Handling Precautions

Remote I/O RT series

Power supply unit

RT-XP24A01N

Thank you for purchasing CKD product.
Please review the precautions in this Handling Precautions thoroughly for safe operation of this product.
Incorrect usage may result in malfunction and dangers.
Keep this Precautions in a safe and convenient place for future reference.
For further information, refer to the instruction manual and product catalog.

Refer to the Handling Precautions of End unit for assembling and installing devices

⚠ CAUTION

- An electric shock may occur by touching the electrical wiring connection (bare live part). Make sure to power off before wiring. Also, do not touch the live parts with bare hands.
- This product is DC dedicated. Use the product within the specified power supply voltage.
- Fully understand the contents of other units connected to this product before use.
- For details on the entire remote IO system including this product, refer to the "Remote I/O RT Series Instruction Manual: System Construction".
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Accessories	This Handling Precautions, tie rod (2 pieces)

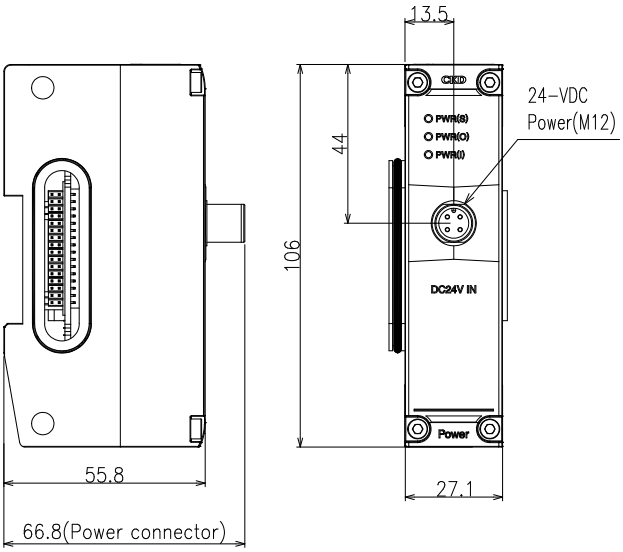
1 Specifications

Always use the product within its specifications.

Item		Specifications
Model No.		RT-XP24A01N
Size (W x H x D)	mm	27.1 × 106 × 55.8
Net weight	g	Approx. 125
Degree of protection		IP65 / IP67 (when connected) Note 1
Working temperature range	℃	-10 to +55
Relative humidity	%RH	30 to 85
Ambient atmosphere		No corrosive gases or heavy dust
Installation location		Indoor use
Altitude	m	Up to 2000
Pollution degree		3
Connector		M12 (A) 4pin male
Power supply (for unit/input)		24 VDC ±10%, Class 2, 3 A
Power supply (for output)		24 VDC +10%-5%, Class 2, 3 A
Protection function		Yes
LED		For indicating power supply status / 3 pieces

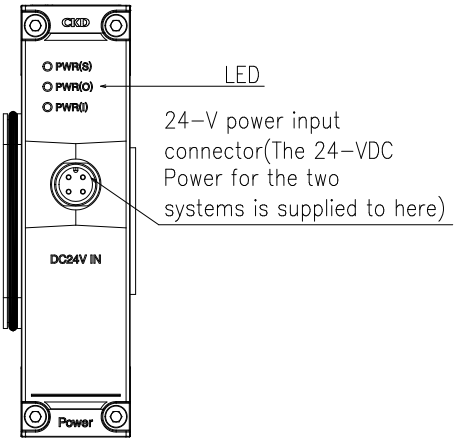
Note 1 IP65/IP67 is not part of the UL certification.

2 External dimensions



Dimensional unit: mm

3 Names and functions of each part



4 LED indicators

4.1 Specifications

Name	Description
PWR(S)	Indicates the status of the unit/input 24 V.
PWR(O)	Indicates the status of the output 24 V.
PWR(I)	Indicates the status of the internal 5 V.

4.2 Status list

Name	Status	Meaning
PWR(S)	OFF	Unit/input 24 V is OFF, or there is a supply fault
	Green on	Normal supply to the internal bus for the unit/input 24 V
PWR(O)	OFF	Output 24 V is OFF, or there is a supply fault
	Green on	Normal supply to the internal bus for the output 24 V
PWR(I)	OFF	Internal 5 V is OFF, or there is a supply fault
	Green on	Normal supply to the internal bus for the internal 5 V

5 Wiring

Function description and connection of the terminals are as following.

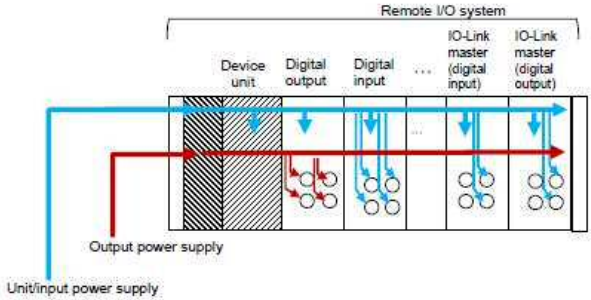
⚠ CAUTION

- An electric shock may occur by touching the electrical wiring connection (bare live part). Make sure to power off before wiring. Also, do not touch the live parts with bare hands.
- Do not apply tension or impact to the M12 connector and network cable. Long cables can exert unexpected momentum and impact due to its weight, and this can consequently damage the connectors and devices. Take appropriate measures such as secure the wiring to the machine or device midway.
- Do not wire the power cable and the other power line in parallel to prevent problems caused by noise.
- Discharge static electricity that has built up on your body by touching a grounded metal object before handling the device. Static electricity may cause damage to the product.
- When conformity to UL is required, the unit must be used with a power supply which satisfy the SELV requirements and UL1310 Class 2 compliant.
- When conformity to UL is required, the power supplies should be separated unit/input and output.

5.1 Power supply wiring

The power supply unit supplies the power for the following two systems via internal buses:

Power supply	Description	Supplied to
Unit/input power supply	The power supplied to connected I/O units / external input devices.	Control power supply for I/O units
		External devices connected to the following units: - Digital input unit - Analog input unit - IO-Link master unit
Output power supply	The power supplied to external output devices.	External devices connected to the following units: - Digital output unit - Analog output unit

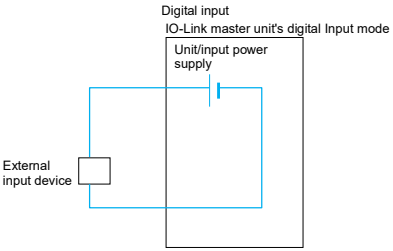


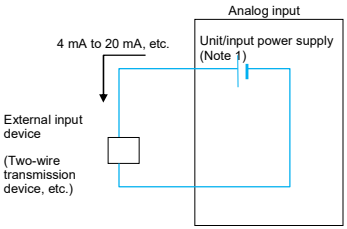
See "1.6.2 Names and functions of each part ■ Recommended power cable" of “Remote I/O RT Series Instruction Manual: System Construction” for what power cable to use.:

5.2 Connections to external devices

A schematic diagram of the connections to external devices is shown below.
For the specific wiring, refer to the instruction manual for each I/O unit.

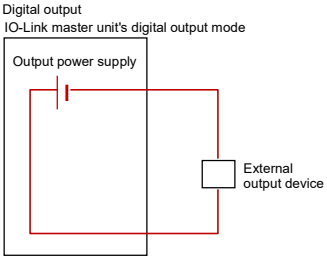
Unit/input power supply

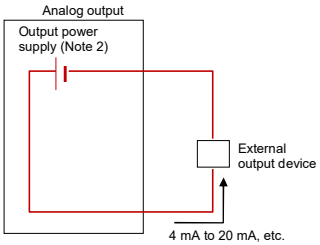




Note 1: For analog input, it is possible to set whether to supply input power based on whether the external input device requires power for analog signals.

Output power supply





Note 2: For analog outputs, it is possible to set whether to supply output power based on whether the external output device requires power for analog signals.

5.3 Connecting and wiring to the M12 connector

The power plug is not supplied with the product. Separately purchase a plug that satisfies the specifications. Wiring a cable to the plug enables to connect to the product.

Recommended power cable: M12 to open-end-cable

・ XS2F-D421-□8□-□ (straight cable) Mfd by OMRON Corporation

Recommended power plug and power cable

・2103 212 2305 (assembly type M12 connector) Mfd by HARTING K.K.

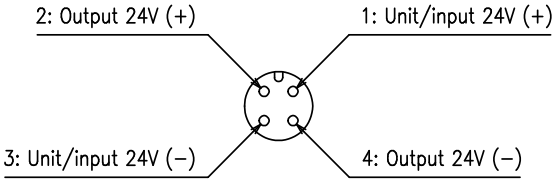
Cable size : AWG22 to 18, outside diameter of compatible cable : 6 to 8 dia.

* □ differs depending on the cable specifications.

⚠ CAUTION

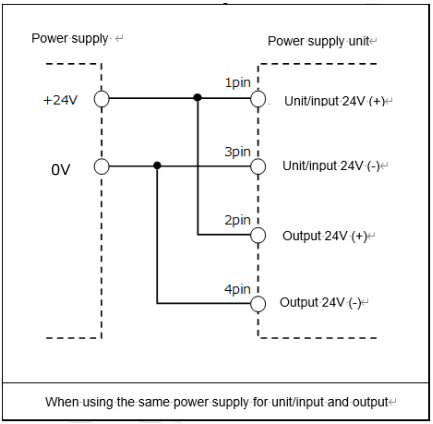
- Use a cable suitable for the working voltage and current.
- Provide sufficient bending radius for the cable and do not bend it forcibly.

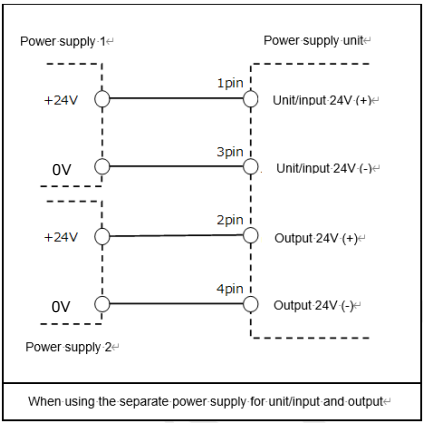
5.4 Pin arrangement and connecting example



M12 4−pin plug: A code

Pin arrangement



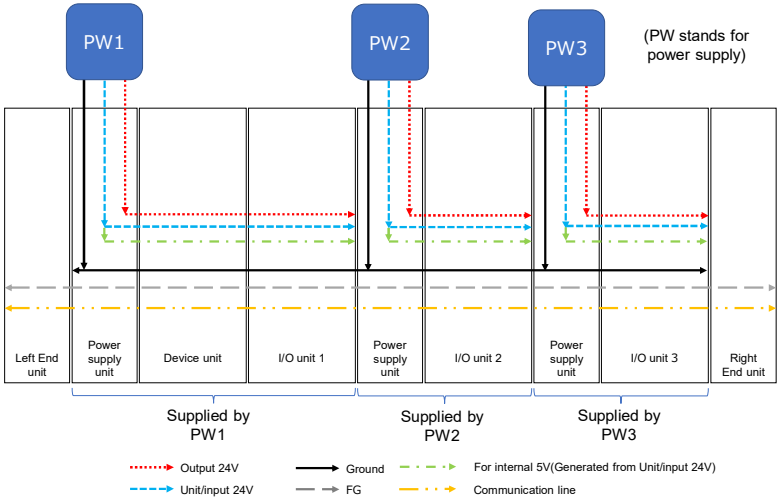


Example of wiring

6 When multiple power supply units are used

Multiple power supply units can be connected according to the number and type of unit, or the current consumption of the devices such as sensors connected to each I/O unit.
The power supply unit supplies power to the I/O units in the right of the location connected. Therefore, make sure to connect one power supply unit next to the left End unit as figure below.

Image diagram of connecting RT power supply units



Example of connecting multiple units

7 How to calculate the supplied power

The power supply unit supplies 24 VDC power to two systems:

- Unit/input 24 VDC power
- Output 24 VDC power

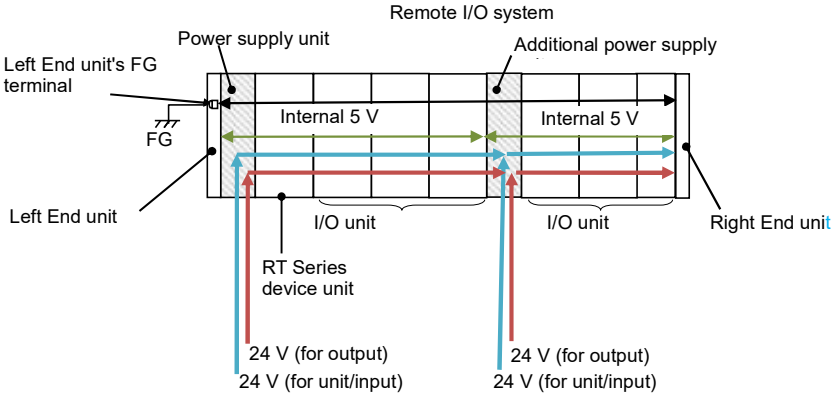
Based on this, the power supply unit powers to the following units via an internal bus:

- Unit power supply for the device unit and connected I/O units (internal 5 V)
- Each unit's external input devices
- Each unit's external output devices

The power supply unit powers the device unit and I/O unit connected on its right (when facing it).
It powers the I/O unit between itself and the End unit or a second power supply unit.

An additional power supply unit will similarly power the I/O unit connected on its right.
It will power the I/O unit between itself and the End unit or a third power supply unit.
The same will apply to a fourth and any subsequent ones.

There is no limit on the number of power supply units (as long as the width of the entire remote I/O system stays within 922.5 mm or less).



Calculate the following total, then add power supply units so that the unit/input 24 VDC power and output 24 VDC power are each less than 3 A [Note 1]

Note 1: It is recommended selecting a capacity that is at least approximately 1.6 times the calculated value, taking into account the efficiency of the power supply and inrush currents that may occur when external connected devices are switched on or off.

1) Unit/input power supply:
- Unit current consumption of the device unit and each I/O unit itself
- Input current x number of points used
- Current consumption of external input devices

2) Output power supply:
- Current consumption of external output devices

Note: The above-mentioned unit/input power and output power can also be supplied from the same external power source. In this case, however, it does not conform to UL requirements.

8 Power supply when multiple power supply units are used

If using more than one power supply unit, power all of them on at the same time (within 3 seconds of each other).

If the power supply units are powered on 3 or more seconds apart [Note 1], a "unit configuration error" may occur.

Note 1: With an EtherCAT compatible device unit, the ERR LED will blink red and the SF LED will blink yellow (fast). When this happens, EtherCAT communication will be stopped.

9 Maintenance

Refer to the "Remote I/O RT Series Instruction Manual: System Construction" for installing and removing this product.

⚠ CAUTION

- Do not work with the cable attached as it may cause disconnection and damage.
- Touching the electrical wiring (bare live part) or the connection between units may cause an electric shock or malfunction.
- Do not install the unit with dirt or dust on the unit opening, gasket, O-ring, etc.

PRECAUTIONS

- Do not disassemble, modify, or repair the product as that may cause failure or malfunction.
- Do not drop or apply excessive vibrations or shocks to the product as the part inside are made precisely.
- Do not attach or detach the connector while the power is ON as that may cause a failure or malfunction.
- Mold and rust may develop on the product if it is exposed to high humidity during transportation. Include moisture absorbers and tightly seal the package.

For inquiries regarding this product, please contact the following or the nearest sales office.

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