Advanced Remote I/O Module

■ Overview

This product (model RJ-11__W____) is an I/O module dedicated for Advanced Controller (models WJ-1101W0000 and WJ-1103W0000), Advanced Controller for Chiller Units (model WJ-1102Q), and Advanced Controller for Pump Units (model WJ-1102P). Up to 20 units of this products can be connected in any combination to Advanced Controller, Advanced Controller for Chiller Units, or Advanced Controller for Pump Units.

■ Features

- Flexible I/O configuration
  This product has I/Os, DI, DI + DO, and UIO (universal I/O), so it allows connections with various I/Os.
  Up to 20 units can be connected in any combination.
- Remote installation
  This product can be installed close to the facilities in the field, away from the Advanced Controller, Advanced Controller for Chiller Units, or Advanced Controller for Pump Units.
- Redundancy by ring connection
  An Ethernet ring connection allows a fail-safe network against disconnection.
- Visualized I/O statuses
  This product has LEDs to indicate the statuses of the feedback input from facility equipment and the ON/OFF output to facility equipment.

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

	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.)
	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 notifies that disassembly is prohibited.)
	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	
	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.
	Be sure to ground this product with a ground resistance of less than 100 Ω. Improper grounding may cause electric shock or malfunction.
	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.
	Do not insert conductive objects through product ventilation holes. Doing so may cause electric shock.
	Do not touch electrically charged parts. Doing so may cause electric shock.

⚠ CAUTION	
	Take anti-lightning surge measures based on regional and building characteristics. Lightning may cause fire or critical damage to this product if protective measures are not taken.
	Keep the products in package for storage. Failure to do so may damage or stain the products.
	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.
	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.
	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.
	All wiring must comply with applicable codes and ordinances. Otherwise there is a danger of fire.
	After installing this product, check that it is steady and does not move. Otherwise it may fall or fail.
	Do not use an uninterruptible power supply (UPS) that outputs rectangular waves. Doing so may cause the device to fail.

⚠ CAUTION	
	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.
	Firmly tighten the terminal screws with the torque indicated in this specifications. Insufficient tightening of the terminal screws may cause fire or overheating.
	Do not block the ventilation holes of this product. Doing so may cause device failure.
	Do not allow wire clippings, metal shavings, and other refuse to enter into the product. Doing so may cause fire or product damage.
	Do not disassemble this product. Doing so might cause device failure.
	Before cleaning the product or retorquing the terminal screws, be sure to turn off the power to the product. Failure to do so may cause electric shock, device failure, or malfunction.

■ System Configuration

In the configurations shown below, the central monitoring unit is used.
The Advanced Controller (model WJ-1103W0000) can be redundantly configured.
When it is used in a redundant configuration, the standalone type of operation is not possible.

● Operation connected to the system

Without redundancy

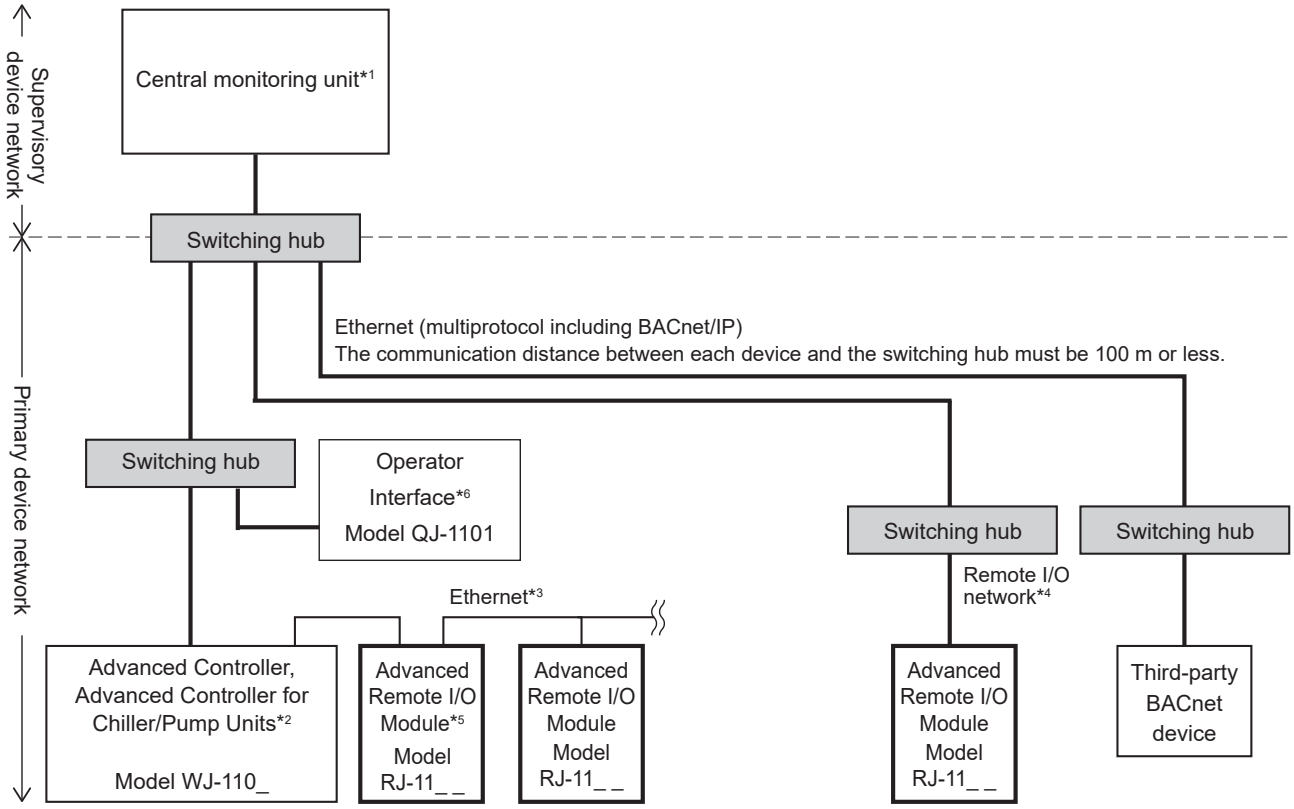


Figure 1. Example system configuration

Notes:

*1 The Advanced Controller can be connected to an Azbil Supervisory Controller (model BH-101G0_0000) or to a third-party central monitoring unit using BACnet/IP communications.

*2 The model WJ-1103W0000 Advanced Controller, the Advanced Controller for Chiller Units, and the Advanced Controller for Pump Units all use BACnet/IPv4 or BACnet/IPv6.
The model WJ-1101W000 Advanced Controller uses BACnet/IPv4 only.
The IPv6 specification is based on BACnet-2012 (which conforms to the Institute of Electrical Installation Engineers of Japan's IEIEJ-G-D006:2017 standard) with ANNEX U of BACnet-2016.

*3 A network that connects an Advanced Controller (model WJ-1101W000 or WJ-1103W000), Advanced Controller for Chiller Units, or Advanced Controller for Pump Units with the products that are 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 daisy chain Ethernet is used between the Advanced Controller and the products under its control, as well as between those products.

*4 A network that connects an Advanced Remote I/O Module to a host network is referred to as a remote I/O network.
To connect this product to a remote I/O network, a switching hub is required.
The maximum number of the Advanced Remote I/O Modules connected to the remote I/O network is 3 per Advanced Controller (model WJ-1101W000 or WJ-1103W000), Advanced Controller for Chiller Units, or Advanced Controller for Pump Units.
When using IPv6 for BACnet communication, Advanced Remote I/O Modules cannot be connected via a remote I/O network.

*5 A maximum of 20 Advanced Remote I/O Modules can be connected to an Advanced Controller (model WJ-1101W000 or WJ-1103W000), Advanced Controller for Chiller Units, or Advanced Controller for Pump Units. This figure is the sum of the units connected to the local and remote I/O networks.

*6 The Operator Interface (model number QJ-1101) can manage a maximum of four controllers (model number WJ-1102_ and WJ-1103W000).

● Operation connected to the system

With redundancy

When the Advanced Controller is used in a redundant configuration, standalone operation is not possible.

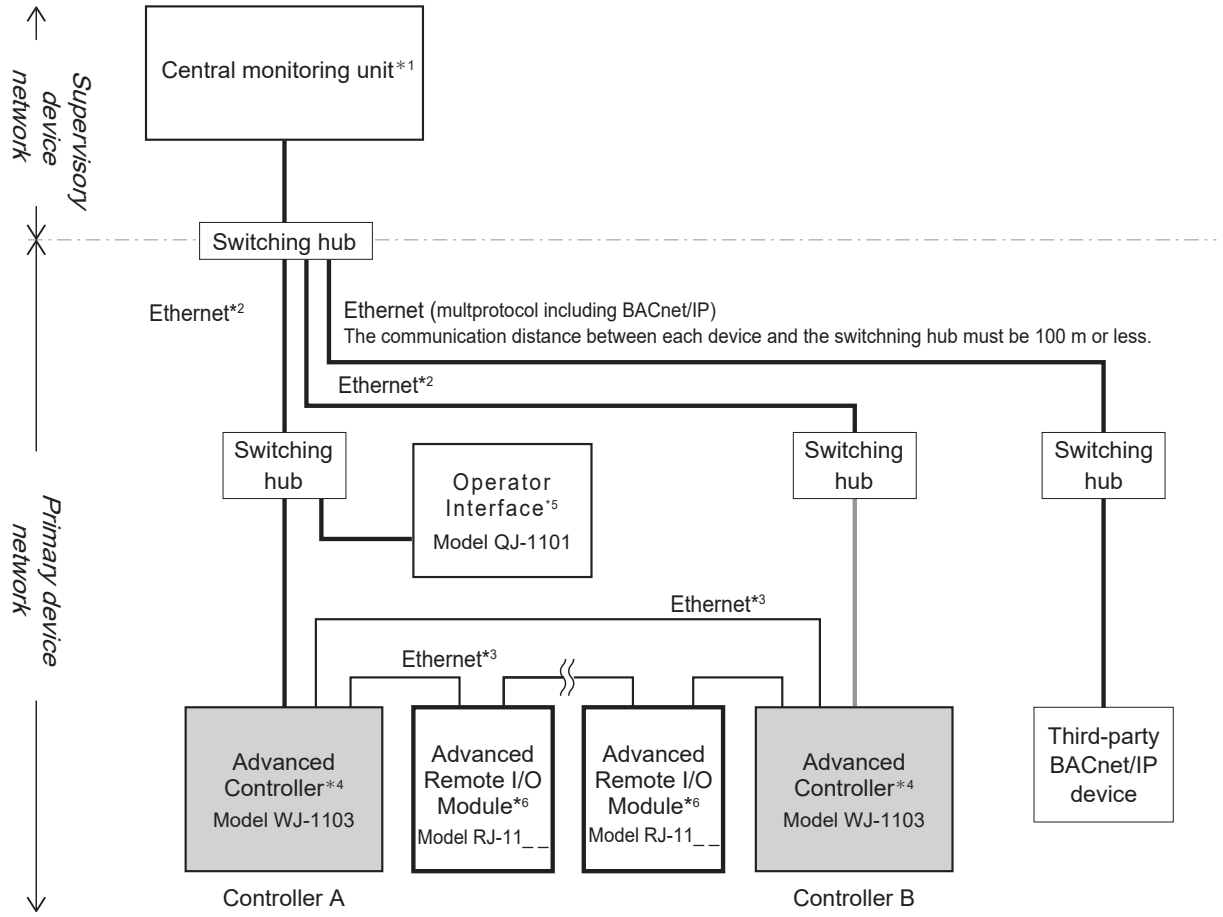


Figure 2. System Configuration Example

*1 The Advanced Controller can be connected to an Azbil Supervisory Controller (model BH-101G0_0000) or to a third-party central monitoring unit using BACnet/IP communications.

*2 A redundant network can be configured depending on the requirements of the job.

*3 A total of 20 Advanced Remote I/O Modules can be connected to two Advanced Controllers in a redundant configuration.
Connect the Advanced Controllers to the Advanced Remote I/O Modules in a ring network using Ethernet.
Advanced Remote I/O Modules cannot be connected to the remote I/O network Ethernet connection that connects this product to the host.

*4 The Advanced Controllers cannot connect to secondary devices using the RS-485 line.

*5 A set of controllers (A and B) can be managed by one Operator Interface.
The Operator Interface can be connected anywhere on the same network as the Advanced Controllers.

*6 The following Advanced Remote I/O Module firmware versions (and later) support redundancy.
Model RJ-1101: version 2.0.5. Model RJ-1102: version 2.0.5. Model RJ-1103: version 1.0.7.

Connection conditions

Model number	Description	Connectability	
		Model WJ-1101*1	Model WJ-1102*2 & WJ-1102*3
RJ-1101W1600	16 digital inputs	Yes	Yes
RJ-1102W1600	8 digital inputs + 8 digital outputs	Yes	Yes
RJ-1103W0400	4 universal I/Os		Yes

*1 WJ-1101 Advanced Controller
*2 WJ-1102 Advanced Controller for Chiller Units, Advanced Controller for Pump Units
*3 WJ-1103 Advanced Controller

■ Model Numbers

Model number					Description
RJ-1					Basic model number for Advanced Remote I/O Module
	101	W	1600		16 digital inputs, power: 100–240 V AC
	102	W	1600		8 digital inputs + 8 digital outputs, power: 100–240 V AC
	103	W	0400		4 universal I/Os (UIO)*, power: 100–240 V AC
				(None)	Not UL-certified
				-U	UL-certified

* The universal I/O (UIO) can be connected to the Advanced Controller for Chiller Units, Advanced Controller for Pump Units, and model WJ-1103 Advanced Controller.
When installing an isolator externally, it is possible to allocate an isolator for 2 terminals (voltage input + voltage input) or 2 terminals (current input + current input) per terminal block.

● Optional parts

Model number	Description
83104567-001	DIN rail clamp

● Optional parts (for CE marking)

Model number	Description	Remarks
84518152-001	• EMC filter • Accessory (180 mm cable with modular plug)	When it is necessary to comply with CE marking

● Replacement parts

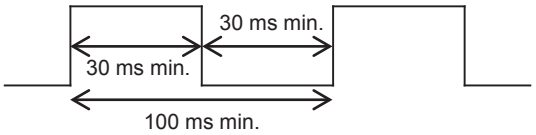
Model number	Description
83173707-001	Power connector (× 1)

■ Specifications

● Basic specifications

Item			Rating	
Power supply		Input voltage	100–240 V AC (264 V AC max.)	
		Input frequency	50/60 Hz ± 3 Hz	
		Power consumption	Model RJ-1101W1600	13 VA max.
			Model RJ-1102W1600	14 VA max.
			Model RJ-1103W0400	16 VA max.
		Inrush current	20 A max. (100 V AC) 40 A max. (240 V AC)	
		Leakage current	0.2 mA max. (100 V AC) 0.5 mA max. (240 V AC)	
		Insulation resistance	Between power terminals together and ground terminal: 100 MΩ or higher (500 V DC)	
CPU			32-bit	
Memory device			Flash ROM 512 kB, SRAM 96 kB	
Communication	Ethernet	Number of ports	2	
		Port function	Auto recognition of MDI/MDI-X	
		Communication method	Proprietary protocol	
		Communication speed	100 Mbps	
Major material		Case, cover	Modified PPE resin	
		DIN holder	POM resin	
Weight			0.65 kg	
Environment	Operating conditions	Ambient temperature	0–50 °C	
		Ambient humidity	10–90 % RH (without condensation)	
		Altitude	2,000 m max.	
		Vibration	5.9 m/s^2 max. (at 10–150 Hz)	
	Transportation/ storage conditions	Ambient temperature	-20–60 °C	
		Ambient humidity	5–95 % RH (without condensation)	
		Vibration (storage)	5.9 m/s^2 max. (at 10–150 Hz)	
		Vibration (transportation)	9.8 m/s^2 max. (at 10–150 Hz)	
	Others		• No corrosive gas should be detected. • The product must not be exposed to direct sunlight. • Do not let the product get wet.	
Installation location			In the control panel	
Installation method			Installed on a DIN rail or with screws	

● Input/output specifications

Item			Specification	
Digital input	Number of inputs		Model RJ-1101W1600	16
			Model RJ-1102W1600	8
	Voltage		24 V DC typ.	
	Current		5 mA DC typ.	
	Connected device output type		Dry contact or open collector	
	Dry contact		Allowable ON contact resistance Allowable OFF contact resistance	100 Ω max. 100 kΩ min.
	Open collector		Allowable ON residual voltage Allowable OFF leakage current	3 V max. 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.  	
Digital output	Number of outputs		Model RJ-1102W1600	8
	Relay output	Output type	Relay N.O. (normally open) contact	
		Contact	24 V AC, 0.5 A max. (Max. inductive load: cosϕ = 0.4) 24 V DC, 0.5 A max.	
		Min. applicable load	5 V DC, 10 mA	
Universal I/O	Number of I/Os		Model RJ-1103W0400	4
	Voltage input*	Input voltage range	0–10 V DC, 2–10 V DC, 0–5 V DC, 1–5 V DC	
		Input impedance	250 kΩ typ.	
	Current input*	Input current range	4–20 mA DC	
		Input impedance	100 Ω typ.	
	Temperature input	Input signal	RTD (Pt100) RTD (Pt1000)	
		Measuring range (Pt100)	0–50 °C, 0–100 °C, 0–200 °C, -20–80 °C, -20–30 °C, -50–100 °C, -100–50 °C	
		Measuring range (Pt1000)	0–50 °C, 0–100 °C, -20–80 °C, -20–30 °C, -50–100 °C	
	Digital input	Voltage/current	3.76 V DC typ., 1 mA DC typ.	
		Connectible load	Dry contact or open collector	
		Dry contact	Allowable ON contact resistance Allowable OFF contact resistance	100 Ω max. 100 kΩ min.
		Open collector	Allowable ON residual voltage Allowable OFF leakage current	1 V max. 100 μA max.
	Voltage output	Output voltage range	0–10 V DC, 2–10 V DC, 0–5 V DC, 1–5 V DC	
		Min. load resistance	10 kΩ min.	
	Current output	Output current range	4–20 mA DC	
		Max. load resistance	500 Ω max.	

* The number of inputs can be up to 2 for a terminal if an isolator is used.
Refer to the "Notes for wiring" in the "Wiring" section.

■ Specifications for Wiring

Type	Item	Recommended wire	Rating	Maximum length	Connection	Remarks
Common	Power supply	IV/CVV or the equivalent	1.25–2.0 mm^2 stranded wire (AWG16–14)	—	Screw terminal block	
	Ground	IV/CVV or the equivalent	1.25–2.0 mm^2 stranded wire (AWG16–14)	—	Screw terminal block	Ground the product with resistance less than 100 Ω.
	Ethernet	—	EIA/TIA-568 category 5e or higher	100 m	RJ-45 modular connector	
DI	Digital input	IV/CVV or the equivalent	0.5–1.25 mm^2 stranded wire (AWG20–16)	100 m	Screw terminal block	
DIO	Digital input	IV/CVV or the equivalent	0.5–1.25 mm^2 stranded wire (AWG20–16)	100 m	Screw terminal block	
	Digital output	IV/CVV or the equivalent	0.5–1.25 mm^2 stranded wire (AWG20–16)	100 m	Screw terminal block	
UIO	Voltage/ current input	IV/CVV or the equivalent	0.5–1.25 mm^2 stranded wire (AWG20–16)	100 m	Screw terminal block	
	RTD (Pt100)/ RTD (Pt1000) input	IV/CVV or the equivalent	0.5–1.25 mm^2 stranded wire (AWG20–16)	100 m	Screw terminal block	Since the wiring resistance will cause an error, a wire with a cross-sectional area of 1.25 mm^2 is recommended.
	Digital input	IV/CVV or the equivalent	0.5–1.25 mm^2 stranded wire (AWG20–16)	100 m	Screw terminal block	
	Voltage/ current output	IV/CVV or the equivalent	0.5–1.25 mm^2 stranded wire (AWG20–16)	100 m	Screw terminal block	

■ Dimensions

Height: 140 mm, Width: 110 mm, Depth: 80 mm

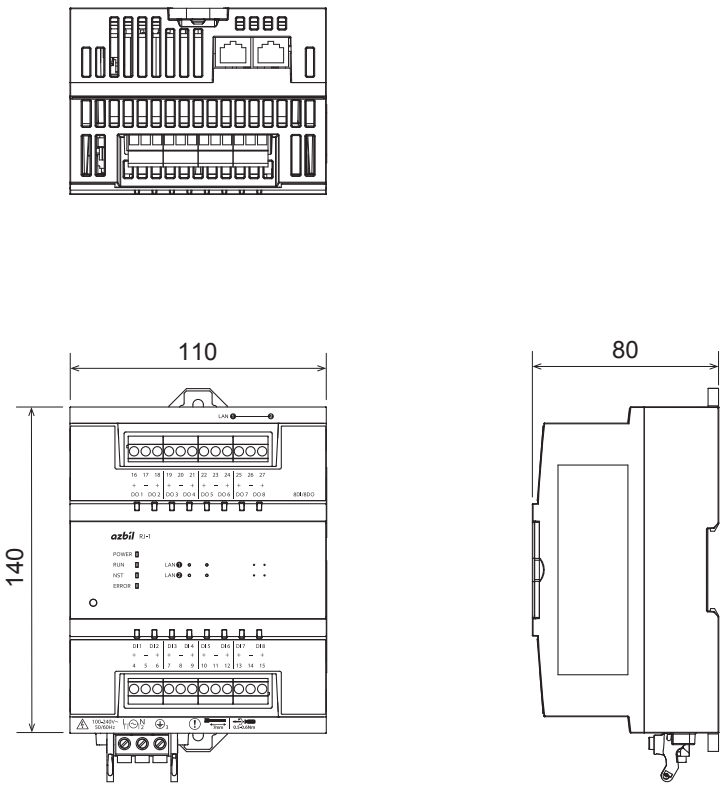


Figure 3. Dimensions (mm)

■ Parts Identification

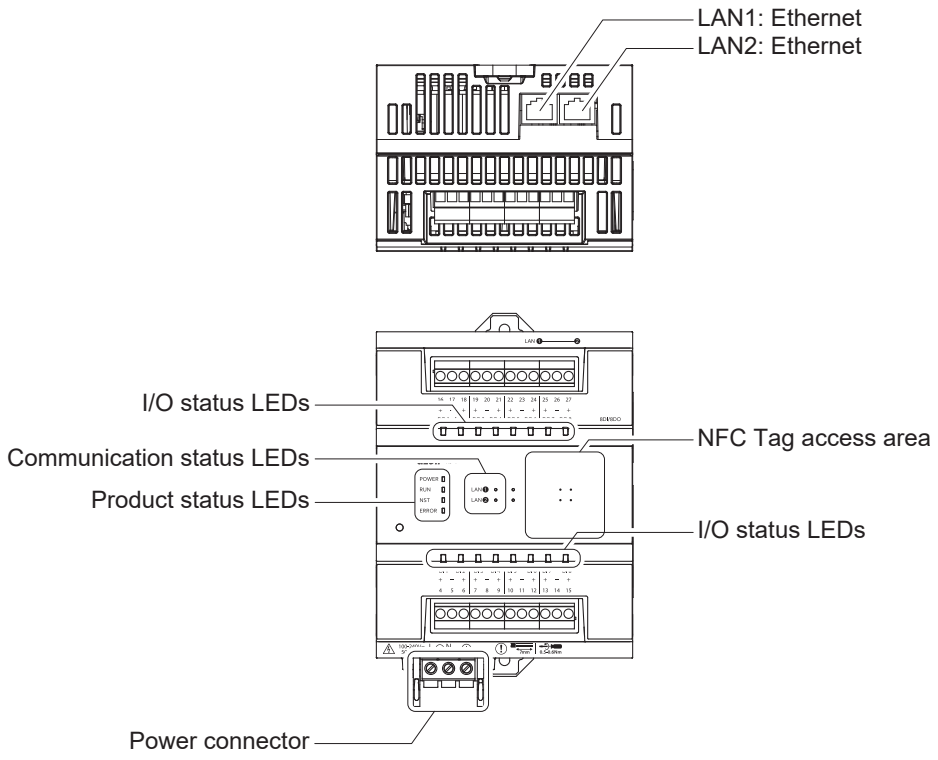


Figure 4.

■ Installation

⚠ WARNING	
	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	
	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.
	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.
	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:

- 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.
The following space should be secured around the product.
The hatched area is for maintenance.

- The horizontal dimension varies depending on the number of I/O modules connected.

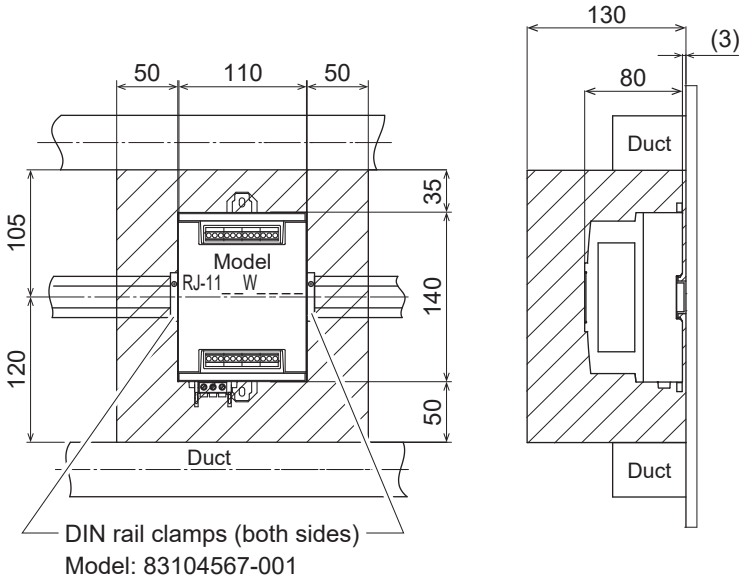


Figure 5. Installation on DIN rail (single unit) (mm)

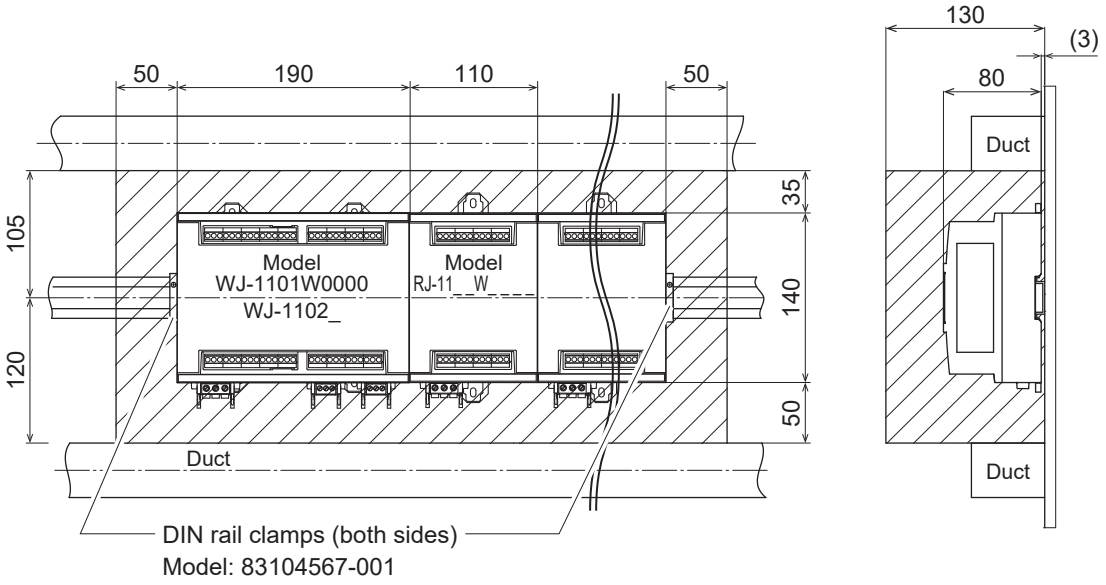


Figure 6. Installation on DIN rail (multiple units) (mm)

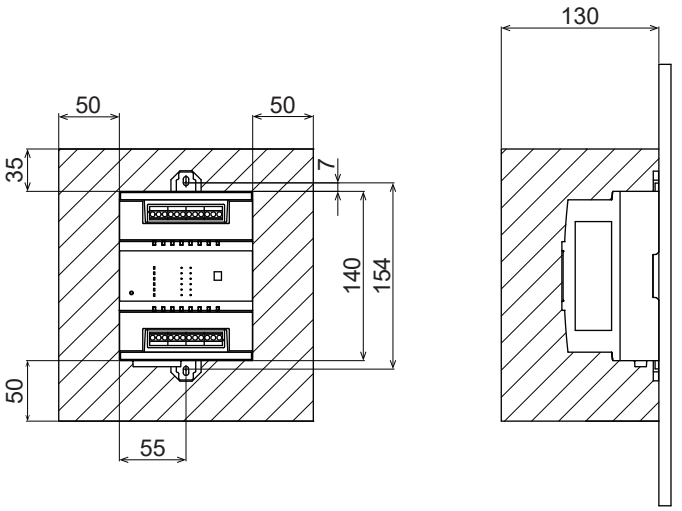


Figure 7. Installation with screws (single unit) (mm)

Note: When multiple units are installed, the maintenance space should be secured as shown in Figure 5, "Installation on DIN rail (multiple units)."

● 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.

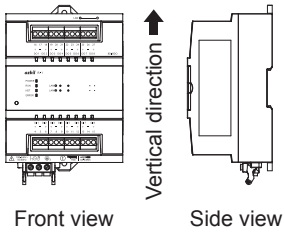


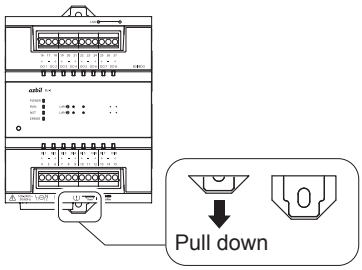
Figure 8. Installation position

- Do not block the ventilation holes by putting an object, etc. on the top of the product.

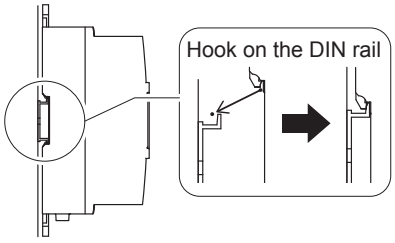
● Installation method

<Installation on DIN Rail>

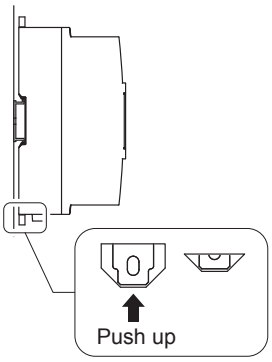
(1) Pull down the DIN holder (x 1) on the bottom of the device.



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



(3) Push up the DIN holder (x 1) on the bottom of the device.



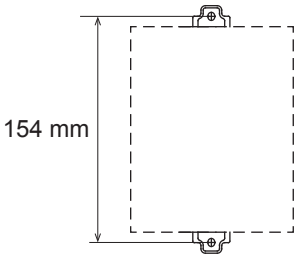
(4) Check that the two DIN holders on the top and bottom of the device are secured on the DIN rail. Check that the device is steady.

(5) Secure both ends with the DIN rail clamps (Model 83104567-001).
After installation, keep the connectors that come with the device because they will be used for wiring connection.

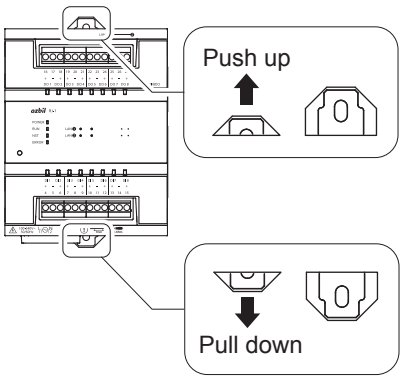
<Direct Installation with Screws>

Install the product on the wall using two M4 L=8 screws.

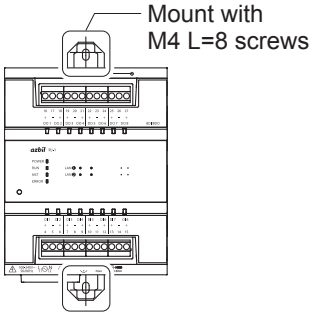
(1) Make two screw holes on the place for installation.



(2) Push up the DIN holder on the top of the device and then pull out the DIN holder on the bottom.



(3) Use the two holes for the DIN holder to secure the device with the M4 L=8 screws.
Check that the device is steady.
After installation, keep the connectors that come with the device because they will be used for wiring connection.



■ Wiring

⚠ WARNING
Be sure to ground this product with a ground resistance of less than 100 Ω. Improper grounding may cause electric shock or malfunction.
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.

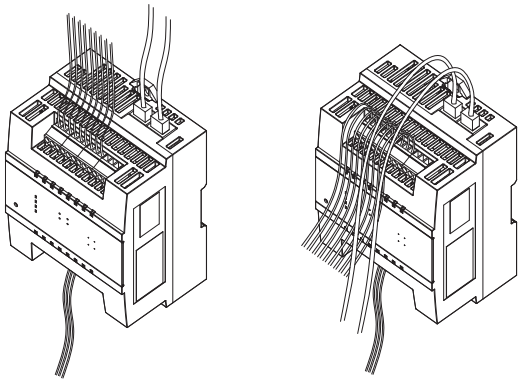
⚠ CAUTION
Take anti-noise measures if this product is installed in a location near source of electric noise. Failure to do so may cause malfunction or device failure.
Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards. Failure to do so may cause fire or electric shock.
All wiring must comply with applicable codes and ordinances. Otherwise there is a danger of fire.
Do not use an uninterruptible power supply (UPS) that outputs rectangular waves. Doing so may cause the device to fail.
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.
Firmly tighten the terminal screws with the torque indicated in this specifications. Insufficient tightening of the terminal screws may cause fire or overheating.

IMPORTANT	• Do not test the withstand voltage of this product. Doing so may cause device failure. • 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 for wiring

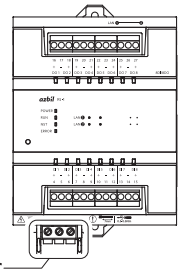
- Do not use unused/spare terminals on this product as relay terminals.
  Doing so may cause device failure.
- Provide a power circuit breaker for the power source to this product.
  This product cannot be turned off because it does not have a power switch.
- Power wires must be routed separately from communication wires and signal wires. Electrical noise from power wires can affect signal wires, causing communication errors.
- Do not allow the wires to cover the front of this product.
  Draw out the wiring in the vertical direction of the product, because the front of the product is an area for LED displays or for adjusting the product.

CORRECT **INCORRECT**



● Wiring power supply terminal block

Screw connectors are used.

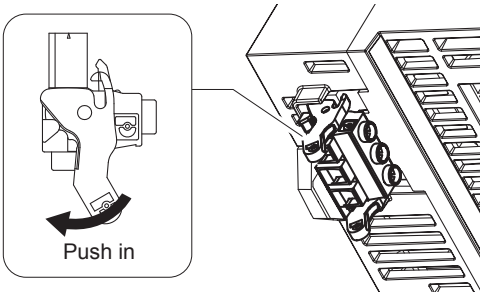


Power connector

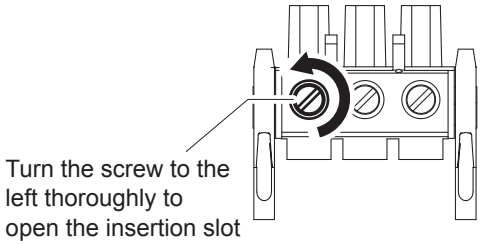
(1) Strip 7 mm of insulation from the cable wire.

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

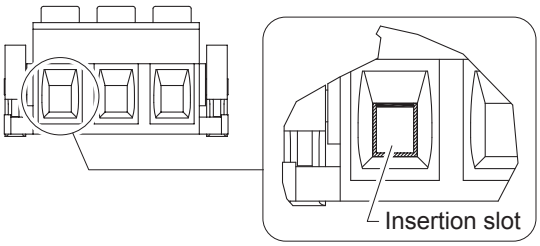
(2) If the connector is plugged into the device, push in the release levers on the right and left sides of the connector to remove it from the device.



(3) Turn the screw above the cable clamp (the hole for the wire) of the connector to the left with a screwdriver to open the cable clamp.

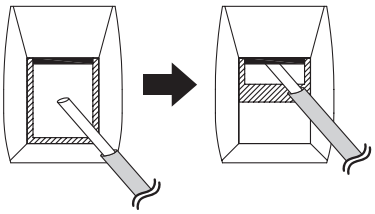


* Compatible screwdriver blade: 0.6 × 3.5 mm

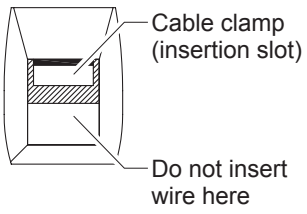


(4) For a daisy chain connection, use and twist the wires specified in "Specifications for Wiring" (limited to those with the same cross-sectional area ranging from 1.25 to 1.5 mm^2).

(5) Insert the wire stripped in step (1) into the cable clamp and tighten it by turning the screw above the cable clamp to the right with a screwdriver.
The screw tightening torque is 0.5–0.6 N•m.
Make sure there are no strands of cable wire protruding from the cable clamp.

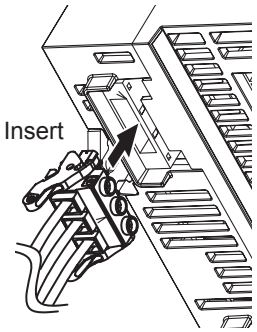


Note: Check that the wire is inserted into the cable clamp.

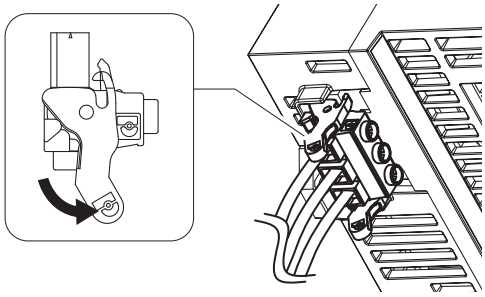


(6) Lightly pull the wire to check that it does not come out.

(7) Insert the connector into the device.



Check that the release levers of the connector are securely locked.



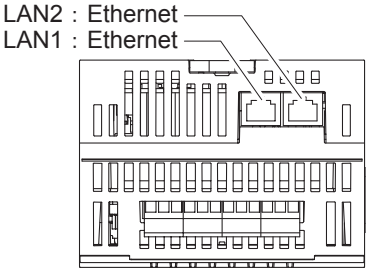
(8) Lightly pull the wire to check that the power supply connector does not come out.

<Power Supply Terminals>

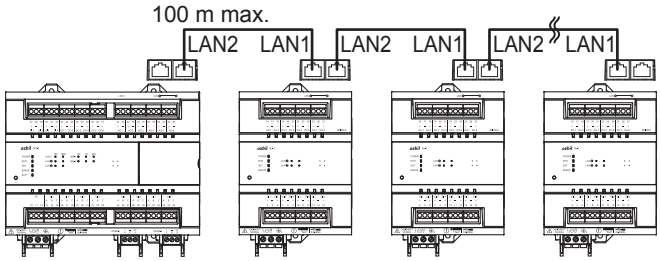
Terminal No.	Symbol	Description
1	L	AC input
2	N	AC input
3	⏚	Protective ground terminal

● Connecting to the local I/O network

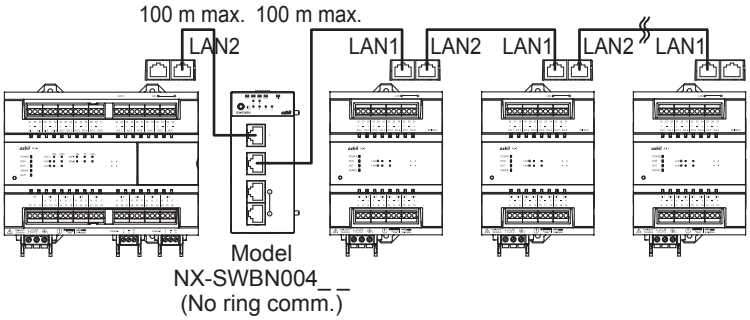
Connect the LAN cables to LAN1 and LAN2.
There are two network topologies, daisy chain and ring, that can be used to connect the Advanced Remote I/O Modules.



<Daisy Chain Topology>



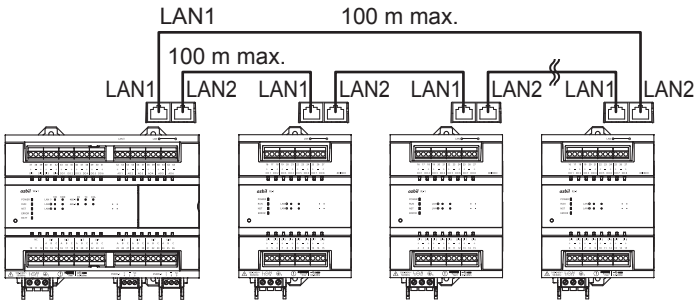
- The maximum communication distance is 100 m.
  To extend the communication distance, connect an industrial switching hub without ring communication (Model NX-SWBN 004_ _) as shown below. This extends the communication distance by 100 m.



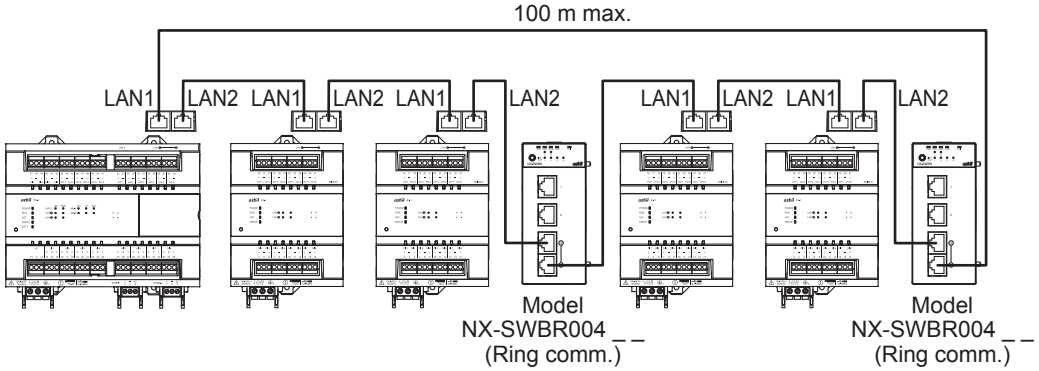
- The industrial switching hub requires a 24 V DC power supply.
  Any of the four Ethernet ports can be used.
  However, the two empty Ethernet ports cannot be used.

* Refer to CP-UM-5718JE, *Industrial Switching Hub User's Manual for Installation*.

<Ring Topology>

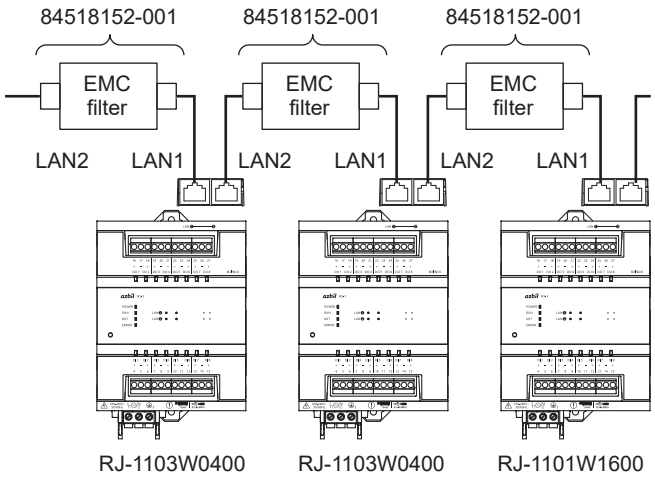


- The maximum communication distance is 100 m.
  To extend the communication distance, connect an industrial switching hub dedicated for ring communication (Model NX-SWBR 004_ _) as shown below. This extends the communication distance by 100 m.
- The industrial switching hub requires a 24 V DC power supply.
  Only the Ethernet ports 3 and 4 of the industrial switching hub can be used.

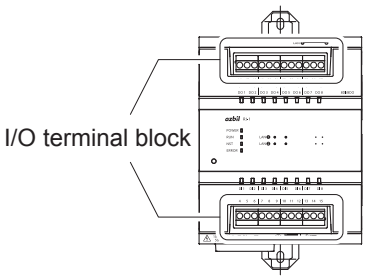


* Refer to CP-UM-5718JE, *Industrial Switching Hub User's Manual for Installation*.

* If compliance with CE marking is required, provide an EMC filter on the LAN cable that connects to RJ-11_ _W_ _ _ _.



● Wiring the I/O terminal blocks

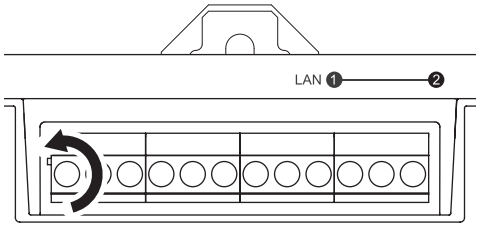


The terminal blocks use screw connections (clamping).

(1) Strip 7 mm of insulation from the cable core wire.

(2) Turn the screw of the terminal block to the left with a screwdriver to open the cable clamp (the hole for the wire).

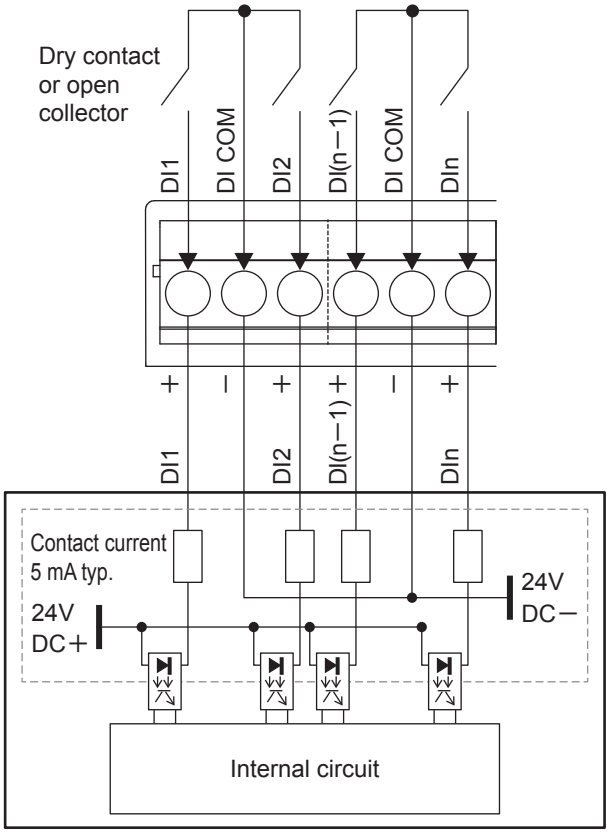
* Compatible screwdriver blade: 0.6 × 3.5 mm



(3) Insert the wire into the cable clamp of the terminal block, and then turn the screw to the right with a screwdriver to tighten the cable clamp.
The screw tightening torque is 0.5–0.6 N•m.
Make sure there are no strands of cable wire protruding from the cable clamp.
For every two channels, there is one common terminal for digital inputs and digital outputs.
The wires with the same cross-sectional area, which are specified in "Specifications for Wiring," can be used and twisted for direct wire connection.

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

<DI Terminals>



* The dashed line indicates internal isolation in this product.

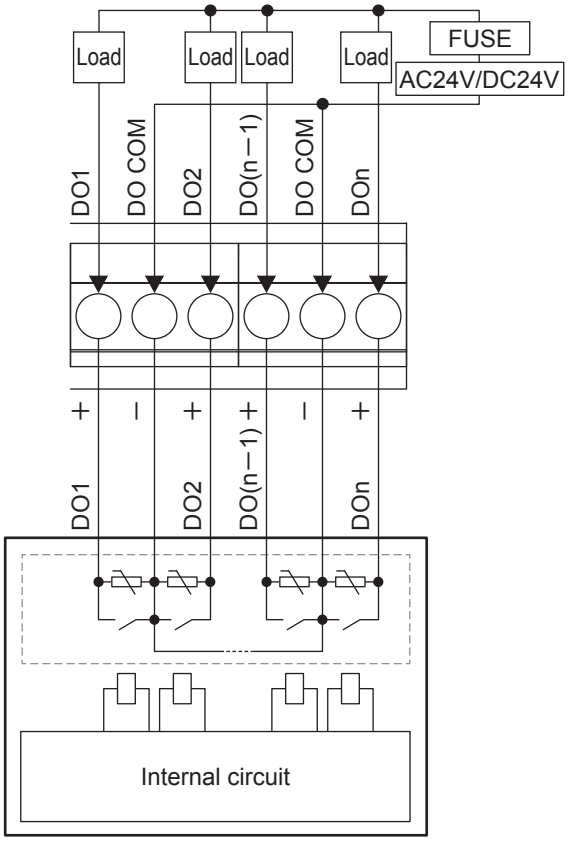
Note: Use contacts that have sufficient opening/closing capability for the contact current and the voltage when contact is open for this product.

Figure 9. Example of DI wiring

Table 1. RJ-1101W1600 I/O terminal

Terminal No.	Symbol	Description
4	+	CH1 +
5	–	CH1 and CH2 common
6	+	CH2 +
7	+	CH3 +
8	–	CH3 and CH4 common
9	+	CH4 +
10	+	CH5 +
11	–	CH5 and CH6 common
12	+	CH6 +
13	+	CH7 +
14	–	CH7 and CH8 common
15	+	CH8 +
16	+	CH9 +
17	–	CH9 and CH10 common
18	+	CH10 +
19	+	CH11 +
20	–	CH11 and CH12 common
21	+	CH12 +
22	+	CH13 +
23	–	CH13 and CH14 common
24	+	CH14 +
25	+	CH15 +
26	–	CH15 and CH16 common
27	+	CH16 +

<DO Terminals>



Notes:

1. Before connecting or removing a load, turn off the power to this product.
   Failure to do so will cause malfunction of this product and load failure.
2. The DO COMs are internally connected with each other in the product.
   However, up to 1 A can flow per common.

Figure 10. Example of DO wiring

Table 2. RJ-1102W1600 I/O terminal

Terminal No.	Symbol	Description
4	+	DI CH1 +
5	–	DI CH1 and CH2 common
6	+	DI CH2 +
7	+	DI CH3 +
8	–	DI CH3 and CH4 common
9	+	DI CH4 +
10	+	DI CH5 +
11	–	DI CH5 and CH6 common
12	+	DI CH6 +
13	+	DI CH7 +
14	–	DI CH7 and CH8 common
15	+	DI CH8 +
16	+	DO CH1 +
17	–	DO CH1 and CH2 common
18	+	DO CH2 +
19	+	DO CH3 +
20	–	DO CH3 and CH4 common
21	+	DO CH4 +
22	+	DO CH5 +
23	–	DO CH5 and CH6 common
24	+	DO CH6 +
25	+	DO CH7 +
26	–	DO CH7 and CH8 common
27	+	DO CH8 +

<UIO Terminals>

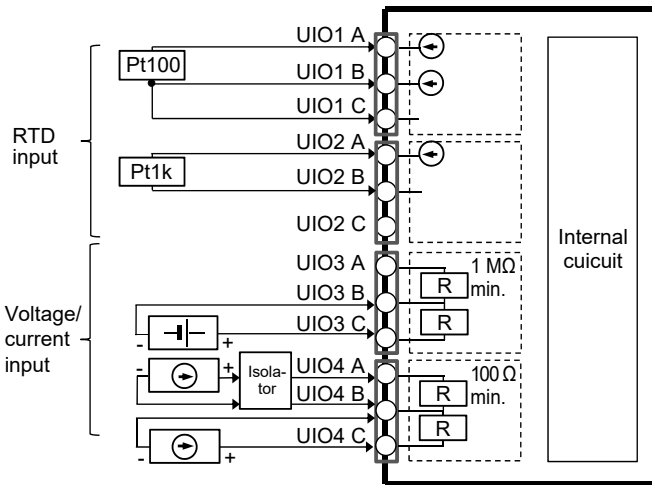
RJ-1103W0400 I/O terminal

		Terminal No.		
UIO Terminal No.	UIO1	4	5	6
	UIO2	13	14	15
	UIO3	16	17	18
	UIO4	25	26	27
Input type	Voltage	+	–	+
	Current	+	–	+
	Pt100	A	B	B
	Pt1000	A	B	NC
	DI	+	–	NC
Output type	Voltage	NC	–	+
	Current	+	NC	–
Symbol		A	B	C

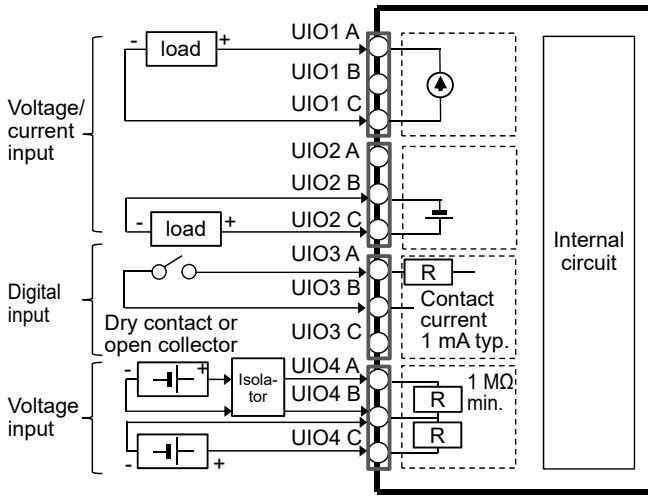
It is possible to input the same two (main/aux) input types to one terminal for voltage/current input.
The part enclosed by ( ) is the auxiliary input of voltage/current input.
Use the B–C terminals for the main input, and the A–B terminals for the auxiliary input.
When using an auxiliary input, main-sub inputs are not insulated. Provide isolators externally.

Two sample wirings are shown below.

(1) UIO1 Pt100 input, UIO2 Pt1000 input, UIO3 main input voltage input, UIO4 main/auxiliary input current input



(2) UIO1 current output, UIO2 voltage output, UIO3 digital input, UIO4 main/aux input voltage input



● Notes

(1) Connected devices should have insulated outputs.

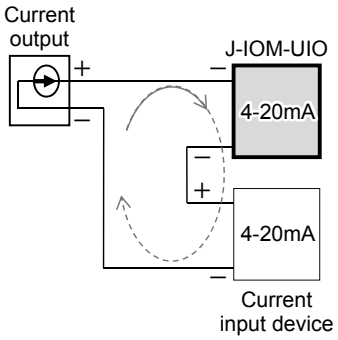
(2) Be careful of the input polarity of the connected device.

(3) Do not change the input settings of this product while the connected device is powered on.
Failure to do so will cause malfunction of this product and load failure.

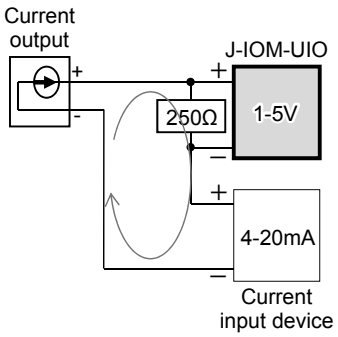
(4) For AI (current or voltage), two inputs can be used for one terminal block.
Use isolator since main-sub inputs are not insulated.

(5) When this product is turned off, the loop may be disconnected by 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 min.



INCORRECT



CORRECT

(6) Since the wiring resistance causes an error for the Pt100 and Pt1000, wires with a cross-sectional area of 1.25 mm^2 is recommended.

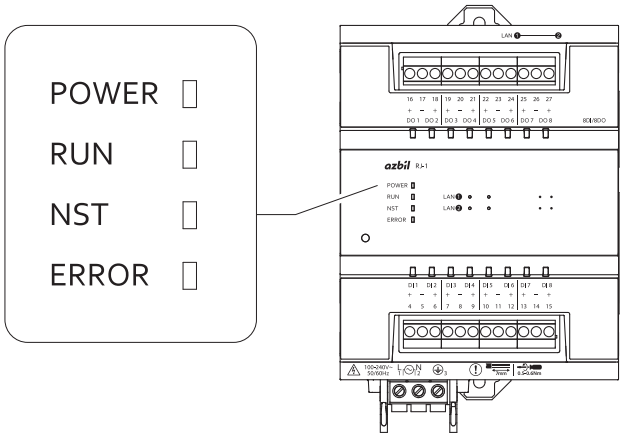
(7) For voltage output, the input impedance of the connected device should be 10 kΩ or higher.

(8) For current output, the sum of the input impedance and the wiring resistance of the connected device should be equal to or lower than 500 Ω.

(9) To connect a relay to a digital input, use a relay of which minimum applicable load is lower than the digital input current.
We recommend a relay with a minimum applicable load of 0.1 mA or lower.

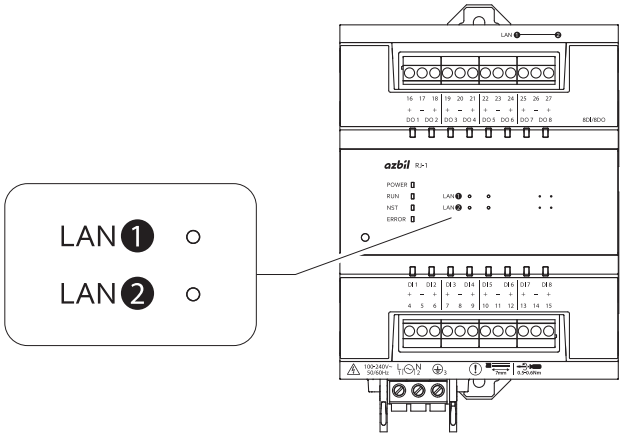
■ Indicators

● Product status LEDs



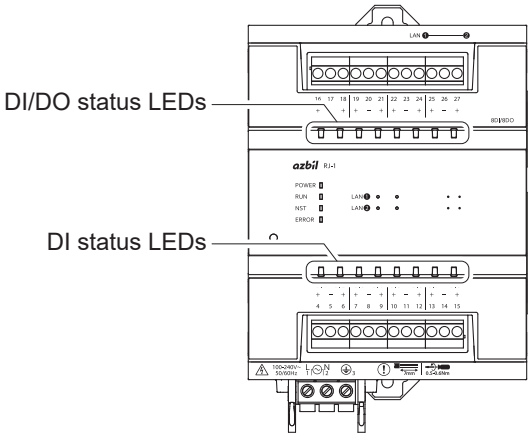
Item	Indicator	Color	State	Description
Power supply status	POWER	Green	Lit	Power ON
			Not lit	Power OFF
Operation mode	RUN	Green	Lit	Operating in RUN mode
			Fast flashing (flashes every 0.2 s)	Ethernet congestion detected
			Slow flashing (flashes every 1.4 s)	Operating in DEBUG mode
Network status	NST	Orange	Lit	Non-ring connection is set for the local I/O network.
			Fast flashing (flashes every 0.2 s)	If the ring connection is set, the local I/O network is disconnected at some node.
			Slow flashing (flashes every 1.4 s)	If the ring connection is set, the local I/O network is disconnected between adjacent nodes.
			Not lit	If the ring connection is set, the local I/O network is connected normally.
Abnormal status	ERROR	Red	Lit	Major failure
			Flashing	Minor failure
			Not lit	Normal

● Communication status LEDs



Item	Indicator	Color	State	Description
Communication status	LAN1	Green	Lit	A link is established.
			Flashing	Data is being transmitted and received.
			Not lit	A link is not established.
	LAN2	Green	Lit	A link is established.
			Flashing	Data is being transmitted and received.
			Not lit	A link is not established.

● I/O status LEDs



Item	Indicator	Color	State	Description
DI/DO status	DI9–DI16/ DO1–DO8	Green	Lit	DI/DO ON
			Not lit	DI/DO OFF
DI status	DI1–DI8	Green	Lit	DI ON
			Not lit	DI OFF
	UIO1–UIO4		Lit	DI ON
			Not lit	DI OFF

■ Handling

⚠ CAUTION
Do not block the ventilation holes of this product. Doing so may cause device failure.

IMPORTANT	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

- Check again that the wiring is done correctly.
- Peel off the protective sheets before powering the device on.
  Note: Check that all protective sheets have been completely removed.

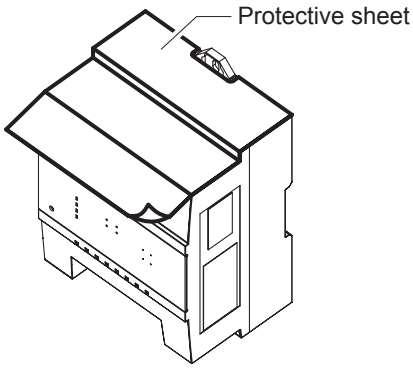


Figure 11. Protective sheet

⚠ WARNING
Do not touch electrically charged parts. Doing so may cause electric shock.

■ Device Protection after Installation

If installation of other equipment (etc.) is ongoing near the product, take dust-proofing measures to prevent metal shavings, dust, and other particles from entering the product.

Note: Take dust-proofing measures for the product regardless of whether the protective sheets are still attached.

■ Maintenance

⚠ CAUTION	
	Do not disassemble this product. Doing so may cause device failure.
	Before cleaning the product or retorquing the terminal screws, 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 periodic maintenance and parts replacement.
Please contact us as necessary.

* Refer to the "Model Numbers" section for details on replacement parts.

● Note for cleaning

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

■ Disposal

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

■ For CE-Marked Products

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

If compliance with CE marking is required, provide an EMC filter on the LAN cable that connects to RJ-11_ _W_ _ _ _.

■ For UL-Marked Products

Install this product in a panel cabinet.
•PAZX ENERGY MANAGEMENT EQUIPMENT
•E492866
•UL 60730-1
•Pollution degree 2
•Overvoltage category II
•Rated impulse voltage 4000V
•IP20
•TYPE 1 ACTION

The model numbers of the UL-certified product are RJ-1101W1600-U, RJ-1102W1600-U, and RJ-1103W0400-U.

* BACnet® is a trademark of ASHRAE.

Azbil Corporation
Building Systems Company

https://www.azbil.com/

AB-7329
Rev. 9.0 Sep. 2023
(J: AI-7420 Rev. 6.0)