GTRIC®

SENSOR PRODUCTS SELECTION MANUAL

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Company introduction

Wenzhou Gtric Technology Co., Ltd. is located in Yueqing IoT sensors Park, which covers 5,000 square meters, with over 100 employees. We are focuses on intelligent manufacturing and industrial automation, our main businesses are sensors, encoders, button switch, coupling, expansion set and other industrial automation products, providing standard and individual products and solutions for customers.

Our products cover over 20 series, 1000specificatison, which have passed CCC, CE, UL, ISO9001 certification as well as EU RoHS Environmental Directives.

Based on our technical advantages, Gtric can provide industrial automation solution according to customers' requirements.

We support OEM & ODM, if you need please feel free to contact us

Sensor characteristics

Installation conditions

Non shielded proximity switches can achieve maximum operating distance (with the diameter of the relevant); but in order to prevent the switch around the metal impact on the switch, the sensor head must be in a certain gap with the surrounding metal (Figure 1).

Due to the special shielding effect inside the shield, the radial magnetic field of the side is reduced, and the induction distance is about 60% of the non shield type, because it can be flush mounted in the metal (Figure 2).

The magnetic sensor is not affected by the conditions of installation, as long as the material around the material is not magnetized.

Figure 1

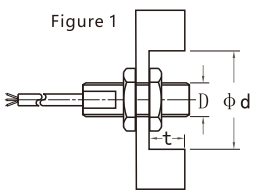
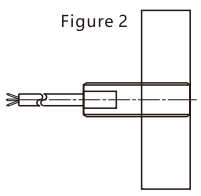
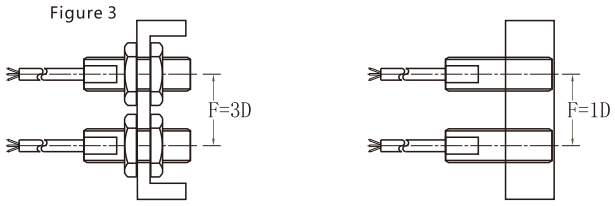


Figure 2



In order to prevent mutual interference, we must keep the minimum distance between each other(Figure 3).

Figure 3



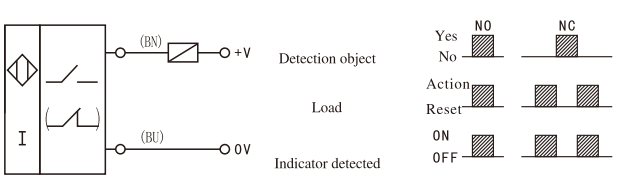
Please refer to the specific data of various types of instructions.

Sensor characteristics

Output mode and electrical characteristics

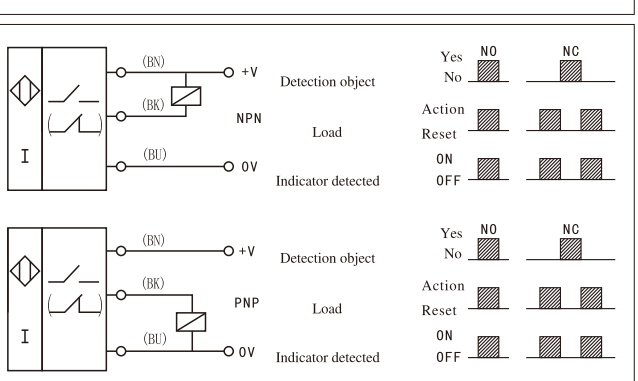
DC **2**-wire system NO or NC

The load must be connected in series in the sensor to work, there is a polarity and short circuit protection function; in the open circuit state, there is a very small leakage current; in the closed circuit, the switching element has a smaller voltage drop.



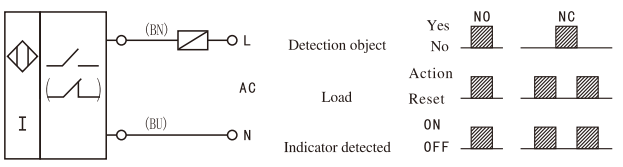
DC **3** -wire system(N,P type) NO or NC

These switches are connected to the load and power supply separately; the polarity, short circuit and overload protection function, and the residual current can be ignored.



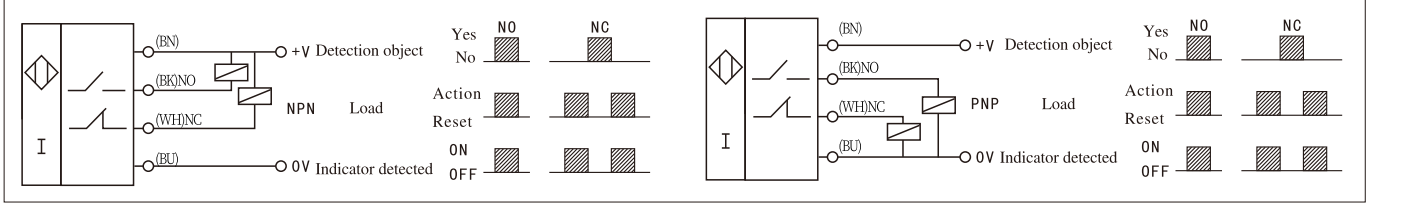
AC **2** -wire system NO or NC

The load must be connected in series in the sensor, in the closed circuit, the switching element has a smaller voltage drop.



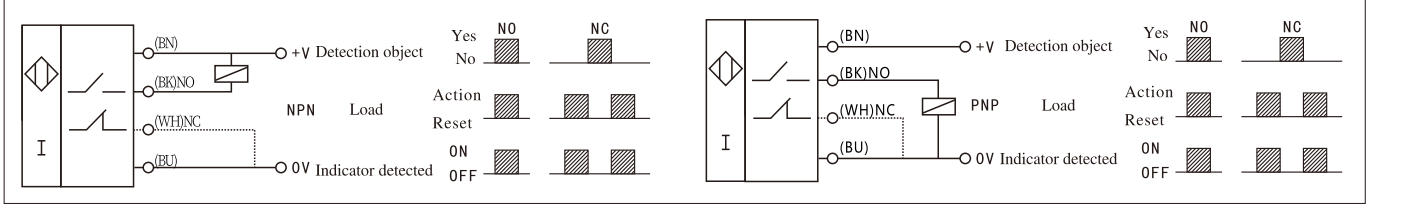
DC 4-wire system (NPN,PNP Type) NO+NC

Sensor switches can provide 2 groups of output NO+NC



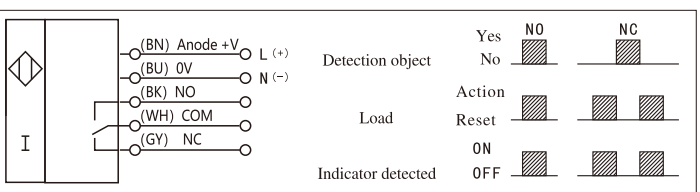
DC **4**-wire system (NPN,PNP Type) NO/NC

The switches can provide two groups of output NO or NC



NO+NC Ac/Dc five wire (relay output) NO + NC

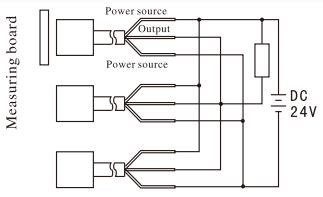
These switches can provide to often open, closed two group relay output.



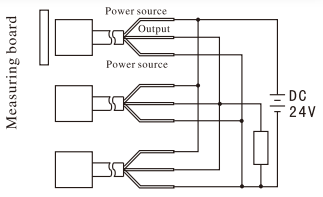
Sensor characteristics

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.



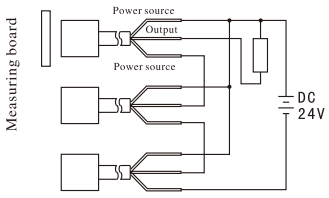
OR connection of NPN output



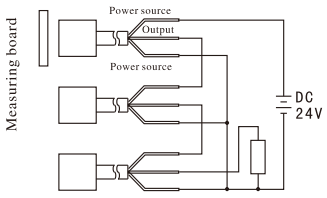
OR connection of PNP output

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.



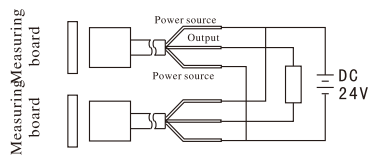
NPN connection of AND output



PNP connection of AND output

Series and parallel connection of proximity switch

AND connection (series) NPN, PNP mixed–use



Promixity switches matters need attention

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 circui 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 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 to be connected through a relay or series connected with a current-limiting resistance. The peak cuttent set by current-limiting resistance Ris within the load cuttent of the procimity switch; Make sure to connect through load.

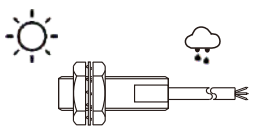
$$\frac{\text{Supply voltage V}}{\text{Peak load current value of proximity switch mA}} \leqslant R(K\Omega)$$

Allowable loss of resistance R (W)

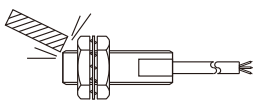
$$\frac{\text{Supply voltage } V^2}{\leqslant R(K\Omega)} \times 2 \text{ times above}$$

Installation notice of proximity switch

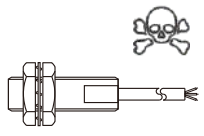
Don't use it in the open air, and use a protectivecover, if necessary.



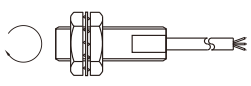
Don't knock the detection surface with hard objects and use a protective cover, if necessary.



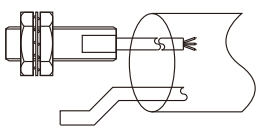
Don't use it in the environment with corrosive objects.



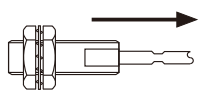
Don't fasten it with a big force, but fasten it with spring washer



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.



※ Surge absorption, reverse connection protection
※ Adjustable sensing distance, can sense transparent objects

Selection Guide

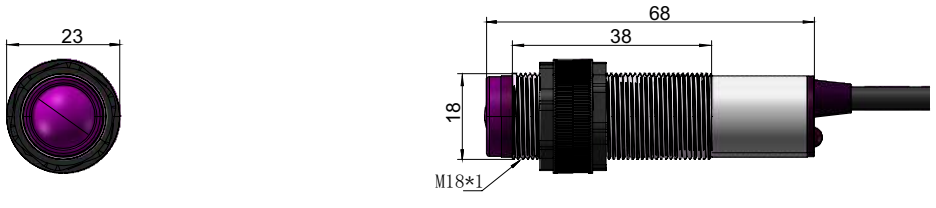
E3F	−	18	S	50	N	1	□	□
		①	②	③	④	⑤	⑥	⑦	⑧

①**Model**:E3F: Photoelectric Sensor
②**DIA. of sensing side:**Number: DIA. of sensing side (unit:mm)
③**Sensing type:**S: Diffuse reflective type、R: Retroreflective type、D: Through-beam type
④**Sensing distance:**Number: Sensing distance (unit:cm)
⑤**Control output:**N: NPN、P: PNP
⑥**Operation mode:**1: Light ON、2: Dark ON

Specifications

Specifications						
Model	NPN.NO	E3F-18S10N1	E3F-18S50N1	E3F-18S3MN1	E3F-18R2MN1	E3F-18D5MN1+L5
	NPN.NC	E3F-18S10N2	E3F-18S50N2	E3F-18S3MN2	E3F-18R2MN2	E3F-18D5MN2+L5
	NPN.NO+NC	E3F-18S10N3	E3F-18S50N3	/	E3F-18R2MN3	E3F-18D5MN3+L5
	PNPNO	E3F-18S10P1	E3F-18S50P1	E3F-18S3MP1	E3F-18R2MP1	E3F-18D5MP1+L5
	PNPNC	E3F-18S10P2	E3F-18S50P2	E3F-18S3MP2	E3F-18R2MP2	E3F-18D5MP2+L5
	PNP.NO+NC	E3F-18S10P3	E3F-18S50P3	/	E3F-18R2MP3	E3F-18D5MP3+L5
	AC2-wireNO	E3F-18S10A1	E3F-18S50A1	/	E3F-18R2MA1	E3F-18D5MA1+L5
	AC2-wireNC	E3F-18S10A2	E3F-18S50A2	/	E3F-18R2MA2	E3F-18D5MA2+L5
Detection type		Diffuse reflection	Diffuse reflection	Diffuse reflectance	Retro-reflective	Through-beam
Sensingdistance		0-10CM	0-50CM	0-3M	0-2M	5M
Settingdistance(Sa)		0-8CM	0-45CM	0-3M	0-2M	0-5M
Adjustment method		Tail potentiometer				
Hysteresis		≤10%				
Light pointing angle		3°-20°				
Standard targe		White card reficetion rate 90%				
Detection target		Opaque Objects and Transparent Objects				
Supplyvoltage		DC:10-30VDC;AC:90-250V				
Leakagecurrent		≤0.6mA				
Responsefrequency(F)		600Hz(DC)25Hz(AC)				
Ambient illuminance		incandescent lights300Luxsunshine≤100Lu				
Consunptioncurrent		Diffuse reflection and Retro-reflective≤15mA:Through-beams25mA				
Loadcurrent		200mA				
Voltagedrop		DC≤1VAC≤7V				
Circuitprotection		Short-circuitEMI protectionreversepolarityprotection				
Outputindicator		Red LED				
Ambienttemperature		-20~+55℃				
Shock		500m/s(50G)ineachX,Y,Zdirectionfor3times				
Vibration		1mm amplitudeatfre quenc y10~55Hz(for1min) ineachX.Y Zdirection for 2hours				
Protectiondegree		IP65				
Connection		2mPVCcable			M12 connector	
Meterial		ABS				
Sensinaside		PC				

Dimension



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