



**OMCH**  
HUGONG AUTOMATION

## Каталог продукции



# Company **OMCH**<sup>®</sup> Introduction

Founded in 1986, Zhejiang Hugong Automation Technology Co., Ltd is one of the biggest electric automation companies engaged in research, development and production of thousands of electric industrial control apparatus such as sensor, photoelectric and approach switch, switching power supply, solid state relay, PLC programmable controller and rotary coder etc. At present, Hugong Company keeps in leading position in the same industry and has a good reputation in China.

The sensor technology of Hugong Automation always keeps ahead in the world and is able to supply users with best service, and its products have passed GB14048/1999 standard and IEC as well as standards of other countries such as Germany, Japan, Korea etc. The company has passed CE and ROHS and other quality attestations, which ensure reliability of user's automation system.

Our products are absolutely necessary parts for industrial automation and are widely used for limiting and positioning test, auto count, speed test, automatic protection, communication, signal transmission, protection and isolation in industries of chemical industry, petroleum, light industry, textile, tobacco, foodstuff, printing, beer, metallurgy, mines, car, spaceflight, machine tool and steel industry etc. They play a great role of improving progress and reliability for automated system.

The company has imported JUKI fully-automatic SMD mounters and wave crest soldering machines made by Tokyo Heavy Industry Co., Ltd(Shanghai), and our products are substitutable with products of OMRON, P+F, Turck, Autonics, Schneider, Fotek, Riko, Hanyoung, Balluff, Shanho, Siemens, Yamatake etc.

In August 2007, the company annexed Shanghai Mingwei Industry Co., Ltd, which is specialized in manufacture of switching power supply in China.

We are specialized in research, manufacture and service of electric automated industrial control apparatus and offer high-quality and top product, excellent service and moderate price for customers, and we also commit ourselves into international competition and cooperation, we own agencies and exclusive distributors in big and medium cities of China, and the products are also exported to countries and areas like Hongkong, Taiwan, Korea, East-Europe, South-America etc including ODM supplies for automated companies and foreign trade corporations of different foreign countries.

Located in Liushi Town of Wenzhou City, Zhejiang Province(City of China Electric Apparatus, within boundary of national grade beauty spot:Yandang Mountains), the company always looks forward to common development and creating flourish future with investors and merchants both at home and abroad.





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## B

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E3F column photoelectric switch series

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Corner column type built-in amplifier photoelectric switch series

Color code & groove type photoelectric switch series

YT infrared photoelectric relay/ electronic velocity sensor series

Accessories (Sensor I/O connector )

**Turck & P+F approach switch series****OMRON & Autonics approach switch series****General corner column approach switch series****E3F column photoelectric switch series****Corner column type photoelectric switch series**

■ Model and Description of Approach switch

LJ □ 12 A3 - 4 - Z / B X  
 <1> <2> <3> <4> <5> <6> <7> <8>

- <1> Approach Switch  
 <2>□No letter: inductive type  
     C: capacitive type  
     X: Simulative type  
 <3>The diameter of column sensor is expressed by number.  
 <4>A3: metallic shell  
     A4: plastic shell  
 <5>The number expresses tested distance.  
 <6>Z: DC type  
     J: AC type  
 <7>B: DC normal open  
     A: DC normal close  
     C: normal open and normal close  
     E: AC normal open  
     D: AC normal close  
 <8>X: NPN 300mA  
     Y: PNP 300mA  
     Z: 300~400mA  
     M: 500mA

■ Model and Description of Approach switch

E3 F - DS 10 C 4  
 <1> <2> <3> <4> <5> <6>

- <1> Photoelectric Switch  
 <2>F: column type  
 JK, M: flat type  
 S: oblong type  
 K: square type  
 <3>DS: diffusive emission type  
 R: feedback emission type  
 G: groove type  
 No letter: correlation type  
 <4>The numbers express test distance  
 <5>C,E: NPN 300mA  
 P,F: PNP 300mA  
 M: contact output  
 Y: AC two-line system  
 <6>1,4: normal open  
 2: normal close  
 3: one open one close

#### ■ Housing material

Nickel plated brass

Heat resistant ABS

Stainless bronze V2A

#### ■ Cable material

PVC Standard cable used in the electronic industry, oil and grease resistant, and corrosion resistant.

To avoid the cable breaking, when the ambient temperature is  $-5^{\circ}\text{C}$  or below, don't move the PVC cable frequently.

#### ■ Cylindrical type proximity switch

The inductive surface of this kind of switch is on the top of the switch and along the vertical direction to the axis of the switch

Switch dimension: 4mm from the polish rod ~ 47mm thread

#### ■ Limit mounted type proximity switch

This switch is designed in terms of the mounting hole structure of Varikont and Varikont M type, meeting the EN 60947 European Standard (IC30 & IC40). The structure is the same as that of the mounting hole of mechanical type travel switch.

Varikont is made up of a firm foundation support (PBT), installed and fastened with screws and inside is the connecting terminal. The upper cover is made of ABS, owning contact pin with numbers and a switch amplifier inside. The upper cover and the foundation support are sealed with rubber gasket ring. The sensor head can convert in 5 directions, for instance, the inductive surface is on the top, bottom, left, front and right side.

#### ■ Surface mounted type proximity switch

This proximity switch has a larger inductive surface (80mm × 80mm), leading to a larger detection range.

The structure is the same as that of the limit mounted type, and the mounting hole is 1D80

#### ■ Screw mounted type (Angular column type) proximity switch

This proximity switch is mounted on the switch surface with screws. The inductive surface can be on the top or in the front and the housing material is generally heat resistant ABS.

#### ■ Slot type proximity switch

This switch is made from heat resistant ABS with a U type shape, and the alternating magnetic field comes in the coil between the two "arms" of the U type. When metallic objects go through the area between the two coils, the switch is activated. Slot type switch can be used for mechanical limit control.

#### ■ Ring type proximity switch

This switch is made from heat resistant ABS with a ring type shape, and the alternating magnetic fields centralize in the ring. When metallic objects go through the circle, the switch is activated.

## Action distance

Action distance is the most important parameter of the proximity switch. It depends mainly on the diameter of the sensor (coil or capacitor), and external shape, induction object material and ambient temperature also affect the inductive range. For magnetic proximity switch, installation and magnet strength must be considered as well.

Definition of action distance:

The definition meets EN60947-5-5-2 Standard, except slot type and ring type.

Proximity switch has two action modes: Axial proximity, Radial proximity.

All parameters mentioned below are defined in terms of the axial proximity mode

## Rated sensing distance $S_n$

It's a standard value without regard to the influence of external environment

## Standard detection sheet

The detection sheet is designed into square type. The thickness is 1 mm, the material is ST37 with smooth surface and the side length is  $3 \times S_n$

The alternation of the detection object dimension or material will attenuate the inductive range

## Effective action distance $S_r$

The action distance detected at the rated operating voltage and room temperature ( $23 \pm 5^\circ\text{C}$ ):  $0.9S_n = S_r = 1.1S_n$

## Practicable action distance $S_u$

The action distance detected when the input voltage is in the range of 85% to 110% the rated voltage and the switch works at the allowable ambient temperature  $-25^\circ\text{C}$  to  $+70^\circ\text{C}$ :  $0.9S_r = S_u = 1.1S_r$

## Reliable action distance $S_a$

When the measure object is in this action distance, the action of the switch is reliable:  $0 = S_a = 0.81S_n$

## Repeatability precision $R$

It is the convert value of the effective action distance that is measured in 8 hours when the ambient temperature is  $23 \pm 5^\circ\text{C}$ , relative humidity is random and the service voltage is  $U_e \pm 5\%$ ;  $R = 0.1S_n$

## Ensure the switch breaking distance

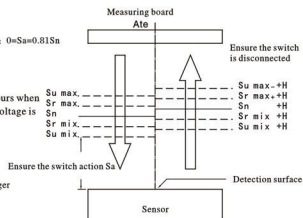
When the distance between the detection sheet and the switch inductive surface is larger than the rated action distance, ensure the switch is disconnected.

## Attenuation

Attenuation coefficient means how much the action distance of a certain kind of material is attenuated when ST37 steel is used as detection sheet. For inductive type proximity switch, the electrical conductivity of the detection sheet material is the main parameter affecting attenuation coefficient.

The attenuation coefficient of some materials is listed below

Material	Attenuation Coefficient
Steel	1
Stainless steel	0.85
Aluminum	0.4
Brass	0.4
Bronze	0.3



While capacitive type proximity switch takes the earth metallic plate as reference.

The attenuation coefficient of some materials is listed below

Material	Attenuation Coefficient
Earth plate	1
Water	1
Alcohol	0.75
Ceramic	0.6
PVC	0.45

#### About the electroplating of detection object

If the surface of detection object is electroplated, the action distance will change, especially after iron is surface treated. The action distance will be shortened 10–30% in terms of the electroplate kind

#### ■ Installation

##### ● Cylindrical type proximity switch

Non-screen shield type proximity switch can achieve the biggest action distance (related to the diameter); but in order to avoid the influence from the metal surrounding the switch to the switch, the switch inductive head must keep a certain space with the surrounding metal. (Chart 1)

The inside special screen shielding of the screen shield type proximity switch makes the magnetic field of side radial decrease and the sensing distance is about 60% that of the non-screen shield type, therefore it can be flush mounted inside the metal. (Chart 2)

Magnetic type sensor doesn't affected by the installation condition, as long as the surrounding materials aren't be magnetized.

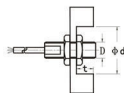


Chart 1



Chart 2

#### Influence of parallel installation (Chart 3)

To avoid mutual interference, the minimum distance between them must be kept.

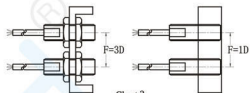
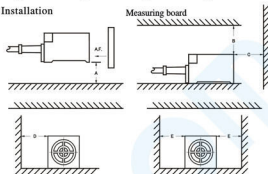


Chart 3

For detailed data, refer to the operation instruction of various types

##### ● Spacing, Installation requirements of angular column type and surface mounted type proximity switch

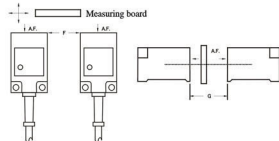
#### Installation



For detailed data, refer to the operation instruction of various types

#### Influence of parallel installation

To avoid mutual interference, the minimum distance between them must be kept.



### Type Selection Guide — In terms of other technical parameters

#### ■ No-load current $I_0$

It means the current consumption that is measured when the proximity switch is on no-load.

#### ■ Operating current $I_a$ (Persistent current)

It means the maximum load current when the switch works continuously.

#### ■ Instantaneous current $I_k$

It means the allowable current in a short time that doesn't ruin the switch when the switch is closed.

#### ■ Residual current $I_r$

It means the current that goes through the load when the proximity switch is disconnected.

#### ■ Operating voltage $U_a$

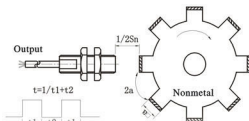
It means the maximum and minimum of the operating voltage. In this range, the proximity switch can ensure the safe operation

#### ■ Voltage drop $U_d$

It means the voltage measured at the both ends of the switch when the switch is turned on.

#### ■ Operating frequency $f$

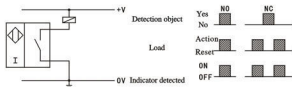
It means the maximum switching times from the attenuation state to non-attenuation state, shown as Hz.



## ■ AC type and DC type Hugong proximity switch

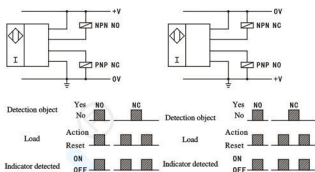
### ● DC two-wire system (D type) NO or NC

The load must be series connected inside the sensor and work, owning the functions of polarity and short-circuit protection. On open-circuit state, tiny leakage current exists, while on closed-circuit state, there is a minor voltage drop on the switch elements.



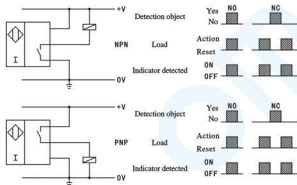
### ● DC four-wire system (X type)

The four output modes can be converted among NPN, PNP, NO and NC



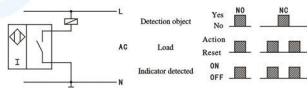
### ● DC three-wire system (N, E, C, P, F, B type) NO or NC

The load of these switches connects separately with the power supply, owning the functions of polarity, short-circuit and over-load protection. The residual current can be neglected.



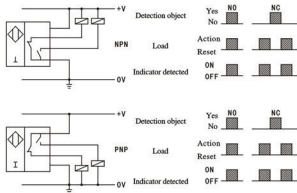
### ● AC two-wire system (A, Y type) NO or NC

The load must be series connected inside the sensor and work, and on closed-circuit state, there is a minor voltage drop on the switch elements.



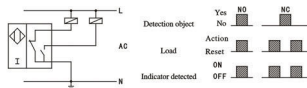
### ● DC four-wire system (N, P type) NO plus NC

The switches can provide two groups of output NO and NC



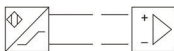
### ● AC three-wire system (W type) NO plus NC

The switches can provide two groups of output NO and NC



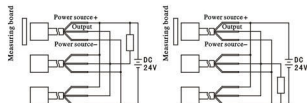
### ● NAMUR type proximity switch, DCtwo-wire system (R type)

Two-wire system NAMUR type proximity switch has steady or changeable current characteristics. Because the voltage and current are kept at a low value, it can be mounted in dangerous zones (Intrinsic safety)



● Series and parallel connection of proximity switch

OR connection (NPN and PNP types can be used mixed) series When the proximity switch is OR connected, the action of any proximity switch can drive load. The quantity of the proximity switches depends on the sum of leakage current. More connections are available given that it doesn't affect the loading action.

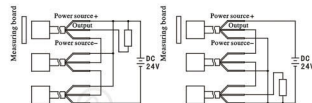


OR connection of NPN output

OR connection of PNP output

● AND connection (series)

When the proximity switch is AND connected, the action of all proximity switches can drive load. The quantity of the proximity switches depends on the sum of saturation voltage. More connections are available given that it doesn't affect the supply voltage of the proximity switch. The response frequency of the proximity switch is the accumulation of initialized reset of various proximity switch.

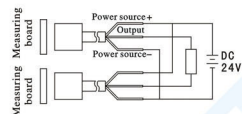


NPN connection of AND output

PNP connection of AND output

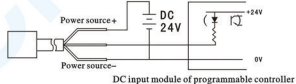
● Series and parallel connection of proximity switch

AND connection (series) NPN, PNP mixed-use



● Connection between proximity switch and programmable controller

Can be connected with the proximity switch of DC switch three-wire system NPN type output



### Matters Needing Attention when using Hugong proximity switch

#### ■ Cautions when connected or disconnected with the power supply

When connecting the proximity switch with the counter and the programmable controller, there isn't any problem because of the built-in initialized reset circuit. Please avoid the conditions mentioned below

- The detection object lies around the detection distance of the proximity switch
- For DC voltage type and DC switch type, when the power supply is turned on (turned off), time constant rises (drops) greatly
- There is self-excitation and noise when the AC switch type proximity switch is power-on (off)

#### ■ Capacitor, light load

The proximity switch can't have the capacitor or light that has larger jumping current as the load directly connected; it's needed to be connected through a relay or series connected with a current-limiting resistance. The peak current set by current-limiting resistance R is within the load current of the proximity switch.

$$\frac{\text{Supply voltage } V}{\text{Peak load current value of proximity switch mA}} \leq R(\text{K}\Omega)$$

Allowable loss of resistance R (W)

$$\frac{\text{Supply voltage } V^2}{\leq R(\text{K}\Omega)} \times 2 \text{ times above}$$

- Make sure to connect through load

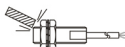


### Installation notice of proximity switch

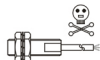
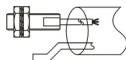
- Don't use it in the open air, and use a protectivecover, if necessary.
- Don't knock the detection surface with hard objects and use a protective cover, if necessary.
- Don't use it in the environment with corrosive objects.



- Don't fasten it with a big force, but fasten it with spring washer



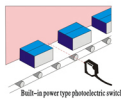
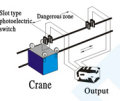

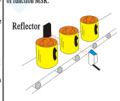
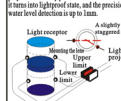
- The proximity switch must be equipped individually with metal flexible pipe, and don't make it with the electric line and power line in the same metal flexible pipe

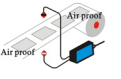
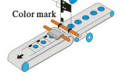
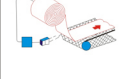




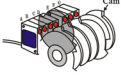
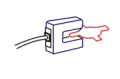

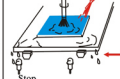
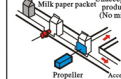
- Don't stretch the power line of the proximity switch with a big force.



### Application Examples of Hugong Proximity Switch and Photoelectric Switch

Thick carton detection	Alarm device of the crane	Tag detection of the beer bottle	Steady detection of mirror surface object	Water level detection inside glass tube
Use photoelectric switch with diffuse reflection when the sensor is mounted on one side.  Built-in power type photoelectric switch	The direction judgment of the crane and the detection of the approach into the dangerous zone.  Slot type photoelectric switch Dangerous zone Crane Output	Check the beer bottle with the reflection type photoelectric switch, and check whether there is a tag with the correlation type photoelectric switch.  Tagging device Reset Button	It's available for mirror surface object to undertake steady detection without any misoperation in terms of function MSR.  Reflector	Mount the light projector and the light receptor at a slightly staggered angle and the lens on the light projector is the key point. The water level drops, it turns into lightproof state, and the precision of water level detection is up to 1mm.  Light receptor Water level Upper limit Lower limit Light projector A slightly staggered angle
Photoelectric switch with diffuse reflection	Slot type photoelectric shape	Reflection type photoelectric switch, correlation type photoelectric switch	Reflection type photoelectric switch	Correlation type optical fiber sensor

Gas tight detection	Mark detection	Inclination detection	Safety detection in robot work area	Various position detection in machining centre
When the substrate is translucent, undertake detection with correlation type.  Air proof	 Color mark			
Optical fiber correlation type photoelectric switch	Mark sensor	Photoelectric switch with diffuse reflection	Safety optical veiling sensor	Cylindrical type proximity switch

Action sequence cam detection	Pulsar	Bottle cap detection	Grinder stop detection	Detect whether there is milk inside the paper pac ket
 Cam		Clean with warm water  Multi-temperature environment	 Grinding fluid Stop	 Milk paper packer Propeller Accepted product No milk
Flat type proximity switch	Slot type proximity switch	Water-proof type proximity switch	Water-proof type proximity switch	Capacitive type proximity switch

■ All-purpose type, which can directly substitute the same type of P+P and TURCK

- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
  - Newly added current over-load protection; the elements are made of imported chip
  - Long service life, high reliability and strong resistance property to environment
  - Red LED indicates that it's available to detect the sensor operating state
  - Full thread shape to enlarge the installation space; can use wrench and clamp directly
  - Countermeasure to improve the housing intensity and to solve disconnection
  - IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



■ Type and Specification (Standard type)

Dimension		M8		M12		M18		M30			
Mounting way		Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type		
Type	NPN	NO	N11.5-MB-ANBx	N12-MB-ANBx	N12-M12-ANBx	N14-M12-ANEx	N15-M18-ANBx	N18-M18-ANEx	N10-M30-ANBx	N15-M30-ANEx	
		NC	N11.5-MB-RNBx	N12-MB-RNBx	N12-M12-RNBx	N14-M12-RNBx	N15-M18-RNBx	N18-M18-RNBx	N10-M30-RNBx	N15-M30-RNBx	
		NO+NC									
	DC type	P	NO	N11.5-MB-APEx	N12-MB-APEx	N12-M12-APEx	N14-M12-APEx	N15-M18-APEx	N18-M18-APEx	N10-M30-APEx	N15-M30-APEx
		N	NC	N11.5-MB-RPEx	N12-MB-RPEx	N12-M12-RPEx	N14-M12-RPEx	N15-M18-RPEx	N18-M18-RPEx	N10-M30-RPEx	N15-M30-RPEx
		P	NO+NC								
	AC type	P	NO	N11.5-MB-AD4X	N12-MB-AD4X	N12-M12-AD4X	N14-M12-AD4X	N15-M18-AD4X	N18-M18-AD4X	N10-M30-AD4X	N15-M30-AD4X
		N	NC	N11.5-MB-RD4X	N12-MB-RD4X	N12-M12-RD4X	N14-M12-RD4X	N15-M18-RD4X	N18-M18-RD4X	N10-M30RD4X	N15-M30RD4X
		P	NO	N11.5-MB-AZ3X	N12-MB-AZ3X	N12-M12-AZ3X	N14-M12-AZ3X	N15-M18-AZ3X	N18-M18-AZ3X	N10-M30-AZ3X	N15-M30-AZ3X
			NC	N11.5-MB-RZ3X	N12-MB-RZ3X	N12-M12-RZ3X	N14-M12-RZ3X	N15-M18-RZ3X	N18-M18-RZ3X	N10-M30-RZ3X	N15-M30-RZ3X
			NO+NC								
	Detection distance		1.5mm±10%	2mm±10%	2mm±10%	4mm±10%	5mm±10%	8mm±10%	10mm±10%	15mm±10%	
Set distance		0~1.2mm	0~1.6mm	0~1.6mm	0~3.2mm	0~4mm	0~7mm	0~8mm	0~13mm		
Standard detection object		8×8×1mm	12×12×1mm	12×12×1mm	15×15×1mm	18×18×1mm	30×30×1mm	30×30×1mm	54×54×1mm		
Response frequency		DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz		
Illustration		Chart 1	Chart 2	Chart 3	Chart 4	Chart 5	Chart 6	Chart 7	Chart 8		

■ Type and Specification (Connector type)

Dimension		M8		M12		M18		M30			
Mounting way		Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type		
Type	NPN	NO	N11.5-MB-ANBx-H11A	N12-MB-ANBx-H11A	N12-M12-ANBx-H11A	N14-M12-ANEx-H11A	N15-M18-ANBx-H11A	N18-M18-ANEx-H11A	N10-M30-ANBx-H11A	N15-M30-ANEx-H11A	
		NC	N11.5-MB-RNBx-H11A	N12-MB-RNBx-H11A	N12-M12-RNBx-H11A	N14-M12-RNBx-H11A	N15-M18-RNBx-H11A	N18-M18-RNBx-H11A	N10-M30-RNBx-H11A	N15-M30-RNBx-H11A	
		NO+NC									
	DC type	P	NO	N11.5-MB-APEx-H11A	N12-MB-APEx-H11A	N12-M12-APEx-H11A	N14-M12-APEx-H11A	N15-M18-APEx-H11A	N18-M18-APEx-H11A	N10-M30-APEx-H11A	N15-M30-APEx-H11A
		N	NC	N11.5-MB-RPEx-H11A	N12-MB-RPEx-H11A	N12-M12-RPEx-H11A	N14-M12-RPEx-H11A	N15-M18-RPEx-H11A	N18-M18-RPEx-H11A	N10-M30-RPEx-H11A	N15-M30-RPEx-H11A
		P	NO+NC								
	AC type	P	NO	N11.5-MB-AD4X-H11A	N12-MB-AD4X-H11A	N12-M12-AD4X-H11A	N14-M12-AD4X-H11A	N15-M18-AD4X-H11A	N18-M18-AD4X-H11A	N10-M30-AD4X-H11A	N15-M30-AD4X-H11A
		N	NC	N11.5-MB-RD4X-H11A	N12-MB-RD4X-H11A	N12-M12-RD4X-H11A	N14-M12-RD4X-H11A	N15-M18-RD4X-H11A	N18-M18-RD4X-H11A	N10-M30RD4X-H11A	N15-M30RD4X-H11A
		P	NO	N11.5-MB-AZ3X-H11A	N12-MB-AZ3X-H11A	N12-M12-AZ3X-H11A	N14-M12-AZ3X-H11A	N15-M18-AZ3X-H11A	N18-M18-AZ3X-H11A	N10-M30-AZ3X-H11A	N15-M30-AZ3X-H11A
			NC	N11.5-MB-RZ3X-H11A	N12-MB-RZ3X-H11A	N12-M12-RZ3X-H11A	N14-M12-RZ3X-H11A	N15-M18-RZ3X-H11A	N18-M18-RZ3X-H11A	N10-M30-RZ3X-H11A	N15-M30-RZ3X-H11A
			NO+NC								
	Detection distance		1.5mm±10%	2mm±10%	2mm±10%	4mm±10%	5mm±10%	8mm±10%	10mm±10%	15mm±10%	
Set distance		0~1.2mm	0~1.6mm	0~1.6mm	0~3.2mm	0~4mm	0~7mm	0~8mm	0~13mm		
Standard detection object		8×8×1mm	12×12×1mm	12×12×1mm	15×15×1mm	18×18×1mm	30×30×1mm	30×30×1mm	54×54×1mm		
Response frequency		DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz		
Illustration		Chart 9	Chart 10	Chart 11	Chart 12	Chart 13	Chart 14	Chart 15	Chart 16		



- Visible type, can be the direct substitution of the same types of Omron and Autonics
- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- Long service life, high reliability and strong resistance property to environment
- Countermeasure to improve the housing intensity
- IP67 protection structure (IEC specification)
- ▲ Read the “Matters needing attention” of the Product Instruction before use



#### ■ Type and Specification (Autonics)

Dimension		M8 (PR08)		M12 (PR12)		M18 (PR18)		M30 (PR30)					
Mounting way		Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type				
Type	DC type	N	NO	PR08-1.5DN	PR08-2DN	PR12-2DN	PR12-4DN	PR18-5DN	PR18-8DN	PR30-10DN	PR30-15DN		
			P	NC	PR08-1.5DN2	PR08-2DN2	PR12-2DN2	PR12-4DN2	PR18-5DN2	PR18-8DN2	PR30-10DN2	PR30-15DN2	
				NO+NC									
	DC type	P	NO	PR08-1.5DP	PR08-2DP	PR12-2DP	PR12-4DP	PR18-5DP	PR18-8DP	PR30-10DP	PR30-15DP		
			N	NC	PR08-1.5DP2	PR08-2DP2	PR12-2DP2	PR12-4DP2	PR18-5DP2	PR18-8DP2	PR30-10DP2	PR30-15DP2	
				NO+NC									
	AC type	Three wires	NO	NO	PR08-1.5DO	PR08-2DO	PR12-2DO	PR12-4DO	PR18-5DO	PR18-8DO	PR30-10DO	PR30-15DO	
				P	NC	PR08-1.5DC	PR08-2DC	PR12-2DC	PR12-4DC	PR18-5DC	PR18-8DC	PR30-10DC	PR30-15DC
					NO+NC								
		Three wires	P	NO			PR12-2AO	PR12-4AO	PR18-5AO	PR18-8AO	PR30-10AO	PR30-15AO	
				N	NC			PR12-2AC	PR12-4AC	PR18-5AC	PR18-8AC	PR30-10AC	PR30-15AC
					NO+NC								
Detection distance		1.5mm ± 10%	2mm ± 10%	2mm ± 10%	4mm ± 10%	5mm ± 10%	8mm ± 10%	10mm ± 10%	15mm ± 10%				
Set distance		0 ~ 1.2mm	0 ~ 1.6mm	0 ~ 1.6mm	0 ~ 3.2mm	0 ~ 4mm	0 ~ 7mm	0 ~ 8mm	0 ~ 13mm				
Standard detection object		8 × 8 × 1mm	12 × 12 × 1mm	12 × 12 × 1mm	15 × 15 × 1mm	18 × 18 × 1mm	30 × 30 × 1mm	30 × 30 × 1mm	54 × 54 × 1mm				
Response frequency		DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz				
Illustration		Chart 17	Chart 18	Chart 19	Chart 20	Chart 21	Chart 22	Chart 23	Chart 24				

#### ■ Type and Specification (Omron)

Dimension		M8		M12		M18		M30					
Mounting way		Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type				
Type	DC type	N	NO	EZE-X1R5E1	EZE-X2ME1	EZE-X2E1	EZE-X5ME1	EZE-X5E1	EZE-X10ME1	EZE-X10E1	EZE-X18ME1		
			P	NC	EZE-X1R5E2	EZE-X2ME2	EZE-X2E2	EZE-X5ME2	EZE-X5E2	EZE-X10ME2	EZE-X10E2	EZE-X18ME2	
				NO+NC									
	DC type	P	NO	EZE-X1R5F1	EZE-X2MF1	EZE-X2F1	EZE-X5MF1	EZE-X5F1	EZE-X10MF1	EZE-X10F1	EZE-X18MF1		
			N	NC	EZE-X1R5F2	EZE-X2MF2	EZE-X2F2	EZE-X5MF2	EZE-X5F2	EZE-X10MF2	EZE-X10F2	EZE-X18MF2	
				NO+NC									
	AC type	Three wires	NO	NO	EZE-X1R5D1	EZE-X2MD1	EZE-X2D1	EZE-X5MD1	EZE-X5D1	EZE-X10MD1	EZE-X10D1	EZE-X18MD1	
				P	NC	EZE-X1R5D2	EZE-X2MD2	EZE-X2D2	EZE-X5MD2	EZE-X5D2	EZE-X10MD2	EZE-X10D2	EZE-X18MD2
					NO			EZE-X2Y1	EZE-X5MY1	EZE-X5Y1	EZE-X10MY1	EZE-X10Y1	EZE-X18MY1
		Three wires	P	NC			EZE-X2Y2	EZE-X5MY2	EZE-X5Y2	EZE-X10MY2	EZE-X10Y2	EZE-X18MY2	
				NO+NC									
				NO									
Detection distance		1.5mm ± 10%	2mm ± 10%	2mm ± 10%	5mm ± 10%	5mm ± 10%	10mm ± 10%	10mm ± 10%	18mm ± 10%				
Set distance		0 ~ 1.2mm	0 ~ 1.6mm	0 ~ 1.6mm	0 ~ 4mm	0 ~ 4mm	0 ~ 8mm	0 ~ 8mm	0 ~ 16mm				
Standard detection object		8 × 8 × 1mm	12 × 12 × 1mm	12 × 12 × 1mm	15 × 15 × 1mm	18 × 18 × 1mm	30 × 30 × 1mm	30 × 30 × 1mm	54 × 54 × 1mm				
Response frequency		DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz				
Illustration		Chart 25	Chart 26	Chart 27	Chart 28	Chart 29	Chart 30	Chart 31	Chart 32				

## ■ Characteristic parameter

Delay distance: 10% below of the detection distance

Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)

Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V(36~250V) 50/60Hz

Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below

Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually -30~+65°C (no freeze, no dew), During operation, storage: individually 35~95%RH

Insulation impedance: 50M $\Omega$ (above DC500 megameter) between charging part and housing

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

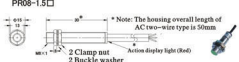
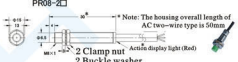
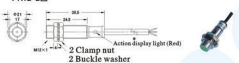

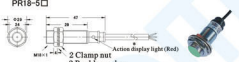

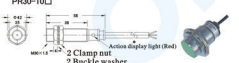
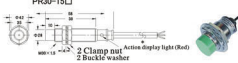





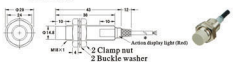


Temperature influence: Temperature range -30~+65°C, at +23°C,  $\pm$ 15% detection distance; temperature range -25~+60°C, at +23°C,  $\pm$ 10% detection distance

Voltage influence: Inside  $\pm$ 15% rated supply voltage range, at rated supply voltage value, inside  $\pm$ 10% detection distance

Protection structure: IP67 (IEC specification)

Material: (Housing: Nickel plated brass), (Detection surface: ABS)

## ■ External dimension

Chart 17 <b>PR08-1.5□</b> 	Chart 18 <b>PR08-2□</b> 
Chart 19 <b>PR12-2□</b> 	Chart 20 <b>PR12-4□</b> 
Chart 21 <b>PR18-5□</b> 	Chart 22 <b>PR18-8□</b> 
Chart 23 <b>PR30-10□</b> 	Chart 24 <b>PR30-15□</b> 
Chart 25 <b>EZE-X1RS□</b> 	Chart 26 <b>EZE-X2M□</b> 
Chart 27 <b>EZE-X2□</b> 	Chart 28 <b>EZE-X5M□</b> 
Chart 29 <b>EZE-X5□</b> 	Chart 30 <b>EZE-X10M□</b> 
Chart 31 <b>EZE-X10□</b> 	Chart 32 <b>EZE-X18M□</b> 

- Economy type, can be the direct substitution of the same types in China.
- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- Super-mini type  $\Phi 4/M5$  D.C., M8 A.C. has been trial-produced and promoted
- Used in common places with medium environment resistance
- Red LED indicates that it's available to detect the sensor operating state
- Economic and simple operation
- Widely used, can be the substitution of min-type switch and limiting switch
- IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



#### Type and Specification

Dimension		$\Phi 4$ (LJ4)	M5 (LJ5)	$\Phi 6$ (LJ6)		M8 (LJ8)		M10 (LJ10)			
Mounting way		Screen shield type	Screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type		
Type	DC type	N P N	NO	LJ4A3-1-Z/BX	LJ5A3-1-Z/BX	LJ6A3-1-Z/BX	LJ6A3-2-Z/BX	LJ8A3-1-Z/BX	LJ8A3-2-Z/BX	LJ10A3-2-Z/BX	LJ10A3-3-Z/BX
			NC	LJ4A3-1-Z/AX	LJ5A3-1-Z/AX	LJ6A3-1-Z/AX	LJ6A3-2-Z/AX	LJ8A3-1-Z/AX	LJ8A3-2-Z/AX	LJ10A3-2-Z/AX	LJ10A3-3-Z/AX
			NO+NC								
	DC type	P N P	NO	LJ4A3-1-Z/BY	LJ5A3-1-Z/BY	LJ6A3-1-Z/BY	LJ6A3-2-Z/BY	LJ8A3-1-Z/BY	LJ8A3-2-Z/BY	LJ10A3-2-Z/BY	LJ10A3-3-Z/BY
			NC	LJ4A3-1-Z/AY	LJ5A3-1-Z/AY	LJ6A3-1-Z/AY	LJ6A3-2-Z/AY	LJ8A3-1-Z/AY	LJ8A3-2-Z/AY	LJ10A3-2-Z/AY	LJ10A3-3-Z/AY
			NO+NC								
	AC type	Three-wire	NO			LJ6A3-1-Z/EX	LJ6A3-2-Z/EX	LJ8A3-1-Z/EX	LJ8A3-2-Z/EX	LJ10A3-2-Z/EX	LJ10A3-3-Z/EX
			NC			LJ6A3-1-Z/DX	LJ6A3-2-Z/DX	LJ8A3-1-Z/DX	LJ8A3-2-Z/DX	LJ10A3-2-Z/DX	LJ10A3-3-Z/DX
			NO+NC			LJ6A3-1-Z/EZ	LJ6A3-2-Z/EZ	LJ8A3-1-Z/EZ	LJ8A3-2-Z/EZ	LJ10A3-2-Z/EZ	LJ10A3-3-Z/EZ
	AC type	Three-wire	NO			LJ6A3-1-Z/DZ	LJ6A3-2-Z/DZ	LJ8A3-1-Z/DZ	LJ8A3-2-Z/DZ	LJ10A3-2-Z/DZ	LJ10A3-3-Z/DZ
			NC			LJ6A3-1-Z/JZ	LJ6A3-2-Z/JZ	LJ8A3-1-Z/JZ	LJ8A3-2-Z/JZ	LJ10A3-2-Z/JZ	LJ10A3-3-Z/JZ
			NO+NC								
Detection distance		1mm±10%	1mm±10%	1.5mm±10%	2mm±10%	1.5mm±10%	2mm±10%	2mm±10%	3mm±10%		
Set distance		0~0.7mm	0~0.7mm	0~1.2mm	0~1.6mm	0~1.2mm	0~1.6mm	0~1.6mm	0~2.4mm		
Standard detection object		5×5×1mm	5×5×1mm	8×8×1mm	12×12×1mm	8×8×1mm	12×12×1mm	8×8×1mm	12×12×1mm		
Response frequency		DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz		
Illustration		Chart 33	Chart 34	Chart 35		Chart 36		Chart 37	Chart 38		

#### Type and Specification

Dimension		M12 (LJ12)		M18 (LJ18)		M24 (LJ24)		M30 (LJ30)			
Mounting way		Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type		
Type	DC type	N P N	NO	LJ12A3-2-Z/BX	LJ12A3-4-Z/BX	LJ18A3-5-Z/BX	LJ18A3-6-Z/BX	LJ24A3-8-Z/BX	LJ24A3-10-Z/BX	LJ30A3-10-Z/BX	LJ30A3-15-Z/BX
			NC	LJ12A3-2-Z/AX	LJ12A3-4-Z/AX	LJ18A3-5-Z/AX	LJ18A3-6-Z/AX	LJ24A3-8-Z/AX	LJ24A3-10-Z/AX	LJ30A3-10-Z/AX	LJ30A3-15-Z/AX
			NO+NC	LJ12A3-2-Z/CX	LJ12A3-4-Z/CX	LJ18A3-5-Z/CX	LJ18A3-6-Z/CX	LJ24A3-8-Z/CX	LJ24A3-10-Z/CX	LJ30A3-10-Z/CX	LJ30A3-15-Z/CX
	DC type	P N P	NO	LJ12A3-2-Z/BY	LJ12A3-4-Z/BY	LJ18A3-5-Z/BY	LJ18A3-6-Z/BY	LJ24A3-8-Z/BY	LJ24A3-10-Z/BY	LJ30A3-10-Z/BY	LJ30A3-15-Z/BY
			NC	LJ12A3-2-Z/AY	LJ12A3-4-Z/AY	LJ18A3-5-Z/AY	LJ18A3-6-Z/AY	LJ24A3-8-Z/AY	LJ24A3-10-Z/AY	LJ30A3-10-Z/AY	LJ30A3-15-Z/AY
			NO+NC	LJ12A3-2-Z/CY	LJ12A3-4-Z/CY	LJ18A3-5-Z/CY	LJ18A3-6-Z/CY	LJ24A3-8-Z/CY	LJ24A3-10-Z/CY	LJ30A3-10-Z/CY	LJ30A3-15-Z/CY
	AC type	Three-wire	NO	LJ12A3-2-Z/EX	LJ12A3-4-Z/EX	LJ18A3-5-Z/EX	LJ18A3-6-Z/EX	LJ24A3-8-Z/EX	LJ24A3-10-Z/EX	LJ30A3-10-Z/EX	LJ30A3-15-Z/EX
			NC	LJ12A3-2-Z/DX	LJ12A3-4-Z/DX	LJ18A3-5-Z/DX	LJ18A3-6-Z/DX	LJ24A3-8-Z/DX	LJ24A3-10-Z/DX	LJ30A3-10-Z/DX	LJ30A3-15-Z/DX
			NO+NC	LJ12A3-2-Z/EZ	LJ12A3-4-Z/EZ	LJ18A3-5-Z/EZ	LJ18A3-6-Z/EZ	LJ24A3-8-Z/EZ	LJ24A3-10-Z/EZ	LJ30A3-10-Z/EZ	LJ30A3-15-Z/EZ
	AC type	Three-wire	NO	LJ12A3-2-Z/DZ	LJ12A3-4-Z/DZ	LJ18A3-5-Z/DZ	LJ18A3-6-Z/DZ	LJ24A3-8-Z/DZ	LJ24A3-10-Z/DZ	LJ30A3-10-Z/DZ	LJ30A3-15-Z/DZ
			NC	LJ12A3-2-Z/JZ	LJ12A3-4-Z/JZ	LJ18A3-5-Z/JZ	LJ18A3-6-Z/JZ	LJ24A3-8-Z/JZ	LJ24A3-10-Z/JZ	LJ30A3-10-Z/JZ	LJ30A3-15-Z/JZ
			NO+NC	LJ12A3-2-Z/JZ	LJ12A3-4-Z/JZ	LJ18A3-5-Z/JZ	LJ18A3-6-Z/JZ	LJ24A3-8-Z/JZ	LJ24A3-10-Z/JZ	LJ30A3-10-Z/JZ	LJ30A3-15-Z/JZ
Detection distance		2mm±10%	4mm±10%	5mm±10%	8mm±10%	8mm±10%	10mm±10%	10mm±10%	15mm±10%		
Set distance		0~1.6mm	0~3.6mm	0~4mm	0~7mm	0~7mm	0~8mm	0~8mm	0~13mm		
Standard detection object		12×12×1mm	15×15×1mm	18×18×1mm	30×30×1mm	24×24×1mm	30×30×1mm	30×30×1mm	54×54×1mm		
Response frequency		DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz	DC: 0.9Hz AC: 25Hz		
Illustration		Chart 39	Chart 40	Chart 41	Chart 42	Chart 43	Chart 44	Chart 45	Chart 46		

### Characteristic parameter

Delay distance: 10% below of the detection distance

Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)

Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V(36~250V) 50/60Hz

Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below

Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually -30~+65°C (no freeze, no dew), During operation, storage: individually 35~95%RH

Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range -30~+65°C, at +23°C, ±15% detection distance;  
temperature range -25~+60°C, at +23°C, ±10% detection distance

Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value, inside ±10% detection distance

Protection structure: IP65 (IEC specification)

Material: (Housing: Nickel plated brass), (Detection surface: ABS).

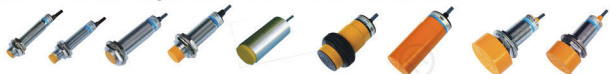
### External dimension

<p>Chart 33</p> <p><b>LJ4A3-1-□</b></p> <p>Proximity Switch Diameter <math>\Phi 0.4</math> Mounting Hole <math>\Phi 4.25</math></p> <p>Action display light (Red)</p>	<p>Chart 34</p> <p><b>LJ5A3-1-□</b></p> <p>Proximity Switch Diameter <math>\Phi 0.5</math> Mounting Hole <math>\Phi 5.7</math></p> <p>Action display light (Red)</p>
<p>Chart 35</p> <p><b>LJ6A3-1-□</b></p> <p>Proximity Switch Diameter <math>\Phi 0.65</math> Mounting Hole <math>\Phi 6.7</math></p> <p>Action display light (Red)</p>	<p>Chart 36</p> <p><b>LJ8A3-2-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>
<p>Chart 37</p> <p><b>LJ10A3-2-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>	<p>Chart 38</p> <p><b>LJ10A3-3-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>
<p>Chart 39</p> <p><b>LJ12A3-2-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>	<p>Chart 40</p> <p><b>LJ12A3-4-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>
<p>Chart 41</p> <p><b>LJ18A3-5-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>	<p>Chart 42</p> <p><b>LJ18A3-8-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>
<p>Chart 43</p> <p><b>LJ24A3-8-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>	<p>Chart 44</p> <p><b>LJ24A3-10-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>
<p>Chart 45</p> <p><b>LJ30A3-10-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>	<p>Chart 46</p> <p><b>LJ30A3-15-□</b></p> <p>2 Clamp nut 2 Buckle washer</p> <p>Action display light (Red)</p>



## Economy type, can be the direct substitution of the same types in China.

- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- Used in common places with medium environment resistance
- Red LED indicates that it's available to detect the sensor operating state
- Economic and simple operation
- Widely used, can be the substitution of min-type switch and limiting switch
- IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



## Type and Specification

Dimension		M14 (LJ14)		M16 (LJ16)		M20 (LJ20)		M22 (LJ22)		
Mounting way		Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	Screen shield type	Non-screen shield type	
T type	DC type	N NO	LJ14A3-3-Z/BX	LJ14A3-5-Z/BX	LJ16A3-3-Z/BX	LJ16A3-5-Z/BX	LJ20A3-6-Z/BX	LJ20A3-8-Z/BX	LJ22A3-6-Z/BX	LJ22A3-8-Z/BX
		N NC	LJ14A3-3-Z/AX	LJ14A3-5-Z/AX	LJ16A3-3-Z/AX	LJ16A3-5-Z/AX	LJ20A3-6-Z/AX	LJ20A3-8-Z/AX	LJ22A3-6-Z/AX	LJ22A3-8-Z/AX
		N NO+NC	LJ14A3-3-Z/CX	LJ14A3-5-Z/CX	LJ16A3-3-Z/CX	LJ16A3-5-Z/CX	LJ20A3-6-Z/CX	LJ20A3-8-Z/CX	LJ22A3-6-Z/CX	LJ22A3-8-Z/CX
		P NO	LJ14A3-3-Z/BY	LJ14A3-5-Z/BY	LJ16A3-3-Z/BY	LJ16A3-5-Z/BY	LJ20A3-6-Z/BY	LJ20A3-8-Z/BY	LJ22A3-6-Z/BY	LJ22A3-8-Z/BY
		P NC	LJ14A3-3-Z/AY	LJ14A3-5-Z/AY	LJ16A3-3-Z/AY	LJ16A3-5-Z/AY	LJ20A3-6-Z/AY	LJ20A3-8-Z/AY	LJ22A3-6-Z/AY	LJ22A3-8-Z/AY
		P NO+NC	LJ14A3-3-Z/CY	LJ14A3-5-Z/CY	LJ16A3-3-Z/CY	LJ16A3-5-Z/CY	LJ20A3-6-Z/CY	LJ20A3-8-Z/CY	LJ22A3-6-Z/CY	LJ22A3-8-Z/CY
	AC type	N NO	LJ14A3-3-Z/EX	LJ14A3-5-Z/EX	LJ16A3-3-Z/EX	LJ16A3-5-Z/EX	LJ20A3-6-Z/EX	LJ20A3-8-Z/EX	LJ22A3-6-Z/EX	LJ22A3-8-Z/EX
		N NC	LJ14A3-3-Z/DX	LJ14A3-5-Z/DX	LJ16A3-3-Z/DX	LJ16A3-5-Z/DX	LJ20A3-6-Z/DX	LJ20A3-8-Z/DX	LJ22A3-6-Z/DX	LJ22A3-8-Z/DX
		N NO	LJ14A3-3-J/EX	LJ14A3-5-J/EX	LJ16A3-3-J/EX	LJ16A3-5-J/EX	LJ20A3-6-J/EX	LJ20A3-8-J/EX	LJ22A3-6-J/EX	LJ22A3-8-J/EX
		N NC	LJ14A3-3-J/DZ	LJ14A3-5-J/DZ	LJ16A3-3-J/DZ	LJ16A3-5-J/DZ	LJ20A3-6-J/DZ	LJ20A3-8-J/DZ	LJ22A3-6-J/DZ	LJ22A3-8-J/DZ
		N NO+NC					LJ20A3-6-J/EDZ	LJ20A3-8-J/EDZ	LJ22A3-6-J/EDZ	LJ22A3-8-J/EDZ
Detection distance		3mm±10%	5mm±10%	3mm±10%	5mm±10%	5mm±10%	8mm±10%	5mm±10%	8mm±10%	
Set distance		0~2.1mm	0~4mm	0~2.4mm	0~4mm	0~4mm	0~7mm	0~4mm	0~7mm	
Standard detection object		14×14×1mm	15×15×1mm	20×20×1mm	30×30×1mm	20×20×1mm	30×30×1mm	22×22×1mm	30×30×1mm	
Response frequency		DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	
Illustration		Chart 47	Chart 48	Chart 49	Chart 50	Chart 51	Chart 52		Chart 53	

## Type and Specification

Dimension		M38 (LJ38)	Φ40 (SC)	Φ48 (SM)	Φ34 (SH)	Φ45 (SG)	
Mounting way		Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	
T type	DC type	N NO	LJ38A4-18-Z/BX	SC-3020A	SM-3025A	SH-3020A	SG-3020A
		N NC	LJ38A4-18-Z/AX	SC-3020B	SM-3025B	SH-3020B	SG-3020B
		N NO+NC	LJ38A4-18-Z/CX	SC-3020AB	SM-3025AB	SH-3020AB	SG-3020AB
		P NO	LJ38A4-18-Z/BY	SC-3020C	SM-3025C	SH-3020C	SG-3020C
		P NC	LJ38A4-18-Z/AY	SC-3020D	SM-3025D	SH-3020D	SG-3020D
		P NO+NC	LJ38A4-18-Z/CY	SC-3020CD	SM-3025CD	SH-3020CD	SG-3020CD
	AC type	N NO	LJ38A4-18-Z/EX	SC-3020AL	SM-3025AL	SH-3020AL	SG-3020AL
		N NC	LJ38A4-18-Z/DX	SC-3020BL	SM-3025BL	SH-3020BL	SG-3020BL
		N NO	LJ38A4-18-J/EX	SC-2020A	SM-2025A	SH-2020A	SG-2020A
		N NC	LJ38A4-18-J/DZ	SC-2020B	SM-2025B	SH-2020B	SG-2020B
		N NO+NC	LJ38A4-18-J/EDZ	SC-2020AB	SM-2025AB	SH-2020AB	SG-2020AB
Detection distance		18mm±10%	20mm±10%	25mm±10%	20mm±10%	20mm±10%	
Set distance		0~16mm	0~17mm	0~22mm	0~17mm	0~17mm	
Standard detection object		54×54×1mm	54×54×1mm	65×65×1mm	78×78×1mm	70×70×1mm	
Response frequency		DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	DC:0.9kHz AC:25Hz	
Illustration		Chart 54	Chart 55	Chart 56	Chart 57	Chart 58	





## ■ Economy type, can be the direct substitution of the same types in China.

- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- Economic and simple operation
- Long service life, high reliability and strong resistance property to environment
- Red LED indicates that it's available to detect the sensor operating state
- IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



## ■ Type and Specification

Dimension	17×17×28	25×25×38	30×30×52	35×35×52	40×40×52	17×17×28	17×17×28	17×17×35			
Mounting way	Non-screen shield type		Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type			
Type	DC type	N	NO	TL-Q5MC1	TL-N5ME1	TL-N10ME1	TL-N15ME1	TL-N20ME1	PS-05N	PS-08N	PL-05N
			NC	TL-Q5MC2	TL-N5ME2	TL-N10ME2	TL-N15ME2	TL-N20ME2	PS-05N2	PS-08N2	PL-05N2
			NO+NC	TL-Q5MC3	TL-N5ME3	TL-N10ME3	TL-N15ME3	TL-N20ME3	PS-05N3	PS-08N3	PL-05N3
		P	NO	TL-Q5MF1	TL-NSMF1	TL-N10MF1	TL-N15MF1	TL-N20MF1	PS-05P	PS-08P	PL-05P
			NC	TL-Q5MF2	TL-NSMF2	TL-N10MF2	TL-N15MF2	TL-N20MF2	PS-05P2	PS-08P2	PL-05P2
			NO+NC	TL-Q5MF3	TL-NSMF3	TL-N10MF3	TL-N15MF3	TL-N20MF3	PS-05P3	PS-08P3	PL-05P3
	AC type	T <sub>1</sub> -100V T <sub>2</sub> -100V	NO	TL-Q5MD1	TL-NSMD1	TL-N10MD1	TL-N15MD1	TL-N20MD1	PS-05D1	PS-08D1	PL-05D1
			NC	TL-Q5MD2	TL-NSMD2	TL-N10MD2	TL-N15MD2	TL-N20MD2	PS-05D2	PS-08D2	PL-05D2
			NO+NC	TL-Q5MY1	TL-NSMY1	TL-N10MY1	TL-N15MY1	TL-N20MY1	PS-05Y1	PS-08Y1	PL-05Y1
		T <sub>1</sub> -250V T <sub>2</sub> -250V	NO	TL-Q5MY2	TL-NSMY2	TL-N10MY2	TL-N15MY2	TL-N20MY2	PS-05Y2	PS-08Y2	PL-05Y2
			NC	TL-Q5MY2	TL-NSMY2	TL-N10MY2	TL-N15MY2	TL-N20MY2	PS-05Y2	PS-08Y2	PL-05Y2
			NO+NC								
Detection distance	5mm±10%	5mm±10%	10mm±10%	15mm±10%	20mm±10%	5mm±10%	8mm±10%	5mm±10%			
Set distance	0~4mm	0~4mm	0~8mm	0~13mm	0~17mm	0~4mm	0~7mm	0~4mm			
Standard detection object	18×18×1mm	25×25×1mm	45×45×1mm	45×45×1mm	50×50×1mm	18×18×1mm	18×18×1mm	18×18×1mm			
Response frequency	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz			
Illustration	Chart59	Chart60	Chart61		Chart62		Chart63	Chart64			

## ■ Type and Specification

Dimension	17×17×35	18×18×36	18×18×36	17×17×29	18×18×34	20×20×36	30×30×52	40×40×52			
Mounting way	Non-screen shield type		Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type			
Type	DC type	N	NO	PL-08N	PS17-50N	SN04-N	SN05-N	SN06-N	SN07-N	SN10-N	SN20-N
			NC	PL-08N2	PS17-50N2	SN04-N2	SN05-N2	SN06-N2	SN07-N2	SN10-N2	SN20-N2
			NO+NC	PL-08N3	PS17-50N3	SN04-N3	SN05-N3	SN06-N3	SN07-N3	SN10-N3	SN20-N3
		P	NO	PL-08P	PS17-50P	SN04-P	SN05-P	SN06-P	SN07-P	SN10-P	SN20-P
			NC	PL-08P2	PS17-50P2	SN04-P2	SN05-P2	SN06-P2	SN07-P2	SN10-P2	SN20-P2
			NO+NC	PL-08P3	PS17-50P3	SN04-P3	SN05-P3	SN06-P3	SN07-P3	SN10-P3	SN20-P3
	AC type	T <sub>1</sub> -100V T <sub>2</sub> -100V	NO	PL-08D1	PS17-50D1	SN04-D1	SN05-D1	SN06-D1	SN07-D1	SN10-D1	SN20-D1
			NC	PL-08D2	PS17-50D2	SN04-D2	SN05-D2	SN06-D2	SN07-D2	SN10-D2	SN20-D2
			NO+NC	PL-08Y1	PS17-50Y1	SN04-Y1	SN05-Y1	SN06-Y1	SN07-Y1	SN10-Y1	SN20-Y1
		T <sub>1</sub> -250V T <sub>2</sub> -250V	NO	PL-08Y2	PS17-50Y2	SN04-Y2	SN05-Y2	SN06-Y2	SN07-Y2	SN10-Y2	SN20-Y2
			NC	PL-08Y2	PS17-50Y2	SN04-Y2	SN05-Y2	SN06-Y2	SN07-Y2	SN10-Y2	SN20-Y2
			NO+NC								
Detection distance	8mm±10%	5mm±10%	5mm±10%	5mm±10%	5mm±10%	8mm±10%	10mm±10%	20mm±10%			
Set distance	0~7mm	0~4mm	0~4mm	0~4mm	0~4mm	0~7mm	0~8mm	0~17mm			
Standard detection object	18×18×1mm	18×18×1mm	18×18×1mm	18×18×1mm	18×18×1mm	18×18×1mm	45×45×1mm	50×50×1mm			
Response frequency	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz			
Illustration	Chart64	Chart65	Chart66								

## Characteristic parameter

Delay distance: 10% below of the detection distance

Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)

Supply voltage: DC type: DC12–24V(6–36V) Impulse (p-p) 10% below, AC type: AC110–220V (36–250V) 50/60Hz

Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below

Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually -30~+65°C (no freeze, no dew), During operation, storage: individually 35–95%RH

Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range -30~+65°C, at +23°C, ±15% detection distance; temperature range -25~+60°C, at +23°C, ±10% detection distance

Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value, inside ±10% detection distance

Protection structure: IP67 (IEC specification)

Material: (Housing: ABS), (Detection surface: ABS).

## External dimension

Chart59 TL-Q5M□

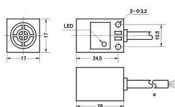


Chart60 TL-N5M□

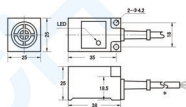


Chart61 TL-N10M□

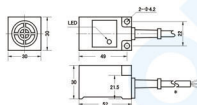


Chart62 TL-N20M□

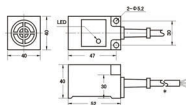


Chart63 PS-05(8)□

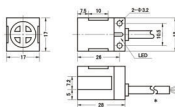


Chart64 PL-05(8)□

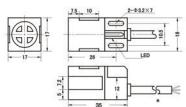


Chart65 PS17-5□

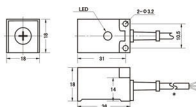
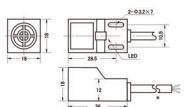


Chart66 SN04-□



## ■ Economy type, can be the direct substitution of the same types in China.

- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- Economic and simple operation
- Long service life, high reliability and strong resistance property to environment
- Red LED indicates that it's available to detect the sensor operating state
- IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



## ■ Type and Specification

Dimension		12×12×45	25×25×39	30×30×53		40×40×53	30×18×10	50×25×10	45×30×12		
Mounting way		Non-screen shield type	Non-screen shield type	Non-screen shield type		Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type		
Type	DC type	N	NO	PS12-4DN	PSN25-5DN	PSN30-10DN	PSN30-15DN	PSN40-20DN	GKB-M0524NA	TL-W5E1	TL-W7E1
			NC	PS12-4DN2	PSN25-5DN2	PSN30-10DN2	PSN30-15DN2	PSN40-20DN2	GKB-M0524NB	TL-W5E2	TL-W7E2
			NO+NC	PSN25-5DN3	PSN30-10DN3	PSN30-15DN3	PSN40-20DN3				
	P	N	NO	PS12-4DP	PSN25-5DP	PSN30-10DP	PSN30-15DP	PSN40-20DP	GKB-M0524PA	TL-W5F1	TL-W7F1
			NC	PS12-4DP2	PSN25-5DP2	PSN30-10DP2	PSN30-15DP2	PSN40-20DP2	GKB-M0524PB	TL-W5F2	TL-W7F2
			NO+NC	PSN25-5DP3	PSN30-10DP3	PSN30-15DP3	PSN40-20DP3				
	AC type	N	NO	PS12-4DO	PSN25-5DO	PSN30-10DO	PSN30-15DO	PSN40-20DO	GKB-M0524D1	TL-W5D1	TL-W7D1
			NC	PS12-4DC	PSN25-5DC	PSN30-10DC	PSN30-15DC	PSN40-20DC	GKB-M0524D2	TL-W5D2	TL-W7D2
			NO	PS12-4AO	PSN25-5AO	PSN30-10AO	PSN30-15AO	PSN40-20AO	TL-W5A1	TL-W7A1	
	AC type	N	NC	PS12-4AC	PSN25-5AC	PSN30-10AC	PSN30-15AC	PSN40-20AC	TL-W5A2	TL-W7A2	
			NO+NC								
Detection distance		4mm±10%	5mm±10%	10mm±10%	15mm±10%	20mm±10%	5mm±10%	5mm±10%	7mm±10%		
Set distance		0-3.6mm	0-4mm	0-8mm	0-13mm	0-17mm	0-4mm	0-4mm	0-5mm		
Standard detection object		18×18×1mm	30×30×1mm	45×45×1mm	45×45×1mm	50×50×1mm	18×18×1mm	18×18×1mm	25×25×1mm		
Response frequency		DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz		
Illustration		Chart67	Chart68	Chart69	Chart70	Chart71	Chart72	Chart73			

## ■ Type and Specification

Dimension		120×80×30	40×26×12		60×60×12	86×29×18	96×26×17	40×40×68	55×39×128	
Mounting way		Non-screen shield type	screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	
Type	DC type	N	NO	HJ-3050A	TL-T2E1	TL-T5E1	TS-T5E1	TK-T5E1	TC-T5E1	JKD-1A
			NC	HJ-3050B	TL-T2E2	TL-T5E2	TS-T5E2	TK-T5E2	TC-T5E2	JKD-1B
			NO+NC	HJ-3050AB			TS-T5E3	TK-T5E3	TC-T5E3	JKD-1C
	P	N	NO	HJ-3050C	TL-T2F1	TL-T5F1	TS-T5F1	TK-T5F1	TC-T5F1	JKD-1D
			NC	HJ-3050D	TL-T2F2	TL-T5F2	TS-T5F2	TK-T5F2	TC-T5F2	JKD-D1
			NO+NC	HJ-3050CD			TS-T5F3	TK-T5F3	TC-T5F3	JKD-D2
	AC type	N	NO	HJ-3050AL	TL-T2D1	TL-T5D1	TS-T5D1	TK-T5D1	TC-T5D1	JKD-A1
			NC	HJ-3050BL	TL-T2D2	TL-T5D2	TS-T5D2	TK-T5D2	TC-T5D2	JKD-A2
			NO	HJ-2050A	TL-T2A1	TL-T5A1	TS-T5A1	TK-T5A1	TC-T5A1	3SG3266-1BR86-A
	AC type	N	NC	HJ-2050B	TL-T2A2	TL-T5A2	TS-T5A2	TK-T5A2	TC-T5A2	3SG3266-1BR86-A2
			NO+NC	HJ-2050AB						3SG3266-1BR86-A3
Detection distance		50mm±10%	2mm±10%	5mm±10%	5mm±10%	5mm±10%	5mm±10%	10mm±10%	30mm±10%	
Set distance		0-40mm	0-1.6mm	0-4mm	0-4mm	0-4mm	0-4mm	0-8mm	0-25mm	
Standard detection object		100×100×2mm	12×12×1mm	18×18×1mm	18×18×1mm	18×18×1mm	18×18×1mm	45×45×1mm	60×60×1mm	
Response frequency		DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	DC:0.5kHz AC:25Hz	
Illustration		Chart74	Chart75	Chart76	Chart77	Chart78	Chart79	Chart80		

## Characteristic parameter

Delay distance: 10% below of the detection distance

Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)

Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V(36~250V) 50/60Hz

Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below

Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually -30~+65°C (no freeze, no dew), During operation, storage: individually 35~95%RH

Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing


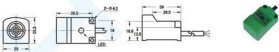
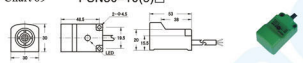
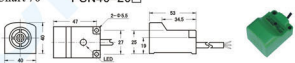
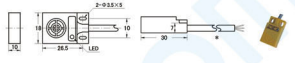
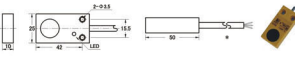

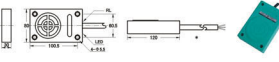
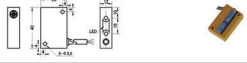
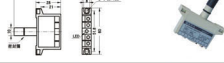
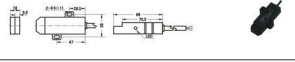
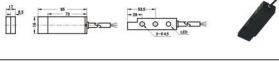
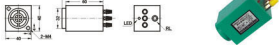

Temperature influence: Temperature range -30~+65°C, at +23°C, ±15% detection distance; temperature range -25~+60°C, at +23°C, ±10% detection distance

Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value, inside ±10% detection distance

Protection structure: IP67 (IEC specification)

Material: (Housing: ABS), (Detection surface: ABS).

## External dimension

<p>Chart 67 PS12-4□</p> 	<p>Chart 68 PSN25-5□</p> 
<p>Chart 69 PSN30-10(5)□</p> 	<p>Chart 70 PSN40-20□</p> 
<p>Chart 71 GKB-M0524□</p> 	<p>Chart 72 TL-W5E□</p> 
<p>Chart 73 TL-W7E□</p> 	<p>Chart 74 HJ-□</p> 
<p>Chart 75 TL-T□</p> 	<p>Chart 76 TS-T□</p> 
<p>Chart 77 TK-T□</p> 	<p>Chart 78 TC-T□</p> 
<p>Chart 79 JKD-□</p> 	<p>Chart 80 3SG3266-□</p> 

■ Economy type, can be the direct substitution of the same types in China.

- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- Economic and simple operation
- Long service life, high reliability and strong resistance property to environment
- Red LED indicates that it's available to detect the sensor operating state
- IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



■ Type and Specification

Dimension		30×30×80	40×40×118	55×55×130	50×50×50	55×55×52	80×80×48	24×24×85				
Mounting way		Non-screen shield type		Non-screen shield type		Non-screen shield type	Non-screen shield type	Non-screen shield type				
Type	DC type	N	NO	HY-3010A	HY-3015A	HY-3020A	HY-3030A	HD-3020A	HE-3025A	HM-3040A	HL-3008A	
		P	NC	HY-3010B	HY-3015B	HY-3020B	HY-3030B	HD-3020B	HE-3025B	HM-3040B	HL-3008B	
		N	NO+NC	HY-3010AB	HY-3015AB	HY-3020AB	HY-3030AB					HL-3008AB
		P	NO	HY-3010C	HY-3015C	HY-3020C	HY-3030C	HD-3020C	HE-3025C	HM-3040C	HL-3008C	
		P	NC	HY-3010D	HY-3015D	HY-3020D	HY-3030D	HD-3020D	HE-3025D	HM-3040D	HL-3008D	
		N	NO+NC	HY-3010CD	HY-3015CD	HY-3020CD	HY-3030CD					HL-3008CD
	AC type	N	NO	HY-3010AL	HY-3015AL	HY-3020AL	HY-3030AL	HD-3020AL	HE-3025AL	HM-3040AL	HL-3008AL	
		P	NC	HY-3010BL	HY-3015BL	HY-3020BL	HY-3030BL	HD-3020BL	HE-3025BL	HM-3040BL	HL-3008BL	
		N	NO	HY-2010A	HY-2015A	HY-2020A	HY-2030A	HD-2020A	HE-2025A	HM-2040A	HL-2008A	
		P	NC	HY-2010B	HY-2015B	HY-2020B	HY-2030B	HD-2020B	HE-2025B	HM-2040B	HL-2008B	
		N	NO+NC		HY-2015AB	HY-2020AB	HY-2030AB	HD-2020AB	HE-2025AB	HM-2040AB	HL-2008AB	
		P										
Detection distance		10mm±10%	15mm±10%	20mm±10%	30mm±10%	20mm±10%	25mm±10%	40mm±10%	8mm±10%			
Set distance		0-8mm	0-13mm	0-17mm	0-27mm	0-17mm	0-22mm	0-35mm	0-7mm			
Standard detection object		30×30×1mm	50×50×1mm	50×50×1mm	65×65×1mm	50×50×1mm	60×60×1mm	90×90×2mm	30×30×1mm			
Response frequency		DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz			
Illustration		Chart81	Chart82	Chart83	Chart84	Chart85	Chart86	Chart87				

■ Type and Specification

Dimension		38×40×80	44×45×90	52×33×25	56×36×26	65×39×25	31×33×50	31×33×50	34×42×73
Mounting way		Non-screen shield type		Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type
Type	DC type	N	NO	LJ2-15/221	LJ2-20/221	LJ1A-24		JWK-A5P	JWK-D10P
		P	NC	LJ2-15G/221	LJ2-20G/221	LJ1A-24B		JWK-D5P2	JWK-D10P2
		N	NO	LJ2L-15-4/121	LJ2L-20-4/121	LJ1A-220	WJK-II	WJK2-II	
	AC type	N	NO	LJ2L-15G-4/121	LK20-4KH-G(NC)	LJ1A-220B	WJK-II	WJK2-II	
		P							
		N							
Detection distance		15mm±10%	20mm±10%	8mm±10%	8mm±10%	8mm±10%	5mm±10%	5mm±10%	10mm±10%
Set distance		0-13mm	0-17mm	0-7mm	0-7mm	0-7mm	0-4mm	0-4mm	0-8mm
Standard detection object		45×45×1mm	50×50×1mm	18×18×1mm	18×18×1mm	18×18×1mm	18×18×1mm	18×18×1mm	25×25×1mm
Response frequency		DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz
Illustration		Chart88	Chart89	Chart90	Chart91	—	Chart92	Chart93	

Dimension		34×42×73	48×48×105	38×40×92	32×26×80	42×90×65	65×55×48	50×25×32	62×25×24
Mounting way		Non-screen shield type		Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type
Type	DC type	N	NO	JWK-A10P		JWKL12-AG		BQ819-24N	LJ1-24
		P	NC	JWK-A10P2		JWKL12-BG			LJ1-24B
		N	NO		JWK20-AD15J	LK20-4KH-G		LXJ9-1A(NC)	LXU1-115G2
	AC type	N	NO		JWK20-AD15K	LJ30B-15/2H1		LXJ9-2D(NC)	
		P							
		N							
Detection distance		10mm±10%	15mm±10%	15mm±10%	8mm±10%	10mm±10%	4mm±10%	5mm±10%	5mm±10%
Set distance		0-8mm	0-8mm	0-13mm	0-7mm	0-8mm	0-3.6mm	0-4mm	0-4mm
Standard detection object		30×30×1mm	30×30×1mm	30×30×1mm	18×18×1mm	30×30×1mm	30×30×1mm	18×18×1mm	18×18×1mm
Response frequency		DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz	DC:0.9Hz AC:25Hz
Illustration		Chart93	Chart94						

### Characteristic parameter

Delay distance: 10% below of the detection distance

Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)

Supply voltage: DC type: DC12-24V(6-36V) Impulse (p-p) 10% below, AC type: AC110-220V (36-250V) 50/60Hz

Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below

Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually -30~+65°C (no freeze, no dew), During operation, storage: individually 35-95%RH

Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range -30~+65°C, at +23°C, ±15% detection distance; temperature range -25~+60°C, at +23°C, ±10% detection distance

Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value, inside ±10% detection distance

Protection structure: IP67 (IEC specification)

Material: (Housing: ABS), (Detection surface: ABS).

### External dimension

<p>Chart 81 HY-□10□</p>	<p>Chart 82 HY-□15□</p>
<p>Chart 83 HY-□30□</p>	<p>Chart 84 HD-□20□</p>
<p>Chart 85 HE-□25□</p>	<p>Chart 86 HM-□40□</p>
<p>Chart 87 HL-□08□</p>	<p>Chart 88 LJ2-15□</p>
<p>Chart 89 LJ2-20□</p>	<p>Chart 90 LJ1A-□</p>
<p>Chart 91 WJK-II</p>	<p>Chart 92 JWK-D(A)5□</p>
<p>Chart 93 JWK-D(A)10□</p>	<p>Chart 94 JWK220-D(A)10□</p>





## Characteristic parameter

Delay distance: 10% below of the detection distance

Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)

Supply voltage: DC type: DC12-24V(6-36V) Impulse (p-p) 10% below, AC type: AC110-220V (36-250V) 50/60Hz

Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below

Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually -30~+65°C (no freeze, no dew), During operation, storage: individually 35-95%RH

Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: N.P type: temperature range -30~+65°C, at +23°C, ±15% detection distance; temperature range -25~+60°C, at +23°C, ±10% detection distance

Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value, inside ±10% detection distance

Protection structure: IP67 (IEC specification)

Material: (Housing: ABS), (Detection surface: ABS).

## External dimension

<p>Chart 95 LJG5C-4□</p>	<p>Chart 96 LJG5C-5□</p>
<p>Chart 97 LU3-10□</p>	<p>Chart 98 LU4-16□</p>
<p>Chart 99 LU5-16□</p>	<p>Chart 100 LU5-15□</p>
<p>Chart 101 SK-□15□</p>	<p>Chart 102 SJ-□18□</p>
<p>Chart 103 SD-□20□</p>	<p>Chart 104 SE-□25□</p>
<p>Chart 105 TCO-□40□</p>	<p>Chart 106 TCA-□50□</p>
<p>Chart 107 TCB-□80□</p>	<p>Chart 108 TCC-□120□</p>

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- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- Economic and simple operation
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- Red LED indicates that it's available to detect the sensor operating state
- IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



## ■ Type and Specification

Dimension		M12×1		M18×1		M24×1.5		M30×1			
Mounting way		screen shield type	Non-screen shield type	screen shield type	Non-screen shield type	screen shield type	Non-screen shield type	screen shield type	Non-screen shield type		
Type	DC type	N	NO	LJC12A3-2-Z/BX	LJC12A3-5-Z/BX	LJC18A3-5-Z/BX	LJC18A3-10-Z/BX	LJC24A3-8-Z/BX	LJC24A3-15-Z/BX	LJC30A3-10-Z/BX	LJC30A3-20-Z/BX
			NC	LJC12A3-2-Z/AX	LJC12A3-5-Z/AX	LJC18A3-5-Z/AX	LJC18A3-10-Z/AX	LJC24A3-8-Z/AX	LJC24A3-15-Z/AX	LJC30A3-10-Z/AX	LJC30A3-20-Z/AX
			NO+NC								
		P	NO	LJC12A3-2-Z/BY	LJC12A3-5-Z/BY	LJC18A3-5-Z/BY	LJC18A3-10-Z/BY	LJC24A3-8-Z/BY	LJC24A3-15-Z/BY	LJC30A3-10-Z/BY	LJC30A3-20-Z/BY
			NC	LJC12A3-2-Z/AY	LJC12A3-5-Z/AY	LJC18A3-5-Z/AY	LJC18A3-10-Z/AY	LJC24A3-8-Z/AY	LJC24A3-15-Z/AY	LJC30A3-10-Z/AY	LJC30A3-20-Z/AY
			NO+NC								
	AC type	Thin-shield	NO								
			NC								
			NO+NC								
		Three-shield	NO		LJC18A3-5-J/EZ	LJC18A3-10-J/EZ	LJC24A3-8-J/EZ	LJC24A3-15-J/EZ	LJC30A3-10-J/EZ	LJC30A3-20-J/EZ	
			NC		LJC18A3-5-J/DZ	LJC18A3-10-J/DZ	LJC24A3-8-J/DZ	LJC24A3-15-J/DZ	LJC30A3-10-J/DZ	LJC30A3-20-J/DZ	
			NO+NC								
Detection distance		2mm±10%	5mm±10%	5mm±10%	10mm±10%	8mm±10%	15mm±10%	10mm±10%	20mm±10%		
Set distance		0~1.7mm	0~4mm	0~4mm	0~8mm	0~7mm	0~13mm	0~8mm	0~18mm		
Standard detection object		SPCC 50×50×1mm									
Response frequency		DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz	DC:0.5Hz AC:25Hz		
Illustration		Chattr109	Chattr110	Chattr111	Chattr112	Chattr113	Chattr114	Chattr115	Chattr116		

## ■ Type and Specification

Dimension		Φ20		Φ34		M38×1.5		Φ80×80×40	
Mounting way		Non-screen shield type		Non-screen shield type		Non-screen shield type		Non-screen shield type	
Type	DC type	N	NO	LJC20A4-10-Z/BX	LJC34A4-25-Z/BX	LJC38A4-20-Z/BX	LJC38A4-20-Z/BX	LJC80A4-40-Z/BX	
			NC	LJC20A4-10-Z/AX	LJC34A4-25-Z/AX	LJC38A4-20-Z/AX	LJC38A4-20-Z/AX	LJC80A4-40-Z/AX	
			NO+NC						
		P	NO	LJC20A4-10-Z/BY	LJC34A4-25-Z/BY	LJC38A4-20-Z/BY	LJC38A4-20-Z/BY	LJC80A4-40-Z/BY	
			NC	LJC20A4-10-Z/AY	LJC34A4-25-Z/AY	LJC38A4-20-Z/AY	LJC38A4-20-Z/AY	LJC80A4-40-Z/AY	
			NO+NC						
	AC type	Thin-shield	NO						
			NC						
			NO+NC						
		Three-shield	NO	LJC20A4-10-J/EZ	LJC34A4-25-J/EZ	LJC38A4-20-J/EZ	LJC38A4-20-J/EZ	LJC80A4-40-J/EZ	
			NC	LJC20A4-10-J/DZ	LJC34A4-25-J/DZ	LJC38A4-20-J/DZ	LJC38A4-20-J/DZ	LJC80A4-40-J/DZ	
			NO+NC						
Detection distance		10mm±10%		25mm±10%		20mm±10%		40mm±10%	
Set distance		0~8mm		0~22mm		0~18mm		0~35mm	
Standard detection object		SPCC 50×50×1mm							
Response frequency		DC:0.5Hz AC:25Hz		DC:0.5Hz AC:25Hz		DC:0.5Hz AC:25Hz		DC:0.5Hz AC:25Hz	
Illustration		Chattr117		Chattr118		Chattr119		Chattr120	

### Characteristic parameter

Delay distance: 10% below of the detection distance

Detection object: Can detect any dielectric

Supply voltage: DC type: DC12-24V(6-36V) Impulse (p-p) 10% below, AC type: AC110-220V (36-250V) 50/60Hz

Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below

Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below

Loop protection: N.P.D type: reverse connection protection, surge absorption, load short-circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually -30~+65°C (no freeze, no dew), During operation, storage: individually 35-95%RH

Insulation impedance: 50M $\Omega$  above (DC500 megameter) between charging part and housing

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range -30~+65°C, at +23°C,  $\pm 15\%$  detection distance; temperature range -25~+60°C, at +23°C,  $\pm 10\%$  detection distance

Voltage influence: Inside  $\pm 15\%$  rated supply voltage range, at rated supply voltage value, inside  $\pm 10\%$  detection distance

Protection structure: IP67 (IEC specification)

Material: (Housing: Nickel plated brass) , (Detection surface: ABS) .

### External dimension

<p>Chart 109 LJC12A3-2-□</p>	<p>Chart 110 LJC12A3-5-□</p>
<p>Chart 111 LJC18A3-5-□</p>	<p>Chart 112 LJC18A3-10-□</p>
<p>Chart 113 LJC24A3-8-□</p>	<p>Chart 114 LJC24A3-15-□</p>
<p>Chart 115 LJC30A3-10-□</p>	<p>Chart 116 LJC30A3-20-□</p>
<p>Chart 117 LJC20A4-10-□</p>	<p>Chart 118 LJC34A4-25-□</p>
<p>Chart 119 LJC38A4-20-□</p>	<p>Chart 120 LJC80A4-40-□</p>

## ■ Analog type, can detect the movement of the object location

- Power supply reversal connection protection
  - Long service life, high reliability
  - Red LED indicates that it's available to detect the sensor operating state
  - Simple operation with adjustable distance
  - IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



## ■ Type and Specification

Dimension		M18×1	M30×1.5	M38×1.5	M24×1.5		
Mounting way		Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type		
Type	Voltage type	N	NO	LJX30A3-10-Z/NU	LJX30A3-15-Z/NU	LJX38A3-18-Z/NU	LJX40A3-20-Z/NU
		P	NO	LJX18A3-10-Z/PU	LJX30A3-15-Z/PU	LJX38A3-18-Z/PU	LJX40A3-20-Z/PU
		N	NO	LJX18A3-10-Z/N	LJX30A3-15-Z/N	LJX38A3-18-Z/N	LJX40A3-20-Z/N
		P	NO	LJX18A3-10-Z/P	LJX30A3-15-Z/P	LJX38A3-18-Z/P	LJX40A3-20-Z/P
	Current type	N	NO	LJX18A3-10-Z/NU	LJX30A3-15-Z/NU	LJX38A3-18-Z/NU	LJX40A3-20-Z/NU
		P	NO	LJX18A3-10-Z/PU	LJX30A3-15-Z/PU	LJX38A3-18-Z/PU	LJX40A3-20-Z/PU
		N	NO	LJX18A3-10-Z/N	LJX30A3-15-Z/N	LJX38A3-18-Z/N	LJX40A3-20-Z/N
		P	NO	LJX18A3-10-Z/P	LJX30A3-15-Z/P	LJX38A3-18-Z/P	LJX40A3-20-Z/P
Detection distance		1...7mm	1...13mm	1...18mm	1...18mm		
Standard detection object		18×18×1mm 30×30×1mm	30×30×1mm 54×54×1mm	54×54×1mm	85×85×1mm		
Voltage output		0...10V					
Load resistance		≥4.7KΩ					
Current output		0...20mA					
Load resistance		≤500Ω					
Response frequency		200Hz					
Illustration		Chatr121	Chatr122	Chatr123	Chatr124		

## ■ Type and Specification

Dimension		30×30×52	Φ48×32	40×40×118	80×80×40		
Mounting way		Non-screen shield type	Non-screen shield type	Non-screen shield type	Non-screen shield type		
Type	Voltage type	N	NO	LFX30A3-10-Z/NU	LFX48A3-20-Z/NU	LFX118A3-20-Z/NU	LFX80A3-40-Z/NU
		P	NO	LFX30A3-10-Z/PU	LFX48A3-20-Z/PU	LFX118A3-20-Z/PU	LFX80A3-40-Z/PU
		N	NO	LFX30A3-10-Z/N	LFX48A3-20-Z/N	LFX118A3-20-Z/N	LFX80A3-40-Z/N
		P	NO	LFX30A3-10-Z/P	LFX48A3-20-Z/P	LFX118A3-20-Z/P	LFX80A3-40-Z/P
	Current type	N	NO	LFX30A3-10-Z/NU	LFX48A3-20-Z/NU	LFX118A3-20-Z/NU	LFX80A3-40-Z/NU
		P	NO	LFX30A3-10-Z/PU	LFX48A3-20-Z/PU	LFX118A3-20-Z/PU	LFX80A3-40-Z/PU
		N	NO	LFX30A3-10-Z/N	LFX48A3-20-Z/N	LFX118A3-20-Z/N	LFX80A3-40-Z/N
		P	NO	LFX30A3-10-Z/P	LFX48A3-20-Z/P	LFX118A3-20-Z/P	LFX80A3-40-Z/P
Detection distance		1...8mm	1...18mm	1...18mm	1...35mm		
Standard detection object		45×45×1mm	65×65×1mm	54×54×1mm	95×95×1mm		
Voltage output		0...10V					
Load resistance		≥4.7KΩ					
Current output		0...20mA					
Load resistance		≤500Ω					
Response frequency		200Hz					
Illustration		Chatr125	Chatr126	Chatr127	Chatr128		

### Characteristic parameter

Delay distance: 10% below of the detection distance

Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)

Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V(36~250V) 50/60Hz

Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below

Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually -30~+65°C (no freeze, no dew), During operation, storage: individually 35~95%RH

Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range -30~+65°C, at +23°C, ± 15% detection distance; temperature range -25~+60°C, at +23°C, ± 10% detection distance

Voltage influence: Inside ± 15% rated supply voltage range, at rated supply voltage value, inside ± 10% detection distance

Protection structure: IP67 (IEC specification)

Material: (Housing: Nickel plated brass), (Detection surface: ABS)

### External dimension

Chart 121 LJX18A3-10-Z-□

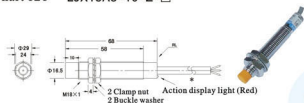


Chart 122 LJX30A3-15-Z-□



Chart 123 LJX38A3-18-Z-□

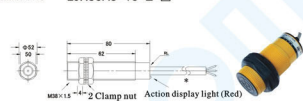


Chart 124 LJX40A3-20-Z-□

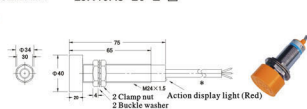


Chart 125 LFX30A3-10-Z-□

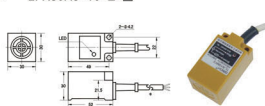


Chart 126 LFX48A3-20-Z-□

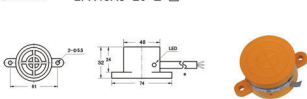


Chart 127 LFX118A3-20-Z-□

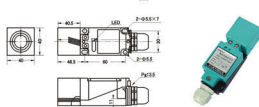
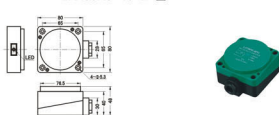


Chart 128 LFX80A3-40-Z-□



### ■ Magnetic induction type, can detect the position of the plunger in the cylinder

- Sensors can be mounted in the metal
- The parallel installation of the sensors hasn't any demand
- Sensor induction surface can be made of metal
- Sensors can undertake detection through metal
- Sensors can have larger induction distance and smaller dimension
- IP67 protection structure (IEC specification)

▲ Read the "Matters needing attention" of the Product Instruction before use



### ■ Type and Specification

Dimension	Φ4×30		M5×1×30	M8×1×30	M12×1×26	M12×1×30	M12×1×50	4.7×8×18	7.5×8×23	
Type	Hall type	NPN NO			NJK-5001C	NJK-5002C	NJK-5002C-3	NJK-5002C-5	SD-1-N1	SD-2-N1
		PNP NO			NJK-5001A	NJK-5002A	NJK-5002A-3	NJK-5002A-5	SD-1-P1	SD-2-P1
Magnetic type	DC/AC Two-wire	NO	LG4A3-10-J/EZ	LG5A3-10-J/EZ	LG8A3-10-J/EZ			LG12A3-10-J/EZ		
		NC						LG12A3-10-J/DZ		
Supply voltage	Hall type: DC12~24V (6~36V) Impulse (P-P) 10% below, Magnetic type DC/AC; DC/AC5~60V Magnetic type, Magnetic type AC; DC/AC5~220V									
Continuous load current	50mA	50mA	50mA	200mA	200mA	200mA	50mA	50mA		
Illustration	Chatr129	Chatr130	Chatr131	Chatr132	Chatr133	Chatr134	Chatr135	Chatr136		

### ■ Type and Specification

Dimension	8×11×26	6.5×11×22.5	6.5×11×22.5	15×14×33.5	11×12×28	11×13×28	10×20×40	7.5×7×22		
Type	DC/AC Two-wire	NO	D-C73	D-A73	CS1-J	D-B54	CS1-U	CS1-F	SR-401	CS4H
	AC Two-wire	NO								
Supply voltage	Magnetic type DC/AC; DC/AC5~60V Magnetic type, Magnetic type AC; DC/AC5~220V									
Continuous load current	100mA	100mA	100mA	100mA	100mA	100mA	100mA	100mA		
Illustration	Chatr137	Chatr138	Chatr139	Chatr140	Chatr141	Chatr142	Chatr143			

### ■ Type and Specification

Dimension	6×14×23	8×16.5×24	8×15×25	6.5×19×28.5	7×14.8×33	7×14.8×34	10×21×56	
Type	DC/AC Two-wire	NO						
	AC Two-wire	NO	MS-1	MS-2	MS-3	MS-4	MS-5	MS-6
Supply voltage	Magnetic type AC; DC/AC5~220V							
Continuous load current	100mA	100mA	100mA	100mA	100mA	100mA	100mA	
Illustration	Chatr144	Chatr145	Chatr146	Chatr147	Chatr148	Chatr149	Chatr150	

### ■ Type and Specification

Dimension	3×4.5×22.5	5.8×5×24.5	5.8×5×29	6×5×29	12×36×36	10×34×40	
Type	DC/AC Two-wire	NO					
	AC Two-wire	NO	SD-3	SD-4	SD-5	D-Z73	SG-1
Supply voltage	Magnetic type DC/AC; DC/AC5~60V Magnetic type, Magnetic type AC; DC/AC5~220V						
Continuous load current	100mA	100mA	100mA	100mA	100mA	100mA	
Illustration	Chatr151	Chatr152	Chatr153	Chatr154	Chatr155	Chatr156	

### ■ Type and Specification

Dimension		28×80×94.5			
Type	Permanent magnet sensor	AC	NO+NC	YG-1	Chatr157
			NO	YG-2	

### ■ Type and Specification

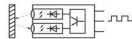
Dimension			13×19.5×43	
Type	Magnetic self-lock switch	AC/DC	NO+NC	LJC1-3/24
				Chatr158

## External dimension

Chart 129 LG4A3-10-J/EZ 	Chart 130 LG5A3-10-J/EZ 	Chart 131 NJK-5001C LG8A3-10-J/EZ 
Chart 132 NJK-5002C 	Chart 133 NJK-5002C-3 	Chart 134 NJK-5002C-5 LG12A3-10-J/EZ 
Chart 135 SD-1-□ 	Chart 136 SD-2-□ 	Chart 137 D-C73 
Chart 138 D-A73 	Chart 139 CS1-J 	Chart 140 D-B54 
Chart 141 CS1-U 	Chart 142 CS1-F 	Chart 143 CS4H 
Chart 144 MS-1 	Chart 145 MS-2 	Chart 146 MS-3 
Chart 147 MS-4 	Chart 148 MS-5 	Chart 149 MS-6 
Chart 150 MS-7 	Chart 151 SD-3 	Chart 152 SD-4 
Chart 153 SD-5 	Chart 154 D-273 	Chart 155 SG-1 
Chart 156 SG-2 	Chart 157 YG-1(2) 	Chart 158 LJC1-3/24 

### ■ Operation principle of photoelectric switch

The transmitter aims at the target and generates light beam, and the receptor turns the light energy received into current and transmits it to the detection circuit backwards. It can filter out an effective signal and use it.

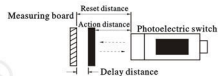


### ■ Technical terms of photoelectric switch

#### ● Distance delay

It means the distance difference between the action distance and the reset distance produced when the measuring board approaches the photoelectric switch; the delay distance is shown as percent number of switch distance.

#### ● Light on / Dark on



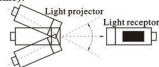
Type	Illustration	Dark on	Light on
Correlation type photoelectric switch			
Reflecting board type photoelectric switch			
Diffuse reflection type photoelectric switch			

#### ● Angle of spread

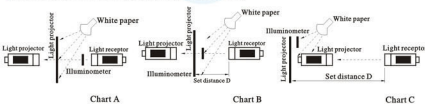
Correlation type and reflection type can ensure the angle range for photoelectric switch to work steadily.

#### ● Response time

It means the delay time when the distance difference is action distance or reset distance between the rise and fall edge of the light input, and the rise and fall edge of the relevant control output. (Action time = reset time).



#### ● Illumination level of operational environment



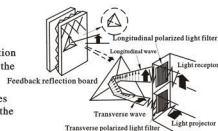
(Chart A) When surrounding environment interferes in the light receptor, it works, therefore, make the determination of

Chart A as the criterion of the surrounding environment interference to the illumination level; in Chart B and Chart C, the interference degree of the light receptor changes in terms of the set distance D and white paper reflection ratio, therefore, the criterion becomes uncertain.

#### ● Mirror surface rejection function (M S R)

Due to the built-in polarized light filter and the property of retro-reflection, the retro-reflection type photoelectric switch only accepts the light beam from the retro-reflection board. Through the light projection part, the light beam of polarized light filter becomes transverse.

The light beam reflected to the standard pyrometric cone of the retro-reflection board becomes from transverse to longitudinal. The reflected light reaches the light receiving elements through the polarized light filter of the light receiving part.





- **Dead zone of reflection board**

During the reflection process, there is a part of area that the reflection board can't identify. This part of area is exactly the dead zone of reflection board.

- **Constant light**

It means the light whose radiation power is basically constant.

- **Detection range**

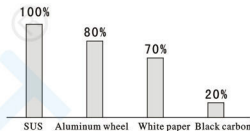
It means the maximum available distance between the photoelectric switch and the object. Detection range is concerned with the reflection light intensity, the environment state of measuring area and the reflection object condition.

- **Infrared ray (IR or IRED)**

It's a kind of light whose radiation wavelength is very long. ( $\lambda = 780\text{nm}$  to  $1\text{mm}$ )

- **Reflection performance**

It's the target's characteristic. It has dependency relationship with the surface structure, color and size of the target, in addition, whether the incident light is good or bad, whether it is directed or diffuse reflected and whether the non-reflection part is totally absorbed or transmitted do matter. The reflection type photoelectric switch that adopts general material can achieve better reflecting distance.



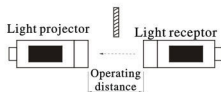
- **Adjuster**

Through the built-in potential meter and under the circumstance of the minimum illumination level, it makes the receptor produce switch output, therefore, the switch distance can be adjusted to the best state inside the range of the effective distance.

- **Switching frequency**

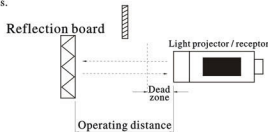
It means the maximum frequency of each interval for transmitting light beam intermittently that the photoelectric switch can distinguish. It's shown as Hz.

## Types of Hugong Sensor Photoelectric Switch



- **Correlation type photoelectric switch**

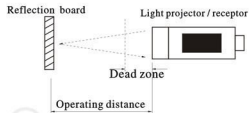
- Correlation type photoelectric switch is made up of light projector and light receptor, and the both are respectively separated in structure.
- Distinguish the opaque reflective object.
- Large effective distance, for the light beam crosses the sensing distance only once.
- Not vulnerable to be interfered.
- The equipment has high consumption, so cables must be laid out on the two units.



- **Reflection board type photoelectric switch**

- Reflection board type photoelectric switch is made up of light projector and light receptor, which is one of standard configurations. The light beam from the projector is reflected by the opposite mirror, and then goes back to the light receptor. The transit time is twice the signal's duration time; a switch change comes into being when the light beam breaks.

- Distinguish the opaque reflective object
- Transparent glass identification mark can be made of special sensor
- When the sensor with polaroid filter works, the reflective target becomes a reliable identification (See MSR function)
- High effective distance range is available with the help of reflective mirror parts
- Not vulnerable to be interfered



#### ■ Diffuse reflection type photoelectric switch

- Diffuse reflection type photoelectric switch is made up of light projector and light receptor, which is one of standard configurations. When the light beam comes from the projector, the target creates diffuse reflection; when the reflected light is enough to reach the light receptor, the switching state will change.
- Effective operating distance depends on the reflective capacity of the target, as well as the surface property and color. The change capacity with sensitivity adjuster can assume compensation action.
- The equipment has lower consumption. When the optical sensor is made up of a single element, rough location can usually be achieved.
- Adopts the function of background rejection to regulate the measuring distance.
- Sensitive to the dust on the target and sensitive to the changed reflective performance of the target.

#### ■ Optical fiber sensor

- Detect micro-objects (Minimum 0.5mm).
- Use high-class alloy steel as external packing, which can work in the high temperature environment.
- Suitable to the installation condition which has restriction.

### Electrical Characteristics & Output Form of hugong Photoelectric Switch

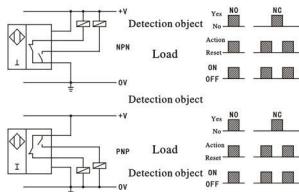
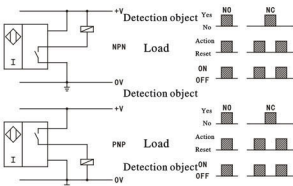
#### ■ AC type and DC type hugong photoelectric switch

- DC three-wire system (N, E, C P, F, B type) NO or NC

The load of these switches connects separately with the power supply, owning the functions of polarity, short-circuit and over-load protection. The residual current can be neglected.

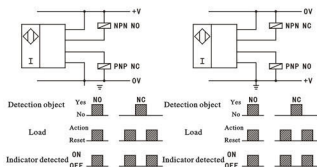
- DC four-wire system (N, P type) NO plus NC

The switches can provide two groups of output NO and NC.



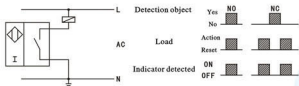
### DC four-wire system (X type)

The four output modes can be converted among NPN, PNP, NO and NC

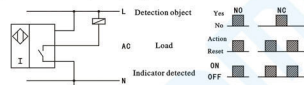


### AC two-wire system (A, Y type) NO or NC

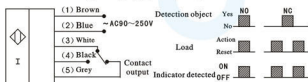
The load must be series connected inside the sensor and work, and on closed-circuit state, there is a minor voltage drop on the switch elements.



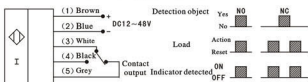
### AC three-wire system (W type) NO plus NC



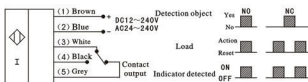
### AC five-wire system (J type) relay output



### DC five-wire system (D type) relay output



### AC / DC five-wire system (M type) relay output



Series and parallel connection of photoelectric switch (See the parameters of proximity switch)

### Matters Needing Attention when using photoelectric switch

#### Ways to avoid mutual interference

- When the photoelectric switch approaches to the equipment, the light from another switch emits, causing unsteady action, which is called mutual interference;
- The light projector and the light receptor are cross-installed mutually;
- When the reflection type is used together, the distance between them must be kept, and the set distance is 1.4 times of detection distance;
- When the correlation type is used together, the distance between them must be kept, and the set distance is 0.4 times of detection distance.

#### Other matters needing attention

- The Photoelectric switch must be equipped individually with metal flexible pipe, and don't make it with the electric line and power line in the same metal flexible pipe;
- The supply voltage must inside the supply voltage range.

#### Misoperation may be caused in the following installation locations and pay attention

- Where there is more dust;
- Where there is more corrosive gas;
- Where water, oil and drugs are sprayed straightly;
- Where intense light such as sun light shines directly;
- When it's during the use, the ambient temperature and humidity must be inside the rated range.

#### About maintenance and repair

- Check whether there is any movement or looseness about the installation sites of the object and photoelectric switch;
- Check whether there is any looseness, bad contact or disconnection about the equipped line and connecting parts;
- Check whether there is any deposit adhered, such as dust;
- Check whether the operating temperature condition and ambient environment condition are abnormal;
- Check whether the detection distance is abnormal.

- All-purpose type, which can directly substitute the same type of P+F and OMRON
- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- Newly added current over-load protection
- Long service life, high reliability and strong resistance property to environment
- Red LED indicates that it's available to detect the sensor operating state
- Newly added metal housing to improve the installation intensity
- Countermeasure to improve the housing intensity and to solve disconnection
- M8 correlation has been trial-produced and promoted
- IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



### ■ Type and Specification

Dimension		M8×1			M12×1 (Plastic housing)			M12×1 (Metal housing)		M18×1 (Plastic housing)		
Detection method		Transmission type	Transmission type	Diffuse reflection type	Transmission type	Diffuse reflection type	Transmission type	Diffuse reflection type	Transmission type	Diffuse reflection type	Feedback reflection type	
Type	DC type	N	NO	E3F01-2DN1	E3F1-2DN1/P	E3F1-DS8C4/P	E3F1-2DN1/M	E3F1-DS8C4/M	E3F-SDN1-SL	E3F-DS10C4	E3F-R2NK	
		P	NC	E3F01-2DN2	E3F1-2DN2/P	E3F1-DS8B2/P	E3F1-2DN2/M	E3F1-DS8B2/M	E3F-SDN2-SL	E3F-DS10B2	E3F-R2N2	
		N	NO+NC							E3F-SDN3-SL	E3F-DS10B3	E3F-R2N3
		P	NO	E3F01-2DP1	E3F1-2DP1/P	E3F1-DS8P1/P	E3F1-2DP1/M	E3F1-DS8P1/M	E3F-SDP1-SL	E3F-DS10P1	E3F-R2NPK	
		P	NC	E3F01-2DP2	E3F1-2DP2/P	E3F1-DS8P2/P	E3F1-2DP2/M	E3F1-DS8P2/M	E3F-SDP2-SL	E3F-DS10P2	E3F-R2NP2	
	AC type	P	NO+NC							E3F-SDP3-SL	E3F-DS10P3	E3F-R2NP3
		NPN/PNP/NO/NC								E3F-5X-SLY	E3F-DS10X	E3F-R2X
		NO								E3F-5DY1-SLY	E3F-DS10Y1	E3F-R2Y1
		NC								E3F-5DY2-SLY	E3F-DS10Y2	E3F-R2Y2
		Three-wire No Relay output										
Detection range		2m±10%	2m±10%	80m±10%	2m±10%	80m±10%	5m±10%	100m±10%	2m±10%			
Detection target		Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Transparent/Opaque object	Opaque object			
Detection range regulation		Fixed	Fixed	Sensitivity adjuster	Fixed	Fixed	Fixed	Fixed	Sensitivity adjuster			
Response frequency		500Hz	500Hz	500Hz	500Hz	500Hz	300Hz	300Hz	300Hz			
Illustration		Chart159	Chart160			Chart161		Chart162				

### ■ Type and Specification

Dimension		M18×1 (Metal housing)			M30×1.5 (Plastic housing)			M24×1.5	M18×1		
Detection method		Transmission type	Transmission type	Diffuse reflection type	Transmission type	Diffuse reflection type	Transmission type	Diffuse reflection type	Feedback reflection type		
Type	DC type	N	NO	E3F-SDN1/M	E3F-DS30C4/M	E3F-R2NK/M	E3F3-10DN1	E3F3-DS70N1	E3F3-RANK	E3F2-8DN1	
		P	NC	E3F-SDN2/M	E3F-DS30B2/M	E3F-R2N2/M	E3F3-10DN2	E3F3-DS70N2	E3F3-RAN2	E3F2-8DN2	
		N	NO+NC	E3F-SDN3/M	E3F-DS30B3/M	E3F-R2N3/M	E3F3-10DN3	E3F3-DS70N3	E3F3-RAN3	E3F2-8DN3	CDD-11N
		P	NO	E3F-SDP1/M	E3F-DS30P1/M	E3F-R2PK/M	E3F3-10DP1	E3F3-DS70P1	E3F3-RAPK	E3F2-8DP1	
		P	NC	E3F-SDP2/M	E3F-DS30P2/M	E3F-R2P2/M	E3F3-10DP2	E3F3-DS70P2	E3F3-RAP2	E3F2-8DP2	
	AC type	P	NO+NC	E3F-SDP3/M	E3F-DS30P3/M	E3F-R2P3/M	E3F3-10DP3	E3F3-DS70P3	E3F3-RAP3	E3F2-8DP3	CDD-11P
		NPN/PNP/NO/NC	E3F-5X/M	E3F-DS30X/M	E3F-R2X/M						
		NO	E3F-5DY1/M	E3F-DS30Y1/M	E3F-R2Y1/M	E3F-10DY1	E3F-DS70Y1	E3F3-R4Y1	E3F2-8DY1		
		NC	E3F-5DY2/M	E3F-DS30Y2/M	E3F-R2Y2/M	E3F-10DY2	E3F-DS70Y2	E3F3-R4Y2	E3F2-8DY2		
		Three-wire No Relay output									
Detection range		5m±10%	30cm±10%	2m±10%	10m±10%	70cm±10%	4m±10%	8m±10%	10-30m±10%		
Detection target		Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Transparent/Opaque object	Opaque object		
Detection range regulation		Fixed	Fixed	Sensitivity adjuster	Fixed	Fixed	Fixed	Fixed	Sensitivity adjuster		
Response frequency		300Hz	300Hz	300Hz	300Hz	300Hz	300Hz	300Hz	300Hz		
Illustration		Chart163			Chart164			Chart165	Chart166		

■ Characteristic parameter

Connection delay: 1.5ms.

Light source: Infrared light 660nm.

Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V(90~250V) 50/60Hz.

Consumption current: N.P type: 20mA below, A type: 1.7mA below.

Control output: N.P type: 300mA below, A type: 400mA below, J type: 2A below (contact service life: 0.1 million times).

Loop protection: N.P..D type: reversal connection protection, surge absorption, load short-circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually

-30~+65°C (no freeze, no dew), During operation, storage: individually 35~95%RH.

Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing.

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range -30~+65°C, at +23°C, ±15% detection distance.

distance; temperature range -25~+60°C, at +23°C, ±10% detection distance.

Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value, inside ±10% detection distance.

Protection structure: IP67 (IEC specification).

Material: Housing: Nickel plated brass (ABS) Detection surface (lens): PMMA.

■ External dimension (mm)

Chart 159 E3F01-□

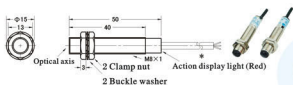


Chart 160 E3F1-□

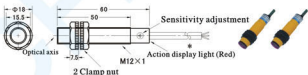


Chart 161 E3F1-□

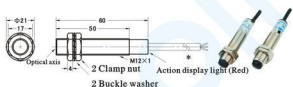


Chart 162 E3F-□

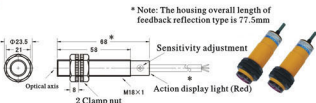


Chart 163 E3F-□



Chart 164 E3F3-□

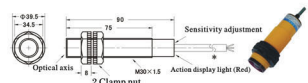


Chart 165 E3F2-□



Chart 166 CDD-□



- All-purpose type, which can directly substitute the same type of P+F and OMRON
- Multiple functions, built-in relay, can drive high current load
- Cabling type and connection terminal type
- Long service life, high reliability and strong resistance property to environment
- Red LED indicates that it's available to detect the sensor operating state
- Countermeasure to improve the housing intensity and to solve disconnection
- Can provide time-delay output type
- IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



## ■ Type and Specification

Dimension		18×50×50				25×65×75			20×43×60		
Detection method		Transmission type	Diffuse reflection type	Feedback reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	
Type	Inhibit Output	DC illuminate	E3JK-SDM1-D	E3JK-DS30M1-D	E3JK-R2M1-D	E3JK-R4M1-D	E3JM-10DM1-D	E3JM-DS70M1-D	E3JM-R4M-D	E3K80-SDM1-D	E3K80-DS70M1-D
		AC illuminate	E3JK-SDM1-A	E3JK-DS30M1-A	E3JK-R2M1-A	E3JK-R4M1-A	E3JM-10DM1-A	E3JM-DS70M1-A	E3JM-R4M-A	E3K80-SDM1-A	E3K80-DS70M1-A
		DC non-illuminate through	E3JK-SDM2-D	E3JK-DS30M2-D	E3JK-R2M2-D	E3JK-R4M2-D	E3JM-10DM2-D	E3JM-DS70M2-D	E3JM-R4M2-D	E3K80-SDM2-D	E3K80-DS70M2-D
		AC non-illuminate through	E3JK-SDM2-A	E3JK-DS30M2-A	E3JK-R2M2-A	E3JK-R4M2-A	E3JM-10DM2-A	E3JM-DS70M2-A	E3JM-R4M2-A	E3K80-SDM2-A	E3K80-DS70M2-A
Detection range		5m±10%	30cm±10%	2m±10%	4m±10%	10m±10%	70cm±10%	4m±10%	5m±10%	70cm±10%	
Detection target		Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	
Detection range regulation		Fixed	Sensitivity adjuster	Sensitivity adjuster	Sensitivity adjuster	Fixed	Sensitivity adjuster	Sensitivity adjuster	Fixed	Sensitivity adjuster	
Response frequency		25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	
Illustration		Chattr167				Chattr168			Chattr169		

## ■ Type and Specification

Dimension		26×63×78			24×53.5×80			36×69×100			
Detection method		Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type	
Type	Inhibit Output	DC illuminate	E3K78-SDM1-D	E3K78-DS80M1-D	E3K78-R2M1-D	E3K80-SDM1-D	E3K80-DS80M1-D	E3K80-R4M1-D	E3K100-10DM1-D	E3K100-DS100M1-D	E3K100-R4M1-D
		AC illuminate	E3K78-SDM1-A	E3K78-DS80M1-A	E3K78-R2M1-A	E3K80-SDM1-A	E3K80-DS80M1-A	E3K80-R4M1-A	E3K100-10DM1-A	E3K100-DS100M1-A	E3K100-R4M1-A
		DC non-illuminate through	E3K78-SDM2-D	E3K78-DS80M2-D	E3K78-R2M2-D	E3K80-SDM2-D	E3K80-DS80M2-D	E3K80-R4M2-D	E3K100-10DM2-D	E3K100-DS100M2-D	E3K100-R4M2-D
		AC non-illuminate through	E3K78-SDM2-A	E3K78-DS80M2-A	E3K78-R2M2-A	E3K80-SDM2-A	E3K80-DS80M2-A	E3K80-R4M2-A	E3K100-10DM2-A	E3K100-DS100M2-A	E3K100-R4M2-A
Detection range		5m±10%	80cm±10%	2m±10%	5m±10%	80cm±10%	4m±10%	10m±10%	100cm±10%	4m±10%	
Detection target		Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	
Detection range regulation		Fixed	Sensitivity adjuster	Sensitivity adjuster	Sensitivity adjuster	Fixed	Sensitivity adjuster	Sensitivity adjuster	Fixed	Sensitivity adjuster	
Response frequency		25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	
Illustration		Chattr170			Chattr171			Chattr172			

## ■ Characteristic parameter

Connection delay: 1.5ms.

Light source: Infrared light 660nm.

Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V(90~250V) 50/60Hz.  
DC&AC type: DC12~240V/AC24~240V, 50/60Hz.

Power current: 3V below

Control output: 2A below(contact service life: 0.1 million times).

Impulsion and vibration are allowed: B≤30g, T≤11ms, f≤55Hz, a≤1mm

Ambient temperature & humidity: During operation, storage: individually -30~+65°C (no freeze, no dew), During operation, storage: individually 35~95%RH.

Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing.

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range -30~+65°C, at +23°C, ±15% detection

distance; temperature range -25~+60°C, at +23°C, ±10% detection distance.

Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value, inside ±10% detection distance.

Protection structure: IP67 (IEC specification).

Material: Housing: Nickel plated brass (ABS)

Detection surface (lens): PMMA.

### External dimension (mm)

Chart 167 E3JK-□

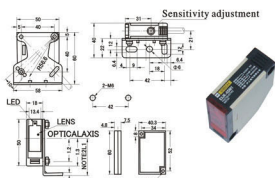


Chart 168 E3JM-□

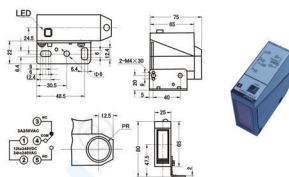


Chart 169 E3K60-□

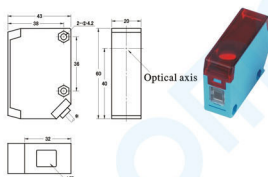


Chart 170 E3K78-□

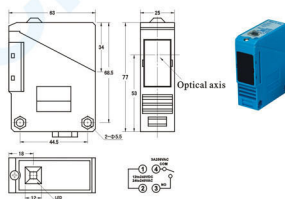


Chart 171 E3K80-□

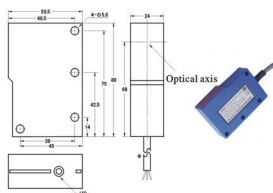
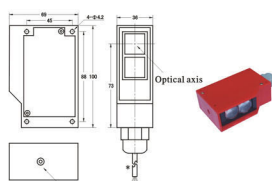


Chart 172 E3K100-□



- All-purpose type, which can directly substitute the same type of P+F and OMRON
  - Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
  - Newly added current over-load protection
  - Long service life, high reliability and strong resistance property to environment
  - Red LED indicates that it's available to detect the sensor operating state
  - Newly added metal housing to improve the installation intensity
  - Countermeasure to improve the housing intensity and to solve disconnection
  - IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



### ■ Type and Specification

Dimension		26 × 56 × 76			27 × 60 × 84			51 × 76 × 73		
Detection method		Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Transmission type	Diffuse reflection type
Type DC type	DC illuminate	E3K76-5DM1-D	E3K76-DS6M1-D	E3K76-R2M1-D	E3K84-5DM1-D	E3K85-DS6M1-D	E3K84-R2M1-D	GDK-5-D	GDK-10-D	GKF-2-D
	AC illuminate	E3K76-5DM1-A	E3K76-DS6M1-A	E3K76-R2M1-A	E3K84-5DM1-A	E3K85-DS6M1-A	E3K84-R2M1-A	GDK-5	GDK-10	GKF-2-A
	DC non-illuminate through	E3K76-5DM2-D	E3K76-DS6M2-D	E3K76-R2M2-D	E3K84-5DM2-D	E3K85-DS6M2-D	E3K84-R2M2-D			
	AC non-illuminate through	E3K76-5DM2-A	E3K76-DS6M2-A	E3K76-R2M2-A	E3K84-5DM2-A	E3K85-DS6M2-A	E3K84-R2M2-A			
Detection range		5m ± 10%	60cm ± 10%	2m ± 10%	5m ± 10%	60cm ± 10%	2m ± 10%	5m ± 10%	10m ± 10%	50cm ± 10%
Detection target		Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Opaque object	Transparent/Opaque object
Detection range regulation		Fixed	Sensitivity adjuster	Sensitivity adjuster	Fixed	Sensitivity adjuster	Sensitivity adjuster	Fixed	Fixed	Sensitivity adjuster
Response frequency		25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	25Hz	25Hz
Illustration		Chart173			Chart174			Chart175		

### ■ Type and Specification

Dimension		13 × 35 × 40			13 × 43.5 × 50			17.5 × 32.5 × 75		
Detection method		Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type
Type DC type	N	NO	E3K40-5DN1	E3K40-DS3N1	E3K40-R2N1	E3K50-5DN1	E3K50-DS3N1	E3K50-R2N1	E3K75-5DN1	E3K75-DS3N1
	P	NC	E3K40-5DN2	E3K40-DS3N2	E3K40-R2N2	E3K50-5DN2	E3K50-DS3N2	E3K50-R2N2	E3K75-5DN2	E3K75-DS3N2
	N	NO	E3K40-5DP1	E3K40-DS3P1	E3K40-R2P1	E3K50-5DP1	E3K50-DS3P1	E3K50-R2P1	E3K75-5DP1	E3K75-DS3P1
	P	NC	E3K40-5DP2	E3K40-DS3P2	E3K40-R2P2	E3K50-5DP2	E3K50-DS3P2	E3K50-R2P2	E3K75-5DP2	E3K75-DS3P2
Detection range		5m ± 10%	30cm ± 10%	2m ± 10%	5m ± 10%	30cm ± 10%	2m ± 10%	5m ± 10%	30cm ± 10%	2m ± 10%
Detection target		Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object
Detection range regulation		Fixed	Sensitivity adjuster	Sensitivity adjuster	Fixed	Sensitivity adjuster	Sensitivity adjuster	Fixed	Sensitivity adjuster	Sensitivity adjuster
Response frequency		300Hz	300Hz	300Hz	300Hz	300Hz	300Hz	300Hz	300Hz	300Hz
Illustration		Chart176			Chart177			Chart178		

### ■ Type and Specification

Dimension		15.5 × 58.5 × 64			23 × 61 × 63			26 × 45.5 × 86		
Detection method		Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type
Type DC type	N	NO	E3K64-5DN1	E3K64-DS3N1	E3K64-R2N1	E3K63-5DN1	E3K63-DS5N1	E3K63-R2N1	E3K86-5DN1	E3K86-DS3N1
	P	NC	E3K64-5DN2	E3K64-DS3N2	E3K64-R2N2	E3K63-5DN2	E3K63-DS5N2	E3K63-R2N2	E3K86-5DN2	E3K86-DS3N2
	N	NO	E3K64-5DP1	E3K64-DS3P1	E3K64-R2P1	E3K63-5DP1	E3K63-DS5P1	E3K63-R2P1	E3K86-5DP1	E3K86-DS3P1
	P	NC	E3K64-5DP2	E3K64-DS3P2	E3K64-R2P2	E3K63-5DP2	E3K63-DS5P2	E3K63-R2P2	E3K86-5DP2	E3K86-DS3P2
Detection range		5m ± 10%	30cm ± 10%	2m ± 10%	5m ± 10%	50cm ± 10%	2m ± 10%	5m ± 10%	30cm ± 10%	2m ± 10%
Detection target		Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object
Detection range regulation		Fixed	Sensitivity adjuster	Sensitivity adjuster	Fixed	Sensitivity adjuster	Sensitivity adjuster	Fixed	Sensitivity adjuster	Sensitivity adjuster
Response frequency		300Hz	300Hz	300Hz	300Hz	300Hz	300Hz	300Hz	300Hz	300Hz
Illustration		Chart179			Chart180			Chart181		



■ Characteristic parameter

Connection delay: 1.5ms.

Light source: Infrared light 660nm.

Supply voltage: DC type: DC12-24V(6-36V) Impulse (p-p) 10% below, AC type: AC110-220V(90-250V) 50/60Hz.

Consumption current: N.P type: 20mA below, A type: 1.7mA below.

Control output: N.P type: 300mA below, A type: 400mA below, J type: 2A below (contact service life: 0.1 million times).

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually

-30~+65°C (no freeze, no dew), During operation, storage: individually 35-95%RH.

Insulation impedance: 50MΩabove (DC500 megameter) between charging part and housing.

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range -30~+65°C, at +23°C, ± 15% detection

distance; temperature range -25~+60°C, at +23°C, ± 10% detection distance.

Voltage influence: Inside ± 15% rated supply voltage range, at rated supply voltage value, inside ± 10% detection distance.

Protection structure: IP66 (IEC specification).

Material: Housing: Nickel plated brass (ABS) Detection surface (lens): PMMA.

■ External dimension (mm)

Chart 173 E3K76-□

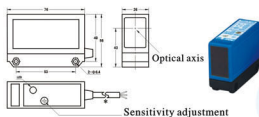


Chart 174 E3K85-□

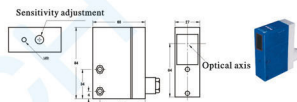


Chart 175 GDK-□

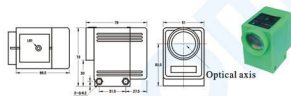


Chart 176 E3K40-□

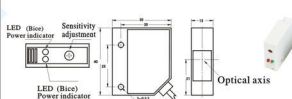


Chart 177 E3K50-□

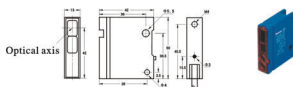


Chart 178 E3K75-□

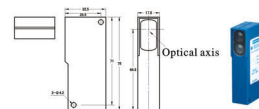


Chart 179 E3K64-□

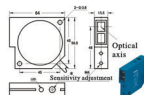


Chart 180 E3K63-□

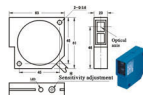
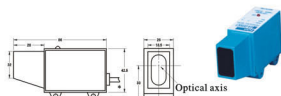


Chart 181 E3K86-□



- All-purpose type, which can directly substitute the same type of P+F and OMRON
- Power supply reversal connection protection; short-circuit protection, can directly connect with PLC

- Newly added current over-load protection
- Long service life, high reliability and strong resistance property to environment
- Red LED indicates that it's available to detect the sensor operating state
- Newly added metal housing to improve the installation intensity
- Countermeasure to improve the housing intensity and to solve disconnection
- Ip65 protection structure (IEC specification)

▲ Read the "Matters needing attention" of the Product Instruction before use



## ■ Type and Specification

Dimension		12×25×30			15.5×21×41			20×20×64					
Detection method		Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type			
Type	DC type	N	NO	E3K30-3DN1	E3K30-DS10N1	E3K30-R2N1	E3K41-5DN1	E3K41-DS20N1	E3K41-R2N1	E3S-5DN1	E3S-DS30N1	E3S-R2N1	
		P	NC	E3K30-3DN2	E3K30-DS10N2	E3K30-R2N2	E3K41-5DN2	E3K41-DS20N2	E3K41-R2N2	E3S-5DN2	E3S-DS30N2	E3S-R2N2	
		N	NO+NC										
		P	NO	E3K30-3DP1	E3K30-DS10P1	E3K30-R2P1	E3K41-5DP1	E3K41-DS20P1	E3K41-R2P1	E3S-5DP1	E3S-DS30P1	E3S-R2P1	
		N	NC	E3K30-3DP2	E3K30-DS10P2	E3K30-R2P2	E3K41-5DP2	E3K41-DS20P2	E3K41-R2P2	E3S-5DP2	E3S-DS30P2	E3S-R2P2	
	AC type	NPN	NO							E3S-5DP3	E3S-DS30P3	E3S-R2P3	
			NC							E3S-5X	E3S-DS30X	E3S-R2X	
		PNP	NO							E3S-5A1	E3S-DS30A1	E3S-R2A1	
			NC							E3S-5A2	E3S-DS30A2	E3S-R2A2	
			Three-wire No Relay output										
Detection range		3m±10%	10cm±10%	2m±10%	5m±10%	20cm±10%	2m±10%	5m±10%	30cm±10%	2m±10%			
Detection target		Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object			
Detection range regulation		Fixed	Fixed	Fixed	Fixed	Sensitivity adjuster	Fixed	Fixed	Sensitivity adjuster	Fixed			
Response frequency		500Hz	500Hz	500Hz	500Hz	500Hz	500Hz	500Hz	500Hz	500Hz			
Illustration		Chair182			Chair183			Chair184					

## ■ Type and Specification

Dimension		12×26×55			18×37×70			16×28×51				
Detection method		Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type	Transmission type	Diffuse reflection type	Feedback reflection type		
Type	DC type	N	NO	E3K55-5DN1	E3K55-DS30N1	E3K55-R2N1	E3K70-5DN1	E3K70-DS50N1	E3K70-R2N1	E3K51-5DN1	E3K51-DS30N1	E3K51-R2N1
		P	NC	E3K55-5DN2	E3K55-DS30N2	E3K55-R2N2	E3K70-5DN2	E3K70-DS50N2	E3K70-R2N2	E3K51-5DN2	E3K51-DS30N2	E3K51-R2N2
		N	NO+NC									
		P	NO	E3K55-5DP1	E3K55-DS30P1	E3K55-R2P1	E3K70-5DP1	E3K70-DS50P1	E3K70-R2P1	E3K51-5DP1	E3K51-DS30P1	E3K51-R2P1
		N	NC	E3K55-5DP2	E3K55-DS30P2	E3K55-R2P2	E3K70-5DP2	E3K70-DS50P2	E3K70-R2P2	E3K51-5DP2	E3K51-DS30P2	E3K51-R2P2
	AC type	NPN	NO									
			NC									
		PNP	NO	E3K55-5A1	E3K55-DS30A1	E3K55-R2A1	E3K70-5A1	E3K70-DS50A1	E3K70-R2A1	E3K51-5DA1	E3K51-DS30A1	E3K51-R2A1
			NC	E3K55-5A2	E3K55-DS30A2	E3K55-R2A2	E3K70-5A2	E3K70-DS50A2	E3K70-R2A2	E3K51-5DA2	E3K51-DS30A2	E3K51-R2A2
			Three-wire No Relay output									
Detection range		5m±10%	30cm±10%	2m±10%	5m±10%	50cm±10%	2m±10%	5m±10%	30cm±10%	2m±10%		
Detection target		Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object	Opaque object	Transparent/Opaque object	Opaque object		
Detection range regulation		Fixed	Fixed	Fixed	Fixed	Sensitivity adjuster	Fixed	Fixed	Sensitivity adjuster	Fixed		
Response frequency		500Hz	500Hz	500Hz	500Hz	500Hz	500Hz	500Hz	500Hz	500Hz		
Illustration		Chair185			Chair186			Chair187				



- All-purpose type, which can directly substitute the same type of P+F and OMRON
- Power supply reversal connection protection; can directly connect with PLC
- For slot type, there is no need to adjust the optical axis
- Long service life, high reliability and strong resistance property to environment
- Red LED indicates that it's available to detect the sensor operating state
- Newly added metal housing to improve the installation intensity
- Countermeasure to improve the housing intensity and to solve disconnection
- IP67 protection structure (IEC specification)
- ▲ Read the "Matters needing attention" of the Product Instruction before use



## ■ Type and Specification

Dimension	16×25×55	20×52×72	16×35.5×40.5	25.5×45.5×75
Detection method	Slot type	Slot type	Slot type	Slot type
Type DC type	NPN NO	E3S-GS7N	E3S-GS30E4	E3S-GS15N
	NPN NC	E3S-GS7N2	E3S-GS30E2	E3S-GS15N2
	NPN P	E3S-GS7P	E3S-GS30F4	E3S-GS15P
	NPN NC	E3S-GS7P2	E3S-GS30F2	E3S-GS15P2
Detection range	7mm	30mm	15mm	10mm
Detection target	Opaque object	Opaque object	Opaque object	Opaque object
Detection range regulation	Sensitivity adjuster	Sensitivity adjuster	Sensitivity adjuster	Sensitivity adjuster
Response frequency	300Hz	300Hz	300Hz	300Hz
Illustration	Chart188	Chart189	Chart190	Chart191

## ■ Type and Specification

Dimension	20×49×59.5	Dimension	32×70×120
Detection method	Slot type	Detection method	Slot type
Type	DC type NPN NO+NC	Type	AC type NO+NC
	KF-PS-E		HF-HJ03
Chromatogram of light	Red, Green, Blue, White	Supply voltage	AC12-24V±10%
Light spot (color)	Dot (Green)	The limit control precision	<8mm
Supply voltage	DC10-30V±10%	The group number of photo sensor detection	2 groups
Detection range	10mm	The output signal	2 groups independent non-contact output AC12-24V
Detection target	Opaque object	Detection target	Opaque object
Detection range regulation	Sensitivity adjuster	Detection range regulation	Sensitivity adjuster
Response frequency	300Hz	Response frequency	25Hz
Illustration	Chart192	Illustration	Chart193

## ■ Type and Specification

## ■ Type and Specification

Dimension	28×57×85	38×62×100	23×40×56	28×48×80	22×63×89
Detection method	Coaxial Reflective	Coaxial Reflective	Coaxial Reflective	Coaxial Reflective	Coaxial Reflective
Type	DC type NPN NO+NC				
	BZJ-211	BZJ-311	BZJ-411	Z3N	KS-C2
Chromatogram of light	Red, Green, Blue, White	Red, Green, Blue, White	Red, Green, Blue, White	Red, Green, Blue, White	Red, Green, Blue, White
Light spot (color)	Dot (Green)	Dot (Green)	Dot (Green)	Dot (Green)	Dot (Green)
Supply voltage	DC10-30V±10%	DC10-30V±10%	DC10-30V±10%	DC10-30V±10%	DC10-30V±10%
Detection range	<200mA	<200mA	<200mA	<200mA	<200mA
Detection target	10mm±2mm	9mm	9mm	10mm±2mm	10mm±3mm
Detection range regulation	Sensitivity adjuster	Sensitivity adjuster	Sensitivity adjuster	Sensitivity adjuster	Sensitivity adjuster
Response frequency	50μs	50μs	20μs/500μs	0.1-1ms	0.25-1ms
Illustration	Chart194	Chart195	Chart196	Chart197	Chart198

### ■ Characteristic parameter

Connection delay: 1.5ms.

Light source: Infrared light 660nm.

Supply voltage: DC type: DC12–24V(6–36V) Impulse (p–p) 10% below, AC type: AC110–220V(90–250V) 50/60Hz.

Consumption current: N.P type: 20mA below, A type: 1.7mA below.

Control output: N.P type: 300mA below, A type: 400mA below, J type: 2A below (contact service life: 0.1 million times).

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short–circuit protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually

–30–+65°C (no freeze, no dew), During operation, storage: individually 35–95%RH.

Insulation impedance: 50MΩabove (DC500 megameter) between charging part and housing.

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range –30–+65°C, at +23°C, ± 15% detection

distance; temperature range –25–+60°C, at +23°C, ± 10% detection distance.

Voltage influence: Inside ± 15% rated supply voltage range, at rated supply voltage value, inside ± 10% detection distance.

Protection structure: IP66 (IEC specification).

Material: Housing: Nickel plated brass (ABS) Detection surface (lens): PMMA.

### ■ External dimension (mm)

Chart 188 E3S-GS7-□

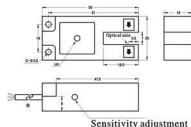


Chart 189 E3S-GS30-□

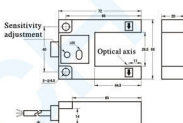


Chart 190 E3S-GS15-□

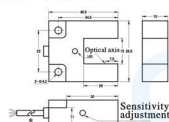


Chart 191 E3S-GS10-□

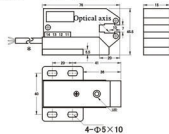


Chart 192 HF-PS-E

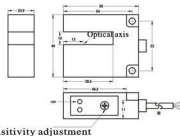


Chart 193 HF-HJ03

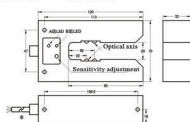


Chart 194  
BZJ-211



Chart 195  
BZJ-311



Chart 196  
BZJ-411



Chart 197  
Z3N



Chart 198  
KS-C2



### ■ YT523B Infrared Photoelectric Relay (Blowing photoelectric switch)

#### ● Use and characteristics

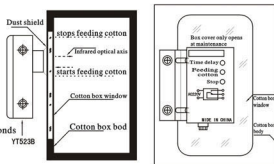
Undertake automatic detection and control to the cotton layer inside the cotton, replacing the old-fashioned mercury switch. The product owns sensitivity regulation and time delay regulation, which are widely used in some situations in industrial automatic production, such as the control of human's position and material level.

#### ● Main technical parameters

- Operating voltage: AC220V, 50/60Hz
- Operating method: Reflection, time-delay operation, continuous operation
- Output capacity: Contact output AC220V-6A, DC28V-12A
- Detection range: Adjustable between 10-80cm, the manufacturer's set value is 50cm
- Operation time: Adjustable between 0.2-10 seconds, the manufacturer's set value is 3 seconds
- Operating environment: Temperature 0-45°C; humidity =85%
- Background illumination level: Incandescent lamp = 1 × 1000000LX  
Sun light= 5 × 1000000LX

#### ● Matters needing attention

The switch is reflection type, which is only used to detection white raw material, such as material with dark color. Please use the YT502B, YT603B correlation type photoelectric relay that we manufacture. The product can replace GD-CNF050, GDN16-CF500W, GDK-F, TR-420Q and SGD-4F, etc.



External and Installation Sketch

### ■ YT522B1 (GD-CH050) cotton-carding photoelectric switch

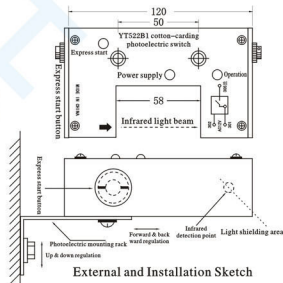
#### ● Use and characteristics

Undertake automatic detection and shut-down control to the breakage, swinging and blocking, etc., during the cotton carding process, which can not only ensure the quality of cotton sliver, but also improve the production efficiency.

#### ● Main technical parameters

- Operating voltage: AC12V (provided from the control box of cotton carding machine)
- Operating method: Correlation, light-on, time-delay absorption, continuous operation
- Output capacity: Contact output AC220V-6A, DC28V-12A
- Detection diameter: =  $\Phi 8\text{mm}$
- Operating environment: Temperature 0-45°C; humidity =85%
- Background illumination level: Incandescent lamp = 1 × 1000000LX;  
Sun light= 5 × 1000000LX
- Operation time: Adjustable between 0-8 seconds, the manufacturer's set value is 2 seconds

#### ● Matters needing attention: The product can replace GD-CH050, SGD-2A, JGD-2A, FGD-2A, EL-C and SGF-C, etc.



External and Installation Sketch

### ■ YT671A electric speed switch

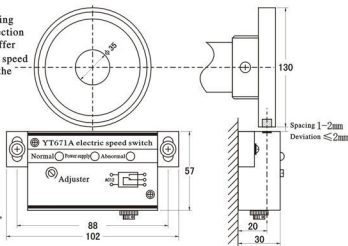
#### ● Use and characteristics

It's mainly used as a supporting part for various series of cotton-carding machine and can replace old-fashioned aboral switch. It undertakes detection to the speed of cotton-carding machine cubing rolls and controls the doffer motor or stops feeding cotton, when the cylinder motor doesn't reach the speed operation state when it starts up or during the operation, so as to protect the card clothing and to ensure the quality of cotton sliver.

#### ● Main technical parameters

- Operating voltage: AC12V
- Operating method: Relay contact undertakes switch output when the set value is reached.
- Output capacity: Contact output AC220V-6A, DC28V-12A
- Set range: 450-1200 rotations per minute
- Power consumption: =0.3W

#### ● Matters needing attention: The product can replace the others of their kind, such as CT-822, VG-901 and JMP-S, etc.



External and Installation Sketch

■ Sensor / O Connector Series

Shape	Screw buckle	Type	Specification	Connection diagram				
				NPN/PNP NO	NPN/PNP NC	NPN/PNP NO+NC	AC/DC Two-wire NO	AC/DC Two-wire NC
	M8	L1	Three-core straight type					
		L2	Four-core straight type					
	M8	L3	Three-core bent type					
		L4	Four-core bent type					
	M8	L5	Three-core relay					
	M12	L6	Four-core straight type					
	M12	L7	Four-core bent type with LED					
	M12	L8	Four-core relay					
	M12	L9	Four-core straight type					
	M12	L10	Four-core straight type					

■ Reflection board

	TD-02	TD-08	TD-09	TD-03	TD-05
Shape					
Installation dimension					



Обращаем Ваше внимание на то, что в документации возможны изменения в связи с постоянным техническим совершенствованием продукции. Последние версии Вы всегда можете скачать на нашем сайте [www.purelogic.ru](http://www.purelogic.ru)



[www.purelogic.ru](http://www.purelogic.ru)

**Адрес:** Россия, 394033, г. Воронеж,  
Ленинский проспект, 160, оф. 149

**Телефон:** +7(495) 505-63-74 (Москва)  
+7(473) 204-51-56 (Воронеж)

**e-mail:** [info@purelogic.ru](mailto:info@purelogic.ru)