CKD

New Products

IO-Link Wireless Input Unit WD Series

Business card size Wireless input unit

Actual size

New **Added IO-Link Wireless Master**

16 Digital Inputs

IO-Link wireless

CKD Corporation

CC-1629 AA 1

What is IO-Link Wireless? *1

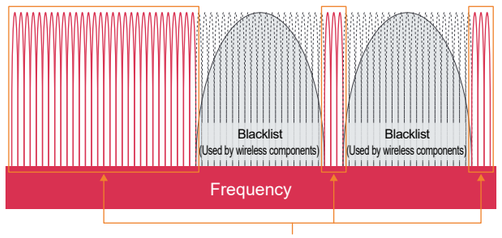
Uninterrupted wireless usable in control. Error rate 1/1 billion. *2

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

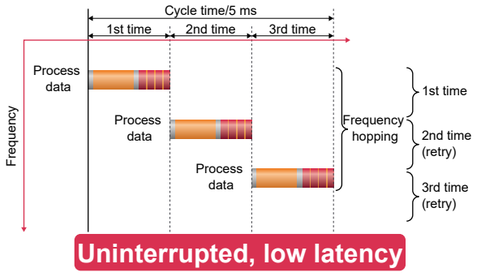
Avoids frequencies used in other wireless components. Coexistence with other wireless components is made possible.



Communicate at frequencies other than those blacklisted

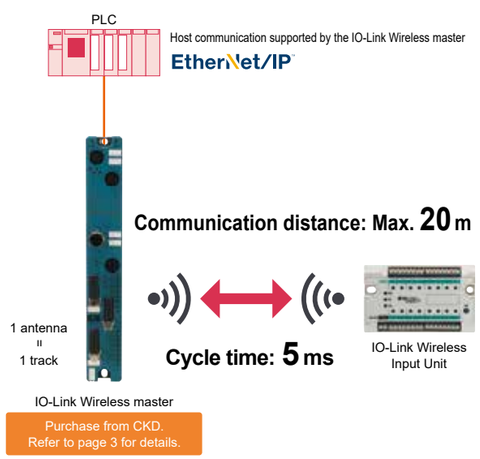
Frequency hopping function

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



Purchase from CKD.
Refer to page 3 for details.

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.

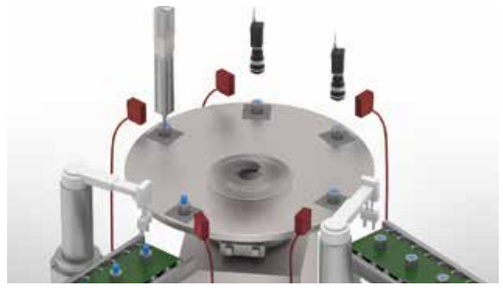
The IO-Link Wireless input unit is wirelessly connected to reduce the risk of disconnection.

Assembly / Inspection (rotary 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.

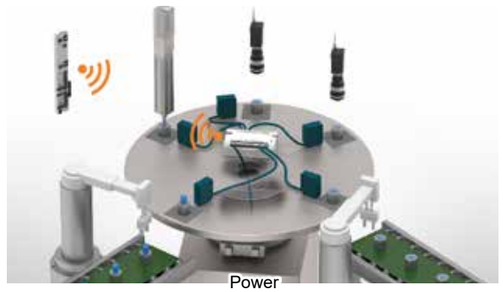
Before PE switch installed outside the table

The positioning confirmation becomes unstable.



After PE switch mounted on the table

Positioning confirmation accuracy is improved.

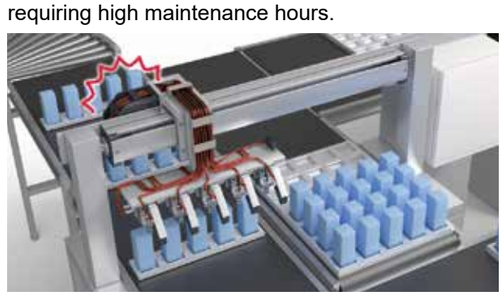


Reduced wiring in the cable carrier

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

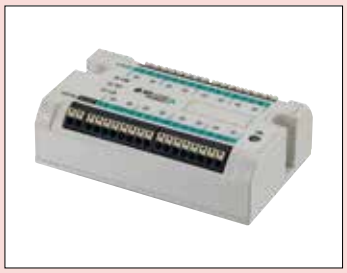
Wiring replacement in the cable carrier is required, requiring high maintenance hours.



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

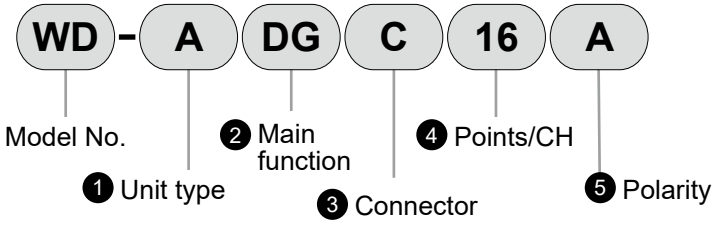
Item	Digital input unit	
	WD-ADGC16A	WD-ADGC16B
Communication protocol	IO-Link Wireless	
Min. communication cycle time	5 ms	
Process Data In (size)	4 byte	
Process Data Out (size)	0 byte	
Maximum data storage size	2 kbytes	
Vender ID	0x0357	
Device ID	0x217000	0x217001
Communication distance	Max. 20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

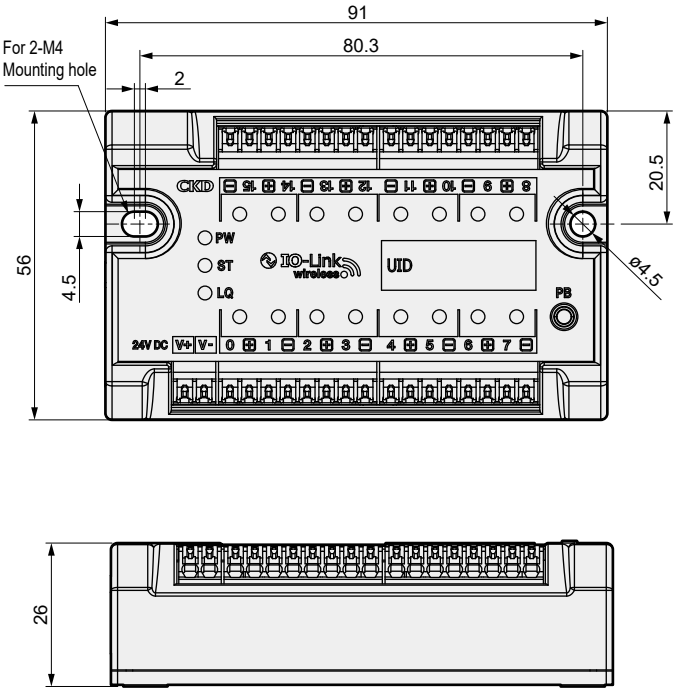
4 Point count/CH

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

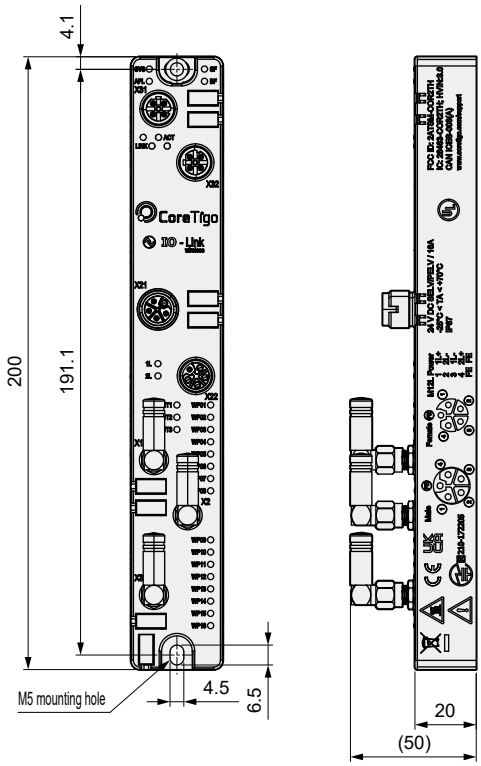
PB (bearing button) *1

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

IO-Link Master Dimensions Diagram

● TIGOMASTER2TH-EIP



Supply source: Toho Technology Co., Ltd.

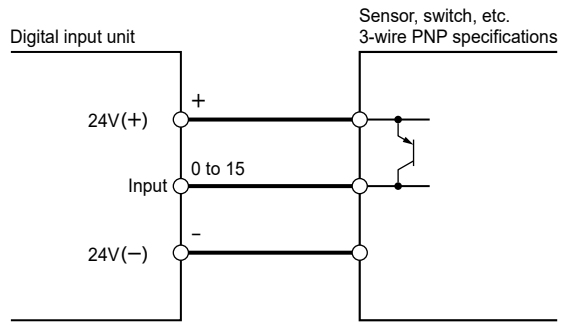
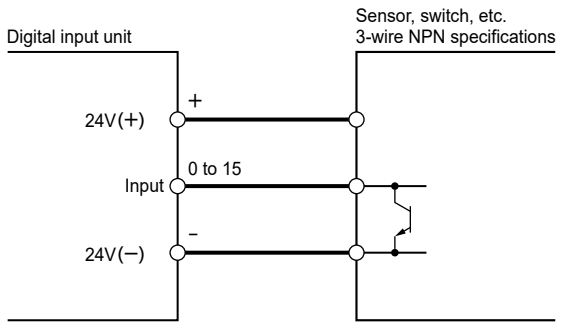
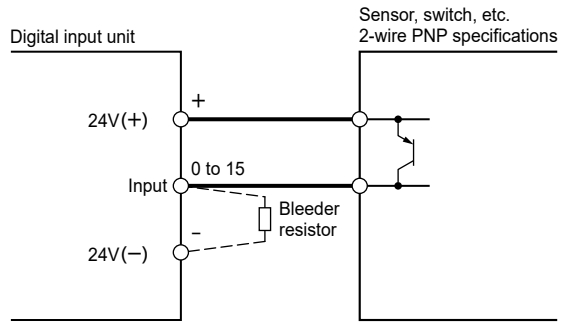
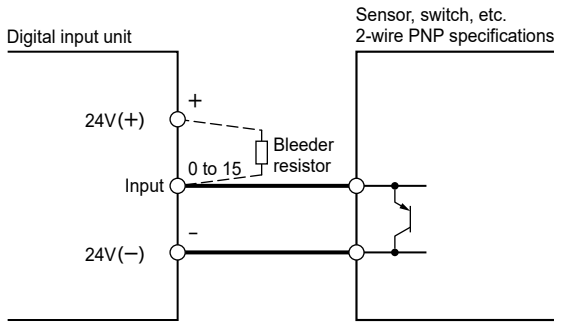
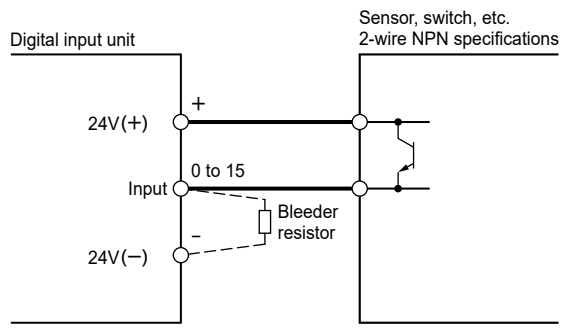
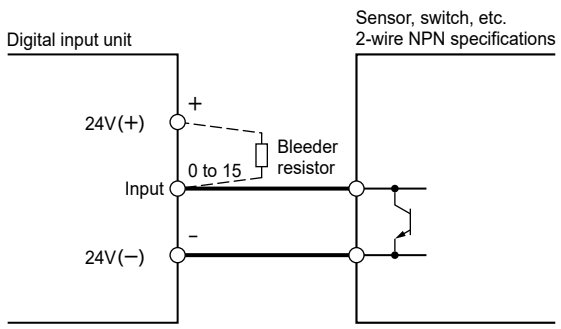
Specifications

Item	Description
Frequency	2401 MHz to 2480 MHz (80 ch)
Transmission output	10 dBm MAX
Modulation method	GFSK
Compliant standards	FCC,CE Ordinance for Enforcement of the Radio Act, Article 2, Item 19
Cycle time	Min. 5 ms
Communication distance	Max. 20 m
Power supply voltage	18 to 31.2 VDC
Current consumption	0.2 A
Mounting method	Screw nominal M4 (torque 1.2 N·m)
Power cable specifications	M12 L code
Communication cable specifications	M12 D code
Communication interface *1	EtherNet/IP
Operating ambient temperature range	−25 to 55 °C
Degree of protection	IP67

Cable specifications

Description	Model No.	Specifications
Power supply cable	TIGOCABLEPOW-1.5	Length 1.5 m, one side M12 female, L-cord, one side rose
Communication cable	TIGOCABLENET-1	Length 1.0 m, one side M12, D cord, one side RJ45

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(1/10 W 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 modifications 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.

Related products

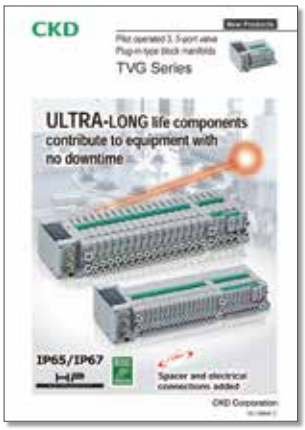
IoT compatible components Series

Catalog No. CC-1466A

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

3, 5-port pilot operated valve, plug-in block manifold TVG Series

Catalog No. CC-1595A



- Even after long-term use, ultra-low air leakage is pursued. A plug-in valve that pursues carbon neutrality, high reliability, and ease of use. Valve width 10mm, 15mm.
- Compatible with a wide range of communication. In addition to Ethernet-based wired communication, it supports wireless communication: IO-Link Wireless.
- Durability count: 120 million cycles. With function * for the number of actuator operational cycles counter for cylinders, etc.

  * Counter function is installed in communication device unit.

Remote I/O RT Series

Catalog No. CC-1557A

- Module type waterproof remote I/O compatible with digital I/O, analog I/O and IO-Link master.
- device unit maximum control points: 512 bytes (4096 points).
- 18 maximum connection units (including device unit units).

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