

Cylindrical, Long Sensing Distance, Spatter-Resistance, Cable Connector type, Proximity Sensor

■ Features

- Long sensing distance
(1.5 to 2 times longer sensing distance guaranteed compared to existing models)
- Prevent malfunction due to welding spatter with PTFE coating
- Improved the noise immunity with dedicated IC
- Built-in surge protection, 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 operation manual before using.



■ 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 PTFE against thermal resistance. Also, the protection cover sold optionally has the same function.

■ Specifications

• DC 2-wire type

| Model | PRDAWT12-4DO PRDAWT12-4DC PRDAWT12-4DO-I PRDAWT12-4DC-I | PRDAWT18-7DO PRDAWT18-7DC PRDAWT18-7DO-I PRDAWT18-7DC-I PRDAWT18-7DO-IV PRDAWT18-7DC-IV | PRDAWT30-15DO PRDAWT30-15DC PRDAWT30-15DO-I PRDAWT30-15DC-I PRDAWT30-15DO-IV |
|----------------------------------|--|--|--|
| Sensing distance | 4mm | 7mm | 15mm |
| 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°C | | |
| 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/s ² (approx. 50G) in each X, Y, Z directions for 3 times | | |
| Indicator | Operation indicator: Red LED | | |
| Environment | Ambient temperature | -25 to 70°C, storage: -30 to 80°C | |
| | Ambient humidity | 35 to 95%RH, storage: 35 to 95%RH | |
| Protection circuit | Surge protection circuit, Over-current protection circuit | | |
| Protection structure | IP67 (IEC standard) | | |
| Cable | Ø4mm, 2-wire, 300mm, M12 connector Ø5mm, 2-wire, 300mm, M12 connector (AWG22, Core diameter: 0.8mm, Number of cores: 60, Insulator diameter: Ø1.25mm) | | |
| Material | Case/Nut: PTFE coated brass, Washer: PTFE coated iron, Sensing surface: PTFE, Standard cable (black): Polyvinyl chloride (PVC), Oil resistant cable (gray): Oil resistant polyvinyl chloride (PVC) | | |
| Approval | CE | | |
| Weight*2 | Approx. 54g (approx. 42g) | Approx. 77g (approx. 65g) | Approx. 155g (approx. 143g) |

*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.

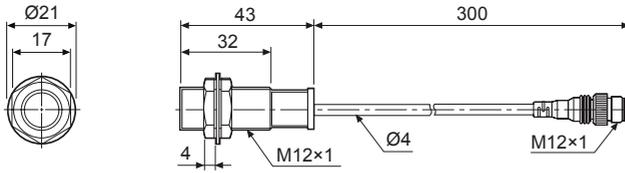
| | |
|-----|---|
| (A) | Photoelectric Sensors |
| (B) | Fiber Optic Sensors |
| (C) | Door/Area Sensors |
| (D) | Proximity Sensors |
| (E) | Pressure Sensors |
| (F) | Rotary Encoders |
| (G) | Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets |
| (H) | Temperature Controllers |
| (I) | SSRs / Power Controllers |
| (J) | Counters |
| (K) | Timers |
| (L) | Panel Meters |
| (M) | Tacho / Speed / Pulse Meters |
| (N) | Display Units |
| (O) | Sensor Controllers |
| (P) | Switching Mode Power Supplies |
| (Q) | Stepper Motors & Drivers & Controllers |
| (R) | Graphic/ Logic Panels |
| (S) | Field Network Devices |
| (T) | Software |

PRDAW Series

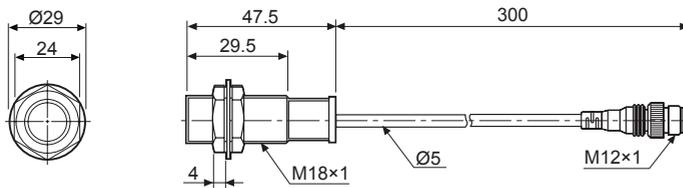
■ Dimensions

(unit: mm)

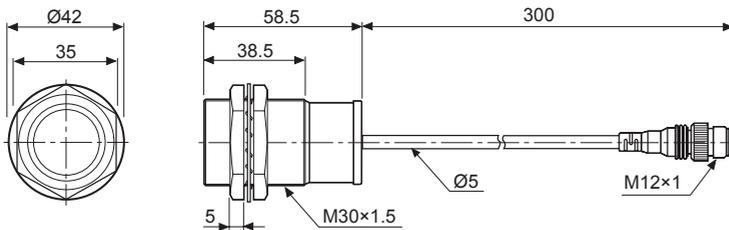
● PRDAWT12-4D



● PRDAWT18-7D

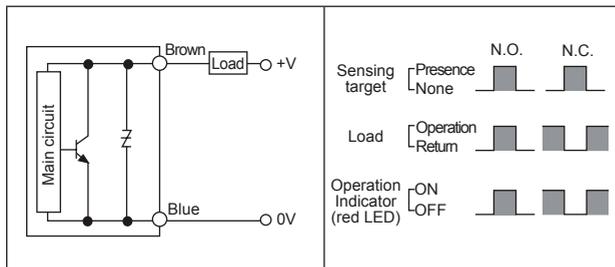


● PRDAWT30-15D



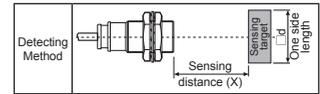
■ Control Output Diagram and Load Operation

◎ DC 2-wire type

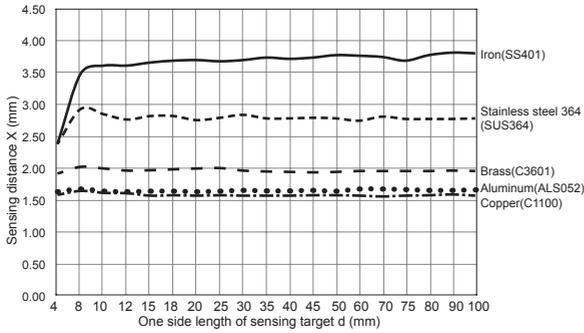


Cylindrical, Long Sensing Distance, Spatter-Resistance, Cable Connector type

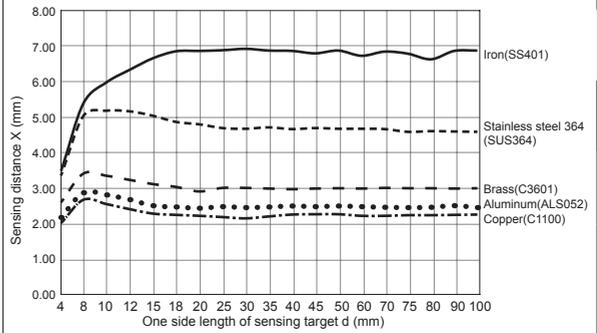
■ Sensing Distance Feature Data by Target Material and Size



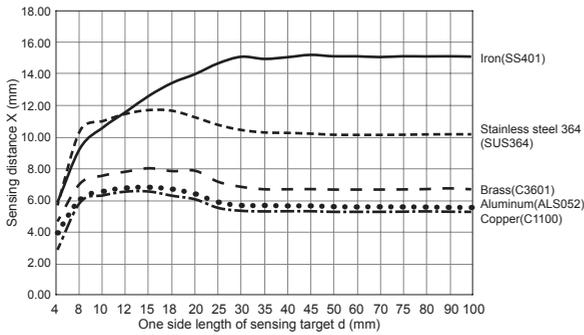
● PRDAWT12-4D □



● PRDAWT18-7D □



● PRDAWT30-15D □



(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/
Connector Cables/
Sensor Distribution
Boxes/Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

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(O) Sensor Controllers

(P) Switching Mode Power Supplies

(Q) Stepper Motors & Drivers & Controllers

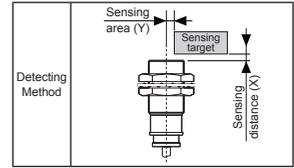
(R) Graphic/ Logic Panels

(S) Field Network Devices

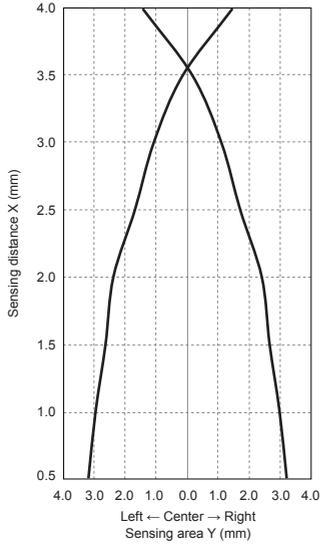
(T) Software

PRDAW Series

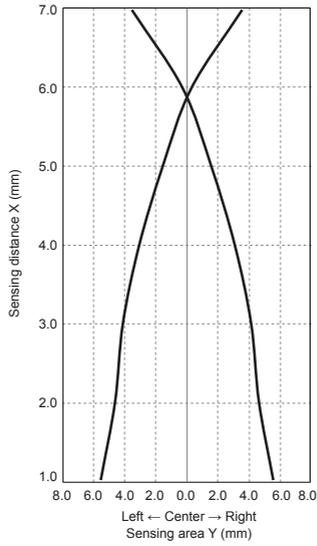
■ Sensing Distance Feature Data by Parallel (Left/Right) Movement



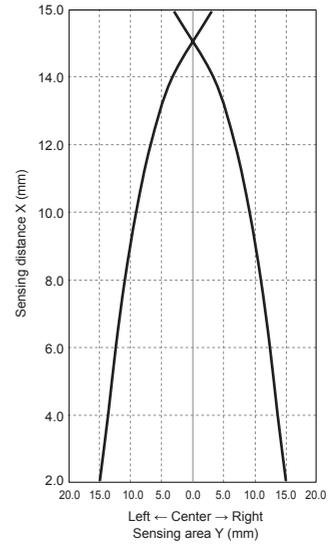
● PRDAWT12-4D □



● PRDAWT18-7D □



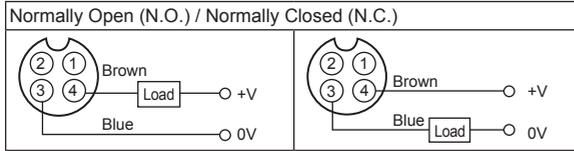
● PRDAWT30-15D □



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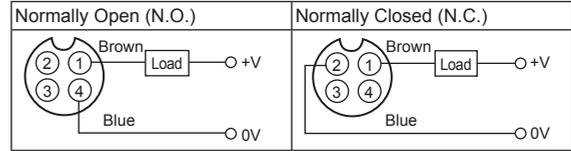
■ Wiring Diagram

◎ 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.

◎ DC 2-wire type (IEC standard type)

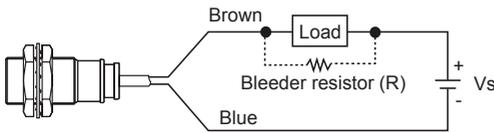


- ※ ②, ③ of N.O. type and ①, ④ of N.C. type are not used terminals.
- ※ The type, pin arrangement of connector based upon IEC standard is being developed.
- ※ Please put "I" behind of standard type for purchasing IEC standard product. E.g.) PRDAWT18-7DO-I
- ※ Please put "I" behind of model name for selecting proximity sensor by IEC standard. E.g.) CID2-2-I, CLD2-2-I

■ Proper Usage

◎ 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.

$$R \leq \frac{V_s}{I} \text{ (k}\Omega\text{)} \quad P > \frac{V_s^2}{R} \text{ (W)}$$

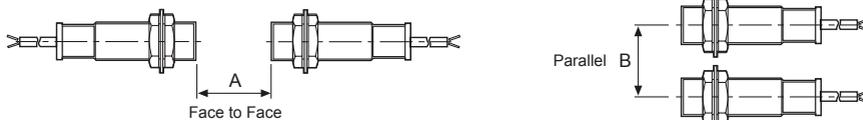
[I: Action current of load, R: Bleeder resistance, P: Permissible power]

$$R \leq \frac{V_s}{I_o - I_{off}} \text{ (k}\Omega\text{)} \quad P > \frac{V_s^2}{R} \text{ (W)}$$

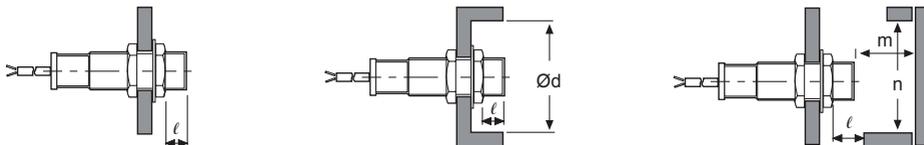
[Vs: Power supply, I_{off}: Return current of load, I_o: Min. action current of proximity sensor, P: Number of Bleeder resistance watt]

◎ 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 | PRDAWT12-4D□ | PRDAWT18-7D□ | PRDAWT30-15D□ |
|------|-------|--------------|--------------|---------------|
| A | | 24 | 42 | 90 |
| B | | 24 | 36 | 60 |
| l | | 0 | 0 | 0 |
| Ød | | 12 | 18 | 30 |
| m | | 12 | 21 | 45 |
| n | | 18 | 27 | 45 |

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