CKD

New Products

IO-Link Wireless Input Unit WD Series

Business card size wireless input unit

Actual size

16 digital inputs

IO-Link wireless

CKD Corporation

CC-1629A

What is IO-Link Wireless? *1

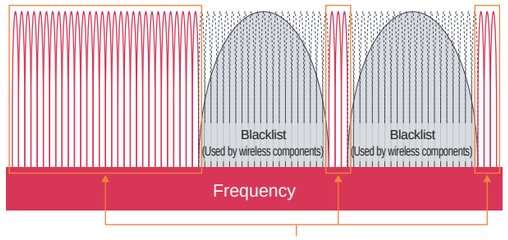
Uninterrupted wireless usable in control. Error rate 1/1 billion. *2

By wiring sensors and switches to the input unit, input signals can be transmitted to and from the IO-Link Wireless master.

Item	Wireless local area network	Bluetooth	ZigBee	IO-Link Wireless
Standards	IEEE802.11b	IEEE802.15.1	IEEE802.15.4	**IEEE802.15.1**
Frequency	2.4 GHz	2.4 GHz	2.4 GHz	**2.4 GHz**
Communication distance	up to 100 m	up to 10 m	up to 100 m	**up to 20 m**
Transmission bit rate	11 Mbps	1 Mbps	250 kbps	**21 kbps**
Unit (node)	32	7	128	**40**
Cycle time	50 ms	10 to 30 ms	100 ms	**5 ms**
Reliability	Low	Low	Medium	**High**

Blacklist function

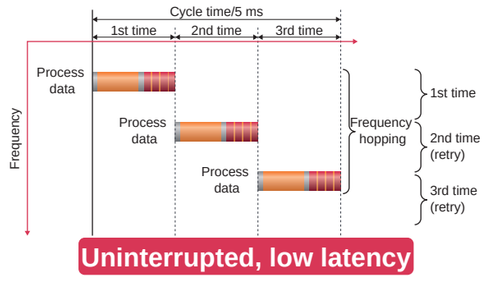
Avoids frequencies used in other wireless components. Coexistence with other wireless components is made possible.



Communicate at frequencies other than those blacklisted

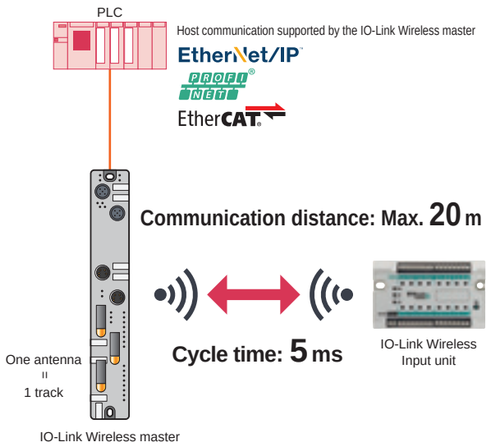
Frequency hopping function

Three communication retries are executed in one cycle time. The retry is executed by switching the frequency band.



Uninterrupted, low latency

IO-Link Wireless system configuration example



Appearance	IO-Link Master (Number of connections per track)		Cycle Time
	16 points Input	1 to 4 units	5 ms

*1. February 2024, based on CKD research. CKD IO-Link Wireless components compatible Region: Japan, EU, USA.

*2. The blacklist and frequency hopping functions realize wire-like reliability. Radio quality for control.

Application

Making Wireless Cylinder Switches for Robot Hands

Enabling wireless functionality for the switch used to confirm the operation of the robot's advanced hand, used for multiple workpieces. By supplying power from the robot's onboard wiring to the IO-Link Wireless Input Unit, external wiring is eliminated, reducing the risk of disconnection.

Before External wiring of the Robot

The risk of disconnection increases and the robot's movable range is limited.

After No external wiring, only internal power supply.

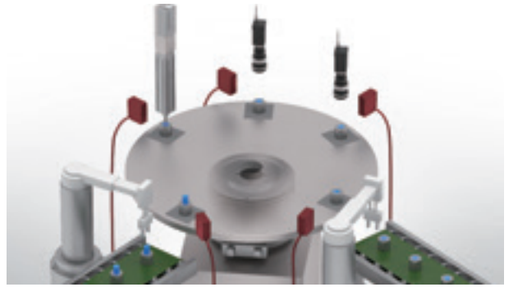
The IO-Link Wireless input unit is wirelessly connected to reduce the risk of disconnection.

Assembly / Inspection (rotating table)

Since the signal line is wireless, it is possible to install a photoelectric sensor on the rotating table.
Contributes to improved workpiece positioning accuracy.

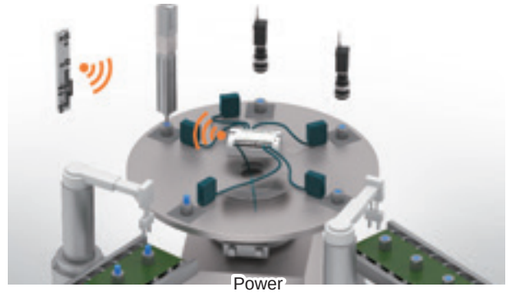
Before PE switch installed outside the table

The positioning confirmation becomes unstable.



After PE switch mounted on the table

Positioning confirmation accuracy is improved.

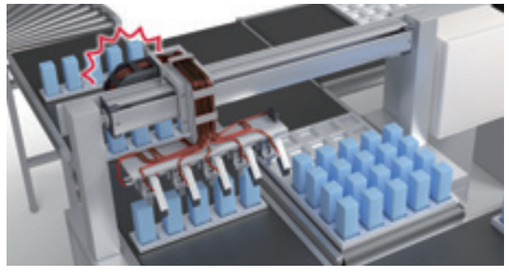


Reduced wiring in the cable carrier

The wiring of switches installed in moving parts is made wireless by using the IO-Link Wireless Input Unit as a repeater for signal lines. This contributes to the reduction of the number of wires in the cable carrier.

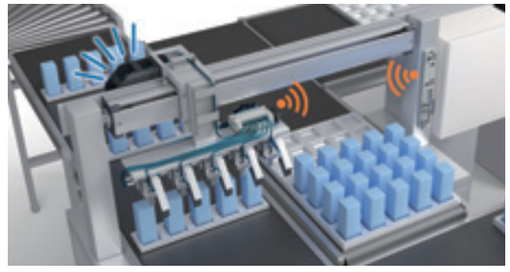
Before Wiring within the cable carrier **11 units***1

Wiring replacement in the cable carrier is required, requiring high maintenance hours.



After Wiring within the cable carrier **1 unit***1

Wiring replacement within the cable carrier is not required, reducing maintenance hours.



*1. Applications: 10 switches for air hand, 1 photoelectric switch. WD can input up to 16 switch points.

IO-Link Wierless input unit

WD Series

●16 points compatible

Communication specifications

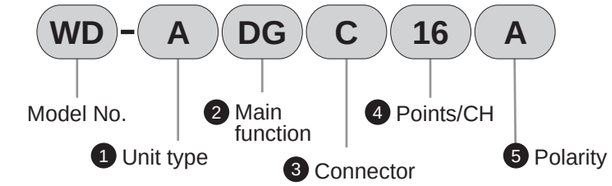
Item	Digital input unit	
	WD-ADGC16A	WD-ADGC16B
Communication protocol	IO-Link Wireless	
Min. communication cycle time	5 ms	
Process Data In (size)	4 byte	
Process Data Out (size)	0 byte	
Maximum data storage size	2 kbytes	
Vender ID	0x0357	
Device ID	0x217000	0x217001
Communication distance	Max. 20 m	

Unit specifications

Item			Digital input unit	
			WD-ADGC16A	WD-ADGC16B
General specifications	Size (W×H×D)	mm	91 x 26 x 56	
	Weight	g	Approx. 100	
	Environmental resistance	Degree of protection	IP20	
		Ambient temperature °C	−10 to 55	
		Working atmosphere	No corrosive gas or heavy dust	
	Vibration resistance	10 to 57Hz	Half amplitude: 0.75 mm	
		57 to 150Hz	Acceleration: 98 m/s^2	
	Shock resistance m/s^2		294	
	Overvoltage category		Category I	
	Pollution level		3	
	Working altitude		2000 m or less	
Input specification	Polarity		PNP	NPN
	Connector		Push-in terminal block	
	Number of points		16 points	
	Input ON voltage		16 V or higher Between input terminal and 24 V (+)	16 V or higher Between input terminal and 24 V (-)
	Input OFF voltage		5 V or less Between input terminal and 24 V (+)	5 V or less Between input terminal and 24 V (-)
	Input OFF current		1 mA or less	
	Simulated input		Input value can be set regardless of actual input	
	Max. sensor supply current	mA	200/connector 1600/unit	
	Input current	mA	3.5 typ (*1)	
	Sampling cycle	ms	2	
	Input filtering time	ms	10/20/50/100	
	Input holding time	ms	20/100/200	
	Power supply	V	(power supply voltage -1.2V) or higher	
Electrical specifications	Power supply voltage	V	21.6 to 26.4 DC (24 VDC ±10%)	
	Internal current consumption		100 mA or less (24.0 VDC, all points ON, excluding sensor supply current)	
	LED		Power supply / Wireless communication quality / Product status / Input status	
Applicable wire			0.2 to 1.5 mm^2 (AWG16 to 24)	

*1: When exceeding the specification value, attach the bleeder resistance in accordance with “Example of each unit wiring”.

How to order



1 Unit type

A	Input unit

2 Main function

DG	Digital

3 Connector

C	Push-in terminal block

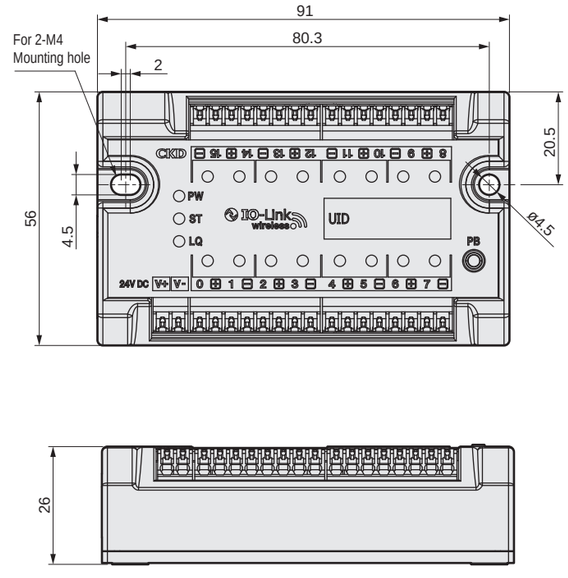
4 Point count/CH

16	16 points

5 Polarity

A	PNP
B	NPN

Dimensions



LED display description

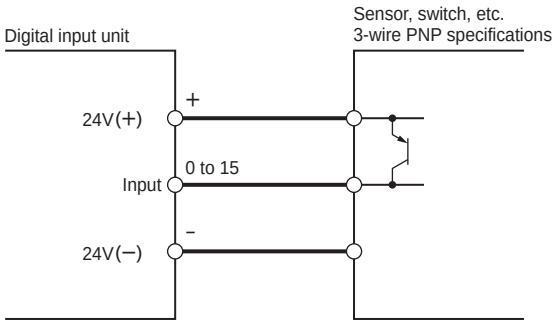
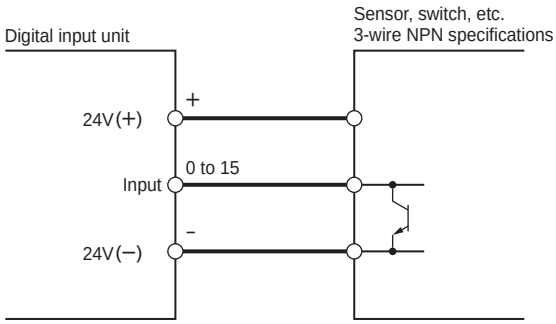
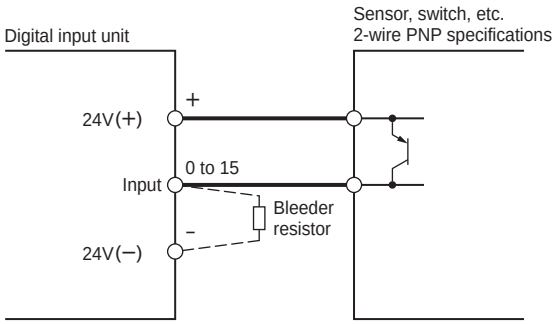
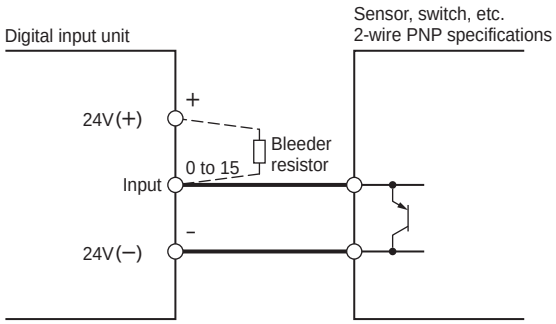
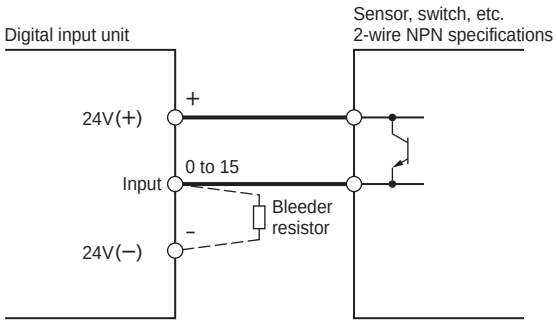
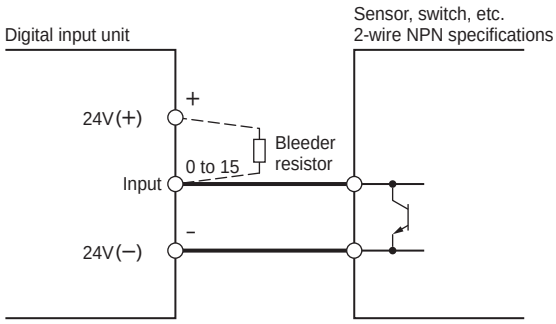
Title	status	Description
PW	Green Not lit	Product power supply is OFF.
	Green lit	Product power is ON.
	Green blinking	Wireless communication established
ST	OFF	Normal operation
	Red blinking	Maintenance required
	Red lit	Detecting abnormalities
LQ	OFF	The power to the product is OFF or Wireless communication not established
	Green lit	Communication quality ”Good”
	Yellow lit	Communication quality ”normal”
	Red lit	Detection of communication errors in wireless communication
DI (0 to 15)	OFF	Target digital input is OFF.
	Green lit	Target digital input is ON.
	Red lit	Sensor power supply or Error detection of sensor input circuit

PB (bearing button) *1

Pressing time	Description
0<....≤ 3	Does not operate
3 <....≤ 10	Request pairing to master
10<....≤ 30	Does not operate
30<	Restart

*1. Compliant with IO-Link Wirelss1.1 specifications

Wiring example of each unit

WD-ADGC16A (PNP)	WD-ADGC16B (NPN)
	
	
	

If using a sensor with a lower limit value of load current that exceeds the specification value of the input current, connect a bleeder resistor to increase the sensor load current.12 kΩ (1/10W and over) load current increases by approx. 2 mA by connecting the bleeder resistance.

This product has received construction design certification (*1) as a wireless device based on the Telecommunications Law.
Be sure to observe the following before using the product.

- Do not disassemble or modify the product. Disassembly and modification are prohibited by law.
- Since this product communicates by radio waves, temporary interruption may occur depending on the environment and usage.
  No responsibility is assumed for secondary damage that may result in loss of life or damage to other equipment or devices.
- The radio waves emitted by this product may adversely affect implantable medical devices.
  If you are using an implantable medical device, contact the manufacturer of the medical device before using this product.

*1: No license application or other procedures are required of customers for use.

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