

# PRDAT/PRDAWT Series

## Long Distance Inductive Proximity Sensor (Spatter Resistance Type)

### ■ Features

- Long sensing distance (1.5 to 2 times longer sensing distance guaranteed compared to existing models)
- Coated with the material against thermal resistance (prevention of malfunction due to spatter)
- Improved the noise resistance with dedicated IC
- Built-in surge protection, reverse polarity protection, overcurrent protection circuit
- red LED operation indication
- Protection structure IP67 (IEC standards)
- Available as spatter-resistance limit switch

Line-up



⚠ Please read "Caution for your safety" 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 teflon against thermal resistance. Also, the protection cover sold optionally has the same function.

### ■ Specifications

#### ●DC 2-wire type

| Model                            | PRDAT12-4DO<br>PRDAT12-4DC<br>PRDAT12-4DO-V<br>PRDAT12-4DC-V   | PRDAWT12-4DO-I<br>PRDAWT12-4DC-I   | PRDAT18-7DO<br>PRDAT18-7DC<br>PRDAT18-7DO-V<br>PRDAT18-7DC-V   | PRDAWT18-7DO<br>PRDAWT18-7DC<br>PRDAWT18-7DO-I<br>PRDAWT18-7DC-I<br>PRDAWT18-7DO-IV<br>PRDAWT18-7DC-IV | PRDAT30-15DO<br>PRDAT30-15DC<br>PRDAT30-15DO-V<br>PRDAT30-15DC-V                                       | PRDAWT30-15DO<br>PRDAWT30-15DC<br>PRDAWT30-15DO-I<br>PRDAWT30-15DC-I<br>PRDAWT30-15DO-IV<br>PRDAWT30-15DC-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)   |  |
| Sensing 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 <sup>*1</sup> | 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            | Min. 50MΩ (at 500VDC megger)   |                                    |  |  |  |  |
| Dielectric strength              | 1,500VAC 50/60Hz for 1 min.  |                                    |  |  |  |  |
| Vibration                        | 1mm amplitude at frequency of 10 to 55Hz (for 1 min.) in each X, Y, Z direction for 2 hours  |                                    |  |  |  |  |
| Shock                            | 500m/s <sup>2</sup> (approx. 50G) in each X, Y, Z direction 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, overcurrent protection   |                                    |  |  |  |  |
| Protection structure             | IP67 (IEC standard)  |                                    |  |  |  |  |
| Cable                            | Ø4mm, 2-wire, 2m (AWG22, Core diameter : 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm)   | Ø4mm, 2-wire, 300mm, M12 connector | Ø5mm, 2-wire, 2m (AWG22, Core diameter : 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm) | Ø5mm, 2-wire, 300mm, M12 connector   | Ø5mm, 2-wire, 2m (AWG22, Core diameter : 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm) | Ø5mm, 2-wire, 300mm, M12 connector   |
| Material                         | Case/Nut: Teflon coated brass, Washer: Teflon coated Iron, Sensing surface: Teflon, Standard cable (black): Polyvinyl chloride (PVC), Oil resistant cable (gray): Polyvinyl chloride (oil resistant PVC) |                                    |  |  |  |  |
| Approval                         | CE   |                                    |  |  |  |  |
| Weight <sup>*2</sup>             | Approx. 84g (approx. 72g)  | Approx. 54g (approx. 42g)          | Approx. 134g (approx. 122g)  | Approx. 77g (approx. 65g)  | Approx. 221g (approx. 184g)  | 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.

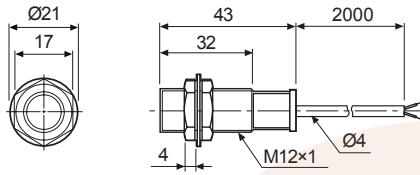
※2: The weight includes packaging. The weight in parentheses in for unit only. ※ Environment resistance is rated at no freezing or condensation.

# Long Distance Cylindrical Spatter-Resistance Type

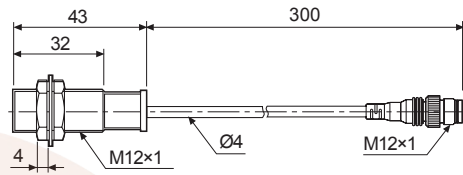
## Dimensions

(unit: mm)

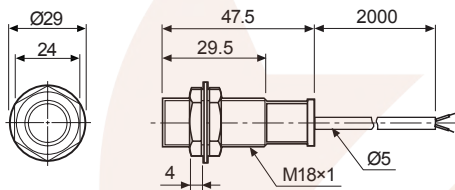
### ● PRDAT12-4D



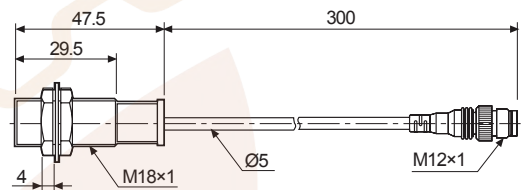
### ● PRDAWT12-4D



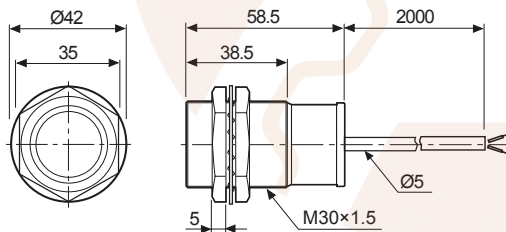
### ● PRDAT18-7D



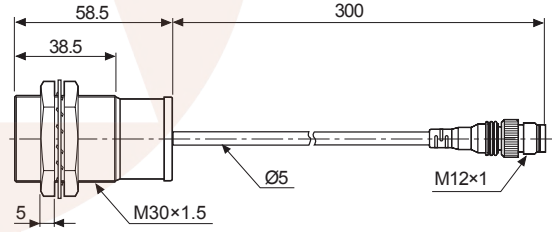
### ● PRDAWT18-7D



### ● PRDAT30-15D

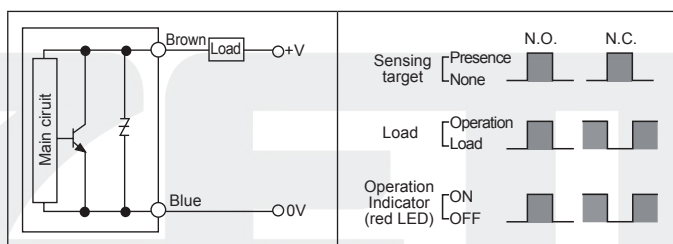


### ● PRDAWT30-15D



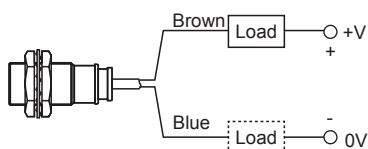
## Output Circuit

### ○ DC 2-wire type



## Example Of Connection

### ○ DC 2-wire standard type



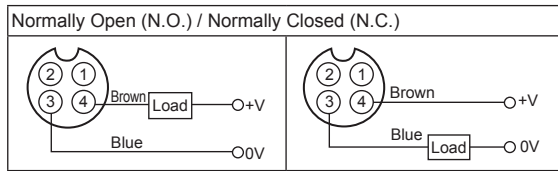
※For using DC 2-wire type, connect load before supplying the power and using this unit, or inner element may be damaged.  
 ※Load can be wired to any direction.

- (A) Photoelectric Sensors
- (B) Fiber Optic Sensors
- (C) Door/Area Sensors
- (D) Proximity Sensors
- (E) Pressure Sensors
- (F) Rotary Encoders
- (G) Connectors/ 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

# PRDAT/PRDAWT Series

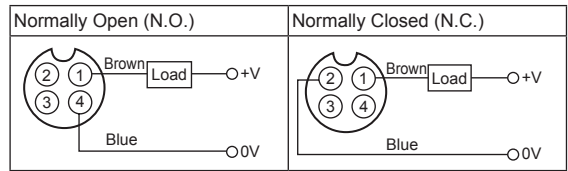
## ■ Connection Diagram

### ○ DC 2-wire type (standard type)



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

### ○ DC 2-wire type (IEC standard type)

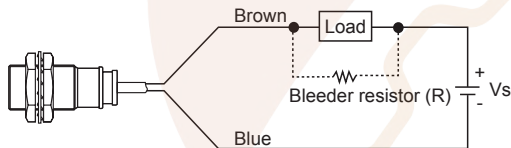


- ※ ②, ③ of N.O. type and ③, ④ of N.C. type are not used terminals.
- ※ The pin arrangement of connector applying IEC standard is being developed.
- ※ Please attach "I" at the end of the name of standard type for purchasing the IEC standard product.  
E.g.) PRDAWT18-7DO-I
- ※ The connector cable for 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

## ■ Proper Usage

### ○ In case of the load current is small

#### ● DC 2-wire



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.

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

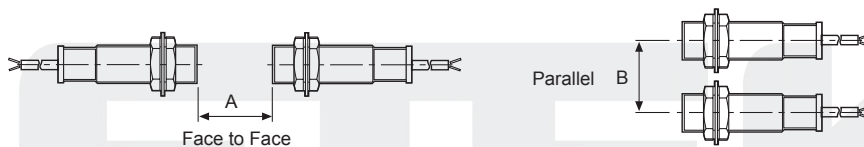
[I: Action current of load, R: Bleeder resistance, P: Permissible power]

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

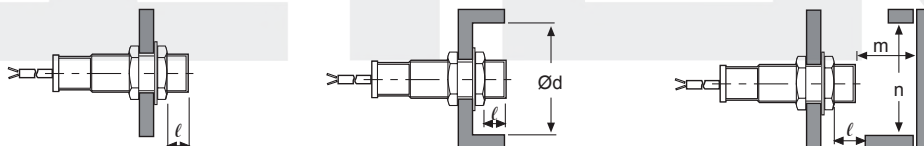
[ V<sub>s</sub> : Power supply,  
I<sub>o</sub> : Min. action current of proximity sensor,  
I<sub>off</sub> : Return current of load,  
P : Number of Bleeder resistance watt ]

### ○ 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 | PRDAT12-4D□<br>PRDAWT12-4D□ | PRDAT18-7D□<br>PRDAWT18-7D□ | PRDAT12-15D□<br>PRDAWT30-15D□ |
|-------|-----------------------------|-----------------------------|-------------------------------|
| Item  |                             |                             |                               |
| A     | 24                          | 42                          | 90                            |
| B     | 24                          | 36                          | 60                            |
| l     | 0                           | 0                           | 0                             |
| Ød    | 12                          | 18                          | 30                            |
| m     | 12                          | 21                          | 45                            |
| n     | 18                          | 27                          | 45                            |