Cylindrical, Long Sensing Distance, Spatter-Resistance, Cable Type

▣ Features

- Long sensing distance
  (1.5 to 2 times longer sensing distance guaranteed compared to existing models)
- Prevent malfunction due to welding spatter with PEFE coating
- Improved the noise immunity with dedicated IC
- Built-in surge protection, output short over current protection circuit
- Red LED operation indication
- IP67 protection structure (IEC standard)
- Replaceable for spatter-resistance type limit switches



⚠ Please read "Safety Considerations" in the instruction manual before using.

CE

▣ The Characteristic of Spatter-Resistance Type

The hot arc from arc welding machine is adhesive even with metals or plastics.
Therefore, normal proximity sensor might have malfunction even though there are no sensing object if the arcs are put on the sensing surface. The arcs are not adhered on the sensing part of the spatter-resistance type proximity sensor as the part is coated with PEFE against thermal resistance.
Also, the protection cover sold optionally has the same function.

▣ Specifications

● DC 2-wire type

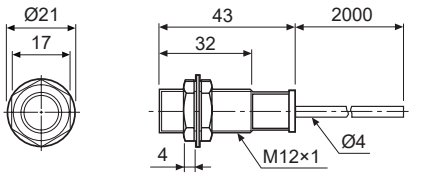
Model		PRDAT12-4DO PRDAT12-4DC PRDAT12-4DO-V PRDAT12-4DC-V	PRDAT18-7DO PRDAT18-7DC PRDAT18-7DO-V PRDAT18-7DC-V	PRDAT30-15DO PRDAT30-15DC PRDAT30-15DO-V PRDAT30-15DC-V
Diameter of the sensing side		12mm	18mm	30mm
Sensing distance		4mm	7mm	15mm
Installation		Shield (flush)		
Hysteresis		Max. 10% of sensing distance		
Standard sensing target		12×12×1mm (iron)	20×20×1mm (iron)	45×45×1mm (iron)
Setting distance		0 to 2.8mm	0 to 4.9mm	0 to 10.5mm
Power supply (operating voltage)		12-24VDC⎓ (10-30VDC⎓)		
Leakage current		Max. 0.6mA		
Response frequency※1		450Hz	250Hz	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 min		
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, output short over current protection circuit		
Protection structure		IP67 (IEC standard)		
Cable		Ø4mm, 2-wire, 2m, M12 connector	Ø5mm, 2-wire, 2m, M12 connector	
		AWG22, Core diameter: 0.8mm, Number of cores: 60, Insulator diameter: Ø1.25mm		
Material		Case/Nut: PEFE coated brass, Washer: PEFE coated iron, Sensing surface: PEFE, Standard cable (black): Polyvinyl chloride (PVC), Oil resistant cable (gray): Oil resistant polyvinyl chloride (PVC)		
Approval		CE		
Weight※2		Approx. 84g (approx. 72g)	Approx. 134g (approx. 122g)	Approx. 221g (approx. 184g)

※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.

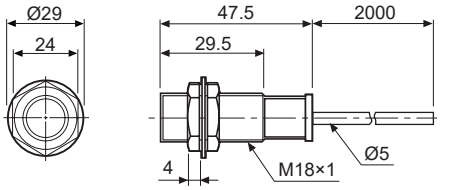
▣ Dimensions

(unit: mm)

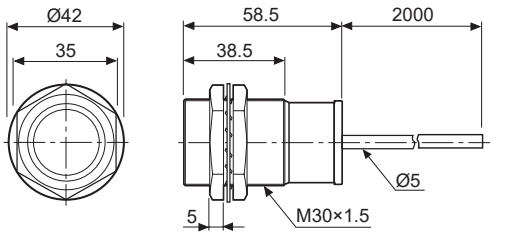
● **PRDAT12-4D□**



● **PRDAT18-7D□**

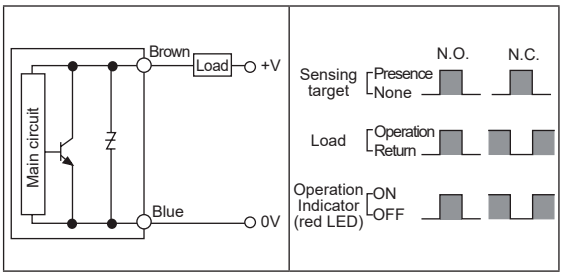


● **PRDAT30-15D□**



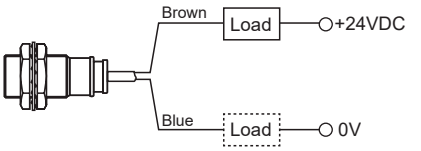
▣ Control Output Diagram and Load Operation

◎ DC 2-wire type



▣ Connections

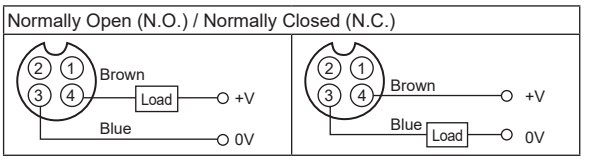
◎ DC 2-wire type



※For using DC 2-wire type, connect load before suppling the power and using this unit, or inner element may be damaged.
※The load can be connected to either wire.

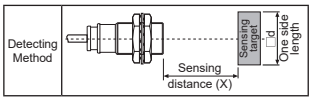
▣ Wiring Diagram

◎ DC 2-wire type (standard type)

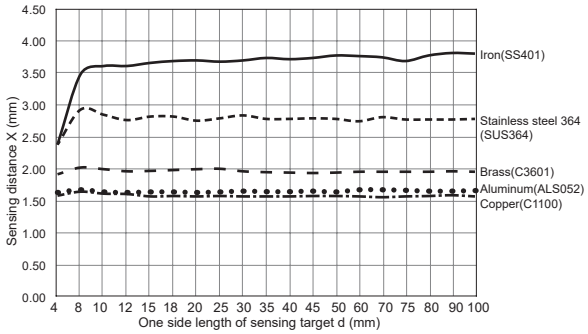


※Pin ①, ② are not used terminals.
※When using DC 3-wire type of connector cable, black (12-24VDC) and blue (0V) cables can be used.

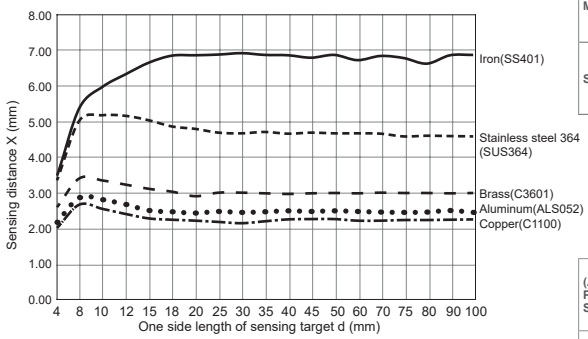
▣ Sensing Distance Feature Data by Target Material and Size



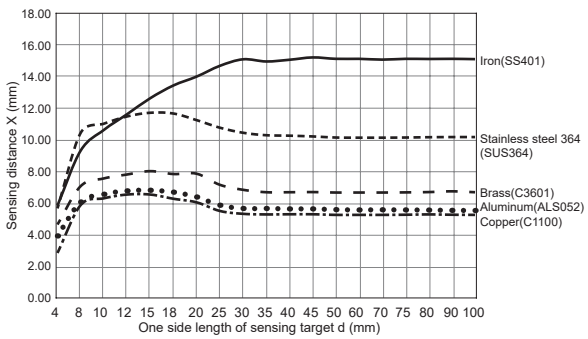
● PRDAT12-4D□



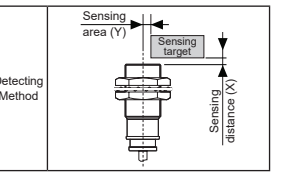
● PRDAT18-7D□



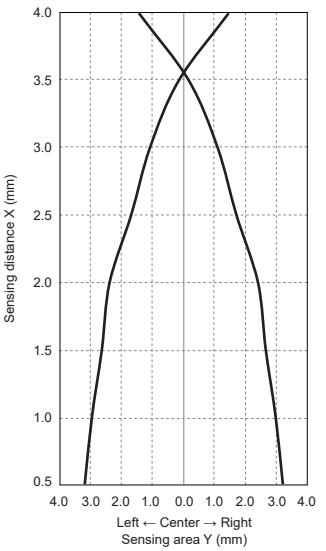
● PRDAT30-15D□



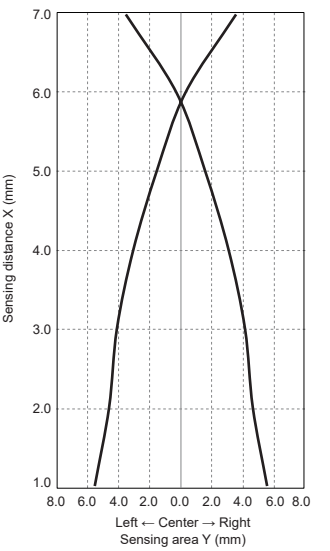
▣ Sensing Distance Feature Data by Parallel (Left/Right) Movement



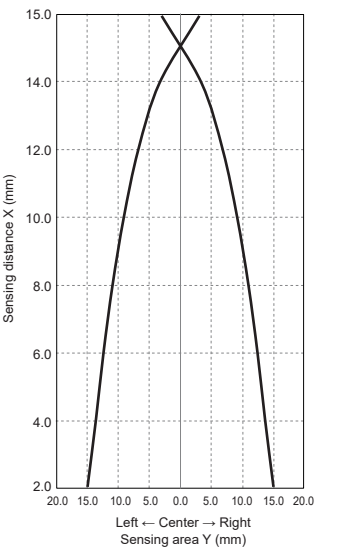
● PRDAT12-4D□



● PRDAT18-7D□

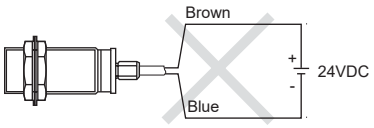


● PRDAT30-15D□

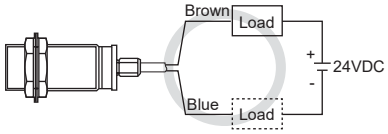


▣ Proper Usage

◎ Load connections



< DC 2-wire type >

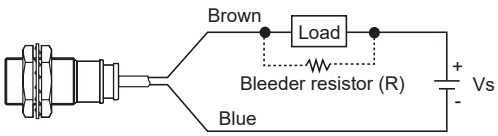


< DC 2-wire type >

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



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.

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.

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

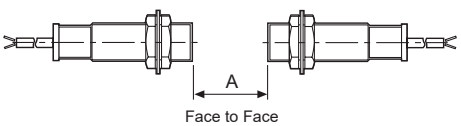
[I: Action current of load, R: Bleeder resistance, P: Permissible power]

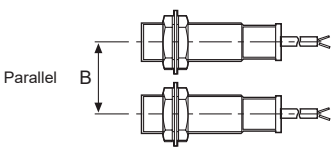
$$R \leq \frac{Vs}{Io\text{-}Ioff}(k\Omega) \qquad P > \frac{Vs^2}{R}(W)$$

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

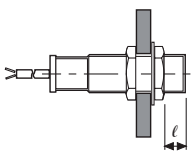
◎ Mutual-interference & Influence by surrounding metals

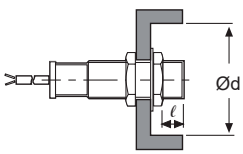
When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to keep a minimum distance between the two sensors as below chart indicates.

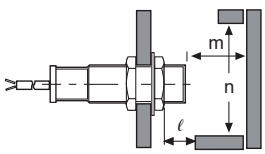




When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.







(unit: mm)

Item \ Model	PRDAT12-4D□	PRDAT18-7D□	PRDAT30-15D□
A	24	42	90
B	24	36	60
ℓ	0	0	0
Ød	12	18	30
m	12	21	45
n	18	27	45