Cylindrical Long Sensing Distance, Connector Type Proximity Sensor

▣ Features

- **Long sensing distance (1.5 to 2 times longer sensing distance guaranteed compared to existing models)**
- Advanced durability as comprehensive existing case and rear cap structure
- Shorten the time of maintenance
- Improved the noise immunity with dedicated IC
- Built-in surge protection, reverse polarity protection, over-current protection circuit
- Red LED operation indicator
- IP67 protection structure (IEC standard)



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

CE

▣ Specifications

● DC 2-wire type

Model		PRDCMT12-4DO PRDCMT12-4DC PRDCMT12-4DO-I PRDCMT12-4DC-I	PRDCMT12-8DO PRDCMT12-8DC PRDCMT12-8DO-I PRDCMT12-8DC-I	PRDCMT18-7DO PRDCMT18-7DC PRDCMT18-7DO-I PRDCMT18-7DC-I PRDCMLT18-7DO PRDCMLT18-7DC PRDCMLT18-7DO-I PRDCMLT18-7DC-I	PRDCMT18-14DO PRDCMT18-14DC PRDCMT18-14DO-I PRDCMT18-14DC-I PRDCMLT18-14DO PRDCMLT18-14DC PRDCMLT18-14DO-I PRDCMLT18-14DC-I	PRDCMT30-15DO PRDCMT30-15DC PRDCMT30-15DO-I PRDCMT30-15DC-I PRDCMLT30-15DO PRDCMLT30-15DC PRDCMLT30-15DO-I PRDCMLT30-15DC-I	PRDCMT30-25DO PRDCMT30-25DC PRDCMT30-25DO-I PRDCMT30-25DC-I PRDCMLT30-25DO PRDCMLT30-25DC PRDCMLT30-25DO-I PRDCMLT30-25DC-I
Sensing distance		4mm	8mm	7mm	14mm	15mm	25mm
Hysteresis		Max. 10% of sensing distance					
Standard sensing target		12×12×1mm (iron)	25×25×1mm (iron)	20×20×1mm (iron)	40×40×1mm (iron)	45×45×1mm (iron)	75×75×1mm (iron)
Setting distance		0 to 2.8mm	0 to 5.6mm	0 to 4.9mm	0 to 9.8mm	0 to 10.5mm	0 to 17.5mm
Power supply (operating voltage)		12-24VDC⎓ (10-30VDC⎓)					
Leakage current		Max. 0.6mA					
Response frequency※1		450Hz	400Hz	250Hz	200Hz	100Hz	100Hz
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 1 minute					
Vibration		1mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours					
Shock		500m/s² (approx. 50G) in each X, Y, Z direction 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 circuit					
Material		Case/Nut: Nickel plated brass, Washer: Nickel plated iron, Sensing surface: Heat-resistant Acrylonitrile butadiene styrene					
Approval		CE					
Protection structure		IP67 (IEC standard)					
Weight※2		Approx. 38g (approx. 26g)		PRDCMT: Approx. 60g (approx. 48g) PRDCMLT: Approx. 78g (approx. 66g)		PRDCMT: Approx. 154g (approx. 142g) PRDCMLT: 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 is for unit only.
※Environment resistance is rated at no freezing or condensation.

▣ Specifications

● DC 3-wire type

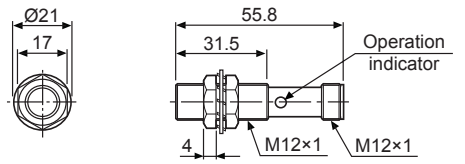
Model	PRDCM12-4DN PRDCM12-4DP PRDCM12-4DN2 PRDCM12-4DP2 PRDCML12-4DN PRDCML12-4DP PRDCML12-4DN2 PRDCML12-4DP2	PRDCM12-8DN PRDCM12-8DP PRDCM12-8DN2 PRDCM12-8DP2 PRDCML12-8DN PRDCML12-8DP PRDCML12-8DN2 PRDCML12-8DP2	PRDCM18-7DN PRDCM18-7DP PRDCM18-7DN2 PRDCM18-7DP2 PRDCML18-7DN PRDCML18-7DP PRDCML18-7DN2 PRDCML18-7DP2	PRDCM18-14DN PRDCM18-14DP PRDCM18-14DN2 PRDCM18-14DP2 PRDCML18-14DN PRDCML18-14DP PRDCML18-14DN2 PRDCML18-14DP2	PRDCM30-15DN PRDCM30-15DP PRDCM30-15DN2 PRDCM30-15DP2 PRDCML30-15DN PRDCML30-15DP PRDCML30-15DN2 PRDCML30-15DP2	PRDCM30-25DN PRDCM30-25DP PRDCM30-25DN2 PRDCM30-25DP2 PRDCML30-25DN PRDCML30-25DP PRDCML30-25DN2 PRDCML30-25DP2
Sensing distance	4mm	8mm	7mm	14mm	15mm	25mm
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm (iron)	25×25×1mm (iron)	20×20×1mm (iron)	40×40×1mm (iron)	45×45×1mm (iron)	75×75×1mm (iron)
Setting distance	0 to 2.8mm	0 to 5.6mm	0 to 4.9mm	0 to 9.8mm	0 to 10.5mm	0 to 17.5mm
Power supply (operating voltage)	12-24VDC⎓ (10-30VDC⎓)					
Current consumption	Max. 10mA					
Response frequency※1	500Hz	400Hz	300Hz	200Hz	100Hz	100Hz
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 1 minute					
Vibration	1mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours					
Shock	500m/s² (approx. 50G) in each X, Y, Z direction 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, Reverse polarity protection circuit, Over-current protection circuit					
Protection structure	IP67 (IEC standard)					
Material	Case/Nut: Nickel plated brass, Washer: Nickel plated iron, Sensing surface: Heat-resistant Acrylonitrile butadiene styrene					
Approval	CE					
Unit Weight	PRDCM: Approx. 26g PRDCML: Approx. 34g		PRDCM: Approx. 48g PRDCML: Approx. 66g		PRDCM: Approx. 142g PRDCML: 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.
※Environment resistance is rated at no freezing or condensation.

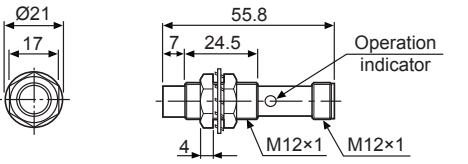
▣ Dimensions

(unit: mm)

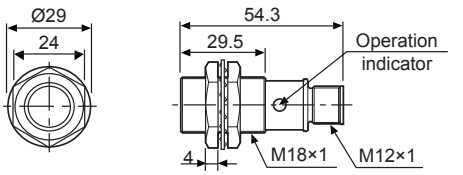
● PRDCM(T)12-4D□



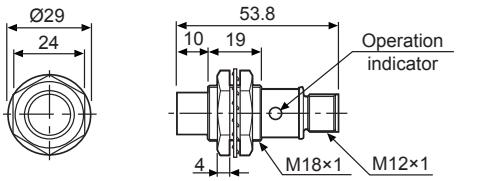
● PRDCM(T)12-8D□



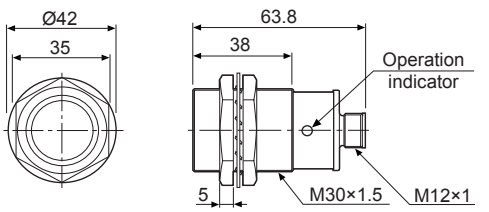
● PRDCM(T)18-7D□



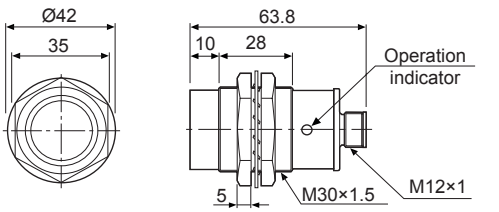
● PRDCM(T)18-14D□



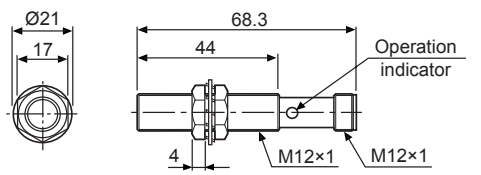
● PRDCM(T)30-15D□



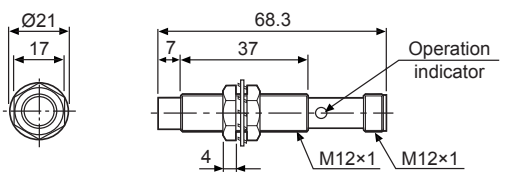
● PRDCM(T)30-25D□



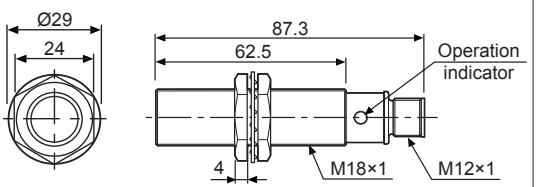
● PRDCML12-4D□



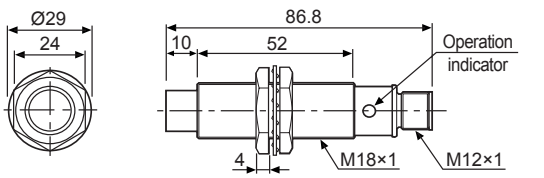
● PRDCML12-8D□



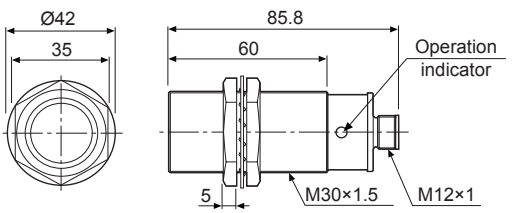
● PRDCML(T)18-7D□



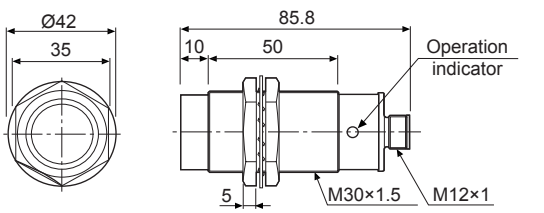
● PRDCML(T)18-14D□



● PRDCML(T)30-15D□

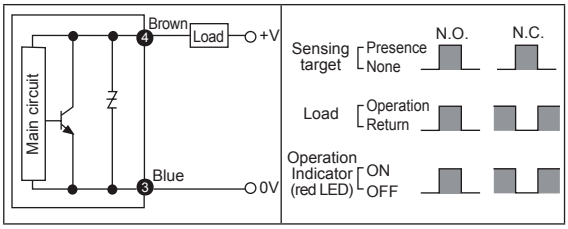


● PRDCML(T)30-25D□



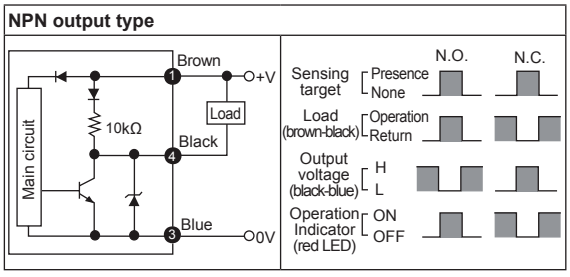
▣ Control Output Diagram and Load Operation

◎ DC 2-wire type

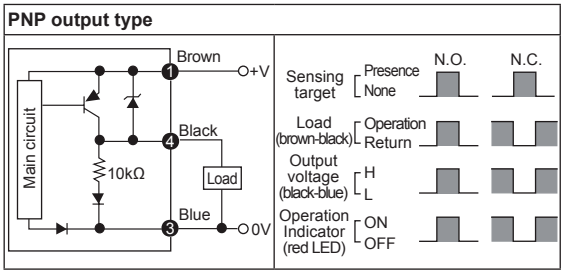


◎ DC 3-wire type

NPN output type



PNP output type

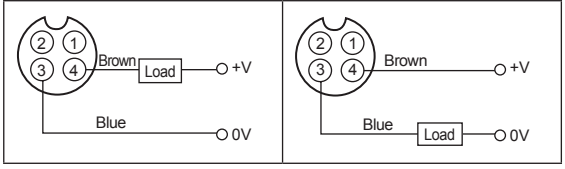


※The number in a circle is pin no. of connector.

▣ Wiring Diagram

◎ DC 2-wire type (standard type)

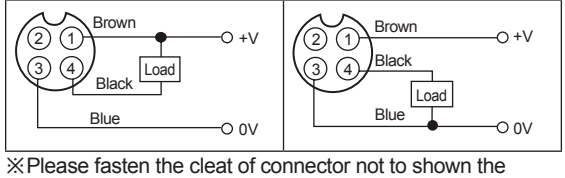
Normally Open (N.O.) / Normally Closed (N.C.)



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

◎ DC 3-wire type

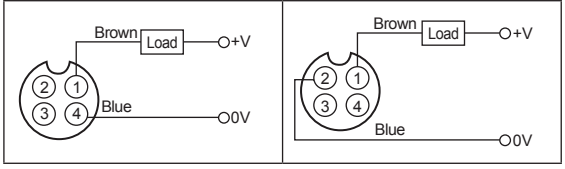
NPN output type | PNP output type



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

◎ DC 2-wire type (IEC standard type)

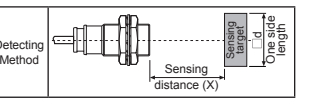
Normally Open (N.O.) | Normally Closed (N.C.)



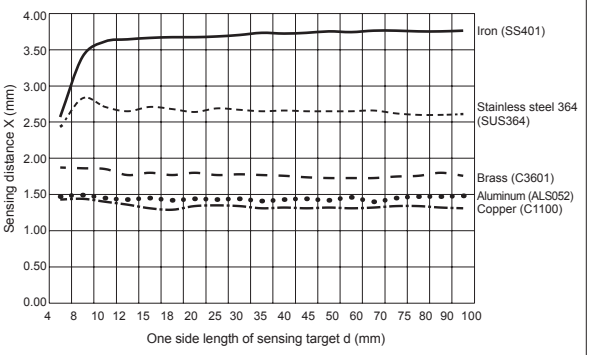
※②,③ of N.O. type and ③,④ of N.C. type are not used terminals.
※The pin arrangement of connector applying IEC standard is being developed.
※Please attach "I" at the end of the name of standard type for purchasing the IEC standard product.
E.g.)PRDCMT12-4DO-I
※The connector cable for IEC standard is being developed. Please attach "I' at the end of the name of standard type.
E.g.)CID2-2-I, CLD2-5-I

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

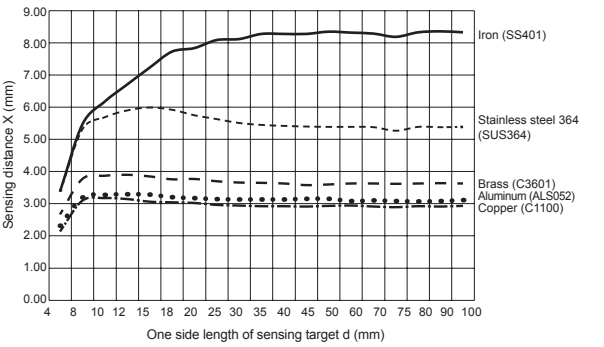
▣ Sensing Distance Feature Data by Target Material and Size



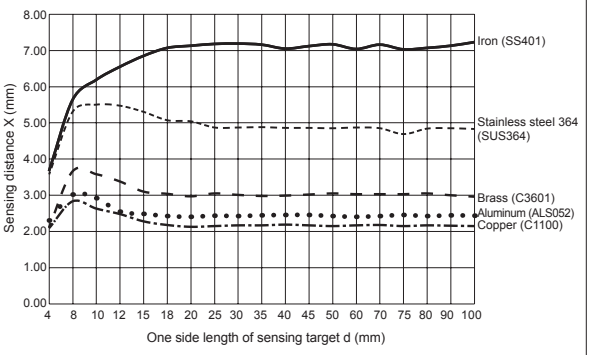
● PRDCMT12-4D□



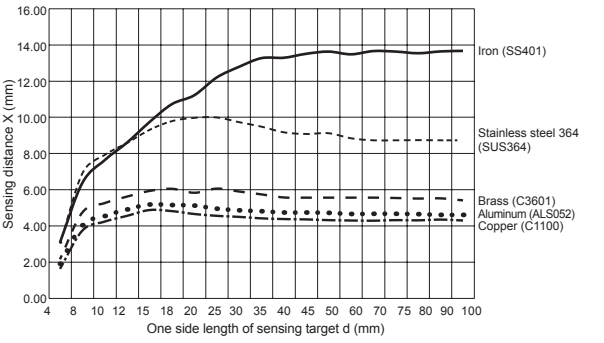
● PRDCMT12-8D□



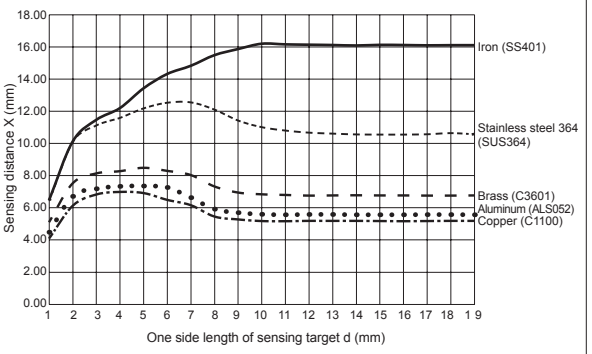
● PRDCM(L)T18-7D□



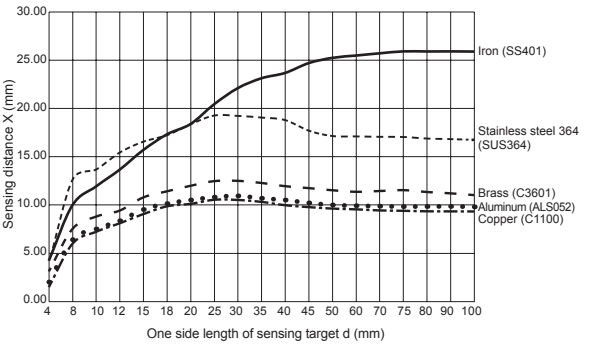
● PRDCM(L)T18-14D□



● PRDCM(L)T30-15D□

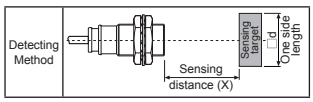


● PRDCM(L)T30-25D□

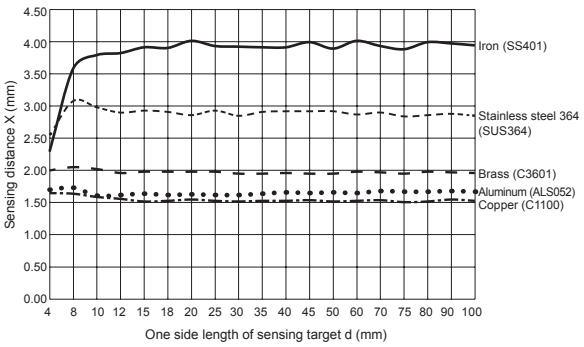


Cylindrical Long Sensing Distance, Connector Type

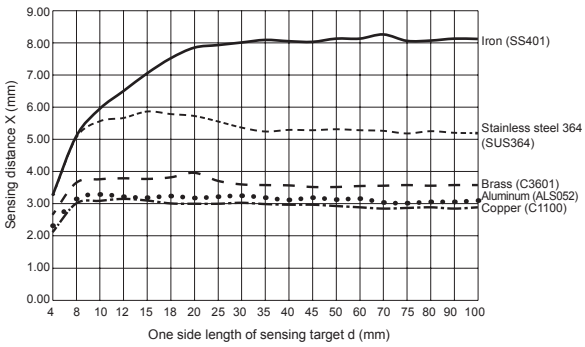
▣ Sensing Distance Feature Data by Target Material and Size



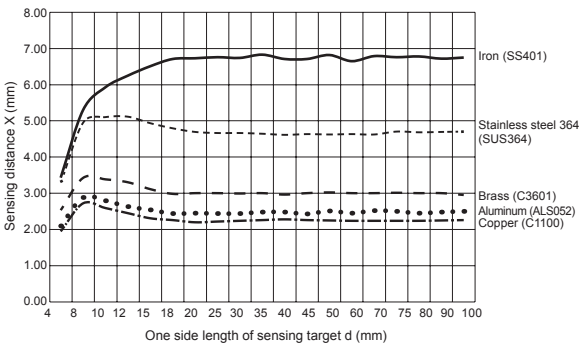
● PRDCM(L)12-4D□



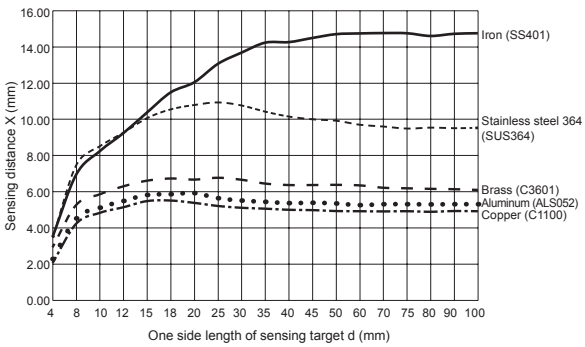
● PRDCM(L)12-8D□



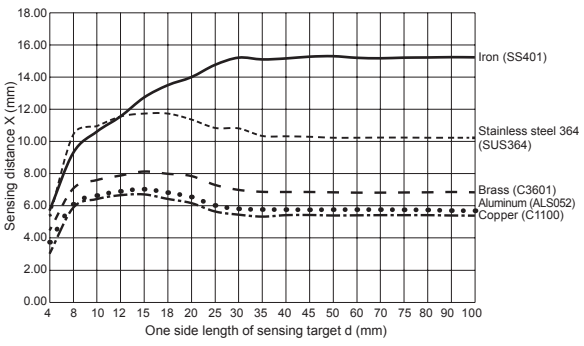
● PRDCM(L)18-7D□



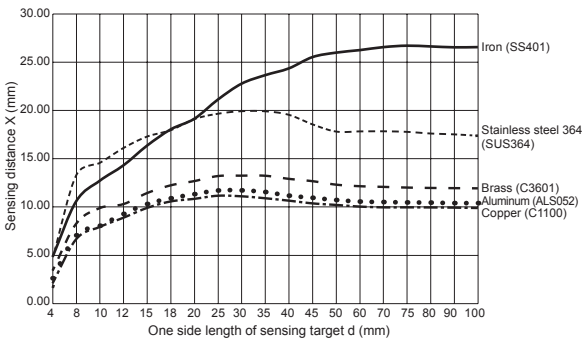
● PRDCM(L)18-14D□



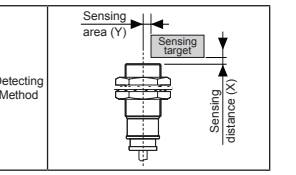
● PRDCM(L)30-15D□



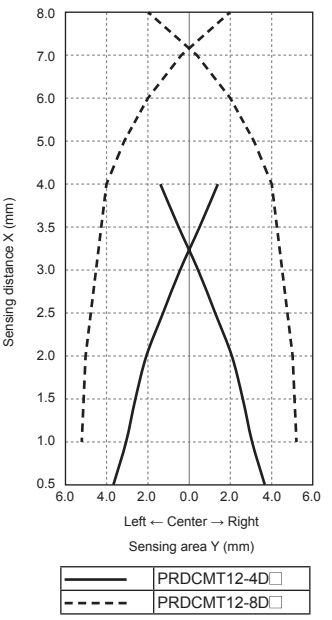
● PRDCM(L)30-25D□



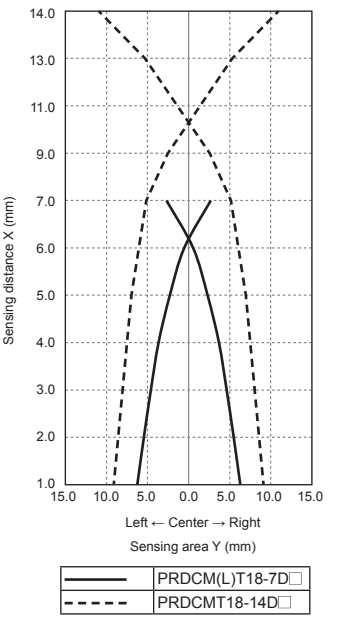
▣ Sensing Distance Feature Data by Parallel (Left/Right) Movement



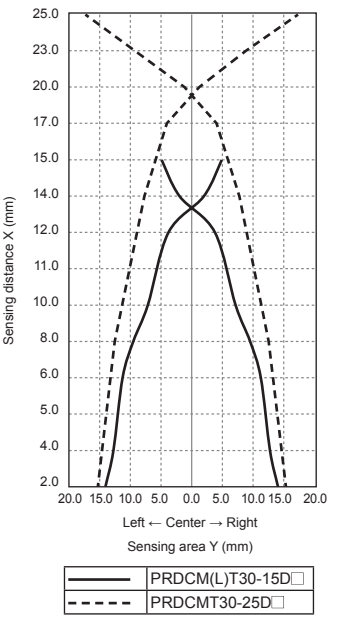
● PRDCMT12-4D□/8D□



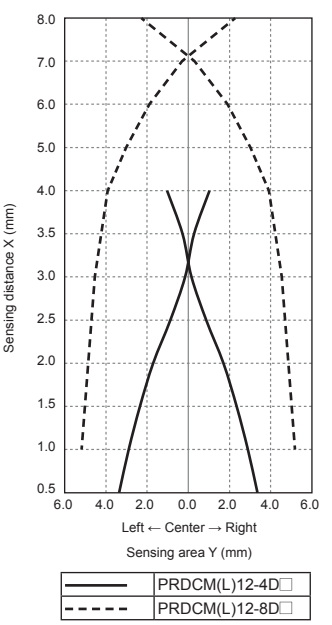
● PRDCM(L)T18-7D□/14D□



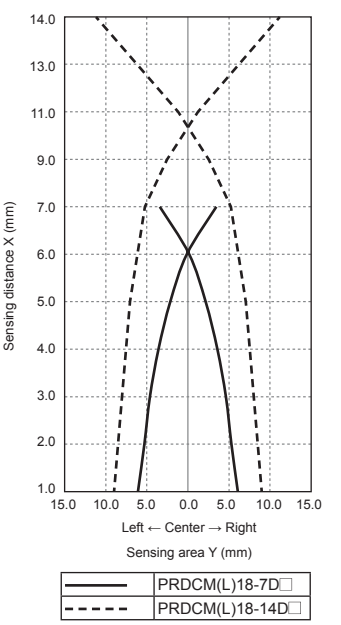
● PRDCM(L)T30-15D□/25D□



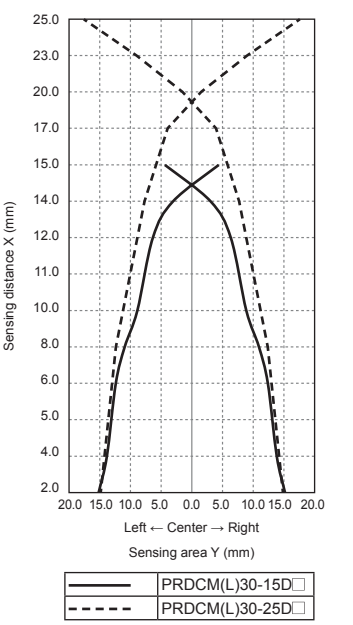
● PRDCM(L)12-4D□/8D□



● PRDCM(L)18-7D□/14D□

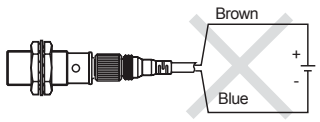


● PRDCM(L)30-15D□/25D□

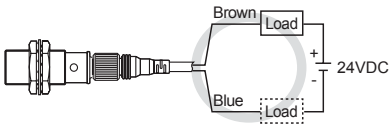


▣ Proper Usage

◎ Load connections



< DC 2-wire type >

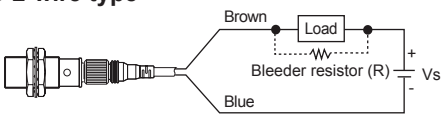


< DC 2-wire type >

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

◎ In case of the load current is small

● 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.

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

[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.

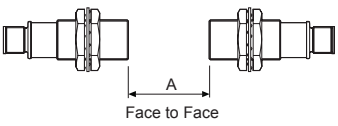
※W value of Bleeder resistor should be bigger for proper heat dissipation.

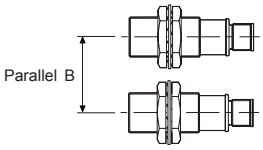
$$R \leq \frac{Vs}{Io\text{-}Ioff}(k\Omega) \qquad P > \frac{Vs^2}{R}(W)$$

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

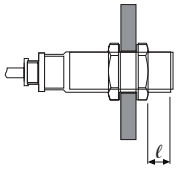
◎ Mutual-interference & Influence by surrounding metals

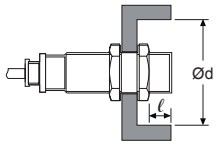
When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.

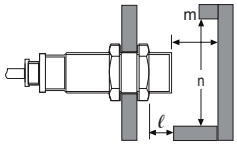




When sensors are mounted on metallic panel, you must prevent the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.







(unit: mm)

Model / Item	PRDCMT12-4D□ PRDCM(L)12-4D□	PRDCMT12-8D□ PRDCM(L)12-8D□	PRDCM(L)T18-7D□ PRDCM(L)18-7D□	PRDCM(L)T18-14D□ PRDCM(L)18-14D□	PRDCM(L)T30-15D□ PRDCM(L)30-15D□	PRDCM(L)T30-25D□ PRDCM(L)30-25D□
A	24	48	42	84	90	150
B	24	36	36	54	60	90
ℓ	0	11	0	14	0	15
Ød	12	36	18	54	30	90
m	12	24	21	42	45	75
n	18	36	27	54	45	90