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

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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

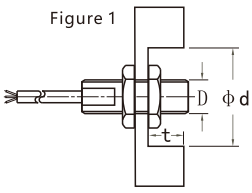
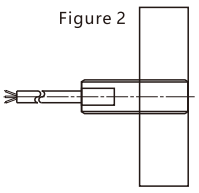
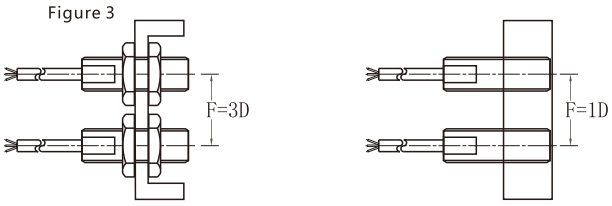


Figure 2



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.

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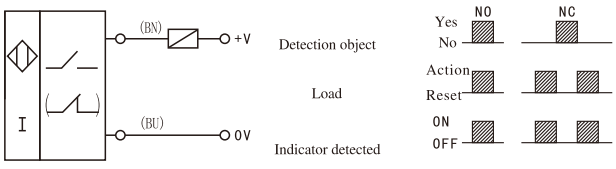
Sensor characteristics

Output mode and electrical characteristics

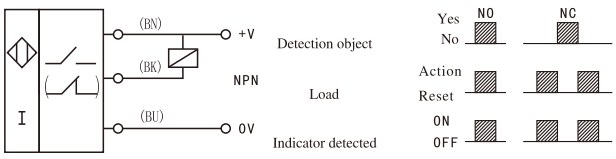
DC **2**-wire system NO or NC

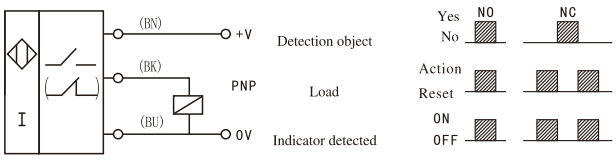
The load must be connected in series in the sensor to work, there is a polarity and short circuit protection function; in the open circuit state, there is a very small leakage current; in the closed circuit, the switching element has a smaller voltage drop.



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

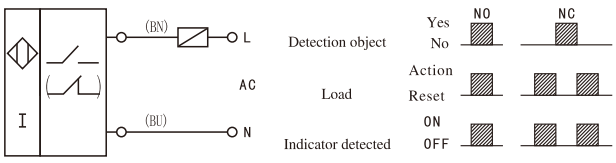
These switches are connected to the load and power supply separately; the polarity, short circuit and overload protection function, and the residual current can be ignored.





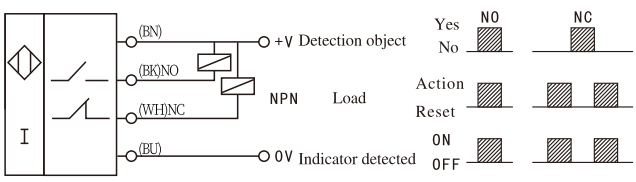
AC **2** -wire system NO or NC

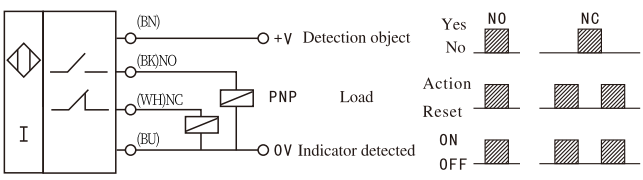
The load must be connected in series in the sensor, in the closed circuit, the switching element has a smaller voltage drop.



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

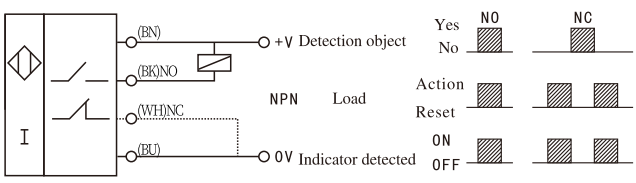
Sensor switches can provide 2 groups of output NO+NC

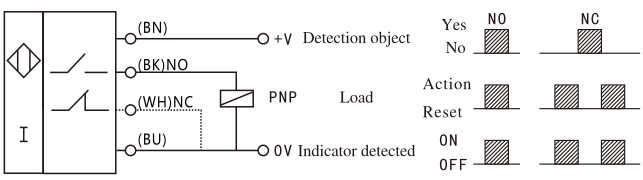




DC **4**-wire system (NPN,PNP Type) NO/NC

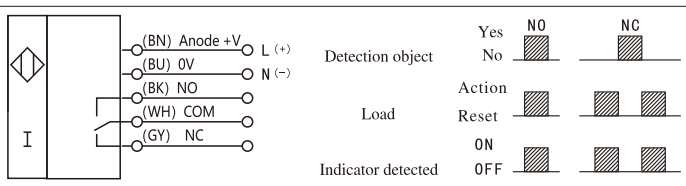
The switches can provide two groups of output NO or NC





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

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



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Sensor characteristics

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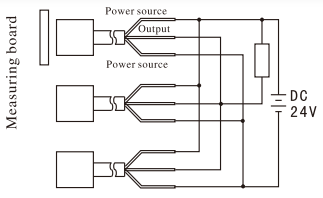
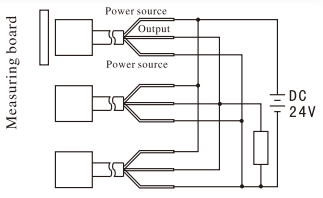
Series and parallel connection of proximity switch

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.



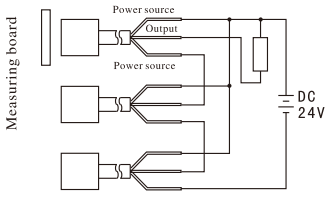
OR connection of NPN output



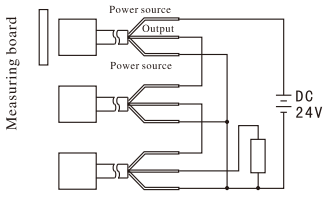
OR connection of PNP output

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.



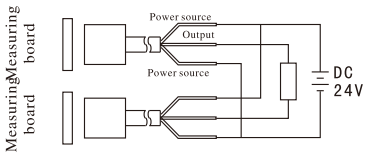
NPN connection of AND output



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.

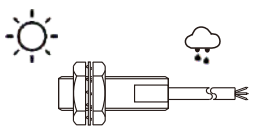
$$\frac{\text{Supply voltage V}}{\text{Peak load current value of proximity switch mA}} \leqslant R(K\Omega)$$

Allowable loss of resistance R (W)

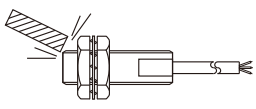
$$\frac{\text{Supply voltage } V^2}{\leqslant R(K\Omega)} \times 2 \text{ times above}$$

Installation notice of proximity switch

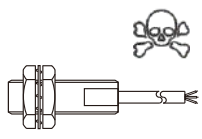
Don't use it in the open air, and use a protectivecover, if necessary.



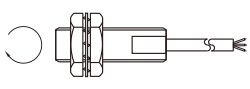
Don't knock the detection surface with hard objects and use a protective cover, if necessary.



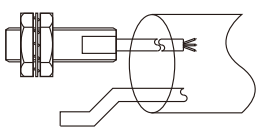
Don't use it in the environment with corrosive objects.



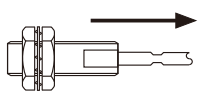
Don't fasten it with a big force, but fasten it with spring washer



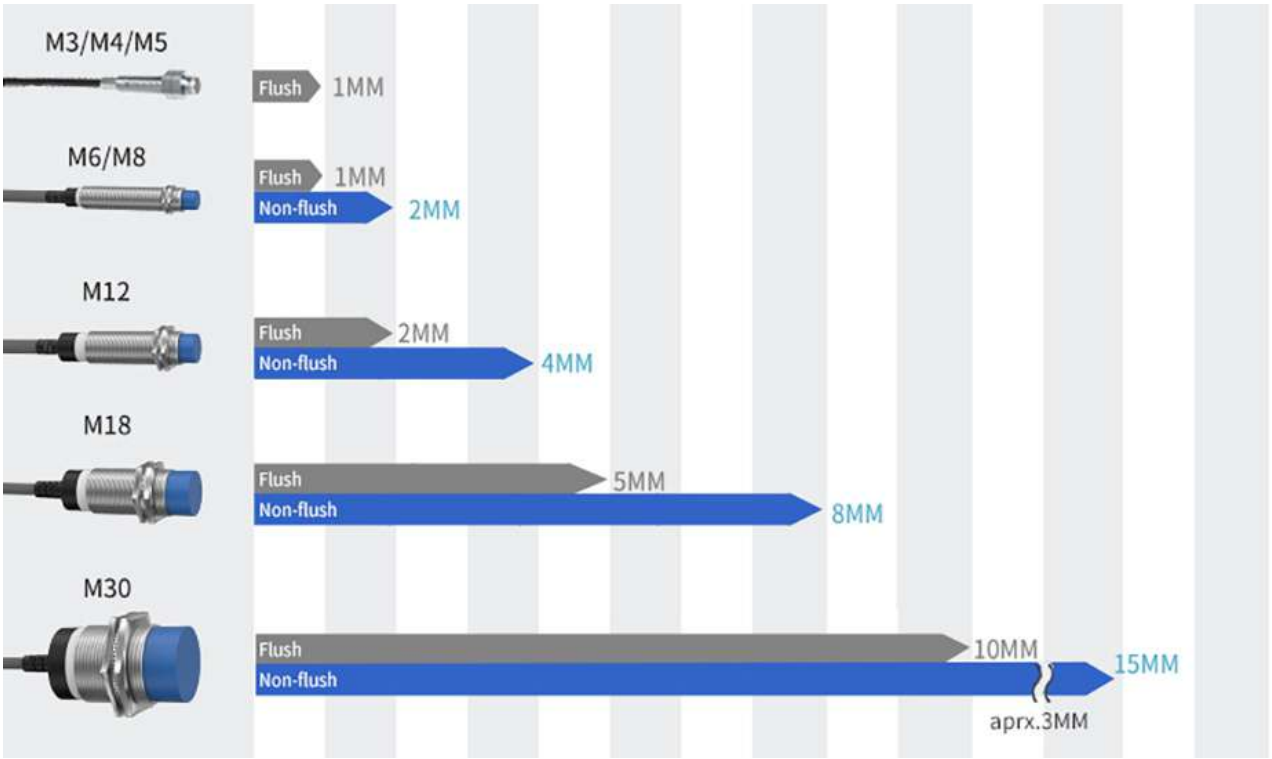
The proximity switch must be equipped individually with metal flexible pipe, and don't make it with the electric line and power line in the same metal flexible pipe



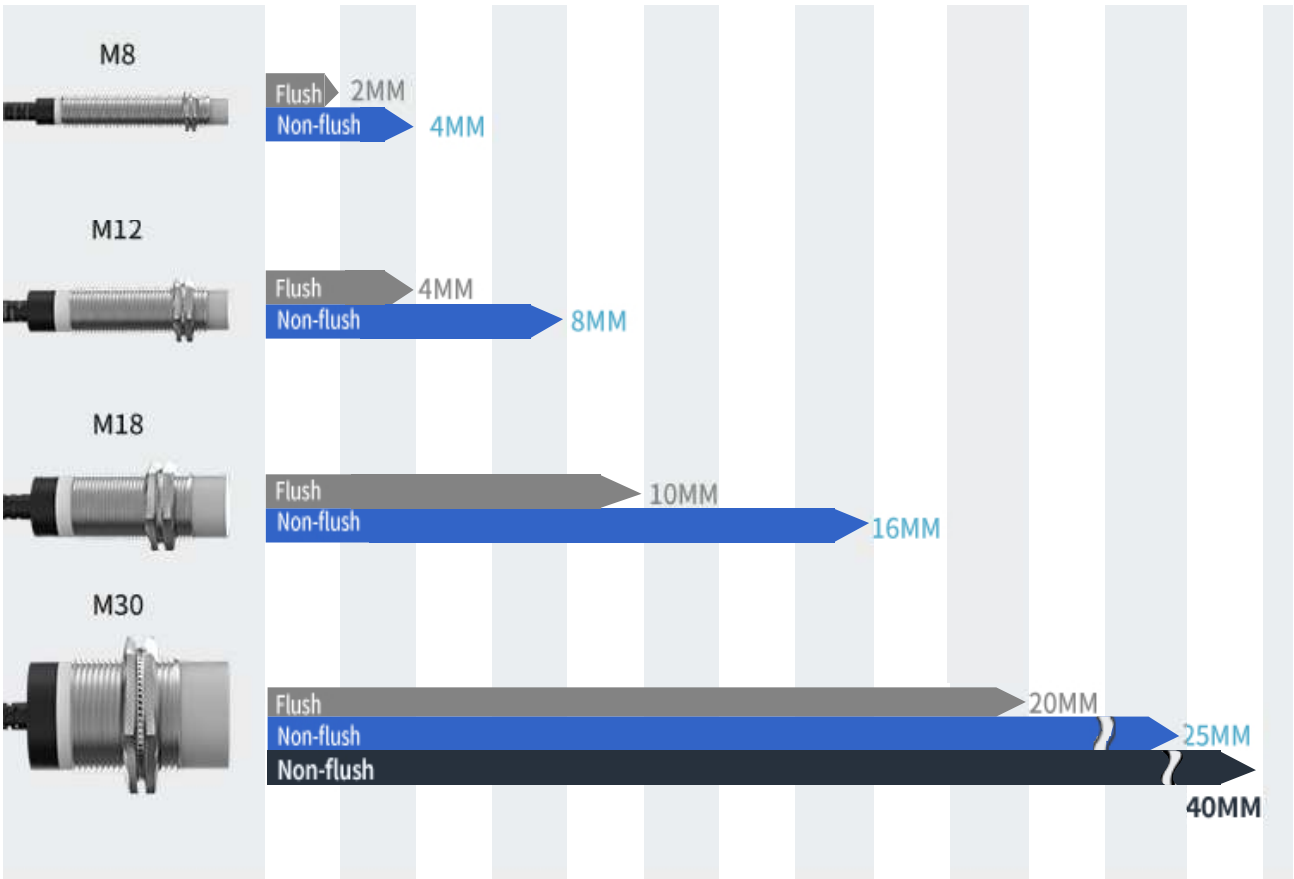
Don't stretch the power line of the proximity switch with a big force.



LR Series Inductive Proximity Sensor Sensing Distance Diagram



FR Series inductive proximity sensor sensing Distance Diagram



Matters needing attention

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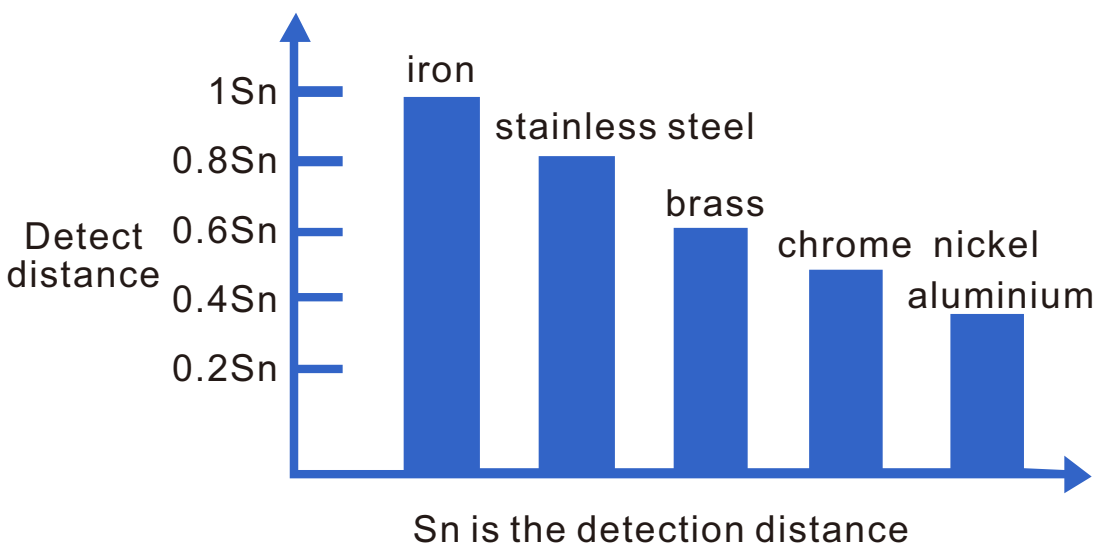
When detecting objects of different materials, the actualsensing distance of the proximity switchis different, asshown in the figure below



GTRIC Long Distance M30 Series Inductive Proximity Sensors

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- With overload short circuit, reverse connection protection, surge absorption IP67 protection level
- It has the advantages of water resistance, oil resistance, high temperature resistance, etc. 360° full surround green LED display working status
- More intuitive and obvious Ultra-long-distance detection, making products more diversified

Selection Guide

FR	30	–	20	N	1	□
①	②		③	④	⑤	⑥

①**Model**：LR： Inductive Sensor、CR: Capacitive Sensor、FR：long Distance Inductive Sensor

②**DIA. of sensing side**：Number: DIA. of sensing side (unit:mm)

③**Sensing distance**：Number: Sensing distance (unit:mm)

④**Powersupply**：N: NPN 10-30VDC 3-wire、P: PNP 10-30VDC 3-wire、D: 10-30VDC 2-wire
A: 90-250VAC 2-wire

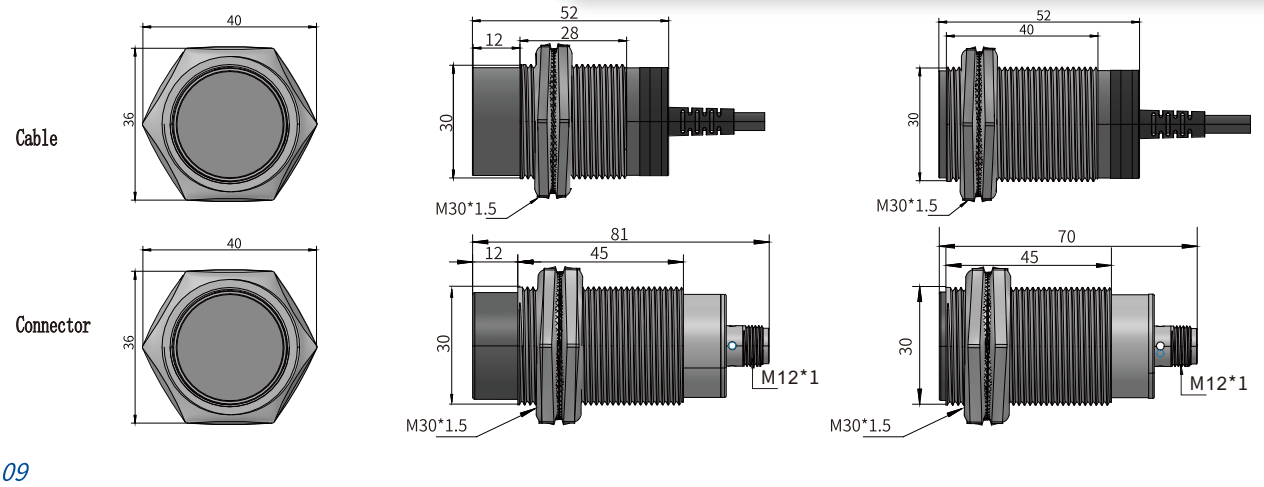
⑤**Control output**：1:Normallyopen、2:Normally closed

⑥**Connection**：Nomark: Cable type、P: Connector type、WP: Cable connector type

Specifications

Specifications						
Model	DC 3-wire NPN.NO	FR30-20N1	FR30-25N1	FR30-40N1	FR30-20N1-P	FR30-25N1-P
	DC 3-wire NPN.NC	FR30-20N2	FR30-25N2	FR30-40N2	FR30-20N2-P	FR30-25N2-P
	DC 3-wire PNP.NO	FR30-20P1	FR30-25P1	FR30-40P1	FR30-20P1-P	FR30-25P1-P
	DC 3-wire PNP.NC	FR30-20P2	FR30-25P2	FR30-40P2	FR30-20P2-P	FR30-25P2-P
	DC 2-wire NO	/	/	/	/	/
	DC 2-wire NC	/	/	/	/	/
	AC 2-wire NO	/	/	/	/	/
	AC 2-wire NC	/	/	/	/	/
Mounting		Flush	Non-Flush	Non-Flush	Flush	Non-Flush
Sensing distance		20MM+10%	25MM+10%	40MM±10%	20MM±10%	25MM±10%
Setting distance(Sa)		0-18MM	0-22.5MM	0-36MM	0-18MM	0-22.5MM
Hysteresis		≤10%				
Standard sensing target		30*30*1MM (iron)				
Supply voltage		DC:10-30VDC； AC：90-250V				
Leakage current		≤0.6mA				
Response frequency(F)		500Hz (DC) 25Hz (AC)				
Consunption current		DC3-wireNPNPNP：≤10mA;DC2-wire：≤3mA；AC2-wire：≤2mA				
Load current		200mA				
Voltage drop		≤2.5V				
Circuit protection		Short-circuit,overload,reversepolarityprotection				
Output indicator		GreenLED				
Ambient temperature		-20~+70℃				
Shock		500m/s(50G)ineachX,Y,Zdirectionfor3times				
Vibration		1mm amplitudeatfre quenc y10~55Hz(for1min) ineachX.Y Zdirection for 2hours				
Protection degree		IP67(IECstandards)				
Connection		2mPVCcable		M12connector		
Meterial		Nickel-copperalloy				
Sensing side		PBT				

Dimension



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