Adopt ecological paper printing for this manual

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CHANKO

SENSOR

SHANGHAI CHANGJIANG ELECTRIC EQUIPMENT GROUP CO., LTD.


All rivers flow to Changjiang

CHANKO

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About Changjiang Group

Shanghai Changjiang Electric Equipment Group Co., Ltd. established in 1988, which is a leading supplier of industrial automation, measurement and control sensors in China. It is located in Shanghai Changjiang Industrial Science and Technology Park. The park covers an area of more than 45000 square meters. After focusing on the accumulation and deposition of electrical manufacturing for more than 30 years, Changjiang Group has the advanced technology and the outstanding quality of sensors in the industry now.

Changjiang mainly manufactures proximity sensor, photoelectric sensor, capacitive sensor, fiber optic sensor, laser sensor, safety screen and so on. Based on strong technical advantages, Changjiang customizes the industrial measurement and control sensing system according to customer's requirements.

Contents

Overview

Inductive sensor is a kind of proximity sensor.

Concept of Proximity Sensor

Proximity sensor is used to detect the proximity of objects and control the switch under the condition of non-contact by using the sensitive characteristics of sensors to close objects. In the common proximity sensor, according to the principle of induction, the proximity sensor can be divided into three types: high frequency oscillation, magnetic induction and electrostatic capacitance.

Features of Proximity Sensor

- No mechanical contact, low power Consumed and long life.
- Suitable for harsh working environment, reliable work.
- High repeatability of the detection, can accurately judge the location of the object.
- High response frequency, suitable for fast moving object detection.

Basic Principle of Inductive Sensor

High frequency alternating magnetic field is generated in the front-end detection coil. When the metal object is close to the magnetic field, eddy current is generated inside the metal object due to electromagnetic induction, leading to the attenuation of magnetic field energy, which is called eddy current loss. When the sensing surface of the proximity sensor is constantly close to the metal object, the attenuation of the magnetic field energy of the metal object is constantly increasing. When the attenuation reaches a certain degree, the sensor triggers the switch to output signals, so as to detect the presence or absence of the object.

Movement Differential

The difference between the induction distance when the proximity switch operates and the distance generated when the proximity switch is reset is the response distance. The response distance of the proximity switch is the response distance measured when the standard detection object is used.

Consumed Current

The current required in the working state of the sensor.

Leak Current

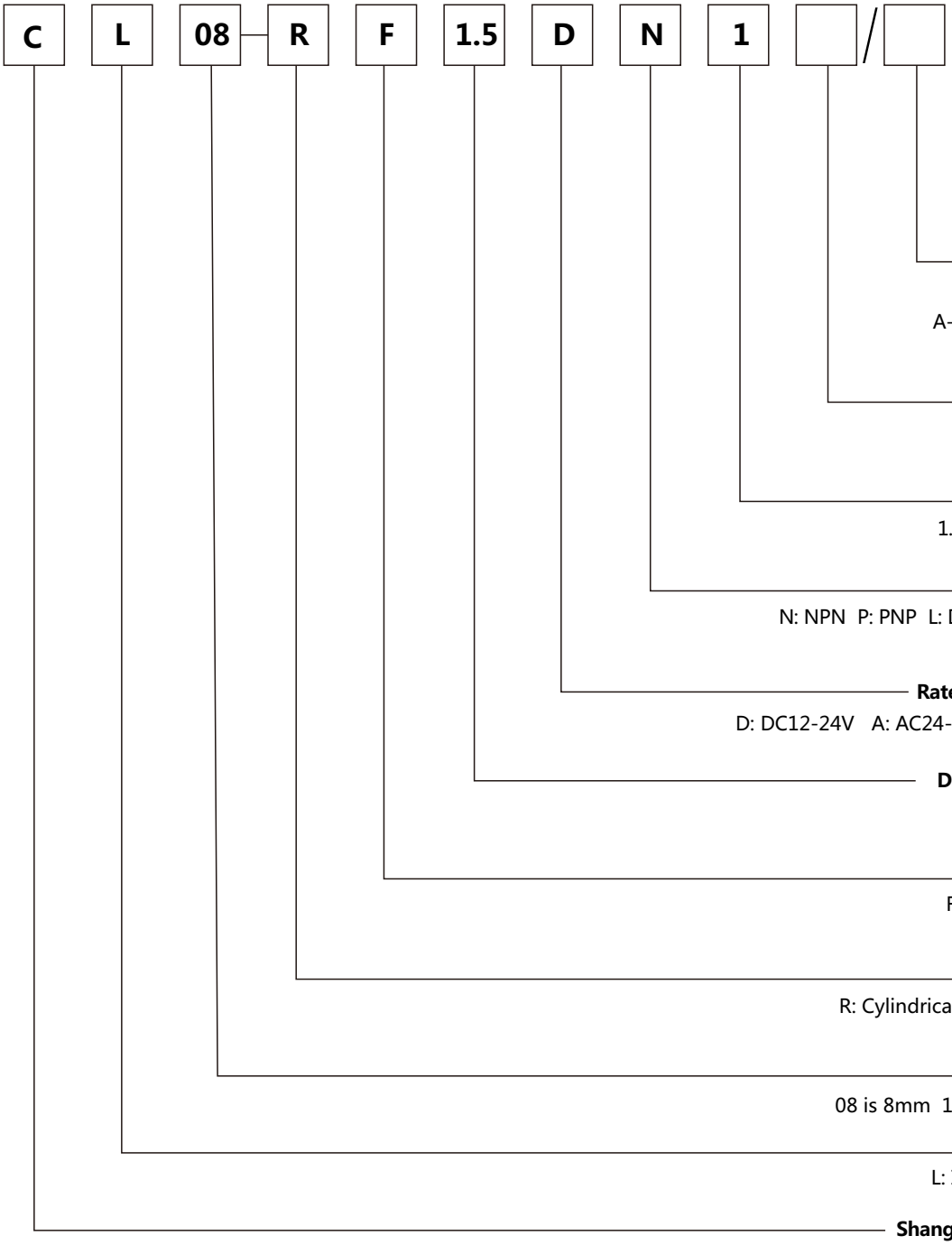
When the sensor is not turned on, the residual current in its load is called leak current.

Response Frequency

Response frequency is the maximum number of actions per second of the sensor.

Model Naming

Product Name:



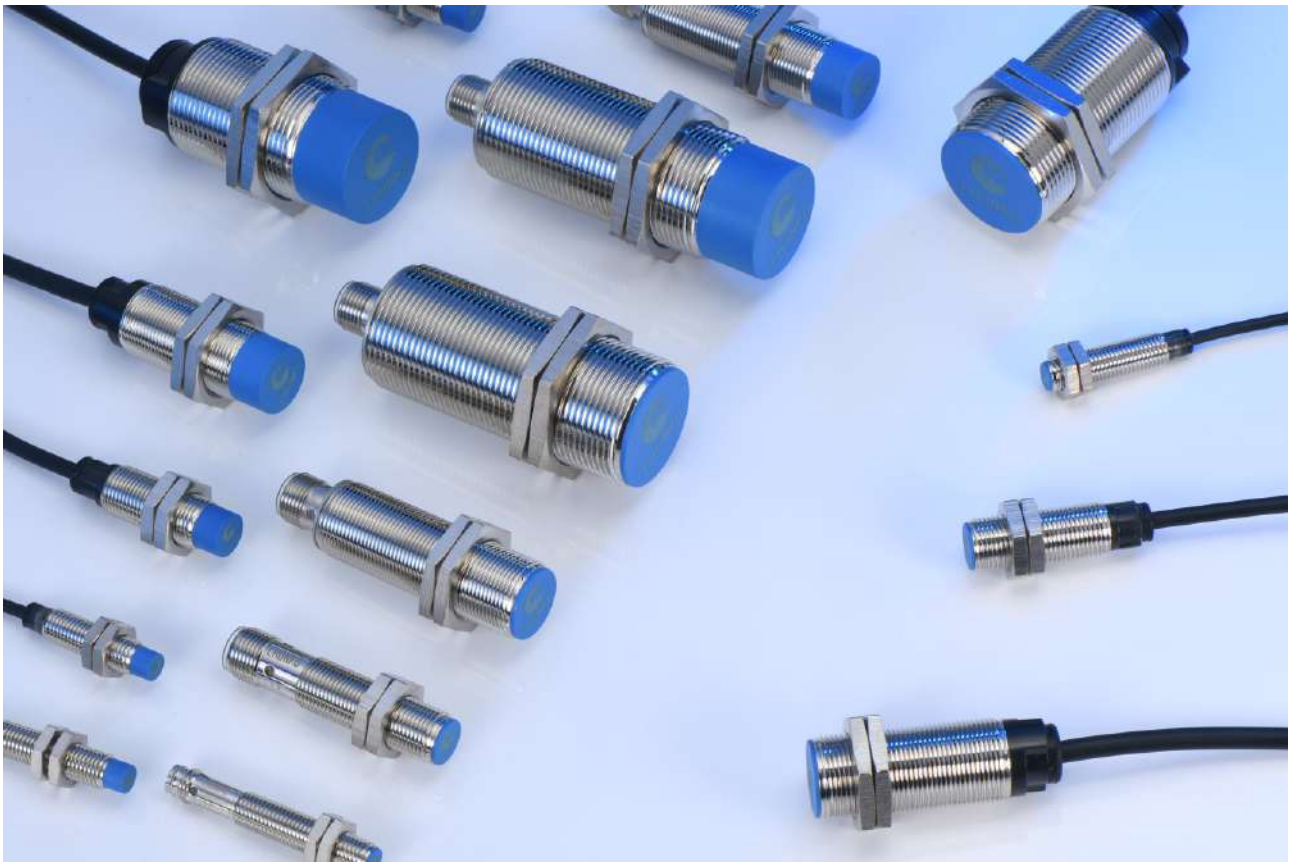
Inductive Sensor

Standard Function Type

- The non-contact detection method is safe and reliable.
- The special IC is used to design and manufacture to improve the anti-interference performance.
- Durable and high reliable, can replace small switches and limit switches.

Full Specification:

The cylindrical series M08 to M30mm and the rectangular series 17*17 to 40*40 mm.



Inductive Sensor-Cylindrical

- High accuracy of repetition
- Low temperature drift
- Strong anti-interference ability
- High response frequency
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

DC 3-Wire

Product No.		CL08	CL08	CL08	CL08
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		1.5mm±10%	2mm±10%	1.5mm±10%	2mm±10%
Setting Distance		0～1.2mm	0～1.6mm	0～1.2mm	0～1.6mm
Size (mm)		M8*1*35	M8*1*35	M8*1*50	M8*1*50
Output Mode	NPN NO	CL08-RF1.5DN1	CL08-RN2DN1	CL08-RF1.5DN1-A	CL08-RN2DN1-A
	NPN NC	CL08-RF1.5DN2	CL08-RN2DN2	CL08-RF1.5DN2-A	CL08-RN2DN2-A
Output Mode	PNP NO	CL08-RF1.5DP1	CL08-RN2DP1	CL08-RF1.5DP1-A	CL08-RN2DP1-A
	PNP NC	CL08-RF1.5DP2	CL08-RN2DP2	CL08-RF1.5DP2-A	CL08-RN2DP2-A
Technical Parameter					
Standard Detection Object		Iron 8×8×1mm	Iron 12×12×1mm	Iron 8×8×1mm	Iron 12×12×1mm
Response Frequency		2kHz	0.8kHz	2kHz	0.8kHz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		DC12-24V ripple (P-P) less than 10% (DC10-30V)			
Consumed Current		Less than 13mA			
Control Output	Switching Capacity	Less than 200mA			
	Residual Voltage	Less than 2V (load current 200mA, conductor 2m)			
Indicator		Action display (red)			
Protection Circuit		Reverse protection, surge absorption, load short circuit protection			
Ambient Temperature Range		Working: -25~+70℃, Storing: -40~+85℃(no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC standard IP67			
Connection Mode		2m PVC cable	2m PVC cable	M8 3 pins connector	M8 3 pins connector
Weight		About 32g	About 31g	About 7g	About 7g
Material		Case: nickel-plated brass, Test surface: heat-resistant ABS, standard cable (black) PVC			

Inductive Sensor-Cylindrical

- The measurement deviation between the same type of sensor is very small
- Low temperature drift
- Strong anti-interference ability
- High response frequency
- Bilateral indicator light structure
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

DC 3-Wire

Product No.		CL12	CL12	CL12	CL12
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		2mm±10%	4mm±10%	2mm±10%	4mm±10%
Setting Distance		0～1.6mm	0～3.2mm	0～1.6mm	0～3.2mm
Size (mm)		M12*1*42	M12*1*42	M12*1*55	M12*1*58
Output Mode	NPN NO	CL12-RF2DN1	CL12-RN4DN1	CL12-RF2DN1-A	CL12-RN4DN1-A
	NPN NC	CL12-RF2DN2	CL12-RN4DN2	CL12-RF2DN2-A	CL12-RN4DN2-A
Output Mode	PNP NO	CL12-RF2DP1	CL12-RN4DP1	CL12-RF2DP1-A	CL12-RN4DP1-A
	PNP NC	CL12-RF2DP2	CL12-RN4DP2	CL12-RF2DP2-A	CL12-RN4DP2-A
Technical Parameter					
Standard Detection Object		Iron 12×12×1mm	Iron 15×15×1mm	Iron 12×12×1mm	Iron 15×15×1mm
Response Frequency		1.5kHz	0.4kHz	1.5kHz	0.4kHz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		DC12-24V ripple (P-P) less than 10% (DC10-30V)			
Consumed Current		Less than 13mA			
Control Output	Switching Capacity	Less than 200mA			
	Residual Voltage	Less than 2V (Load current 200mA, conductor 2m)			
Indicator		Action display (red)			
Protection Circuit		Reverse protection, surge absorption, load short circuit protection			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M12 4 pins connector	M12 4 pins connector
Weight		About 54g	About 52g	About15g	About 14g
Material		Case: nickel-plated brass, Test surface: heat-resistant ABS, standard cable (black) PVC			

Inductive Sensor-Cylindrical

- High repeat accuracy
- Low temperature drift
- Strong anti-interference ability
- Bilateral indicator light structure
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

DC 3-Wire

Product No.		CL18	CL18	CL18	CL18
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		5mm±10%	8mm±10%	5mm±10%	8mm±10%
Setting Distance		0～4mm	0～6.4mm	0～4mm	0～6.4mm
Size (mm)		M18*1*53	M18*1*53	M18*1*67	M18*1*70
Output Mode	NPN NO	CL18-RF5DN1	CL18-RN8DN1	CL18-RF5DN1-A	CL18-RN8DN1-A
	NPN NC	CL18-RF5DN2	CL18-RN8DN2	CL18-RF5DN2-A	CL18-RN8DN2-A
Output Mode	PNP NO	CL18-RF5DP1	CL18-RN8DP1	CL18-RF5DP1-A	CL18-RN8DP1-A
	PNP NC	CL18-RF5DP2	CL18-RN8DP2	CL18-RF5DP2-A	CL18-RN8DP2-A
Technical Parameter					
Standard Detection Object		Iron 18×18×1mm	Iron 30×30×1mm	Iron 18×18×1mm	Iron 30×30×1mm
Response Frequency		0.6kHz	0.2kHz	0.6kHz	0.2kHz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		DC12-24V ripple (P-P) less than 10% (DC10-30V)			
Consumed Current		Less than 13mA			
Control Output	Switching Capacity	Less than 200mA			
	Residual Voltage	Less than 2V (Load current 200mA, conductor 2m)			
Indicator		Action display (red)			
Protection Circuit		Reverse protection, surge absorption, load short circuit protection			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M12 4 pins connector	M12 4 pins connector
Weight		About 93g	About 93g	About 42g	About 41g
Material		Case: nickel-plated brass, Test surface: heat-resistant ABS, standard cable (black) PVC			

Inductive Sensor-Cylindrical

- The measurement deviation between the same type of sensor is small
- Low temperature drift
- Strong anti-interference ability
- Double side indicator structure
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

DC 3-Wire

Product No.		CL30	CL30	CL30	CL30
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		10mm±10%	15mm±10%	10mm±10%	15mm±10%
Setting Distance		0～8mm	0～12mm	0～8mm	0～12mm
Size (mm)		M30*1.5*66	M30*1.5*68	M30*1.5*84	M30*1.5*90
Output Mode	NPN NO	CL30-RF10DN1	CL30-RN15DN1	CL30-RF10DN1-A	CL30-RN15DN1-A
	NPN NC	CL30-RF10DN2	CL30-RN15DN2	CL30-RF10DN2-A	CL30-RN15DN2-A
Output Mode	PNP NO	CL30-RF10DP1	CL30-RN15DP1	CL30-RF10DP1-A	CL30-RN15DP1-A
	PNP NC	CL30-RF10DP2	CL30-RN15DP2	CL30-RF10DP2-A	CL30-RN15DP2-A
Technical Parameter					
Standard Detection Object		Iron 30×30×1mm	Iron 54×54×1mm	Iron 30×30×1mm	Iron 54×54×1mm
Response Frequency		0.4kHz	0.1kHz	0.4kHz	0.1kHz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		DC12-24V ripple (P-P) less than 10% (DC10-30V)			
Consumed Current		Less than 13mA			
Control Output	Switching Capacity	Less than 200mA			
	Residual Voltage	Less than 2V (Load current 200mA, conductor 2m)			
Indicator		Action display (red)			
Protection Circuit		Reverse protection, surge absorption, load short circuit protection			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M12 4 pins connector	M12 4 pins connector
Weight		About 168g	159g	About 127g	About 128g
Material		Case: nickel-plated brass, Test surface: heat-resistant ABS, standard cable (black) PVC			

Inductive Sensor - Cylindrical

- High repeat accuracy
- Low temperature drift
- Strong anti-interference ability
- High response frequency
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

DC 2-Wire

Product No.		CL08	CL08	CL08	CL08
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		1.5mm±10%	2mm±10%	1.5mm±10%	2mm±10%
Setting Distance		0～1.2mm	0～1.6mm	0～1.2mm	0～1.6mm
Size (mm)		M8*1*35	M8*1*35	M8*1*50	M8*1*50
Output Mode	DC 2-Wires NO	CL08-RF1.5DL1	CL08-RN2DL1	CL08-RF1.5DL1-A	CL08-RN2DL1-A
Output Mode	DC 2-Wires NC	CL08-RF1.5DL2	CL08-RN2DL2	CL08-RF1.5DL2-A	CL08-RN2DL2-A
Technical Parameter					
Standard Detection Object		Iron 8×8×1mm	Iron 12×12×1mm	Iron 8×8×1mm	Iron 12×12×1mm
Response Frequency		1.5kHz	0.8kHz	1.5kHz	0.8kHz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		DC12-24V ripple (P-P) less than 10% (DC10-30V)			
Consumed Current		Less than 0.8mA			
Control Output	Switching Capacity	3-100mA			
	Residual Voltage	Less than 3V (less than 5V), (load current 100mA, conductor 2m)			
Indicator		Action display (red)			
Protection Circuit		Reverse protection, surge absorption, load short circuit protection			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M8 3 pins connector	M8 3 pins connector
Weight		About 32g	About 31g	About 7g	About 7g
Material		Case: brass nickel plated, Test surface: heat-resistant ABS, standard cable (black) PVC			

Inductive Sensor - Cylindrical

- The measurement deviation between the same type of sensor is very small
- Low temperature drift
- Strong anti-interference ability
- High response frequency
- Bilateral indicator light structure
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

DC 2-Wire

Product No.		CL12	CL12	CL12	CL12
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		2mm±10%	4mm±10%	2mm±10%	4mm±10%
Setting Distance		0～1.6mm	0～3.2mm	0～1.6mm	0～3.2mm
Size (mm)		M12*1*42	M12*1*42	M12*1*55	M12*1*58
Output Mode	DC 2-Wires NO	CL12-RF2DL1	CL12-RN4DL1	CL12-RF2DL1-A	CL12-RN4DL1-A
Output Mode	DC 2-Wires NC	CL12-RF2DL2	CL12-RN4DL2	CL12-RF2DL2-A	CL12-RN4DL2-A
Technical Parameter					
Standard Detection Object		Iron 12×12×1mm	Iron 15×15×1mm	Iron 12×12×1mm	Iron 15×15×1mm
Response Frequency		1kHz	0.4kHz	1kHz	0.4kHz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		DC12-24V ripple (P-P) less than 10% (DC10-30V)			
Consumed Current		Less than 0.8mA			
Control Output	Switching Capacity	3-100mA			
	Residual Voltage	Less than 3V (less than 5V), (load current 100mA, conductor 2m)			
Indicator		Action display (red)			
Protection Circuit		Reverse protection, surge absorption, load short circuit protection			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M12 4 pins connector	M12 4 pins connector
Weight		About54g	About52g	About15g	About14g
Material		Case : brass nickel plated, Test surface: heat-resistant ABS, standard cable (black) PVC			

Inductive Sensor - Cylindrical

- High repeat accuracy
- Low temperature drift
- Strong anti-interference ability
- Bilateral indicator light structure
- 2m standard cable
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DC 2-Wire

Product No.		CL18	CL18	CL18	CL18
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		5mm±10%	8mm±10%	5mm±10%	8mm±10%
Setting Distance		0～4mm	0～6.4mm	0～4mm	0～6.4mm
Size (mm)		M18*1*53	M18*1*53	M18*1*67	M18*1*70
Output Mode	DC 2-Wires NO	CL18-RF5DL1	CL18-RN8DL1	CL18-RF5DL1-A	CL18-RN8DL1-A
Output Mode	DC 2-Wires NC	CL18-RF5DL2	CL18-RN8DL2	CL18-RF5DL2-A	CL18-RN8DL2-A
Technical Parameter					
Standard Detection Object		Iron 18×18×1mm	Iron 30×30×1mm	Iron 18×18×1mm	Iron 30×30×1mm
Response Frequency		0.6kHz	0.2kHz	0.6kHz	0.2kHz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		DC12-24V ripple (P-P) less than 10% (DC10-30V)			
Consumed Current		Less than 0.8mA			
Control Output	Switching Capacity	3-100mA			
	Residual Voltage	Less than 3V (less than 5V), (load current 100mA, conductor 2m)			
Indicator		Action display (red)			
Protection Circuit		Reverse protection, surge absorption, load short circuit protection			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M12 4 pins connector	M12 4 pins connector
Weight		About 93g	About 93g	About 42g	About 41g
Material		CASE: brass nickel plated, Test surface: heat-resistant ABS, standard cable (black) PVC			

Inductive Sensor - Cylindrical

- The measurement deviation between the same type of sensor is very small
- Low temperature drift
- Strong anti-interference ability
- Bilateral indicator light structure
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

DC 2-Wire

Product No.		CL30	CL30	CL30	CL30
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		10mm±10%	15mm±10%	10mm±10%	15mm±10%
Setting Distance		0～8mm	0～12mm	0～8mm	0～12mm
Size (mm)		M30*1.5*66	M30*1.5*68	M30*1.5*84	M30*1.5*90
Output Mode	DC 2-Wires NO	CL30-RF10DL1	CL30-RN15DL1	CL30-RF10DL1-A	CL30-RN15DL1-A
Output Mode	DC 2-Wires NC	CL30-RF10DL2	CL30-RN15DL2	CL30-RF10DL2-A	CL30-RN15DL2-A
Technical Parameter					
Standard Detection Object		Iron 30×30×1mm	Iron 54×54×1mm	Iron 30×30×1mm	Iron 54×54×1mm
Response Frequency		0.4kHz	0.1kHz	0.4kHz	0.1kHz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		DC12-24V ripple (P-P) less than 10% (DC10-30V)			
Consumed Current		Less than 0.8mA			
Control Output	Switching Capacity	Less than 3-100mA			
	Residual Voltage	Less than 3V (less than 5V), (load current 100mA, conductor 2m)			
Indicator		Action display (red)			
Protection Circuit		Reverse protection, surge absorption, load short circuit protection			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M12 4 pins connector	M12 4 pins connector
Weight		About 168g	About 159g	About 127g	About 128g
Material		Case: brass nickel plated, Test surface: heat-resistant ABS, standard cable (black) PVC			

Inductive Sensor - Cylindrical

- The measurement deviation between the same type of sensor is very small
- Low temperature drift
- Strong anti-interference ability
- Bilateral indicator light structure
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

AC 2-Wire

Product No.		CL12	CL12	CL12	CL12
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		2mm±10%	4mm±10%	2mm±10%	4mm±10%
Setting Distance		0～1.6mm	0～3.2mm	0～1.6mm	0～3.2mm
Size (mm)		M12*1*42	M12*1*42	M12*1*55	M12*1*58
Output Mode	AC 2-Wires NO	CL12-RF2AK1	CL12-RN4AK1	CL12-RF2AK1-A	CL12-RN4AK1-A
Output Mode	AC 2-Wires NC	CL12-RF2AK2	CL12-RN4AK2	CL12-RF2AK2-A	CL12-RN4AK2-A
Technical Parameter					
Standard Detection Object		Iron 12×12×1mm	Iron 15×15×1mm	Iron 12×12×1mm	Iron 15×15×1mm
Response Frequency		25Hz	25Hz	25Hz	25Hz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		AC24~240V 50/60Hz (AC20~264V)			
Consumed Current		Less than 1.7mA			
Switching Capacity		5-200mA			
Indicator		Action display (red)			
Protection Circuit		Surge absorption			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M12 4 pins connector	M12 4 pins connector
Weight		About 54g	About 52g	About 15g	About 14g
Material		Case: brass nickel plated, Test surface: heat-resistant ABS, standard cable			

Inductive Sensor - Cylindrical

- High repeat accuracy
- Low temperature drift
- Strong anti-interference ability
- Bilateral indicator light structure
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

AC 2-Wire

Product No.		CL18	CL18	CL18	CL18
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		5mm±10%	8mm±10%	5mm±10%	8mm±10%
Setting Distance		0～4mm	0～6.4mm	0～4mm	0～6.4mm
Size (mm)		M18*1*53	M18*1*53	M18*1*67	M18*1*70
Output Mode	AC 2-Wires NO	CL18-RF5AK1	CL18-RN8AK1	CL18-RF5AK1-A	CL18-RN8AK1-A
Output Mode	AC 2-Wires NC	CL18-RF5AK2	CL18-RN8AK2	CL18-RF5AK2-A	CL18-RN8AK2-A
Technical Parameter					
Standard Detection Object		Iron 18×18×1mm	Iron 30×30×1mm	Iron 18×18×1mm	Iron 30×30×1mm
Response Frequency		25Hz	25Hz	25Hz	25Hz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		AC24-240V 50/60Hz (AC20-264V)			
Consumed Current		Less than 1.7mA			
Switching Capacity		5-200mA			
Indicator		Action display (red)			
Protection Circuit		Surge absorption			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M12 4 pins connector	M12 4 pins connector
Weight		About 93g	About 93g	About 42g	About 41g
Material		Case: brass nickel plated, Test surface: heat-resistant ABS, standard cable			

Inductive Sensor - Cylindrical

- The measurement deviation between the same type of sensor is very small
- Low temperature drift
- Strong anti-interference ability
- Bilateral indicator light structure
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

AC 2-Wire

Product No.		CL30	CL30	CL30	CL30
Installation Mode		Flush	Non-flush	Flush	Non-flush
Detection Distance		10mm±10%	15mm±10%	10mm±10%	15mm±10%
Setting Distance		0～8mm	0～12mm	0～8mm	0～12mm
Size (mm)		M30*1.5*66	M30*1.5*68	M30*1.5*84	M30*1.5*90
Output Mode	AC 2-Wires NO	CL30-RF10AK1	CL30-RN15AK1	CL30-RF10AK1-A	CL30-RN15AK1-A
Output Mode	AC 2-Wires NC	CL30-RF10AK2	CL30-RN15AK2	CL30-RF10AK2-A	CL30-RN15AK2-A
Technical Parameter					
Standard Detection Object		Iron 30×30×1mm	Iron 54×54×1mm	Iron 30×30×1mm	Iron 54×54×1mm
Response Frequency		25Hz	25Hz	25Hz	25Hz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		AC24-240V 50/60Hz (AC20-264V)			
Consumed Current		Less than 1.7mA			
Switching Capacity		5-200mA			
Indicator		Action display (red)			
Protection Circuit		Surge absorption			
Ambient Temperature Range		Working: -25~+70℃ Storing: -40 ~ +85 ℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±15% of the rated power supply voltage, the detection distance is less than ±1%.			
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2 m of PVC cable	2 m of PVC cable	M12 4 pins connector	M12 4 pins connector
Weight		About 168g	About 159g	About 127g	About 128g
Material		Case: nickel-plated brass, Test surface: heat-resistant ABS, standard cable (black) PVC			

Inductive Sensor - Rectangular

- The measurement deviation between the same type of sensor is very small
- High temperature stability
- Strong anti-interference ability
- 2m standard cable
- Strong and durable structure, stable and reliable performance, good consistency, high cost performance

DC 3-Wire

Product No.		CL17	CL25	CL30	CL40
Installation Mode		Non-flush	Non-flush	Non-flush	Non-flush
Detection Distance		5mm±10%	5mm±10%	10mm±10%	20mm±10%
Setting Distance		0～4mm	0～4mm	0～8mm	0～16mm
Size (mm)		17*17*30	25*25*43	30*30*57	40*40*57
Output Mode	NPN NO	CL17-QN5DN1	CL25-QN5DN1	CL30-QN10DN1	CL40-QN20DN1
	NPN NC	CL17-QN5DN2	CL25-QN5DN2	CL30-QN10DN2	CL40-QN20DN2
Output Mode	PNP NO	CL17-QN5DP1	CL25-QN5DP1	CL30-QN10DP1	CL40-QN20DP1
	PNP NC	CL17-QN5DP2	CL25-QN5DP2	CL30-QN10DP2	CL40-QN20DP2
Technical Parameter					
Standard Detection Object		Iron 15×15×1mm	Iron 30×30×1mm	Iron 40×40×1mm	Iron 50×50×1mm
Response Frequency		500Hz	500Hz	500Hz	40Hz
Movement Differential		Less than 10% of detection distance			
Supply Voltage Service Voltage Range		DC12-24V ripple (p-p) less than 10% (DC10~30V)			
Consumed Current		Less than 8mA (at DC12V), less than 15mA (at DC24V)			
Control Output	Switching Capacity	Less than 100mA			
	Residual Voltage	Below 2V (load current 200mA)			
Indicator		Action display (red)			
Protection Circuit		Reverse protection, surge absorption			
Ambient Temperature Range		Working / Storing: -25~+70℃ (no freeze, no dew)			
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)			
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.			
Influence of Voltage		In the range of ±10% of the rated power supply voltage, the detection distance is less than ±2.5%.			
Insulation Resistance		Above 50MΩ (DC500V megger) between the whole charging part and the shell			
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions			
IP Grade		IEC Standard IP67			
Connection Mode		2m PVC cable	2m PVC cable	2m PVC cable	2m PVC cable
Weight		About 58g	About 99g	About 136g	About 198g
Material		Case: heat resistant ABS, Standard Cable (Black) PVC			

Inductive Sensor - Flat

- High repeat accuracy
- Easy to install in a narrow space
- Low temperature drift control
- Strong anti-interference ability
- Strong and durable structure, stable and reliable performance

DC 3-Wire

Product No.		CL18	CL18
Installation Mode		Non-flush	Non-flush
Detection Distance		5mm±10%	5mm±10%
Setting Distance		0~4mm	0~4mm
Size(mm)		M18×10×30	M18×10×30
Output Mode	NPN/PNP NO	CL18-FN5DN1	CL18-FN5DP1
	NPN/PNP NC	CL18-FN5DN2	CL18-FN5DP2
Technical Parameter			
Standard Detection Object		Iron 18×18×1mm	Iron 18×18×1mm
Response Frequency		500Hz	500Hz
Movement Differential		Less than 10% of detection distance	
SupplyVoltage Service Voltage Range		DC12-24V ripple(P-P)less than 10% (DC10-30V)	
Consumed Current		Less than 10mA (at DC12V at non-load)	
Control Output	Switching Capacity	Less than 100mA at DC24V, Less than 50mA at DC12V	
	Residual Voltage	Below 1V (at load current 100mA, wire length 2m)	
Indicator		Action display (red)	
Protection Circuit		Reverse protection, surge absorption	
Ambient Temperature Range		Working / Storing: -25~+70℃ (no freeze, no dew)	
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)	
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±10%.	
Influence of Voltage		In the range of ±10% of the rated power supply voltage, the detection distance is less than ±2.5%.	
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell	
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell	
Vibration(Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions	
Impact(Durability)		300m/s² for each 10 times in X / Y / Z directions	
IP Grade		IEC standard IP67	
Connection Mode		2 m of PVC cable	
Weight		50g	50g
Material		Shell: ABS, Detection surface: heat resistant ABS, Standard Cable (Black) PVC	

Capacitive Sensor - Cylindrical

- High repeat accuracy
- Multiple protection circuits
- Strong anti-interference ability
- Wide range of detection applications
- Strong and durable structure, stable and reliable performance

DC 3-Wire

Product No.		CC12	CC18	CC30
Installation Mode		Non-flush	Non-flush	Non-flush
Detection Distance		4mm+10%	8mm+10%	15mm+10%
Setting Distance		0~2.8mm	0~5.6mm	0~10mm
Size (mm)		M12*1*80	M18*1*80	M30*1.5*80
Output Mode	NPN NO	CC12-RN4DN1	CC18-RN8DN1	CC30-RN15DN1
	NPN NC	CC12-RN4DN2	CC18-RN8DN2	CC30-RN15DN2
Output Mode	PNP NO	CC12-RN4DP1	CC18-RN8DP1	CC30-RN15DP1
	PNP NC	CC12-RN4DP2	CC18-RN8DP2	CC30-RN15DP2
Technical Parameter				
Standard Detection Object		Iron 50x50x1mm		
Detection Object		Conductor and electrolytic objects		
Movement Differential		Less than 20% of detection distance		
Response Frequency		100Hz		
Supply Voltage Service Voltage Range		DC12~24V (DC10~30V)		
Consumed Current		Less than 15mA		
Control Output	Switching Capacity	Less than 200mA		
	Residual Voltage	Below 2V (at load current 200mA, wire length 2m)		
Indicator		Action display (red)		
Protection Circuit		Reverse protection, surge absorption, load short circuit protection, output reverse protection		
Ambient Temperature Range		Working / Storing: -25~+70℃ (no freeze, no dew)		
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)		
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±20%.		
Influence of Voltage		In the range of ±10% of the rated supply voltage, the detection distance is less than ±2%.		
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell		
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell		
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions		
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions		
IP Grade		IEC standard IP67		
Connection Mode		2m of PVC cable	2m of PVC cable	2m of PVC cable
Weight		About 60g	About 140g	About 200g
Material		Shell and detection surface: heat resistant ABS, Standard Cable (Black) PVC		

Capacitive Sensor - Cylindrical

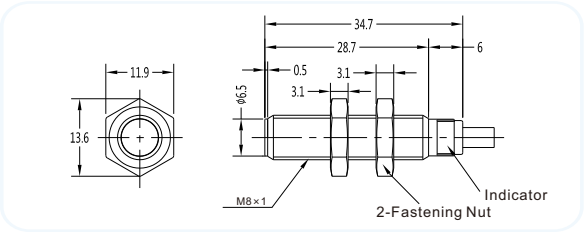
- High repeat accuracy
- Multiple protection circuits
- Strong anti-interference ability
- Wide range of detection applications
- Strong and durable structure, stable and reliable performance

AC 2-Wire

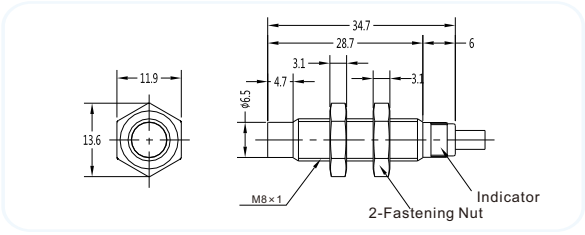
Product No.		CC12	CC18	CC30
Installation Mode		Non-flush	Non-flush	Non-flush
Detection Distance		4mm+10%	8mm+10%	15mm+10%
Setting Distance		0~2.8mm	0~5.6mm	0~10mm
Size (mm)		M12*1*80	M12*1*80	M30*1.5*80
Output Mode	AC 2-Wire NO	CC12-RN4AK1	CC18-RN8AK1	CC30-RN15AK1
	AC 2-Wire NC	CC12-RN4AK2	CC18-RN8AK2	CC30-RN15AK2
Technical Parameter				
Standard Detection Object		Iron 50x50x1mm		
Detection Object		Conductor and electrolytic objects		
Movement Differential		Less than 20% of detection distance		
Response Frequency		100Hz		
Supply Voltage Service Voltage Range		AC100~220V (AC90~250V)		
Consumed Current		Less than 2.2mA		
Control Output	Switching Capacity	Less than 10~200mA		
	Residual Voltage	Less than 20V		
Indicator		Action display (red)		
Protection Circuit		Surge absorption		
Ambient Temperature Range		Working / Storing: -25~+70℃ (no freeze, no dew)		
Ambient Humidity Range		Working / Storing: 35~95%RH (no dew)		
Temperature Effect		Temperature range from-25 ℃ to 70 ℃ is 23 ℃, the detection distance is less than ±20%.		
Influence of Voltage		In the range of ±10% of the rated supply voltage, the detection distance is less than ±2%.		
Insulation Resistance		Above 50MΩ (DC500 V megger) between the whole charging part and the shell		
Withstand Voltage		AC 1, 000V 50/60Hz 1min between the whole charging part and the shell		
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions		
Impact (Durability)		300m/s² for each 10 times in X / Y / Z directions		
IP Grade		IEC standard IP67		
Connection Mode		2m of PVC cable	2m of PVC cable	2m of PVC cable
Weight		About 60g	About 140g	About 200g
Material		Shell and detection surface: heat resistant ABS, Standard Cable (Black) PVC		

Inductive Type - Cylindrical Wire Type Outline Dimensions

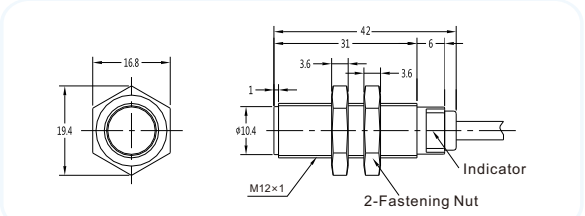
CL08-RF1.5□□□-□/□



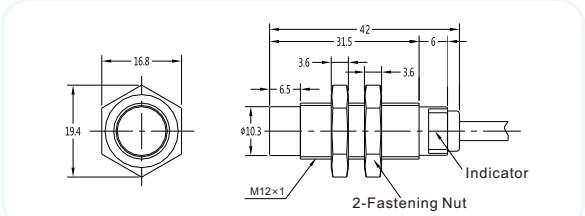
CL08-RN2□□□-□/□



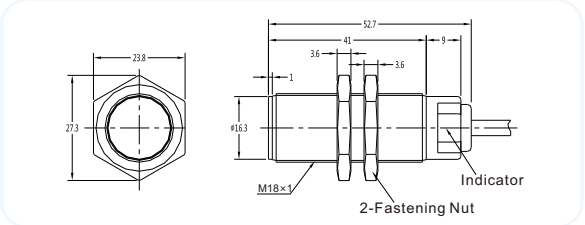
CL12-RF2□□□-□/□



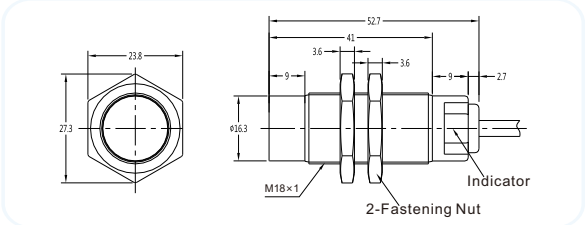
CL12-RN4□□□-□/□



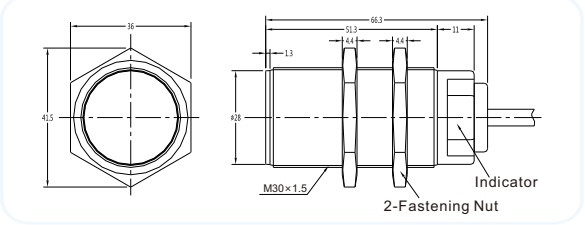
CL18-RF5□□□-□/□



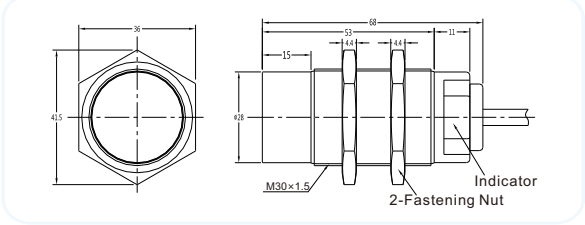
CL18-RN8□□□-□/ □



CL30-RF10□□□-□/□

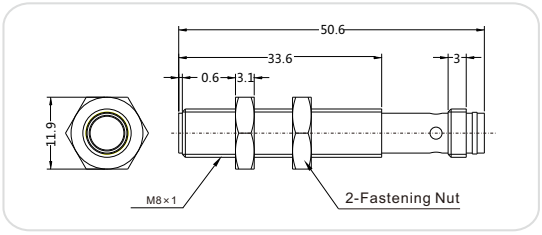


CL30-RN15□□□-□/□

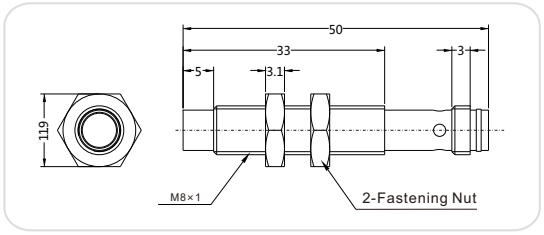


Inductive Type - Cylindrical Connector Type Outline Dimensions

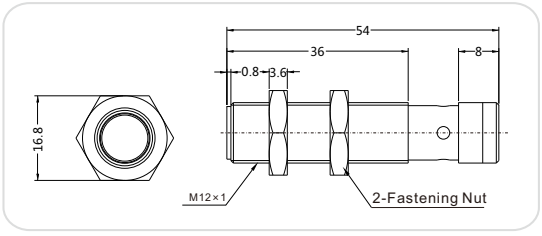
CL08-RF1.5□□□-□/□



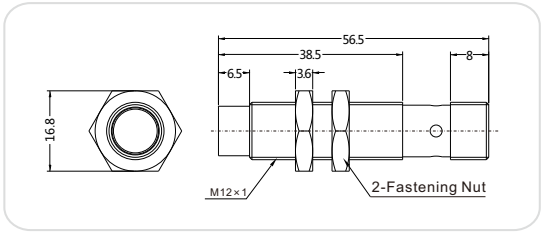
CL08-RN2□□□-□/□



CL12-RF2□□□-□/□



CL12-RN4□□□-□/□



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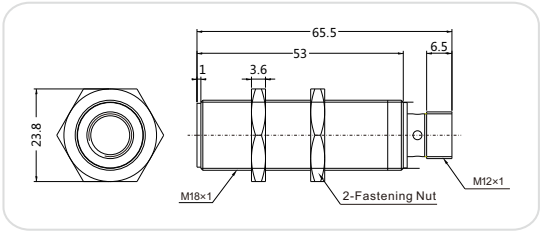
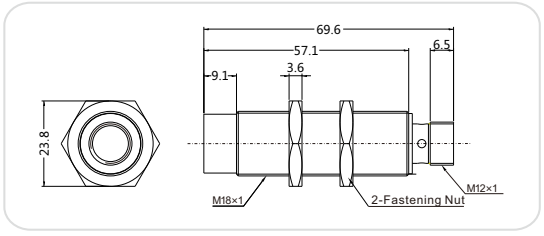
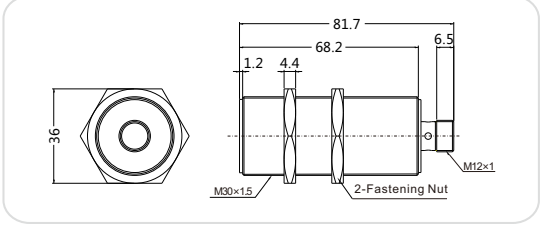


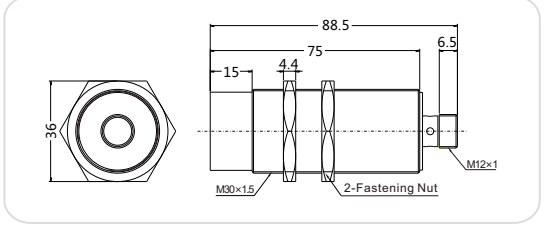
CL18-RN8□□□-□/□



CL30-RF10□□□-□/□



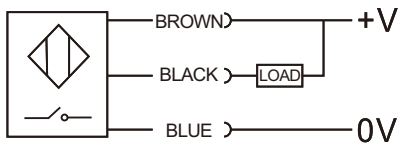
CL30-RN15□□□-□/□



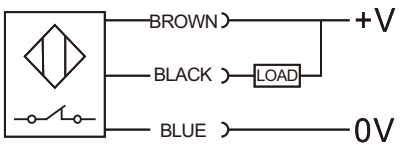
Inductive Type - Wire Type Diagram

DC 3-Wire

NPN NO



NPN NC



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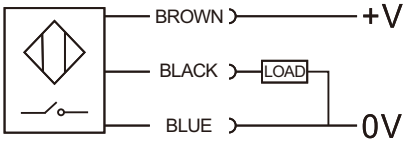
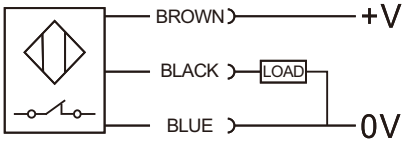
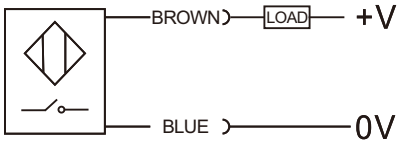


PNP NC



DC 2-Wire

NO



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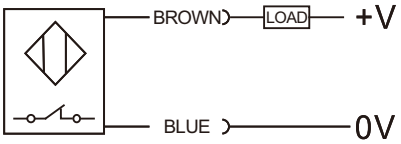
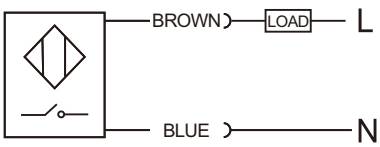
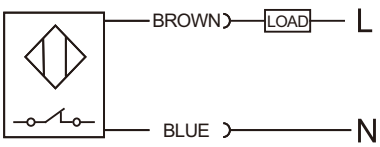


AC 2-Wire

NO

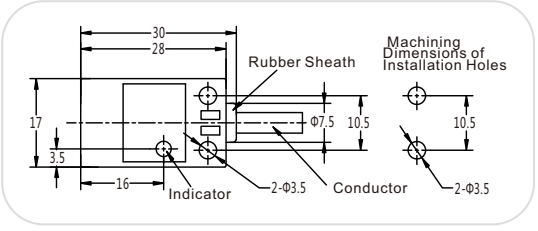


NC

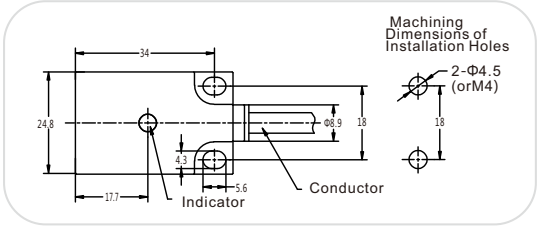


Inductive Type - Rectangular Wire Type Outline Dimensions

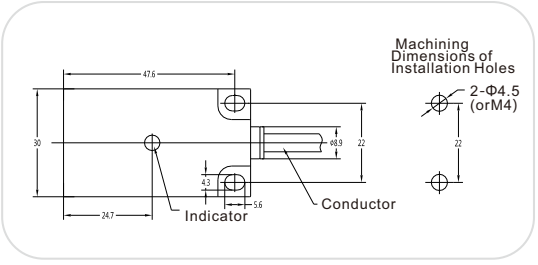
CL17-QN5□□□-□/□



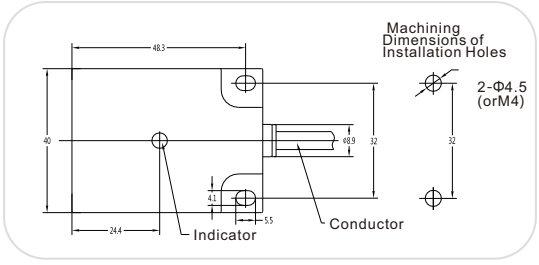
CL25-QN5□□□-□/□



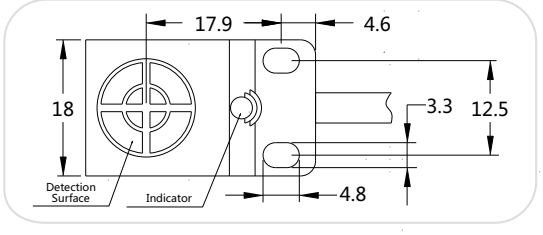
CL30-QN10□□□-□/□

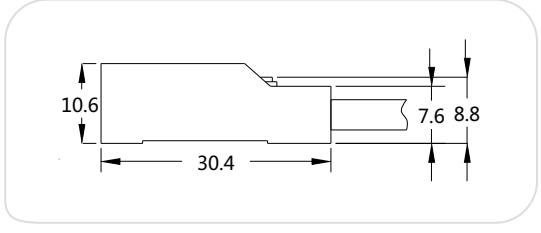


CL40-QN20□□□-□/□



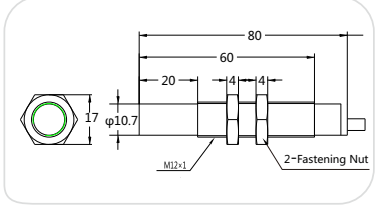
Inductive Type - Flat Wire Type Outline Dimensions



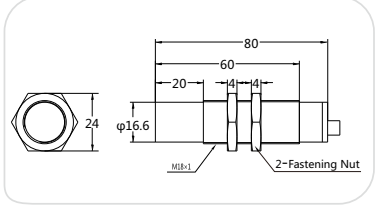


Capacitive Type - Cylindrical Wire Type Outline Dimensions

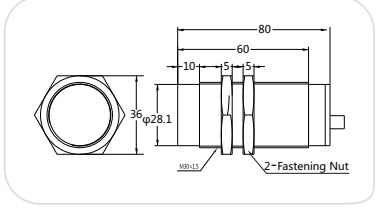
CC12-RN4□□/□



CC18-RN8□□/□



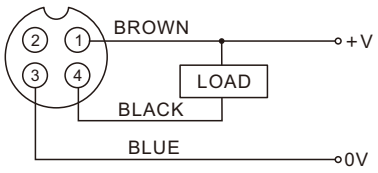
CC30-RN15□□/□



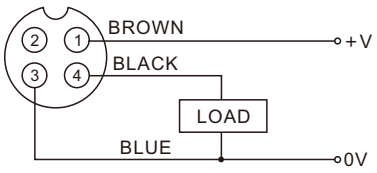
Inductive Type - Connector Type Diagram

DC 3-Wire (4 Pins)

NPN NO

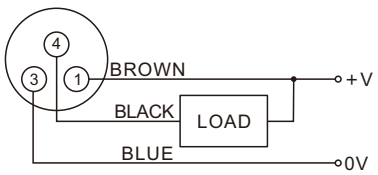


PNP NO

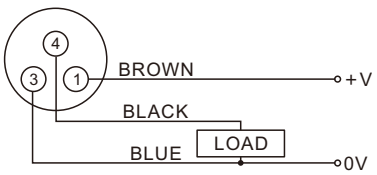


DC 3-Wire (3 Pins)

NPN

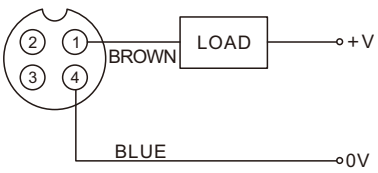


PNP



DC 2-Wire

NO



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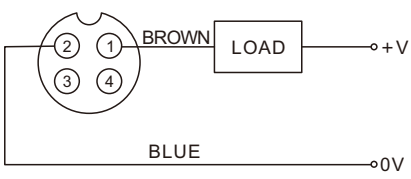
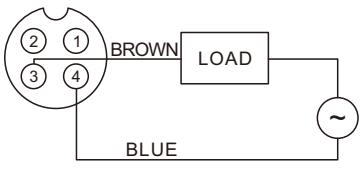


AC 2-Wire

NO



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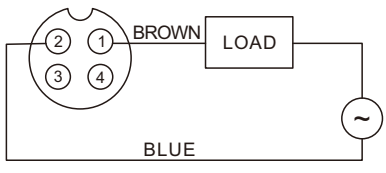
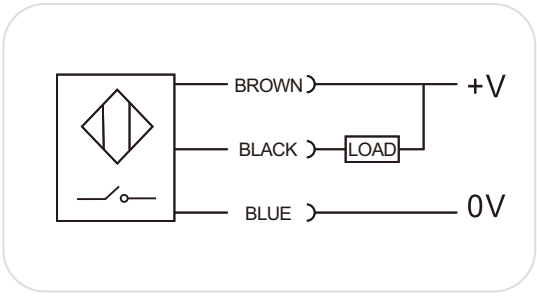


Inductive Type - Rectangular / Flat Diagram

NPN



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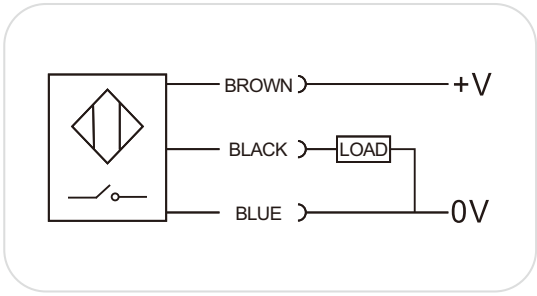
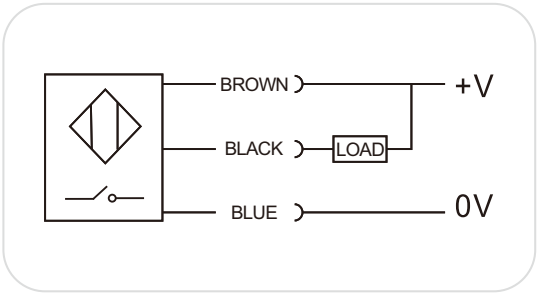


Capacitive Type - Wire Type Diagram

NPN (NO)



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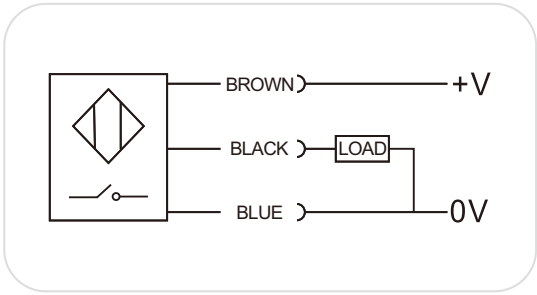

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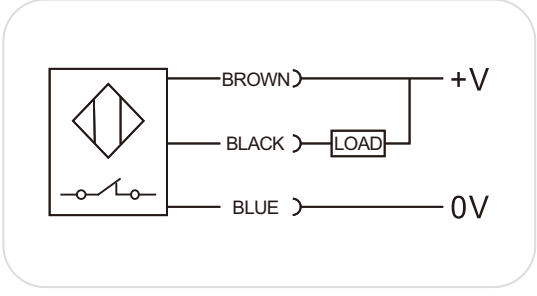
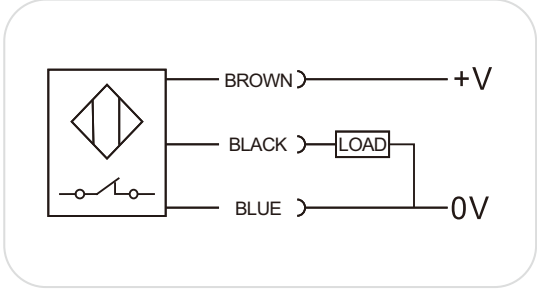


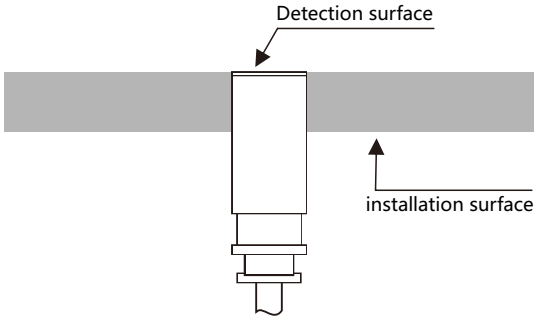
PNP (NC)



Product Installation Mode

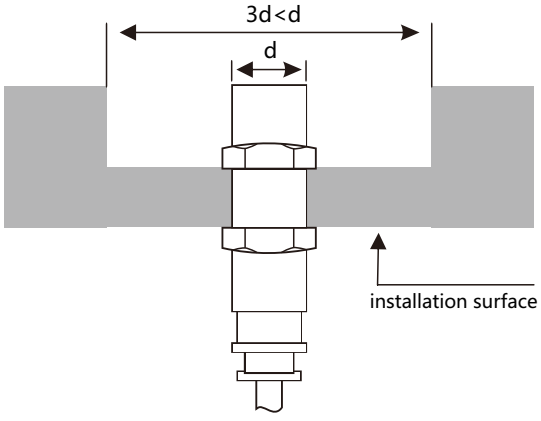
Installation Mode of Flush Type Sensor

When the inductive sensor (proximity switch) detection surface and the metal surface are mounted flush, other surfaces are submerged in the metal surface and are not affected by the metal object. Please refer to



Installation Mode of Non-Flush Type Sensor

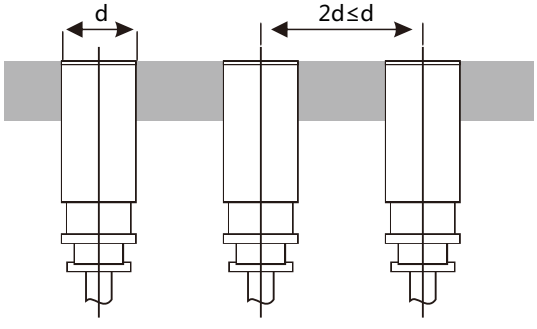
The non-embedded inductive sensor (proximity switch) cannot be submerged in the metal surface around the sensor surface, and it is easy to be affected by the metal surface. The detection distance of the non-submerged inductive sensor is longer, and the distance between the sides of the inductive sensor must be 3 times as long as that of the detection head during installation to prevent interference by metal objects.



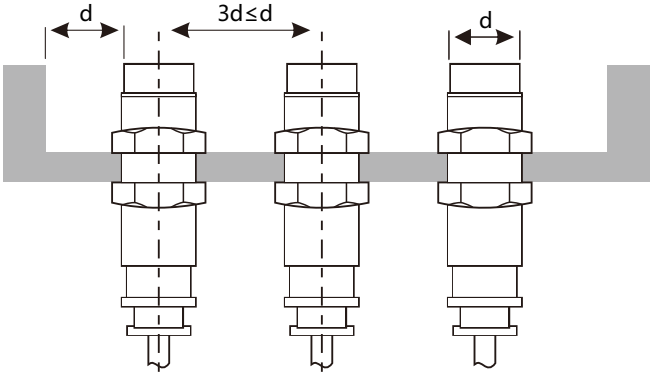
Installation Mode of Side-by-Side Sensor

When multiple inductive sensors (proximity switches) are required to be installed side by side, in order to prevent interference between proximity switches, please refer to the chart less than to reserve a distance.

Flush :

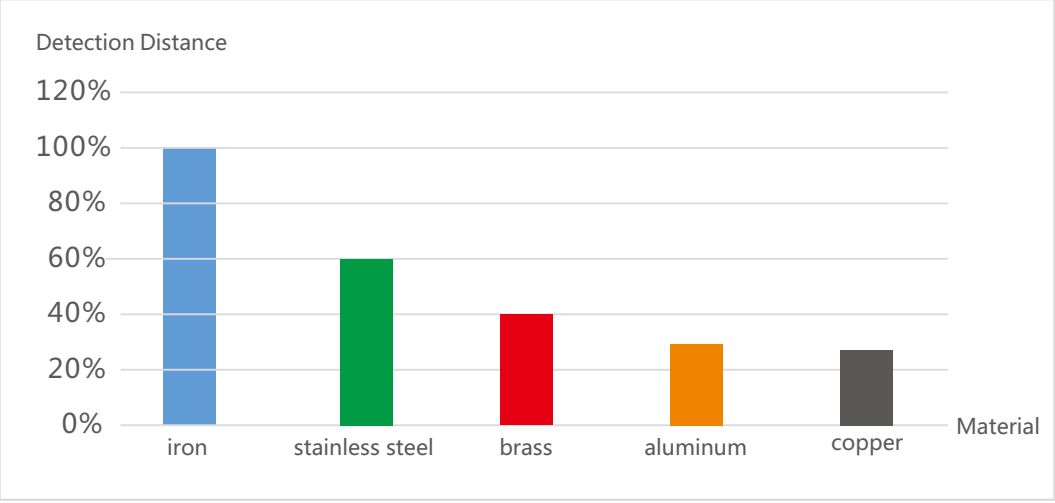


Non-Flush :

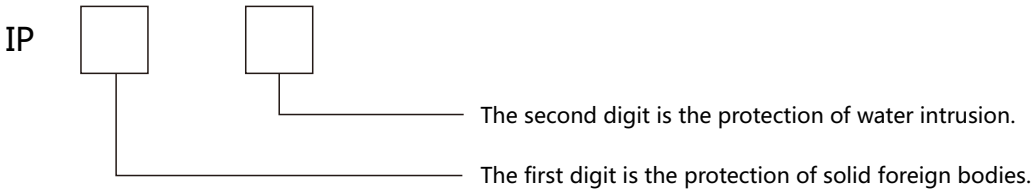


The effect of the material close to the detected object on the measuring distance

When detecting objects of different materials, the detection distance of the proximity switch has a corresponding change.



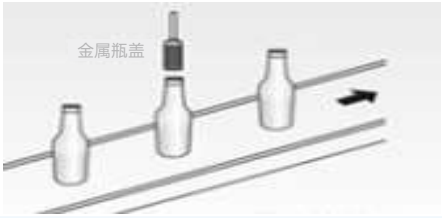
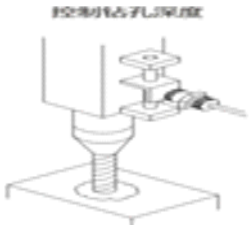
IP Grade Description

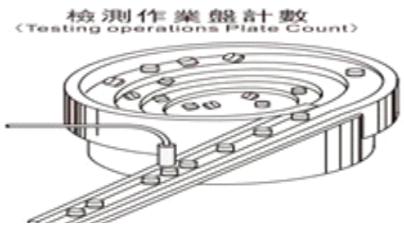
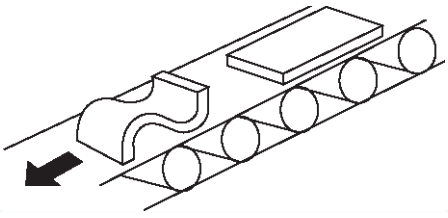


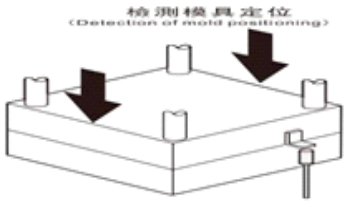
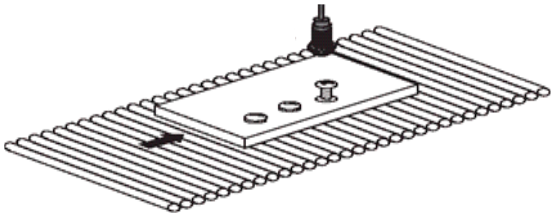
Jargon	Instruction			
IP67 Grade Standard		The first digit represents the level of protection (dust)	The second digit indicates the IP Grade	
	4	Prevent solid invasion of products with diameters greater than 1.0mm	4	Not affected by droplets splashing in any direction
	5	Prevent dust from operating site	5	Not affected by water injection in any direction
	6	Prevent all dust from invading	6	Not intruded by water spraying in any direction
			7	No effect on invasion of water under specified time and pressure
			8	Can still be used in water under specific pressure

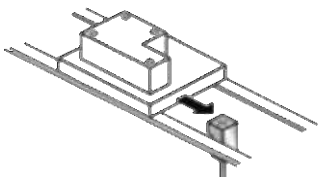
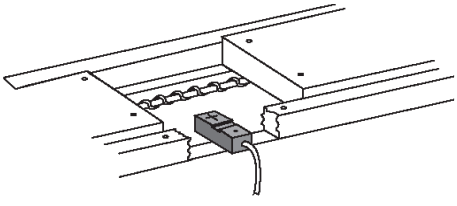
Product Application Case

Our products are widely used in food packaging, transportation equipment, textile machinery, semiconductor, printing machinery, pharmaceutical machinery, logistics industry, medical devices, elevators and so on.

Detection of bottle caps	Manipulator application
	

Panel count	Test the product for changes
	

Mold positioning detection	Test screw height
	

Location detection	Equipment production line application
	

Series of Photoelectric Sensors

Overview

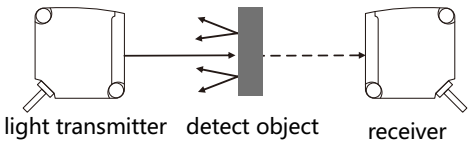
Photoelectric sensor is a sensor which uses photoelectric element as detection element. It first converts the measured change into the change of optical signal, and then further converts the optical signal into electrical signal with the help of photoelectric element. Photoelectric sensor is generally composed of light source, optical path and photoelectric element.

Functional Classification of Photoelectric Sensors

According to different detection methods, photoelectric sensors can be divided into three types: contrast type, the diffuse type and the specular type.

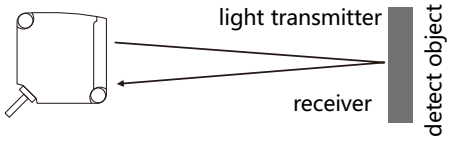
① Through Beam Photoelectric Sensor

The photophore and the receiver are installed on the same optical axis. When there is an object between them, the object will be detected and output according to the change of light transmission. This kind of sensor is called the photoelectric sensor.



② Diffuse Reflection Photoelectric Sensor

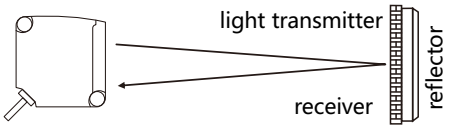
The light transmitter and receiver are photoelectric sensor. The light transmitter sends out light to the detecting object, after the detected object is reflected to the receiver, the light intensity of the reflected light is recognized and detected and the output of the object is detected.



③ Mirror Reflection Photoelectric Sensor

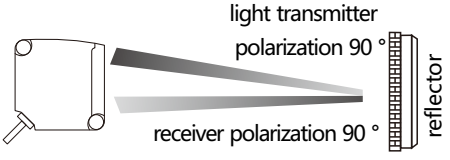
Mirror Reflection Photoelectric Sensor

The light transmitter and the receiver are photoelectric sensor. The light emitted by the light transmitter is reflected through the reflector to the receiver. When there is an object in the middle between the photoelectric sensor and the reflector, the object is judged by the change in the amount of light reflected back to judge the object and output. This photoelectric sensor is a mirror photoelectric sensor.



Polarized Reflection Photoelectric Sensor

Polarized mirror reflection photoelectric sensor and specular reflection action are in the same way. The light emitter and the receiver are installed with a polarizing filter, the filter angle is 90 °, the receiver only receives the light emitting after filter angle of 90 ° . It uses this feature to detect the things with metal reflection.



① Consumed Current of Photoelectric Sensor : The current required for the working state of the photoelectric sensor.

② Response Time of Photoelectric Sensor : The time from the receiver of photoelectric sensor receiving the light to output to ON immediately.

③ Action Mode of Photoelectric Sensor : Dark ON and Light ON

▶ Dark ON (Shading Action)

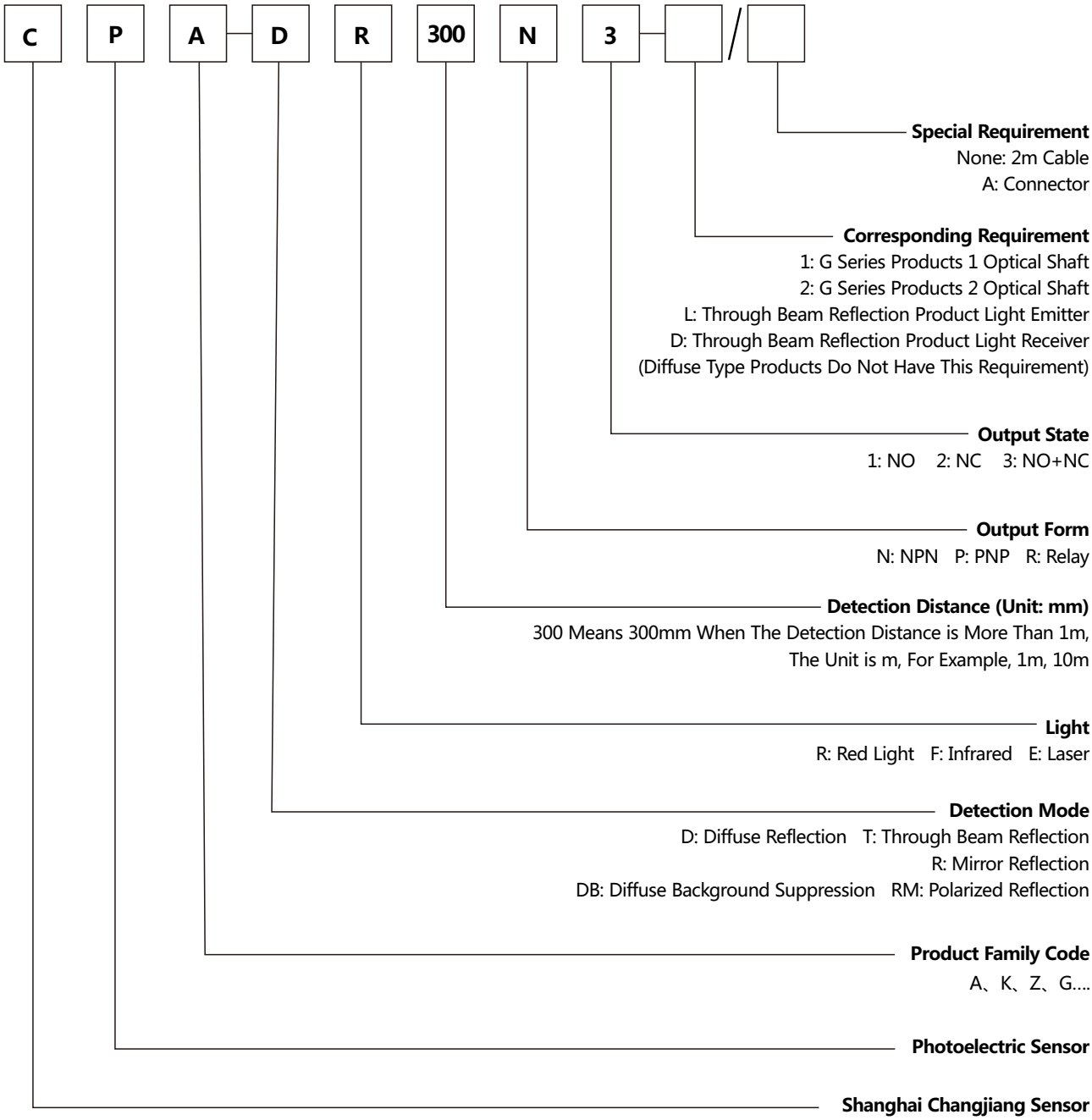
The light emitted from the light emitter, the output of the receiver when it doesn't receive light, (between the light transmitter and the receiver between the detection of objects) in the ON mode.

▶ Light ON (Light Action)

The light emitted from the light emitter, the output of the receiver when it receives light, (there is no object blocking between the light emitter and the receiver) is the ON mode.

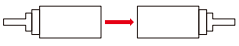
Series of Photoelectric Sensor

Model Naming



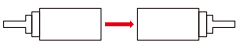
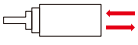
CPA Cylindrical Photoelectric Sensor

Red Light

Detection Mode	Simple Graph	Detection Distance	Connection Mode	Output Form	Model
Through Beam Reflection		20m	**Cable**	NPN	CPA-TR20MN3 2M Emitter:CPA-TR20MN3-L 2M Receiver:CPA-TR20MN3-D 2M
				PNP	CPA-TR20MP3 2M Emitter:CPA-TR20MP3-L 2M Receiver:CPA-TR20MP3-D 2M
			M12 Connector	NPN	CPA-TR20MN3-A Emitter:CPA-TR20MN3-L/A Receiver:CPA-TR20MN3-D/A
				PNP	CPA-TR20MP3-A Emitter:CPA-TR20MP3-L/A Receiver:CPA-TR20MP3-D/A
Polarized Reflection		0.1~4m	**Cable**	NPN	CPA-RMR4MN3
				PNP	CPA-RMR4MP3
			M12 Connector	NPN	CPA-RMR4MN3-A
				PNP	CPA-RMR4MP3-A
Diffuse Reflection		100mm	**Cable**	NPN	CPA-DR100N3
				PNP	CPA-DR100P3
			M12 Connector	NPN	CPA-DR100N3-A
				PNP	CPA-DR100P3-A
		300mm	**Cable**	NPN	CPA-DR300N3
				PNP	CPA-DR300P3
			M12 Connector	NPN	CPA-DR300N3-A
				PNP	CPA-DR300P3-A
		1m	**Cable**	NPN	CPA-DR1MN3
				PNP	CPA-DR1MP3
			M12 Connector	NPN	CPA-DR1MN3-A
				PNP	CPA-DR1MP3-A

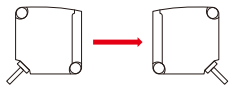
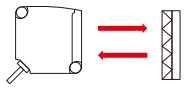
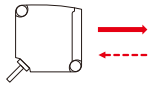
CPA Cylindrical Photoelectric Sensor

Red Infrared Ray

Detection Mode	Simple Graph	Detection Distance	Connection Mode	Output Form	Model
Through Beam Reflection		15m	Cable	NPN	CPA-TF15MN3 2M Emitter: CPA-TF15M-L 2M Receiver: CPA-TF15MN3-D 2M
				PNP	CPA-TF15MP3 2M Emitter: CPA-TF15M-L 2M Receiver: CPA-TF15MP3-D 2M
			M12 Connector	NPN	CPA-TF15MN3-A Emitter: CPA-TF15M-L/A Receiver: CPA-TF15MN3-D/A
				PNP	CPA-TF15MP3-A Emitter: CPA-TF15M-L/A Receiver: CPA-TF15MP3-D/A
Diffuse Reflection		100mm	Cable	NPN	CPA-DF100N3
				PNP	CPA-DF100P3
			M12 Connector	NPN	CPA-DF100N3-A
				PNP	CPA-DF100P3-A
		300mm	Cable	NPN	CPA-DF300N3
				PNP	CPA-DF300P3
			M12 Connector	NPN	CPA-DF300N3-A
				PNP	CPA-DF300P3-A
		1m	Cable	NPN	CPA-DF1MN3
				PNP	CPA-DF1MP3
			M12 Connector	NPN	CPA-DF1MN3-A
				PNP	CPA-DF1MP3-A

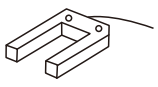
CPK Rectangular AC / DC Photoelectric sensor

Red Light

Detection Mode	Simple Graph	Detection Distance	Output Form	Model
Through Beam Reflection		40m	Relay	CPK-TR40MR3 2M Emitter:CPK-TR40MR3-L 2M Receiver:CPK-TR40MR3-D 2M
		20m		CPK-TR20MR3 2M Emitter:CPK-TR20MR3-L 2M Receiver:CPK-TR20MR3-D 2M
Polarized Reflection		6m		CPK-RMR6MR3 2M
Diffuse Reflection		300mm		CPK-DR300R3 2M
		1m		CPK-DR1MR3 2M
		2.5m		CPK-DR2.5MR3 2M

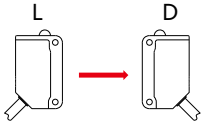
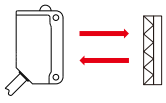
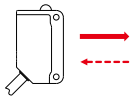
CPG U-Shaped Photoelectric Sensor

Red Light

Detection Mode	Simple Graph	Detection Width	Connection Mode	Optical Axis Number	Model	
					NPN Output	PNP Output
Through Beam Reflection		25mm	Formed cable (2m)	1 Optic Axis	CPG-TF25N3-1	CPG-TF25P3-1
			Connector relay (M8)		CPG-TF25N3-1/A	CPG-TF25P3-1/A
			Formed cable (2m)	2 Optic Axis	CPG-TF25N3-2	CPG-TF25P3-2
			Connector relay (M8)		CPG-TF25N3-2/A	CPG-TF25N3-2/A

CPZ Small Rectangular Photoelectric sensor

Red Infrared Ray

Detection Mode	Simple Graph	Detection Distance	Connection Mode	Output Form	Model
Through Beam Reflection		30m	Cable	NPN	CPZ-TF30MN3
				PNP	CPZ-TF30MP3
			M12 Connector	NPN	CPZ-TF30MN3-A
				PNP	CPZ-TF30MP3-A
		15m	Cable	NPN	CPZ-TF15MN3
				PNP	CPZ-TF15MP3
			M12 Connector	NPN	CPZ-TF15MN3-A
				PNP	CPZ-TF15MP3-A
Polarized Reflection		4m	Cable	NPN	CPZ-RMR4MN3
				PNP	CPZ-RMR4MP3
			M12 Connector	NPN	CPZ-RMR4MN3-A
				PNP	CPZ-RMR4MP3-A
Diffuse Reflection		100mm	Cable	NPN	CPZ-DF100N3
				PNP	CPZ-DF100P3
			M12 Connector	NPN	CPZ-DF100N3-A
				PNP	CPZ-DF100P3-A
		300mm	Cable	NPN	CPZ-DF300N3
				PNP	CPZ-DF300P3
			M12 Connector	NPN	CPZ-DF300N3-A
				PNP	CPZ-DF300P3-A
		1m	Cable	NPN	CPZ-DF1MN3
				PNP	CPZ-DF1MP3
			M12 Connector	NPN	CPZ-DF1MN3-A
				PNP	CPZ-DR1MP3-A

CPA Cylindrical (18 mm) Photoelectric Sensor

- Adopt advanced visible red light technology;
- Fast response time: 0.5ms;
- Action mode Dark ON/Light ON switches freely;
- Strong anti-interference ability
- Stable and reliable performance, good consistency, high cost performance.
- Long detection distance, through beam reflection up to 20m, diffuse reflection up to 1m;

Specification

Sensor Type			Through Beam Reflection	Polarized Reflection	Diffuse Reflection		
Type	NPN output	Cable	CPA-TR20MN3	CPA-RMR4MN3	CPA-DR100N3	CPA-DR300N3	CPA-DR1MN3
	NPN output	Connector	CPA-TR20MN3-A	CPA-RMR4MN3-A	CPA-DR100N3-A	CPA-DR300N3-A	CPA-DR1MN3-A
	PNP output	Cable	CPA-TR20MP3	CPA-RMR4MP3	CPA-DR100P3	CPA-DR300P3	CPA-DR1MP3
	PNP output	Connector	CPA-TR20MP3-A	CPA-RMR4MP3-A	CPA-DR100P3-A	CPA-DR300P3-A	CPA-DR1MP3-A
Detection Distance			20m	0.1~4m	100mm	300mm	1m
Spot Diameter (Reference Value)			–		40×45mm	40×50mm	120×150mm
Standard Detection Object			Opaque objects above φ 7mm	opaque objects above φ 75mm	White paper : 300×300mm		
Direction Angle			Min 2°		–		
Light Source (Wavelength)			Red light emitting diode(617nm)				
Supply Voltage			DC12~24V ripple (P-P) less than 10% (DC10~30V)				
Consumed Current			Below 40mA (Emitter below 25mA, Receiver below 15mA)	Less than 25mA			
Control Output			NPN/PNP (collector open-circuit output) load current less than 100mA (residual voltage less than 3V), load supply voltage less than 30V				
Action Mode			Dark ON / Light ON select by wire connection				
Indicator			Action indicator (orange) Stable indicator (green) Power indicator (green): through beam emitter only				
Protection Circuit			Power supply reverse connection protection, surge absorption, load short circuit protection				
Response Time			0.5ms	1ms (0.5ms is upgrading)			
Sensitivity Adjustment			Single knob				
Ambient Illumination (Receiver Side)			Lighting collecting surface illumination incandescent lamp: less than 3000lx, sunlight: less than 10000lx				
Ambient Temperature Range			Working: -25 ~ 55 ℃ / Storing: -40 ~ 70 ℃ (no freeze, no dew)				
Ambient Humidity Range			Working: 35~85%RH/ Storing: 35~95%RH (no dew)				
Insulation Resistance			Above 20MΩ (DC500VMeg-ohmmeter)				
Withstand Voltage			AC 1,000V 50/60Hz 1min between the whole charging part and the shell				
Vibration			Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions				
Impact			300m/s² for each 3 times in X / Y / Z directions				
IP Grade			IEC standard IP65 (Note: no knob IP67)				
Weight (Packing Status / Sensors Only)	Cable (2m)		Cable Weight: about 94g		Cable weight: about 50g		
	Connector		M12 connector weight: about 80g		M12 connector weight: about 55g		
Material	Case		ABS				
	Lens / Display Window		PDM				
	Knob		POM				
	Nut		ABS				
Accessory			Instructions, M18 nuts (4)	Reflector, instructions, M18 nuts (2)	Instructions, M18 nuts (2)		

CPA Cylindrical (18 mm) Photoelectric Sensor

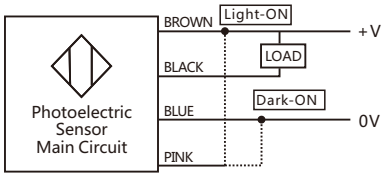
- Red LED state indicator
- Adopt infrared technology
- Action mode: Dark ON/Light ON switches freely
- Fast response time: 0.5ms; Screw thread cylindrical appearance
- Stable and reliable performance, good consistency, high cost performance
- Long detection distance, through beam reflection up to 15m, diffuse reflection up to 1m

Specification

Sensor Type			Through Beam Reflection	Diffuse Reflection		
Type	NPN output	Cable	CPA-TF15MN3	CPA-DF100N3	CPA-DF300N3	CPA-DF1MN3
	NPN output	Connector	CPA-TF15MN3-A	CPA-DF100N3-A	CPA-DF300N3-A	CPA-DF1MN3-A
	PNP output	Cable	CPA-TF15MP3	CPA-DF100P3	CPA-DF300P3	CPA-DF1MP3
	PNP output	Connector	CPA-TF15MP3-A	CPA-DF100P3-A	CPA-DF300P3-A	CPA-DF1MP3-A
Detection Distance			15m	100mm	300mm	1m
Spot Diameter (Reference Value)			-	40×45mm	40×50mm	120×150mm
Standard Detection Object			Opaque objects above φ 7mm	White paper:300×300mm		
Return Difference			-	The detection distance is less than 20%		
Direction Angle			Minimum 2°	-		
Light Source (Wavelength)			Red infrared ray emitting diode(850nm)			
Supply Voltage			DC12~24V ripple (P-P) less than 10% (DC10~30V)			
Consumed Current			Below 40mA (Emitter below 25mA, Receiver below 15mA)	Less than 25mA		
Control Output			NPN/PNP (collector open-circuit output) load current below 100mA (residual voltage below 3V), load supply voltage less than 30V			
Action Mode			Dark ON / Light ON select by wire connection			
Indicator			Action indicator (orange) Stable indicator (green) Power indicator (green): through beam emitter only			
Protection Circuit			Power supply reverse connection protection, surge absorption, load short circuit protection			
Response Time			0.5ms	1ms (0.5ms is upgrading)		
Sensitivity Adjustment			Single knob			
Ambient Illumination (Receiver Side)			Lighting collecting surface illumination incandescent lamp: below 3000lx, sunlight: less than 10000lx			
Ambient Temperature Range			Working: -25 ~ 55 ℃ / Storing: -40 ~ 70 ℃ (no freeze, no dew)			
Ambient Humidity Range			Working: 35~85%RH/ Storing: 35~95%RH (no dew)			
Insulation Resistance			Above 20MΩ (DC500VMeg-ohmmeter)			
Withstand Voltage			AC 1,000V 50/60Hz 1min between the whole charging part and the shell			
Vibration (Durability)			Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions			
Impact (Durability)			300m/s² for each 3 times in X / Y / Z directions			
IP Grade			IEC standard IP65 (Note: no knob IP67)			
Product Weight	Cable		About 94g	About 50g		
	M12 Connector		About 80g	About 55g		
Material	Case		ABS			
	Lens / Display Window		PDM			
	Knob		POM			
	Nut		ABS			
Accessory			Instructions, M18 nuts (4)	Instructions, M18 nuts (2)		

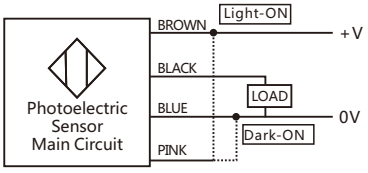
CPA Control Output Diagram

NPN



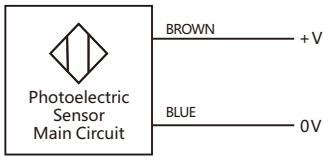
Note: when the pink line is not connected, the default is the Light-ON (NO) action.

PNP



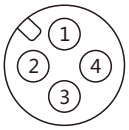
Note: when the pink line is not connected, the default is the Light-ON (NO) action.

Through Beam Reflection Light Emitter



Connector Pin Configuration

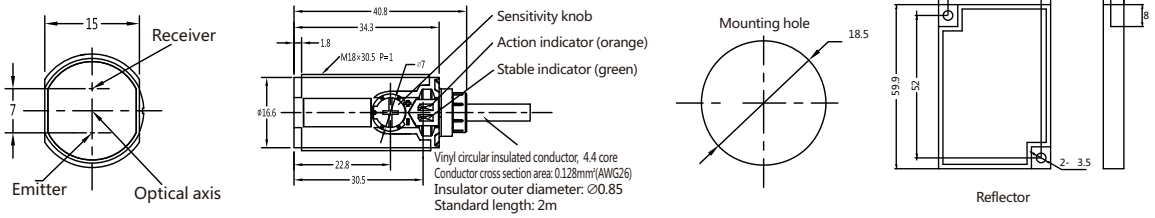
M12 Connector Pin Configuration



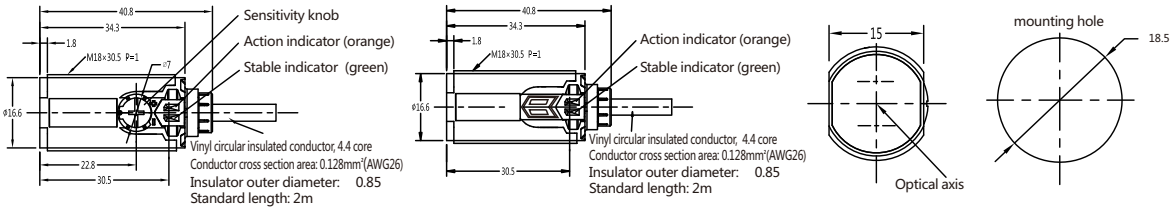
NO.	Cable Color	Specification
1	Brown	+V
2	Pink	L/ON.D/ON
3	Blue	-V
4	Black	Output

CPA Outline Dimension Diagram

●Product Model：CPA-RMR4M□3/ CPA-DR□□3



●Product Model：CPA-TR20M□3



CPK Rectangular Photoelectric sensor

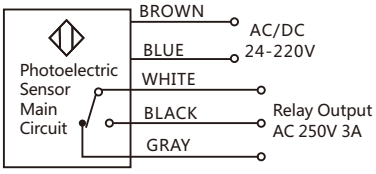
- ▶ Adopt advanced technology visible red light;
- ▶ Action mode: Dark ON/Light ON switches freely;
- ▶ Strong anti-interference ability
- ▶ Long detection distance, through beam reflection up to 40m, diffuse reflection up to 2.5m;

Specification

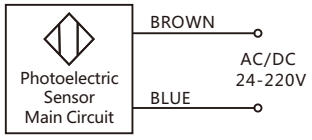
Sensor Type		Through Beam Reflection		Polarized Reflection	Diffuse Reflection		
Type	Relay Output	CPK-TR40MR3	CPK-TR20MR3	CPK-RMR6MR3	CPK-DR300R3	CPK-DR1MR3	CPK-DR2.5MR3
Detection Distance		40m	20m	0.1~6m	300mm	1m	2.5m
Standard Detection Object		Opaque objects above Φ17mm		Opaque objects above Φ75mm	White paper:100×100mm		White paper:300×300mm
Return Difference		-			Less than 20% of detection distance		
Direction Angle		Emitter, receiver: above 3°		Above 1.5°	-		
Light Source (Wavelength)		Red emitting diode (617nm)					
Supply Voltage		DC24~240V±10% Pulsation (P-P) is less than 10% AC24~240V±10% 50/60Hz					
Consumed Power/ Consumed Current		Less than 3W (transmitter less than 1.5W optometer less than 1.5W)		Less than 2W			
Control Output		Relay output: 1c contact AC250V less than 3A (cos φ = 1), DC5V above 10mA					
Action Mode		Dark ON / Light On switches freely					
Indicator		Action indicator (orange) Stable indicator (green) Power indicator (green) : through beam emitter only					
Protection Circuit		-		Function of preventing mutual interference			
Life (Relay Output)	Machinery	More than 50 million times (switching frequency is 18000 times / h)					
	Electrical	More than 100000 times (switching frequency is 18000 times / h)					
Response Time		Less than 20ms					
Sensitivity Adjustment		Single knob (receiver only)					
Ambient Illumination (Receiver Side)		Lighting collecting surface illumination incandescent lamp: less than 3000lx, sunlight: less than 11000lx					
Ambient Temperature Range		Working: -25~55 ℃ / Storing: -40~70 ℃ (no freeze, no dew)					
Ambient Humidity Range		Working: 35~85%RH / Storing: 35~95%RH (no dew)					
Insulation Resistance		Above 20m (DC500V megabit meter)					
Withstand Voltage		AC1,500V 50/60Hz 1min between the whole charging part and the shell					
Vibration (Durability)		Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions					
Impact (Durability)		300m/s² for each 3 times in X / Y / Z directions					
IP Grade		IEC standard IP65 (Note: no knob IP67)					
Connection Mode		Lead out type (standard conductor 2m)					
Weight (Packing State)		About 215g		About 146g	About 132g		
Shell	Case	ABS					
	Lens / Display Window	PDM					
	Cable	2m PVC cable cable bend radius : R18					
Accessory		Instructions, mounting bracket		Instructions, mounting bracket, reflector	Instructions, mounting bracket		

CPK Control Output Diagram

Relay Output

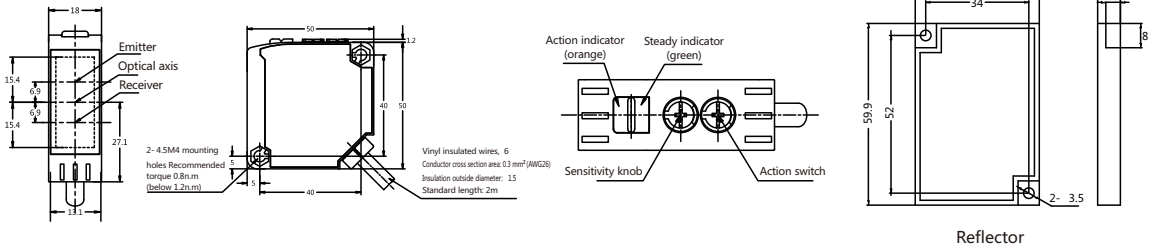


Through Beam Reflection Light Emitter

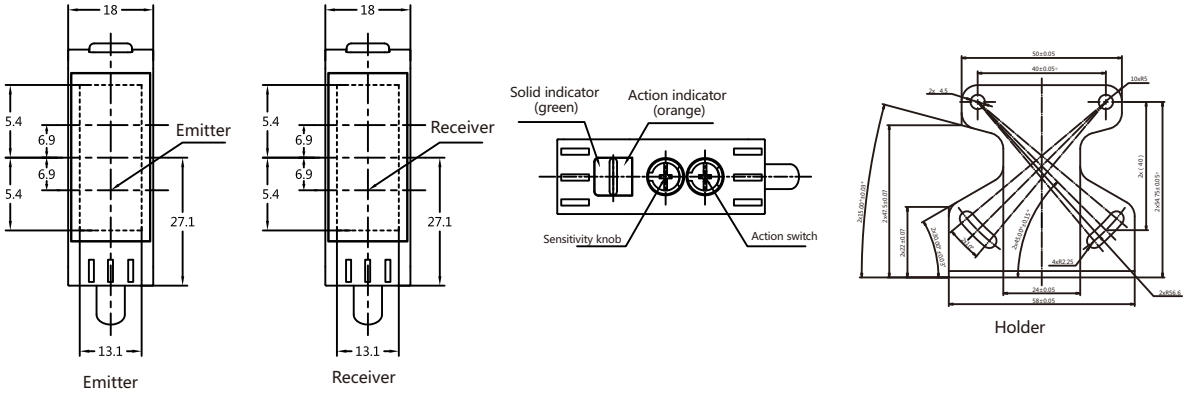


CPK Outline Dimension Diagram

● CPK-RMR6MR3 / CPK-DR300R3/ CPK-DR1MR3/ CPK-DR2.5MR3



● CPK-TR□□□□



CPZ Small Rectangular Photoelectric sensor

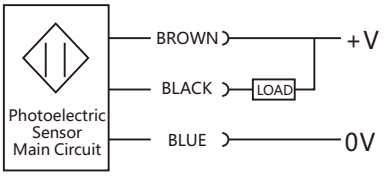
- Red LED state indicator
- Multiple protection circuit
- Strong anti-interference ability
- Easy to install in a narrow space
- Stable and reliable performance, good consistency,high cost performance

Specification

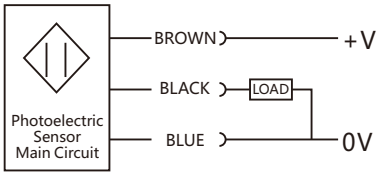
Sensor Type			Through Beam Reflection		Polarized Reflection	Diffuse Reflection		
TYPE	NPN	Cable	CPZ-TF30MN3	CPZ-TF15MN3	CPZ-RMF4MN3	CPZ-DF100N3	CPZ-DF300N3	CPZ-DF1MN3
	NPN	Connector	CPZ-TF30MN3-A	CPZ-TF15MN3-A	CPZ-RMRFMN3-A	CPZ-DF100N3-A	CPZ-DF300N3-A	CPZ-DF1MN3-A
	PNP	Cable	CPZ-TF30MP3	CPZ-TF15MP3	CPZ-RMF4MP3	CPZ-DF100P3	CPZ-DF300P3	CPZ-DF1MP3
	PNP	Connector	CPZ-TF30MP3-A	CPZ-TF15MP3-A	CPZ-RMF4MP3-A	CPZ-DF100P3-A	CPZ-DF300P3-A	CPZ-DF1MP3-A
Detection Distance			30m	15m	4m	100mm	300mm	1m
Spot Diameter (Reference Value)			-		-			
Standard Object Detection			Opaque objects above φ 12mm		Opaque objects above φ 75mm	White paper: 100×100mm	White paper:300×300mm	
Return Difference			-			Less than 20% of detection distance		
Direction Angle			Emitter/Receiver: 3-15 °		2-10°			
Light Source (Wavelength)			Red infrared ray emitting diode(870nm)		Red emitting diode(660nm)	Red infrared ray emitting diode(860nm)		
Supply Voltage			DC12~24V ripple (P-P) less than 10%					
Consumed Current			Below 35mA (Emitter below 15mA,Receiver below 20mA)		Less than 30mA			
Control Output			NPN/PNP (collector open-circuit output) load current below 100mA (Residual voltage load current below 10mA:below 1V, load current 10-100mA:below 2V), load supply voltage below DC 26.4V					
Action Mode			Dark ON / Light ON mode switching					
Indicator			Action indicator (orange) Stable indicator (green) Power indicator (green): through beam emitter only					
Protection Circuit			Power supply reverse connection protection, output short circuit protection, output reverse connection protection		Power supply reverse connection protection, output short circuit protection, output reverse connection protection and mutual interference prevention function			
Response Time			Action and reset: below 2ms		Action and reset: below 1ms			
Sensitivity Adjustment			Single knob					
Ambient Illumination (Receiver Side)			Lighting collecting surface illumination incandescent lamp: below 3000lx, sunlight: below 10000lx					
Ambient Temperature Range			Working: -25 ~ +55 ℃ / Storing: -40 ~+ 70 ℃ (no freeze, no dew)					
Ambient Humidity Range			Working: 35~85%RH/ Storing: 35~95%RH (no dew)					
Insulation Resistance			Above 20MΩ (DC500V Meg-ohmmeter)					
Withstand Voltage			AC 1,000V 50/60Hz 1min between the whole charging part and the shell					
Vibration (Durable)			Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions					
Impact (Durable)			300m/s² for each 3 times in X / Y / Z directions					
IP Grade			IEC standard IP65					
Weight	Cable (2m)		About 120g		Abou t80g	About 65g		
	Connector		About 40g		About 25g	About 20g		
Material	Case		ABS					
	Lens / Display Window		PMMA					
	Cable		2m PVC					
Accessory			Instructions,mounting bracket		Instructions,mounting bracket,reflector	Instructions,mounting bracket		

CPZ Control Output Diagram

NPN

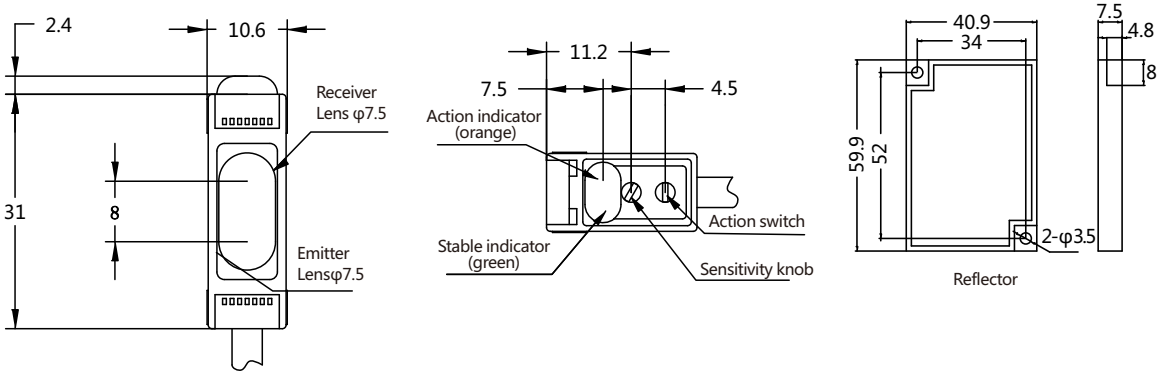


PNP

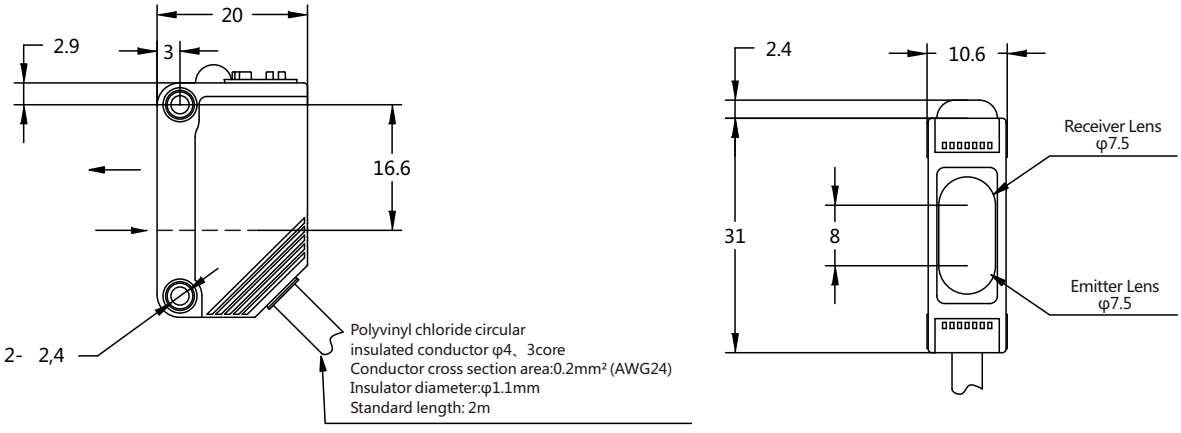


CPZ Outline Dimension Diagram

Product Type： CPZ-RMR4M□3/□/CPZ-DF□□□3/□



Product Type：CPZ-TF□□□3/□



CPG U-Shaped Photoelectric Sensor

- Fast response: 1ms
- Action mode: Dark ON/Light switch ON freedom
- Strong anti-interference ability
- IP67 grade
- Stable and reliable performance, good consistency, high cost performance

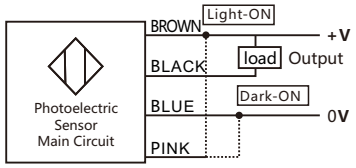
Specification

Through Beam Reflection	Optical Axis Number		1 Optical Axis	2 Optical Axis
Type	NPN Output	Cable	CPG-TF25N3-1	CPG-TF25N3-2
	NPN Output	Connector	CPG-TF25N3-1/A	CPG-TF25N3-2/A
	PNP Output	Cable	CPG-TF25P3-1	CPG-TF25P3-2
	PNP Output	Connector	CPG-TF25P3-1/A	CPG-TF25P3-2/A
Detection Distance (Slot Width)			25mm	
Standard Detection Object			Above Φ1.5mm opaque objects	
Light Source (Wavelength)			Infrared emitting diode (940nm)	
Supply Voltage			DC12~24V ripple (P-P) less than 10%(DC10~30V)	
Consumption Current			Less than 25mA	Less than 40mA
Control Output			The load current is less than 100mA (residual voltage is less than 1V), and the load supply voltage is less than DC26.4V	
Action Mode			Dark ON / Light ON select by wire connection	
Protection Circuit			Power supply reverse connection protection, surge absorption, load short circuit protection, mutual interference prevention function	
Loop Response Time			1ms	
Ambient Illumination			Light collecting surface illumination	Incandescent lamps: less than 3,000lx, sunlight: less than 10,000lx
Ambient Temperature Range			Working: -25 ~ 55 ℃ / Storing: -40 ~ 70 ℃ (no freeze, no dew)	
Ambient Humidity Range			Working: 35~85%RH / Storing: 35~95%RH (no dew)	
Insulation Resistance			Above 20MΩ(DC500V megger)	
Withstand Voltage			AC1,000V 50/60Hz 1min between the whole charging part and the shell	
Vibration (Durability)			Up and down 1.5mm at 10~55Hz for each 2 hours in X / Y / Z directions	
Impact (Durability)			300m/s² for each 3 times in X / Y / Z directions	
IP Grade			IEC Standard IP67	
Connection Mode			Cable (standard cable 2m) / connector relay type (standard cable 300mm)	
Indicator			Action display indicator (orange)	
Weight (wrapping State)	Cable 2m		2m PVC weight: about 52g	
	Connector		M8 connector weight: about 50g	
Material	Case		ABS	
Accessory			Instructions	

CPG Control Output Diagram

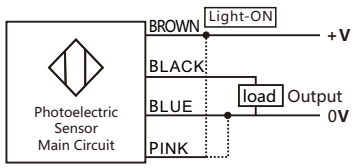
- CPG-TF25N3-1/ CPG-TF25P3-1 (1 Optic Axis)

NPN



Note: When the pink line is not connected, the default is light-ON (NO) action.

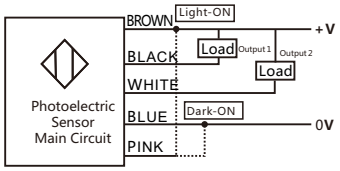
PNP



Note: When the pink line is not connected, the default is light-ON (NO) action.

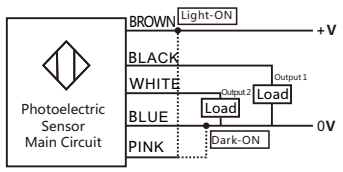
- CPG-TF25N3-2/ CPG-TF25P3-2 (2 Optic Axis)

NPN



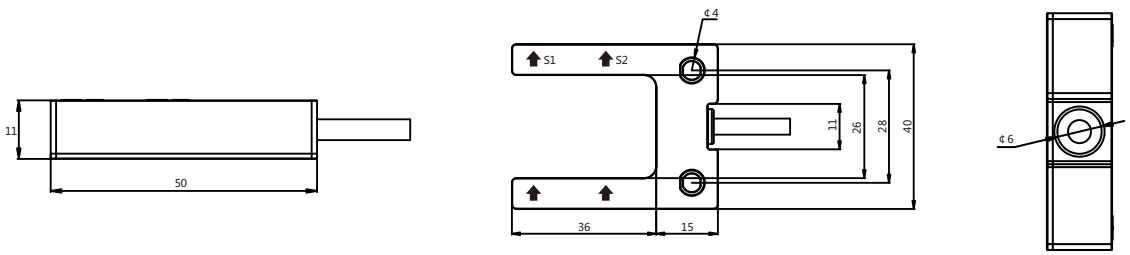
Note: When the pink line is not connected, the default is light-ON (NO) action.

PNP



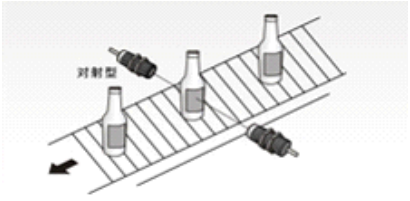
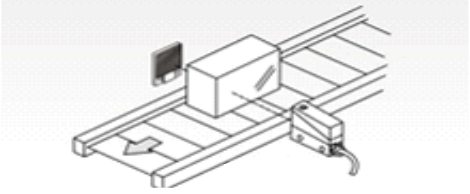
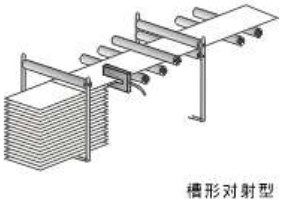
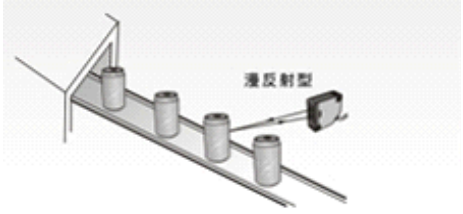
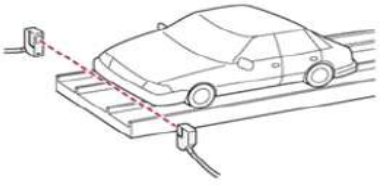
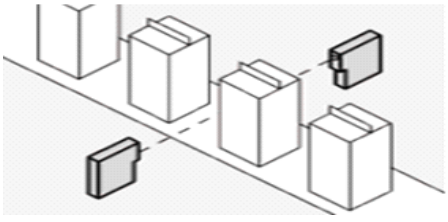
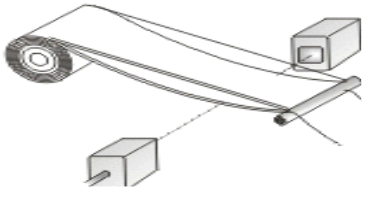
Note: When the pink line is not connected, the default is light-ON (NO) action.

CPG Outline Dimension Diagram



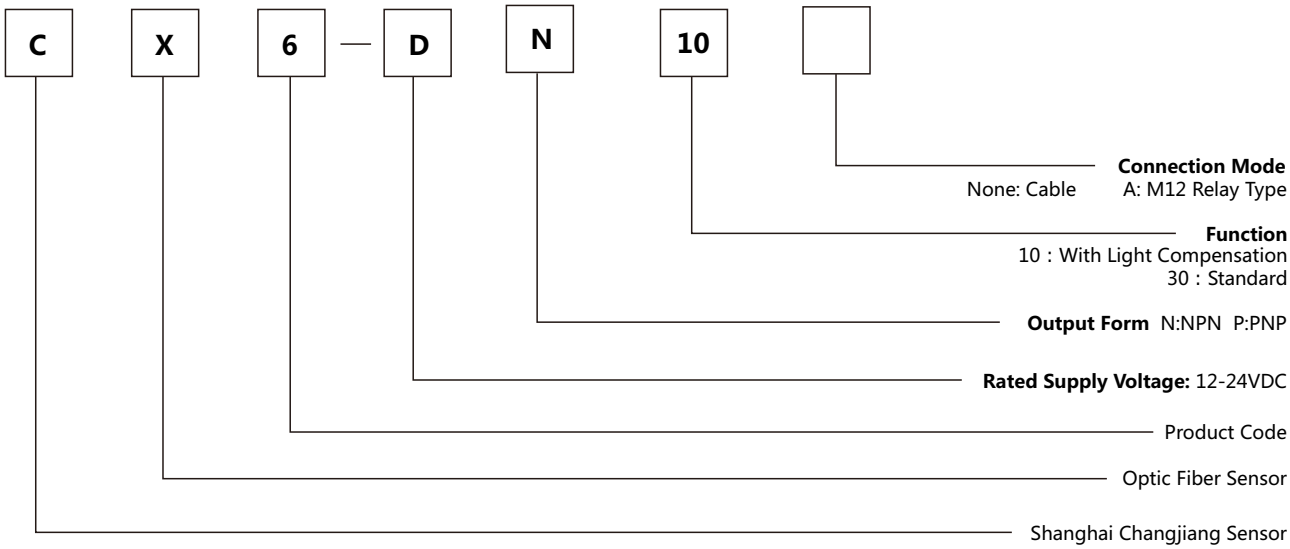
Industry Application Case

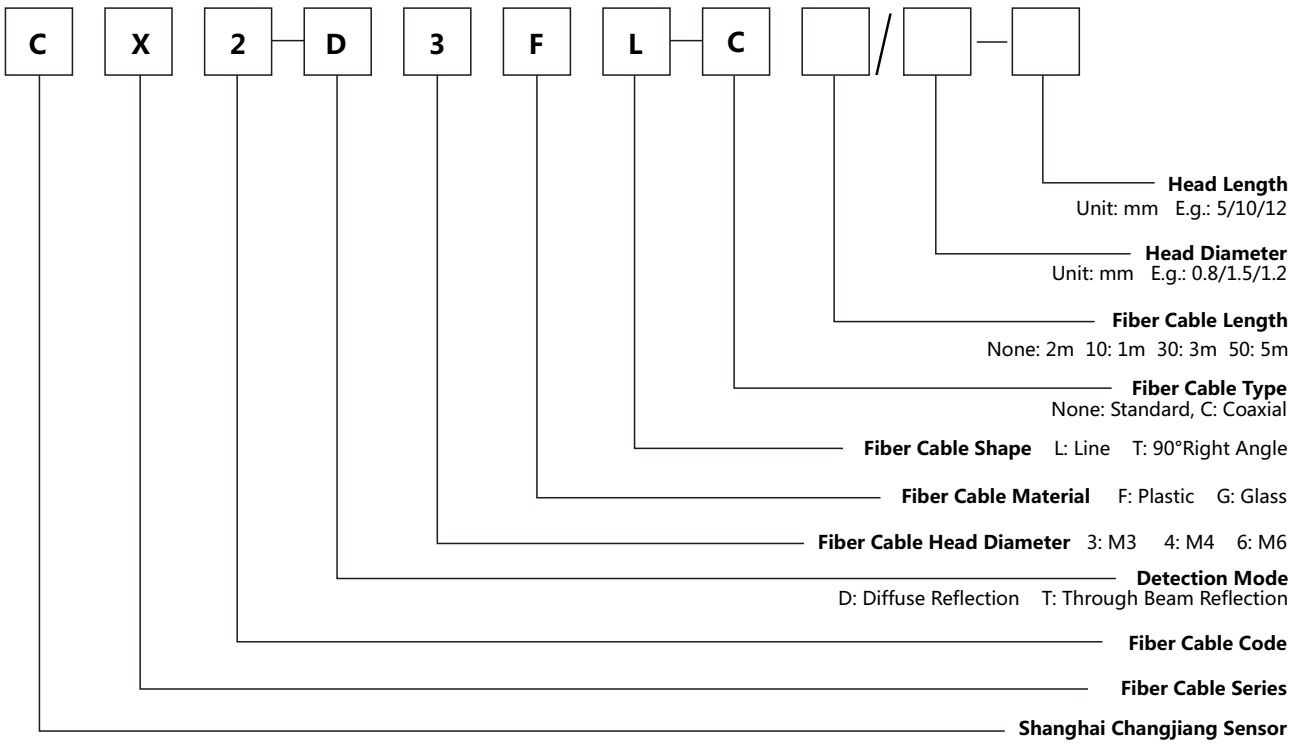
Our products are widely used in packaging machinery, transportation equipment, textile machinery, semiconductor, printing machinery, pharmaceutical machinery, logistics industry, medical devices, elevators and so on.

Check the label on the empty glass bottle	Object detection whether or not
	
Check whether there is any cardboard	**Check for bottles on the conveyor belt**
	
Check if a car has passed	**Test milk carton**
	
Ransmission line detection	**Detect whether the object is straightened**
	

Series of Fiber Optic Sensors

Model Naming





CX6 Fiber Optic Sensor

- Double digital display screen;
- Built-in light correction compensation function, strong product stability;
- Realize threshold and light volume settings through a button, and easy to operate;
- Four kinds of optional response mode to choose;
- Strong anti-interference ability, more than 30 sets can be used side by side;
- Stable and reliable performance, good consistency, high cost performance.

Specification

Series		Fiber optic sensor
Type	NPN	CX6-DN10
	PNP	CX6-DP10
Light Source		Red 4 element light emitting diode (625nm)
Supply Voltage		DC12~24V ±10% fluctuation (P-P) < 10%
Action Mode		Light ON / Dark ON
Output Mode		NPN / PNP
Response Time	Super High Speed(SHS)	NPN Action / Reset : 100 μs PNP Action / Reset : 150 μs
	High Speed (HS)	Action / Reset : 300μs
	Standard (STND)	Action / Reset : 2ms
	High Precision(GIGA)	Action / Reset : 16ms
Protection Circuit		Power supply reverse connection protection, output short circuit protection, output reverse connection protection, power surge protection
Power Consumption	Normal Mode	Less than 720mW (Consumption current less than 30mA at supply voltage of 24V / current less than 60mA at supply voltage at 12V)
Withstand Voltage		AC1000V 50/60Hz 1min
Insulation Resistance		≥ 20MΩ
Vibration Resistance		Double-amplitude 0.7mm or 50m/s² at 10~55Hz for each 1.5 hours in X / Y / Z directions
Impact Resistance		150m/s² for each 3 times in X / Y / Z directions
Ambient Humidity		25~85%RH (No dew)
Operating Temperature Range		0~55℃ (No dew)
External Light		Filament lamp:2000 lx Sunshine:10000 lx
Protection Level		Lead-out type: IEC standard IP50
Set of Prevent Mutual Interference	Ultra-high Speed Mode (SHS)	0 Set
	High Speed Mode (HS)	30 Sets
	Standard Mode(STND)	30 Sets
	High-precision Mode (GIGA)	30 Sets
Connection Mode		2 m PVC cable
Weight		About 65g
Material		Case: ABS, standard cable (black) PVC

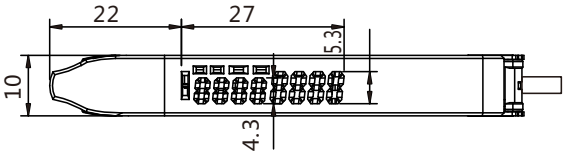
CX6 Fiber Optic Sensor

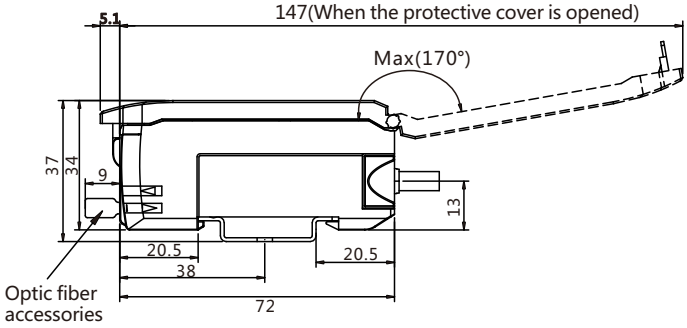
- Double digital display screen
- Four kinds of optional response mode to choose
- Stable and reliable performance, good consistency, high cost performance
- Strong anti-interference ability, more than 30 sets can be used side by side
- Realize threshold and light volume settings through a button, and easy to operate

Specification

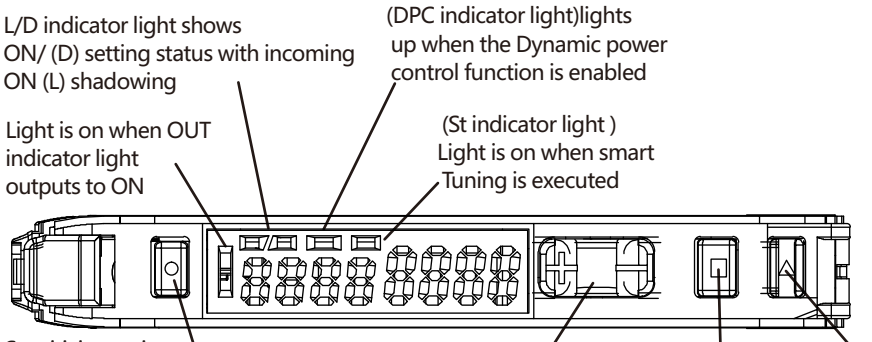
Series		Fiber optic sensor
Type	NPN	CX6-DN30
	PNP	CX6-DP30
Light Source		Red 4 element light emitting diode (625nm)
Supply Voltage		DC12~24V ±10% fluctuation (P-P) < 10%
Action Mode		Light ON / Dark ON
Output Mode		NPN / PNP
Response Time	Super High Speed(SHS)	Action / Reset：200μs
	High Speed (HS)	Action / Reset：350μs
	Standard (STND)	Action / Reset ：3ms
	High Precision(GIGA)	Action / Reset：18ms
Protection Circuit		Power supply reverse connection protection, output short circuit protection, output reverse connection protection, power surge protection
Power Consumption	Normal Mode	Less than 720mW (Consumption current below 30mA at supply voltage of 24V / current less than 60mA at supply voltage at 12V)
Withstand Voltage		AC1000V 50/60Hz 1min
Insulation Resistance		≥ 20MΩ
Vibration Resistance		Double-amplitude 0.7mm or 50m/s² at 10~55Hz for each 1.5 hours in X / Y / Z directions
Impact Resistance		150m/s² for each 3 times in X / Y / Z directions
Ambient Humidity		25~85%RH (No dew)
Operating Temperature Range		0~55℃ (No dew)
External Light		Filament lamp:2000 lx Sunshine:10000 lx
Protection Level		Lead-out type: IEC standard IP50
Set Of Prevent Mutual Interference	Ultra-high Speed Mode (SHS)	0 Set
	High Speed Mode (HS)	30 Sets
	Standard Mode(STND)	30 Sets
	High-precision Mode (GIGA)	30 Sets
Connection Mode		2 m PVC cable
Weight		About 65g
Material		Case: ABS, standard cable (black) PVC

Outline Dimensional Diagram





Setting



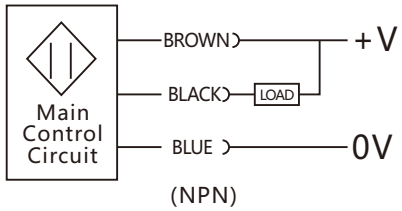
+ : Press simultaneously
→ : Press simultaneously in order

Light quantity adjustment (when the light quantity is saturated)	+
Setting initialization	→
Button locked	+
reset to 0	+

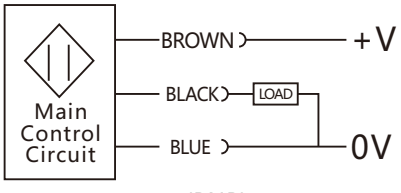
VII. Convenient Setting

Input-Output Circuit Diagram

CX6 Series



(NPN)



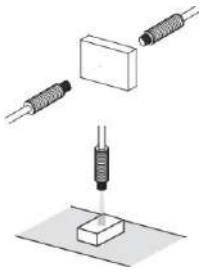
(PNP)

Output Switching Method

(L/D)Button

Through Beam Type: when objects are detected and the product wants to enter ON state, it sets as "ON when shading".(L/D indicator light) D is on.

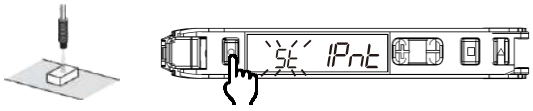
Reflective Type: when there is a detection object, if you want the product to enter ON state, it sets as "ON when entering light".(L/D indicator light) L is on.



I. Detect Objects With / Without Detection

- 2 points should be adjusted

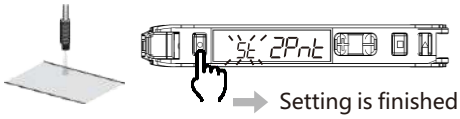
① Press the (TUNE) button when the object is being detected



Light exposure setting: adjust the side with high light exposure in 1.2 to the light exposure adjustment level.

Threshold setting: sets the intermediate valueof light exposure at the time of 1 and 2.

② Press the (TUNE) buttonagain when there is no detecte object



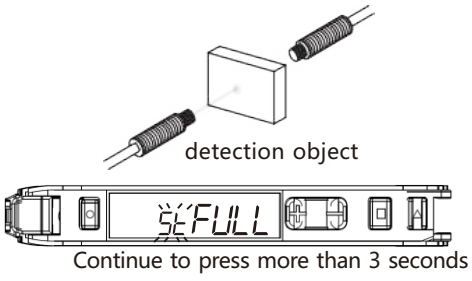
Note: the order of 1 and 2 canbe reversed.

II. Strengthen Dust and Pollution Resistance.

- Maximum Sensitivity Adjustment

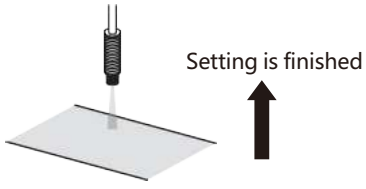
① If the object is detected in the following state, keep pressing the (TUNE) button for more than 3 seconds,and release the button after the FULL display.

Through beam type: State of object detection



Red digital display (IPnt) switching to (FULL)

Reflective type: State of no detection object



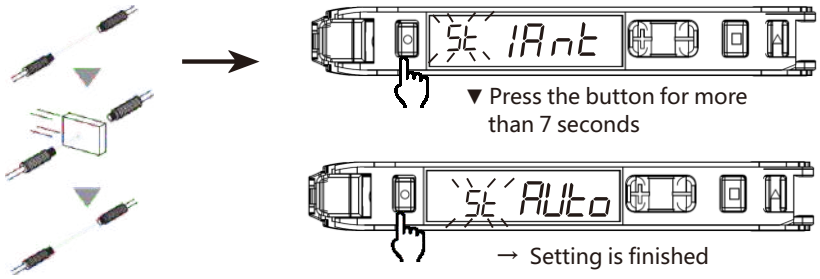
Light exposure setting: adjust the light exposure at 1 to "0"

Threshold setting: a value of about 7% of the light exposure at the time of 1. In the case of small light exposure at the time of long distance detection, it is setted as the minimum value to correctly execute the output ON.

III. Keep Running, Adjust By Moving Detection Object

● Automatic Adjustment

① Continue to press button ⊙ when state of no detected object, and make the detection object pass during the period from (IPnt) to (FULL) to (Auto). (state of detection the object, press button ⊙ for more than 7 seconds until the red digital display (Auto). After state completely passed the detection, please release ⊙ .



▼ Press the button for more than 7 seconds

→ Setting is finished

Photometric setting: Adjust the maximum amount of light received by 1 to the amount of light adjustment level

Threshold setting: Set to the median value of the maximum and minimum amount of light received at 1

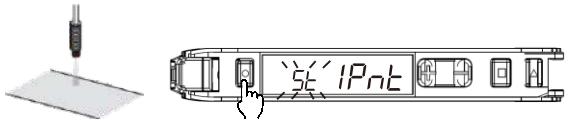
IV. Confirm The Detection Object Location

● **Location adjustment**

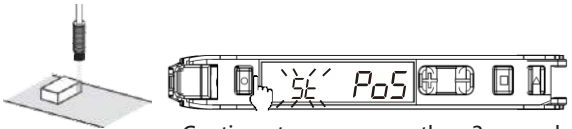
① Press button ⊙ when state of no detection object

Photometric setting: adjust the amount of light received by 2 to half the level of light adjustment.

Threshold setting: set to the same value as the amount of light received at 2.



② Detection object is placed in the desired position and continue to press the ⊙ button to display the red digital display (2Pnt) switching to (PoS).



Continue to press more than 3 seconds

V. Detect Transparent Objects Or Tiny Objects (Want To Set A Threshold Through The Ratio of Light To Light)

● Percentage adjustment

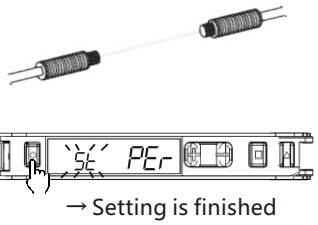
① Setting the percentage adjustment to ON in the setting mode, 📖 Detail setting

② Press ⊙ button when state of no detection object

Photometric setting: adjust the amount of light received by 2 to the level of the amount of light.

Threshold setting: set to (light quantity X percent adjustment level 2 for 2)

Note: when set to percentage adjustment, intelligent adjustments other than light volume adjustment cannot be performed.



→ Setting is finished

- **Intelligent Adjustment Error**

Error Name / Display / Reason	Type of Adjustment	Strategy
Near Error nEAr Err Difference between theamount of light receivedat point 1 and point 2	2-point Automatic Adjustment And Positioning Adjustment	■ Please switch to a mode where the response time of the detection feature is slower ■ Please narrow the gap between the cast and receive light. (Through Beam Type) ■ Please bring the sensor close to the workpiece. (Reflective Type)
Over Error ouEr Err Too much photometric	All	■ Please increase the level of light quantity adjustment. ■ Please use a small-diameter fiber. ■ Please expand the distance between the light and light. (Through Beam Type) Please keep the sensor away from the workpiece. (Reflective Type)
Low Error Lo Err Too little photometric	Beyond Maximum Sensitivity Adjustment	■ Please reduce the level of the amount of light adjustment. ■ Please narrow the gap between the cast and receive light. (Through Beam Type) ■ Please bring the sensor close to the workpiece. (Reflective Type)

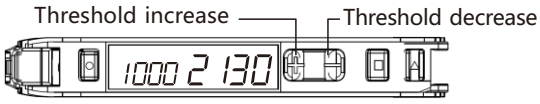
Note: The adjustment range of the intelligent adjustment is about 20-1/100 times. When the detection function is selected as GIGA mode, the range of adjustment is about 2 ~ 1 / 100 times because the initial value is large.

To change the level of light volume, browse for "VIII. Detail Setting"

VI. Threshold Fine-Tuning

① (UP/DOWN) Button setting.

Note: continuous push button for high speed adjustment



VII. Convenient Setting

1.Want to restore light changes caused by dust or dirt

- Light volume adjustment

① When state of no detection object, press button and button(MODE)continuously for more than 1 second

Photometric setting: Adjust the photometric received at time 1 to adjust the level of light volume

Threshold setting: Will not change, the threshold is small, the output will be set to perform the ON/OFF minimum correctly

Note: when reflective, perform in the presence of artifacts.

If the location adjustment has been performed, then the through beam and reflective type should be executed in the presence of the detection object.

2. Even if photometric due to dust or dirt changes, but also in a stable state of detection!

● DPC Function

DPC function recommended for through beam type / retro reflector type product

① Please perform smart adjustment

"Intelligent Adjustment" "Convenient setting photometric adjustment"

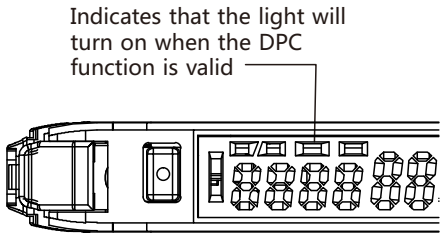
② Turn on the DPC function in setting mode

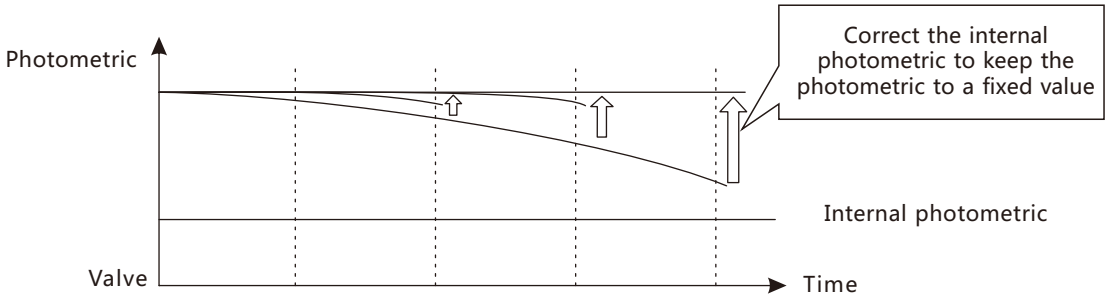
● step 1.2 may be reversed;

● The DPC function will be turned off when the intelligent adjustment occurs error / performs differential function, and the maximum sensitive adjustment / positioning adjustment at the first point receives less light.

● Adjust the photometric to adjust the level of light to ensure that the threshold and the photometric is always fixed;

● Therefore, even due to the probe fouling, position shift, temperature change and so on, the photometric can be detected in a stable state.





If the photometric cannot be corrected, the photometric shown will drop and the DPC will flash.

---

3. Setting initialization

● Setting initialization

Initialize all settings and return to factory state.

Continue to press more than 3 seconds at the same

① Press the state of button and button (L/D) for more than 3 seconds;

② Select (rSt) through (UP/DOWN) and press (MODE) button;

③ Select (rSt init) through (UP/DOWN)and press (MODE) button.

Note: please note that pressing (L/D) button will cause output inversion.

Item	Initial Value
threshold	76
Control output	L-ON

* Other functions for the detailed set state intelligent adjustment is removed. User saved content is not initialized

---

4.Want to save / read settings

● User Saving

Save current Setting

① Press the state of button press (L/D) button for more than 3 seconds.

② Select (SAvE) through (UP/DOWN) and press button .

③ Select (SAvE Yes) through (UP/DOWN)and press (MODE)

● User Setting

Read the saved settings

① Press the state of button andbutton (L/D)for more than 3 seconds.

② Select (rSt) through (UP/DOWN) and press button

③ Select (rSt USEr) through (UP/DOWN) and press button .

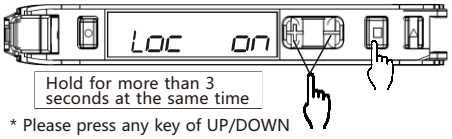
Note: please note that pressing the (L/D) button first will cause output inversion

5. Prevent misoperation!

● Button locked

Turn off all button operation functions and press the button to display(Loc) on

■ Execute / release (same step)

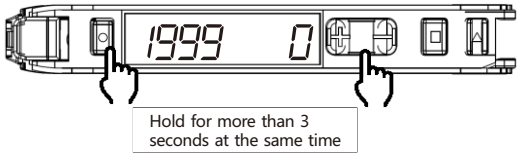


6. Make the photometic displayed as 0!

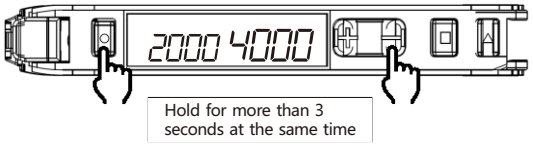
● Return to zero reset

Displays the photometic received as 0 and the threshold changes accordingly.

■ Execute



■ Relieve



Note: After performing the DPC function / differential function adjustment, the reset is removed after returning to zero

VIII. Detailed Settings

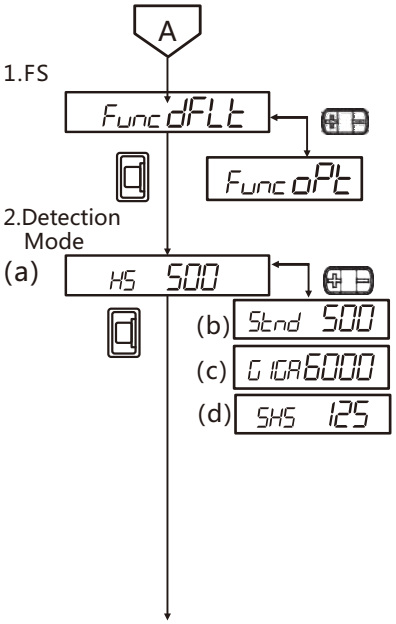
Continue press (MODE) button for more than 3 seconds to switch to

● Setting mode

In setting mode, the following functions can be setted

■ The content displayed on the function migration is the factory setting

Function Setting



Function Instruction

When changing function setting in setting mode

dFLt Function setting 1 / 5

oPt Function setting 1 / 10

Change the photometic and response time

	Detection Function		Response Time	Light Volume
(a)	HS high speed mode		300μs	1(benchmark)
(b)	STND Standard mode		2ms	1Times
(c)	GIGA High precision mode		16ms	12Times
(d)	SHS Ultra-high speed	NPN	100μs	0.25Times
		PNP	150μs	

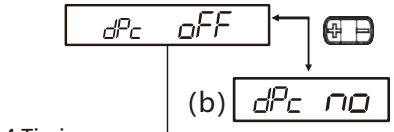
After you change the mode of the detection feature, the intelligent adjustment is removed.

*When switching detection mode to SHS, the communication function prevents related interference from

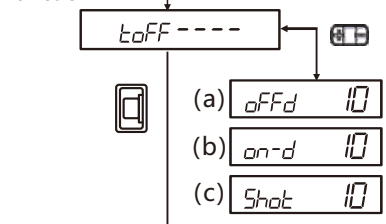
Note: DPC function is to correct the automatic compensation of the photometic received, used in CX6-DN10

Function Setting

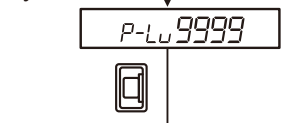
3.DPC Function



4.Timing Function



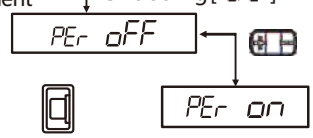
5. Light volume adjustment level



Choosing [dFLt]

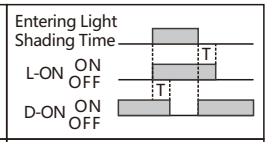
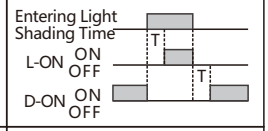
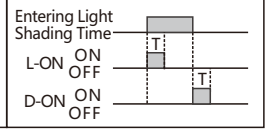
6. Percentage Adjustment

Choosing[oPt]



Function Instruction

When setting the timing time for the output

(a)	When the OFF delay timing detection time is short and the detection cannot be performed through PLC, the state of output ON is maintained.	
(b)	ON delay timing detects the state of the delayed output ON.	
(c)	Trigger timing even if the size of the object detected uneven, can also timing output.	

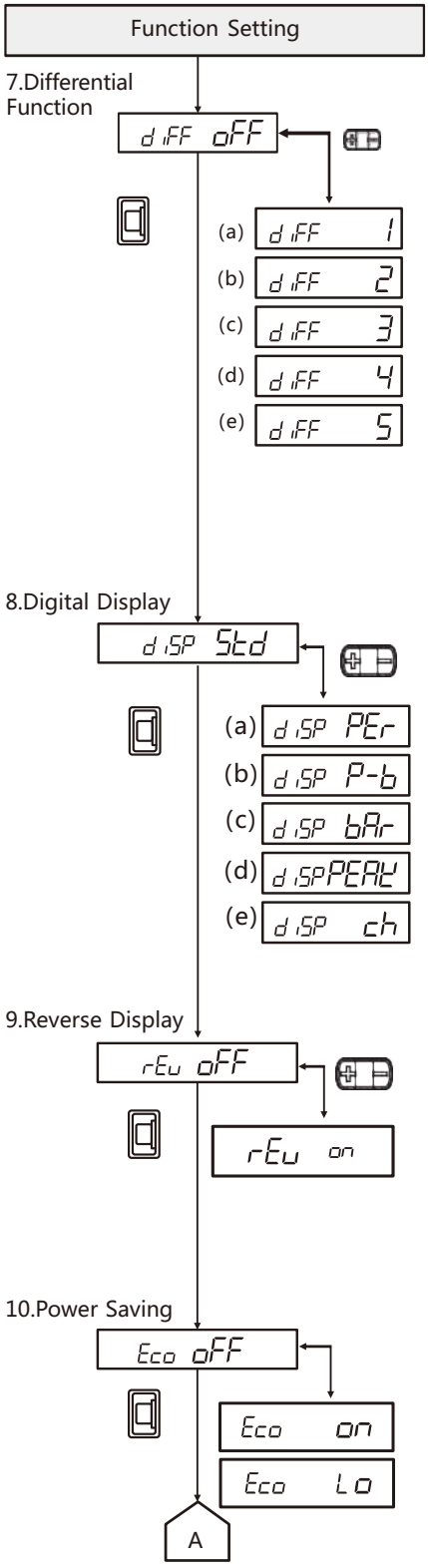
●On the Settings ("---") menu, press you can pass to set the timing. (1-9999ms.1MS scale, initial value 10ms)

● If you want to modify the target value of the amount of light (light level adjustment) through to set the amount of light adjustment level (100x9999,1 scale, initial value 9999)

VII. Convenient Setting

● To detect transparent objects or tiny objects, click on the (PEr On) menu After the (MODE) button, you can pass the Button to change the percentage adjustment level. (- 99% / 99% scale, initial value-10%)

Intelligent adjustment



Function Instruction

If the response time is greater than the threshold value, the detection will be performed. The change in the photometic received in the set response time is shown in red digital display.

Differential setting	1	2	3	4	5
Response speed	250μs	500μs	1ms	10ms	100ms

• You can set the response time through the button. When the differential function is valid, the detection function setting is invalid.

•Intelligent adjustments other than light volume adjustments cannot be performed. The adjustment range of light volume 1~1/100 times.

Switching digital display when in detection mode according to different purpose

When view the threshold value photometric percentage

(a) threshold value photometric percentage — 2000 150P — Threshold value photometric percentage displays as red number

When set threshold value photometric through a tiny detection object or a fast moving detection object

(b) Peak value photometric / Valley value photometric — 8000 2000 — Maintain and display the minimum of the incoming peak value and the maximum of the shading valley value

When perform an easy-to-visualize display in a simulated manner

(c) Threshold120% 100% 80% — Displays current values with 100% threshold and 80%~120% display range

When you want to perform an optical axis adjustment

(d) Peak value photometric — 3500 3000 — Maintain the photometric received at the peak and display as green number.

The ch NO. at the link

(e) ch NO. photometic — ch 3000 — Displays the ch number and the amount of light

When set the amplifier in reverse

• Reverse display

The threshold value displays as red number, photometric displays as green number. Wants to cut power consumption

• Low Eco ON

Indicator light green (green digital red digital) lights out, through the button operation, about 10 minutes after the lights will be lights out

• Low Eco LO

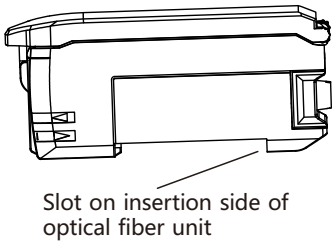
After the operation of the button, the light will be on for about 10 seconds, and then the indicator light (green, red) will enter the state of low light

Note: DPC function is to correct the automatic compensation of the amount of light received, used in CX6-DN20

IX. Installation of Fiber Optic Sensors

Install to DIN Rail

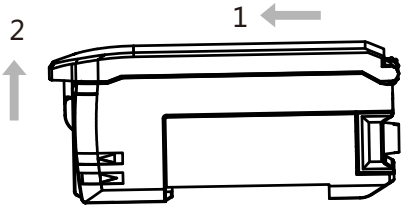
① Insert the fiber unit into the slot on the side of the rail and push the lock hook until you hear the click



Remove from DIN Rail

① Press down the host in direction 1

② Lift up in direction 2



Installation of Optical Fiber Units

① The using method the chopper of optic fiber

- The optical fiber unit is inserted into the shearing hole of the optical fiber chopper;The standard fiber unit should be inserted into the position where you want to cut off, and the thin fiber unit should be inserted deep.
- Press the knife down and cut it off.

Installation of Optical Fiber Units

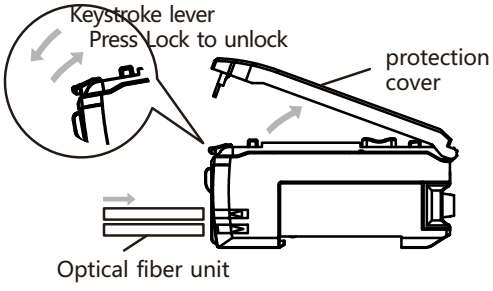
① Open the cover

② Lift button lock lever

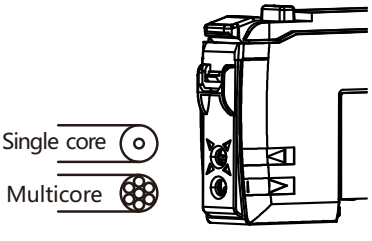
③ Insert the fiber unit firmly into the depth of the fiber unit plug-in

④ Press the key lock bar back to the original direction.

Keystroke optical unit



Note: When installing a coaxial reflective fiber unit to the host, install the single core fiber unit to the upper side of the mounting hole (lighting) and the multi-core fiber unit to the lower side (light)



X. Error Indication

Error Name	Reason	Strategy
DPC Error 	Photometric decrease bacause of dust or dirt.	Please wipe the inspection surface of the optical fiber unit, etc.and re-perform the intelligent adjustment after restoring the photometic. "Intelligent adjustment"
EEPROM Error 	Read / write internal data failed	Please reconnect the power. If not restored, perform initialization operation " VII. Convenient Setting"
Lock ON 	Button locked to open state	Please unlock the key " VII. Convenient Setting"
Current Over 	Control overload current of output	Please confirm the load of the control output and set it in the rated range. Please confirm if the load is short circuit "Output input circuit diagram, rating / specification"

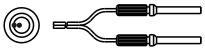
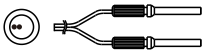
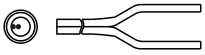
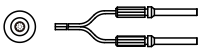
XI. Maintenance (Troubleshooting)

Fault	Reason	Strategy
Blank on screen	The state of power off, or disconnected	Please check wiring, power supply voltage, and power supply capacity "output input circuit diagram"
Nothing is displayed on the digital display	Power saving is ON state	Please turn off the environment protection function "VIII. Detail Setting"
Cannot be checked or detected even if the threshold value is minimum	The detection function has been setting to a small photometic mode and is affected by dust or dirt	When set to GIGA mode, the photometic increases and the amount of light displayed increases "VIII. Detail Setting"
Photometric display variation	Affected by dust or dirt and temperature changing	If you use the DPC function, the photometric display can be stabilized "VII. Convenient Setting"
Action indicator blinking	Be affected by mutual interference, etc.	Please confirm the connection status of the sensor and power it up again "IX. Installation of Fiber Optic Sensors"
The amount of light is displayed as-(negative)	Zero reset is open state	Please unreset the return to zero "VII. Convenient Setting"
	Differential function is open state	Please turn off the differential function "VIII. Detail Setting"
Set unknown		Please perform the set initialization operation "VII. Convenient Settings"

CX2 Fiber Cable Series

- ▶ Small spot, suitable for the detection of small objects
- ▶ Good bending resistance, small space for installation
- ▶ Suitable for high precision, high speed and other special environment use.

Fiber Cable (Diffuse Reflection)

Species	Model	Structure	Size	Minimum Detection Object(mm)	Cable Bend Radius(mm)	Fiber Head Material	Working Temperature
Standard Type	CX2-D3FL		M3	ϕ1.0	R5	Stainless steel	0~70℃
	CX2-D4FL		M4	1.0	R10	Stainless steel	0~70℃
	CX2-D6FL		M6	1.0	R25	Stainless steel	0~70℃
Coaxial Type	CX2-D3FL-C		M3	0.5	R5	Stainless steel	0~70℃
	CX2-D4FL-C		M4	1.0	R5	Stainless steel	0~70℃
	CX2-D6FL-C		M6	1.0	R5	Stainless steel	0~70℃

Fiber Cable (Through Beam Reflection)

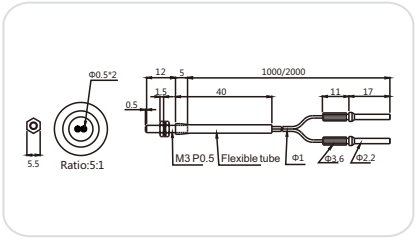
Species	Model	Structure	Size	Fibre Diameter (mm)	Minimum Detection Object(mm)	Cable Bend Radius(mm)	Fiber Head Material	Working Temperature
Standard Type	CX2-T3FL		M3	ϕ2.2	ϕ2.0	R25	Stainless steel	0~70℃
	CX2-T4FL		M4	ϕ2.2	ϕ2.0	R25	Stainless steel	0~70℃
	CX2-T6FL		M6	ϕ2.2	ϕ2.0	R25	Stainless steel	0~70℃

Note: Fiber length standards are 1 m and 2 m, other length requirements are non-standard custom.

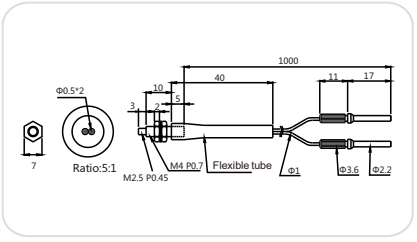
Outline Dimensional Diagram

- Size Specification of Diffuse Reflection (Standard) Fiber Cable

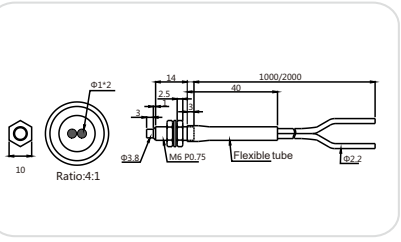
CX2-D3FL



CX2-D4FL

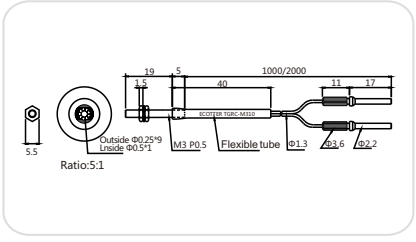


CX2-D6FL

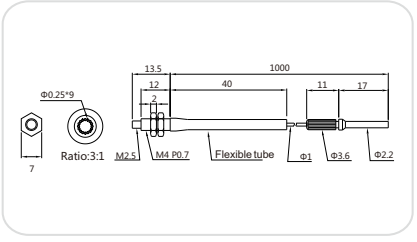


- Size Specification of Diffuse Reflection (Coaxial) Fiber Cable

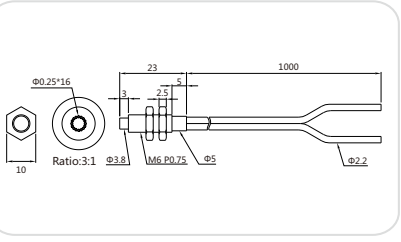
CX2-D3FL-C



CX2-D4FL-C

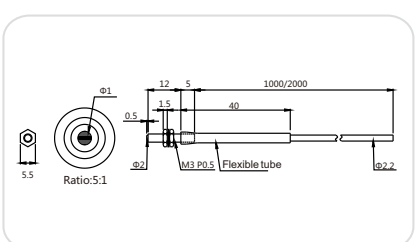


CX2-D6FL-C

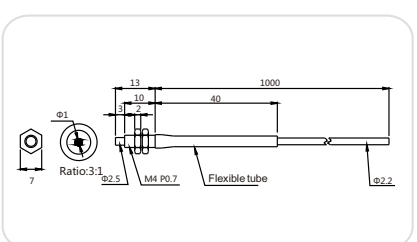


- Size Specification of Through Beam Reflection (Standard) Fiber Cable

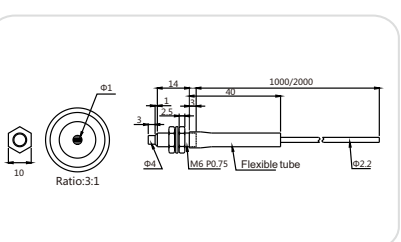
CX2-T3FL



CX2-T4FL

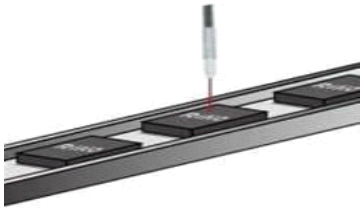
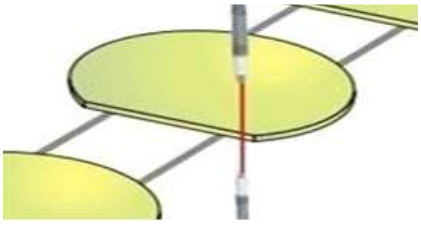
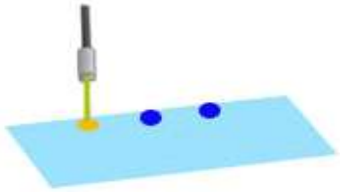
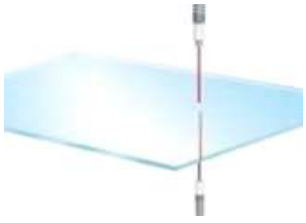
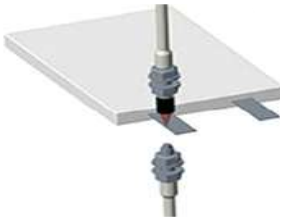


CX2-T6FL



Industry Application Case

Our products are widely used in semiconductor, packaging machinery, printing machinery, pharmaceutical machinery, plastic machinery, lithium battery equipment, solar equipment, agricultural machinery, etc.

Test whether the product is available or not	Detect if there is a gap on the edge of the glass
	
Heck whether the capacitor leads are available	Diffuse cursor detection
	
Detect if the edges of the glass are flat	Detect the position of the two polar ends of the battery
	
Detect if the box on the conveyor belt is interrupted	Check if the wire of the winding machine is used up.