Handling Precautions

Remote I/O RT series
Digital I/O unit
Push-in terminal block type
RT-X□DGC32□

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, and the Handling Precautions of Power supply unit for wiring power supply.

⚠ 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	QR label, tie rod (2 pieces)

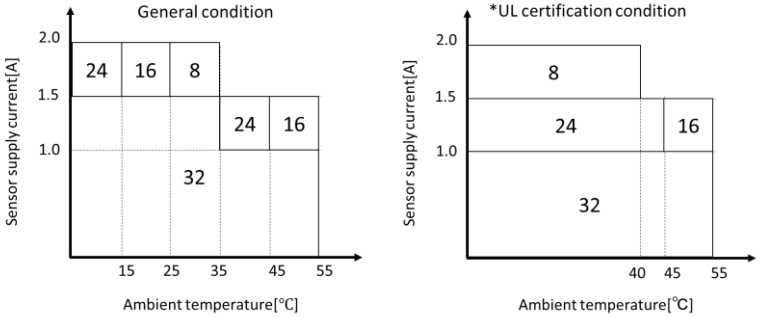
1 Specifications

Always use the product within its specifications.

Item		Specifications	
Model No.		RT-XADGC32A/B	RT-XBDGC32A/B
Size (W x H x D)	mm	46.1×106×55.8	
Net weight	g	Approx. 205	
Degree of protection		IP40 (when connected to other units) 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	
Input/output		input	output
Polarity		PNP/NPN	
Connector		Push-in terminal block	
Number of points		32 points (4 bytes) Note 2	32 points (4 bytes)
Response time Note 3	ms	[Point 0 to 15] ON: Delay is less than 0.8 OFF: Delay is less than 0.8 [Point 16 to 31] ON: Delay is less than 50 OFF: Delay is less than 50	ON: Delay is less than 0.5 OFF: Delay is less than 1.0
Protection/Error detection functions		Yes	
Forced input/output setting		Input value can be set regardless of the actual input	Output can be set regardless of the process data
Maximum sensor supply current	A	0.3 /block, 2 /unit	-
Input resistance	kΩ	Approx. 4.5	-
Rated Input voltage	V	DC24	-

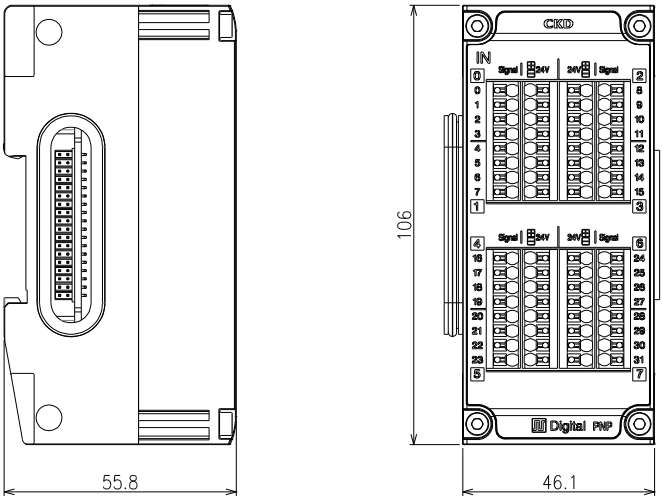
Item		Specifications	
Model No.		RT-XADGC32A/B	RT-XBDGC32A/B
Rated Input current	mA	5.3 typ.	-
Sampling cycle	μs	100	-
Input filter time	ms	0.1/ 1/ 5/ 10/ 20	-
Input hold time	ms	1/ 15/ 100/ 200 (Point 0 to 15) 100 /200 (Point 16 to 31)	-
Power supply (for unit/input)	V	DC24	-
Maximum load current	A	-	0.5/point, 2/unit Note 4
Leakage current	mA	-	0.1 or less
Power supply (for output)	V	-	DC24
Internal current consumption (for unit/input)	mA	220 or less	25 or less
Internal current consumption (for output)	mA	5 or less	80 or less
LED For indicating device and Input/output status	pc	32	32

Note 1 IP40 is not part of the UL certification.
Note 2 The max. number of ON points is limited by the ambient temperature and sensor supply current.
Refer to the graph below.(Left: General condition, Right: UL certification condition)



Note 3 The response time does not include the internal bus communication time.
Note 4 If the ambient temperature exceeds 25°C but is 55°C or less, use at a maximum of 1.5A/unit.
(If 0.5A is used for outputs 0-7, 8-15, 16-23, and 24-31 respectively, it can be used up to an ambient temperature of 30°C at a maximum of 2A/unit.)
UL certification condition is 1.5A/unit over the entire temperature range.

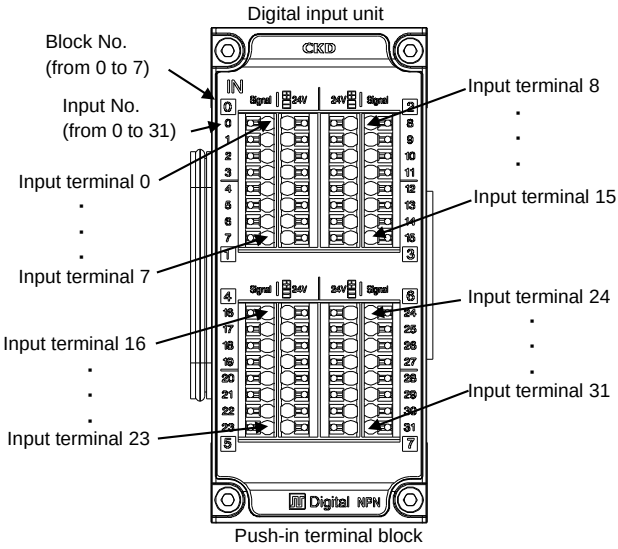
2 External dimensions

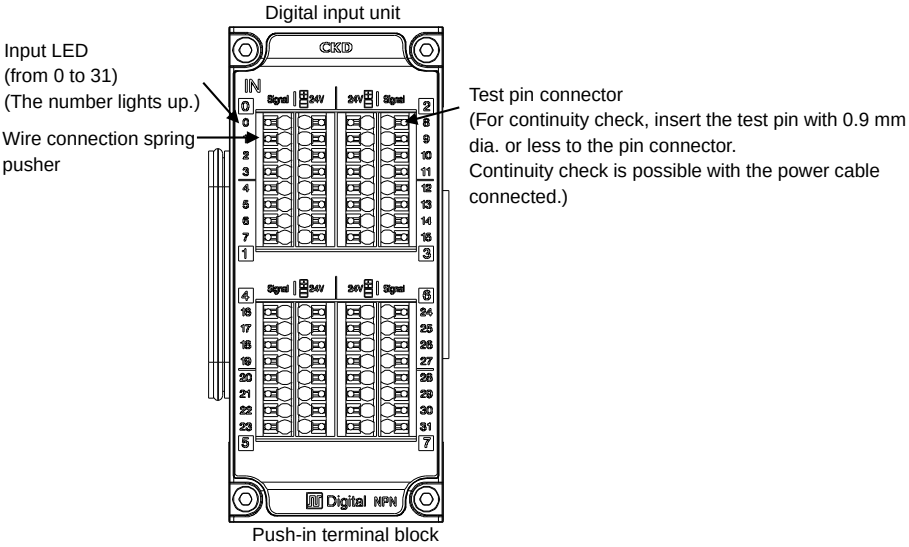


Dimensional unit: mm

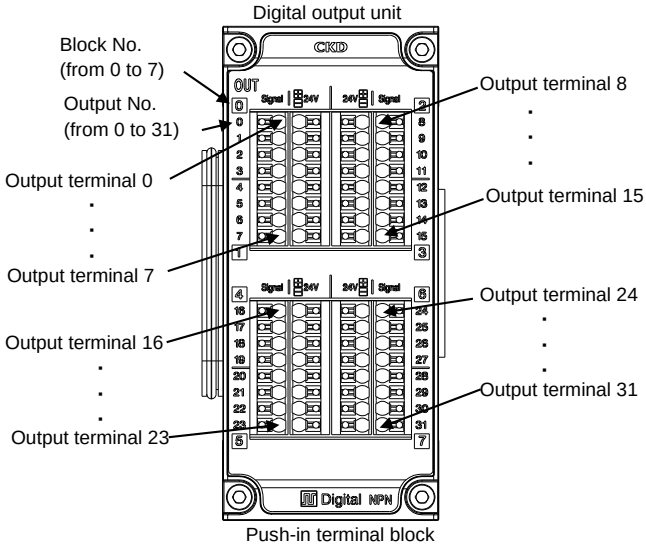
3 Names and functions of each part

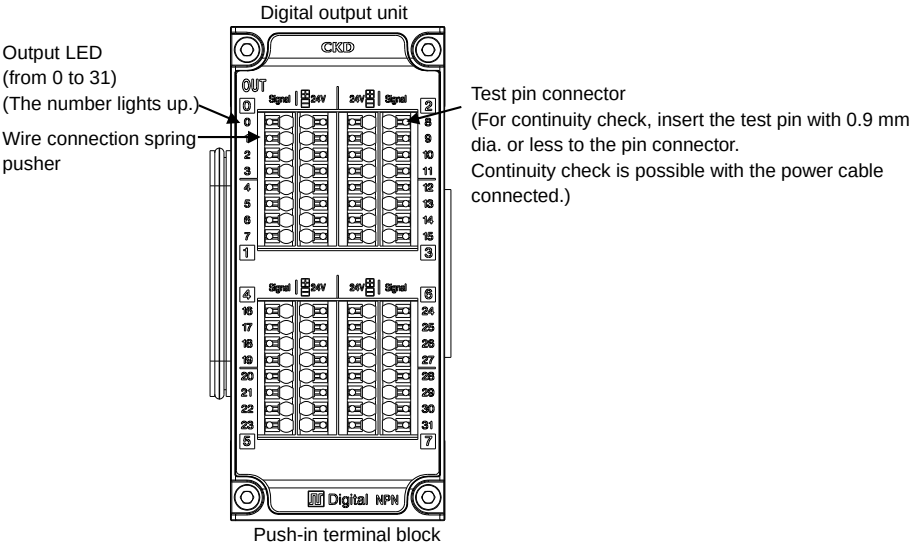
3.1 Input unit





3.2 Output unit





4 LED indicators

These LEDs indicate the status of each point.

Input unit

Status	Meaning
Red on	Internal bus communication disconnected
Red blinking (fast)	Hardware error
Red blinking (slow)	Power line error detection or disconnection detection (power line error detection is given priority)
Yellow blinking (fast)	Off_On cycle threshold over detection
Green on	Input ON
OFF	Power is OFF, or input is OFF

Output unit

Status	Meaning
Red on	Internal bus communication disconnected
Red blinking (fast)	Hardware error
Red blinking (slow)	Signal line error detection
Yellow on	Output power supply voltage error (detected by the device unit)
Yellow blinking (fast)	Off_On cycle threshold over detection
Green on	Output ON
OFF	Power is OFF, or output is OFF

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 terminal blocks and cables. Long cables can exert unexpected momentum and impact due to its weight, and this can consequently damage devices. Take appropriate measures such as secure the wiring to the machine or device midway.
- Do not wire the input/output line and 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.
- Use a cable suitable for the working voltage and current.
- Provide sufficient bending radius for the cable and do not bend it forcibly.

5.1 Connecting and wiring to terminal blocks

The wire, ferrules for input/output are not supplied with the product. Separately purchase a wire, ferrules that satisfies the specifications.

Applicable cable:

・Cross-sectional area of the connected cable: AWG28 to 16 (0.08 mm^2 to 1.5 mm^2)

・Strip length[mm]：8-9

Recommended ferrules:

i.e. Manufactured by Phoenix Contact

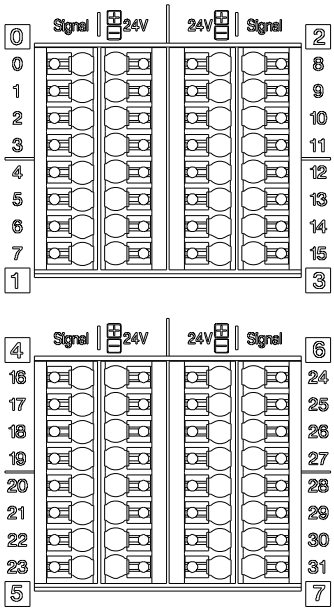
Item code	Model No.	Cross-sectional area
AI0.25-8YE	32 03 03 7	0.25 mm^2
AI0.34-8TQ	32 03 06 6	0.34 mm^2
AI0.5-8WH	32 00 01 4	0.5 mm^2
AI0.75-8GY	32 00 51 9	0.75 mm^2
AI-TWIN2×0.5-8WH	32 00 93 3	2×0.5 mm^2

Recommended crimping pliers

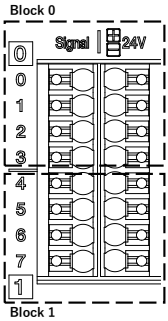
Model No.	Manufacturer
CRIMPFOX 6	Phoenix Contact Corporation

5.2 Pin arrangement and connecting example

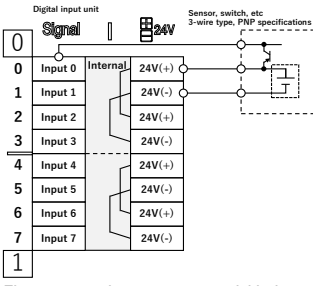
5.2.1 Input unit

Push-in terminal block	Block No.	Input No.	Description	
			Signal	24V , 24V
	0	0	Input 0	Unit/input 24 V (+)
		1	Input 1	Unit/input 24 V (-)
		2	Input 2	Unit/input 24 V (+)
		3	Input 3	Unit/input 24 V (-)
	1	4	Input 4	Unit/input 24 V (+)
		5	Input 5	Unit/input 24 V (-)
		6	Input 6	Unit/input 24 V (+)
		7	Input 7	Unit/input 24 V (-)
	2	8	Input 8	Unit/input 24 V (+)
		9	Input 9	Unit/input 24 V (-)
		10	Input 10	Unit/input 24 V (+)
		11	Input 11	Unit/input 24 V (-)
	3	12	Input 12	Unit/input 24 V (+)
		13	Input 13	Unit/input 24 V (-)
		14	Input 14	Unit/input 24 V (+)
		15	Input 15	Unit/input 24 V (-)
	4	16	Input 16	Unit/input 24 V (+)
		17	Input 17	Unit/input 24 V (-)
		18	Input 18	Unit/input 24 V (+)
		19	Input 19	Unit/input 24 V (-)
	5	20	Input 20	Unit/input 24 V (+)
		21	Input 21	Unit/input 24 V (-)
		22	Input 22	Unit/input 24 V (+)
		23	Input 23	Unit/input 24 V (-)
	6	24	Input 24	Unit/input 24 V (+)
		25	Input 25	Unit/input 24 V (-)
		26	Input 26	Unit/input 24 V (+)
		27	Input 27	Unit/input 24 V (-)
	7	28	Input 28	Unit/input 24 V (+)
		29	Input 29	Unit/input 24 V (-)
		30	Input 30	Unit/input 24 V (+)
		31	Input 31	Unit/input 24 V (-)

Pin arrangement

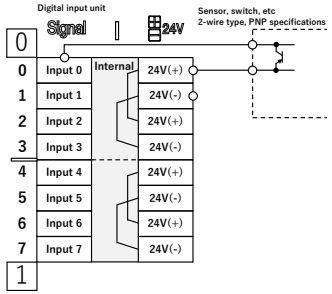


Appearance



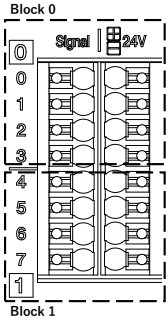
The power supply is common to each block.
Wire the block 1 to 7 same as the block 0.

PNP: 3-wire system

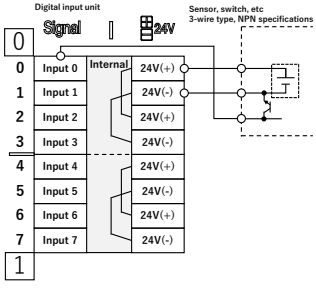


The power supply is common to each block.
Wire the block 1 to 7 same as the block 0.

PNP: 2-wire system

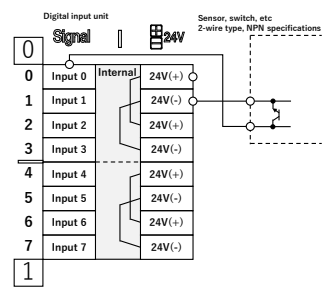


Appearance



The power supply is common to each block.
Wire the block 1 to 7 same as the block 0.

NPN: 3-wire system

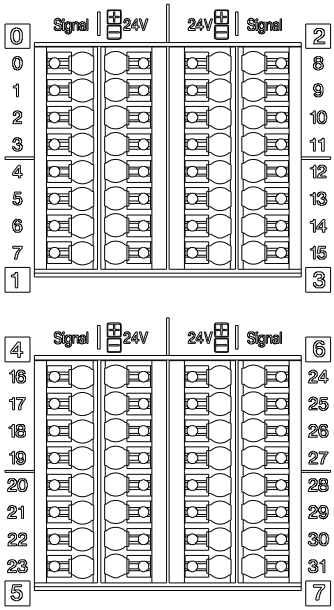


The power supply is common to each block.
Wire the block 1 to 7 same as the block 0.

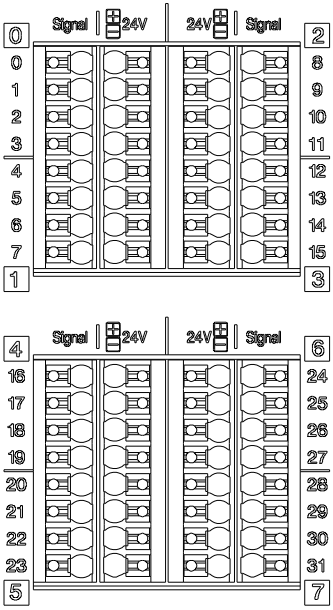
NPN: 2-wire system

Connecting example

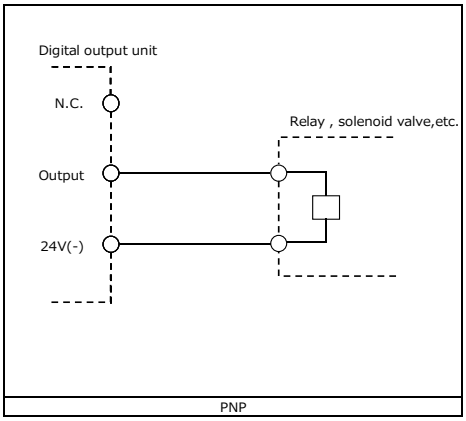
5.2.2 Output unit

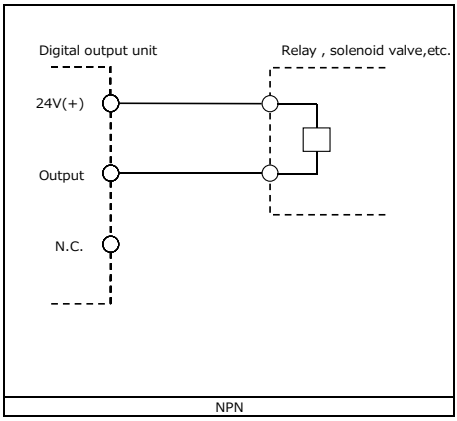
Push-in terminal block PNP	Block No.	Output No.	Description	
			Signal	24V , 24V
	0	0	Output 0	N.C.
		1	Output 1	Output 24 V (-)
		2	Output 2	N.C.
		3	Output 3	Output 24 V (-)
	1	4	Output 4	N.C.
		5	Output 5	Output 24 V (-)
		6	Output 6	N.C.
		7	Output 7	Output 24 V (-)
	2	8	Output 8	N.C.
		9	Output 9	Output 24 V (-)
		10	Output 10	N.C.
		11	Output 11	Output 24 V (-)
	3	12	Output 12	N.C.
		13	Output 13	Output 24 V (-)
		14	Output 14	N.C.
		15	Output 15	Output 24 V (-)
	4	16	Output 16	N.C.
		17	Output 17	Output 24 V (-)
		18	Output 18	N.C.
		19	Output 19	Output 24 V (-)
	5	20	Output 20	N.C.
		21	Output 21	Output 24 V (-)
		22	Output 22	N.C.
		23	Output 23	Output 24 V (-)
	6	24	Output 24	N.C.
		25	Output 25	Output 24 V (-)
		26	Output 26	N.C.
		27	Output 27	Output 24 V (-)
	7	28	Output 28	N.C.
		29	Output 29	Output 24 V (-)
		30	Output 30	N.C.
		31	Output 31	Output 24 V (-)

Pin arrangement

Push-in terminal block NPN	Block No.	Output No.	Description	
			Signal	24V 24V
	0	0	Output 0	Output 24 V (+)
		1	Output 1	N.C.
		2	Output 2	Output 24 V (+)
		3	Output 3	N.C.
	1	4	Output 4	Output 24 V (+)
		5	Output 5	N.C.
		6	Output 6	Output 24 V (+)
		7	Output 7	N.C.
	2	8	Output 8	Output 24 V (+)
		9	Output 9	N.C.
		10	Output 10	Output 24 V (+)
		11	Output 11	N.C.
	3	12	Output 12	Output 24 V (+)
		13	Output 13	N.C.
		14	Output 14	Output 24 V (+)
		15	Output 15	N.C.
	4	16	Output 16	Output 24 V (+)
		17	Output 17	N.C.
		18	Output 18	Output 24 V (+)
		19	Output 19	N.C.
	5	20	Output 20	Output 24 V (+)
		21	Output 21	N.C.
		22	Output 22	Output 24 V (+)
		23	Output 23	N.C.
	6	24	Output 24	Output 24 V (+)
		25	Output 25	N.C.
		26	Output 26	Output 24 V (+)
		27	Output 27	N.C.
	7	28	Output 28	Output 24 V (+)
		29	Output 29	N.C.
		30	Output 30	Output 24 V (+)
		31	Output 31	N.C.

Pin arrangement





Connecting example

6 Maintenance

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

⚠ CAUTION

- Do not pull the cable forcibly as it may cause cable disconnection or damage.
- An electric shock may occur by touching the electrical wiring connection (bare live part).
- Do not install the unit with dirt or dust on the unit opening, gasket, O-ring, etc.

7 Function List

Input unit

Function	Description	Related settings
Power line error detection	Detects short circuits, disconnections, and overheating in the digital input unit's power lines. Whether detection is performed depends on the "Power line error detection" setting.	[Power line error detection]
Input filtering	Sets the time before ON or OFF of the digital input unit's input signal is confirmed. Choose from 0.1 ms, 1 ms, 5 ms, 10 ms, or 20 ms.	[Input filter time]
Input hold time	Sets the minimum hold time after the digital input unit's input signal has been confirmed ON or OFF. For points 0 to 15, choose from 1 ms, 15 ms, 100 ms, or 200 ms. For points 16 to 31, choose from 100 ms or 200 ms.	[Input hold time]
Off_On cycle counts/over detection	Counts the number of times the digital input unit's input signal has changed from OFF to ON. The counted number is stored in non-volatile memory once every 30 minutes. It can also detect when the set threshold is exceeded.	[Input Off_On cycle threshold]
Forced input setting	Forces the digital input unit's input signal to be either ON or OFF (regardless of the actual input value) from the PC software.	-
Point diagnostic information for the unit	The diagnostic information for each of the digital input unit's points. 16 bits per point, and each bit corresponds to an error type. If an error is detected, the corresponding bit is 1 (ON). The information can be read from the PC software or upper master. The types of errors are as follows: Bit: Error description (genres of device diagnostics) 15: Power line error (power supply) 14: Over Off_On cycle threshold (unit input) 13: Hardware error (hardware) 12: Hold forcibly non-output (disconnection detection) (user operation waiting)	-

Output unit

Function	Description	Related settings
Signal line error detection	Detects short circuits, disconnections, and overheating in the digital output unit's signal lines. Whether detection is performed depends on the "Signal line error detection" setting.	[Signal line error detection]
Signal line error recovery operation setting	Specifies whether to maintain the same behavior as during the signal line error when it has been recovered from, or return to normal from the most recent data update after recovery. If it maintains the same behavior as during the error, it will wait for the user to turn the power off and on again.	[Error recovery operation]
Off_On cycle counts/over detection	Counts the number of times the digital output unit's output signal has changed from OFF to ON. The counted number is stored in non-volatile memory once every 30 minutes. It can also detect when the set threshold is exceeded.	[Output Off_On cycle threshold]
Forced output setting	Forces the digital output unit's output signal to be either ON or OFF (regardless of the actual output) from the PC software.	-
Operation setting in the event of a communication error	If the device unit's DIP switch setting SW3 is OFF (set individually for each unit), the output operation in the event of a communication (upper communication or internal bus communication) error is set on the Digital output unit side.	[Communication error operation]
Point diagnostic information for the unit	The diagnostic information for each of the digital output unit's points. 16 bits per point, and each bit corresponds to an error type. If an error is detected, the corresponding bit is 1 (ON). The information can be read from the PC software or upper master. The types of errors are as follows: Bit: Error description (genres of device diagnostics) 15: Signal line error (unit output) 14: Over Off_On cycle threshold (unit output) 13: Hardware error (hardware) 12: On signal line error recovery, same behavior maintained as during error (operation waiting)	-

PRECAUTIONS

- Make sure that cables are securely connected before turning on the power.
- 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 cable 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.

CKD Corporation

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250, Ouji 2-chome, Komaki, Aichi, 485-8551, Japan
Phone: +81-(0)568-77-1111 /Fax: +81-(0)568-77-1123
Overseas Sales Dept.
250, Ouji 2-chome, Komaki, Aichi, 485-8551, Japan
Phone: +81-(0)568-74-1338 /Fax: +81-(0)568-74-1165
Please check global distributers with our catalog or the website below.
https://www.ckd.co.jp/en/