Compact Remote I/O Module

■ Overview

This product (Model RJ-12_ _W0_00) is an I/O module compatible with BACnet MS/TP which is an open protocol.

Various I/Os such as digital I/O, totalizing pulse input, remote control relay output, analog I/O, RTD input are available.

Even if the monitoring points are distributed throughout a building, the compact body and the communication function allow the product to be installed in distributed locations in the building and to execute the following operations of the building facilities:

- Monitoring the operating/alarm state
- Turning ON/OFF
- Measuring data

■ Features

- Open communication protocol
  This product is a controller compatible with BACnet MS/TP which is an open protocol.
- Saving space
  The product is compact so as to save the space for installation.
  It is possible to install the product in a power distribution panel or power panel, so a remote panel is not required.
- Compatible with the various I/Os
  DI modules (DI/TOT: x8) , DIO modules (DI: x4, DO: x4) , RRD modules (remote control relay output: x4) , UIO modules (current/voltage input: x2, PT input: x2, current/voltage output: x2) , combination modules (DI: x2, DO: x2, AO: x1) are available.
  The combination module is an I/O module that includes CX/TX relays and an analog current output signal to control a fan.
  By installing one combination module, it is possible to turn ON/OFF a device, input alarm state, and enable inverter output.
- Simple installation
  The push-in terminal blocks are used for the I/O terminals, so wiring can be done easily.
  The RJ-45 connector is used for the BACnet MS/TP communication terminal block, which enables to save labor for wiring by using the LAN cable.

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Safety Precautions

Please read instructions carefully and use the product as specified in this manual. Be sure to keep this manual nearby for quick reference.

Restrictions on Use

This product was developed, designed, and manufactured for general air conditioning use.

Do not use the product in a situation where human life may be at risk or for nuclear applications in radiation controlled areas. If you wish to use the product in a radiation controlled area, please contact Azbil Corporation.

Particularly when the product is used in the following applications where safety is required, implementation of fail-safe design, redundant design, regular maintenance, etc., should be considered in order to use the product safely and reliably.

- Safety devices for protecting the human body
- Start/stop control devices for transportation machines
- Aeronautical/aerospace machines

For system design, application design, instructions for use, or product applications, please contact Azbil Corporation.

Azbil Corporation bears no responsibility for any result, or lack of result, deriving from the customer's use of the product.

■ Caution for Instrumentation Design

Considering unexpected failures or contingencies, be sure to design and check safety of the system and equipment.

■ Recommended Design Life

It is recommended that this product be used within the recommended design life.

The recommended design life is the period during which you can use the product safely and reliably based on the design specifications.

If the product is used beyond this period, its failure ratio may increase due to time-related deterioration of parts, etc.

The recommended design life during which the product can operate reliably with the lowest failure ratio and least deterioration over time is estimated scientifically based on acceleration tests, endurance tests, etc., taking into consideration the operating environment, conditions, and frequency of use as basic parameters.

The recommended design life of this product is 15 years.

The recommended design life assumes that maintenance, such as replacement of the limited life parts, is carried out properly.

Refer to the section on maintenance in this manual.

■ Warnings and Cautions

 WARNING	Alerts users that improper handling may cause death or serious injury.
 CAUTION	Alerts users that improper handling may cause minor injury or material loss.

■ Signs

 Electric shock	Alerts users to possible hazardous conditions caused by erroneous operation or erroneous use. The symbol inside △ indicates the specific type of danger. (For example, the sign on the left warns of the risk of electric shock.)
 Disassemble	Notifies users that specific actions are prohibited to prevent possible danger. The symbol inside ⃠ graphically indicates the prohibited action. (For example, the sign on the left means that disassembly is prohibited.)
 General	Instructs users to carry out a specific obligatory action to prevent possible danger. The symbol inside ● graphically indicates the actual action to be carried out. (For example, the sign on the left indicates general instructions.)

⚠ WARNING	
 Electric shock	Install this product in a place, such as a control cabinet, where only the administrator has access to it. Otherwise there is a danger of electric shock.
 Ground	Be sure to ground this product with a ground resistance of less than 100 Ω. Improper grounding may cause electric shock or malfunction.
 Electric shock	Before wiring or maintenance, be sure to turn off the power to this product. Failure to do so may result in electric shock or device failure.
 Electric shock	Do not touch electrically charged parts. Doing so may cause electric shock.

⚠ CAUTION	
 General	Provide a circuit breaker for the power source of this product. This product cannot be turned off because it does not have a power switch.
 Fire	Take anti-lightening measures based on regional and building characteristics. Lightning may cause fire or critical damage to this product if protective measures are not taken.
 General	Keep this product in the package for storage. Failure to do so may damage or stain the product.
 General	Use this product under the operating conditions (for temperature, humidity, power, vibration, shock, mounting direction, atmosphere, etc.) listed in the specifications. Failure to do so may cause fire or device failure.
 General	Use this product under the input/output conditions (for output range, load resistance, contact rating, etc.) listed in the specifications. Failure to do so may cause fire or device failure.
 General	Take anti-noise measures if this product is installed in a location near source of electric noise. Failure to do so may cause malfunction or device failure.

⚠ CAUTION	
 General	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards. Failure to do so may cause fire or electric shock.
 General	After installing this product, check that it is steady and does not move. Otherwise it may fall or fail.
 General	All wiring must comply with applicable codes and ordinances. Otherwise there is a danger of fire.
 Prohibition	Do not use an uninterruptible power supply (UPS) that outputs rectangular waves. Doing so may cause the device to fail.
 General	For wiring, strip the insulation from cables as specified in this manual. If the length of exposed wire is longer than specified, it may cause electric shock or short circuit between adjacent terminals. If it is too short, it may not make proper contact.
 Prohibition	Do not allow wire clippings, metal shavings, and other refuse to enter into the product. Doing so may cause fire or product damage.
 General	If more than the rated power voltage is accidentally applied to this product, replace the product with a new one for your safety. Failure to do so may cause device failure or cause fire.
 Disassemble	Do not disassemble this product. Doing so might cause device failure.
 General	Before cleaning the product, be sure to turn off the power to the product. Failure to do so may cause electric shock, device failure, or malfunction.

■ System Configuration

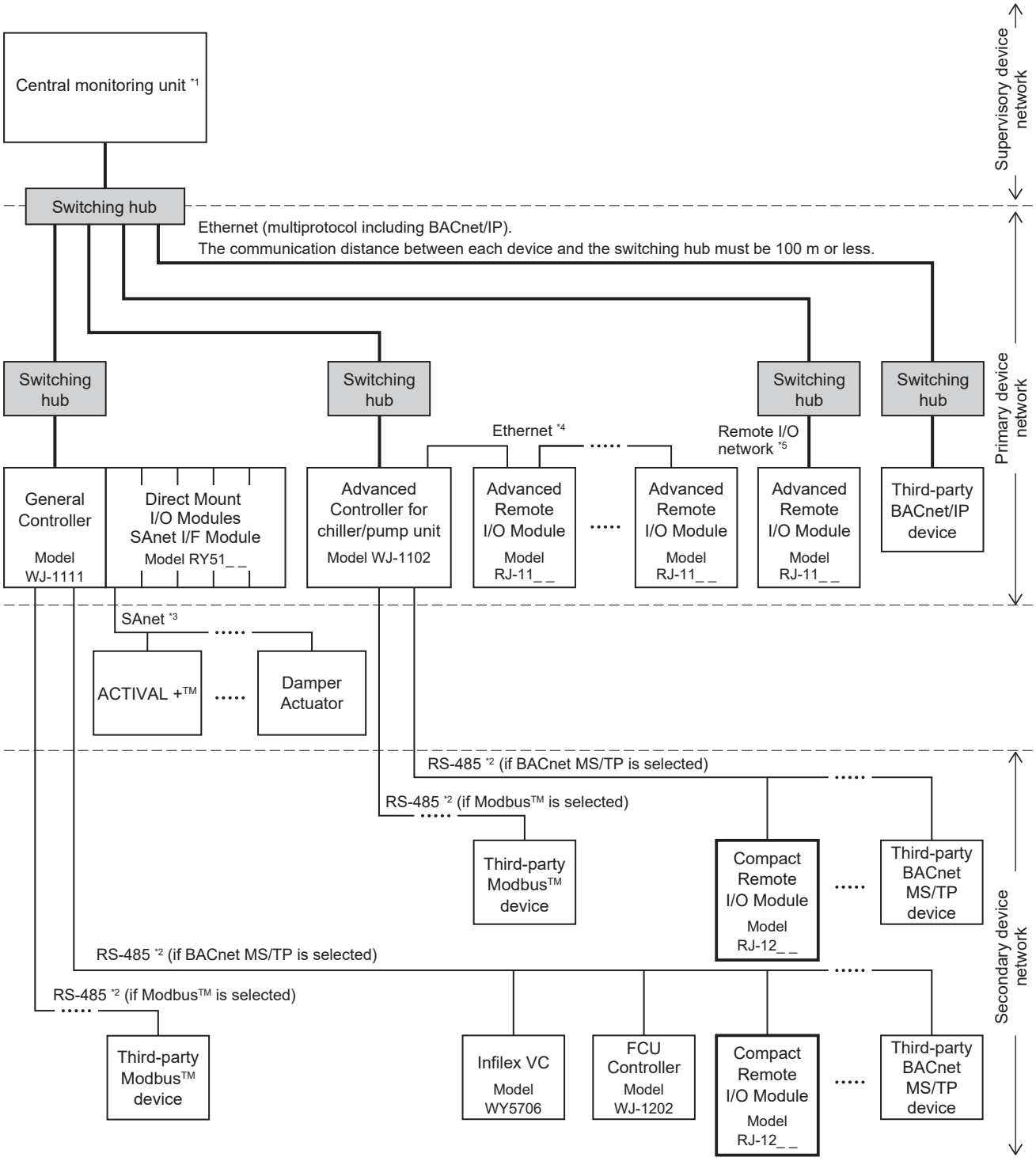


Figure 1. Example system configuration

*1 The system can be connected to Azbil Supervisory Controller (Model BH-101G0W0000) or a third-party central monitoring unit for BACnet/IP communications.

*2 The General Controller and Advanced Controller have two RS-485 communication channels.
For each channel, communication protocol can be selected from BACnet MS/TP, Modbus™ RTU, or Modbus™ ASCII.
- The number of devices that can be connected for BACnet MS/TP
  If only the Azbil devices are connected:
  50 devices/channel (VAV/FCU controllers, Compact Remote I/O Modules, etc.)
  The maximum number of the secondary devices that can be connected to one General Controller is 70 , or 50 which is the sum of Azbil VAV and FCU Controllers. The Advanced Controller has no restrictions.
  If only the third-party devices are connected:
  31 devices/channel (when transmission speed is 76.8 kbps, 30 objects/device)
- The number of devices that can be connected for Modbus™
  31 devices/channel (when transmission speed is 76.8 kbps, 30 objects/device)

If the transmission speed and the number of objects are different among the third-party devices, or if the Azbil devices and third-party devices coexist on the same channel, the number of connected devices will vary. For details, please contact one of Azbil salespersons.

*3 By connecting the SAnet Interface Module, it is possible to connect the Intelligent Component Series devices.
For restrictions on the SAnet communication line, refer to AB-6713, *Intelligent Component Series for SAnet Communication: Installation Manual.*

*4 A network that connects the Advanced Controller and Advanced Remote I/O Modules under its control is referred to as a local I/O network.
A switching hub is not required for the local I/O network since a daisy chain Ethernet is used between the Advanced Controller and the Advanced Remote I/O Modules under its control, as well as between the Advanced Remote I/O Modules and the I/O modules for the Advanced Controller.

*5 A network that connects the Advanced Controller and Advanced Remote I/O Modules through a host network is referred to as a remote I/O network.
A switching hub is required to connect the Advanced Remote I/O Modules to the remote I/O network.
The maximum number of the Advanced Remote I/O Modules connected to this network is 3 per Advanced Controller.

■ Model Numbers

Model number							Description
RJ-12							
	01	W	0	8	0	0	8 digital inputs / 8 totalizing inputs
	02	W	0	8	0	0	4 digital inputs + 4 digital outputs
	03	W	0	2	0	0	2 universal inputs/outputs
	04	W	0	4	0	0	4 remote-control relay outputs
	05	W	0	5	0	0	Combination (2 digital inputs + 2 digital outputs + 1 analog output)

● Optional parts

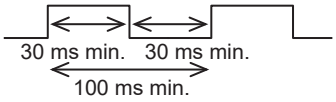
Model number	Description
83104567-001	DIN rail clamp
83162637-005	RS-485 terminator (x 1)
83162637-006	RS-485 terminators (x 10)

■ Specifications

Item			Specification
Supply power	Input voltage		100–240 V AC (or 100–264V AC)
	Power frequency		50/60 Hz ± 3Hz
	Power consumption		10 VA max.
	Inrush current		15 A max. (for 100 V AC) 35 A max. (for 240V AC)
	Leakage current		0.2 mA max. (for 100V AC) 0.5 mA max. (for 240V AC)
	Insulation resistance		Between the power terminals and the ground terminal 100 MΩ or more (500 V DC)
CPU			32-bit
Environmental conditions	Operating conditions	Ambient temperature	0–50 °C
		Ambient humidity	10–90 % RH (without condensation)
		Altitude	2000 m max.
		Vibration	5.9 m/s² max., 10–150 Hz
	Transport/ storage conditions	Ambient temperature	-20–60 °C
		Ambient humidity	5–95 % RH (without condensation)
		Vibration (storage)	5.9 m/s² max., 10–150 Hz
		Vibration (transport)	9.8 m/s² max., 10–150 Hz
	Others		• No corrosive gas detected • The product must not be exposed to direct sunlight. • Do not let the product get wet.
Communication	RS-485	Protocol	BACnet MS/TP
		Speed	9.6 / 19.2 / 38.4 / 76.8 kbps (default: 76.8 kbps)
		Distance	1000 m max.
Major material			Modified PPE resin
Weight			0.23 kg
Installation location			Installed in the control panel cabinet
Installation method			Installed on a DIN rail

● Input/output specifications

Model RJ-1201W0800: DI/TOT module

Item			Specification
Input	Digital input	Number of inputs	8
		Current	5 mA typ.
		Voltage	24 V DC typ.
		Connectable output	Dry contact or open collector
		Dry contact specification	Allowable ON contact resistance 100 Ω max. Allowable OFF contact resistance 100 kΩ min.
		Open collector specification	Allowable ON residual voltage 3 V max. Allowable OFF leakage current 500 μA max.
		Pulse integration	10 Hz max. Note: Digital input pulse integration requires a pulse width and a pulse interval that satisfy the conditions shown in the following figure. 

Model RJ-1202W0800: DIO module

Item			Specification
Input	Digital input	Number of inputs	4
		Current	5 mA typ.
		Voltage	24 V DC typ.
		Connectable output	Dry contact or open collector
		Dry contact specification	Allowable ON contact resistance 100 Ω max. Allowable OFF contact resistance 100 kΩ min.
		Open collector specification	Allowable ON residual voltage 3 V max. Allowable OFF leakage current 500 μA max.
Output	Relay output (Normally open contact)	Number of outputs	4
		Output type	Relay output, normally open contact
		Contact specification	250 V AC, 1 A max. (inductive load: cos φ0.4 or more) 24 V DC, 0.5 A max.
		Min. applicable load	5 V DC, 10 mA

Model RJ-1203W0200: UIO module

Item			Specification
Universal input/output	Number of inputs/outputs		2
	Voltage input*	Input range	1–5 V DC
		Input impedance	250 kΩ typ.
	Current input*	Input range	4–20 mA DC
		Input impedance	100 Ω typ.
	Temperature input	Input signal	RTD (Pt100)
		Settable range	0–50 °C, 0–100 °C, 0–200 °C, -20–80 °C, -20–30 °C, -50-100 °C, -100–50 °C
	Digital input	Voltage/current	3.76 V DC typ., 1 mA DC typ.
		Connectable output	Dry contact or open collector
		Dry contact specification	Allowable ON contact resistance 100 Ω max. Allowable OFF contact resistance 100 kΩ min.
		Open collector specification	Allowable ON residual voltage 1V max. Allowable OFF leakage current 100 μA max.
	Voltage output	Output range	0–10 V DC / 2–10 V DC
		Min. load resistance	10 kΩ or higher
	Current output	Output range	4–20 mA DC
		Max. load resistance	500 Ω or less

* If an isolator is used, it is possible to input two signals to a terminal block.

Model RJ-1204W0400: RRD module

Item			Specification
Output	Remote-control relay output	Number of outputs	4
		Output type	Thyristor output
		Contact specification	24 V AC, 1.5 A max.
		Number of connectable devices	1 remote-control relay per point

Model RJ-1205W0500: Combination module

Item			Specification
Input	Digital input	Number of inputs	2
		Current	5 mA typ.
		Voltage	24 V DC typ.
		Connectable output	Dry contact or open collector
		Dry contact specification	Allowable ON contact resistance 100 Ω max. Allowable OFF contact resistance 100 kΩ min.
		Open collector specification	Allowable ON residual voltage 3 V max. Allowable OFF leakage current 500 μA max.
Output	Relay output (normally open contact)	Number of outputs	1
		Output type	Relay output, normally open contact
		Contact specification	250 V AC, 1 A max. (inductive load: cos φ0.4 or more) 24 V DC, 0.5 A max.
		Min. applicable load	5 V DC, 10 mA
	Relay output (normally open / normally close contact)	Number of outputs	1
		Output type	Relay output, normally open / normally closed contact
		Contact specification	250 V AC, 1 A max. (inductive load: cos φ0.4 or more) 24 V DC, 0.5 A max.
		Min. applicable load	5 V DC, 10 mA
	Current output	Number of outputs	1
		Output range	4–20 mA DC
		Max. load resistance	500 Ω or less

■ Specifications for Wiring

Model number	Item	Wire Type	Max. cable length	Remarks
All models	Power supply	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 1.25–2.0 mm^2	-	
	Ground	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 2.0 mm^2	-	Ground the product with resistance less than 100 Ω.
	RS-485	EIA / TIA-568 category 5e or higher	1000 m	
RJ-1201W0800	Digital input	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 0.5–1.25 mm^2	100 m	
RJ-1202W0800	Digital input	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 0.5–1.25 mm^2	100 m	
	Digital output	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 1.25–2.0 mm^2	100 m	
RJ-1203W0200	Universal output (Voltage/current)	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 0.5–1.25mm^2	100 m	
	Universal input (Voltage/current)	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 0.5–1.25 mm^2	100 m	
	The resistance temperature detector input (Pt100 sensor)	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 0.5–1.25 mm^2	100 m	The resistance temperature detector will cause an error because of the resistance of the wires. Therefore, the use of a cable with a cross-sectional area of 1.25mm^2 is recommended.
RJ-1204W0400	Remote control relay output	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 1.25 mm^2	100 m	
RJ-1205W0500	Digital Input	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 0.5–2.0 mm^2	30 m	
	Digital output	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 1.25–2.0 mm^2	30 m	
	Analog output	600 V PVC-insulated cable (IEC 60227-3) / CVV equivalent, stranded cable, 0.75–1.25 mm^2	30 m	

* CVV: control-use vinyl insulated vinyl sheathed cable

■ Dimensions

100 mm (H) x 50 mm (W) x 75 mm (D)

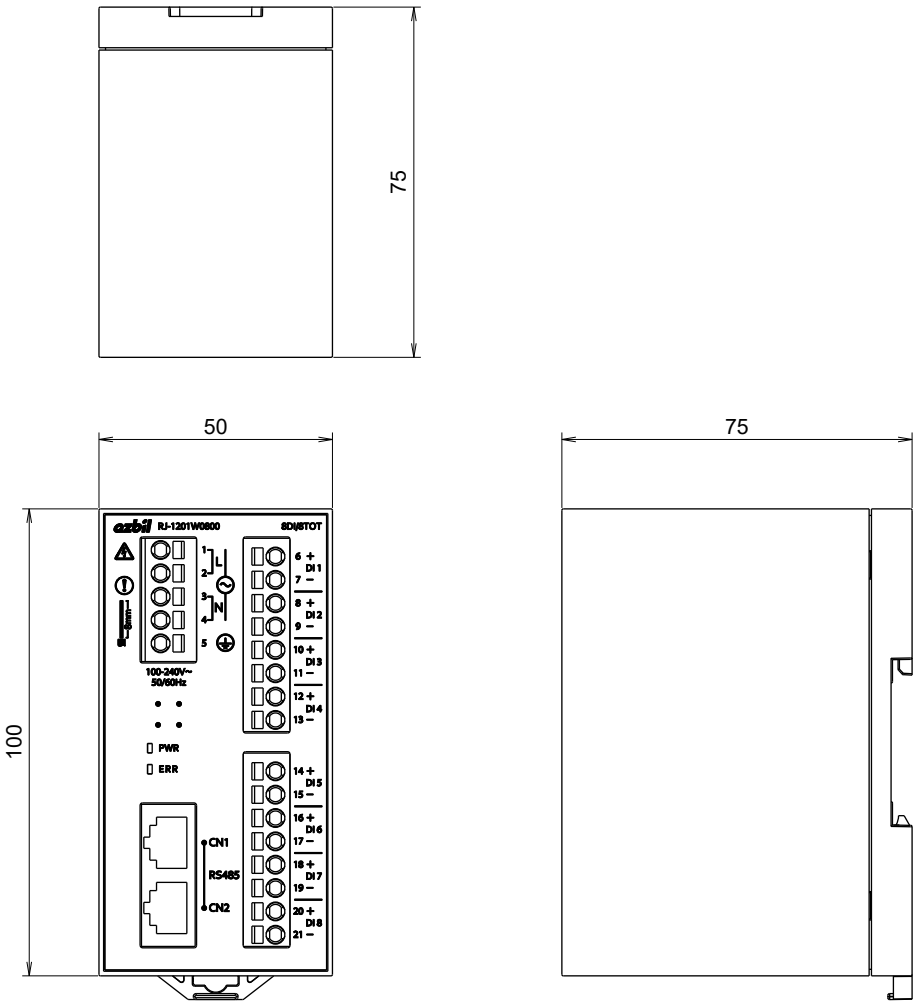


Figure 2. Dimensions (mm)

■ Parts Identification

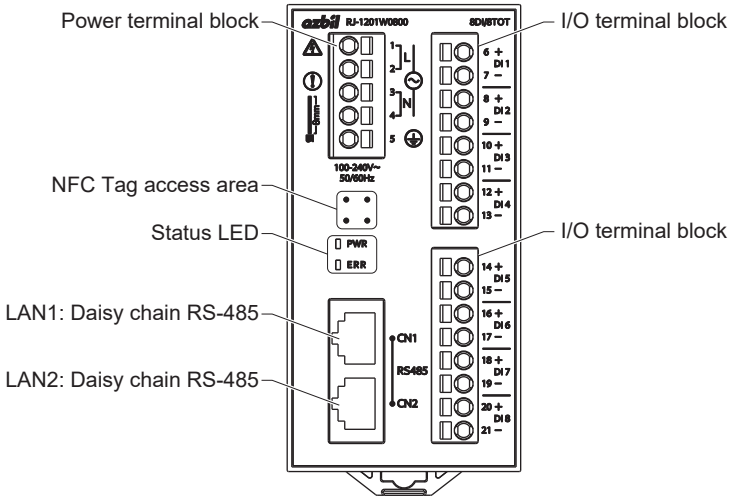


Figure 3.

■ Installation

⚠ WARNING	
Electric shock	Install this product in a place, such as a control cabinet, where only the administrator has access to it. Otherwise there is a danger of electric shock.

⚠ CAUTION	
General	Use this product under the operating conditions (for temperature, humidity, power, vibration, shock, mounting direction, atmosphere, etc.) listed in the specifications. Failure to do so may cause fire or device failure.
General	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards. Failure to do so may cause fire or electric shock.
General	After installing this product, check that it is steady and does not move. Otherwise it may fall or fail.

● Installation location

The panel should be installed in a place that satisfies the following conditions.

- An indoor place where is not exposed to direct sunlight
- A place where water is not splashed on the product.

Note: The product is not waterproof.

This product should be installed in a panel.
Free space, the hatched area in the following figure, should be secured around the product.
The hatched area is for maintenance.

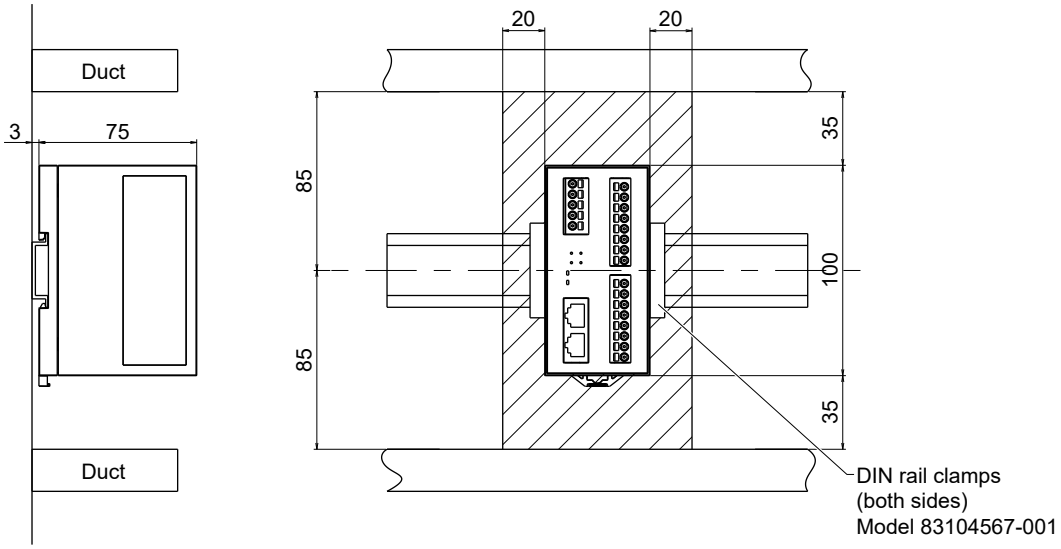


Figure 4. Installation on DIN rail (single unit) (mm)

Notes:

1. The horizontal dimension varies depending on the number of I/O modules connected.
2. When attaching various units (n pieces) , secure the hatched area for maintenance.
   When n pieces of the products are installed, width of the products will be given as “50 x n” (mm) .

● Installation position

- This product should be installed upright in the panel.
  Installation of this product on a slant or laid on its side is prohibited. Doing so reduces heat radiation performance, which may cause the internal temperature to rise abnormally.

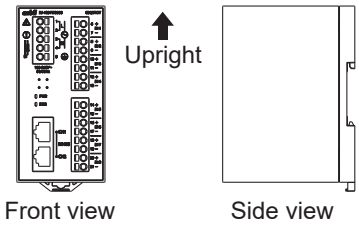
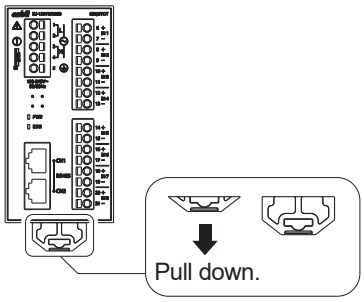


Figure 5. Installation position

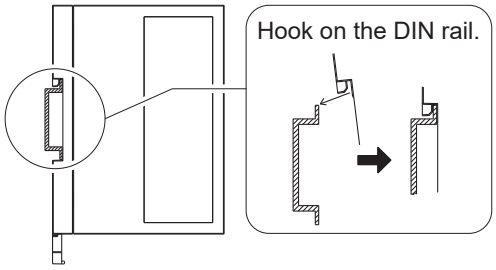
● Installation method

<Installation on the DIN Rail>

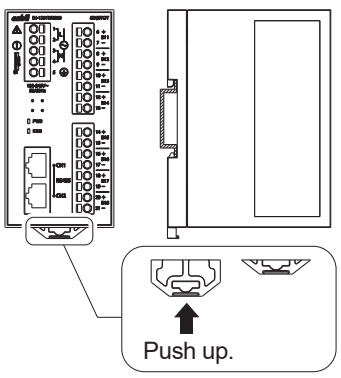
(1) Pull down the DIN holder on the bottom of the device.



(2) Hook the upper part of the base to the DIN rail and check that it is hooked securely.



(3) Push up the DIN holder (x1) on the bottom of the device. Check that the DIN holder is securely hooked on the DIN rail.



(4) Check that the DIN holder on the bottom of the device is secured on the DIN rail.
Check that the device is steady and does not move.

(5) Secure both ends with the DIN rail clamps (Model 83104567-001) .

■ Wiring

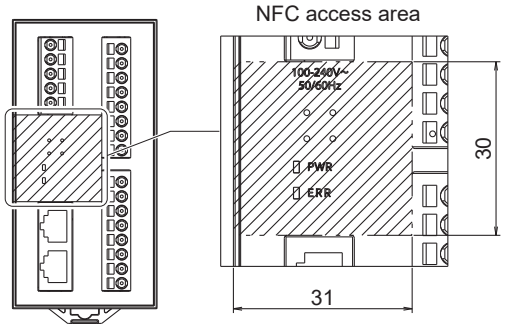
⚠ WARNING	
Ground	Be sure to ground this product with a ground resistance of less than 100 Ω. Improper grounding may cause electric shock or malfunction.
Electric shock	Before wiring or maintenance, be sure to turn off the power to this product. Failure to do so may result in electric shock or device failure.

⚠ CAUTION	
General	Provide a power circuit breaker for the power source to this product. The product does not have a power switch.
General	Take anti-noise measures if this product is installed in a location near source of electric noise. Failure to do so may cause malfunction or device failure.
General	Use this product within the input/output conditions (output range, load resistance, contact rating, etc.) as listed in the specifications. Failure to do so may cause fire or device failure.
General	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards. Failure to do so may cause fire or electric shock.
General	All wiring must comply with applicable codes and ordinances. Otherwise there is a danger of fire.
Prohibition	Do not use an uninterruptible power supply (UPS) that outputs rectangular waves. Doing so may cause the device to fail.
General	For wiring, strip the insulation from cables as specified in this manual. If the length of exposed wire is longer than specified, it may cause electric shock or short circuit between adjacent terminals. If it is too short, it may not make proper contact.

IMPORTANT • Incorrect wiring may cause the device to fail.
Before turning on the power, check that all wires are correctly connected.

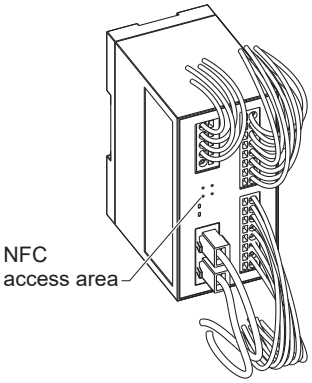
● **Notes for wiring**

- Do not use unused/spare terminals on this product as relay terminals.
  Doing so may cause device failure.
- Reconfirm that this product and the devices to be connected are wired correctly.
- Do not allow the wires to cover the shaded area, shown in the following figure, in front of this product.



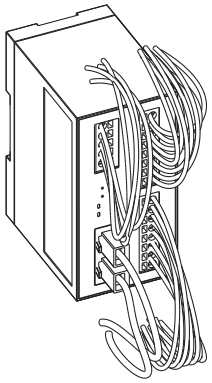
- Since this product has LEDs and NFC access area in the front of it, draw the wires upward or downward of the product.

CORRECT



The cables do not hide the NFC access area.

INCORRECT



The cables hide the NFC access area.

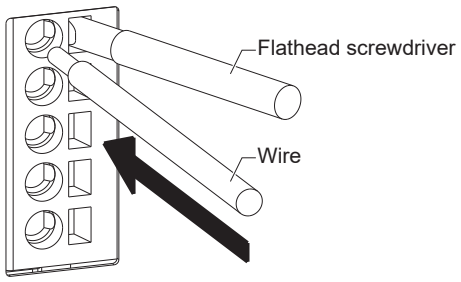
● Wiring the terminal blocks (power, ground, I/O)

(1) Strip 8mm of sheath from the cable core wire.

Note: There is an insulation stripping gauge at the top-left of the product.

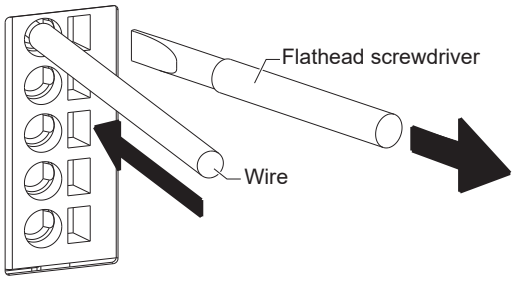
Check that there are no straying wires from the stripped conductor.

(2) Insert the flathead screwdriver* into the driver insertion slot (square hole) and keep it as it is, and then insert the wire deeply into the terminal (round hole) .



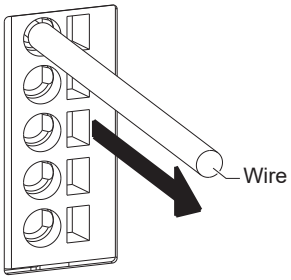
Note: Only 1 wire can be inserted into the terminal (round hole).

(3) Pull out the screwdriver* while holding the wire.



(4) Lightly pull the wire to check that it does not come out.

Note: If you pull the wire diagonally, it may be disconnected.



(5) Check that there are no straying wires at the hole in which the wire was inserted.

* Recommended screwdriver:
SZF 0-0,4×2,5 Model 1204504 made by PHOENIX CONTACT

● Daisy chain wiring

This product allows daisy chain wiring of the power supply by providing 2 insertion holes for the power terminal blocks.

There are the following restrictions when doing daisy chain wiring.

- The load current flowing into the product must be 10 A or less.
- Provide a circuit breaker of 10 A max. for the power source.
- Do not insert 2 or more wires into an insertion hole.
  Only 1 wire can be inserted.
- Only the ground terminal has 1 insertion hole.
- If N units of the product are connected by daisy chain, N times the current that flows in a unit may flow in the input terminal, so you need to choose appropriate wires for this application.

<If the daisy chain wiring is not applied>

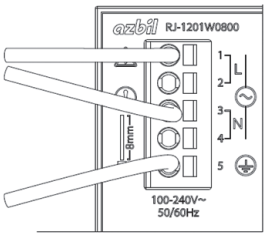
Connect the power lines to the terminal numbers 1 and 3.

Connect the ground wire to the terminal number 5.

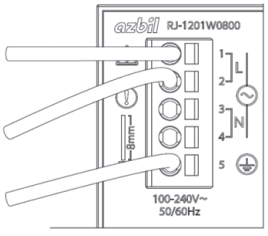
Terminal No.	Description	Mark on the product
1	AC power line	L
2	–	
3	AC power line	N
4	–	
5	Protective ground terminal	⏚

Wiring example

CORRECT



INCORRECT



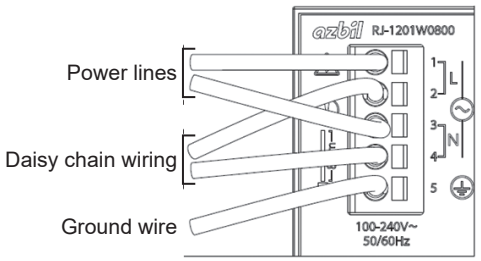
<If the daisy chain wiring is applied>

Connect the power lines to the terminal numbers 1 and 3. Use the terminal numbers 2 and 4 for the daisy chain.

Connect the ground wire to the terminal number 5.

Terminal No.	Description	Mark on the product
1	AC power line	L
2	Daisy chain for AC power line	
3	AC power line	N
4	Daisy chain for AC power line	
5	Protective ground terminal	⏚

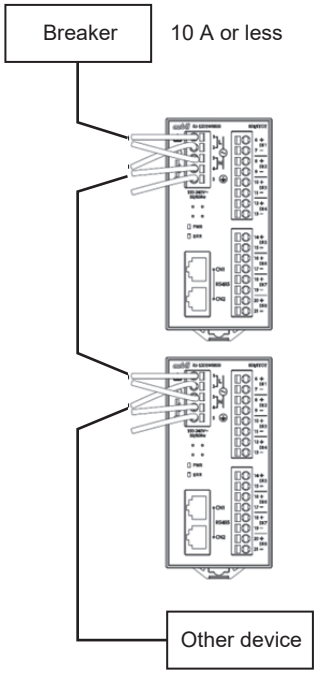
Wiring example



- If the load current for daisy chain wiring is 10 A or less

  Daisy chain wiring is allowed for this product using its terminal blocks.

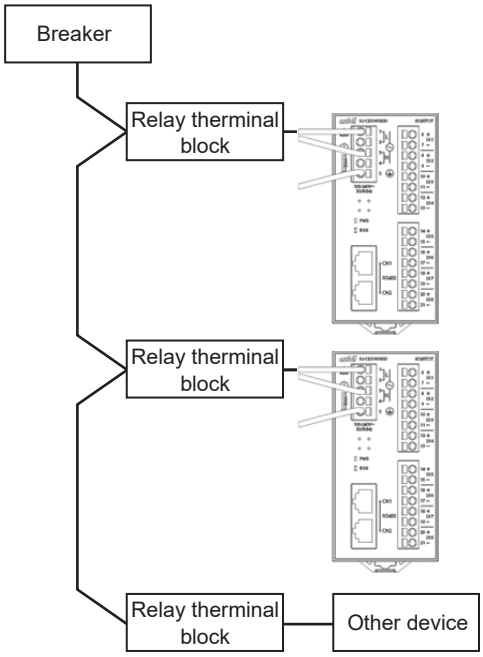
  Use a circuit breaker whose cutoff current is 10 A or less.



- If the load current for the daisy chain wiring exceeds 10 A

  Daisy chain wiring is not allowed for this product using its terminal blocks.

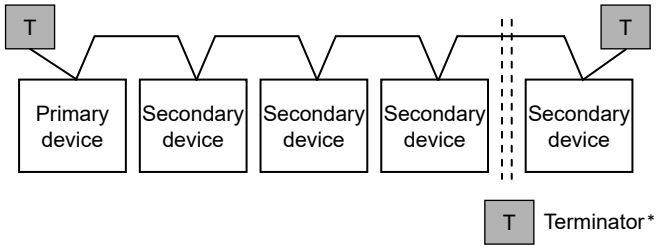
  In this case, provide relay terminal blocks externally etc. and individually wire the power supply to this product.



● Wiring the RS-485 terminals

RJ45 moduler connectors are used for the connection.

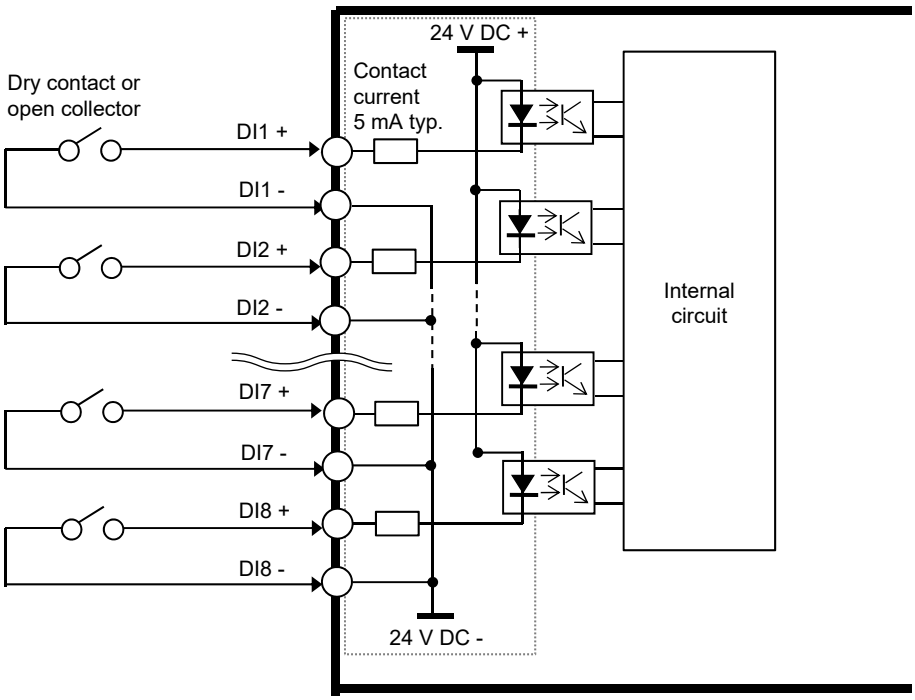
Connect a terminating resistor (120 Ω) to the last-end device connected to RS-485.



Note: Use the terminator listed below.
Model 83162637-005, RS-485 terminator (x1)
Model 83162637-006, RS-485 terminator (x10)

Notes:
1. For RS-485 communication, no branch wiring is allowed.
2. Branch wiring using Model DY7203A0000 is prohibited.

(1) DI/TOT module (Model RJ-1201W0800)



* The area enclosed by the dotted lines indicates internally isolated state in this product.

Note: Use contacts that have sufficient opening/closing capability for the contact current and voltage when the contacts are open for this product.

Terminal No.	Indication
6	DI1 +
7	DI1 -
8	DI2 +
9	DI2 -
10	DI3 +
11	DI3 -
12	DI4 +
13	DI4 -
14	DI5 +
15	DI5 -
16	DI6 +
17	DI6 -
18	DI7 +
19	DI7 -
20	DI8 +
21	DI8 -

The type of secondary devices that can be set by the DI module and the settings are listed in the table 1.

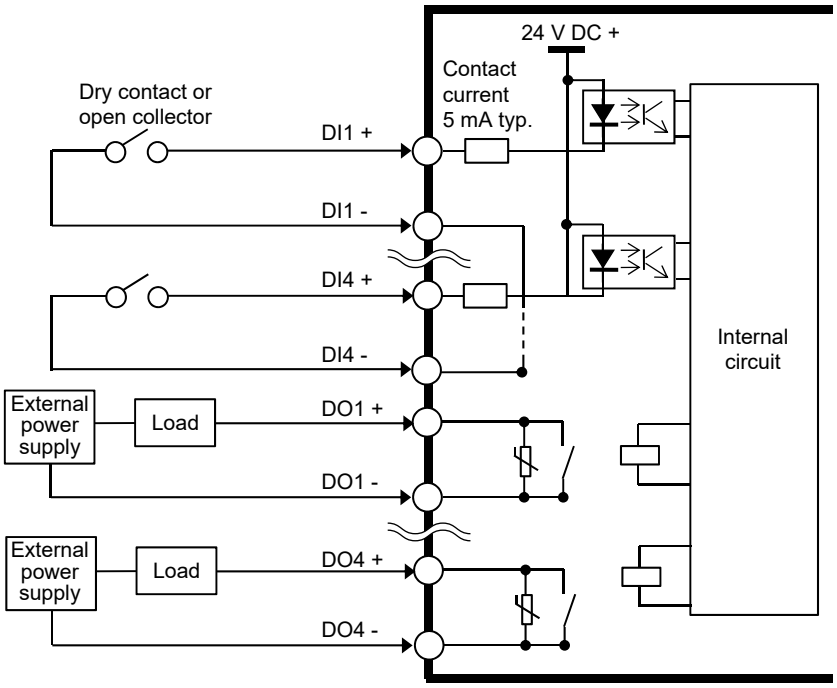
Table 1. I/O configuration of DI module

Secondary device type*		Terminal No.							
		6, 7	8, 9	10, 11	12, 13	14, 15	16, 17	18, 19	20, 21
701	I/O type	DI	DI	DI	DI	DI	DI	DI	DI
702	I/O type	PI	PI	PI	PI	PI	PI	PI	PI
703	I/O type	DI	DI	DI	DI	PI	PI	PI	PI
704	I/O type	DI	DI	DI	DI	DI	DI	PI	PI
705	I/O type	DI	DI	PI	PI	PI	PI	PI	PI

DI: Digital input AI: Analog input
PI: Totalizing pulse input AO: Analog output
DO: Digital output

* Settable by the software

(2) DIO module (Model RJ-1202W0800)



Notes:

1. Before connecting or removing a load, turn off the power to this product. Doing so may cause failure of this product and load.
2. The DO -s are connected with each other internally in the product. However, up to 1 A can flow per DO common.
3. Provide a protective circuit such as a circuit breaker or fuse in the power supply that feeds externally.

Terminal No.	Indication
6	DI1 +
7	DI1 -
8	DI2 +
9	DI2 -
10	DI3 +
11	DI3 -
12	DI4 +
13	DI4 -
14	DO1 +
15	DO1 -
16	DO2 +
17	DO2 -
18	DO3 +
19	DO3 -
20	DO4 +
21	DO4 -

The type of secondary devices that can be set by the DIO module and the settings are listed in the table 2.

Table 2. I/O configuration of DIO module

Secondary device type*		Terminal No.							
		6, 7	8, 9	10, 11	12, 13	14, 15	16, 17	18, 19	20, 21
711	I/O type	DI	DI	DI	DI	DO_{ma}	DO_{ma}	–	–
712	I/O type	DI FB	DI FB	DI	DI	DO_{ma} FB	DO_{ma} FB	–	–
713	I/O type	DI FB	DI FB	DI	DI	DO_{mo} FB with local operation		DO_{mo} FB with local operation	
714	I/O type	DI FB	DI FB	DI	DI	DO_{mo} FB		DO_{mo} FB	
715	I/O type	DI	DI	DI	DI	DO_{mo}		DO_{mo}	
716	I/O type	DI FB	DI FB	DI	DI	DO_{ma} FB	DO_{ma} FB	DO_{ma}	DO_{ma}
717	I/O type	DI	DI	DI	DI	DO_{ma}	DO_{ma}	DO_{ma}	DO_{ma}
718	I/O type	DI FB	DI FB	DI FB	DI FB	DO_{ma} FB	DO_{ma} FB	DO_{ma} FB	DO_{ma} FB

DI: Digital input DO_{ma}: Maintained DO_{mo}: Momentary FB: feedback

* Settable by the software

(3) UIO module (Model RJ-1203W0200)

		Terminal No.		
UIO Terminal No.	UIO1	6	7	8
	UIO2	9	10	11
Input type	Voltage	+	–	+
	Current	+	–	+
	Pt100	A	B	B
	DI	+	–	NC
Output type	Voltage	NC	–	+
	Current	+	NC	–
Indication on the terminal		A	B	C

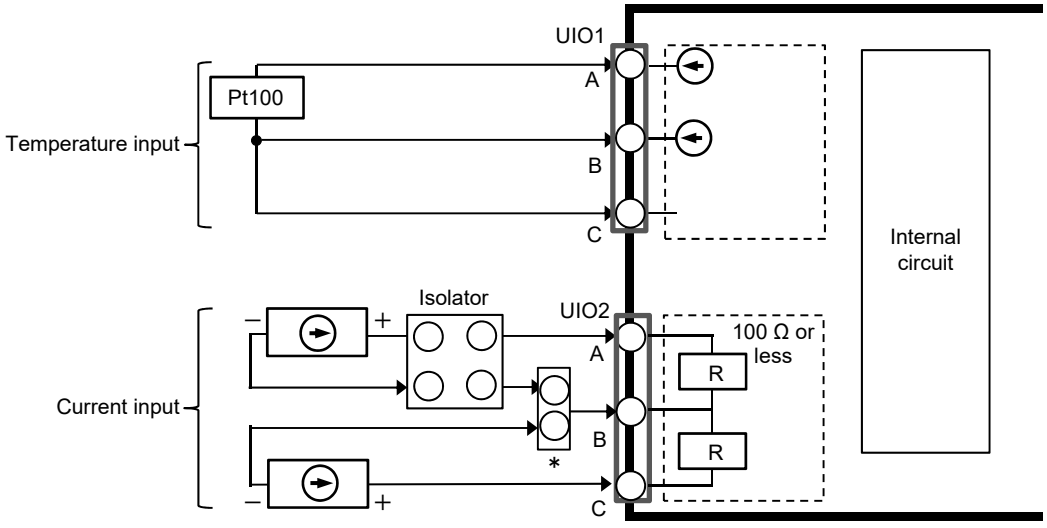
For the voltage/current inputs, it is possible to input 2 (main/sub) signals of the same input type to a terminal block.

( ) shows the sub inputs of the voltage/current inputs.

The main inputs use the B–C terminals, the sub inputs use the A–B terminals.

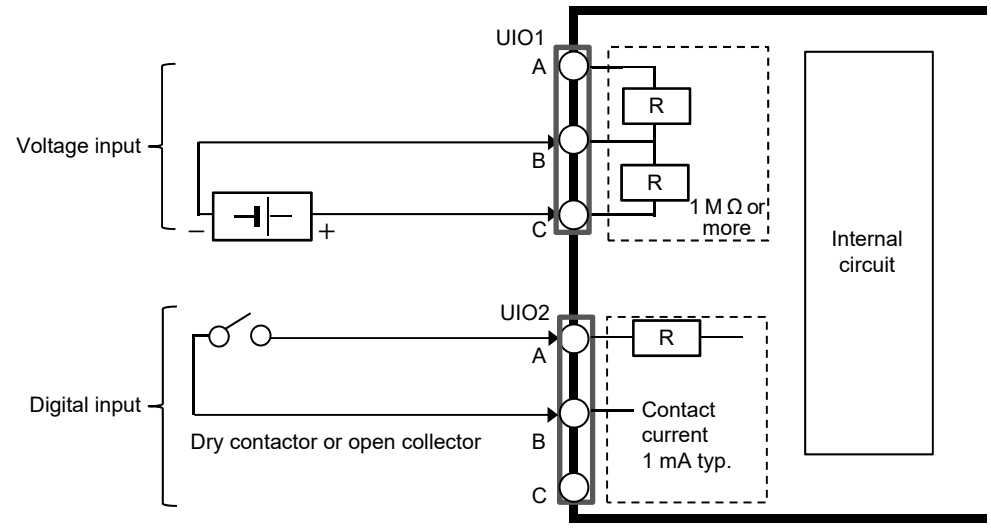
If a sub input is used, provide an isolator externally because the main and sub are not electrically isolated. If outputs of the connected devices are electrically isolated, the isolator is not required.

Example for UIO1 is Pt100 input, UIO2 is current input (2 inputs)

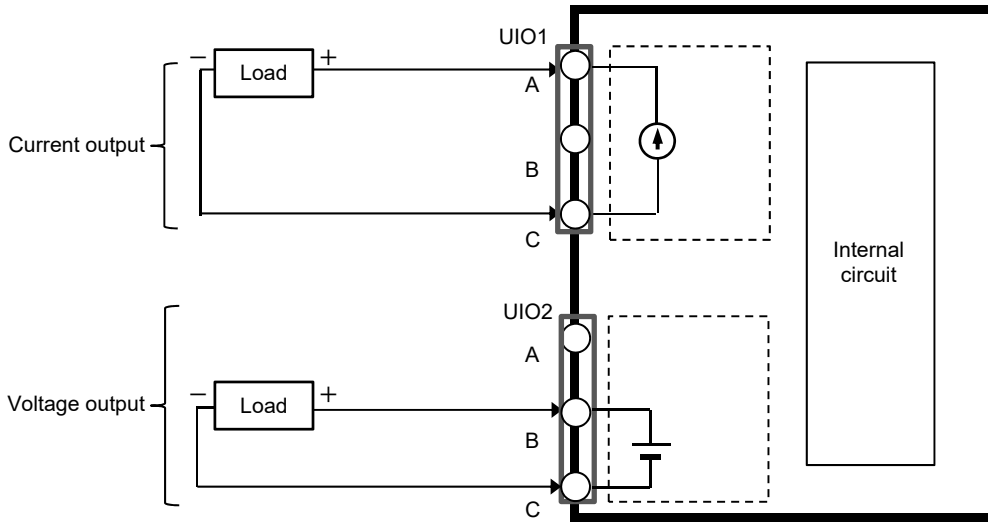


Note: Connecting 2 or more wires to a terminal is prohibited.
If 2 wires are to be connected a terminal, provide a relay terminal externally.

Example for UIO1 is voltage input, UIO2 is digital input

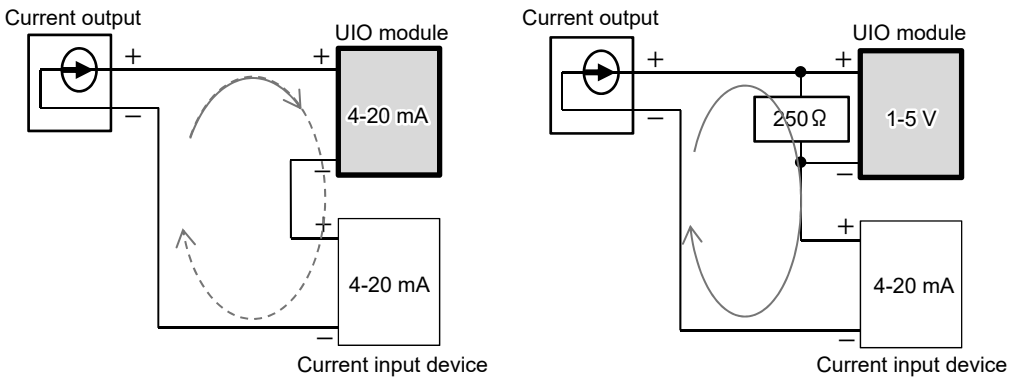


Example for UIO1 is current output, UIO2 is voltage output



Notes:

1. Connected devices should have insulated outputs.
2. Be careful of the input polarity of the connected devices.
3. Before changing the input settings of this product, turn off the power to this product. Failure to do so may cause failure of this product and loads.
4. For AI (current or voltage) , 2 inputs can be connected to a terminal block.
   Provide an isolator externally because the main and sub are not electrically isolated. If outputs of the connected devices are electrically isolated, the isolator is not required.
5. When this product is turned off, the loop may be disconnected due to the output capacity of the connected devices.
   In order to secure the current loop, it is necessary to set the input voltage of this product to 1–5 V and provide a 250 Ω resistor externally.
   In this case, use an external 250 Ω resistor that satisfies the following specifications.
   • Allowable tolerance: ±0.05 %, temperature characteristic: ±30 ppm, rated power: 1/4 W or more



6. Since the wiring resistance causes an error for Pt100, a wire with a cross-sectional area of 1.25 mm^2 (AWG 16) is recommended.
7. For the voltage output, connect devices whose input impedance is 10 kΩ or more.
8. For the current output, the sum of the input impedance of the connected device and the wiring resistance should be 500 Ω or less.
9. If a relay is connected to a digital input, use a relay whose minimum applicable load is less than the contact current. A relay with the minimum applicable load 0.1 mA or less is recommended.

The type of secondary devices that can be set by the UIO module and the settings are listed in the table 3.

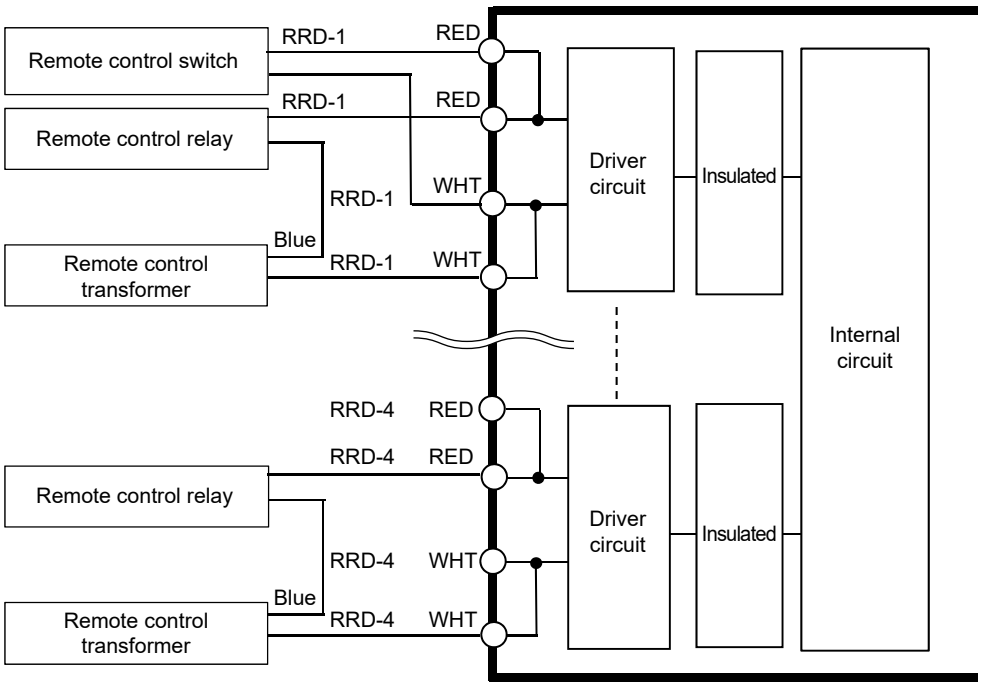
Table 3. I/O configuration of UIO module

Secondary device type*		Terminal No.					
		6	7	8	9	10	11
721	I/O type	AI	AI		AI	AI	
	Input/output type	4–20 mA	4–20 mA		4–20 mA	4–20 mA	
722	I/O type	AI	AI		AI	AI	
	Input/output type	1-5 V	1-5 V		1-5 V	1-5 V	
723	I/O type	AI	AI		AI	AI	
	Input/output type	4–20 mA	4–20 mA		1-5 V	1-5 V	
724	I/O type	AI	AI		AI		
	Input/output type	4–20 mA	4–20 mA		Individual settings		
725	I/O type	AI	AI		AO		
	Input/output type	1-5 V	1-5 V		Individual settings		
726	I/O type	AI	AI		DI		–
	Input/output type	4–20 mA	4–20 mA		–		–
727	I/O type	AI	AI		DI		–
	Input/output type	1-5 V	1-5 V		–		–
731	I/O type	AI			AI		
	Input/output type	Pt100 (-20–80 °C)			Pt100 (-20–80 °C)		
732	I/O type	AI			AI		
	Input/output type	Pt100 (individual settings)			Pt100 (individual settings)		
733	I/O type	AI			AI	AI	
	Input/output type	Pt100 (individual settings)			4–20 mA	4–20 mA	
734	I/O type	AI			AI	AI	
	Input/output type	Pt100 (individual settings)			1-5 V	1-5 V	
735	I/O type	AI			AO		
	Input/output type	Pt100 (individual settings)			Individual settings		
736	I/O type	AI			DI		–
	Input/output type	Pt100 (individual settings)			–		–
741	I/O type	AO	–		AO	–	
	Input/output type	4–20 mA	–		4–20 mA	–	
742	I/O type	–	AO		–	AO	
	Input/output type	–	0-10 V		–	0-10 V	
743	I/O type	–	AO		–	AO	
	Input/output type	–	2-10 V		–	2-10 V	
744	I/O type	AO			AO		
	Input/output type	Individual settings			Individual settings		
745	I/O type	AO			DI		–
	Input/output type	Individual settings			–		–

DI: Digital input AI: Analog input AO: Analog output

* Settable by the software

(4) RRD module (Model RJ-1204W0400)



Note: Provide a protective circuit such as a circuit breaker or fuse in the power supply that feeds externally.

Terminal No.	Indication
6	RRD1
7	RED
8	RRD1
9	WHT
10	RRD2
11	RED
12	RRD2
13	WHT
14	RRD3
15	RED
16	RRD3
17	WHT
18	RRD4
19	RED
20	RRD4
21	WHT

The type of secondary devices that can be set by the RRD module and the settings are listed in the table 4.

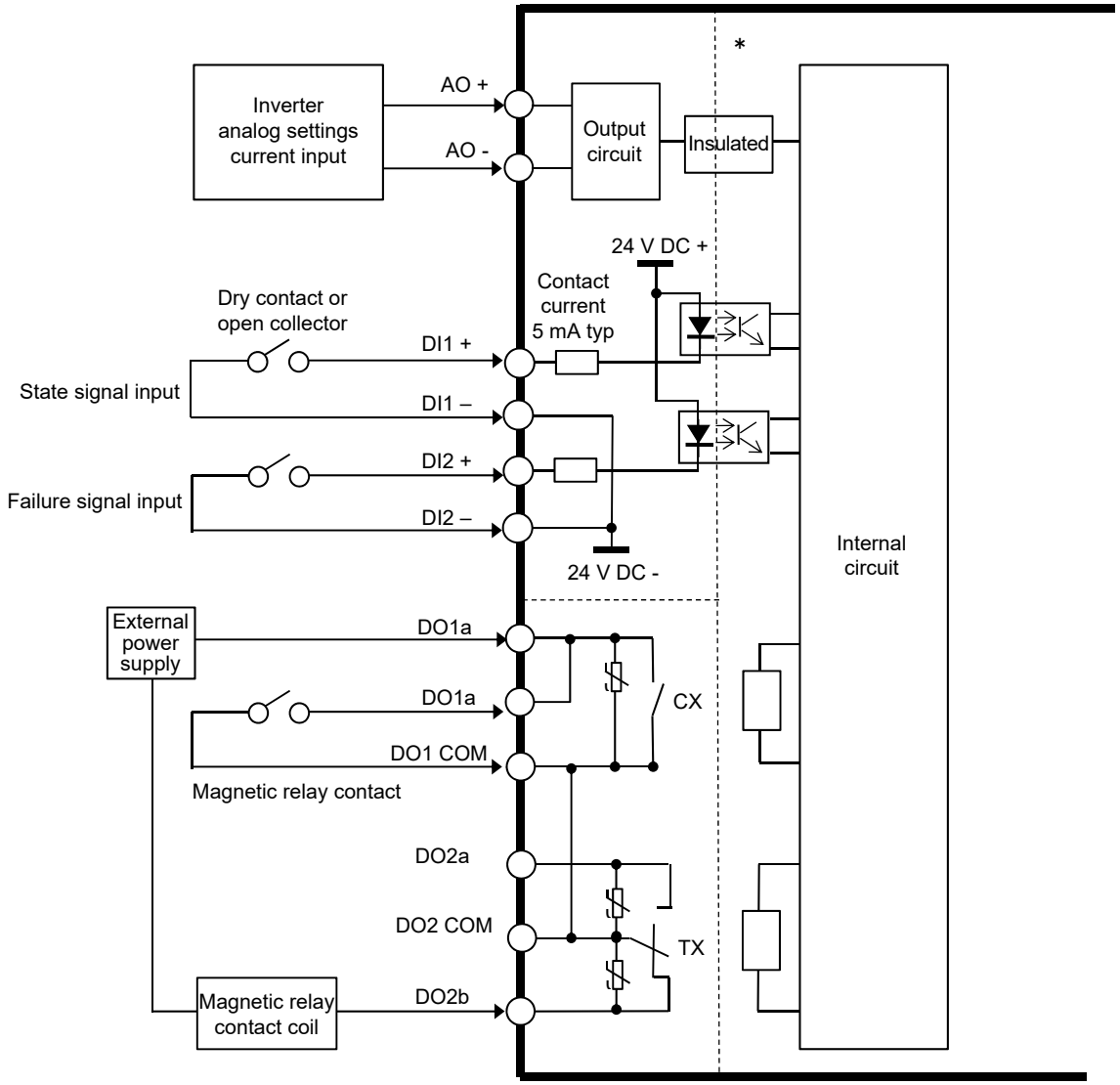
Table 4. I/O configuration of RRD module

Secondary device type*		Terminal No.							
		6, 7	8, 9	10, 11	12, 13	14, 15	16, 17	18, 19	20, 21
751	I/O type	RRD		RRD		RRD		RRD	

RRD: Remote-control relay output

* Settable by the software

(5) Combination module (Model RJ-1205W0500)



CX: ON signal output TX: OFF signal output

Note: The area enclosed by the dotted lines indicates internally isolated state in this product.

Notes:

1. Use contacts that have sufficient opening/closing capability for the contact current and opening voltage used by this product.
2. Before connecting or removing a load, turn off the power to this product.
   Failure to do so may cause failure of this product and the loads.
3. The DO COMs are internally connected with each other in the product.
   However, up to 1 A can flow per common.
4. Provide a protective circuit such as a circuit breaker or fuse in the power supply that feeds externally.

Terminal No.	Indication
6	AO I+
7	AO I-
8	NC
9	NC
10	DI1 +
11	DI1 -
12	DI2 +
13	DI2 -
14	DO1a
15	
16	DO1 COM
17	DO2a
18	DO2 COM
19	DO2b

The type of secondary devices that can be set by the combination module and the settings are listed in the table 5.

Table 5. I/O configuration of combination module

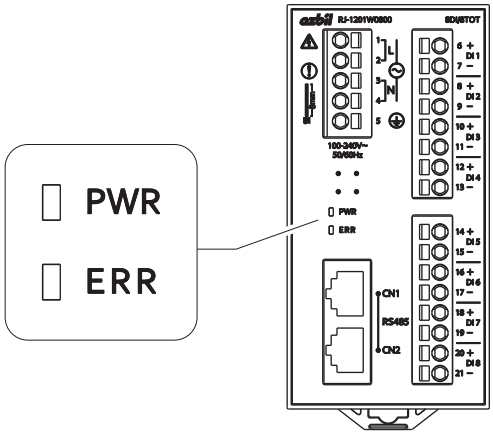
Secondary device type*		Terminal No.				
		6, 7	10, 11	12, 13	14, 15, 16	17, 18, 19
761	I/O type	AO	DI	DI	DO_{mo}	
762	I/O type	AO	DI	DI	DO_{ma}	DO_{ma}

AO: Analog output DI: Digital input DO_{ma}: Maintained DO_{mo}: Momentary

* Settable by the software

■ Indicators

● Product status LEDs



Item	Indicator	Color	State	Description
Power supply status	POWER	Green	Not lit	Power OFF
			Lit	Power ON
Abnormal status	ERROR	Red	Not lit	No abnormalities
			Flashing (1.4 s intervals)	Minor error
			Lit	Major failure, initializing
			Flashing (0.2 s intervals)	Communication error

Note: When the power is turned on or CPU is reset, the red led will be temporarily lit. But it is not an erroneous state.

■ ID Label

When doing engineering work, write down the BACnet MS/TP channel No. under General Controller, the BACnet MAC address of this product, and Ethernet address of General Controller on the ID label.

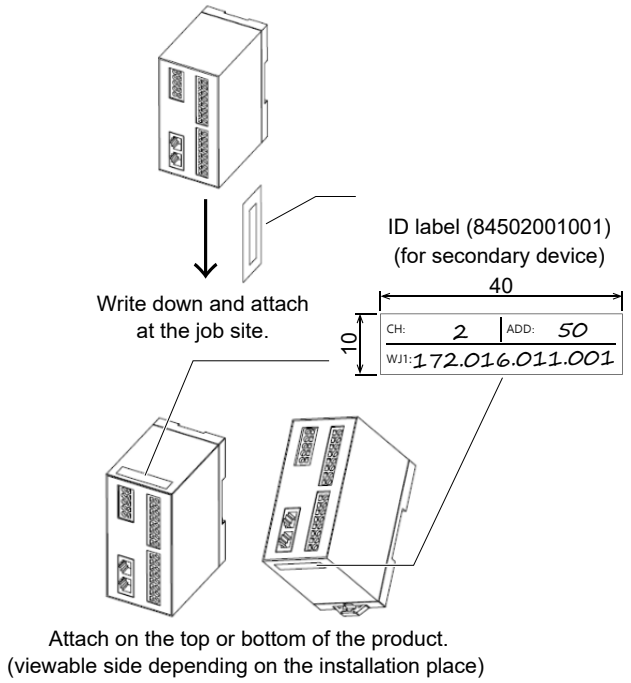


Figure 6.

■ Handling

⚠ CAUTION

General

If more than the rated power voltage is accidentally applied to this product, replace the product with a new one for your safety.
Failure to do so may cause device failure or cause fire.

● **Notes before power-on**

- Reconfirm that the wiring is done correctly.

⚠ WARNING

Electric shock

Do not touch electrically charged parts. Otherwise there is a danger of electric shock.

(1) When installing this product, do not turn the insertion opening of the modular connector for communication line upward.

(2) For the RRD type, if the remote control relay or the remote control breaker is used, the remote control transformer should be used.
If those devices or the remote control relay are used, carefully read the manuals provided by suppliers.

(3) Do not bind the LAN cable with other cables.

(4) Before turning on the power to the product, check that the wiring is correct.
If an input for the AI type is reversely connected, other inputs of the same module may become incorrect values. (Only when it is reversely connected.)

■ Maintenance

⚠ WARNING	
 Electric shock	Do not touch electrically charged parts. Otherwise there is a danger of electric shock.

⚠ CAUTION	
 Disassemble	Do not disassemble this product. Doing so might cause device failure.
 General	Before cleaning the product, be sure to turn off the power to the product. Failure to do so may cause electric shock, device failure, or malfunction.

Azbil personnel who have been trained on the product will carry out the periodic maintenance.
Please contact Azbil as necessary.

● Notes on cleaning

Do not use chemicals containing cleaning agents, solvents, etc., when removing dirt and other dust on the product surface.

■ Disposal

Dispose of this product as industrial waste in accordance with your local regulations.
Do not reuse all or any part of this product.

■ CE Marking

Install this product in a panel cabinet. Additionally, always keep the panel cabinet accessible only to people with sufficient knowledge concerning electrical equipment.
This product complies with the following harmonised standards of the Radio Equipment Directive (RED), the Electromagnetic Compatibility Directive (EMCD) and the Low Voltage Directive (LVD).

RED : EN 300 330
EMCD : EN 61326-1 Class A, Table 2 (for use in an industrial electromagnetic environment)
EN 301 489-1 / EN 301 489-3
LVD : EN 61010-1 Overvoltage category II
Pollution degree 2

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Firmware version 1.0.33 and later of this product comply with BTL certification requirements.

Azbil Corporation
Building Systems Company

https://www.azbil.com/

AB-7458
Rev. 3.0 Jan. 2022
(J: AI-7458 Rev. 0.0)

Specifications are subject to change without notice.