

Remote I/O RT Series



Remote I/O from the perspective of worksites



Push-in terminal box unit

IP65/IP67

EtherNet/IP™



EtherCAT®

IO-Link

CKD Corporation

CC-1557AA **2**

It's fast, connected and tough!

Update cycle as fast as 0.5 ms

High-speed internal communication enables high-speed device control and status monitoring. Contributes to faster production tact time.

Max. connection units 18

Supports a total of 512 bytes (4096 points) of I/O. The type and number of units can be selected according to the equipment specifications.

Remote I/O for the worksite

IP65/IP67 design for tough use

IP65/IP67 (dust-proof/jet-proof) design. Ready to be installed in the vicinity of the actuator. Layout flexibility is improved as control panel is not required.

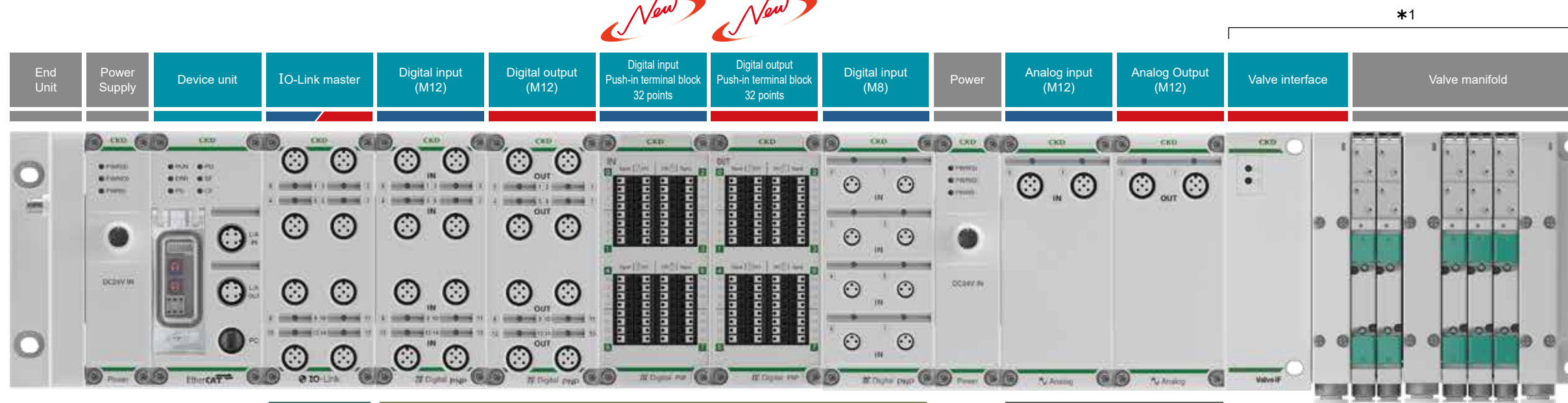
*The push-in terminal block is IP40.



Remote I/O

IP65

IP67



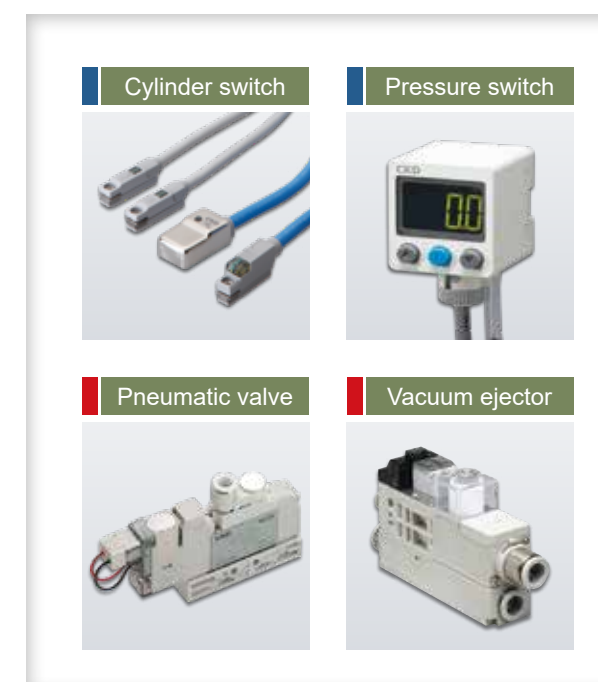
- Count as a connected unit
- Do not count as a connected unit
- Input
- Output

*1
The valve interface and valve manifold must be prepared separately. For details, refer to the plug-in block manifold (CC-1595AA). Valve interface and valve manifold are not UL compliant.

IO-Link



Digital input/output



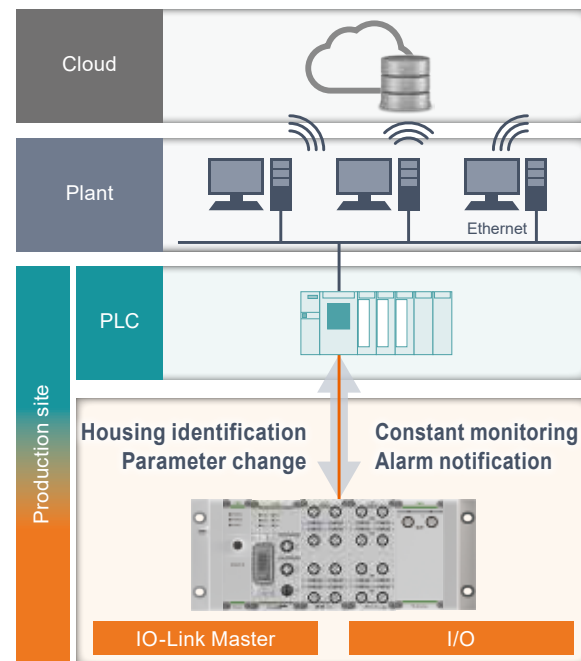
Analog input/output



Digitalization of worksites and reduced

IO-Link

IO-Link is a digital communication standard for sensors/actuators at factory sites. (IEC 61131-9)
Unlike analog communication, it enables the transmission of parameters and event data.

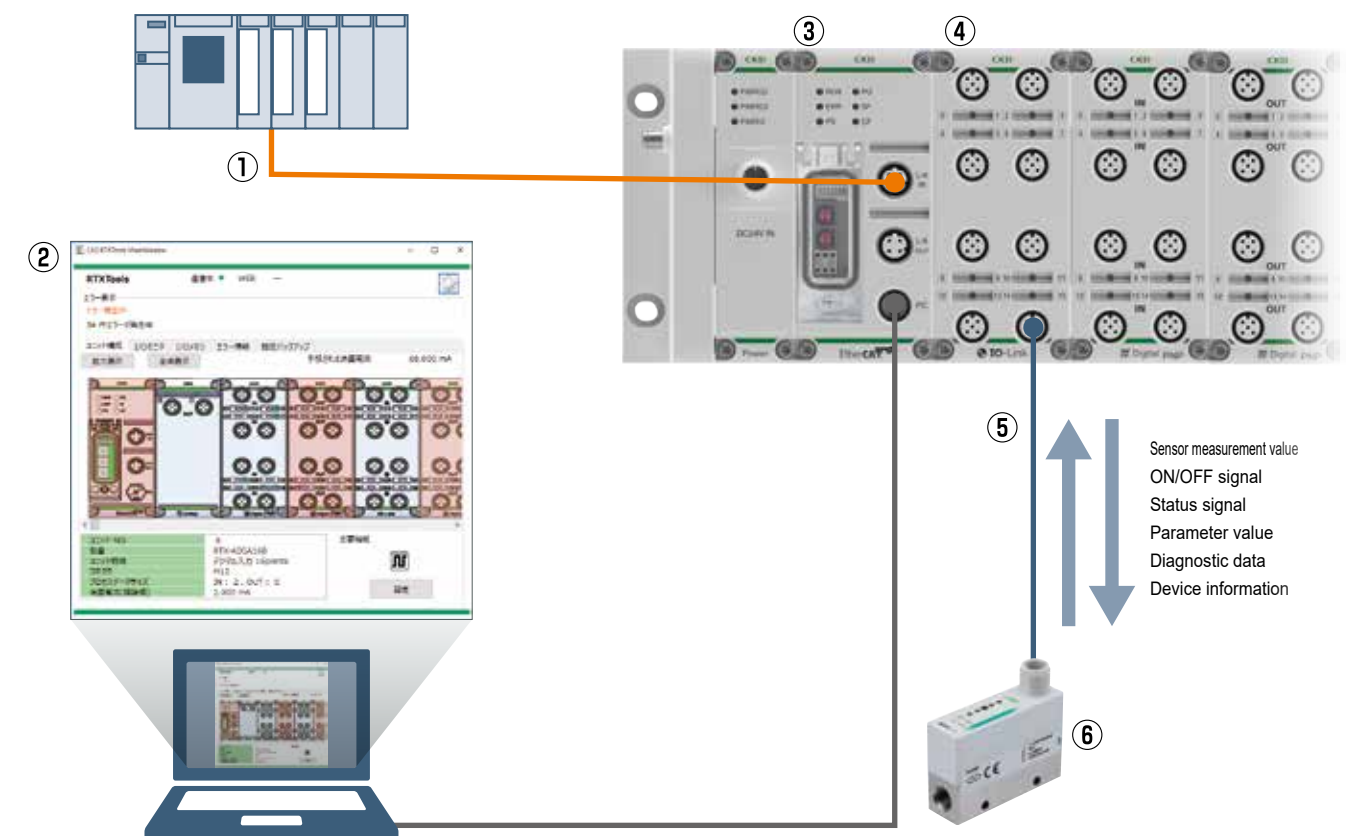


Features of IO-Link

- Digital signal**: Constant monitoring via digital data is possible.
- Parameter remote control**: Parameters can be set and changed via the network, enabling remote operation of the device.
- Housing identification**: Model Nos. and serial Nos. can be checked via the network.
- Data storage**: Settings can be copied from the IO-Link master, making troublesome parameter resetting during maintenance unnecessary.
- Error notification**: Device failure and disconnection can be confirmed.
- Connection to fieldbus**: The network can also be changed to Ethernet connection, making the device a part of IoT.

wiring of sensors with IO-Link

System configuration

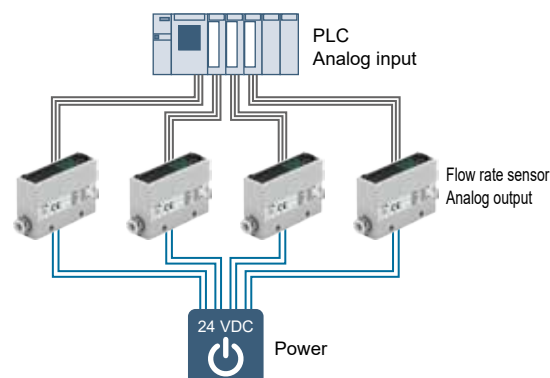


80% reduction in wiring processes with IO-Link

IO-Link master supplies power and communication from a single source.

Analog input system

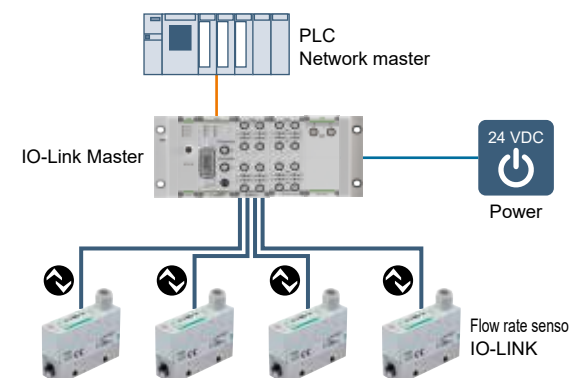
- › Branched wiring power supply.
- › Branched wiring of power supply and analog input.



Number of wiring lines 5 units × 4 sensors = 20 units

IO-Link system

- › Power is supplied only to the IO-Link master.
- › IO-Link master supplies power and signal from a single source.



Number of wiring lines 1 unit × 4 sensors = 4 units

General analog input units do not supply power to the sensor.

*The CKD analog input unit also supplies power to the sensors.

(1) Host communication cable

(2) device unit setting tool*

- › Software for setting and monitoring the device unit, IO-Link master, and each unit (RTX Tools).
- › Automatically recognizes connected units and visually displays them.
- › Settings of each unit and diagnosis information (overcurrent, short-circuit, error, etc.) can be confirmed.
- › Connect PC and RT with USB cable

*Available free of charge on the CKD website

(3) device unit

- › I/O 512byte (4096 points).
- › The unit status is reported to the PLC at the beginning of the periodic communication data for upper level communication.
- › Error information of each unit can be referred to from the upper level, contributing to reduced maintenance hours.

(4) IO-Link master

- › 8 ports/unit.
- › Port class A.
- › Data size can be changed per port. Since data is only occupied by the data size of connected IO-Link devices, adjustments can be made even when connecting many non-IO-Link master units.
- › Max. occupied 64byte (512 points)/unit.
- › The basic settings of the connected device are read, making settings easy.

(5) Communication cable for IO-Link device

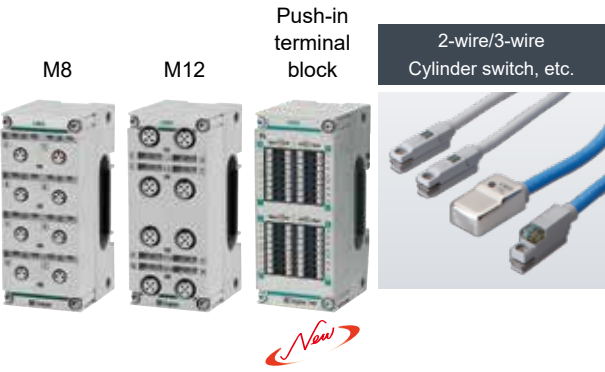
- › Conventional 3-wire non-shielded cable for sensor.
- › Max. cable length: 20 m.

(6) IO-Link device

- › One port to one on the IO-Link master.
- › Up to 8 units can be connected to CKD IO-Link master.

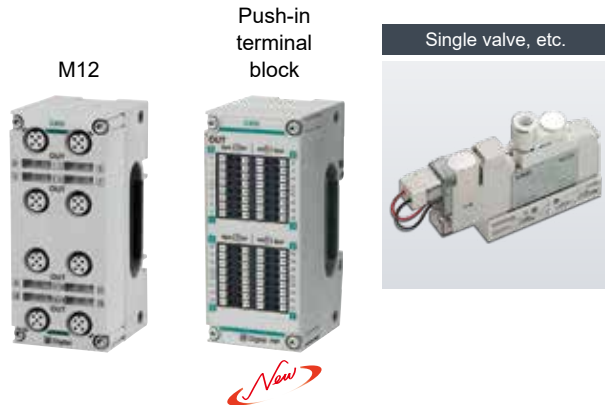
Unit lineup meets on-site needs

Digital input unit



Input the digital signal (ON/OFF signal). Signals from the 2-wire/3-wire cylinder switches are fetched and fed back to the PLC through the device unit of the remote I/O. This enables network management. Using a Y-splitter connector, two switches can be input through a single port. (M12 type only)

Digital output unit



The digital signal (24 VDC 0.5 A) is output. The single valve, vacuum switching unit, etc., can be operated. It is ideal for installing a vacuum switching unit or the like locally close to the actuator by using communication from the PLC. Using a Y-branch connector, it's possible to output to two devices from a single port. (M12 type only)

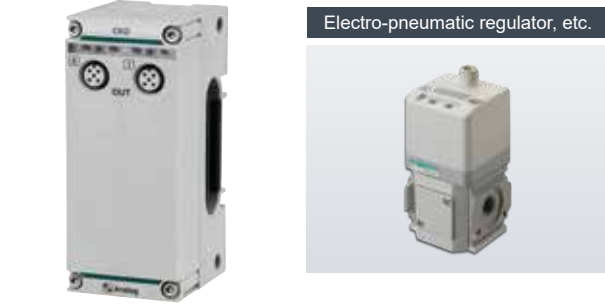
Analog input unit



Units that input analog signals (voltage/current). The pressure sensor analog signal can be input to monitor the current pressure.

*The CKD analog input (output) unit can supply analog signals and power (24 VDC), contributing to reduced wiring.

Analog output unit



Units that output analog signals (voltage/current). Analog signal output to the electro pneumatic regulator enables pressure control.

Power supply unit



As the power supply for unit and load power supply are separated, it is possible to shut OFF the load power supply without interrupting communication. You can add any number of units according to the connected load.

Valve interface

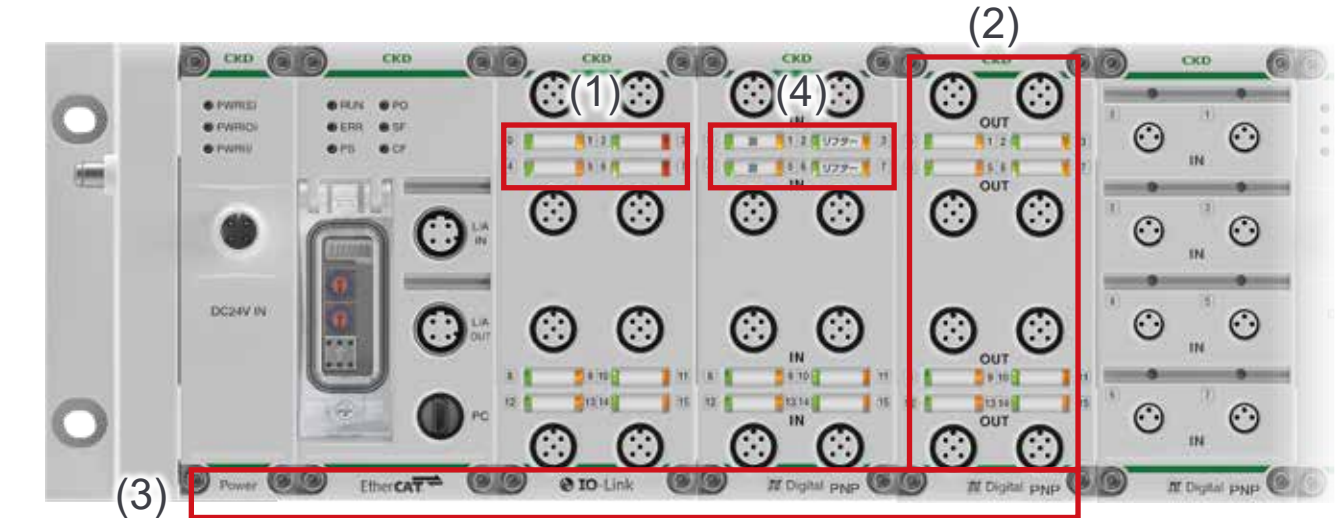


Plug-in valve TVG connection interface. Up to 32 solenoid valves can be connected.

Discrete model No.:
TVG□P-TB-□□□KA1□

For details, refer to the plug-in block manifold TVG Series (CC-1595AA). Valve interface and valve manifold are not UL compliant.

Easy-to-use design



- (1) I/O status is displayed clearly with the 3-color LEDs
Green: Normal
Red: Error (disconnection, communication error, etc.)
Orange: Information (Output, etc., above set value)
- (2) Pin layout that enables easy plug rotation
- (3) Function, input and output of each unit are clearly displayed
- (4) Tag plates can be attached to the LED section

Remote I/O model No. system

Category	Head model No.	Network	Appearance	Listed page
Remote I/O	Single unit	RT-X	EtherNet/IP EtherCAT	1
	Manifold IP65 IP67 (*4)	RT-E RT-F (*2)	PROFINET IO-Link(*1)	17

- *1: IO-Link Network between the master unit and subordinate IO-Link devices.
- *2: RT-E: Direct mount, RT-F: DIN rail mount
- *3: Contact CKD for models with solenoid valves.
- *4: IP40 when including the push-in terminal block.

Compatible with global standards



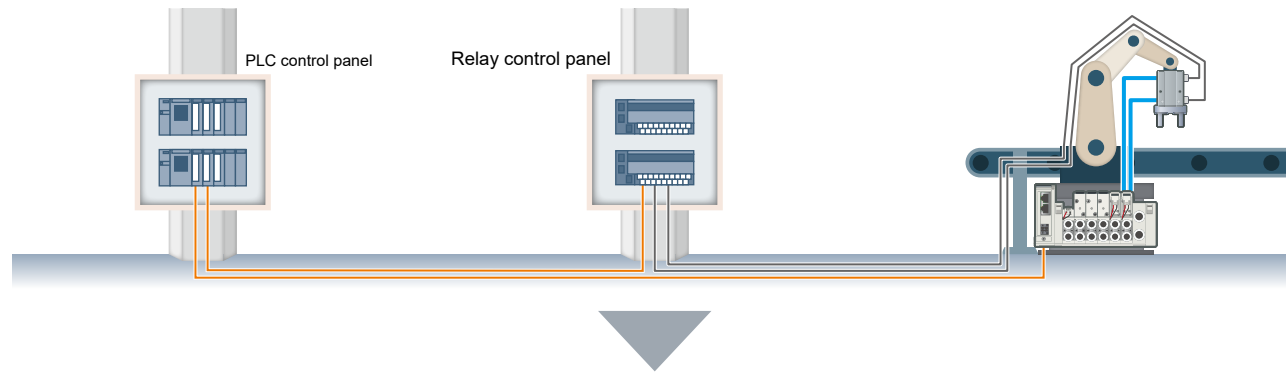
Waterproof remote I/O changes

Benefits

No relay control panel required

Before

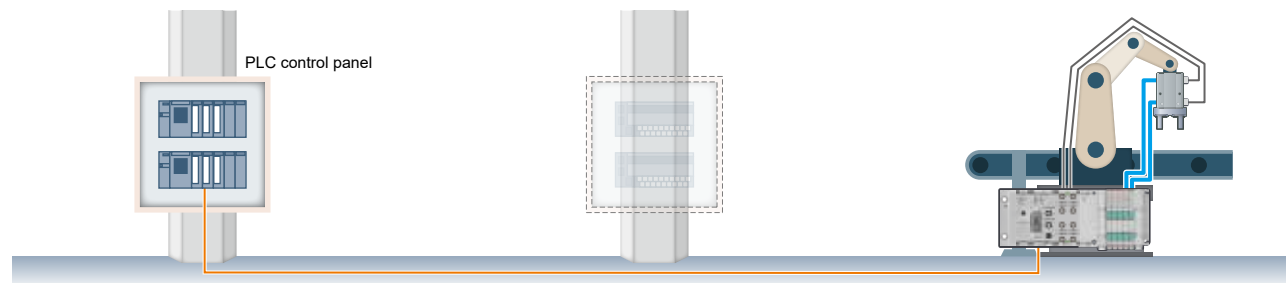
- For terminal blocks that are not water-proof, a control panel is necessary to cover them
- If the control panel is not delivered, assembly cannot start, resulting in loss of start-up time.



After

IP65 structure

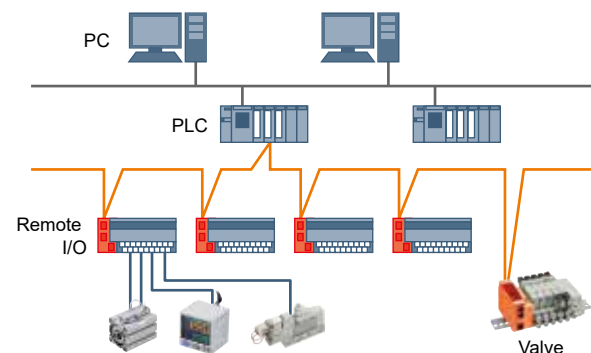
- The water-proof structure eliminates the need for a control panel, reducing the cost of the control panel.
- Assembly starts when remote I/O is delivered. Since there is no need to wait for delivery of the control panel, it contributes to shortening the start-up time of equipment.



Reduced number of communication device units

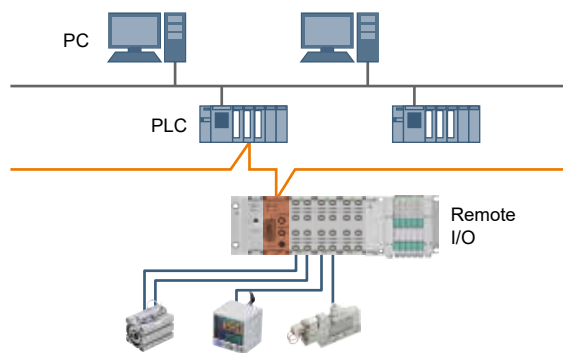
Before

- Sensor system remote I/O and solenoid valve are separated, so a unit communication device unit is required.



After

- The only communication device unit is the remote I/O unit, enabling a reduction in the number of communication device units.
- The remote I/O unit can be connected to a PLC or other controller with a single communication line, and long-distance wiring can be connected with a noise-resistant Ethernet cable. Remote I/O can be installed near the actuator for efficient reduced wiring.



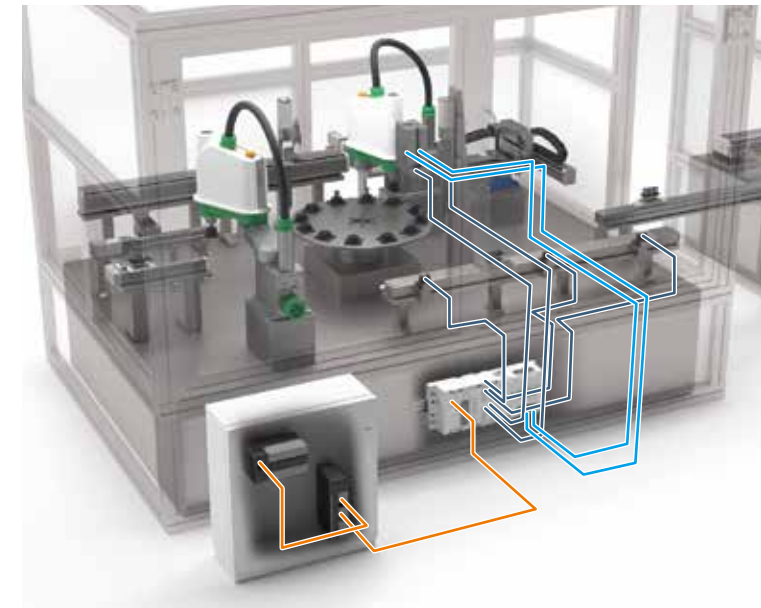
CKD

site layout

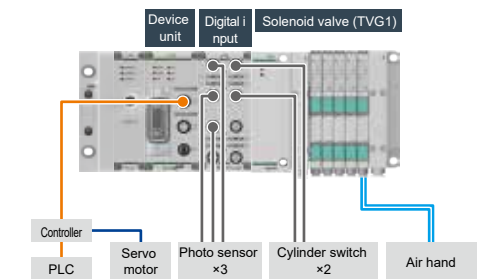
Application

Transport equipment

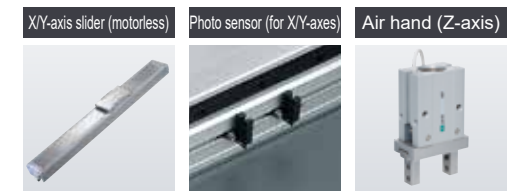
Air piping and electric wiring can be integrated in devices where servo motor drive actuator and air hand are mixed.



Remote I/O configuration

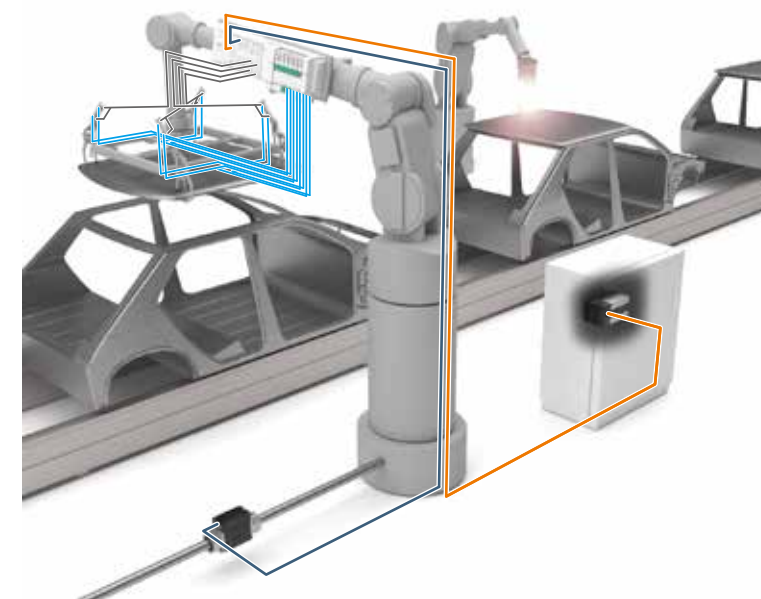


Components configuration

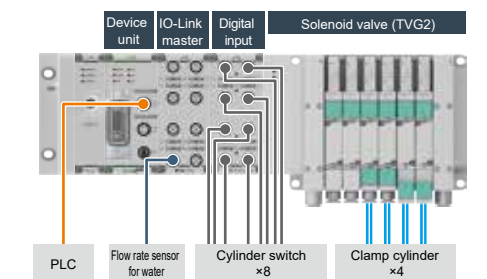


Auto body welding

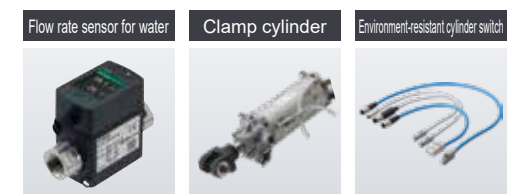
Contributes to reduced wiring of solenoid valve for cylinder drive and cylinder switch input. Wiring from a PLC (programmable logic controller) can be completed with one Ethernet cable. We contribute to reducing the installation space of components including IO-Link components and improving the wiring layout.



Remote I/O configuration



Components configuration

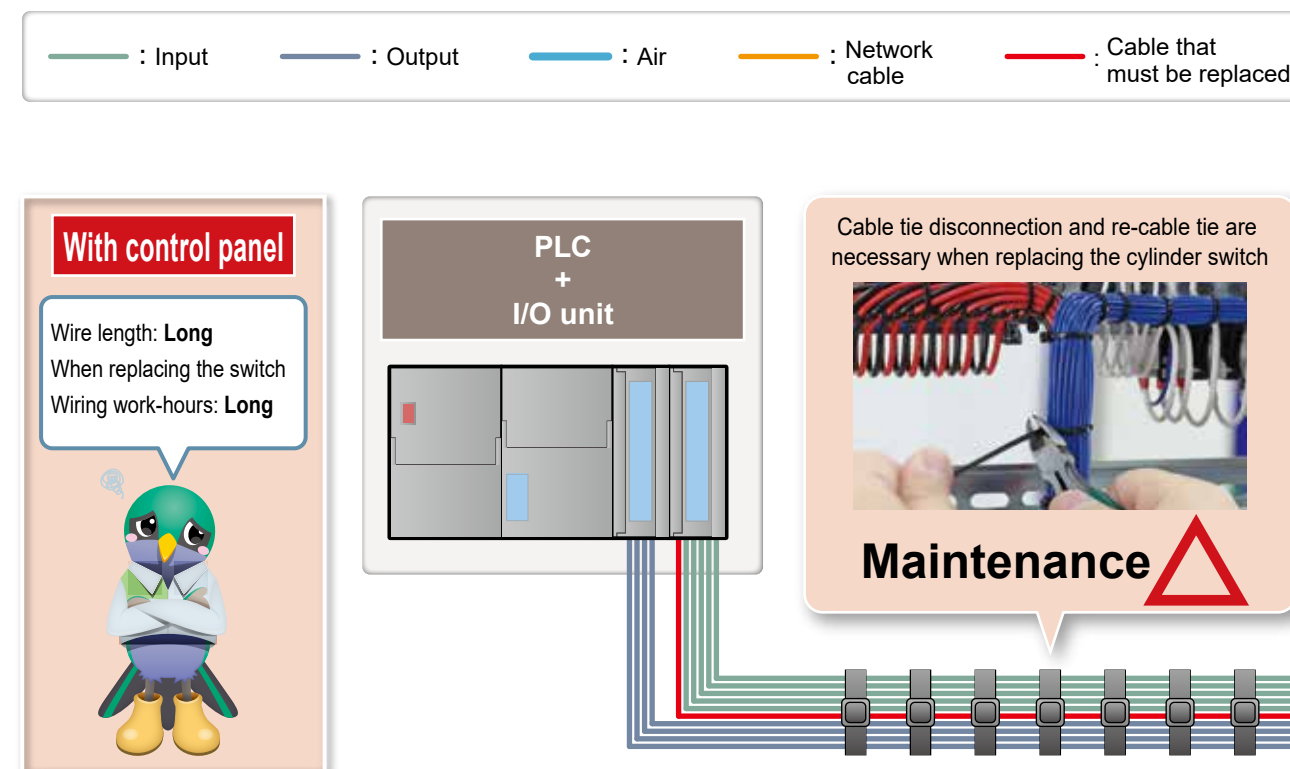


CKD

Remote I/O that can be installed outside the

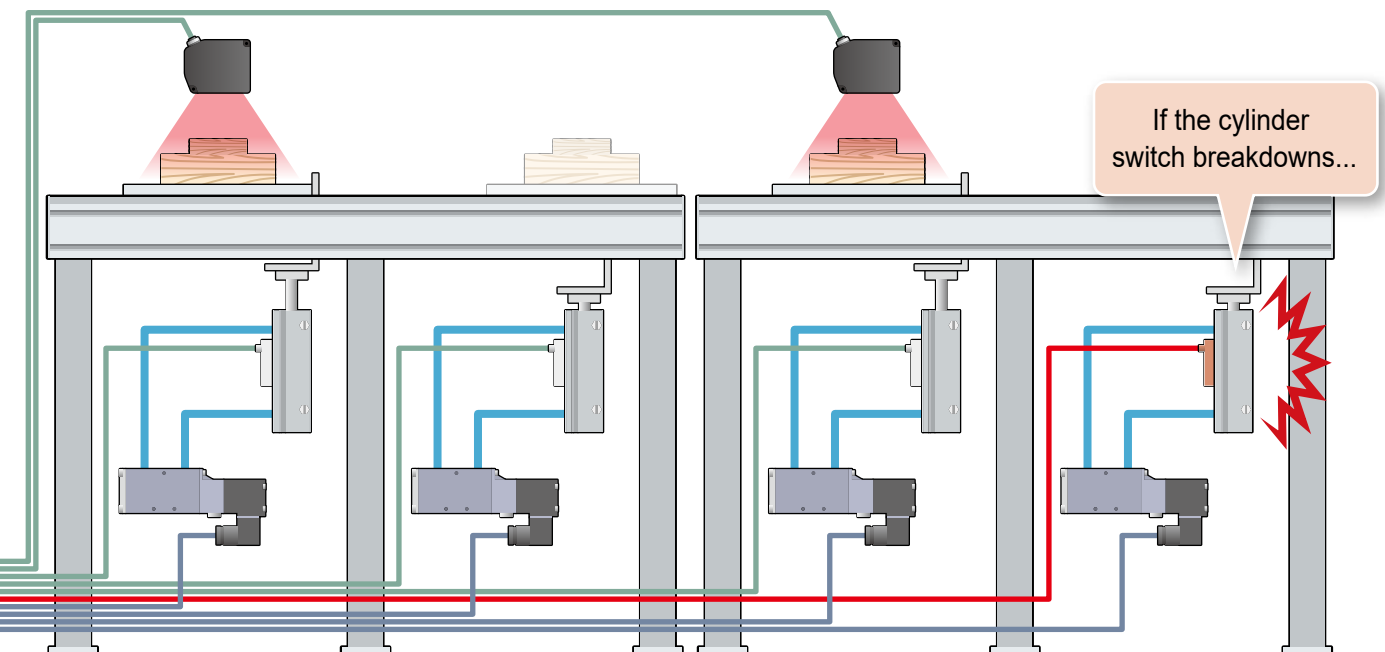
control panel the same as solenoid valves

Before (non-waterproof/non-dust-proof I/O unit + control panel)

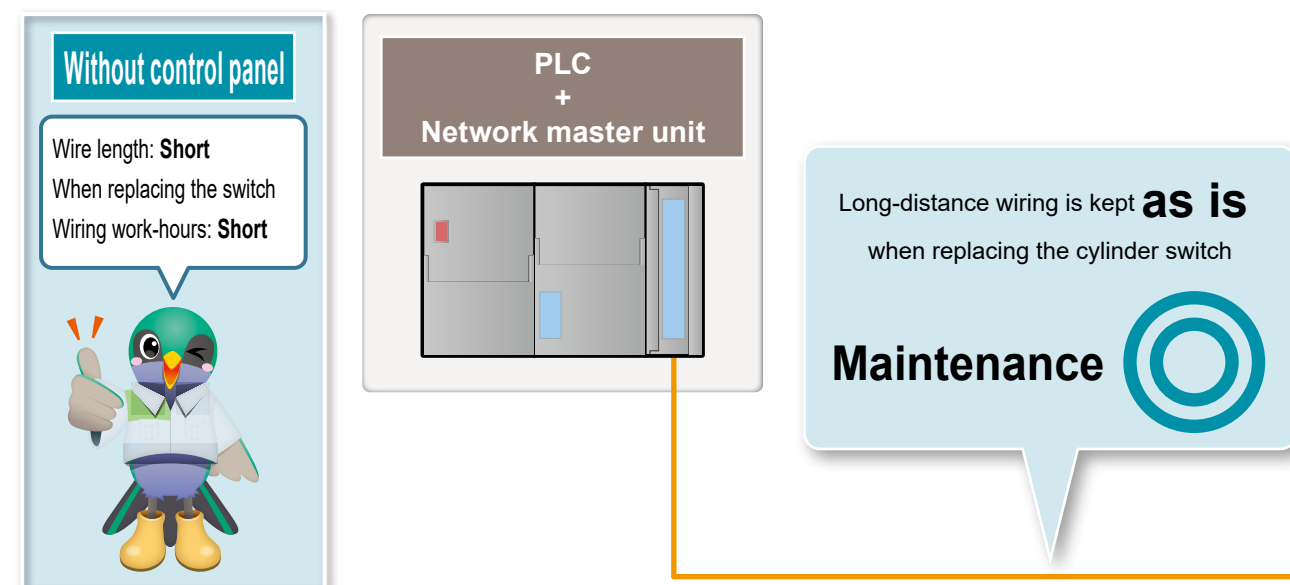


● **Long** sensor cable: Disconnection, noise risk is **large**

Maintenance: Replace the long sensor cable to the PLC

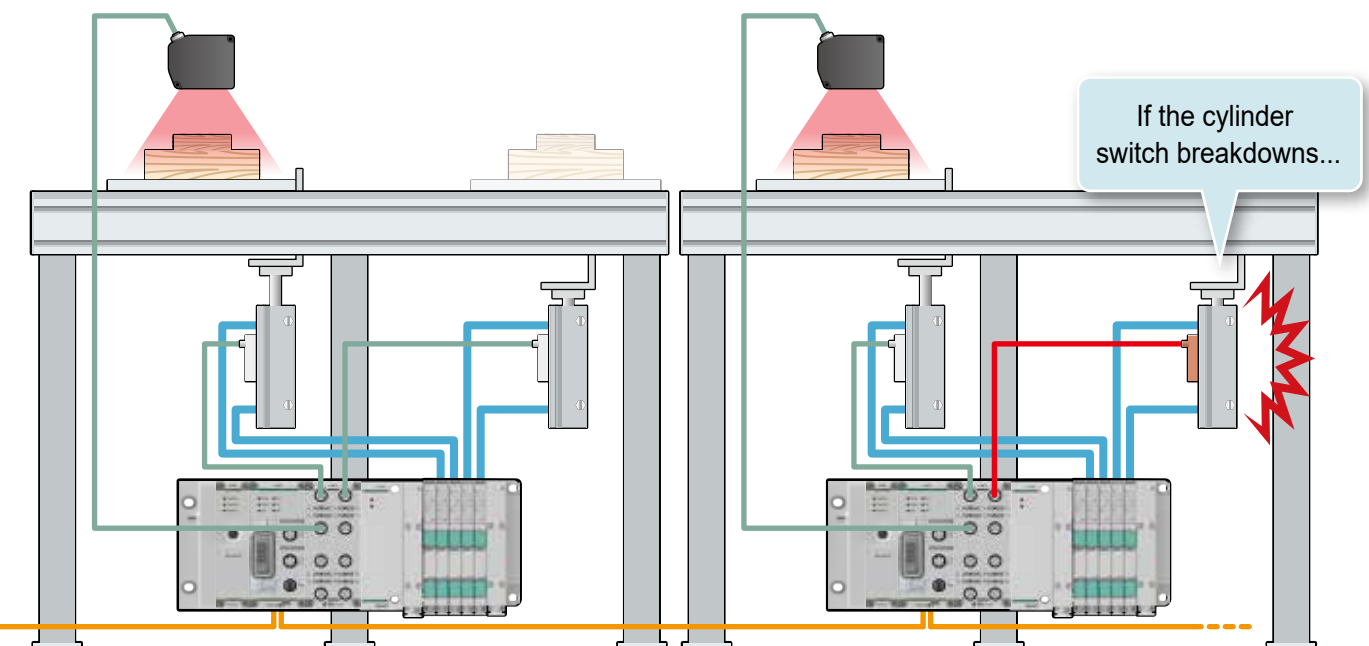


After (waterproof/dust-proof remote I/O + without control panel)



● **Short** sensor cable: Disconnection, noise risk is **small**

Maintenance: Just replace the short sensor cable up to the remote I/O!





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Remote I/O Unit

RT Series

Remote I/O system that can be created by freely combining units



Refer to the CKD website for detailed compatible model Nos.



Device unit

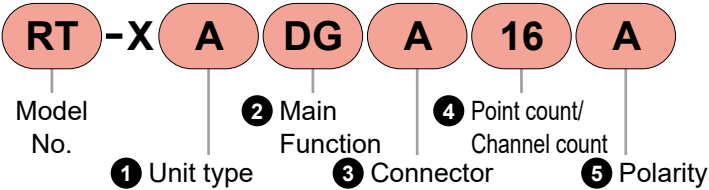
RT-XT

Communication unit connecting the PLC and I/O unit



Refer to the CKD website for detailed compatible model Nos.

How to Order



① Unit type

Code	Description
T	Device unit
A	Input unit
B	Output unit
L	IO-Link. unit
E	End unit (for direct mounting)
F	End unit (for DIN rail mounting)
P	Power supply unit

② Main Function

Code	Description	Model No.						
		RT-XT	RT-XA	RT-XB	RT-XL	RT-XE	RT-XF	RT-XP
EC	EtherCAT compatible device unit	●						
EN	EtherNet/IP compatible device unit	●						
EP	PROFINET compatible device unit	●						
AG	Analog		●	●				
DG	Digital		●	●				
MS	Master				●			
EL	For left end					●	●	
ER	For right end					●	●	
24	Power supply (24 VDC)							●

③ Connector

Code	Description	Model No.						
		RT-XT	RT-XA	RT-XB	RT-XL	RT-XE	RT-XF	RT-XP
A	M12		●	●	●			●
B	M8		● *1					
C	Push-in terminal block		● *2	● *2				
N	No connector specified	●				●	●	

*1: Only selectable for RT-XADG.

*2: Only selectable for RT-XADG and RT-XBDG.

④ Point count/ Channel count

Code	Description	Model No.						
		RT-XT	RT-XA	RT-XB	RT-XL	RT-XE	RT-XF	RT-XP
01	1 point/1 CH							●
02	2 points/2CH		● *1	● *1				
08	8 points/8CH		● *2		●			
16	16 points/16CH		● *3	● *3				
32	32 points/32CH		● *4	● *4				
00	Point count/Channel count cannot be designated	●				●	●	

*1: ② Can be selected only when the Main Function is "AG".

*2: Only selectable for RT-XADGB.

*3: ② Only selectable when the Main Function is "DG" and ③ connector type is "A".

*4: ② Only selectable when the Main Function is "DG" and ③ connector type is "C".

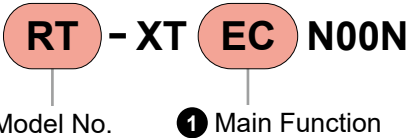
⑤ Polarity

Code	Description	Model No.						
		RT-XT	RT-XA	RT-XB	RT-XL	RT-XE	RT-XF	RT-XP
A	PNP		● *1	● *1				
B	NPN		● *1	● *1				
N	Polarity cannot be designated	●	● *2	● *2	●	●	●	●

*1: ② Only selectable when Main function is "DG".

*2: ② Only selectable when Main function is "AG".

How to Order



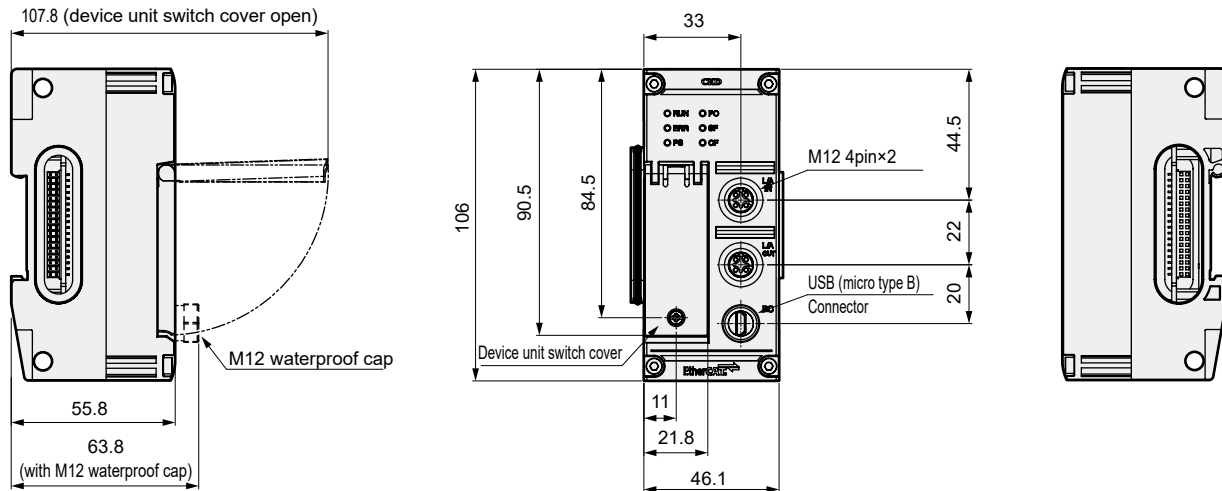
① Main Function

Code	Description
EC	EtherCAT compatible device unit
EN	EtherNet/IP compatible device unit
EP	PROFINET compatible device unit

Specifications

Item			RT-XTECN00N	RT-XTENN00N	RT-XTEPN00N
General specifications	Size (W×H×D)		mm		
	Weight		g		
	Environmental resistance	Degree of Protection	IP65/IP67 (with manifold)		
		Operating ambient temperature range	°C		
		Working atmosphere	No corrosive gas or heavy dust		
	Vibration resistance	10 to 57 Hz	Single amplitude: 0.75 mm		
		57 to 150 Hz	Acceleration: 98 m/s ²		
Shock resistance		m/s ²			
Communication specifications	Network		Supports EtherCAT DC mode	EtherNet/IP DLR compatible	PROFINET IO MRP compatible
	Connector		Max. 513 byte used	Max. 513 byte used	Max. 514 byte used
Input specs.	Max. number of points		M12(D)4pin female ×2		
Output specs.	Max. number of points		Max. 4096 points (512 bytes) including input and output		
Electrical specifications	Internal current consumption	mA For unit input	100 or less		
		For output	20 or less		
Function specifications	LED		For Components / Communication Status Display / 8 pcs.		
	Number of connectable I/O units		17 units		
	Unit automatic recognition		Recognize and monitor unit type and sequence		
	Configuration software		Connect to PC with USB (micro type B)	Connect to PC with USB (micro typeB) or Ethernet	
	Data synchronization interval between units		ms		
		Approx. 0.5 (min.)			

Dimensions



*This figure shows RT-XTECN00N. The logo and other printing parts differ depending on the Main Functions.



Digital input unit/digital output unit

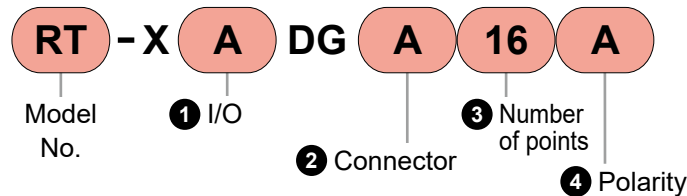
RT-XADG / RT-XBDG

8/16 points supported, status notified by LED



Refer to the CKD website for detailed compatible model Nos.

How to Order



1 I/O

Code	Description
A	Input
B	Output

2 Connector

Code	Description
A	M12
B	M8 (1 Input "A" only)

3 Number of points

Code	Description
08	8 points (2 connector "B" only)
16	16 points

4 Polarity

Code	Description
A	PNP
B	NPN

Specifications

Item	Digital input unit			Digital output unit
	RT-XADGA16A/B	RT-XADGB08A/B	RT-XBDGA16A/B	
General specifications	Size (W×H×D)	mm 46.1 x 106 x 55.8		
	Weight	g Approx. 245		
	Environmental resistance	Degree of Protection IP65/IP67 (with manifold)		
		Operating ambient temperature range °C -10 to 55		
		Working atmosphere No corrosive gas or heavy dust		
	Vibration resistance	10 to 57 Hz Single amplitude: 0.75 mm		
	Shock resistance	57 to 150 Hz Acceleration: 98 m/s ²		
I/O Common	Polarity	PNP/NPN	PNP/NPN	PNP/NPN
	Connector	M12(A) 5pin female	M8 3pin female	M12(A) 5pin female
	Number of points	16 points (2 bytes)	8 points (2 bytes)	16 points (2 bytes)
	Response time	ms ON: 0.8 or less/OFF: 0.8 or less		
	Protection/Detection Function	Yes		
Input specification	Forced Input/Output Setting	Input value can be set regardless of actual input		
	Max. sensor supply current	A 0.5/connector 2/unit	*1	-
	Input current	mA 4.3 typ		
	Input resistance	kΩ 5.6		
	Sampling cycle	μs 100		
	Input filtering time	ms 0.1, 1, 5, 10, 20		
	Input holding time	ms 1, 15, 100, 200		
Output specifications	Supply power (for unit/input)	V 24 DC		
	Max. load current	A -	-	0.5/point 2/unit
	Leakage current	mA -		
	Supply power (for output)	V -		
Electrical Specifications	Internal consumption	For unit input	110 or less	80 or less
	Current	mA For output	5 or less	5 or less
	LED	Components / Input Status	Components / Input Status	Components / Output Status

*There are temperature conditions, and refer to the instruction manual.

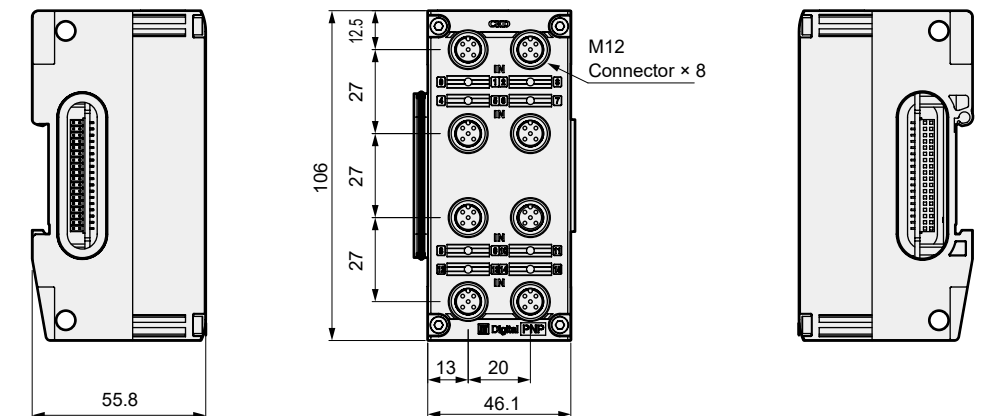
RT-X*DG Series

Dimensions

Dimensions

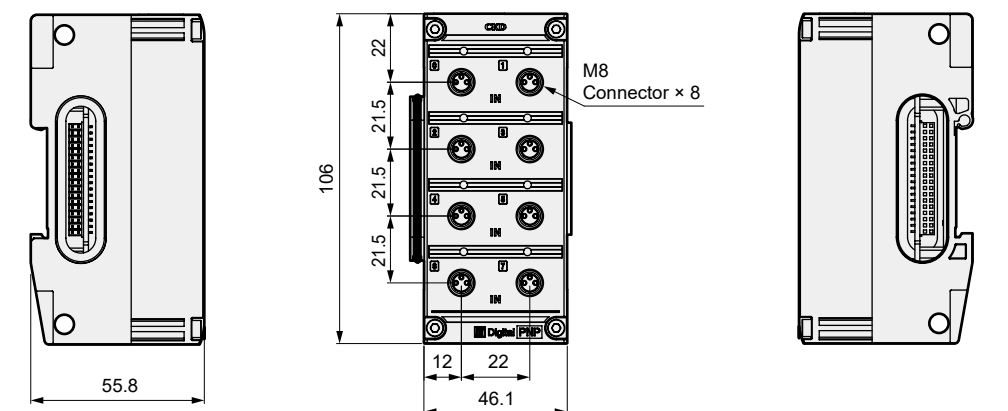
●Connector: M12

*This diagram shows the RT-XADGA16A digital input unit.



●Connector: M8

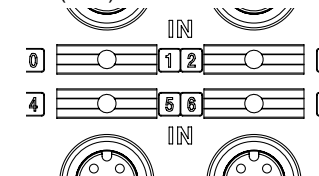
*This diagram shows the digital input unit RT-XADGB08A.



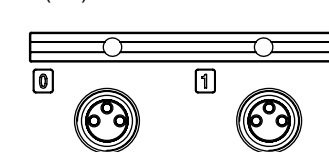
*Dimensions of the digital input unit and digital output unit are identical. However, the I/O display and polarity display differ as shown in the figure below.

●Input (A)

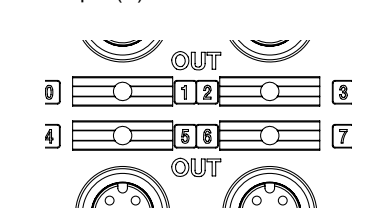
• A (M12)



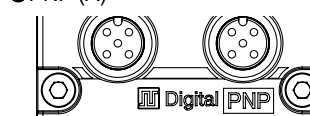
• B (M8)



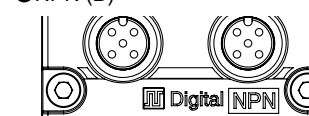
●Output (B)



●PNP (A)



●NPN (B)





Digital input unit/digital output unit

RT-XADGC / RT-XBDGC

Supports 32 points, status notification via LED
Push-in terminal block



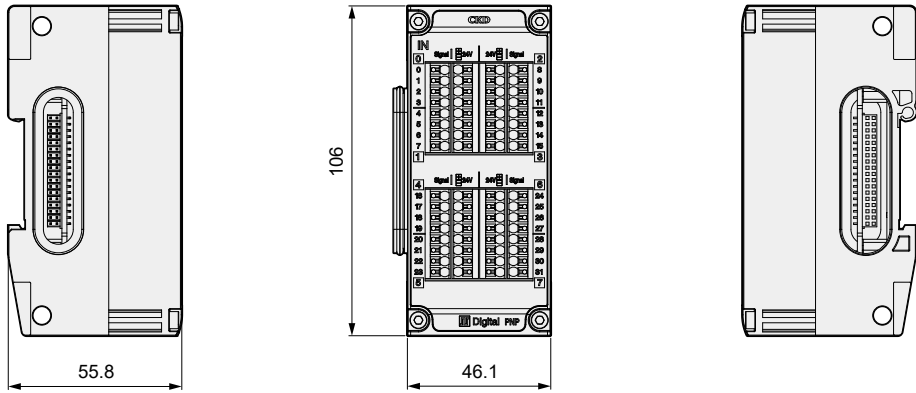
Refer to the CKD website for detailed compatible model Nos.

RT-X*DGC Series

Dimensions

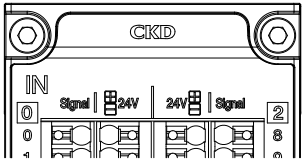
Dimensions

*This figure is the figure for the digital input unit RT-XADGC32A.

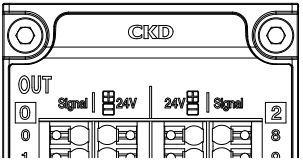


*Dimensions of the digital input unit and digital output unit are identical. However, the I/O display and polarity display differ as shown in the figure below.

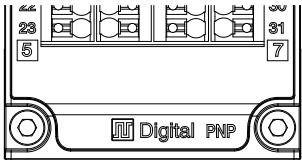
●Input (A)



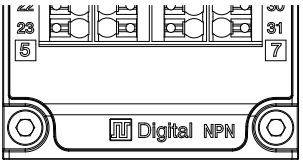
●Output (B)



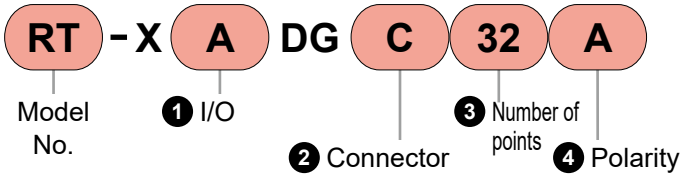
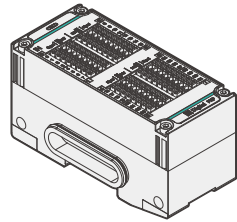
●PNP (A)



●NPN (B)



How to Order



① I/O

Code	Description
A	Input
B	Output

② Connector

Code	Description
C	Push-in terminal block

③ Number of points

Code	Description
32	32 points

④ Polarity

Code	Description
A	PNP
B	NPN

Specifications

Item		Digital input unit RT-XADGC32A/B	Digital output unit RT-XBDGC32A/B
General specifications	Size (W×H×D)	46.1 x 106 x 55.8	
	Weight	Approx. 205	
	Environmental resistance	Degree of Protection	IP40 (with manifold)
		Operating ambient temperature range	°C -10 to 55
		Working atmosphere	No corrosive gas or heavy dust
	Vibration resistance	10 to 57 Hz	Single amplitude: 0.75 mm
		57 to 150 Hz	Acceleration: 98 m/s ²
	Shock resistance	294	
I/O Common	Polarity	PNP/NPN	
	Connector	Push-in terminal block	
	Number of points	32 points (4 bytes) *1	
	Response time	ms ON: 0.8 or less / OFF: 0.8 or less (point 0 to 15) ON: 50 or less / OFF: 50 or less (point 16 to 31)	ON: 0.5 or less / OFF: 1.0 or less
	Protection/Detection Function	Yes	
Input specification	Forced Input/Output Setting	Input value can be set regardless of actual input	Output value settable regardless of process data
	Max. sensor supply current	A 0.3/block, 2/unit *2	-
	Input current	mA 5.3typ	-
	Input resistance	kΩ Approx. 4.5	-
	Sampling cycle	μs 100	-
	Input filtering time	ms 0.1, 1, 5, 10, 20	-
	Input holding time	ms Point 0-15: 1, 15, 100, 200 Point 16-31: 100, 200	-
	Supply power (for unit/input)	V 24 DC	-
Output specifications	Max. load current	A -	0.5/point, 2/unit *2
	Leakage current	mA -	0.1 or less
	Supply power (for output)	V -	24 DC
Electrical Specifications	Internal consumption Current	For unit input	220 or less
		For output	5 or less
	LED	For components/input status display/32 pcs	For components/output status display/32 pcs
Applicable wire		0.08 to 1.5 mm ² (AWG16 to 28) *When UL/cUL is supported	

*1 There are temperature conditions for the max. ON point count. Refer to the instruction manual.

*2 There are temperature conditions. Refer to the instruction manual.



Analog input unit/analog output unit

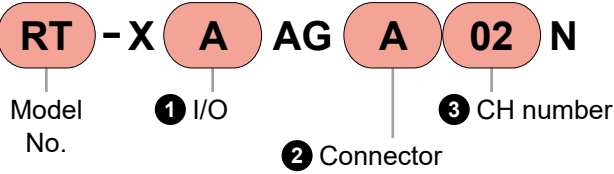
RT-XAAG / RT-XBAG

Compatible with 2CH, current and voltage can be switched with software



Refer to the CKD website for detailed compatible model Nos.

How to Order



① I/O

Code	Description
A	Input
B	Output

② Connector

Code	Description
A	M12

③ CH number

Code	Description
02	2CH

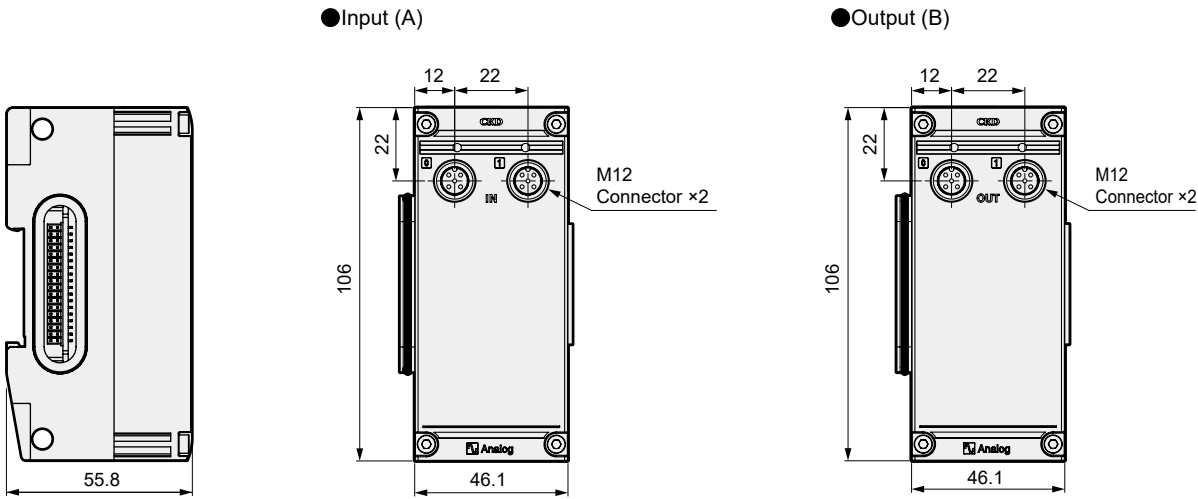
Specifications

Item			RT-XAAGA02N	RT-XBAGA02N	
General specifications	Size (W×H×D) mm		46.1 x 106 x 55.8		
	Weight g		Approx. 230		
	Environmental resistance	Degree of Protection		IP65/IP67 (with manifold)	
		Operating ambient temperature range °C		-10 to 55	
		Working atmosphere		No corrosive gas or heavy dust	
	Vibration resistance	10 to 57 Hz		Single amplitude: 0.75 mm	
		57 to 150 Hz		Acceleration: 98 m/s ²	
Shock resistance m/s ²			294		
I/O Common	Connector		M12(A) 5pin female		
	CH number		2CH		
	Resolution		12bit / 16bit	16bit	
	Data length		2byte×2CH		
	Protection/Detection Function		Yes		
	Forced Input/Output Setting		Input value can be set regardless of actual input	Output value can be set regardless of process data	
Input specification	Max. sensor supply current A		0.5/CH	-	
	Input impedance	Voltage kΩ	100	-	
		Current Ω	50	-	
	Absolute accuracy (25°C)	Voltage %F.S.	±0.5 or less	-	
		Current %F.S.	±0.6 or less	-	
	Sampling cycle ms		1 to 65535	-	
Supply power (for unit/input) V			24 DC	-	
Output specifications	Max. load current A		-	0.5/CH	
	Load impedance	Voltage kΩ	-	1 or more	
		Current Ω	-	600 or less	
	Absolute accuracy (25°C)	Voltage %F.S.	-	±0.5 or less	
		Current %F.S.	-	±0.6 or less	
	Supply power (for output) V			-	24 DC
Compatible Range	Voltage	-10 to 10 VDC	○	-	
		-5 to 5 VDC	○	-	
		0 to 10 VDC	○	○	
		0 to 5 VDC	○	○	
		1 to 5 VDC	○	○	
	Current	-20 to 20 mA DC	○	-	
		4 to 20 mA DC	○	○	
		0 to 20 mA DC	○	○	
Electrical Specifications	Internal current consumptionmA	For unit input	70 or less	25 or less	
		For output	1 or less	65 or less	
	LED		For components/input status display/2 pcs	For components/output status display/2 pcs	

RT-X*AG Series

Dimensions

Dimensions



*Dimensions of the analog input unit and analog output unit are identical. However, the I/O display differs as shown in the figure below.





IO-Link master unit

RT-XLMS

Master unit to control IO-Link devices

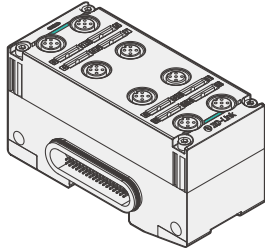


Refer to the CKD website for detailed compatible model Nos.

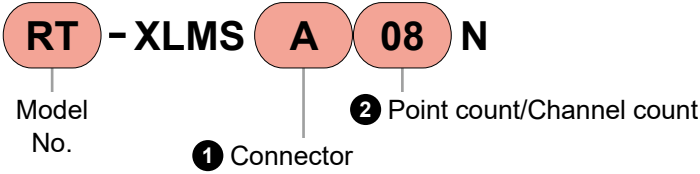
RT-XLMS Series

Dimensions

Dimensions



How to Order

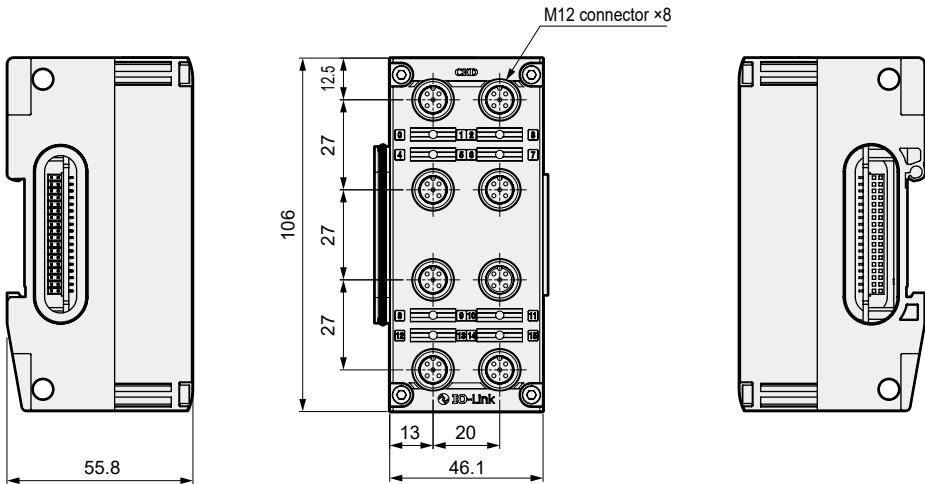


① Connector

Code	Description
A	M12

② Point count/Channel count

Code	Description
08	8 points/8CH



Specifications

Item			RT-XLMSA08N
General specifications	Size(W×H×D)		mm 46.1 x 106 x 55.8
	Weight		g Approx. 230
	Environmental resistance	Degree of Protection	IP65/IP67 (with manifold)
		Operating ambient temperature range °C	-10 to 55
		Working atmosphere	No corrosive gas or heavy dust
	Vibration resistance	10 to 57 Hz	Single amplitude: 0.75 mm
		57 to 150 Hz	Acceleration: 98 m/s ²
IO-Link Specifications	Shock resistance		m/s ² 294
	Communication protocol		V1.1
	Transmission bit rate		kbps COM1:4.8, COM2:38.4, COM3:230.4
	Number of ports (number of connectors)		8
	Connector		M12 (Class A) 5pin female
	Device supply current		A 0.2/port
	Supply power (for unit/input)		V 24 DC
Digital Input specification	Input/output data size		byte Input max. 64/output max. 64/unit
	Input		PNP/NPN
	Max. number of inputs		16
Digital Output specifications	Supply power (for unit/input)		V 24 DC
	Output		PNP/NPN
	Max. output points		8
	Max. load current		A 0.2/port
Electrical Specifications	Supply power (for unit/input)		V 24 DC
	Internal current consumption mA	For unit input	100 or less
		For output	None
Function specifications	LED		For components/IO-Link communication/I/O status display/16 pcs
	Operation mode setting		Configurable by port for IO-Link, digital input (PNP/NPN), digital output (PNP/NPN), or ineffective
	Synchronous communication between ports		Communication timing with IO-Link devices synchronized between ports
	Forced input setting		Input value can be set regardless of actual input
	Forced output setting		Output value settable regardless of process data



End unit
RT-XE/RT-XF

Units installed on the left and right ends of remote I/O



Refer to the CKD website for detailed compatible model Nos.



Power supply unit
RT-XP

Unit supplying power to device unit and I/O unit



Refer to the CKD website for detailed compatible model Nos.

How to Order

RT-XEELN00N

Model No. ① Unit type ② Main Function

① Unit type

Code	Description
E	End unit (for direct mounting)
F	End unit (for DIN rail mounting)

② Main Function

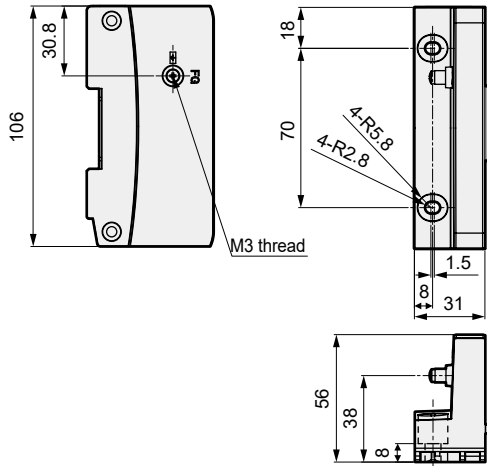
Code	Description
EL	For left end
ER	For right end

Specifications

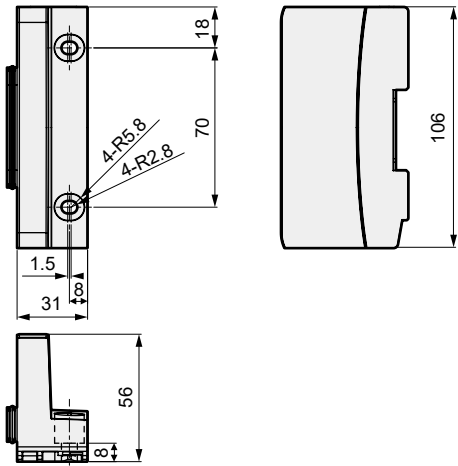
Item			RT-XEELN00N	RT-XEERN00N	RT-XFELN00N	RT-XFERN00N
General specifications	Size (W×H×D) mm		31 x 106 x 56			
	Weight g		Approx. 130	Approx. 150	Approx. 140	Approx. 165
	Environmental resistance	Degree of Protection	IP65/IP67 (with manifold)			
		Operating ambient temperature range °C	-10 to 55			
		Working atmosphere	No corrosive gas or heavy dust			
Electrical specs.	Terminating resistor for internal bus		Yes			
	FG terminal		Yes (M3 thread used)	None	Yes (M3 thread used)	None
Function specs.	Mounting Method		Direct (M5-30mm or larger threads used)		DIN rail	

Dimensions

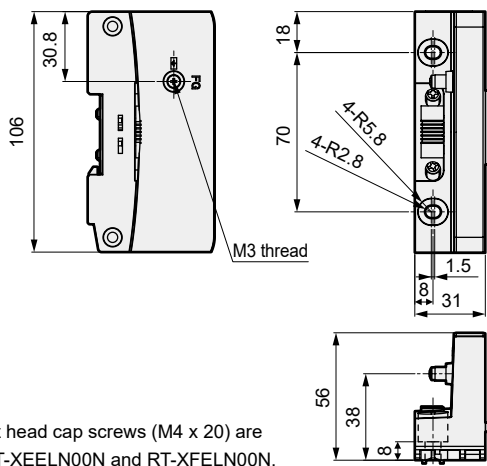
●RT-XEELN00N



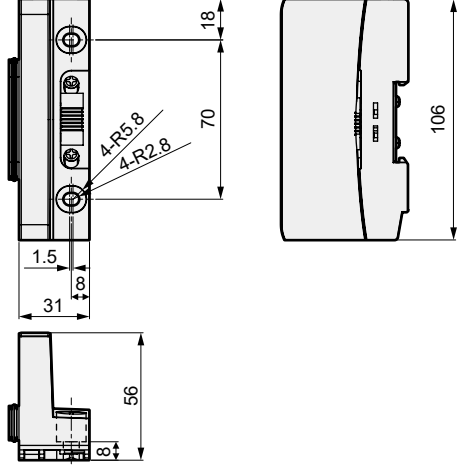
●RT-XEERN00N



●RT-XFELN00N



●RT-XFERN00N



*Hexagon socket head cap screws (M4 x 20) are supplied with RT-XEELN00N and RT-XFELN00N.

How to Order

RT-XP24A01N

Model No. ① Connector ② Point count/Channel count

① Connector

Code	Description
A	M12

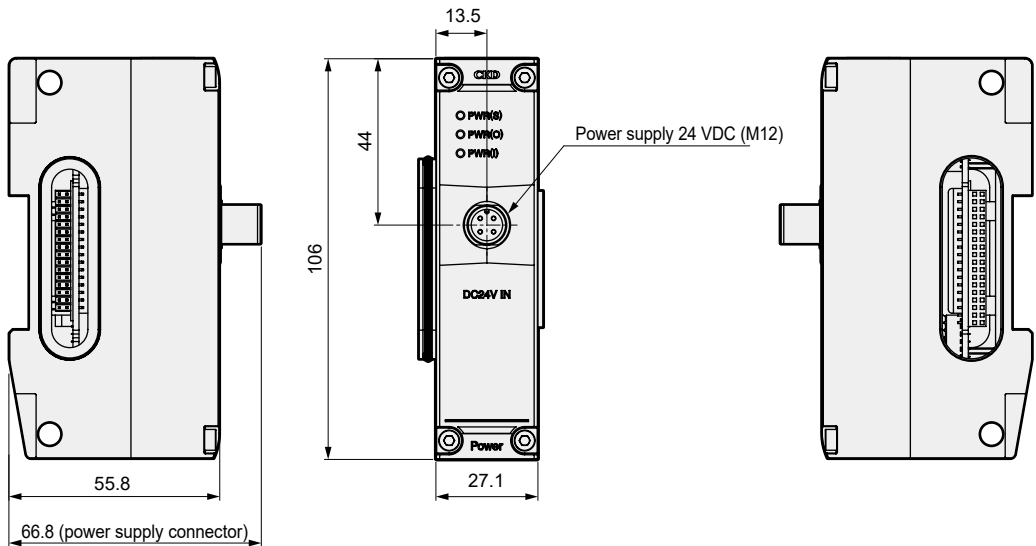
② Point/Channel count

Code	Description
01	1 point/1 CH

Specifications

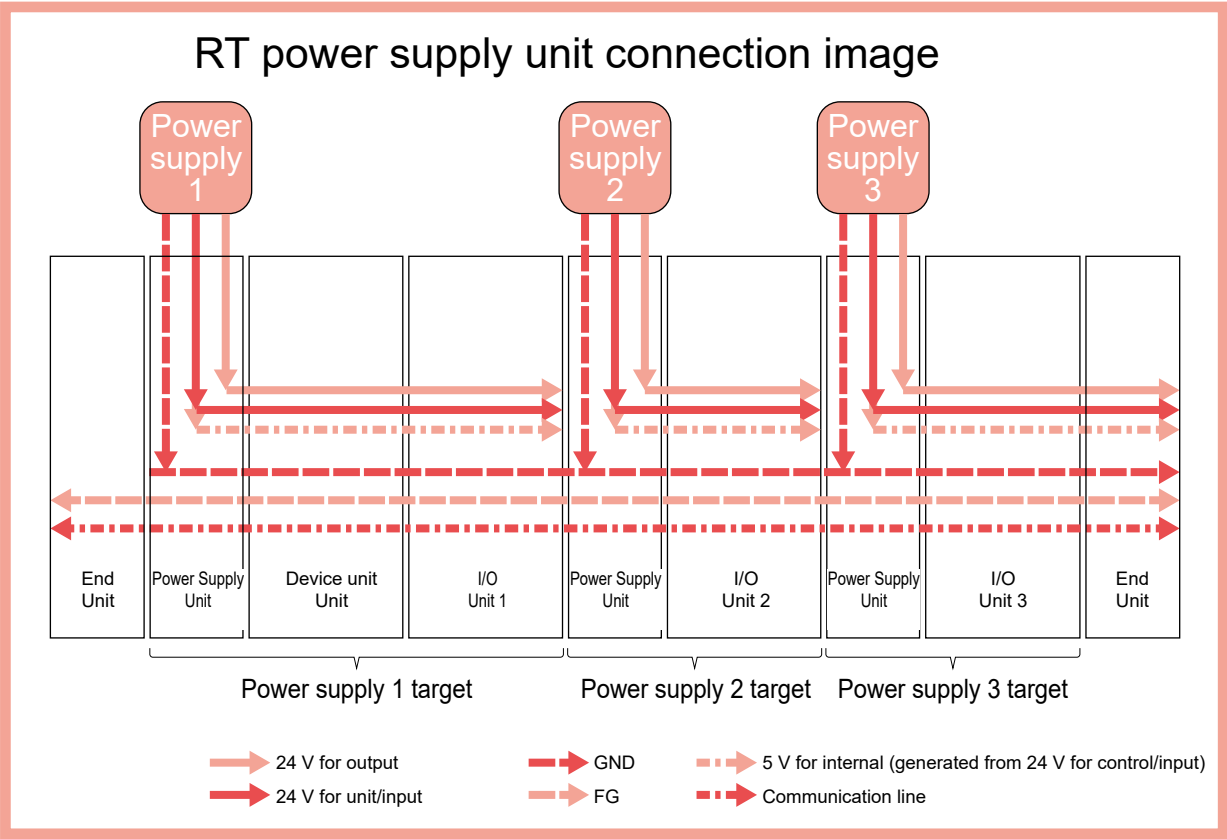
Item			RT-XP24A01N
General specifications	Size (W×H×D)mm		27.1 x 106 x 55.8
	Weightg		Approx. 125
	Environmental resistance	Degree of Protection	IP65/IP67 (with manifold)
		Operating ambient temperature range °C	−10 to 55
	Working atmosphere		No corrosive gas or heavy dust
Input specification	Input connector		M12(A) 4pin male
	Power supply (for unit/input)		24 VDC ±10% Class2 3A
	Supply power (for output)		24VDC +10% -5% Class2 3A
Electrical Specifications	Protection function		Yes
	LED		For power status display/3 pcs

Dimensions



Power supply selection example

- Multiple power supply units can be positioned anywhere.
- When using multiple units, power is supplied to the I/O unit on the right as shown in the figure below.



- Power supply unit layout example
Arrange the power supply system so that the total current consumption of each power supply system (24 V for output of each power supply unit and 24 V for unit and input) x 1.6 does not exceed the supply capacity of the power supply unit (3 A).
- The power supply for unit/input supplies power to unit internal operation and external input components.
- The power supply for output supplies power to internal output operation and external output components.

1. To separate the output side power system of the digital output unit

No.	Unit	Current consumption (mA)				Total by power supply unit (mA)	
		For unit input		For output		For unit input	For output
		Internal	Exterior	Internal	Exterior		
1	End unit	-	-	-	-	-	-
2	Power supply unit	-	-	-	-	100 + 110 + 110 + 800+200 =1320	20 + 5 + 5 = 30
3	Device unit	100	-	20	-		
4	Digital input unit	110	800 (100×8 connector)	5	-		
5	Digital input unit	110	200 (100×2 connector)	5	-	20	45+700=745
6	Power supply unit	-	-	-	-		
7	Digital output unit	20	-	45	700	-	-
8	End unit	-	-	-	-	-	-

2. When the current consumption of the connected sensors, etc., is high

No.	Unit	Current consumption (mA)				Total by power supply unit (mA)	
		For unit input		For output		For unit input	For output
		Internal	Exterior	Internal	Exterior		
1	End unit	-	-	-	-	-	-
2	Power supply unit	-	-	-	-	100+110+1520 =1730	20 + 5 = 25
3	Device unit	100	-	20	-		
4	Digital input unit	110	1520 (190×8 connector)	5	-		
5	Power supply unit	-	-	-	-	20	45+700=745
6	Digital output unit	20	-	45	700		
7	End unit	-	-	-	-	-	-

3. When using the IO-Link master unit

No.	Unit	Current consumption (mA)				Total by power supply unit (mA)	
		For unit input		For output		For unit input	For output
		Internal	Exterior	Internal	Exterior		
1	End unit	-	-	-	-	-	-
2	Power supply unit	-	-	-	-	100 + 100 + 100 + 100 + 360 + 360+360 =1480	20
3	Device unit	100	-	20	-		
4	IO-Link master unit	100	360 (With 8 CKD FSM3 units connected)	-	-		
5	IO-Link master unit	100	360 (With 8 CKD FSM3 units connected)	-	-		
6	IO-Link master unit	100	360 (CKD FSM3 with 8 units connected)	-	-	100 + 100 + 800+800 =1800	-
7	Power supply unit	-	-	-	-		
8	IO-Link master unit *Digital input mode	100	800 (100×8 connector)	-	-		
9	IO-Link master unit *Digital output mode	100	800 (100×8 connector)	-	-	-	-
10	End unit	-	-	-	-	-	-

*The IO-Link master unit does not use power supply for output

*In the selection example, the current consumption of 1 mA or less is indicated with "-" and excluded from the calculation.

RT-E / RT-F

Remote I/O



CONTENTS

■ Manifold Configuration Explanation and Parts List	18
■ How to Order	19
■ Dimensions	20
■ Related Products	22
⚠ Safety Precautions	36



Remote I/O

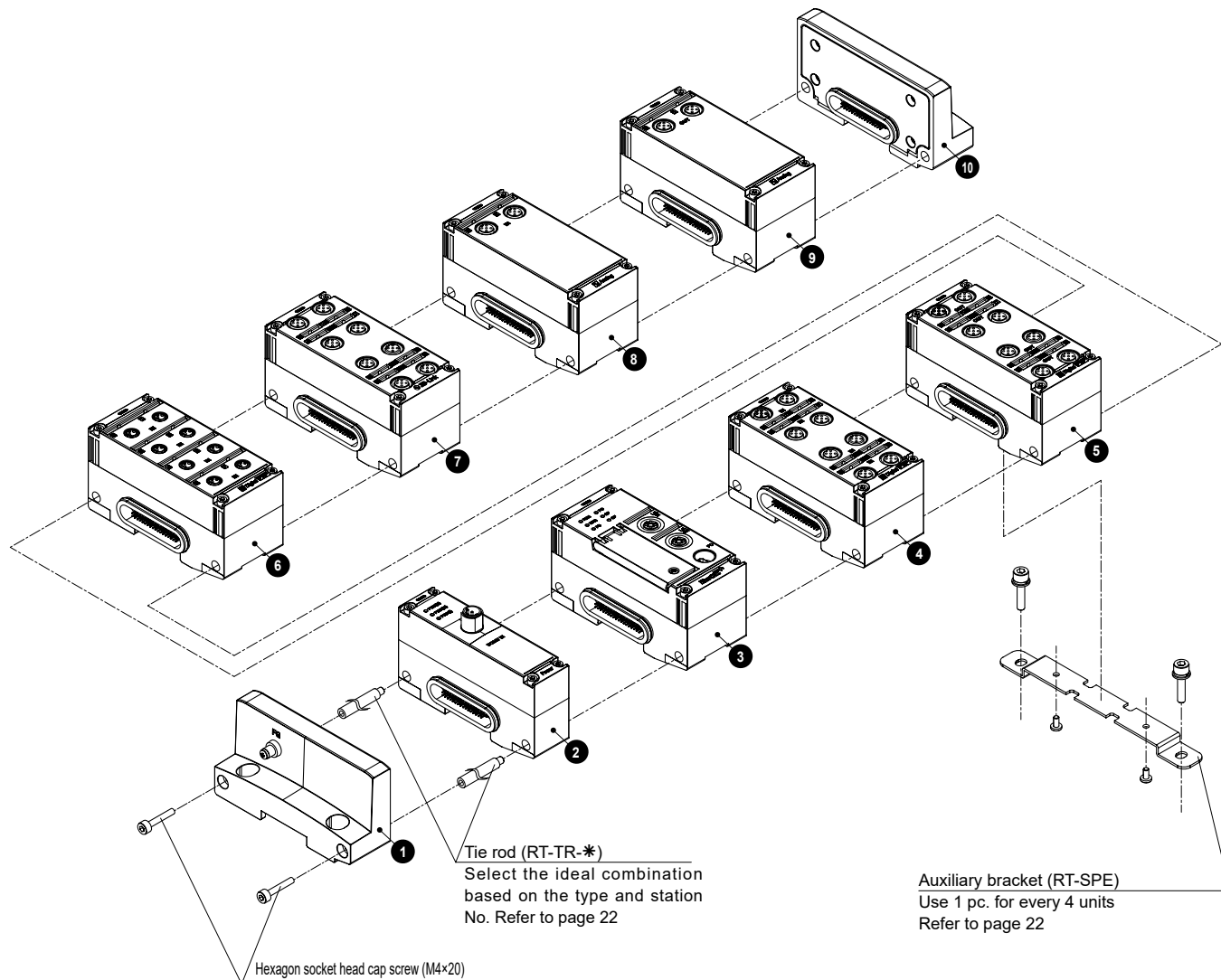
RT-E / RT-F Series

Remote I/O system that can be created by freely combining units



Refer to the CKD website for detailed compatible model Nos.

Manifold configuration explanation and parts list



Main configuration parts list

(For details, refer to page 3 to page 13.)

Part No.	Configuration parts name	Model No. (example)
1	End unit	RT-XEELN00N
2	Power supply unit	RT-XP24A01N
3	Device unit	RT-XTECN00N
4	Digital input unit	RT-XADGA16A
5	Digital output unit	RT-XBDGA16A
6	Digital input unit	RT-XADGB08A
7	IO-Link master unit	RT-XLMSA08N
8	Analog input unit	RT-XAAGA02N
9	Analog output unit	RT-XBAGA02N
10	End unit	RT-XEERN00N

Weight

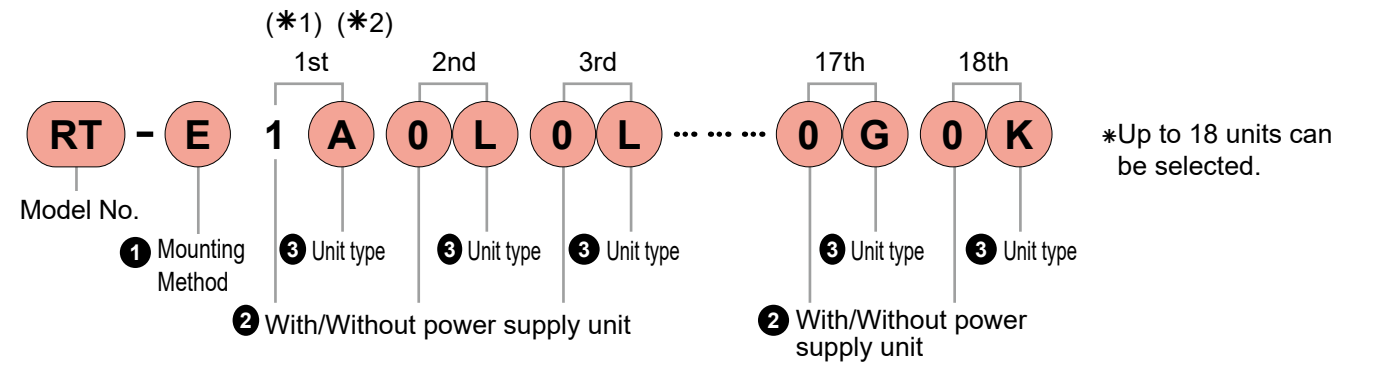
Unit type	Model No.	Weight (g)
End unit	RT-XEELN00N	130
Power supply unit	RT-XP24A01N	125
Device unit	RT-XTECN00N	230
Digital input unit	RT-XADGA16A	245
Digital output unit	RT-XBDGA16A	245
Digital input unit	RT-XADGB08A	245
IO-Link master unit	RT-XLMSA08N	230
Analog input unit	RT-XAAGA02N	230
Analog output unit	RT-XBAGA02N	230
End unit	RT-XEERN00N	150

*Includes the weight of tie rod and hexagon socket head cap screws.

RT-E / RT-F Series

How to Order

How to Order



1 Mounting Method

Code	Description
E	Direct mounting
F	DIN mounting

*1: The left and right end units are automatically selected according to the mounting method.

*2: Total length, including mounting rail, must be 962.5 mm or less. For the mounting rail length, refer to Page 21.

2 With/Without power supply unit

Code	Description
0	Without power supply unit
1	Power supply unit available (RT-XP24A01N)

*1: *2 When selecting the first unit, be sure to select "1" with power supply unit.

*2: *2 The selection of "Power Supply Unit: with/without" *3 must always be made in conjunction with the "Unit Type" selection. The power supply unit will be placed to the left of the selected unit.

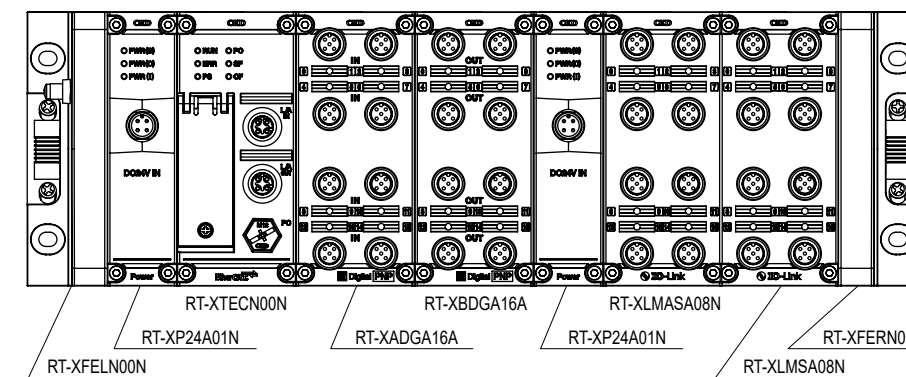
3 Unit type

Unit name	Description	Discrete model No.	Code
Device unit	EtherCAT compatible	RT-XTECN00N	A
	EtherNet/IP compatible	RT-XTENN00N	B
	PROFINET compatible	RT-XTEPN00N	P
Digital input	M12/16 points/PNP	RT-XADGA16A	C
	M12/16 points/NPN	RT-XADGA16B	D
	M8/8 points/PNP	RT-XADGB08A	E
	M8/8 points/NPN	RT-XADGB08B	F
Analog input	2CH	RT-XAAGA02N	G
Digital output	M12/16 points/PNP	RT-XBDGA16A	H
	M12/16 points/NPN	RT-XBDGA16B	J

Unit name	Description	Discrete model No.	Code
Analog Output	2CH	RT-XBAGA02N	K
IO-Link master	8-port	RT-XLMSA08N	L
Digital input	Push-in terminal block/32 points/PNP	RT-XADGC32A	M
	Push-in terminal block/32 points/NPN	RT-XADGC32B	N
Digital output	Push-in terminal block/32 points/PNP	RT-XBDGC32A	R
	Push-in terminal block/32 points/NPN	RT-XBDGC32B	S

*1: Only one device unit unit can be selected within the manifold.

*2: Up to 18 units can be selected for connection.



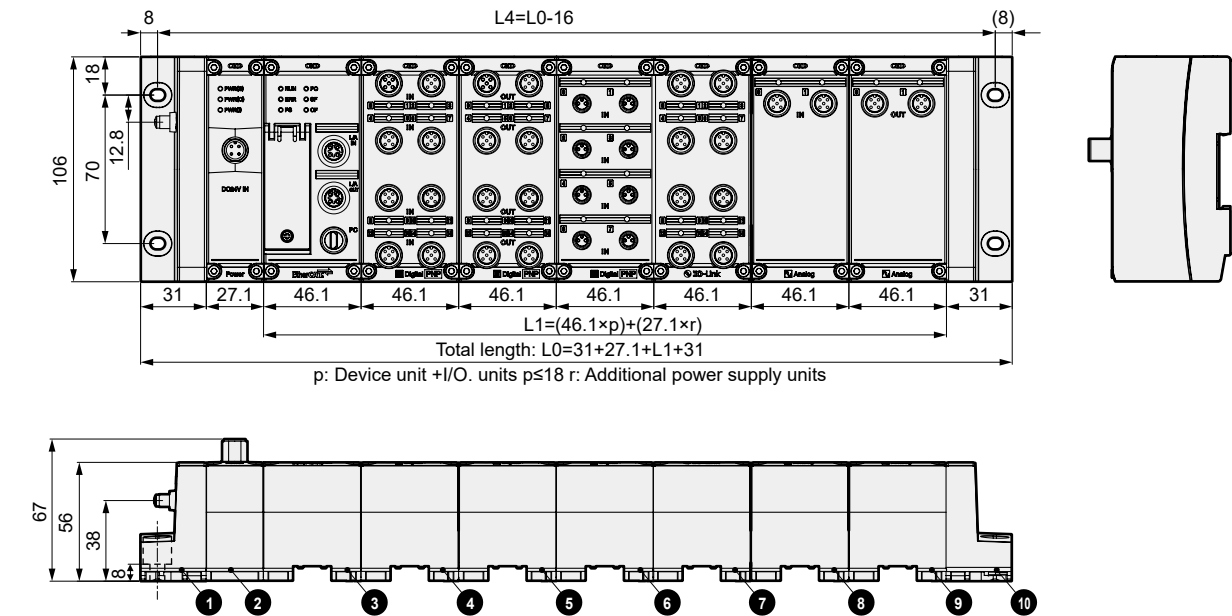
[Example of model No.]

RT-F1A0C0H1L0L

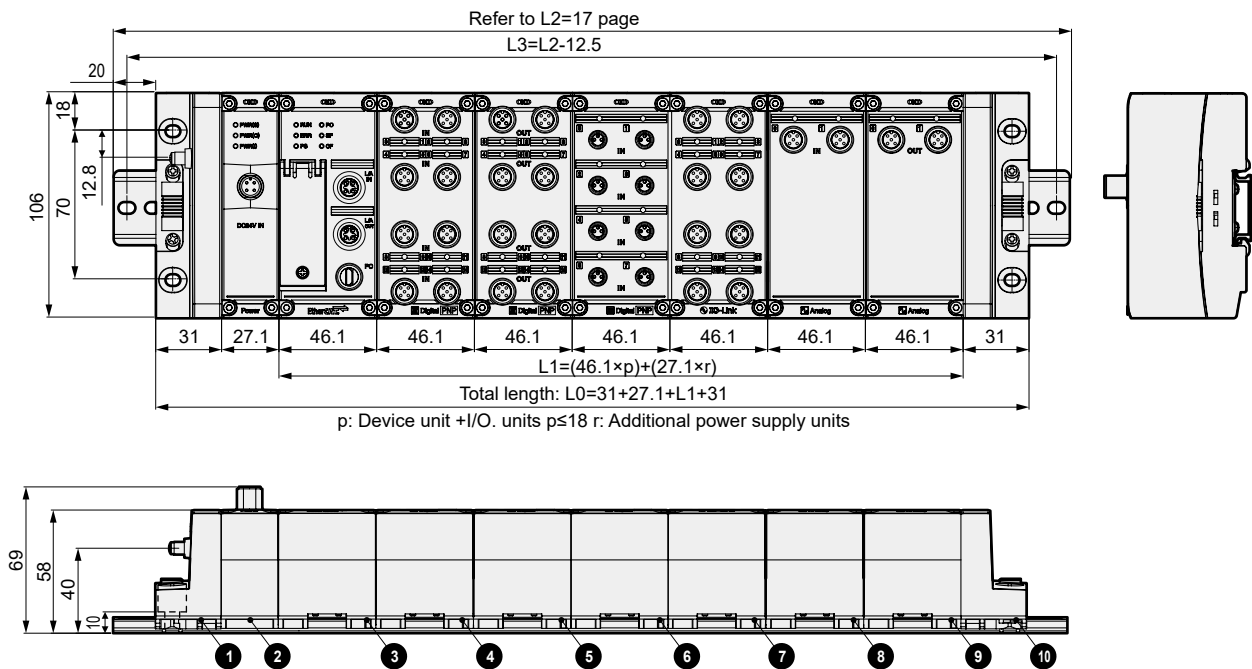
- 1 Mounting Method: DIN mounting
- 2 With/Without power supply unit: With power supply unit
- 3 Unit type: RT-XTECN00N
- 2 With/Without power supply unit: Without power supply unit
- 3 Unit type: RT-XADGA16A
- 2 With/Without power supply unit: Without power supply unit
- 3 Unit type: RT-XBDGA16A
- 2 With/Without power supply unit: With power supply unit
- 3 Unit type: RT-XLMSA08N
- 2 With/Without power supply unit: Without power supply unit
- 3 Unit type: RT-XLMSA08N

Dimensions

●RT-E * (Direct mounting)



●RT-F* (DIN rail mount)



Part No.	Configuration parts name	Part No.	Configuration parts name
1	End unit	6	Digital input unit
2	Power supply unit	7	IO-Link master unit
3	Device unit	8	Analog input unit
4	Digital input unit	9	Analog output unit
5	Digital output unit	10	End unit

How to calculate length L

How to calculate total length L

End Unit Power Supply Unit End Unit
 $L0 = 31 + 27.1 + L1 + 31$

How to calculate remote I/O length L

I/O Unit Power Supply Unit
 $L1 = (46.1 \times p) + (27.1 \times r)$
p: Device unit +I/O Number of units $p \leq 18$
r: Additional power supply units

Mounting rail

- When an RT-F * (DIN rail mount) manifold is selected, the product will be shipped with a standard DIN rail mounted.
- Determine standard length using the calculation method shown below.
- When a mounting rail other than the standard length is required, specify the length (L2) in the following model No. and purchase separately.

RT-DIN-length

● How to determine the length of the mounting rail

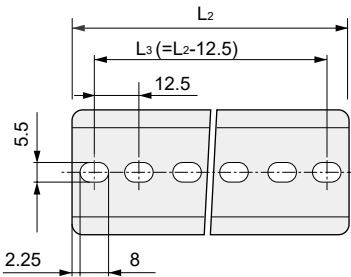
$L2=L2' \times 12.5$
 $L2': \frac{L0+40}{12.5} \rightarrow \text{decimals rounded up}$

Rail mounting pitch (L3) = L2 - 12.5

● Mounting rail length quick reference table

L0	172.5 to 185	185 to 197.5	197.5 to 210	210 to 222.5	222.5 to 235	235 to 247.5	247.5 to 260	260 to 272.5	272.5 to 285	285 to 297.5	297.5 to 310	310 to 322.5	322.5 to 335	335 to 347.5	347.5 to 360	360 to 372.5	372.5 to 385	385 to 397.5	397.5 to 410	410 to 422.5	422.5 to 435	435 to 447.5	447.5 to 460	460 to 472.5	472.5 to 485	485 to 497.5	497.5 to 510	510 to 522.5	522.5 to 535	535 to 547.5
L2	225	237.5	250	262.5	275	287.5	300	312.5	325	337.5	350	362.5	375	387.5	400	412.5	425	437.5	450	462.5	475	487.5	500	512.5	525	537.5	550	562.5	575	587.5
L3	212.5	225	237.5	250	262.5	275	287.5	300	312.5	325	337.5	350	362.5	375	387.5	400	412.5	425	437.5	450	462.5	475	487.5	500	512.5	525	537.5	550	562.5	575
L0	547.5 to 560	560 to 572.5	572.5 to 585	585 to 597.5	597.5 to 610	610 to 622.5	622.5 to 635	635 to 647.5	647.5 to 660	660 to 672.5	672.5 to 685	685 to 697.5	697.5 to 710	710 to 722.5	722.5 to 735	735 to 747.5	747.5 to 760	760 to 772.5	772.5 to 785	785 to 797.5	797.5 to 810	810 to 822.5	822.5 to 835	835 to 847.5	847.5 to 860	860 to 872.5	872.5 to 885	885 to 897.5	897.5 to 910	910 to 922.5
L2	600	612.5	625	637.5	650	662.5	675	687.5	700	712.5	725	737.5	750	762.5	775	787.5	800	812.5	825	837.5	850	862.5	875	887.5	900	912.5	925	937.5	950	962.5
L3	587.5	600	612.5	625	637.5	650	662.5	675	687.5	700	712.5	725	737.5	750	762.5	775	787.5	800	812.5	825	837.5	850	862.5	875	887.5	900	912.5	925	937.5	950

*1: L2 must be 962.5 mm or less.



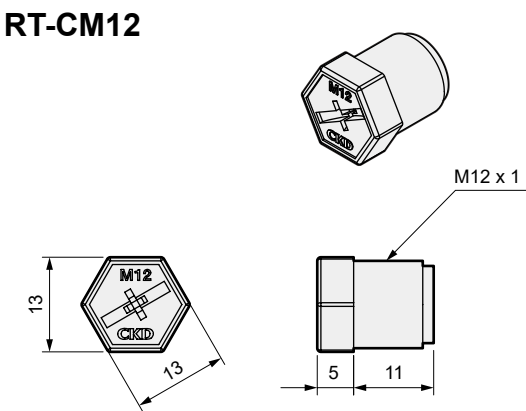
Tie rod combination

When increasing or decreasing the number of stations, purchase a tie rod with reference to the table below.

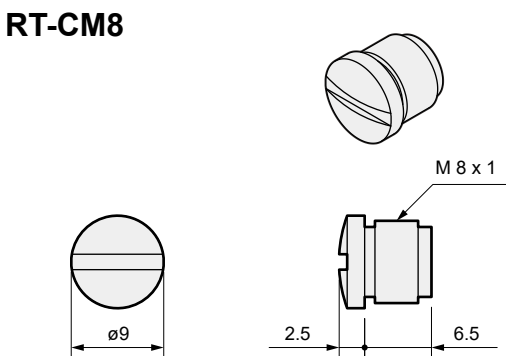
	Number of device unit +I/O units																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
RT-TR-1	1	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	1	-
RT-TR-2	-	1	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	1
RT-TR-3	-	-	1	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-
RT-TR-4	-	-	-	1	1	1	1	-	-	-	-	1	1	1	1	-	-	-
RT-TR-8	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	2	2
RT-TR-P	1 or more number of power supply units																	
RT-TR-E	1																	

Related products

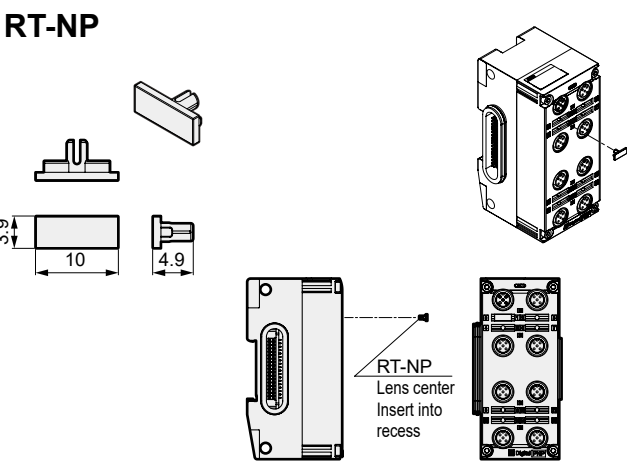
● M12 Waterproof Cap Sold Individually (1 pc.)



● M12 Waterproof Cap Sold Individually (1 pc.)



● Nameplate Sales unit is 10



● Tie rod



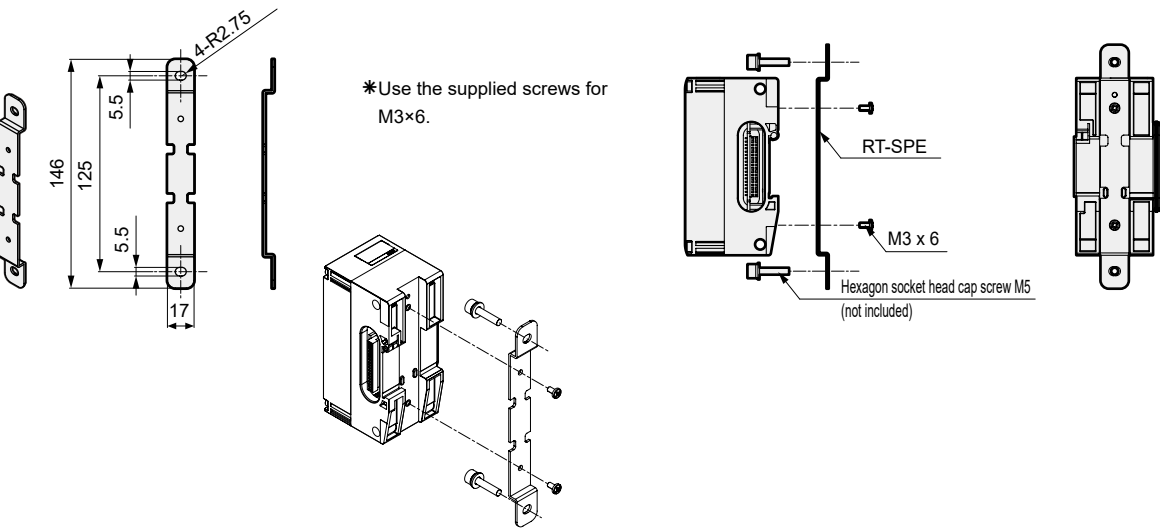
① Type

Code	Description	Length (mm)
1	For 1 I/O unit (2 pcs)	46
2	For 2 I/O units (2 pcs)	92
3	For 3 I/O units (2 pcs)	138
4	For 4 I/O units (2 pcs)	184
8	For 8 I/O units (2 pcs)	368
P	For power supply unit (2 pcs)	27
E	End unit right end (2 pcs)	35

*screws are not included.
*When purchasing an individual unit (RT-X *), a tie rod is included according to the unit type.
*When purchasing the manifold (RT-E/RT-F), a tie rod with the appropriate length is included. (For details Page 21.)

● Auxiliary bracket set

RT-SPE (Direct mounting)



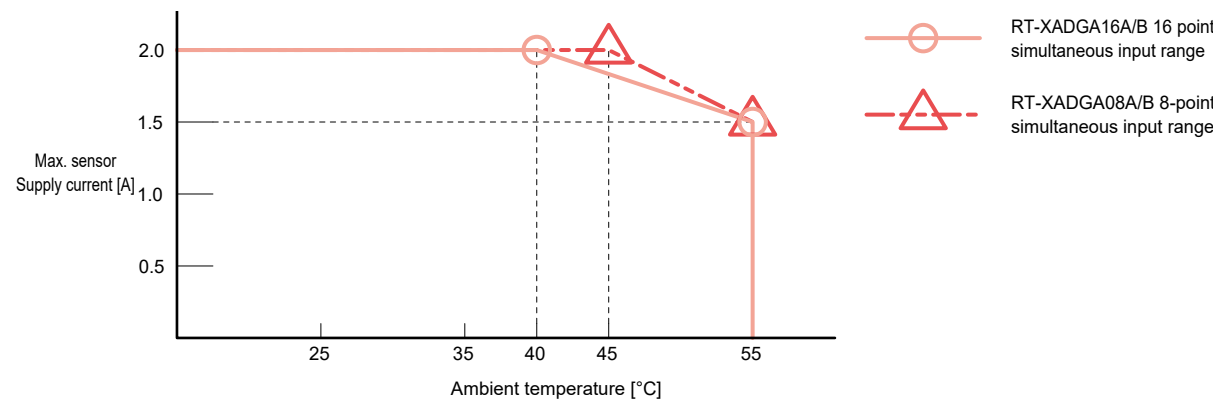
MEMO

Consider the following restrictions when selecting/configuring the remote I/O unit.

- The end unit (RT-XEELN00N or RT-XFELN00N) is required on the left end.
- The end unit (RT-XEERN00N or RT-XFERN00N) is required at the right end.
- After the end unit at the left end, a power supply unit (RT-XP24A01N) is required.
- The I/O units and power supply units can be placed at any position between the power supply unit installed next to the left end and the end unit installed at the right end.
- Only one device unit unit can be used as a whole.
- The maximum number of units to be connected is 18, including the device unit unit and I/O unit.
- The total length must be 922.5 mm or less.

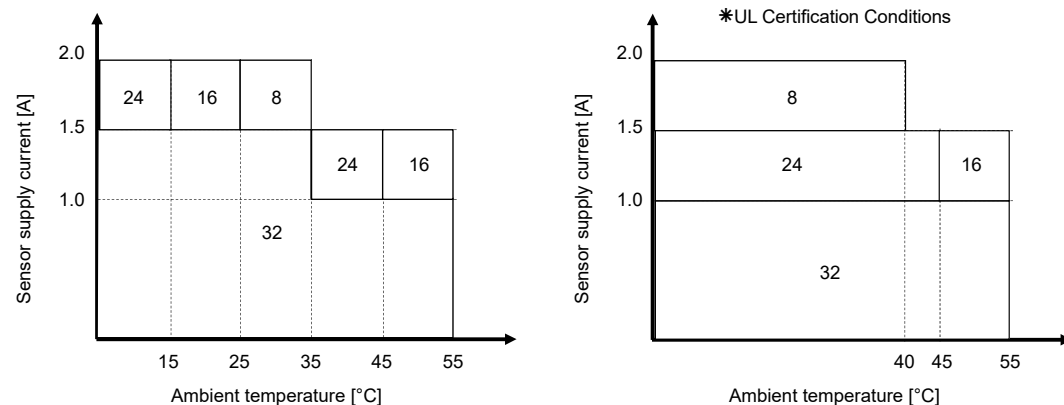
Notes on wiring and communication

- The working power is 24 VDC.
- Contact CKD for usable PLC models, host unit model numbers and communication system specifications. (Refer to Page 34)
- Securely tighten each connector (power/communication/signal). Close and securely tighten the device unit switch cover after each setting. (Proper tightening torque 0.08 to 0.12 N·m) Similarly, attach waterproof caps to the device unit M12 connector, USB connector, and open connectors of each I/O unit. (Proper tightening torque 0.1 N·m)
- IP40 when terminal block is included.
- Make sure the proper tightening torque of the connector is in accordance with the specified torque in the instruction manual.
- Refer to the device unit unit instruction manual and I/O unit instruction manuals for details on assigning transmission data.
- The limits shown in the figure below are depending on the ambient temperature of the digital input unit.



For RT-XADGC32A/B, the max. number of ON points is limited by the ambient temperature and sensor supply current. Refer to the graph below.

(left: General conditions, right: UL Certification conditions)



The RT-XBDGC32A/B can be used at up to 1.5 A/unit over 25°C to 55°C ambient temperature. (The unit can be used at up to 2 A per unit at an ambient temperature of up to 30°C, provided that each of the output point ranges (0-7, 8-15, 16-23, 24-31) is limited to 0.5 A.)

UL certified conditions are 1.5 A/unit over the entire temperature range.

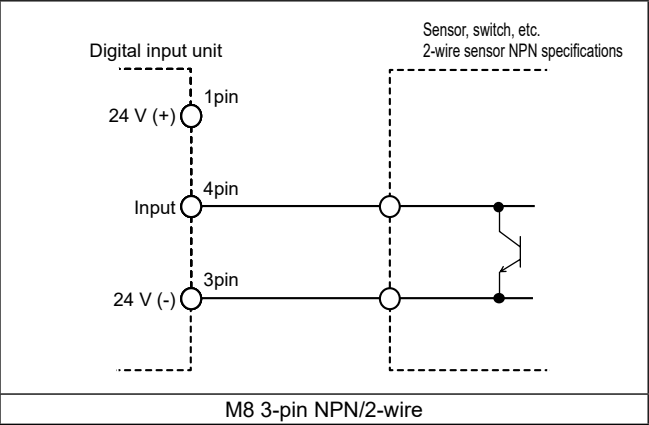
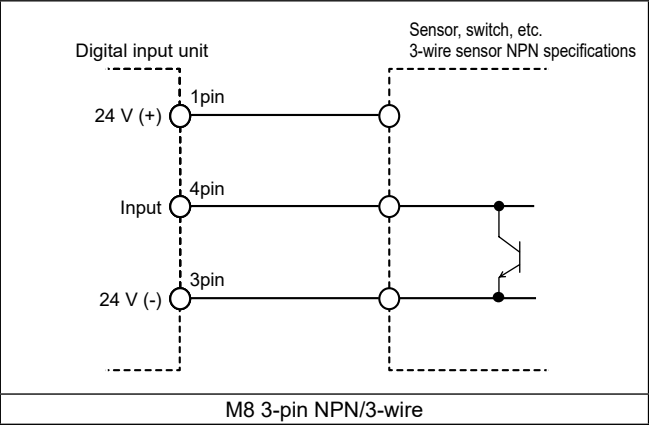
Model No.	LED display	Connector pins overview																		
RT-XTECN00N	○ RUN ○ PO ○ ERR ○ SF ○ PS ○ CF <table> <tr> <th>LED name</th><th>Indicator description</th></tr> <tr> <td>RUN</td><td>Communication status of EtherCAT is indicated by the LED (green) state (OFF/ON/ blinking) (green during normal communication)</td></tr> <tr> <td>ERR</td><td>Abnormal status of EtherCAT is indicated by the LED (red) state (OFF/ON/ blinking) (OFF during normal communication)</td></tr> <tr> <td>PS</td><td>24 V status for unit/input is displayed with red-green 2-color LEDs</td></tr> <tr> <td>PO</td><td>24 V status for output indicated by red-green 2-color LEDs</td></tr> <tr> <td>SF</td><td>Status of the entire device is indicated with red-green 2-color LEDs</td></tr> <tr> <td>CF</td><td>Status of setting changes or forced I/O is indicated with red-green 2-color LEDs</td></tr> <tr> <td>L/A IN</td><td>Status of the Ethernet port (IN side) is indicated by the LED (green) state (OFF/ON/ blinking)</td></tr> <tr> <td>L/A OUT</td><td>Status of the Ethernet port (OUT side) is indicated by the LED (green) state (OFF/ON/ blinking)</td></tr> </table>	LED name	Indicator description	RUN	Communication status of EtherCAT is indicated by the LED (green) state (OFF/ON/ blinking) (green during normal communication)	ERR	Abnormal status of EtherCAT is indicated by the LED (red) state (OFF/ON/ blinking) (OFF during normal communication)	PS	24 V status for unit/input is displayed with red-green 2-color LEDs	PO	24 V status for output indicated by red-green 2-color LEDs	SF	Status of the entire device is indicated with red-green 2-color LEDs	CF	Status of setting changes or forced I/O is indicated with red-green 2-color LEDs	L/A IN	Status of the Ethernet port (IN side) is indicated by the LED (green) state (OFF/ON/ blinking)	L/A OUT	Status of the Ethernet port (OUT side) is indicated by the LED (green) state (OFF/ON/ blinking)	1: Transmitted data, positive 2: Received data, positive 4: Received data, negative 3: Transmitted data, negative M12 4pin socket D cord • Connect the EtherCAT cable from the host components such as the PLC to the communication connector (IN). (Use M12 connector) • Prepare a connector to be used on the cable end.
LED name	Indicator description																			
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RT-XTENN00N	○ MS ○ PO ○ NS ○ SF ○ PS ○ CF <table> <tr> <th>LED name</th><th>Indicator description</th></tr> <tr> <td>MS</td><td>EtherNet/IP component status is indicated by the LED (red/green) state/ blinking (green during normal communication)</td></tr> <tr> <td>NS</td><td>Communication status of EtherNet/IP is indicated by the LED (red/green) state/ blinking (green during normal communication)</td></tr> <tr> <td>PS</td><td>24 V status for unit/input is displayed with red-green 2-color LEDs</td></tr> <tr> <td>PO</td><td>24 V status for output indicated by red-green 2-color LEDs</td></tr> <tr> <td>SF</td><td>Status of the entire device is indicated with red-green 2-color LEDs</td></tr> <tr> <td>CF</td><td>Status of setting changes or forced I/O is indicated with red-green 2-color LEDs</td></tr> <tr> <td>L/A IN</td><td>Status of the Ethernet port (IN side) is indicated by the LED (green) state (OFF/ON/ blinking)</td></tr> <tr> <td>L/A OUT</td><td>Status of the Ethernet port (OUT side) is indicated by the LED (green) state (OFF/ON/ blinking)</td></tr> </table>	LED name	Indicator description	MS	EtherNet/IP component status is indicated by the LED (red/green) state/ blinking (green during normal communication)	NS	Communication status of EtherNet/IP is indicated by the LED (red/green) state/ blinking (green during normal communication)	PS	24 V status for unit/input is displayed with red-green 2-color LEDs	PO	24 V status for output indicated by red-green 2-color LEDs	SF	Status of the entire device is indicated with red-green 2-color LEDs	CF	Status of setting changes or forced I/O is indicated with red-green 2-color LEDs	L/A IN	Status of the Ethernet port (IN side) is indicated by the LED (green) state (OFF/ON/ blinking)	L/A OUT	Status of the Ethernet port (OUT side) is indicated by the LED (green) state (OFF/ON/ blinking)	1: Transmitted data, positive 2: Received data, positive 4: Received data, negative 3: Transmitted data, negative M12 4pin socket D cord • Connect the EtherNet/IP cable from the host components such as the PLC to the communication connector (IN). (Use M12 connector) • Prepare a connector to be used on the cable end.
LED name	Indicator description																			
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RT-XTEPN00N	○ RUN ○ PO ○ BF ○ SF ○ PS ○ CF <table> <tr> <th>LED name</th><th>Indicator description</th></tr> <tr> <td>RUN</td><td>PROFINET components status is indicated by the LED (green) state/ blinking (green during normal communication)</td></tr> <tr> <td>BF</td><td>Communication status of PROFINET components is indicated by the LED (red/green) state/ blinking (OFF during normal communication)</td></tr> <tr> <td>PS</td><td>24 V status for unit/input is displayed with red-green 2-color LEDs</td></tr> <tr> <td>PO</td><td>24 V status for output indicated by red-green 2-color LEDs</td></tr> <tr> <td>SF</td><td>Status of the entire device is indicated with red-green 2-color LEDs</td></tr> <tr> <td>CF</td><td>Status of setting changes or forced I/O is indicated with red-green 2-color LEDs</td></tr> <tr> <td>L/A IN</td><td>Status of the Ethernet port (IN side) is indicated by the LED (green) state (OFF/ON/ blinking)</td></tr> <tr> <td>L/A OUT</td><td>Status of the Ethernet port (OUT side) is indicated by the LED (green) state (OFF/ON/ blinking)</td></tr> </table>	LED name	Indicator description	RUN	PROFINET components status is indicated by the LED (green) state/ blinking (green during normal communication)	BF	Communication status of PROFINET components is indicated by the LED (red/green) state/ blinking (OFF during normal communication)	PS	24 V status for unit/input is displayed with red-green 2-color LEDs	PO	24 V status for output indicated by red-green 2-color LEDs	SF	Status of the entire device is indicated with red-green 2-color LEDs	CF	Status of setting changes or forced I/O is indicated with red-green 2-color LEDs	L/A IN	Status of the Ethernet port (IN side) is indicated by the LED (green) state (OFF/ON/ blinking)	L/A OUT	Status of the Ethernet port (OUT side) is indicated by the LED (green) state (OFF/ON/ blinking)	1: Transmitted data, positive 2: Received data, positive 4: Received data, negative 3: Transmitted data, negative M12 4pin socket D cord • Connect the PROFINET cable from the host components such as the PLC to the communication connector (IN). (Use M12 connector) • Prepare a connector to be used on the cable end.
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Model No.	LED display	Connector pins overview																						
RT-XP24A01N	○ PWR(S) ○ PWR(O) ○ PWR(I) <table><tr><th>LED name</th><th>Indicator description</th></tr><tr><td>PWR(S)</td><td>Status of the unit/input 24 V is indicated by the LED (green). Green lamp is ON when normal.</td></tr><tr><td>PWR(O)</td><td>Output 24 V status is indicated with LED (green). Green lamp is ON when normal.</td></tr><tr><td>PWR(I)</td><td>Internal power supply status is indicated with LED (green). Green lamp is ON when normal.</td></tr></table>	LED name	Indicator description	PWR(S)	Status of the unit/input 24 V is indicated by the LED (green). Green lamp is ON when normal.	PWR(O)	Output 24 V status is indicated with LED (green). Green lamp is ON when normal.	PWR(I)	Internal power supply status is indicated with LED (green). Green lamp is ON when normal.	2: 24 V (+) Output 1: 24 V (+) Input for Unit 3: 24 V (-) Input for Unit 4: 24 V (-) Output M12 4pin plug A cord • The power supply for unit/input and output are separate power supplies. Supply power from the power supply connector (24 VDC). (Use M12 connector) • Prepare a connector to be used on the cable end.														
LED name	Indicator description																							
PWR(S)	Status of the unit/input 24 V is indicated by the LED (green). Green lamp is ON when normal.																							
PWR(O)	Output 24 V status is indicated with LED (green). Green lamp is ON when normal.																							
PWR(I)	Internal power supply status is indicated with LED (green). Green lamp is ON when normal.																							
RT-XADGA16* RT-XADGB08*	• M12 connector (A) Point 0 LED Point 1 LED Point 2 LED Point 3 LED • M8 connector (B) Point 0 LED Point 1 LED <table><tr><th>LED state</th><th>Point LED display description</th></tr><tr><td>Red lit</td><td>Internal bus disconnection</td></tr><tr><td>Red blinking (rapid)</td><td>Hardware breakdown</td></tr><tr><td>Red blinking (slow)</td><td>Power line error detection</td></tr><tr><td>Yellow lit</td><td>None</td></tr><tr><td>Yellow blinking (rapid)</td><td>ON times Threshold exceeded</td></tr><tr><td>Yellow blinking (slow)</td><td>None</td></tr><tr><td>Green blinking (rapid)</td><td>None</td></tr><tr><td>Green blinking (slow)</td><td>None</td></tr><tr><td>Green lit</td><td>Input ON</td></tr><tr><td>OFF</td><td>Power supply OFF or input OFF</td></tr></table>	LED state	Point LED display description	Red lit	Internal bus disconnection	Red blinking (rapid)	Hardware breakdown	Red blinking (slow)	Power line error detection	Yellow lit	None	Yellow blinking (rapid)	ON times Threshold exceeded	Yellow blinking (slow)	None	Green blinking (rapid)	None	Green blinking (slow)	None	Green lit	Input ON	OFF	Power supply OFF or input OFF	• M12 connector (A) 1: 24 V (+) Input for Unit 2: Input 2 5: FG 4: Input 1 3: 24 V (-) Input for Unit M12 5pin socket A cord • M8 connector (B) 4: Input 1 3: 24V (-) Input for Unit 1: 24 V Input for Unit M8 3pin socket A cord • The input types include PNP and NPN • Prepare a cable-side connector
LED state	Point LED display description																							
Red lit	Internal bus disconnection																							
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RT-XBDGA16*	Point 0 LED Point 1 LED Point 2 LED Point 3 LED <table><tr><th>LED state</th><th>Point LED display description</th></tr><tr><td>Red lit</td><td>Internal bus disconnection</td></tr><tr><td>Red blinking (rapid)</td><td>Hardware breakdown</td></tr><tr><td>Red blinking (slow)</td><td>Signal wire error detection</td></tr><tr><td>Yellow lit</td><td>Output power supply error</td></tr><tr><td>Yellow blinking (rapid)</td><td>ON times Threshold exceeded</td></tr><tr><td>Yellow blinking (slow)</td><td>None</td></tr><tr><td>Green blinking (rapid)</td><td>None</td></tr><tr><td>Green blinking (slow)</td><td>None</td></tr><tr><td>Green lit</td><td>With output</td></tr><tr><td>OFF</td><td>Power supply OFF or no output</td></tr></table>	LED state	Point LED display description	Red lit	Internal bus disconnection	Red blinking (rapid)	Hardware breakdown	Red blinking (slow)	Signal wire error detection	Yellow lit	Output power supply error	Yellow blinking (rapid)	ON times Threshold exceeded	Yellow blinking (slow)	None	Green blinking (rapid)	None	Green blinking (slow)	None	Green lit	With output	OFF	Power supply OFF or no output	PNP 1: N.C. 2: Output 2 5: FG 4: Output 1 3: 24 V (-) Output NPN type 1: 24 V (+) Output 2: Output 2 5: FG 4: Output 1 3: N.C. M12 5pin socket A cord • Prepare a cable-side connector
LED state	Point LED display description																							
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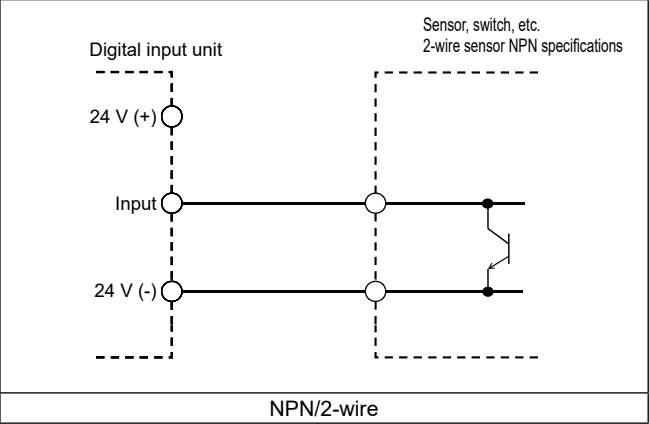
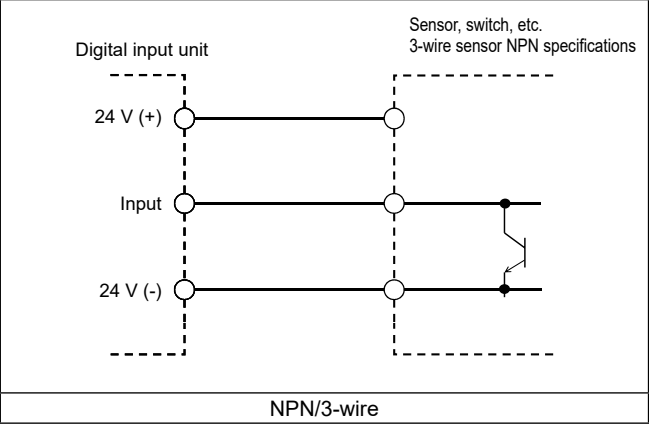
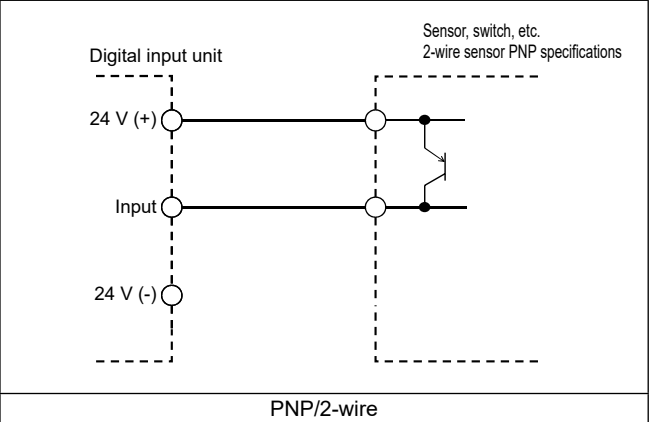
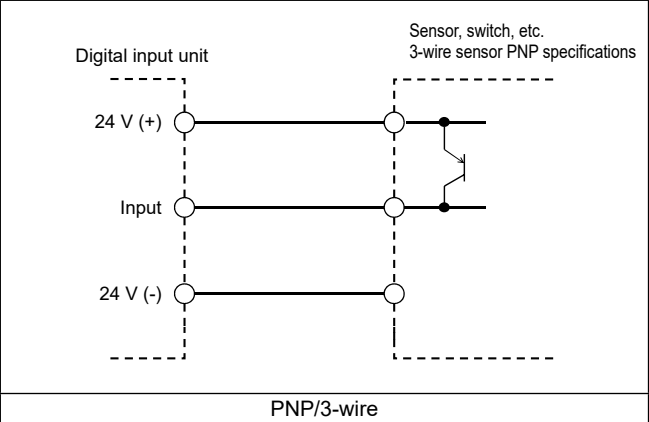
Model No.	LED display	Connector pins overview																							
RT-XADGC32*	Input 0 LED Input 1 LED Input 2 LED Input 3 LED 0 1 2 3 8 9 10 11 Input 8 LED Input 9 LED Input 10 LED Input 11 LED Note: The numbers will light up. <table><tr><th>LED state</th><th>Point LED display description</th></tr><tr><td>Red lit</td><td>Internal bus disconnection</td></tr><tr><td>Red blinking (rapid)</td><td>Hardware breakdown</td></tr><tr><td>Red blinking (slow)</td><td>Power line error detection</td></tr><tr><td>Yellow lit</td><td>None</td></tr><tr><td>Yellow blinking (rapid)</td><td>ON times Threshold overdetction</td></tr><tr><td>Yellow blinking (slow)</td><td>None</td></tr><tr><td>Green blinking (rapid)</td><td>None</td></tr><tr><td>Green blinking (slow)</td><td>None</td></tr><tr><td>Green lit</td><td>Input ON</td></tr><tr><td>OFF</td><td>Power supply OFF state or input OFF</td></tr></table>	LED state	Point LED display description	Red lit	Internal bus disconnection	Red blinking (rapid)	Hardware breakdown	Red blinking (slow)	Power line error detection	Yellow lit	None	Yellow blinking (rapid)	ON times Threshold overdetction	Yellow blinking (slow)	None	Green blinking (rapid)	None	Green blinking (slow)	None	Green lit	Input ON	OFF	Power supply OFF state or input OFF	Input 0 Input 1 Input 2 Input 3 0 1 2 3 8 9 10 11 Input 8 Input 9 Input 10 Input 11 24 V (+) 24 V (-) *1 *1 Unit input power supply (e.g., sensors).	• The input types include PNP and NPN.
	LED state	Point LED display description																							
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	LED state	Point LED display description																							
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Model No.	LED display	Connector pins overview																																				
RT-XLMSA08N	LED0 (for port 0) LED2 (for port 1) LED1 (for port 0) LED3 (for port 1) <table><thead><tr><th>LED Status</th><th colspan="2">Port LED display description</th></tr><tr><th></th><th>Even No.</th><th>Odd number</th></tr></thead><tbody><tr><td>Red lit</td><td>Internal bus disconnection</td><td>None</td></tr><tr><td>Red blinking (rapid)</td><td>Hardware breakdown</td><td>None</td></tr><tr><td>Red blinking (slow)</td><td>Power cable error/ output error</td><td>None</td></tr><tr><td>Yellow lit</td><td>Digital input 1/output 1 ON</td><td>Digital input 2 ON</td></tr><tr><td>Yellow blinking (rapid)</td><td>Allocation failure</td><td>Setting reflection waiting</td></tr><tr><td>Yellow blinking (slow)</td><td>Process data size error IO-Link device mismatch</td><td>None</td></tr><tr><td>Green blinking (rapid)</td><td>None</td><td>None</td></tr><tr><td>Green blinking (slow)</td><td>IO-Link communication error</td><td>None</td></tr><tr><td>Green lit</td><td>IO-Link in communication</td><td>None</td></tr><tr><td>OFF</td><td>Power supply OFF or invalid port or digital input 1/output 1OFF state</td><td>Power supply OFF or invalid port or digital input 2 OFF status</td></tr></tbody></table> The LED lighting conditions differ in the operation mode.	LED Status	Port LED display description			Even No.	Odd number	Red lit	Internal bus disconnection	None	Red blinking (rapid)	Hardware breakdown	None	Red blinking (slow)	Power cable error/ output error	None	Yellow lit	Digital input 1/output 1 ON	Digital input 2 ON	Yellow blinking (rapid)	Allocation failure	Setting reflection waiting	Yellow blinking (slow)	Process data size error IO-Link device mismatch	None	Green blinking (rapid)	None	None	Green blinking (slow)	IO-Link communication error	None	Green lit	IO-Link in communication	None	OFF	Power supply OFF or invalid port or digital input 1/output 1OFF state	Power supply OFF or invalid port or digital input 2 OFF status	IO-Link mode 1: 24 V (+) Input for Unit L+ 5: N.C. 4: IO-Link communication C/Q 2: Digital input 2 DI 3: 24 V (-) Input for Unit L- Digital input mode (PNP/NPN) 1: 24 V (+) Input for Unit L+ 5: N.C. 4: Digital input 1 C/Q 2: Digital input 2 DI 3: 24 V (-) Input for Unit L- Digital output mode (PNP/NPN) 1: 24 V (+) Input for Unit L+ 5: N.C. 4: Digital output 1 C/Q 2: N.C. DI 3: 24 V (-) Input for Unit L- M12 5pin socket A cord • Prepare a cable-side connector
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RT-XAAGA02N	CH1 LED CH0 LED <table><thead><tr><th>LED state</th><th>LED display for each CH</th></tr></thead><tbody><tr><td>Red lit</td><td>Internal bus disconnection</td></tr><tr><td>Red blinking (rapid)</td><td>Hardware breakdown</td></tr><tr><td>Red blinking (slow)</td><td>Power line error detection</td></tr><tr><td>Yellow lit</td><td>None</td></tr><tr><td>Yellow blinking (rapid)</td><td>Range upper/lower limit errors occur</td></tr><tr><td>Yellow blinking (slow)</td><td>User set value upper/lower limit errors occur</td></tr><tr><td>Green blinking (rapid)</td><td>None</td></tr><tr><td>Green blinking (slow)</td><td>Power supply for input OFF</td></tr><tr><td>Green lit</td><td>Power supply for input ON</td></tr><tr><td>OFF</td><td>Power supply OFF state or CH ineffective state</td></tr></tbody></table>	LED state	LED display for each CH	Red lit	Internal bus disconnection	Red blinking (rapid)	Hardware breakdown	Red blinking (slow)	Power line error detection	Yellow lit	None	Yellow blinking (rapid)	Range upper/lower limit errors occur	Yellow blinking (slow)	User set value upper/lower limit errors occur	Green blinking (rapid)	None	Green blinking (slow)	Power supply for input OFF	Green lit	Power supply for input ON	OFF	Power supply OFF state or CH ineffective state	1: 24 V (+) Input 5: FG 4: Analog input (-) 2: Analog input (+) 3: 24 V (-) Input M12 5pin socket A cord														
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RT-XBAGA02N	CH1 LED CH0 LED <table><thead><tr><th>LED state</th><th>LED display for each CH</th></tr></thead><tbody><tr><td>Red lit</td><td>Internal bus disconnection</td></tr><tr><td>Red blinking (rapid)</td><td>Hardware breakdown</td></tr><tr><td>Red blinking (slow)</td><td>Power line error detection</td></tr><tr><td>Yellow lit</td><td>Output power supply error</td></tr><tr><td>Yellow blinking (rapid)</td><td>Range upper/lower limit errors occur</td></tr><tr><td>Yellow blinking (slow)</td><td>User set value upper/lower limit errors occur</td></tr><tr><td>Green blinking (rapid)</td><td>None</td></tr><tr><td>Green blinking (slow)</td><td>Output power supply OFF</td></tr><tr><td>Green lit</td><td>Power supply for output ON</td></tr><tr><td>OFF</td><td>Power supply OFF state or CH ineffective state</td></tr></tbody></table>	LED state	LED display for each CH	Red lit	Internal bus disconnection	Red blinking (rapid)	Hardware breakdown	Red blinking (slow)	Power line error detection	Yellow lit	Output power supply error	Yellow blinking (rapid)	Range upper/lower limit errors occur	Yellow blinking (slow)	User set value upper/lower limit errors occur	Green blinking (rapid)	None	Green blinking (slow)	Output power supply OFF	Green lit	Power supply for output ON	OFF	Power supply OFF state or CH ineffective state	1: 24 V (+) Output 5: FG 4: Analog output (-) 2: Analog output (+) 3: 24 V (-) Output M12 5pin socket A cord														
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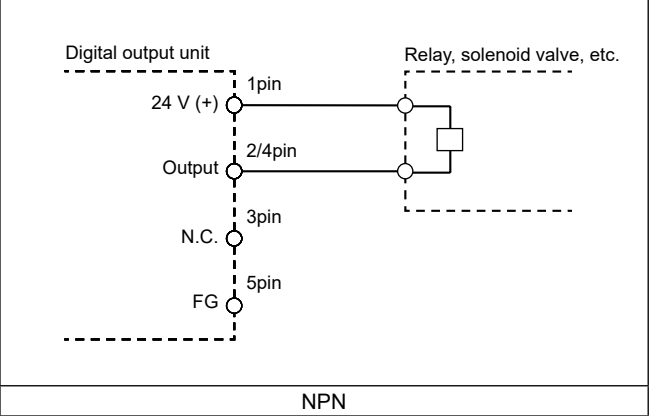
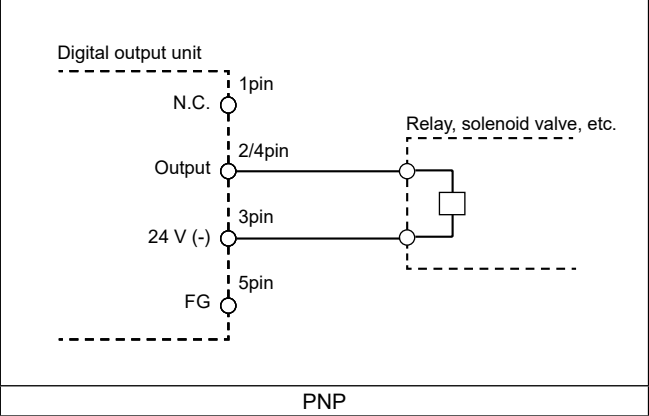
Wiring example of each unit	
Power supply unit	
Power Supply 24 V (+) 0 V Power supply unit 1pin 24 V (+) Input for Unit 3pin 24 V (-) Input for Unit 2pin 24 V (+) Output 4pin 24 V (-) Output When using the same power supply for unit/input and output	Power supply 1 24 V (+) 0 V Power supply unit 1pin 24 V (+) Input for Unit 3pin 24 V (-) Input for Unit 2pin 24 V (+) Output 4pin 24 V (-) Output Power supply 2 When separating the power supply for unit/input and output
Digital input unit	
Digital input unit 24 V (+) Input 24 V (-) FG Sensor, switch, etc. 3-wire PNP specifications M12 5-pin PNP/3-wire	Digital input unit 24 V (+) Input 24 V (-) FG Sensor, switch, etc. 2-wire PNP specifications M12 5-pin PNP/2-wire
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Digital input unit 24 V (+) Input 24 V (-) Sensor, switch, etc. 3-wire PNP specifications M8 3-pin PNP/3-wire	Digital input unit 24 V (+) Input 24 V (-) Sensor, switch, etc. 2-wire PNP specifications M8 3-pin PNP/2-wire



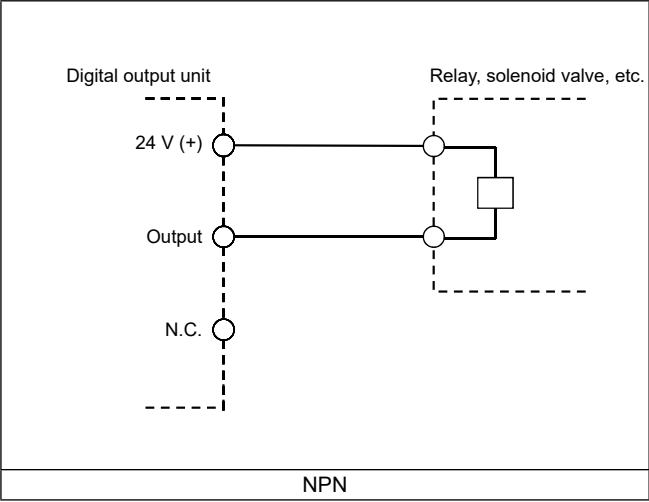
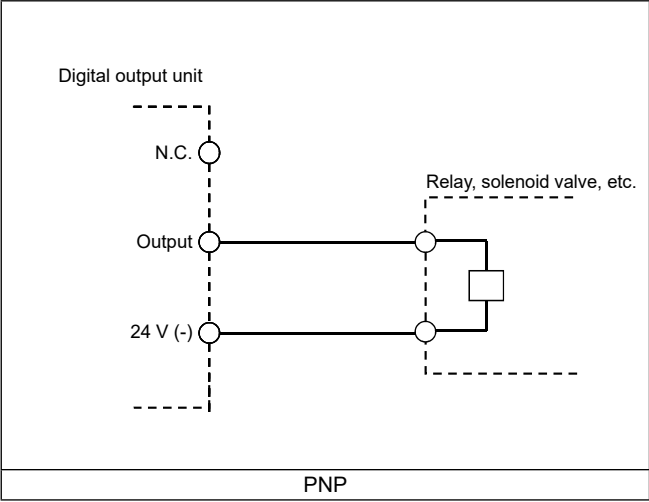
Push-in terminal block input unit



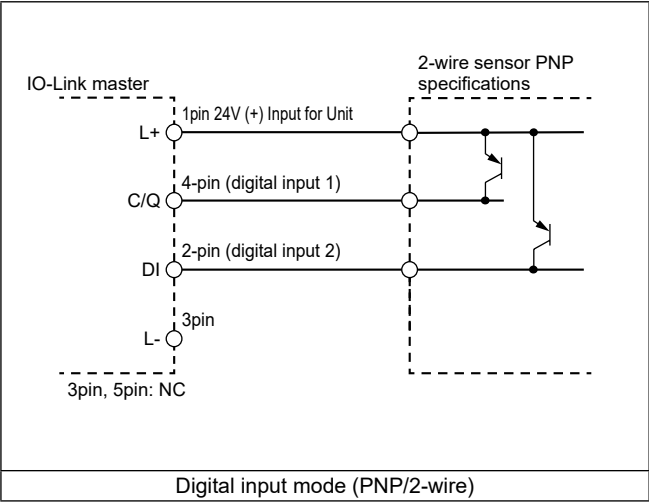
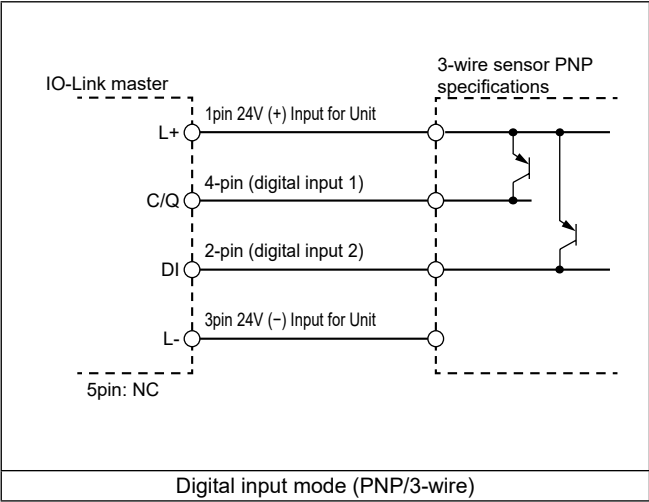
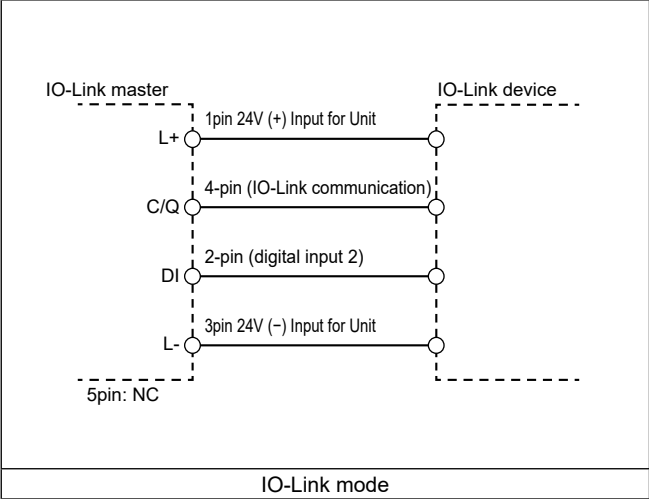
Digital output unit

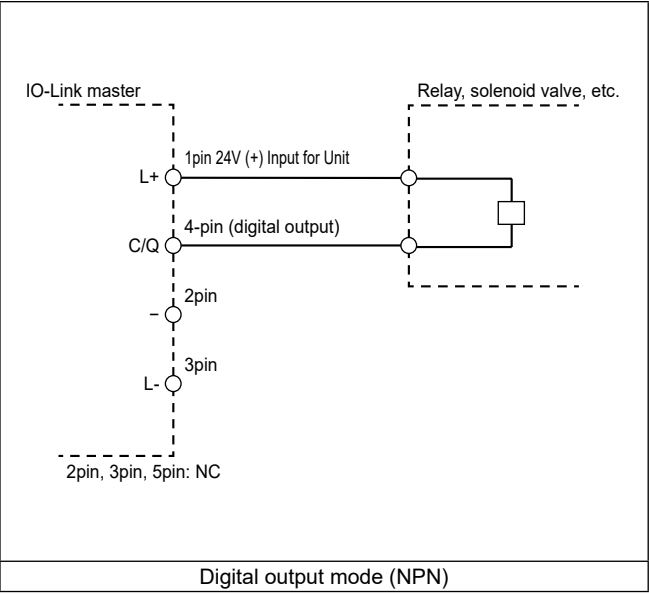
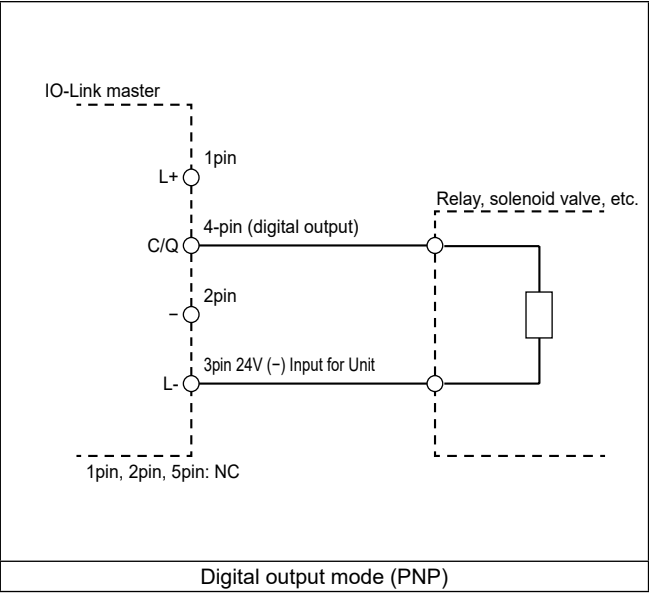
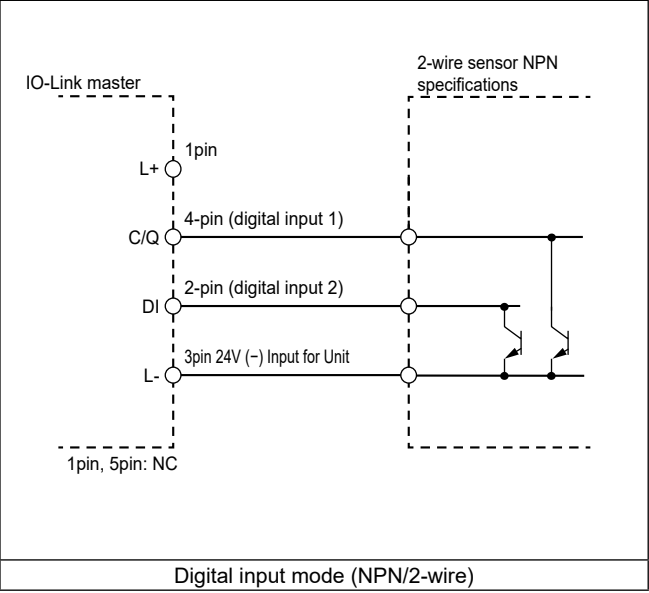
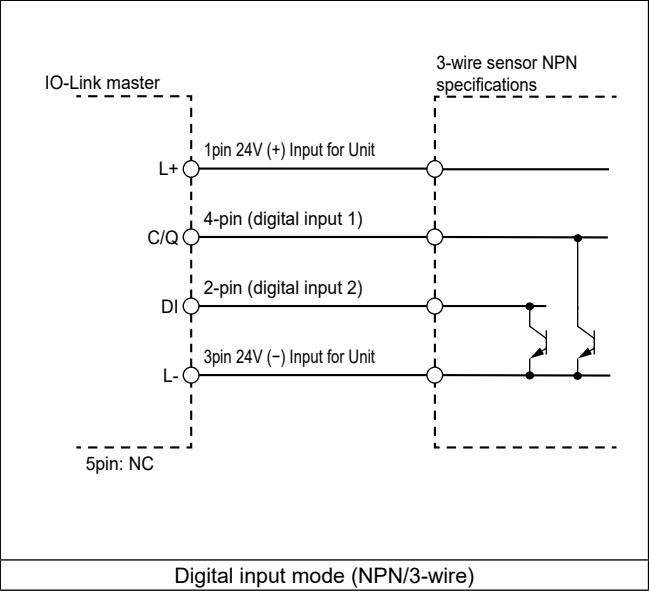


Push-in terminal block output unit

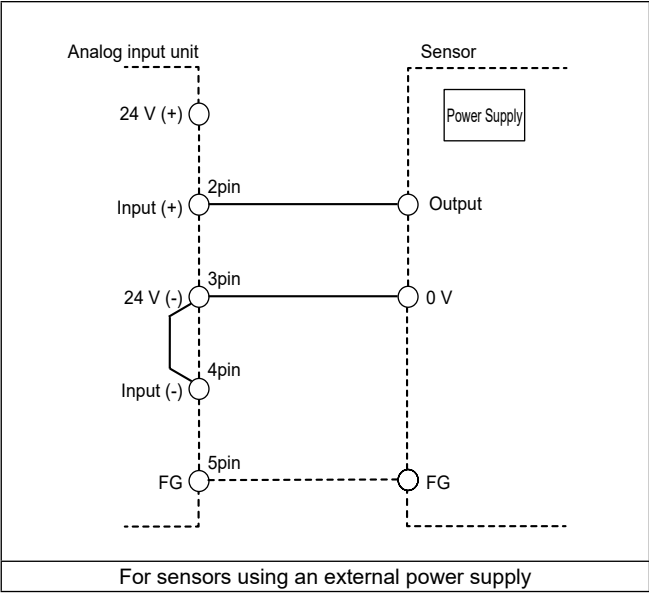
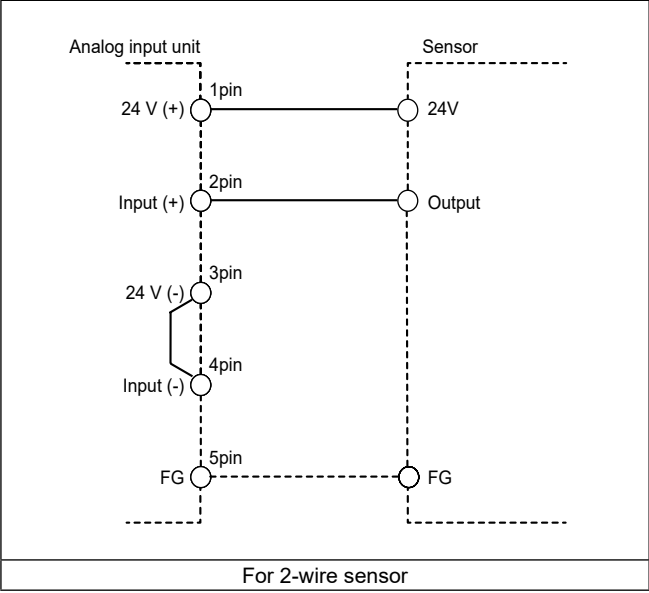
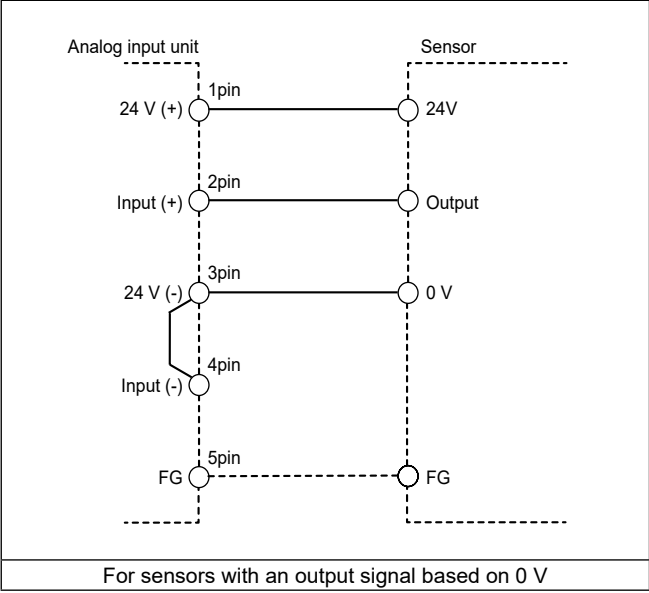


IO-Link master unit

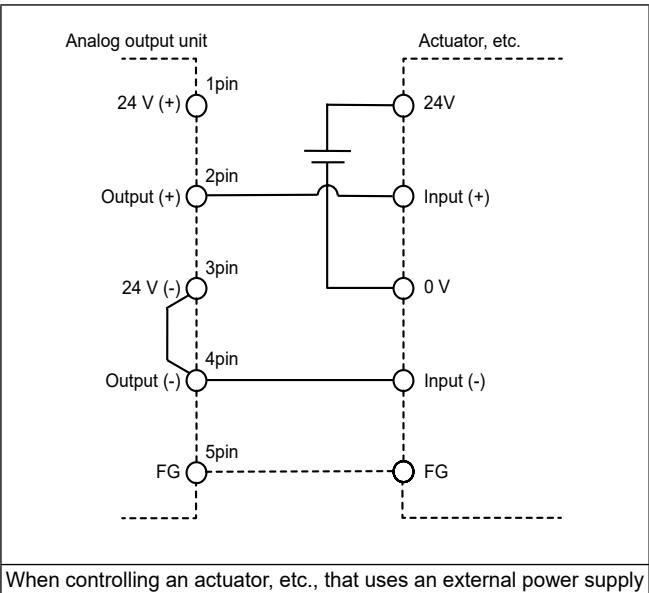
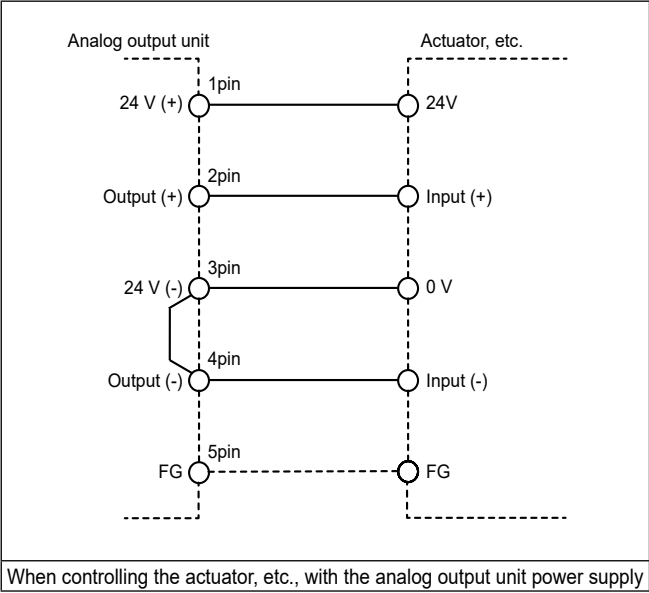




Analog input unit



Analog output unit



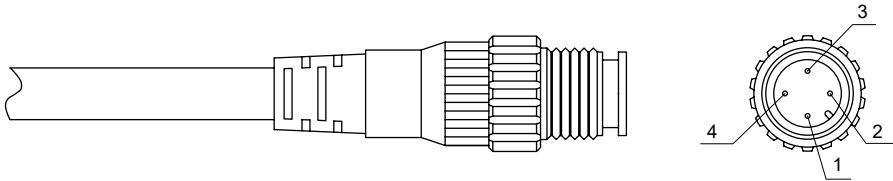
PLC compatibility table

Model No.	Manufacturer name (recommended organization)	Communication protocol	Host unit model No.
RT-XTECN00N	EtherCAT Technology Group	EtherCAT	Connected to EtherCAT-compatible master
	OMRON Corporation		NJ101-9000 / NX1P2
RT-XTENN00N	ODVA	EtherNet/IP	Connect to EtherNet/IP-compatible scanner
	OMRON Corporation		NJ101-9000 / NX1P2
	Keyence Corporation		KV8000 / KVNano
RT-XTEPN00N	Mitsubishi Electric Corporation	PROFINET	RJ71PN92
	SIEMENS Corporation		S7-1200 / S7-1500

Water-proof connector

For I/O

●Recommended connector for I/O

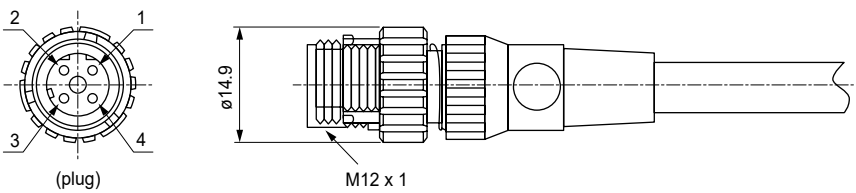


Refer to pages 25 to 33 for the signals assigned to each pin.

- Recommended connector
- Connector with cable
- Part No.XS2H-D421-＊ (single end connector plug) OMRON Corporation
- M8 connector with cable
- Part No.XS3H-M321-＊ (single end connector plug) OMRON Corporation

Communication

●Communication connector

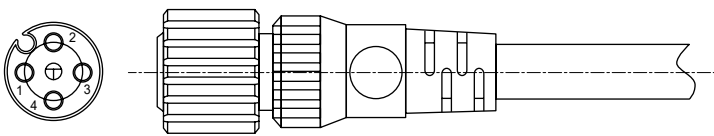


Pin No.	Signal name	Function
1	TD+	Transmitted data, positive
2	RD+	Received data, positive
3	TD-	Transmitted data, negative
4	RD-	Received data, negative

- For wiring method, refer to the following communication connector pin array and communication cable wiring example.
- Use CAT5 or higher for communication cable lines.
- Recommended M12-RJ45 communication cable with connector
- Part number XS5W-T421-□MC-K Straight OMRON
 - No. 0945 700 50□□Straight HARTING

- Recommended communication plug and cable
- No. 0945 600 01□□Single unit cable HARTING
 - Part No. 2103 281 1405 Assembly M12 connector HARTING
 - No. 0945 151 1100 Assembly RJ-45 connector HARTING

●Connector for power supply



- Recommended M12-loose wire power cable
- No. WF-FL-280741 CKD Manufactured
 - Part number XS2F-D421-□ 8□-□ Straight OMRON
- Recommended communication plug and power cable
- No. 2103 212 2305 Assembly M12 connector HARTING
 - Electric wire size: AWG22-18, Applicable cable diameter: ø6 to ø8
 - ＊□differs depending on the cable specifications.

Pin No.	Description
1	24V (+) Input for Unit
2	24 V (+) Output
3	24V (-) Input for Unit
4	24 V (-) Output

UL standards compliant by unit

Unit name	Digital input	Digital output	Analog input	Analog Output	Power Supply	Device unit	Valve interface
UL supported	●	●	●	●	●	●	-



Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.

It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.

Observe warnings and precautions to ensure device safety.

Check that device safety is ensured, and manufacture a safe device.



WARNING

- 1 This product is designed and manufactured as a general industrial machine part. It must be handled by an operator having sufficient knowledge and experience.
 - 2 Use this product in accordance with specifications.
This product must be used within its stated specifications. In addition, never modify or additionally machine this product. This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)
 - ① Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
 - ② Use for applications where life or assets could be significantly affected, and special safety measures are required.
 - 3 Observe organization standards and regulations, etc., related to the safety of device design and control, etc.
ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.
 - 4 Do not handle, pipe, or remove devices before confirming safety.
 - ① Inspect and service the machine and devices after confirming safety of all systems related to this product.
 - ② Note that there may be hot or charged sections even after operation is stopped.
 - ③ When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility. Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
 - ④ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.
 - 5 Observe warnings and cautions in the following pages to prevent accidents.
- The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

 **DANGER:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning.

 **WARNING:** If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury.

 **CAUTION:** When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation. Every item provides important information and must be observed.

Warranty

- 1 **Warranty period**
The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.
- 2 **Warranty coverage**
If the product specified herein fails for reasons attributable to CKD within the warranty period specified above, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge. However, following failures are excluded from this warranty:
 - 1) Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
 - 2) Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
 - 3) Failure not caused by the product.
 - 4) Failure caused by use not intended for the product.
 - 5) Failure caused by modifications/alterations or repairs not carried out by CKD.
 - 6) Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
 - 7) Failure caused by acts of nature and disasters beyond control of CKD.The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.
Note: For details on the durability and consumable parts, contact your nearest CKD sales office.
- 3 **Compatibility check**
The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.



Pneumatic Components

Safety Precautions

Be sure to read this section before use.

Product-specific cautions: Remote I/O RT series

Design / Selection

1. Safety design

WARNING

- When used in an interlock circuit, multiple interlocks should be provided by a separate system using mechanical protection or other means.
Malfunctions may result in accidents.

CAUTION

- Use with 24 VDC.
If used with voltage other than 24 VDC, it may cause breakdown or malfunction.
- Do not mount in a location used for footing.
The product may be damaged if excessive load is applied by stepping or putting feet on it.
- Be sure to secure space for maintenance work.
Secure sufficient space for maintenance and inspection.
- Do not remove the nameplate.
Errors during adjustment/maintenance and inspection or misuse of the instruction manual may result in breakdown or malfunction. It may also cause non-conformity with safety standards.
- Be careful of rush current when turning the power ON.
Depending on the connected load, the overcurrent protection function may operate due to the initial charging current, leading to malfunction.
- The behavior when an error occurs is described in the instruction manual for each unit. Fully understand contents before use.

2. Working environment

WARNING

- Do not use in flammable or explosive gas atmospheres.
There is a risk of fire or explosion. This product does not have an explosion-proof structure.
- Consider the required degree of protection and working environment.
IP20 when using the device unit USB connector. During use, be careful to prevent foreign matter from entering the product and coming in contact with water, solvents, or oil. Protective structure IP65/IP67 can be achieved when the following conditions are implemented.
 - 1) Use an M12 cable with connector to wire the product and the external device appropriately.
 - 2) Be sure to mount a waterproof cap on any unused connectors. Countermeasures such as covering the unit should also be taken if using in environments where it will be constantly exposed to water.
 - 3) Avoid use in conditions where water or cutting oil directly contacts the unit.
 - 4) Do not include units other than IP65/IP67.
- For use in the following locations, be sure to implement sufficient cutoff measures.
Insufficient measures may cause malfunction or breakdown. Confirm the effects of the measures after assembly into individual components or devices.
 - 1) Locations with noise due to static electricity, etc.
 - 2) Locations with strong electric field strength
 - 3) Locations close to power lines

⚠ CAUTION

- Do not use this product in environments where it will be exposed to oil or chemicals.
Use in environments where oil or chemicals such as coolant or cleaning fluid contact the unit, even for short periods, may adversely affect the unit (breakdown, malfunctions, etc.).
- Do not use in environments exposed to corrosive gases or liquids.
The unit may be damaged or malfunction.
- Do not use this product in surge generating areas.
If there are components (solenoid lifters, high frequency induction furnace, welding machines, motors, etc.) around the unit that generate a large surge, consider surge protection of the source and avoid accidental line contact, in order to prevent degradation or damage of the unit's internal circuit element.
- Direct drive of a load where surge voltage is generated may damage the unit.
- This product is not equipped with CE marking surge immunity (EN61000-4-5). Implement measures on the device side for use.

- Prevent foreign matter such as dust or wiring chips from entering the product.
Allowing so may cause a failure or malfunction.
- Mount the unit in a location not subject to vibration or impact.
Allowing so may cause a failure or malfunction.
- Do not use this product in environments with a temperature cycle.
Temperature cycles other than normal temperature changes may negatively affect the unit interior.
- Do not use this product in areas exposed to direct sunlight.
Cut off any direct sunlight the product is exposed to. Allowing so may cause a failure or malfunction.
- Use this product within the ambient temperature range.
There is a risk of malfunction.
- Do not use the product in a location exposed to radiant heat from heat sources nearby.
This may cause malfunction.

For cautions for mounting, installation, adjustment, use and maintenance, refer to the CKD components Product Site (<https://www.ckd.co.jp/kiki/jp/>) → "Model No.→ Instruction manual for details.

Related products

IoT Compatible components Series

- Supports various industrial networks to accommodate the creation of IoT at production sites. Contributes to the visualization of actuators and sensors operating within equipment.
- In addition to electric components such as electric actuators and direct drive motors with high reduced wiring needs, there is a wide lineup of network components with a sensor level that is closer to the workpiece.
- Since the air and electric components are listed by network, it is possible to reduce the man-hours for examining the network inside the equipment.

Catalog No.CC-1466AA





Red cube icon: Distributors

CKD Corporation

Website <https://www.ckd.co.jp/en/>

ASIA

喜開理(上海)機器有限公司

CKD(SHANGHAI) CORPORATION

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- 杭州事務所(HANGZHOU OFFICE)
- 無錫事務所(WUXI OFFICE)
- 昆山事務所(KUNSHAN OFFICE)
- 蘇州事務所(SUZHOU OFFICE)
- 南京事務所(NANJING OFFICE)
- 合肥事務所(HEFEI OFFICE)
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- 天津事務所(TIANJIN OFFICE)
- 青島事務所(QINGDAO OFFICE)
- 濰坊事務所(WEIFANG OFFICE)
- 濟南事務所(JINAN OFFICE)
- 烟台事務所(YANTAI OFFICE)

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Revision details • Push-in terminal box unit added • PROFINET compatible device unit unit added

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