Cylindrical Connector Type Proximity Sensor

▣ Features

- Improved the noise immunity with dedicated IC
- Built-in reverse polarity protection circuit (DC 3-wire type)
- Built-in surge protection circuit
- Built-in over-current protection circuit (DC type)
- IP67 protection structure (IEC standard) for connector part
- Replaceable for micro switches and limit switches

Please read "Safety Considerations" in operation manual before using.

▣ Specifications

● DC 2-wire type

Model	PRCMT12-2DO PRCMT12-2DC PRCMT12-2DO-I PRCMT12-2DC-I	PRCMT12-4DO PRCMT12-4DC PRCMT12-4DO-I PRCMT12-4DC-I	PRCMT18-5DO PRCMT18-5DC PRCMT18-5DO-I PRCMT18-5DC-I	PRCMT18-8DO PRCMT18-8DC PRCMT18-8DO-I PRCMT18-8DC-I	PRCMT30-10DO PRCMT30-10DC PRCMT30-10DO-I PRCMT30-10DC-I	PRCMT30-15DO PRCMT30-15DC PRCMT30-15DO-I PRCMT30-15DC-I
Sensing distance	2mm	4mm	5mm	8mm	10mm	15mm
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm (iron)		18×18×1mm (iron)	25×25×1mm (iron)	30×30×1mm (iron)	45×45×1mm (iron)
Setting distance	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (operating voltage)	12-24VDC⎓ (10-30VDC⎓)					
Leakage current	Max. 0.6mA					
Response frequency※1	1.5kHz	500Hz	350Hz	400Hz	200Hz	
Residual voltage	Max. 3.5V					
Affection by Temp.	Max. ±10% for sensing distance at ambient temperature 20℃					
Control output	2 to 100mA					
Insulation resistance	Over 50MΩ (at 500VDC megger)					
Dielectric strength	1,500VAC 50/60Hz for 1minute					
Vibration	1mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z directions for 2 hours					
Shock	500m/s² (approx. 50G) in each X, Y, Z directions for 3 times					
Indicator	Operation indicator: Red LED					
Environment: Ambient temperature	-25 to 70℃, storage: -30 to 80℃					
Environment: Ambient humidity	35 to 95%RH, storage: 35 to 95%RH					
Protection circuit	Surge protection circuit, Over-current protection					
Protection structure	IP67 (IEC standard)					
Material	Case/Nut: Nickel plated brass, Washer: Nickel plated iron, Sensing surface: Polybutylene terephthalate					
Approval	CE					
Weight※2	Approx. 38g (approx. 26g)		Approx. 60g (approx. 48g)		Approx. 154g (approx. 142g)	

※1: The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.
※2: The weight includes packaging. The weight in parenthesis in for unit only.
※There is IEC standard connector cable. Refer to the G-6 about IEC standard connector wires and specifications.
※Environment resistance is rated at no freezing or condensation.

▣ Specifications

● DC 3-wire type

Model		PRCM12-2DN PRCM12-2DP PRCM12-2DN2 PRCM12-2DP2	PRCM12-4DN PRCM12-4DP PRCM12-4DN2 PRCM12-4DP2	PRCM18-5DN PRCM18-5DP PRCM18-5DN2 PRCM18-5DP2 PRCML18-5DN PRCML18-5DP PRCML18-5DN2 PRCML18-5DP2	PRCM18-8DN PRCM18-8DP PRCM18-8DN2 PRCM18-8DP2 PRCML18-8DN PRCML18-8DP PRCML18-8DN2 PRCML18-8DP2	PRCM30-10DN PRCM30-10DP PRCM30-10DN2 PRCM30-10DP2 PRCML30-10DN PRCML30-10DP PRCML30-10DN2 PRCML30-10DP2	PRCM30-15DN PRCM30-15DP PRCM30-15DN2 PRCM30-15DP2 PRCML30-15DN PRCML30-15DP PRCML30-15DN2 PRCML30-15DP2
Sensing distance		2mm	4mm	5mm	8mm	10mm	15mm
Hysteresis		Max. 10% of sensing distance					
Standard sensing target		12×12×1mm (iron)		18×18×1mm (iron)	25×25×1mm (iron)	30×30×1mm (iron)	45×45×1mm (iron)
Sensing distance		0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (operating voltage)		12-24VDC⎓ (10-30VDC⎓)					
Current consumption		Max. 10mA					
Response frequency※1		1.5kHz	500Hz	500Hz	350Hz	400Hz	200Hz
Residual voltage		Max. 1.5V					
Affection by Temp.		Max. ±10% for sensing distance at ambient temperature 20℃					
Control output		Max. 200mA					
Insulation resistance		Over 50MΩ (at 500VDC megger)					
Dielectric strength		1,500VAC 50/60Hz for 1minute					
Vibration		1mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z directions for 2 hours					
Shock		500m/s² (approx. 50G) in each X, Y, Z directions for 3 times					
Indicator		Operation indicator: Red LED					
Environment	Ambient temperature	-25 to 70℃, storage: -30 to 80℃					
	Ambient humidity	35 to 95%RH, storage: 35 to 95%RH					
Protection circuit		Surge protection circuit, Reverse polarity protection circuit, Over-current protection					
Protection structure		IP67 (IEC standard)					
Material		Case/Nut: Nickel plated brass, Washer: Nickel plated iron, Sensing surface: Polybutylene terephthalate					
Approval		CE					
Weight※2		Approx. 38g (approx. 26g)		PRCM: Approx. 61g (approx. 49g) PRCML: Approx. 85g (approx. 73g)		PRCM: Approx. 146g (approx. 134g) PRCML: Approx. 181g (approx. 169g)	

● AC 2-wire type

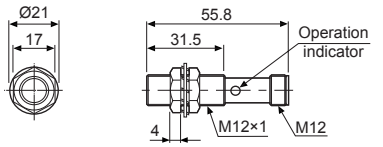
Model		PRCM12-2AO PRCM12-2AC	PRCM12-4AO PRCM12-4AC	PRCM18-5AO PRCM18-5AC PRCML18-5AO PRCML18-5AC	PRCM18-8AO PRCM18-8AC PRCML18-8AO PRCML18-8AC	PRCM30-10AO PRCM30-10AC PRCML30-10AO PRCML30-10AC	PRCM30-15AO PRCM30-15AC PRCML30-15AO PRCML30-15AC
Sensing distance		2mm	4mm	5mm	8mm	10mm	15mm
Hysteresis		Max. 10% of sensing distance					
Standard sensing target		12×12×1mm (iron)		18×18×1mm (iron)	25×25×1mm (iron)	30×30×1mm (iron)	45×45×1mm (iron)
Sensing distance		0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (operating voltage)		100-240VAC～ (85-264VAC～)					
Leakage current		Max. 2.5mA					
Response frequency※1		20Hz					
Residual voltage		Max. 10V					
Affection by Temp.		Max. ±10% for sensing distance at ambient temperature 20℃					
Control output		5 to 150mA		5 to 200mA			
Insulation resistance		Over 50MΩ (at 500VDC megger)					
Dielectric strength		2,500VAC 50/60Hz for 1minute					
Vibration		1mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z directions for 2 hours					
Shock		500m/s² (approx. 50G) in each X, Y, Z directions for 3 times					
Indicator		Operation indicator: Red LED					
Environment	Ambient temperature	-25 to 70℃, storage: -30 to 80℃					
	Ambient humidity	35 to 95%RH, storage: 35 to 95%RH					
Protection circuit		Surge protection circuit					
Protection structure		IP67 (IEC standard)					
Insulation type		Double insulation or reinforced insulation (Mark: ⧈, dielectric strength between the measuring input part and the power part: 1kV)					
Material		Case/Nut: Nickel plated brass, Washer: Nickel plated iron, Sensing surface: Polybutylene terephthalate					
Approval		CE					
Weight※2		Approx. 42g (approx. 30g)		PRCM: Approx. 66g (approx. 54g) PRCML: Approx. 78g (approx. 66g)		PRCM: Approx. 154g (approx. 142g) PRCML: Approx. 194g (approx. 182g)	

※1: The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.
※2: The weight includes packaging. The weight in parenthesis in for unit only.
※Environment resistance is rated at no freezing or condensation.

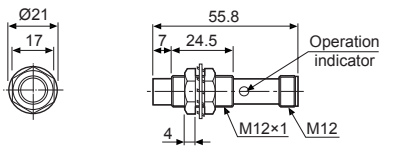
▣ Dimensions

(unit: mm)

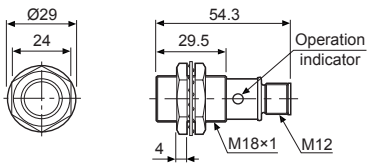
● **PRCM12-2D□ / PRCMT12-2D□(-I)**



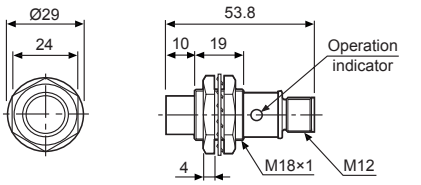
● **PRCM12-4D□ / PRCMT12-4D□(-I)**



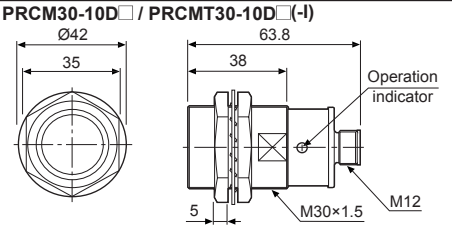
● **PRCM18-5D□ / PRCMT18-5D□(-I)**



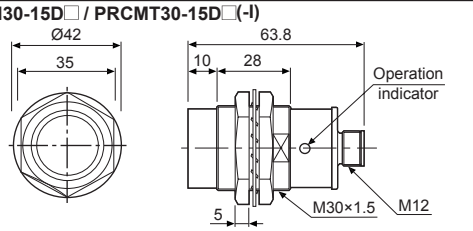
● **PRCM18-8D□ / PRCMT18-8D□(-I)**



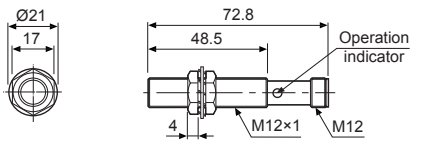
● **PRCM30-10D□ / PRCMT30-10D□(-I)**



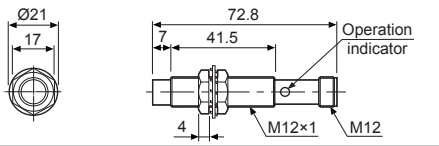
● **PRCM30-15D□ / PRCMT30-15D□(-I)**



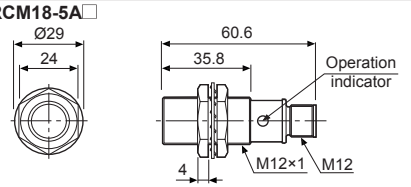
● **PRCM12-2A□**



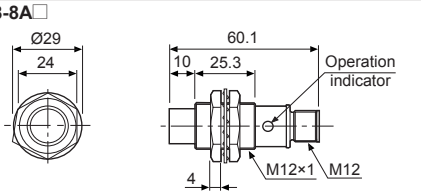
● **PRCM12-4A□**



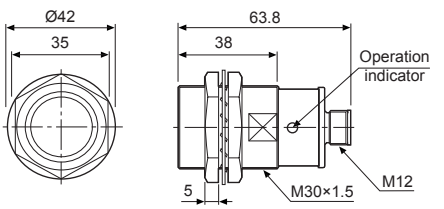
● **PRCM18-5A□**



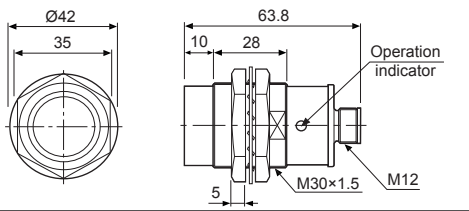
● **PRCM18-8A□**



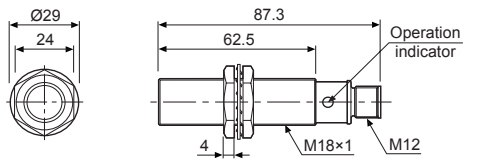
● **PRCM30-10A□**



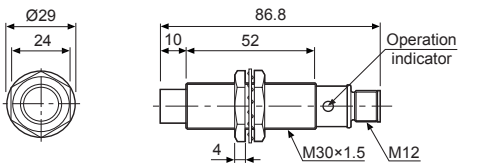
● **PRCM30-15A□**



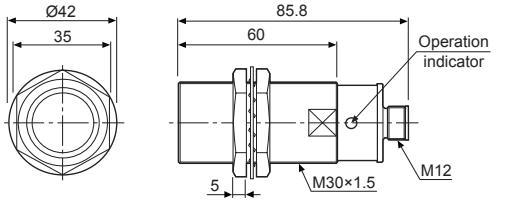
● **PRCML18-5D□ / PRCML18-5A□**



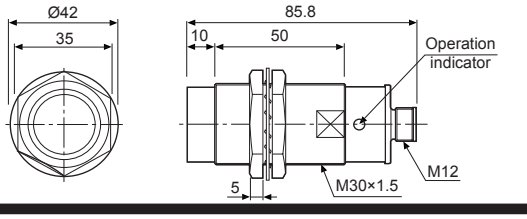
● **PRCML18-8D□ / PRCML18-8A□**



● **PRCML30-10D□ / PRCML30-10A□**

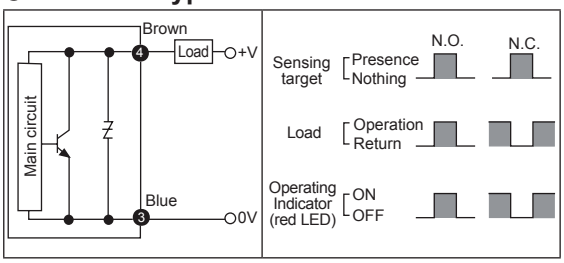


● **PRCML30-15D□ / PRCML30-15A□**



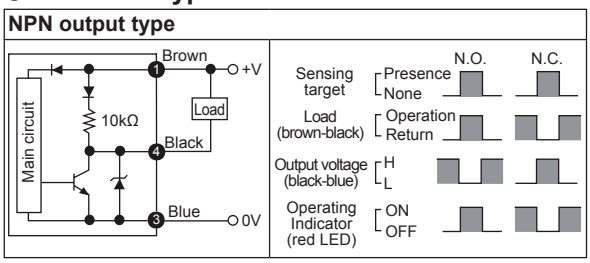
■ Control Output Diagram and Load Operation

◎ DC 2-wire type

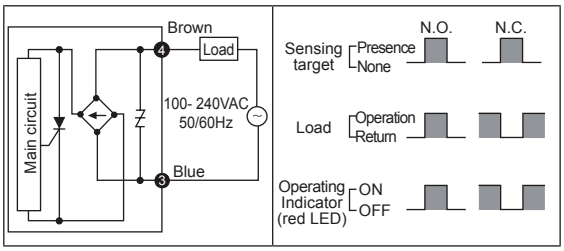


◎ DC 3-wire type

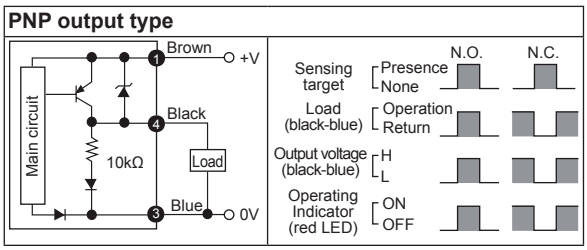
NPN output type



◎ AC 2-wire type



PNP output type

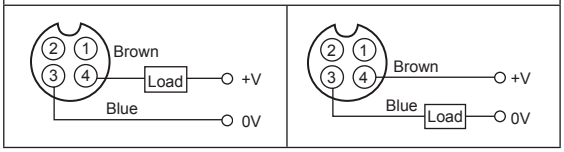


※The number in a circle is pin no. of connector.

■ Wiring Diagram

◎ DC 2-wire type (standard type)

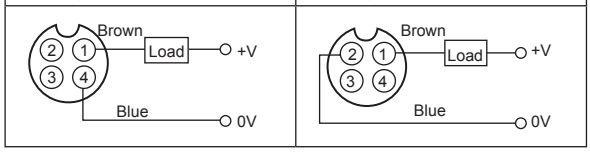
Normally Open (N.O.) / Normally Closed (N.C.)



※Pin ①, ② are not used terminals.
※For DC 3-wire type connector cable, it is available to use with black wire (12-24V DC) and blue wire (0V).

◎ DC 2-wire type (IEC standard type)

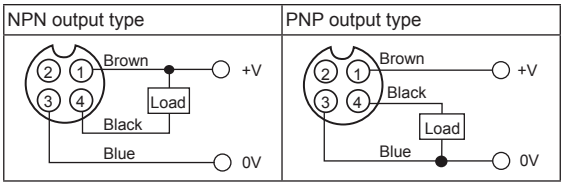
Normally Open (N.O.)	Normally Closed (N.C.)



※②,③ of N.O. type and ③,④ of N.C. type are not used terminals.
※The pin arrangement of connector applying IEC standard is being developed.
※Please attach "I" at the end of the name of standard type for purchasing the IEC standard product.
E.g.) PRCMT12-4DO-I
※The connector cable for IEC standard is being developed. Please attach "I' at the end of the name of standard type.
E.g.) CID2-2-I, CLD2-5-I

◎ DC 3-wire type

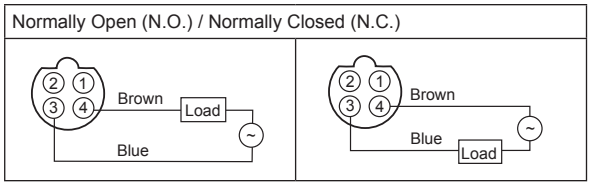
NPN output type	PNP output type



※Please fasten the cleat of connector not to shown the thread. (0.39 to 0.49N·m)

◎ AC 2-wire type

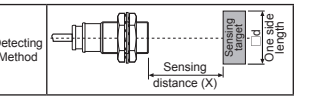
Normally Open (N.O.) / Normally Closed (N.C.)



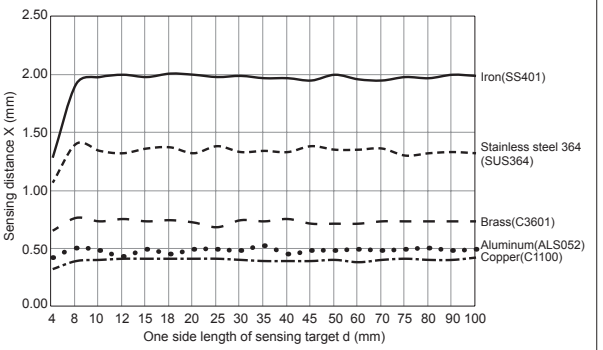
※In AC inductive type, ② and ③, ① and ④ are connected inside of the connector cable.

※Please fasten the vibration part with PTFE tape.
※Refer to the G-6 about IEC standard connector wires and specifications.

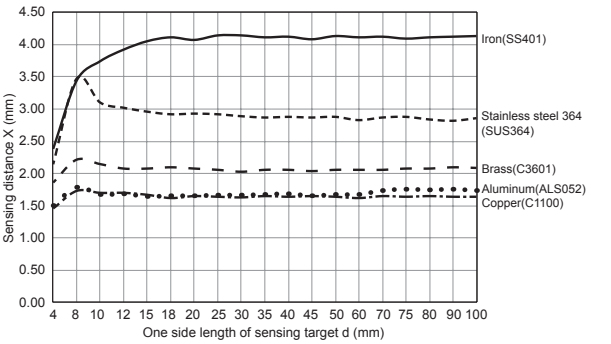
▣ Sensing Distance Feature Data by Target Material and Size



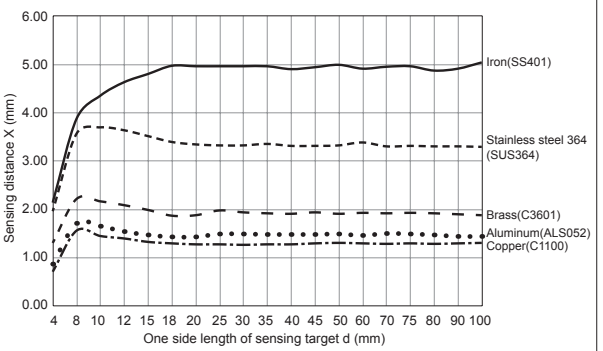
● PRCMT12-2D□, PRCM12-2A□



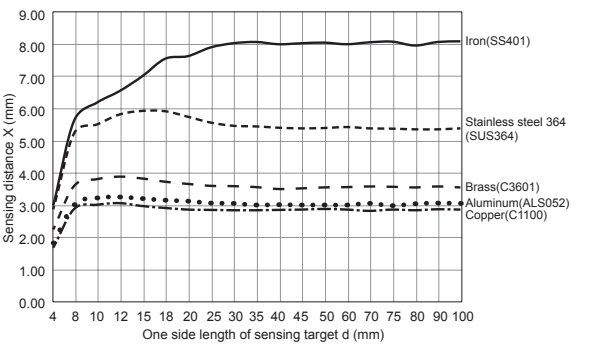
● PRCMT12-4D□, PRCM12-4A□



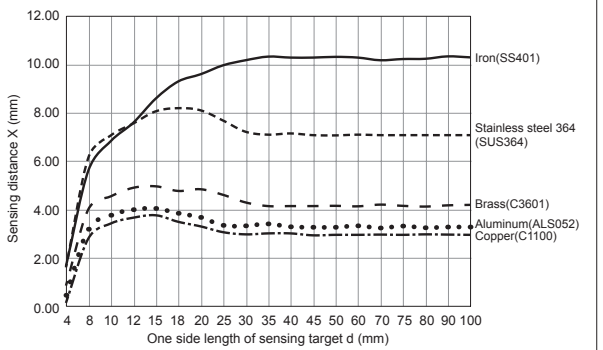
● PRCMT18-5D□, PRCM(L)18-5A□



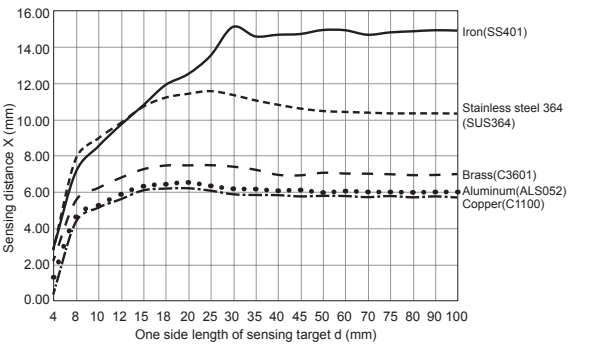
● PRCMT18-8D□, PRCM(L)18-8A□



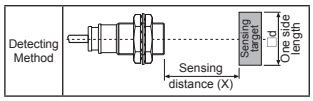
● PRCMT30-10D□, PRCM(L)30-10A□



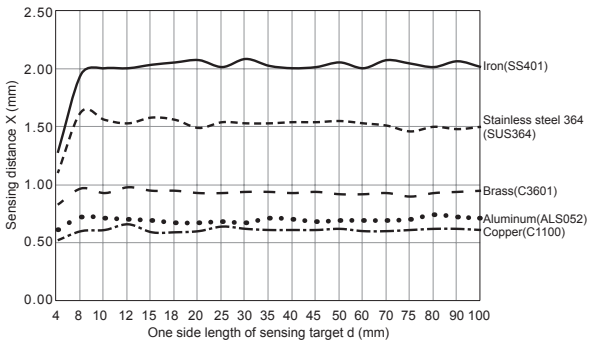
● PRCMT30-15D□, PRCM(L)30-15A□



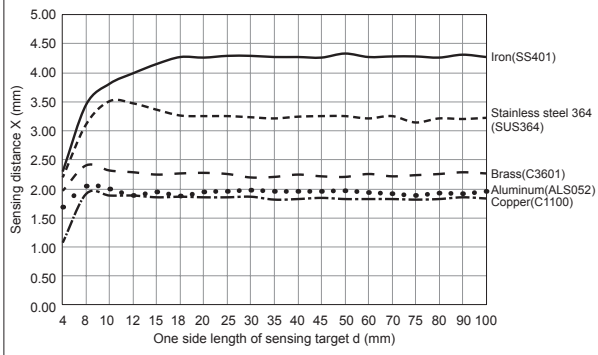
▣ Sensing Distance Feature Data by Target Material and Size



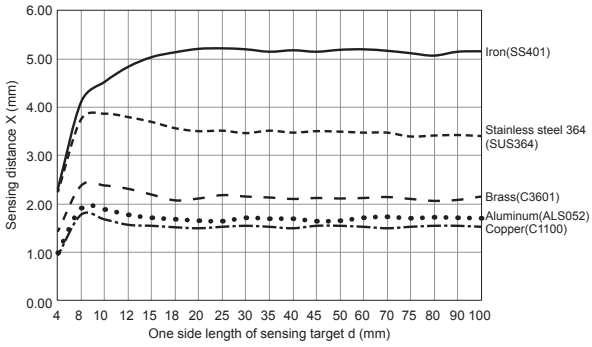
● PRCM(L)12-2D□



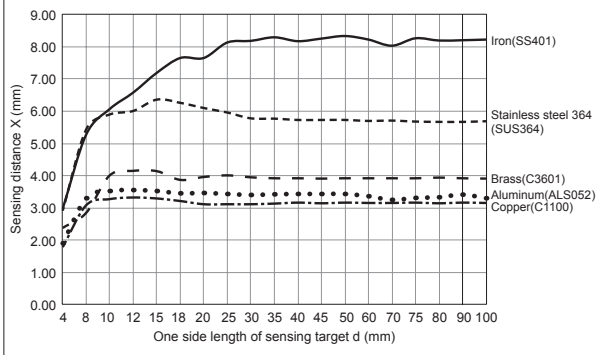
● PRCM12-4D□



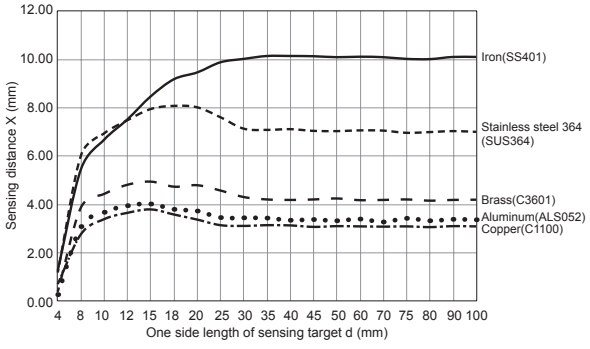
● PRCM(L)18-5D□



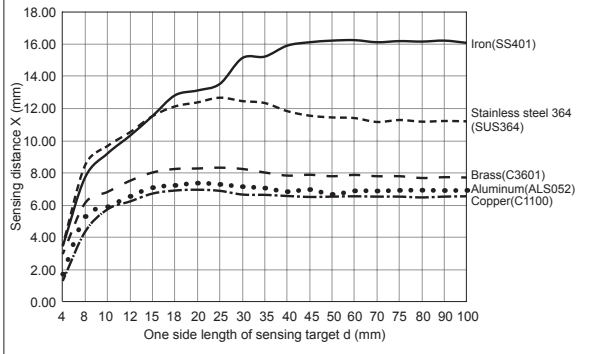
● PRCM(L)18-8D□



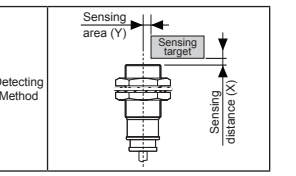
● PRCM(L)30-10D□



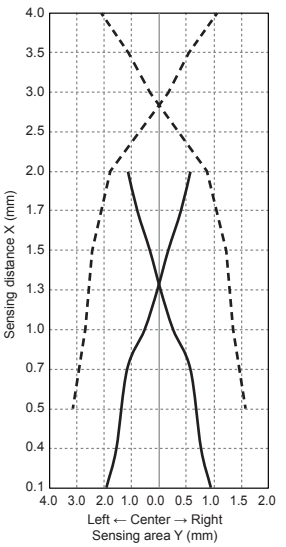
● PRCM(L)30-15D□



▣ Sensing Distance Feature Data by Parallel (Left/Right) Movement

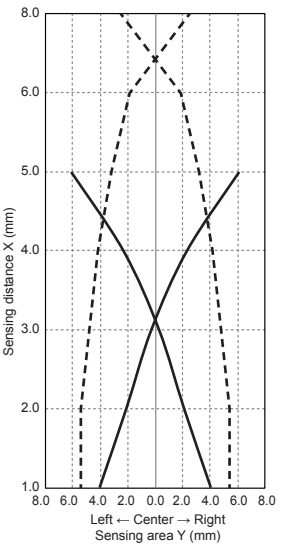


● PRCMT12-2D□/4D□ , PRCM12-2A□/4A□



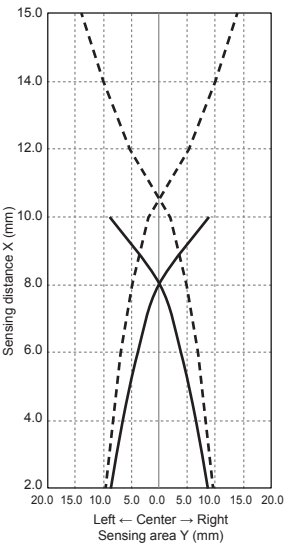
———	PRCMT12-2D□, PRCM12-2A□
- - - - -	PRCMT12-4D□, PRCM12-4A□

● PRCMT18-5D□/8D□, PRCM(L)18-5A□/8A□



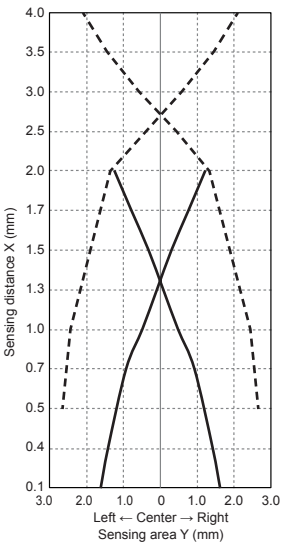
———	PRCMT18-5D□, PRCM(L)18-5A□
- - - - -	PRCMT18-8D□, PRCM(L)18-8A□

● PRCMT30-10D□/15D□ , PRCM(L)30-10A□/15A□



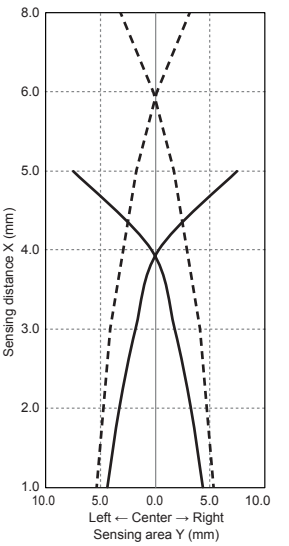
———	PRCMT30-10D□, PRCM(L)30-10A□
- - - - -	PRCMT30-15D□, PRCM(L)30-15A□

● PRCM(L)12-2D□ PRCM12-4D□



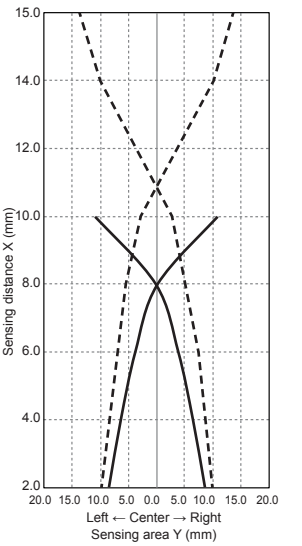
———	PRCM(L)12-2D□
- - - - -	PRCM12-4D□

● PRCM(L)18-5D□/8D□



———	PRCM(L)18-5D□
- - - - -	PRCM(L)18-8D□

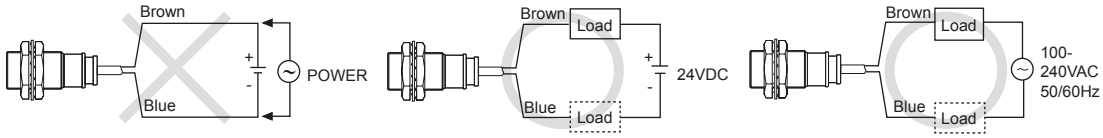
● PRCM(L)30-10D□/15D□



———	PRCM(L)30-10D□
- - - - -	PRCM(L)30-15D□

▣ Proper Usage

◎ Load connections

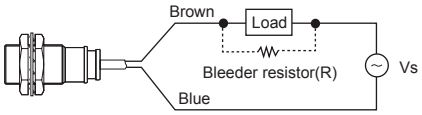


< DC 2-wire type & AC 2-wire type > < DC 2-wire type > < AC 2-wire type >

When using DC or AC 2-wire type proximity sensor, the load must be connected, otherwise internal components may be damaged. The load can be connected to either wire.

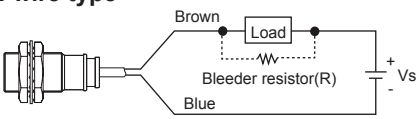
◎ Load connections

● AC 2-wire type



110VAC: Min. 20kΩ 3W
220VAC: Min. 39kΩ 10W

● DC 2-wire type



It may cause return failure of load by residual voltage.
If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

$$R \le \frac{Vs}{I}(k\Omega) \qquad P > \frac{Vs^2}{R}(W)$$

[I:Action current of load, R:Bleeder resistance, P:Permissible power]

Please make the current on proximity sensor smaller than the return current of load by connecting a bleeder resistor in parallel.

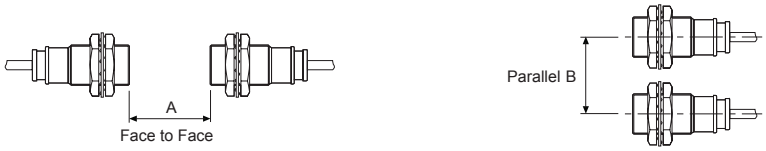
※W value of Bleeder resistor should be bigger for proper heat dissipation.

$$R \le \frac{Vs}{Io\text{-}Ioff}(k\Omega) \qquad P > \frac{Vs^2}{R}(W)$$

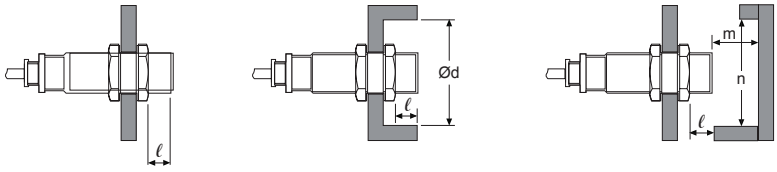
[Vs: Power supply, Io: Min. action current of proximity sensor,
Ioff: Return current of load, P : Number of Bleeder resistance watt]

◎ Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to keep a minimum distance between the two sensors as below chart indicates.



When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.



(unit: mm)

Item \ Model	PRCMT12-2D□ PRCM12-2D□ PRCM12-2A□	PRCMT12-4D□ PRCM12-4D□ PRCM12-4A□	PRCMT18-5D□ PRCM(L)18-5D□ PRCM(L)18-5A□	PRCMT18-8D□ PRCM(L)18-8D□ PRCM(L)18-8A□	PRCMT30-10D□ PRCM(L)30-10D□ PRCM(L)30-10A□	PRCMT30-15D□ PRCM(L)30-15D□ PRCM(L)30-15A□
A	12	24	30	48	60	90
B	24	36	36	54	60	90
ℓ	0	11	0	14	0	15
Ød	12	36	18	54	30	90
m	6	12	15	24	30	45
n	18	36	27	54	45	90