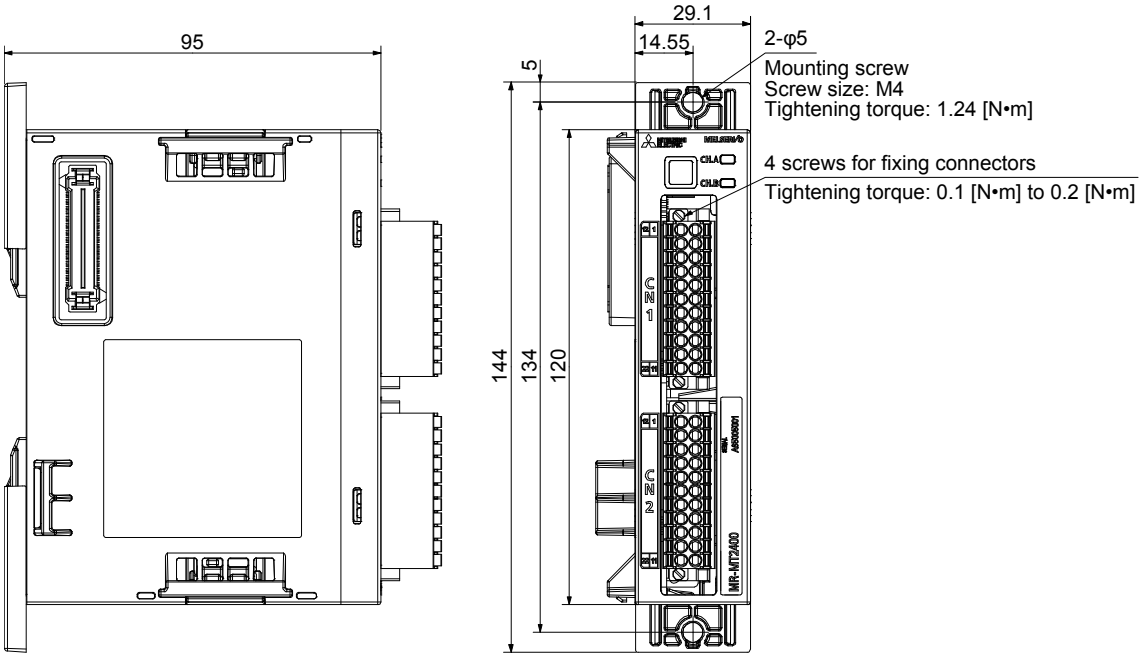
[Unit: mm]



Mass: 0.2 [kg]

(5) MR-MT2400

[Unit: mm]



Mass: 0.2 [kg]

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APPENDIX

App. 1 Compliance with global standards

App. 1.1 About safety

This chapter explains safety of users and machine operators. Please read the chapter carefully before mounting the equipment.

App. 1.1.1 Professional engineer

Only professional engineers should mount sensing modules.
Here, professional engineers should meet all the conditions below.

(1) Persons who took a proper training of related work of electrical equipment or persons who can avoid risk based on past experience.

(2) Persons who have read and familiarized himself/herself with this installation guide.

App. 1.1.2 Applications of the devices

Sensing modules comply with the following standards.

- IEC/EN 61800-3, IEC/EN 60204-1

App. 1.1.3 Correct use

Use the sensing modules within specifications. Refer to section 1.3, 4.2, 5.2, 6.2, 7.2 and 8.2 for specifications such as voltage, temperature, etc. Mitsubishi Electric Co. accepts no claims for liability if the equipment is used in any other way or if modifications are made to the device, even in the context of mounting and installation.

⚠WARNING	●If you need to get close to the moving parts of the machine for inspection or others, ensure safety by confirming the power off, etc. Otherwise, it may cause an accident.

(1) Peripheral device
The followings are selected based on UL 508C, and CSA C22.2 No. 14.

(a) Power supply
Sensing modules can be used under the conditions of the overvoltage category II.
For the interface power supply, use an external 24 V DC power supply with reinforced insulation on I/O terminals.

(2) EU compliance

The sensing modules are designed to comply with the following directions to meet requirements for mounting, using, and periodic technical inspections: EMC directive (2014/30/EU).

(a) EMC requirement

Sensing modules comply with category C3 in accordance with EN 61800-3. As for I/O wires (max. length 10 m.) and encoder cables (max. length 30 m), use shielded wires and ground the shields. Sensing modules are not intended to be used on a low-voltage public network which supplies domestic premises; radio frequency interference is expected if used on such a network. The installer shall provide a guide for Installation and use, including recommended mitigation devices. To avoid the risk of crosstalk to signal cables, the installation instructions shall either recommend that the power interface cable be segregated from signal cables.

Use the DC power supply installed with the sensing module in the same cabinet. Do not connect the other electric devices to the DC power supply.

(b) For Declaration of Conformity (DoC)

Hereby, MITSUBISHI ELECTRIC EUROPE B.V., declares that the sensing modules are in compliance with the necessary requirements and standards (2014/30/EU). For the copy of Declaration of Conformity, contact your local sales office.

(3) USA/Canada compliance

This sensing module is designed in compliance with UL 508C and CSA C22.2 No. 14.

(a) Installation

The minimum cabinet size is 150% of volume of each sensing module. Also, design the cabinet so that the ambient temperature in the cabinet is 60 °C or less. The sensing module must be installed in the metal cabinet. Additionally, mount the sensing module on a cabinet that the protective earth based on the standard of IEC/EN 60204-1 is correctly connected. For environment, the units should be used in open type (UL 50) and overvoltage category shown in table in app. 1.7. The sensing module needs to be installed at or below of pollution degree 2. For connection, use copper wires.

(b) Short-circuit current rating (SCCR)

SCCR of sensing modules requires support at the branch circuit protection devices (fuse and circuit breaker, etc). Selection of the branch circuit protection devices is dependent on the external power supply.

(c) Branch circuit protection

For installation in United States, branch circuit protection must be provided, in accordance with the National Electrical Code and any applicable local codes.

For installation in Canada, branch circuit protection must be provided, in accordance with the Canada Electrical Code and any applicable provincial codes.

(4) South Korea compliance
This product complies with the Radio Wave Law (KC mark). Please note the following to use the product.
이 기기는 업무용 (A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
(The product is for business use (Class A) and meets the electromagnetic compatibility requirements. The seller and the user must note the above point, and use the product in a place except for home.)

App. 1.1.4 General cautions for safety protection and protective measures

Observe the following items to ensure proper use of the sensing modules.

(1) For safety components and installing systems, only qualified personnel and professional engineers should perform.

(2) When mounting, installing, and using the sensing module, always observe standards and directives applicable in the country.

(3) The item about noises of the test notices in the manuals should be observed.

App. 1.1.5 Residual risk

(1) Only qualified personnel are authorized to install, start-up, repair or service the machines in which these components are installed. Only trained engineers should install and operate the equipment. (ISO 13849-1 Table F.1 No. 5)

(2) Protect the cables with appropriate ways (routing them in a cabinet, using a cable guard, etc.).

(3) Keep the required clearance/creepage distance depending on voltage you use.

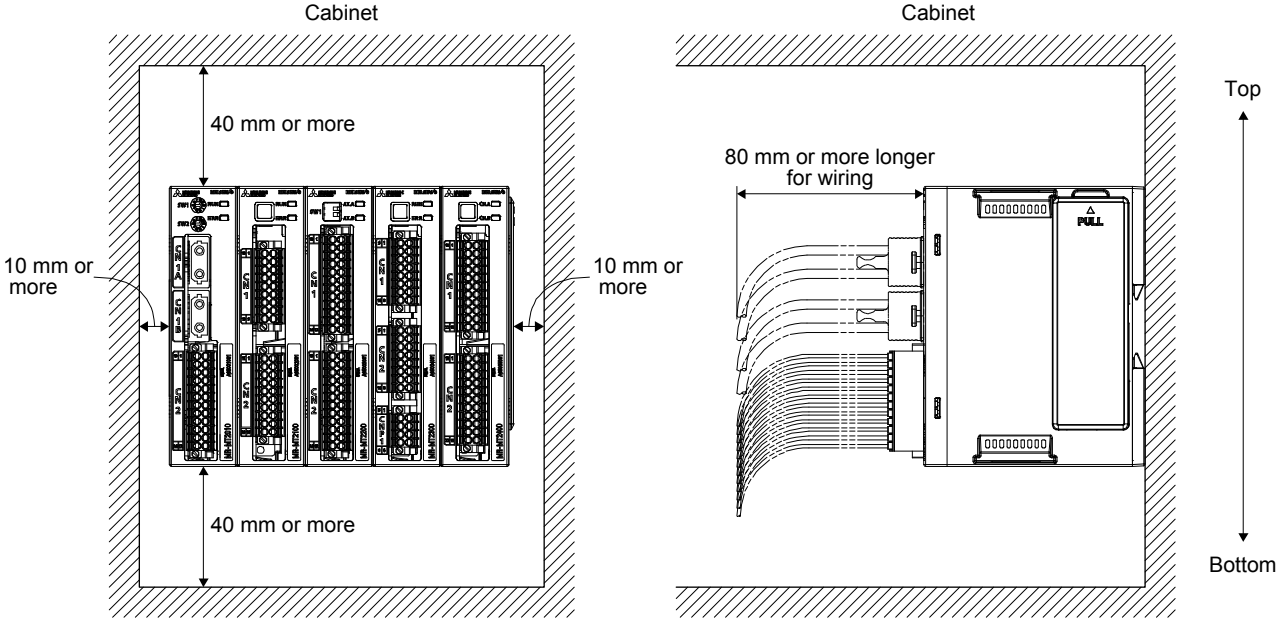
App. 1.1.6 Disposal

Disposal of unusable or irreparable devices should always occur in accordance with the applicable country-specific waste disposal regulations. (Example: European Waste 16 02 14)

App. 1.2 Installation direction and clearances

⚠CAUTION

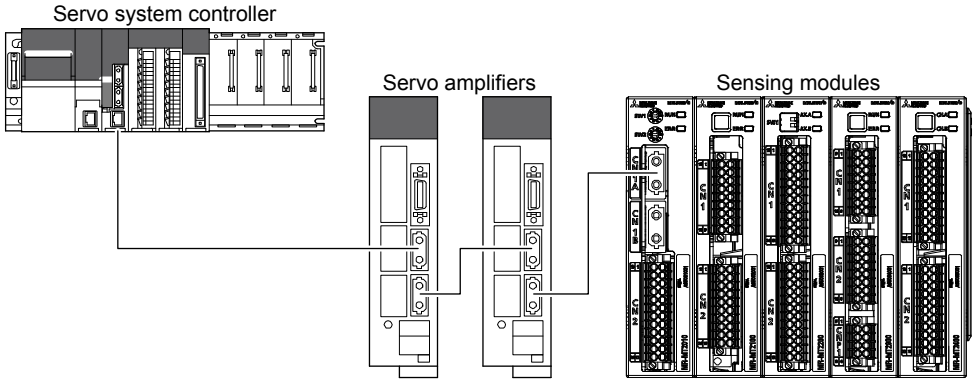
- The devices must be installed in the specified direction. Not doing so may cause a malfunction.
- Mount the sensing module on a cabinet which meets IP54 in the correct vertical direction to maintain pollution degree 2.



App. 1.3 Configuration diagram

> **⚠CAUTION** ●Securely connect the cables in the specified method. Otherwise, the servo motor may operate unexpectedly.

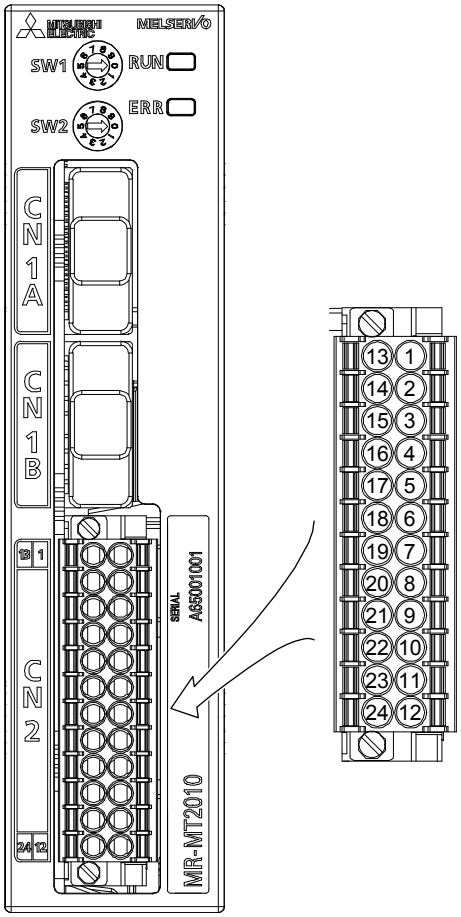
The following shows configuration examples of sensing modules.
Sensing modules are connected to the servo system controller by SSCNET III/H communication. Sensing modules can be connected to the same network system with the SSCNET III/H interface servo amplifier.



App. 1.4 Signals

The following shows MR-MT2010 signals as a typical example.

App. 1.4.1 Signal



Pin No.	Symbol	Symbol	Pin No.
13	DI1	DI2	1
14	DI3	DI4	2
15	DI5	DI6	3
16	DI7	DI8	4
17	DI9	DI10	5
18	DI11	DI12	6
19	DICOM	DICOM	7
20	DO1	DO2	8
21	DOCOM(-)	DOCOM(-)	9
22	CTL(+)	DOCOM(-)	10
23	24 V(+)	24G	11
24	FG	FG	12

App. 1.4.2 I/O device

Symbol	Device	Connector	Pin No.
DI1 to DI12	Digital input	CN2	1 to 6/13 to 18
DO1/DO2	Digital output		8/20
DICOM	Common terminal for input signals		7/19
DOCOM(-)	Common terminal for output signals		9/10/21
24 V(+)/24G	Control circuit power supply		11/23
FG	Grounding		12/24

App. 1.5 Maintenance and service

⚠ WARNING ●To avoid an electric shock, only qualified personnel should attempt inspections. For repair and parts replacement, contact your local sales office.

App. 1.5.1 Inspection items

It is recommended that the following points periodically be checked.

(1) Check the cables and the like for scratches or cracks. Perform periodic inspection according to operating conditions.

(2) Check that the wires are not coming out from the connector.

(3) Check for dust accumulation on the sensing module.

(4) Check for unusual noise generated from the sensing module.

App. 1.6 Transportation and storage

⚠CAUTION
- Transport the products correctly according to their mass.
- Stacking in excess of the limited number of product packages is not allowed.
- Install the product in a load-bearing place of sensing module in accordance with the instruction manual.
- Do not put excessive load on the machine.

When you keep or use it, please fulfill the following environment.

Item		Environment
Ambient temperature	Operation [°C]	0 to 60 Class 3K3 (IEC/EN 60721-3-3)
	Transportation (Note) [°C]	-20 to 65 Class 2K4 (IEC/EN 60721-3-2)
	Storage (Note) [°C]	-20 to 65 Class 1K4 (IEC/EN 60721-3-1)
Ambient humidity	Operation, transportation, storage	5 %RH to 90 %RH
Vibration resistance	Test condition	10 Hz to 57 Hz with constant amplitude of 0.075 mm 57 Hz to 150 Hz with constant acceleration of 9.8 m/s^2 to IEC/EN 61800-5-1 (Test Fc of IEC 60068-2-6)
	Operation	5.9 m/s^2
	Transportation (Note)	Class 2M3 (IEC/EN 60721-3-2)
	Storage	Class 1M2 (IEC/EN 60721-3-2)
Pollution degree		2
IP rating		IP20 (IEC/EN 60529)
		Open type (UL 50)
Altitude	Operation, storage	Max. 2000 m above sea level
	Transportation	Max. 10000 m above sea level

Note. In regular transport packaging

App. 1.7 Technical data

App. 1.7.1 MR-MT2010

Item		Specifications
Control circuit power supply input	Voltage	24 V DC
	Permissible voltage fluctuation	24 V DC ± 10%
	Rated current [A]	1.0
DI	Points	12
	Input type	Photocoupler insulation, 24 V sink/source input
DO	Points	2
	Output method	Photocoupler insulation, 24 V sink output
Mass [kg]		0.2

App. 1.7.2 MR-MT2100

Item		Specifications
DI	Points	16
	Input type	Photocoupler insulation, 24 V sink/source input
DO	Points	16
	Output method	Photocoupler insulation, 24 V sink/source output (Note)
Mass [kg]		0.2

Note. The source output is usable when MR-MT2010 with software version A1 or later is connected.

App. 1.7.3 MR-MT2200

Item		Specifications
Number of pulse I/O channels		Output: 2/Input: 2/Input and output: 1 each (selective)
Pulse output	Output signal	Differential output/open collector output
	Output pulse train	Forward/reverse rotation pulse train, Signed pulse train, A-phase/B-phase pulse train
Pulse input	Input signal	Differential input
	Input pulse train	Forward/reverse rotation pulse train, Signed pulse train, A-phase/B-phase pulse train
DI	Points	14 (7 each axis)
	Input type	Photocoupler insulation, 24 V sink/source input
DO	Points	6 (3 each axis)
	Output method	Photocoupler insulation, 24 V sink/source output
Mass [kg]		0.2

App. 1.7.4 MR-MT2300

Item		Specifications
Analog input	Points	4
	Input voltage range	DC -10 V to +10 V/DC -5 V to +5 V (selective)
Analog output	Points	4
	Output voltage range	DC -10 V to +10 V
Mass [kg]		0.2

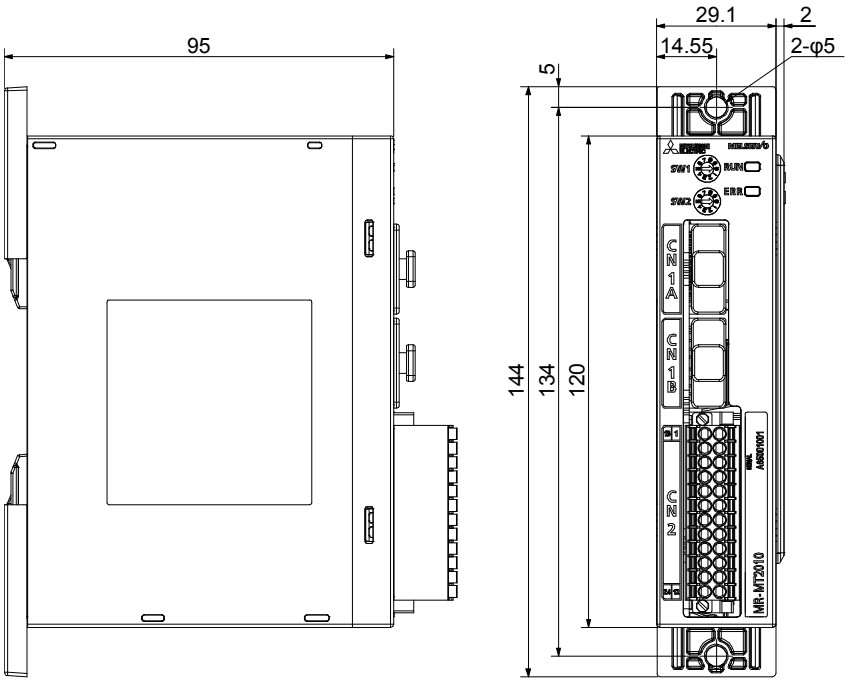
App. 1.7.5 MR-MT2400

Item	Specifications
Encoder communication format	SSI
Mass [kg]	0.2

App. 1.7.6 Dimensions/mounting hole process drawing

(1) MR-MT2010

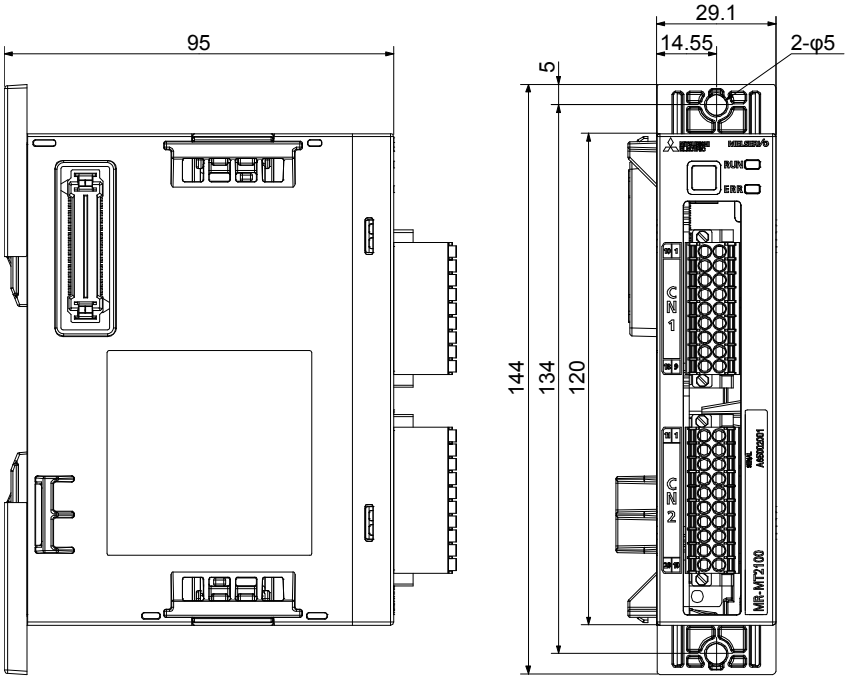
[Unit: mm]



Mounting screw
Screw size: M4
Tightening torque:
1.24 [N•m]

(2) MR-MT2100

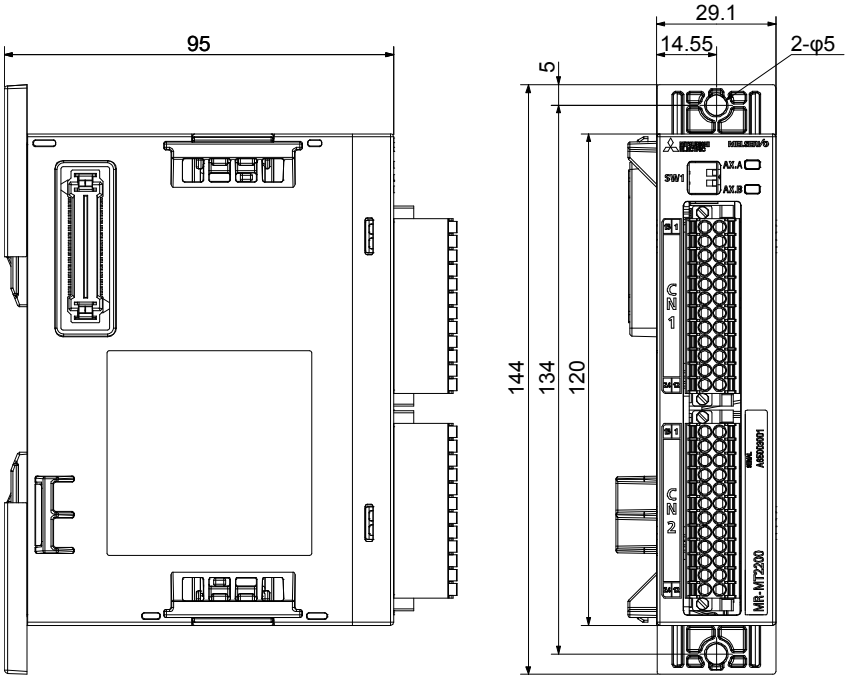
[Unit: mm]



Mounting screw
Screw size: M4
Tightening torque:
1.24 [N•m]

(3) MR-MT2200

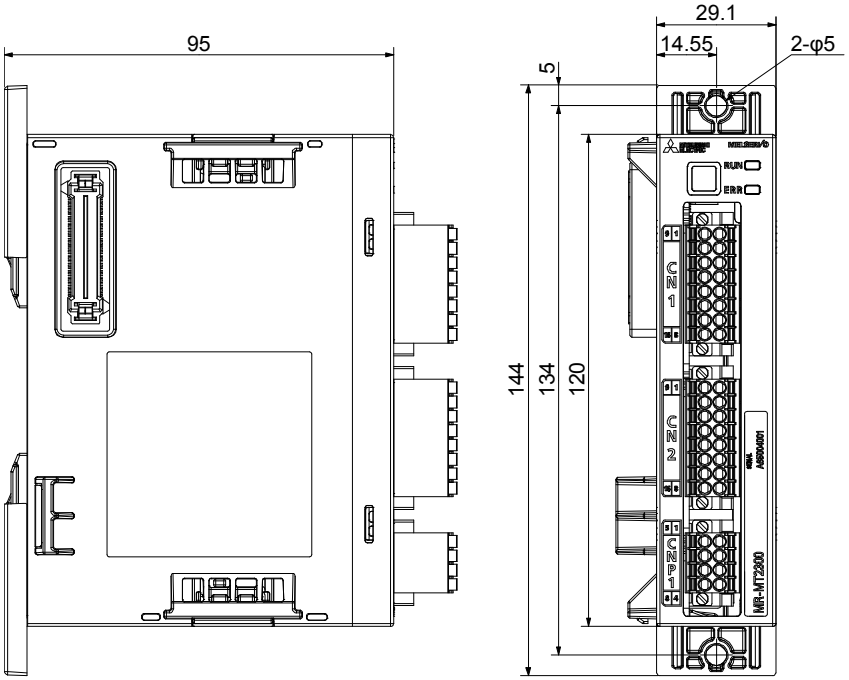
[Unit: mm]



Mounting screw
Screw size: M4
Tightening torque:
1.24 [N•m]

(4) MR-MT2300

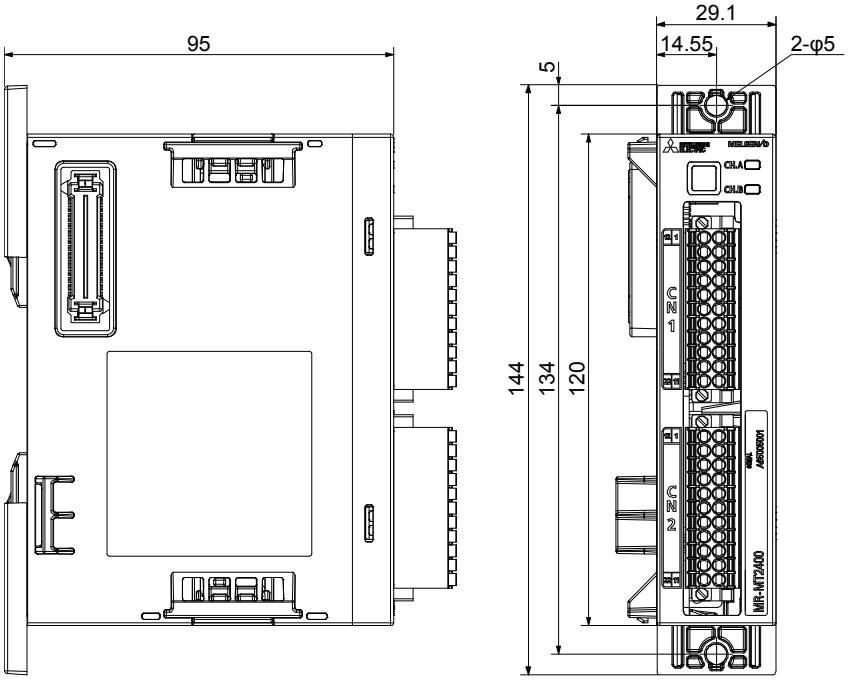
[Unit: mm]



Mounting screw
Screw size: M4
Tightening torque:
1.24 [N•m]

(5) MR-MT2400

[Unit: mm]



Mounting screw
Screw size: M4
Tightening torque:
1.24 [N•m]

REVISIONS

*The manual number is given on the bottom left of the back cover.

Revision Date	*Manual Number	Revision
Oct. 2016	SH(NA)030251ENG-A	First edition
Feb. 2017	SH(NA)030251ENG-B	MR-MT2100 Compatibility to source output is added
		Section 3.1 Partially changed.
		Section 4.5 Partially changed.
		Section 4.7.3 Partially changed.
		Section 5.2 Partially added and partially changed.
		Section 5.6.1 Partially added.
		Section 5.6.2 Partially added and partially changed.
		Section 5.6.3 Newly added.
		Section 5.6.4 Partially added and partially changed.
		Section 6.2 Partially added.
		Section 6.5.2 Partially changed.
		Section 9.1.1 (2) Partially added.
		Section 9.1.2 (2) Partially added.
		Section 9.2.1 (2) Partially added.
		Section 9.2.2 (1) Partially added.
		Section 9.2.2 (2) Partially added.
		Section 10.4 Partially added.
		App.1.1.3 Added "Warning".
		App.1.3 Added "Caution".
		App.1.7.2 Partially changed.
Nov. 2025	SH(NA)030251ENG-C	The back cover is changed.

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Warranty

1. Warranty period and coverage

We will repair any failure or defect hereinafter referred to as "failure" in our FA equipment hereinafter referred to as the "Product" arisen during warranty period at no charge due to causes for which we are responsible through the distributor from which you purchased the Product or our service provider. However, we will charge the actual cost of dispatching our engineer for an on-site repair work on request by customer in Japan or overseas countries. We are not responsible for any on-site readjustment and/or trial run that may be required after a defective unit is repaired or replaced.

[Term]

For terms of warranty, please contact your original place of purchase.

[Limitations]

(1) You are requested to conduct an initial failure diagnosis by yourself, as a general rule.
It can also be carried out by us or our service company upon your request and the actual cost will be charged. However, it will not be charged if we are responsible for the cause of the failure.

(2) This limited warranty applies only when the condition, method, environment, etc. of use are in compliance with the terms and conditions and instructions that are set forth in the instruction manual and user manual for the Product and the caution label affixed to the Product.

(3) Even during the term of warranty, the repair cost will be charged on you in the following cases;

1. a failure caused by your improper storing or handling, carelessness or negligence, etc., and a failure caused by your hardware or software problem
2. a failure caused by any alteration, etc. to the Product made on your side without our approval
3. a failure which may be regarded as avoidable, if your equipment in which the Product is incorporated is equipped with a safety device required by applicable laws and has any function or structure considered to be indispensable according to a common sense in the industry
4. a failure which may be regarded as avoidable if consumable parts designated in the instruction manual, etc. are duly maintained and replaced
5. any replacement of consumable parts (battery, fan, smoothing capacitor, etc.)
6. a failure caused by external factors such as inevitable accidents, including without limitation fire and abnormal fluctuation of voltage, and acts of God, including without limitation earthquake, lightning and natural disasters
7. a failure generated by an unforeseeable cause with a scientific technology that was not available at the time of the shipment of the Product from our company
8. any other failures which we are not responsible for or which you acknowledge we are not responsible for

2. Term of warranty after the stop of production

(1) We may accept the repair at charge for another seven (7) years after the production of the product is discontinued. The announcement of the stop of production for each model can be seen in our Sales and Service, etc.

(2) Please note that the Product (including its spare parts) cannot be ordered after its stop of production.

3. Service in overseas countries

Our regional FA Center in overseas countries will accept the repair work of the Product. However, the terms and conditions of the repair work may differ depending on each FA Center. Please ask your local FA center for details.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Change of Product specifications

Specifications listed in our catalogs, manuals or technical documents may be changed without notice.

6. Application and use of the Product

(1) For the use of our AC Servo, its applications should be those that may not result in a serious damage even if any failure or malfunction occurs in AC Servo, and a backup or fail-safe function should operate on an external system to AC Servo when any failure or malfunction occurs.

(2) Our AC Servo is designed and manufactured as a general purpose product for use at general industries.
Therefore, applications substantially influential on the public interest for such as atomic power plants and other power plants of electric power companies, and also which require a special quality assurance system, including applications for railway companies and government or public offices are not recommended, and we assume no responsibility for any failure caused by these applications when used.
In addition, applications which may be substantially influential to human lives or properties for such as airlines, medical treatments, railway service, incineration and fuel systems, man-operated material handling equipment, entertainment machines, safety machines, etc. are not recommended, and we assume no responsibility for any failure caused by these applications when used.
We will review the acceptability of the abovementioned applications, if you agree not to require a specific quality for a specific application. Please contact us for consultation.

(3) Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

SH(NA)030251ENG-C(2511)MEE
MODEL:
MODEL CODE:

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Specifications subject to change without notice.
Compliance with the indicated global standards and regulations is current as of the release date of this manual.