


# Cylindrical Cable Outgoing Connector Type

## Cylindrical cable outgoing connector type proximity sensor

### ■ Features


- Shorten the time of maintenance with the body
- Improved the noise resistance by adopting dedicated IC (DC 3-wire type)
- Reverse power polarity (DC 3-wire), surge, overcurrent protection (DC type)
- Red LED status indication
- IP67 rated waterproof structure (IEC standard)
- Replacer for micro switches and limit switches

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



### ■ Specifications

#### ● DC 2-wire type

| Model                            | PRWT08-1.5DO<br>PRWT08-1.5DC  | PRWT08-2DO<br>PRWT08-2DC | PRWT12-2DO<br>PRWT12-2DC | PRWT12-4DO<br>PRWT12-4DC | PRWT18-5DO<br>PRWT18-5DC | PRWT18-8DO<br>PRWT18-8DC | PRWT30-10DO<br>PRWT30-10DC | PRWT30-15DO<br>PRWT30-15DC |
|----------------------------------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------|----------------------------|
| Sensing distance                 | 1.5mm ±10%  | 2mm ±10%                 | 4mm ±10%                 | 5mm ±10%                 | 8mm ±10%                 | 10mm ±10%                | 15mm ±10%                  |                            |
| Hysteresis                       | Max. 10% of sensing distance  |                          |                          |                          |                          |                          |                            |                            |
| Standard sensing target          | 8×8×1mm (Iron)  |                          | 12×12×1mm (Iron)         |                          | 18×18×1mm (Iron)         | 25×25×1mm (Iron)         | 30×30×1mm (Iron)           | 45×45×1mm (Iron)           |
| Setting distance                 | 0 ~ 1.05mm  | 0 ~ 1.4mm                |                          | 0 ~ 2.8mm                | 0 ~ 3.5mm                | 0 ~ 5.6mm                | 0 ~ 7mm                    | 0 ~ 10.5mm                 |
| Power supply (Operation voltage) | 24VDC (15~30VDC)  |                          |                          |                          |                          |                          |                            |                            |
| Leakage current                  | Max. 0.6mA  |                          |                          |                          |                          |                          |                            |                            |
| Response frequency(*1)           | 1.5kHz  | 1kHz                     | 1.5kHz                   | 500Hz                    |                          | 350Hz                    | 400Hz                      | 200Hz                      |
| Residual voltage                 | Max. 4V   |                          |                          |                          |                          |                          |                            |                            |
| Affection by Temp.               | ±10% Max. for sensing distance at +20°C within temperature range of -25 ~ +70°C     |                          |                          |                          |                          |                          |                            |                            |
| Control output                   | 2 ~ 100mA   |                          |                          |                          |                          |                          |                            |                            |
| Insulation resistance            | Min. 50MΩ (at 500VDC mega)  |                          |                          |                          |                          |                          |                            |                            |
| Dielectric strength              | 1500VAC 50/60Hz for 1 minute  |                          |                          |                          |                          |                          |                            |                            |
| Vibration                        | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours   |                          |                          |                          |                          |                          |                            |                            |
| Shock                            | 500m/s <sup>2</sup> (50G) in X, Y, Z directions for 3 times                         |                          |                          |                          |                          |                          |                            |                            |
| Indicator                        | Operation indicator (Red LED)   |                          |                          |                          |                          |                          |                            |                            |
| Ambient temperature              | -25 ~ +70°C (at non-freezing status)  |                          |                          |                          |                          |                          |                            |                            |
| Storage temperature              | -30 ~ +80°C (at non-freezing status)  |                          |                          |                          |                          |                          |                            |                            |
| Ambient humidity                 | 35 ~ 95%RH  |                          |                          |                          |                          |                          |                            |                            |
| Protection circuit               | Surge, Overcurrent protection circuit   |                          |                          |                          |                          |                          |                            |                            |
| Protection                       | IP67 (IEC standard)   |                          |                          |                          |                          |                          |                            |                            |
| Approval                         |  |                          |                          |                          |                          |                          |                            |                            |
| Unit weight                      | Approx. 30g   |                          | Approx. 45g              |                          | Approx. 65g              |                          | Approx. 169g               |                            |

\* (\*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.

\* Please fasten the vibration part with Teflon type.

\* See J-48 for IEC standard connector cables and specifications.

(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

(L) Pressure sensor

(M) Rotary encoder

(N) Stepping motor & Driver & Controller

(O) Graphic panel

(P) Production stoppage models & replacement

# PRW Series

## ●Specifications(DC 3-wire type)

| Model                            | PRW08-1.5DN<br>PRW08-1.5DP<br>PRW08-1.5DN2<br>PRW08-1.5DP2<br>PRWL08-1.5DN<br>PRWL08-1.5DP<br>PRWL08-1.5DN2<br>PRWL08-1.5DP2 | PRW08-2DN<br>PRW08-2DP<br>PRW08-2DN2<br>PRW08-2DP2 | PRW12-2DN<br>PRW12-2DP<br>PRW12-2DN2<br>PRW12-2DP2 | PRW12-4DN<br>PRW12-4DP<br>PRW12-4DN2<br>PRW12-4DP2 | PRW18-5DN<br>PRW18-5DP<br>PRW18-5DN2<br>PRW18-5DP2<br>PRWL18-5DN<br>PRWL18-5DP<br>PRWL18-5DN2<br>PRWL18-5DP2 | PRW18-8DN<br>PRW18-8DP<br>PRW18-8DN2<br>PRW18-8DP2<br>PRWL18-8DN<br>PRWL18-8DP<br>PRWL18-8DN2<br>PRWL18-8DP2 | PRW30-10DN<br>PRW30-10DP<br>PRW30-10DN2<br>PRW30-10DP2<br>PRWL30-10DN<br>PRWL30-10DP<br>PRWL30-10DN2<br>PRWL30-10DP2 | PRW30-15DN<br>PRW30-15DP<br>PRW30-15DN2<br>PRW30-15DP2<br>PRWL30-15DN<br>PRWL30-15DP<br>PRWL30-15DN2<br>PRWL30-15DP2 |
|----------------------------------|--|--|--|--|--|--|--|--|
| Sensing distance                 | 1.5mm ±10%   | 2mm ±10%   | 4mm ±10%   | 5mm ±10%   | 8mm ±10%   | 10mm ±10%  | 15mm ±10%  |  |
| Hysteresis                       | Max. 10% of sensing distance   |  |  |  |  |  |  |  |
| Standard sensing target          | 8×8×1mm (Iron)   |  | 12×12×1mm (Iron)                                   |  | 18×18×1mm (Iron)   | 25×25×1mm (Iron)   | 30×30×1mm (Iron)   | 45×45×1mm (Iron)   |
| Setting distance                 | 0 ~ 1.05mm   | 0 ~ 1.4mm  | 0 ~ 1.4mm  | 0 ~ 2.8mm  | 0 ~ 3.5mm  | 0 ~ 5.6mm  | 0 ~ 7mm  | 0 ~ 10.5mm   |
| Power supply (Operation voltage) | 12-24VDC (10-30VDC)  |  |  |  |  |  |  |  |
| Current consumption              | Max. 10mA  |  |  |  |  |  |  |  |
| Response frequency(*1)           | 1.5kHz   | 1kHz   | 1.5kHz   | 500Hz  | 350Hz  | 400Hz  | 200Hz  |  |
| Residual voltage                 | Max. 1.5V  |  |  |  |  |  |  |  |
| Affection by Temp.               | ±10% Max. for sensing distance at +20°C within temperature range of -25 ~ +70°C  |  |  |  |  |  |  |  |
| Control output                   | 200mA  |  |  |  |  |  |  |  |
| Insulation resistance            | Min. 50MΩ (at 500VDC mega)   |  |  |  |  |  |  |  |
| Dielectric strength              | 1500VAC 50/60Hz for 1minute  |  |  |  |  |  |  |  |
| Vibration                        | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours  |  |  |  |  |  |  |  |
| Shock                            | 500m/s <sup>2</sup> (50G) in X, Y, Z direction for 3 times   |  |  |  |  |  |  |  |
| Indicator                        | Operation indicator (Red LED)  |  |  |  |  |  |  |  |
| Ambient temperature              | -25 ~ +70°C (at non-freezing status)   |  |  |  |  |  |  |  |
| Storage temperature              | -30 ~ +80°C (at non-freezing status)   |  |  |  |  |  |  |  |
| Ambient humidity                 | 35 ~ 95%RH   |  |  |  |  |  |  |  |
| Protection circuit               | Surge, Reverse power polarity, Overcurrent protection circuit  |  |  |  |  |  |  |  |
| Protection                       | IP67 (IEC standard)  |  |  |  |  |  |  |  |
| Approval                         | CE   |  |  |  |  |  |  |  |
| Unit weight                      | PR08:Approx. 68g<br>PRW08:Approx. 30g  | Approx. 40g  |  |  | PRW18:Approx. 84g<br>PRWL18:Approx. 108g   | PRW30:Approx. 143g<br>PRWL30:Approx. 178g  |  |  |

\*(\*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.

## ●Specifications(AC 2-wire type)


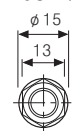
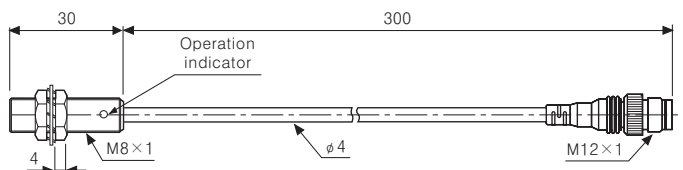

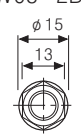
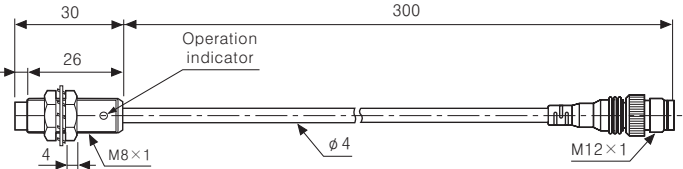

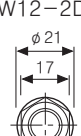
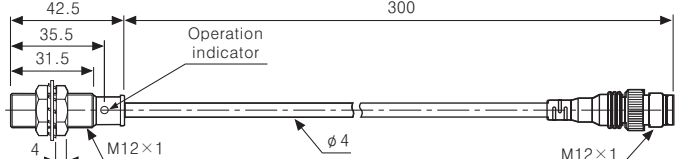

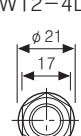
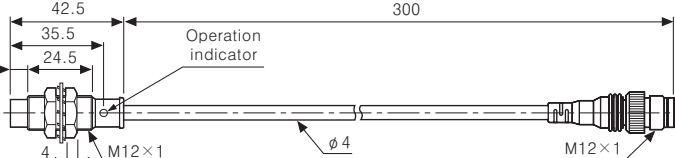
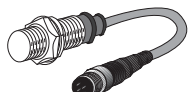
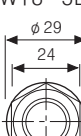
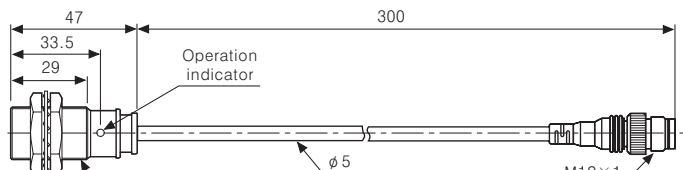

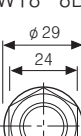
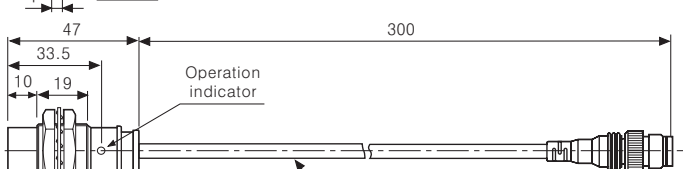
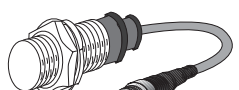
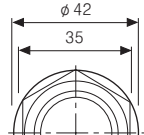
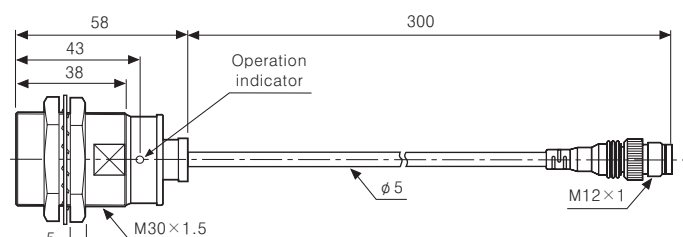
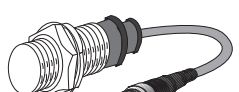
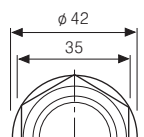
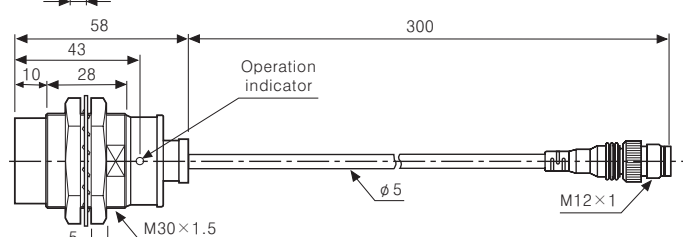

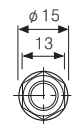
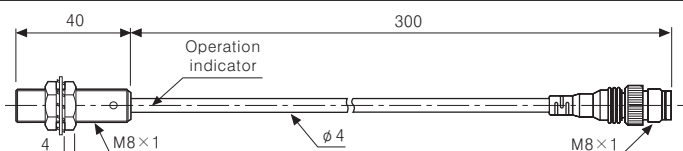
| Model                            | PRW12-2AO<br>PRW12-2AC  | PRW12-4AO<br>PRW12-4AC | PRW18-5AO<br>PRW18-5AC<br>PRWL18-5AO<br>PRWL18-5AC | PRW18-8AO<br>PRW18-8AC<br>PRWL18-8AO<br>PRWL18-8AC | PRW30-10AO<br>PRW30-10AC<br>PRWL30-10AO<br>PRWL30-10AC | PRW30-15AO<br>PRW30-15AC<br>PRWL30-15AO<br>PRWL30-15AC |
|----------------------------------|---|------------------------|--|--|--|--|
| Sensing distance                 | 2mm ±10%  | 4mm ±10%               | 5mm ±10%   | 8mm ±10%   | 10mm ±10%  | 15mm ±10%  |
| Hysteresis                       | Max. 10% of sensing distance  |                        |  |  |  |  |
| Standard sensing target          | 12×12×1mm (Iron)  |                        | 18×18×1mm (Iron)                                   | 25×25×1mm (Iron)                                   | 30×30×1mm (Iron)                                       | 45×45×1mm (Iron)                                       |
| Setting distance                 | 0 ~ 1.4mm   | 0 ~ 2.8mm              | 0 ~ 3.5mm  | 0 ~ 5.6mm  | 0 ~ 7mm  | 0 ~ 10.5mm   |
| Power supply (Operation voltage) | 100-240VAC (85-264VAC)  |                        |  |  |  |  |
| Leakage current                  | Max. 2.5mA  |                        |  |  |  |  |
| Response frequency(*1)           | 20Hz  |                        |  |  |  |  |
| Residual voltage                 | Max. 10V  |                        |  |  |  |  |
| Affection by Temp.               | ±10% Max. for sensing distance at +20°C within temperature range of -25 ~ +70°C   |                        |  |  |  |  |
| Control output                   | 5 ~ 150mA   |                        |  | 5 ~ 200mA  |  |  |
| Insulation resistance            | Min. 50MΩ (at 500VDC mega)  |                        |  |  |  |  |
| Dielectric strength              | 1500VAC 50/60Hz for 1minute   |                        |  |  |  |  |
| Vibration                        | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours |                        |  |  |  |  |
| Shock                            | 500m/s <sup>2</sup> (50G) in X, Y, Z direction for 3 times                        |                        |  |  |  |  |
| Indicator                        | Operation indicator (Red LED)   |                        |  |  |  |  |
| Ambient temperature              | -25 ~ +70°C (at non-freezing status)  |                        |  |  |  |  |
| Storage temperature              | -30 ~ +80°C (at non-freezing status)  |                        |  |  |  |  |
| Ambient humidity                 | 35 ~ 95%RH  |                        |  |  |  |  |
| Protection circuit               | Surge protection circuit  |                        |  |  |  |  |
| Protection                       | IP67 (IEC standard)   |                        |  |  |  |  |
| Approval                         | CE  |                        |  |  |  |  |
| Unit weight                      | Approx. 42g   |                        | PRW18 : Approx. 87g<br>PRWL18 : Approx. 112g       | PRW30 : Approx. 148g<br>PRWL30 : Approx. 185g      |  |  |

\*(\*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.

# Cylindrical Cable Outgoing Connector Type

## Dimensions

(Unit:mm)

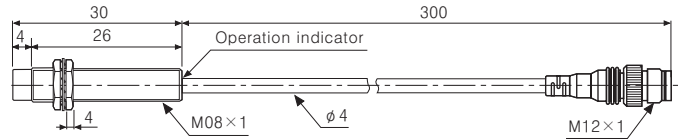
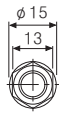
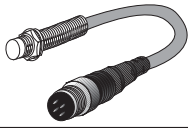
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| <ul style="list-style-type: none"> <li>●PRWT08-2D□(-I)</li> </ul>     | <ul style="list-style-type: none"> <li>●PRW08-2D□</li> </ul>      |    | (B) Timer                                    |
| <ul style="list-style-type: none"> <li>●PRWT12-2D□(-I)</li> </ul>     | <ul style="list-style-type: none"> <li>●PRW12-2D□</li> </ul>      |    | (C) Temp. controller                         |
| <ul style="list-style-type: none"> <li>●PRWT12-4D□(-I)</li> </ul>     | <ul style="list-style-type: none"> <li>●PRW12-4D□</li> </ul>      |    | (D) Power controller                         |
| <ul style="list-style-type: none"> <li>●PRWT18-5D□(-I)</li> </ul>   | <ul style="list-style-type: none"> <li>●PRW18-5D□</li> </ul>    |  | (E) Panel meter                              |
| <ul style="list-style-type: none"> <li>●PRWT18-8D□(-I)</li> </ul>   | <ul style="list-style-type: none"> <li>●PRW18-8D□</li> </ul>    |  | (F) Tacho/Speed/Pulse meter                  |
| <ul style="list-style-type: none"> <li>●PRWT30-10D□(-I)</li> </ul>  | <ul style="list-style-type: none"> <li>●PRW30-10D□</li> </ul>   |  | (G) Display unit                             |
| <ul style="list-style-type: none"> <li>●PRWT30-15D□(-I)</li> </ul>  | <ul style="list-style-type: none"> <li>●PRW30-15D□</li> </ul>   |  | (H) Sensor controller                        |
| <ul style="list-style-type: none"> <li>●PRWL08-1.5D□</li> </ul>     | <ul style="list-style-type: none"> <li>●PRW08-1.5D□</li> </ul>  |  | (I) Switching power supply                   |
|  |  |  | (J) Proximity sensor                         |
|  |  |  | (K) Photo electric sensor                    |
|  |  |  | (L) Pressure sensor                          |
|  |  |  | (M) Rotary encoder                           |
|  |  |  | (N) Stepping motor & Driver & Controller     |
|  |  |  | (O) Graphic panel                            |
|  |  |  | (P) Production stoppage models & replacement |

# PRW Series

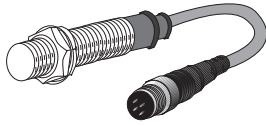
## Dimensions

(Unit:mm)

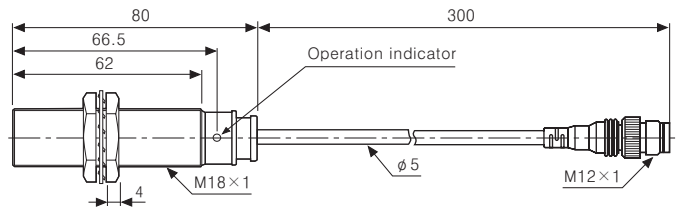
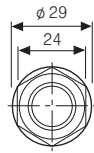
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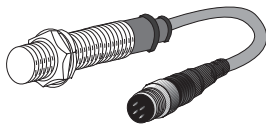
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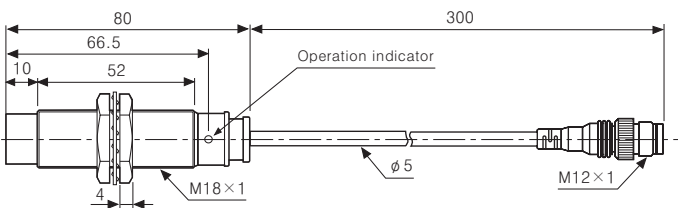
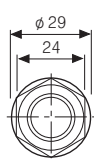
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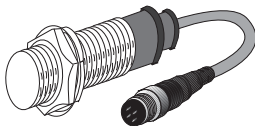
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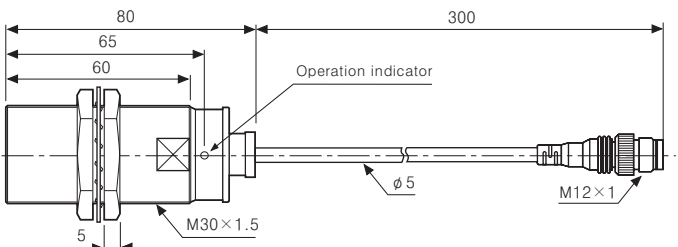
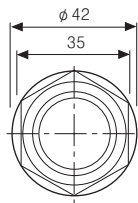
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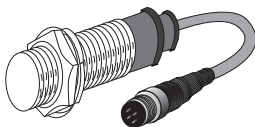
●PRWL30-10D□



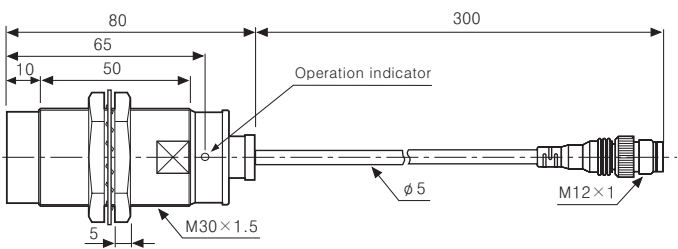
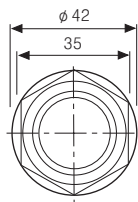
●PRWL30-10A□



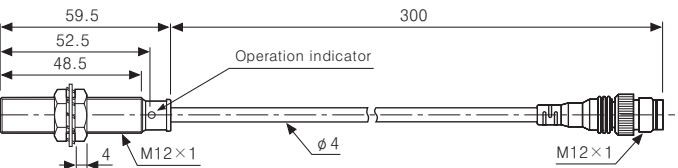
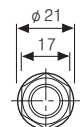
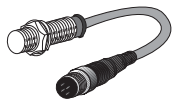
●PRWL30-15D□



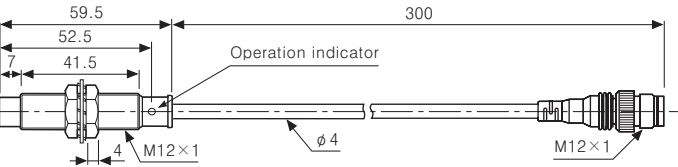
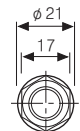
●PRWL30-15A□



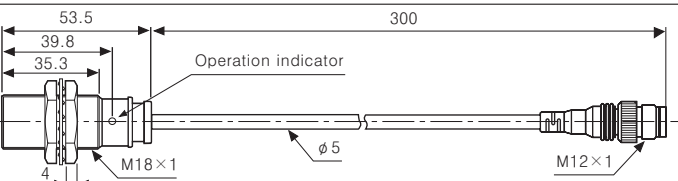
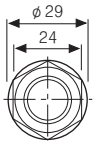
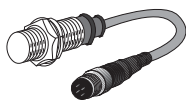
●PRW12-2A□



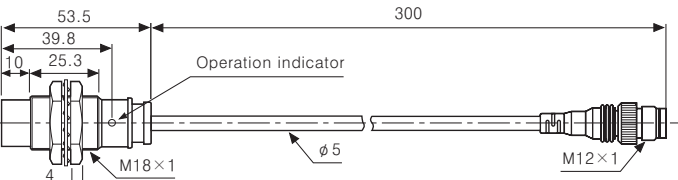
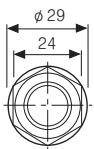
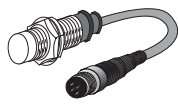
●PRW12-4A□



●PRW18-5A□



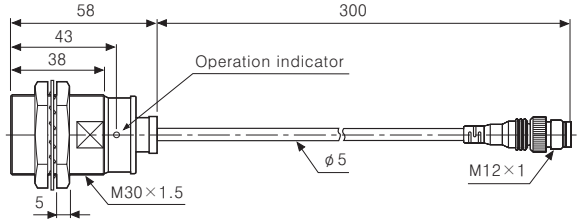
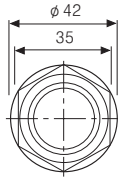
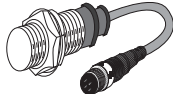
●PRW18-8A□



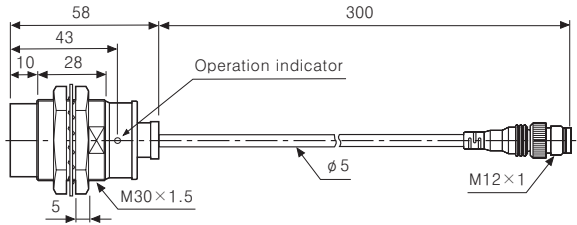
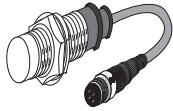
# Cylindrical Cable Outgoing Connector Type

## Dimensions

●PRW30-10A□



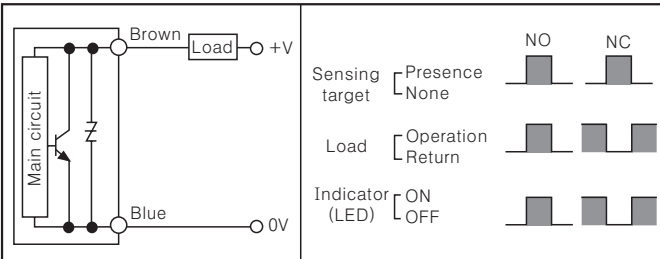
●PRW30-15A□



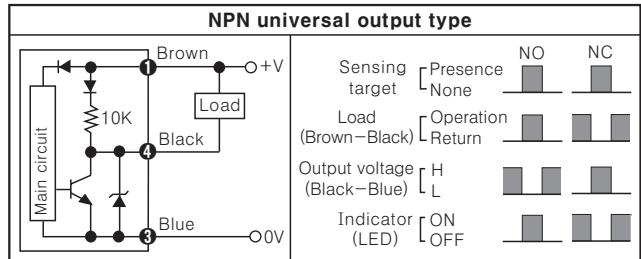
(Unit:mm)

## Control output diagram

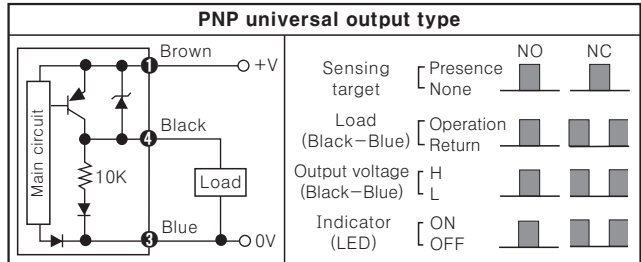
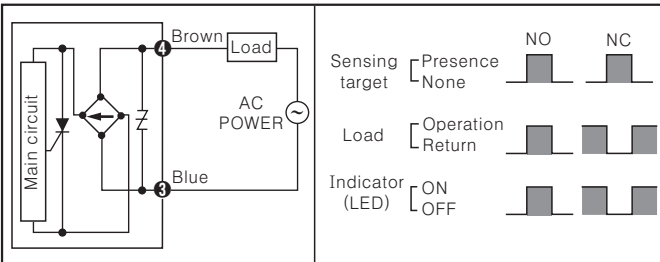
### DC 2-wire type



### DC 3-wire type



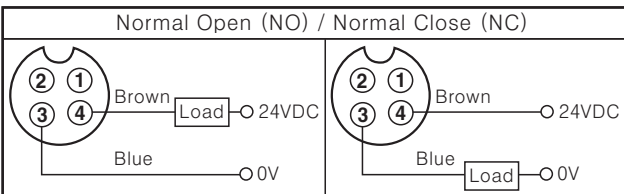
### AC 2-wire type



\*The number in a circle is pin no. of connector.

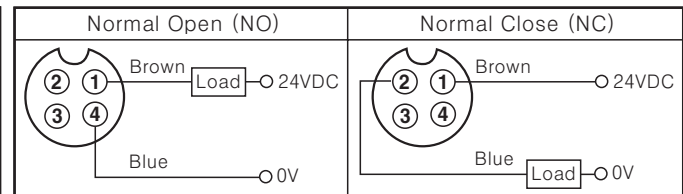
## Wiring diagram

### DC 2-wire type(Standard/non-polar type)



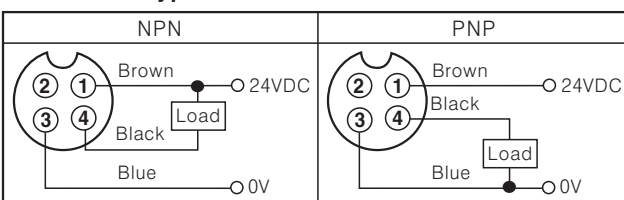
\*Pin ① and ② are not connected.  
\*When using DC 3-wire type of connector cable, black (24VDC) and blue (0V) cables can be used.

### DC 2-wire type(IEC standard/IEC standard non-polar type)



\*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. Ex) PRWT12-4DO-1  
\*Please put "I" behind of model name for selecting proximity sensor by IEC standard. Ex) CID2-2-1, CLD2-2-1

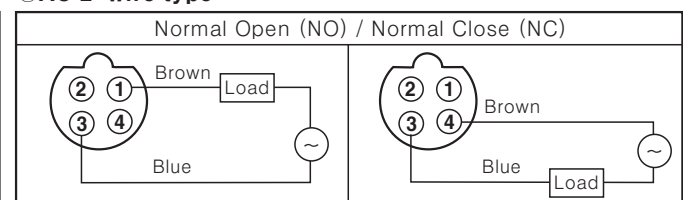
### DC 3-wire type



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

\*Please fasten the vibration part with Teflon tape. \*See J-48 for IEC standard connector cables and specifications.

### AC 2-wire type



\*In case of AC switching type, ② and ③, ① and ④ are connected to each other inside.

(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

(L) Pressure sensor

(M) Rotary encoder

(N) Stepping motor & Driver & Controller

(O) Graphic panel

(P) Production stoppage models & replacement

# PRW Series

## ■ Proper usage

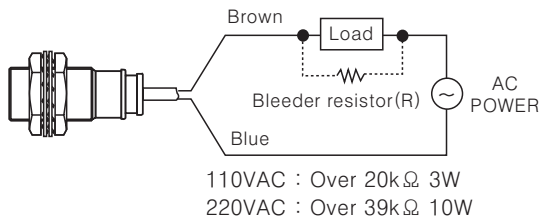
### ○ Load connections



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

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

#### ● AC 2-wire type



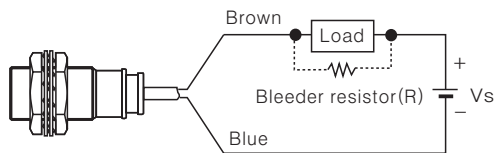
It may cause return failure of load by residual voltage.

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.

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

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

#### ● 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.

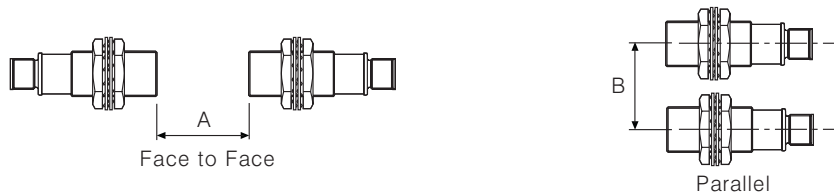
※ W value of Bleeder resistor should be bigger for proper heat dissipation.

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

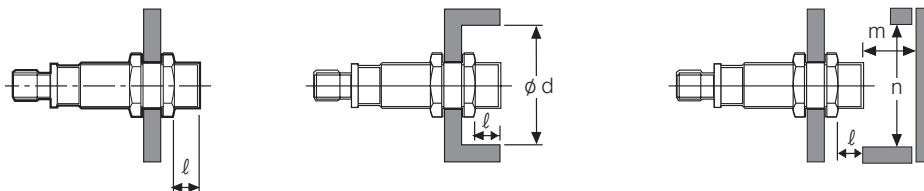
[ Vs : Power supply, I<sub>o</sub> : Min. action current of proximity sensor  
I<sub>off</sub> : Return current of load, P : Number of Bleeder resistance watt ]

### ○ Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted closely, malfunction of sensor may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors, as below charts.



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



(Unit:mm)

| Model | PRW08-1.5D□  | PRW08-2D□  | PRWT12-2D□ | PRWT12-4D□ | PRWT18-5D□   | PRWT18-8D□   | PRWT30-10D□   | PRWT30-15D□   |
|-------|--------------|------------|------------|------------|--------------|--------------|---------------|---------------|
| Item  | PRW08-1.5D□  | PRW08-2D□  | PRWT12-2A□ | PRWT12-4A□ | PRW(L)18-5D□ | PRW(L)18-8D□ | PRW(L)30-10D□ | PRW(L)30-15D□ |
|       | PRWL08-1.5D□ | PRWL08-2D□ |            |            | PRW(L)18-5A□ | PRW(L)18-8A□ | PRW(L)30-10A□ | PRW(L)30-15A□ |
| A     | 9            | 12         | 12         | 24         | 30           | 48           | 60            | 90            |
| B     | 16           | 24         | 24         | 36         | 36           | 54           | 60            | 90            |
| l     | 0            | 8          | 0          | 11         | 0            | 14           | 0             | 15            |
| φ d   | 8            | 24         | 12         | 36         | 18           | 54           | 30            | 90            |
| m     | 4.5          | 6          | 6          | 12         | 15           | 24           | 30            | 54            |
| n     | 12           | 24         | 18         | 36         | 27           | 54           | 45            | 90            |