

PRD Series Cylindrical, Long Sensing Distance, Cable Type

Cylindrical, Long Sensing Distance, Cable Type Proximity Sensor

■ Features

- Long sensing distance (1.5 to 2 times longer sensing distance guaranteed compared to existing models)
- Improved the noise immunity with dedicated IC
- Built-in surge protection, reverse polarity protection, over-current protection circuit
- Long life cycle and high reliability, and simple operation
- Red LED operation indicator
- IP67 protection structure (IEC standard)
- Replaceable for micro switches and limit switches
- Strain relief cables: improved flexural strength of cable connecting component



⚠ Please read "Caution for your safety" in operation manual before using.



■ Specifications

● DC 2-wire type

※When the □ model name is X, it is non-polarity model.

| Model | PRDT12-4 □ O PRDT12-4 □ C PRDT12-4DO-V PRDT12-4 □ C-V PRDLT12-4DO PRDLT12-4DC PRDLT12-4DO-V PRDLT12-4DC-V | PRDT12-8 □ O PRDT12-8 □ C PRDT12-8 □ O-V PRDT12-8 □ C-V PRDLT12-8DO PRDLT12-8DC PRDLT12-8DO-V PRDLT12-8DC-V | PRDT18-7 □ O PRDT18-7 □ C PRDT18-7 □ O-V PRDT18-7 □ C-V PRDLT18-7 □ O PRDLT18-7 □ C PRDLT18-7 □ O-V PRDLT18-7 □ C-V | PRDT18-14 □ O PRDT18-14 □ C PRDT18-14 □ O-V PRDT18-14 □ C-V PRDLT18-14 □ O PRDLT18-14 □ C PRDLT18-14 □ O-V PRDLT18-14 □ C-V | PRDT30-15 □ O PRDT30-15DC PRDT30-15 □ O-V PRDT30-15DC-V PRDLT30-15DO PRDLT30-15DC PRDLT30-15DO-V PRDLT30-15DC-V | PRDT30-25 □ O PRDT30-25 □ C PRDT30-25 □ O-V PRDT30-25 □ C-V PRDLT30-25DO PRDLT30-25DC PRDLT30-25DO-V PRDLT30-25DC-V |
|----------------------------------|---|--|--|--|--|--|
| 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 | |
| Residual voltage ^{※2} | Max. 3.5V (non-polarity type is Max. 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 of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours | | | | | |
| Shock | 500m/s ² (approx. 50G) in X, Y, Z direction for 3 times | | | | | |
| Indicator | Operation indicator: Red LED | | | | | |
| Environment | Ambient temp. -25 to 70°C, storage: -30 to 80°C Ambient humi. 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 Standard cable (black): Polyvinyl chloride (PVC), Oil resistant cable (gray): Oil resistant polyvinyl chloride (PVC) | | | | | |
| Cable | Ø4mm, 2-wire, 2m | | | Ø5mm, 2-wire, 2m | | |
| Approval | CE | | | | | |
| Protection structure | IP67 (IEC standard) | | | | | |
| Unit weight | PRDT: Approx. 74g PRDLT: Approx. 94g | PRDT: Approx. 72g PRDLT: Approx. 92g | PRDT: Approx. 115g PRDLT: Approx. 145g | PRDT: Approx. 110g PRDLT: Approx. 140g | PRDT: Approx. 175g PRDLT: Approx. 215g | PRDT: Approx. 180g PRDLT: Approx. 220g |

※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: Before using non-polarity type, check the condition of connected device ※because residual voltage is 5V.

※The □ of model name is for power type. 'D' is 12-24VDC, 'X' is non-polarity 12-24VDC.

※The last 'V' of model name is for the model with oil-resistance reinforced cable.

※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 |

PRD Series

■ Specifications

● DC 3-wire type

| Model | PRD12-4DN PRD12-4DP PRD12-4DN2 PRD12-4DP2 PRDL12-4DN PRDL12-4DP PRDL12-4DN2 PRDL12-4DP2 | PRD12-8DN PRD12-8DP PRD12-8DN2 PRD12-8DP2 PRDL12-8DN PRDL12-8DP PRDL12-8DN2 PRDL12-8DP2 | PRD18-7DN PRD18-7DP PRD18-7DN2 PRD18-7DP2 PRDL18-7DN PRDL18-7DP PRDL18-7DN2 PRDL18-7DP2 | PRD18-14DN PRD18-14DP PRD18-14DN2 PRD18-14DP2 PRDL18-14DN PRDL18-14DP PRDL18-14DN2 PRDL18-14DP2 | PRD30-15DN PRD30-15DP PRD30-15DN2 PRD30-15DP2 PRD30-15DN-V PRD30-15DP-V PRD30-15DN2-V PRD30-15DP2-V PRDL30-15DN PRDL30-15DP PRDL30-15DN2 PRDL30-15DP2 | PRD30-25DN PRD30-25DP PRD30-25DN2 PRD30-25DP2 PRD30-25DN-V PRD30-25DP-V PRD30-25DN2-V PRD30-25DP2-V PRDL30-25DN PRDL30-25DP PRDL30-25DN2 PRDL30-25DP2 |
|----------------------------------|--|--|--|--|--|--|
| 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) | | | | | |
| Leakage current | 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°C | | | | | |
| Control output | 200mA | | | | | |
| Insulation resistance | Over 50MΩ (at 500VDC megger) | | | | | |
| Dielectric strength | 1,500VAC 50/60Hz for 1 minute | | | | | |
| Vibration | 1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours | | | | | |
| Shock | 500m/s ² (approx. 50G) in X, Y, Z direction for 3 times | | | | | |
| Indicator | Operation indicator: Red LED | | | | | |
| Environment | Ambient temp. | -25 to 70°C, storage: -30 to 80°C | | | | |
| | Ambient humi. | 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, Standard cable (black): Polyvinyl chloride (PVC), Oil resistant cable (gray): Oil resistant Polyvinyl chloride (PVC) | | | | | |
| Cable | Ø4mm, 3-wire, 2m | | | Ø5mm, 3-wire, 2m | | |
| | AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator diameter: Ø1.25mm | | | | | |
| Approval | CE | | | | | |
| Unit weight | PRD: Approx. 74g PRDL: Approx. 94g | PRD: Approx. 72g PRDL: Approx. 92g | PRD: Approx. 115g PRDL: Approx. 145g | PRD: Approx. 110g PRDL: Approx. 140g | PRD: Approx. 175g PRDL: Approx. 215g | PRD: Approx. 180g PRDL: Approx. 220g |

※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.

※The last 'V' of model name is for the model with oil-resistance reinforced cable.

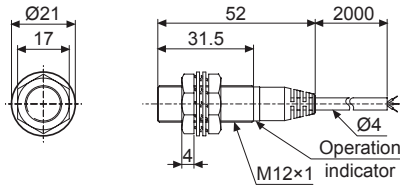
※Environment resistance is rated at no freezing or condensation.

Cylindrical, Long Sensing Distance, Cable Type

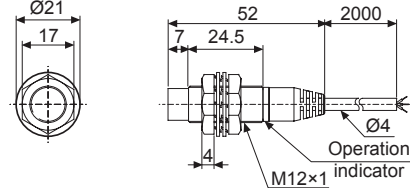
■ Dimensions

(unit: mm)

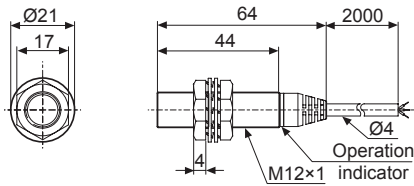
● PRD(T)12-4D □



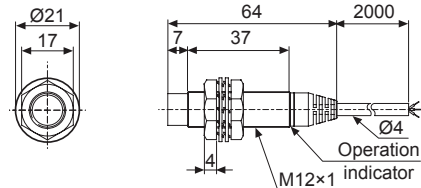
● PRD(T)12-8D □



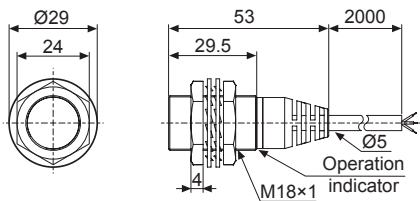
● PRDL(T)12-4D □



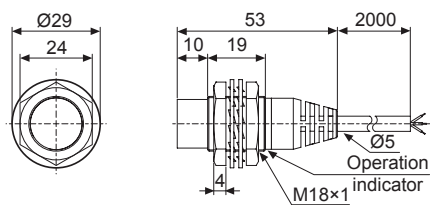
● PRDL(T)12-8D □



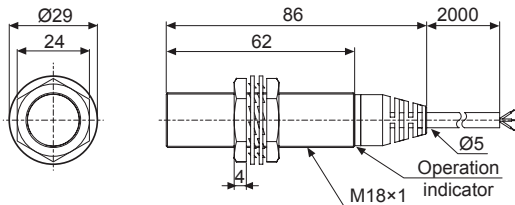
● PRD(T)18-7D □



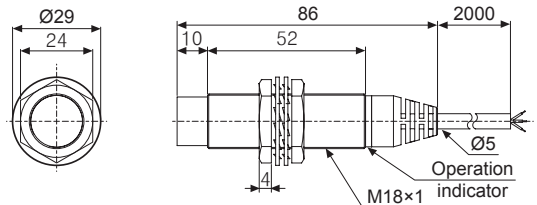
● PRD(T)18-14D □



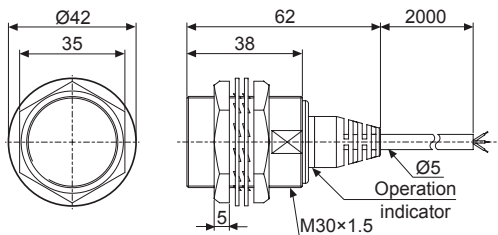
● PRDL(T)18-7D □



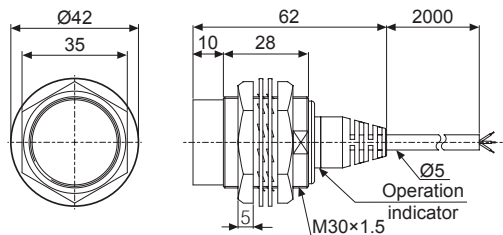
● PRDL(T)18-14D □



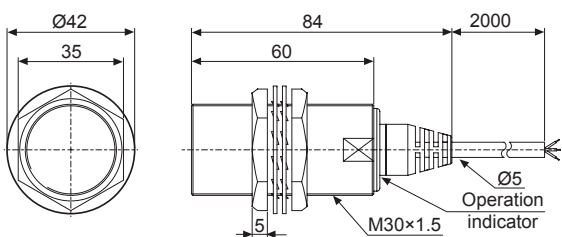
● PRD(T)30-15D □



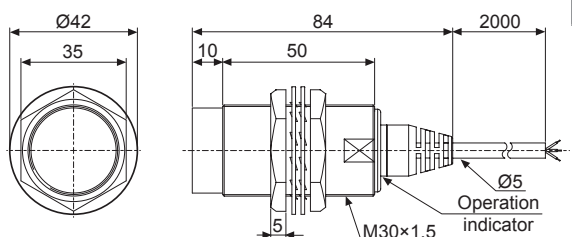
● PRD(T)30-25D □



● PRDL(T)30-15D □



● PRDL(T)30-25D □



(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

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(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

(Q) Stepper Motors & Drivers & Controllers

(R) Graphic/ Logic Panels

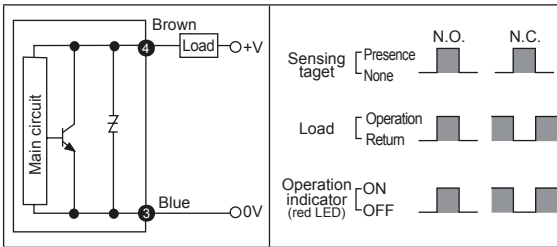
(S) Field Network Devices

(T) Software

PRD Series

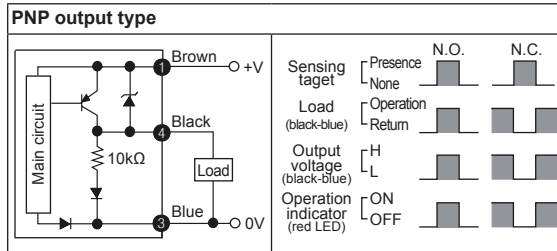
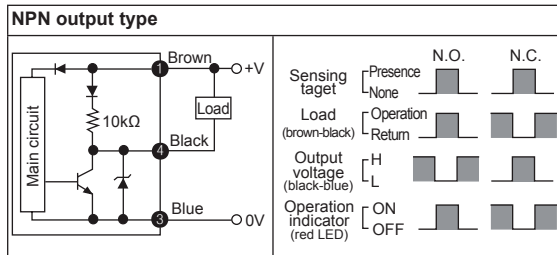
■ Control Output Diagram And Load Operation

◎ DC 2-wire type



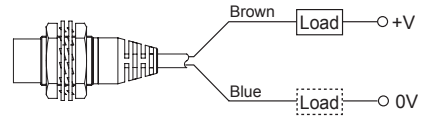
※ The number in a circle is pin no. of connector.

◎ DC 3-wire type



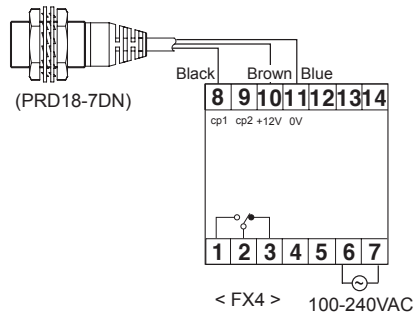
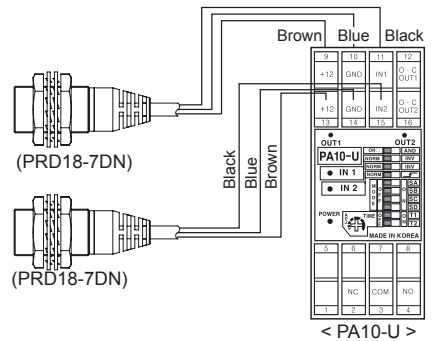
■ Connections

◎ DC 2-wire type



※ The load can be connected to either wire.

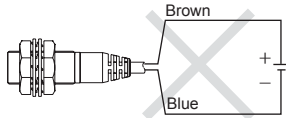
◎ DC 3-wire type



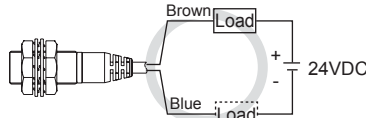
Cylindrical, Long Sensing Distance, Cable Type

■ Proper Usage

◎ Load connections



< DC 2-wire type >

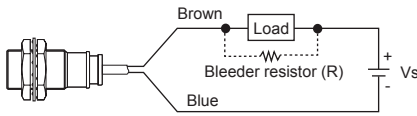


< DC 2-wire type >

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.

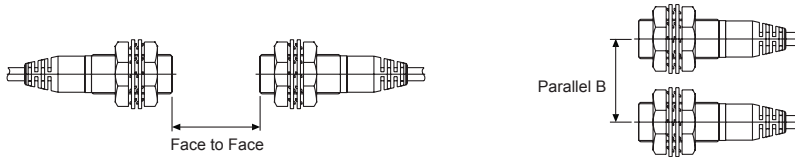
※W value of Bleeder resistor should be bigger for proper heat dissipation.

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

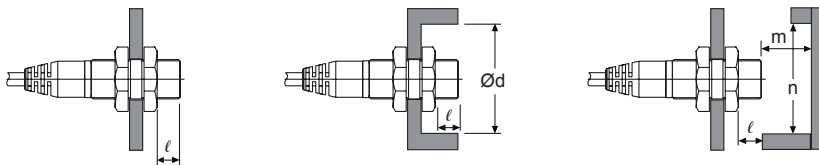
[Vs: Power supply, Io: Min. action current of proximity sensor, Ioff: Return current of load, P: Number of Bleeder resistance watt]

◎ 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 | | | | | |
|------|---------------------------|---------------------------|---------------------------|-----------------------------|-----------------------------|-----------------------------|
| | PRDT12-4□□ PRDLT12-4□□ | PRDT12-8□□ PRDLT12-8□□ | PRDT18-7□□ PRDLT18-7□□ | PRDT18-14□□ PRDLT18-14□□ | PRDT30-15□□ PRDLT30-15□□ | PRDT30-25□□ PRDLT30-25□□ |
| 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 |

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(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