Proximity Sensor User's Manual

Thank you for choosing our products

For your safety， please read the following content carefully before use

▣ Safety caution

※ Please read the manual carefully before use

※ Please comply with the below important points:

⚠ Warning If not operate as the manual , an accident may happen

⚠ Note If not operate as the manual , it may cause damage to the product

※ Please note the following warning mark in the manual

⚠ There will be an accident or danger in special circumstances

⚠ Warning

1.Use it in the following field:such as (nuclear energy control, armarium,automobile,train,airplane,aviation,entertainment or satefy equipment ect.)，the safety equipment is required , otherwise damage will be caused .

⚠ Note

1.This product should be avoid working under the circumstance that is flammable, explosive, moist, under sunshine, heat radiation and vibration. Otherwise it may cause explosion.

2.Don't nob the product，otherwise it may cause malfunction to it .

3.Please comply with the manual，otherwise a bad damage may happen .

4.Avoid wrong connecting , otherwise a bad damage may happen to the product ,

▣ Model

PR □ — □ □ □ □

Model	
PR	inductive
CR	capacitive

Installation mode	
Blank	Non-PIN
I	straight-PIN
L	Bend-PIN

Appearance	
S	square
E	easy install square type
H	protruding
8	M8 cylinder
12	M12 cylinder
18	M18 cylinder
22	M22 cylinder
30	M30 cylinder

Output mode	
N	NPN normal open
NC	NPN normal close
P	PNP normal open
PC	PNP normal close
X	DC two-wire normal open
Y	AC two-wire normal open
YC	DC two-wire normal close

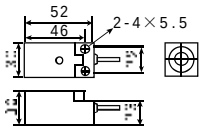
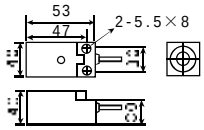
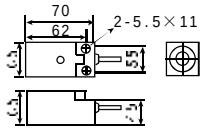
Detect distance	
2	2mm
4	4mm
5	5mm
8	8mm
10	10mm
15	15mm
20	20mm
25	25mm
35	35mm
40	40mm

Output current	
A	50mA
B	100mA
C	200mA
D	300mA
E	150mA

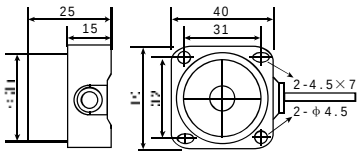
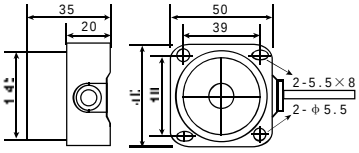
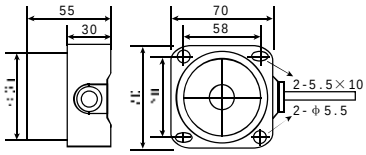
For example: PRI-12N4C means straight -PIN connecting , DC inductive proximity sensor , diameter 12mm , NPN normal open , detecting distance 4mm, Max. output current is 200mA

▣ Specification

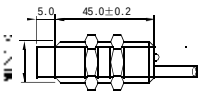
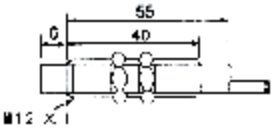
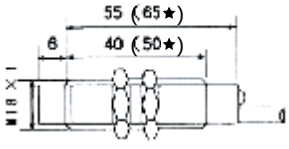
■S type plastic casing inductive proximity sensor (Power wire be vertical to inductive surface)

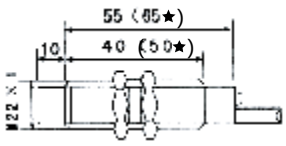
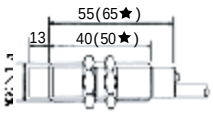
Code		PR-S□□□			PR-S□□□			PR-S□□□		
Dimension										
Output mode		DC(three-wire)		AC(two-wire)	DC(three-wire)		AC(two-wire)	DC(three-wire)		AC(two-wire)
		NPN	PNP		NPN	PNP		NPN	PNP	
Mode	NO normal open	PR-SN10B	PR-SP10B	PR-SY10D	PR-SN20B	PR-SP20B	PR-SY20D	PR-SN35B	PR-SP35B	PR-SY35D
	NC normal close	PR-SNC10B	PR-SPC10B	PR-SYC10D	PR-SNC20B	PR-SPC20B	PR-SYC20D	PR-SNC35B	PR-SPC35B	PR-SYC35D
Detect distance		10.0mm			20.0mm			35.0mm		
Set distance		0～8.0mm			0～16.0mm			0～28.0mm		
work voltage		DC 10～30V		AC 90～250V	DC 10～30V		AC 90～250V	DC 10～30V		AC 90～250V
Action frequency		≤200Hz		≤ 20Hz	≤100Hz		≤10Hz	≤50Hz		≤5Hz
Output current		≤100mA		10～300mA	≤100mA		10～300mA	≤100mA		10～300mA
Install mode		Non-imbedding								

■H type plastic casing inductive proximity sensor (Power wire be parallel to inductive surface)

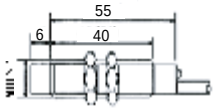
Code		PR-H□□□			PR-H□□□			PR-H□□□		
Dimension										
Output mode		DC(three-wire)		AC(two-wire)	DC(three-wire)		AC(two-wire)	DC(three-wire)		AC(two-wire)
		NPN	PNP		NPN	PNP		NPN	PNP	
Model	NO normal open	PR-HN10B	PR-HP10B	PR-HY10D	PR-HN20B	PR-HP20B	PR-HY20D	PR-HN35B	PR-HP35B	PR-HY35D
	NC normal close	PR-HNC10B	PR-HPC10B	PR-HYC10D	PR-HNC20B	PR-HPC20B	PR-HYC20D	PR-HNC35B	PR-HPC35B	PR-HYC35D
Detect distance		10.0mm			20.0mm			35.0mm		
Set distance		0～8.0mm			0～16.0mm			0～28.0mm		
work voltage		DC 10～30V		AC 90～250V	DC 10～30V		AC 90～250V	DC 10～30V		AC 90～250V
Action frequency		≤200Hz		≤ 20Hz	≤100Hz		≤10Hz	≤50Hz		≤5Hz
Output current		≤100mA		10～300mA	≤100mA		10～300mA	≤100mA		10～300mA
Install mode		Non-imbedding								

■Metal case inductive proximity sensor

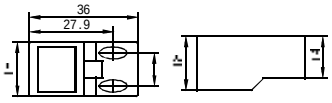
Code		PR-8□□□		PR□-12□□□		PR□-18□□□		
Dimension								
Output mode		DC(three-wire)		DC(three-wire)		DC(three-wire)		AC(two-wire)
		NPN	PNP	NPN	PNP	NPN	PNP	
Model	NO normal open	PR-8N2B	PR-8P2B	PR(I、L)-12N2(4)B	PR(I、L)-12P2(4)B	PR(I、L)-18N5(8)B	PR(I、L)-18P5(8)B	PR-18Y5(8)D
	NC normal close	-----	-----	PR(I、L)-12NC2(4)B	PR(I、L)-12PC2(4)B	PR(I、L)-18NC5(8)B	PR(I、L)-18PC5(8)B	PR-18YC5(8)D
Detect distance		2mm		2mm/4mm		5mm/8mm		
Set distance		0～1.6mm		2mm：0～1.6mm 4mm：0～3.2mm		5mm：0～4.0mm 8mm：0～6.4mm		
work voltage		DC 10～30V		DC 10～30V		DC 10～30V		AC 90～250V
Action frequency		≤800Hz		2mm≤600Hz 4mm≤400Hz		5mm≤400Hz 8mm≤200Hz		≤20Hz
Output current		≤100mA		≤100mA		≤100mA		10～300mA
Install mode		Non-imbedding		2mm:imbeding 4mm:Non-imbedding		5mm:imbedding 8mm:Non-imbedding		

Code		PR□-22□□□			PR□-30□□□		
Dimension							
Output mode		DC(three-wire)		AC(two-wire)	DC(three-wire)		AC(two-wire)
		NPN	PNP		NPN	PNP	
Model	NO normal open	PR(I、L)-22N10B	PR(I、L)-22P10B	PR(I、L)-22Y10D	PR(I、L)-30N10(15)B	PR(I、L)-30P10(15)B	PR(I、L)-30Y10(15)D
	NC normal close	PR(I、L)-22NC10B	PR(I、L)-22PC10B	PR(I、L)-22YC10D	PR(I、L)-30NC10(15)B	PR(I、L)-30PC10(15)B	PR(I、L)-30YC10(15)D
Detect distance		10.0mm			10.0mm/15.0mm		
Set distance		0～8.0mm			10mm：0～8.0mm 15mm：0～12.0mm		
work voltage		DC 10～30V		AC 90～250V	DC 10～30V		AC 90～250V
Action frequency		≤200Hz		≤20Hz	≤200Hz		≤20Hz
Output current		≤100mA		10～300mA	≤100mA		10～300mA
Install mode		Non-imbedding			10mm:imbedding 15mm:Non-imbedding		

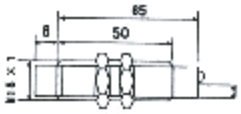
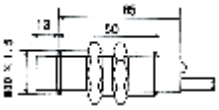
■ Inductive DC two-wire proximity sensor

Code		PR□-18X□□□
Dimension		
Output mode		DC(two-wire)
Model	NO normal open	PR(I、L)-18X5(8)B
	NC normal close	PR(I、L)-18XC5(8)B
Detect distance		5.0mm/8.0mm
Set distance		5mm：0～4.0mm 8mm：0～6.4mm
work voltage		DC 10～30V
Action frequency		≤80Hz
Output current		10～100mA
Install mode		5mm:imbeding 8mm:Non-imbedding

■Etype plastic casing inductive proximity sensor

Code		PR-E□□□	
Dimension			
Output mode		DC(three-wire)	
		NPN	PNP
Model	NO normal open	PR-EN5B	PR-EP5B
	NC normal close	PR-ENC5B	PR-EPC5B
Detect distance		5.0mm	
Set distance		0～4.0mm	
work voltage		DC 10～30V	
Action frequency		≤500Hz	
Output current		≤100mA	
Install mode		Non-imbedding	

■ Capacitive proximity sensor

Code		CR-18□□□			CR-30□□□		
Dimension							
Output mode		DC(three-wire)		AC(two-wire)	DC(three wire)		AC(two-wire)
		NPN	PNP		NPN	PNP	
Model	NO normal open	CR-18N8C	CR-18P8C	CR-18Y8C	CR-30N15C	CR-30P15C	CR-30Y15C
	NC normal close	CR-18NC8C	CR-18PC8C	CR-18YC8C	CR-30NC15C	CR-30PC15C	CR-30YC15C
Detect distance		8.0mm			15.0mm		
Set distance		1～8mm settable			2～15mm settable		
work voltage		DC 10～30V		AC 150～250V	DC 10～30V		AC 150～250V
Action frequency		≤50Hz		≤ 10Hz	≤50Hz		≤10Hz
Output current		≤200mA		10～200mA	≤200mA		10～200mA
Install mode		Non-imbedding			Non-imbedding		

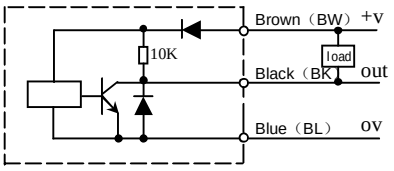
Note:①The data in the bracket means the action distance can be choosed，straight-PIN or bend-PIN can be selected .

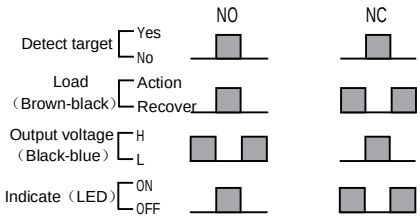
The size with ★ in the bracket means AC sensor .

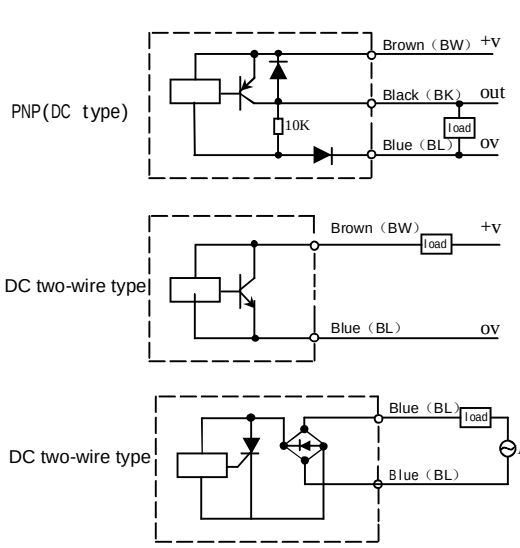
②Ambient temperature of the above sensor：-15～65℃（non-freezing status）

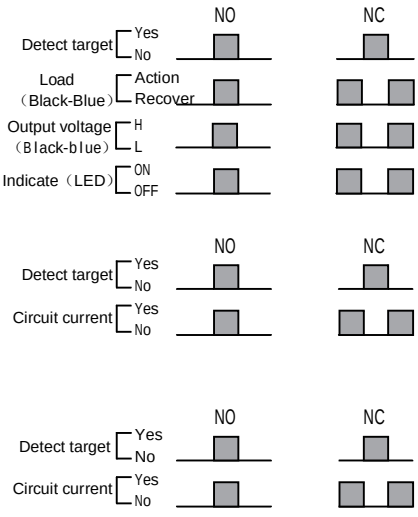
■ Control output graph

NPN(DC type)

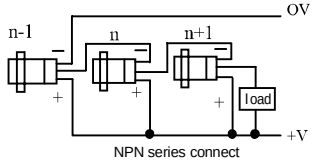




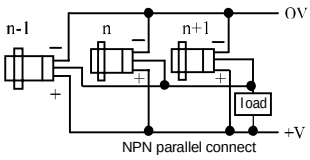




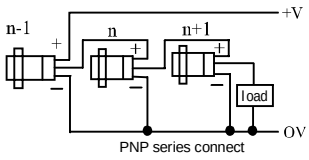
■ Series connection & Parallel connection



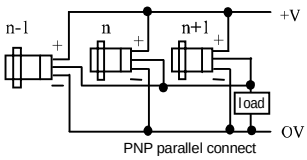
NPN series connect



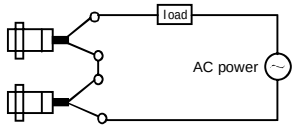
NPN parallel connect



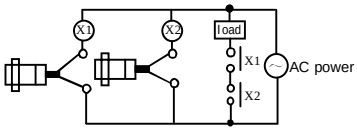
PNP series connect



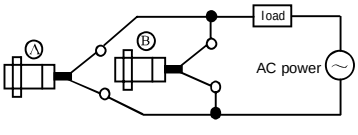
PNP parallel connect



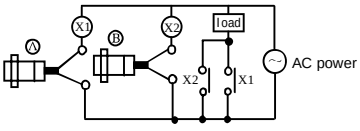
AC Series connect（figure 1）



AC series connect（figure 2）



AC Parallel connect（figure 3）



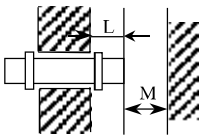
AC Parallel connect（figure 4）

If the power supply is 220V,and the quantity of connected sensor is less than 3 ,connect as figure 1 ,otherwise connect as figure 2 by serial with relay.

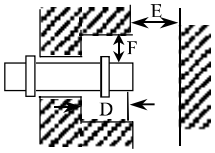
Parallel sensor A&B,if the detected object approach to sensor A，sensor A act，load current go through sensor A，there will be 10V voltage drop between two ends of sensor A（B），If the detected object approach to sensor B at this time ,sensor B won't act for being short of voltage (the voltage between two ends is only 10V) . Only when sensor A is closed , raise the voltage between two ends of sensor A to working voltage,then sensor B will act . The time interval between sensor A close and sensor B act is 10mS. So several sensors are needed in parallel，the influence among sensors should be considered.Generally , please connect by serial with relay

■ Install requirement

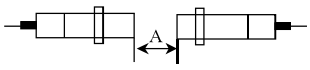
If there is metal material around ,when installing the proximity sensor，please install at a bigger mounting size than the following figure when the sensors be contraposition or apposition to avoid bad influence of the reliability of the sensor (Sn: detect distance) .



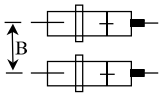
L≥4Sn M≥8Sn



E≥8Sn F≥6Sn D≥4Sn



A≥10Sn



B≥10Sn

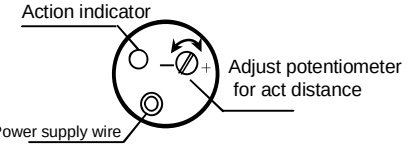
■ Capacitive proximity sensor operate instruction

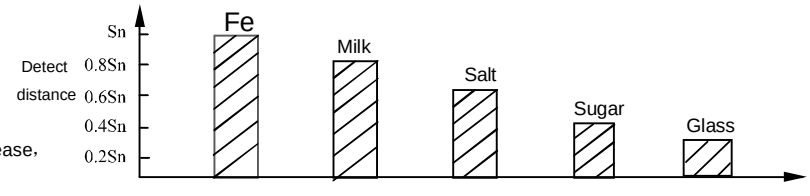
※Capacitive proximity sensor can not only detect metal ,but also plastic,glass ,water,oil ect.The detect distance is different as the conductivity , dielectric constant ,water absorption and volume of the detected object . The metal connected to the ground can obtain the max. detect distance .

※Detect distance of the different detect object（see as the below figure）

※Capacitive proximity sensor can not adapt to high-frequency electric field,such as high-frequency induction welder,ultrasonic generator，or error action will be caused.

※The detect distance of capacitive proximity sensor is adjustable,so different object can be detected. And it must be adjusted when install.Please do as the following sequenc



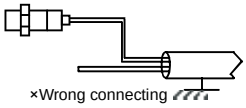


Potentiometer revolves clockwisely,detect distance increase，Anticlockwisely revolve ,the distance decrease.
Revolution number is 10 rounds。

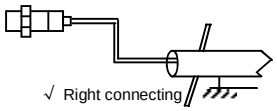
■ Caution

※When it is DC power supply , insulating transformer is needed , auto-transformer can't be used .

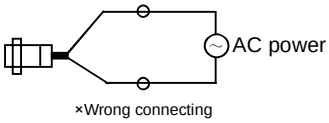
※When electric power wire , drive power wire go around the sensor, electrical metallic tubing is needed to avoid error action and damage.



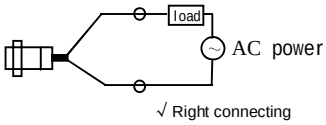
×Wrong connecting



√ Right connecting



×Wrong connecting



√ Right connecting

※If the power supply is 110V for a AC sensor,series connect should through the relay；

※AC sensor should connect to the power by the load.If the sensor connect to the power directly ,it will cause damage

※Connection wire should be shorter than 200m.in case of a large voltage drop .