

# PRDW Series

## Cylindrical, Long Sensing Distance, Cable Connector 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 "Safety Considerations" in operation manual before using.



### ■ Specifications

#### ● DC 2-wire type

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

Model	PRDWT12-4 □ O PRDWT12-4 □ C PRDWT12-4 □ O-I PRDWT12-4 □ C-I PRDWT12-4 □ O-IV PRDWT12-4 □ C-IV	PRDWT12-8 □ O PRDWT12-8 □ C PRDWT12-8 □ O-I PRDWT12-8 □ C-I PRDWT12-8 □ O-IV PRDWT12-8 □ C-IV	PRDWT18-7 □ O PRDWT18-7 □ C PRDWT18-7 □ O-I PRDWT18-7 □ C-I PRDWT18-7 □ O-IV PRDWT18-7 □ C-IV PRDWT18-7DC-IV	PRDWT18-14 □ O PRDWT18-14 □ C PRDWT18-14 □ O-I PRDWT18-14 □ C-I PRDWT18-14 □ O-IV PRDWT18-14 □ C-IV	PRDWT30-15 □ O PRDWT30-15 □ C PRDWT30-15 □ O-I PRDWT30-15 □ C-I PRDWT30-15DC-IV	PRDWT30-25DO PRDWT30-25DC PRDWT30-25DO-I PRDWT30-25DC-I PRDWT30-25DO-IV PRDWT30-25DC-IV
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 <sup>※1</sup>	450Hz	400Hz	250Hz	200Hz	100Hz	
Residual voltage <sup>※2</sup>	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 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 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	∅4mm, 2-wire, 300mm, M12 connector   ∅5mm, 3-wire, 300mm, M12 connector (AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator diameter: ∅1.25mm)					
Approval	CE					
Protection structure	IP67 (IEC standard)					
Unit weight	PRDWT: Approx. 44g	PRDWT: Approx. 42g	PRDWT: Approx. 80g PRDWT: Approx. 42g	PRDWT: Approx. 75g PRDWT: Approx. 105g	PRDWT: Approx. 140g	PRDWT: Approx. 145g

※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.

# Cylindrical, Long Sensing Distance, Cable Connector Type

## ■ Specifications

### ● DC 3-wire type

Model	PRDW12-4DN PRDW12-4DP PRDW12-4DN2 PRDW12-4DP2 PRDW12-4DN-V PRDW12-4DP-V PRDW12-4DN2-V PRDW12-4DP2-V PRDWL12-4DN PRDWL12-4DP PRDWL12-4DN2 PRDWL12-4DP2	PRDW12-8DN PRDW12-8DP PRDW12-8DN2 PRDW12-8DP2 PRDW12-8DN-V PRDW12-8DP-V PRDW12-8DN2-V PRDW12-8DP2-V PRDWL12-8DN PRDWL12-8DP PRDWL12-8DN2 PRDWL12-8DP2	PRDW18-7DN PRDW18-7DP PRDW18-7DN2 PRDW18-7DP2 PRDW18-7DN-V PRDW18-7DP-V PRDW18-7DN2-V PRDW18-7DP2-V PRDWL18-7DN PRDWL18-7DP PRDWL18-7DN2 PRDWL18-7DP2	PRDW18-14DN PRDW18-14DP PRDW18-14DN2 PRDW18-14DP2 PRDW18-14DN-V PRDW18-14DP-V PRDW18-14DN2-V PRDW18-14DP2-V PRDWL18-14DN PRDWL18-14DP PRDWL18-14DN2 PRDWL18-14DP2	PRDW30-15DN PRDW30-15DP PRDW30-15DN2 PRDW30-15DP2 PRDW30-15DN-V PRDW30-15DP-V PRDW30-15DN2-V PRDW30-15DP2-V PRDWL30-15DN PRDWL30-15DP PRDWL30-15DN2 PRDWL30-15DP2	PRDW30-25DN PRDW30-25DP PRDW30-25DN2 PRDW30-25DP2 PRDW30-25DN-V PRDW30-25DP-V PRDW30-25DN2-V PRDW30-25DP2-V PRDWL30-25DN PRDWL30-25DP PRDWL30-25DN2 PRDWL30-25DP2
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 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 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, 2-wire, 300mm, M12 connector			Ø5mm, 3-wire, 300mm, M12 connector		
	(AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator diameter: Ø1.25mm)					
Approval	<b>CE</b>					
Unit weight	PRDW: Approx. 44g	PRDW: Approx. 42g	PRDW: Approx. 80g	PRDW: Approx. 75g	PRDW: Approx. 140g	PRDW: Approx. 145g
	PRDWL: Approx. 64g	PRDWL: Approx. 62g	PRDWL: Approx. 110g	PRDWL: Approx. 105g	PRDWL: Approx. 180g	PRDWL: 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.

※ 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

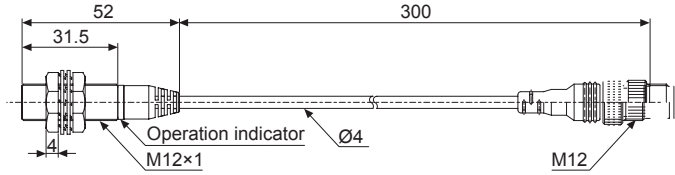
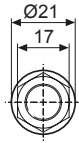
(T) Software

# PRDW Series

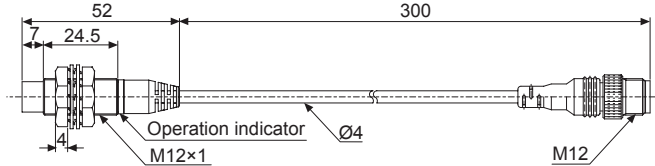
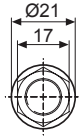
## ■ Dimensions

(unit: mm)

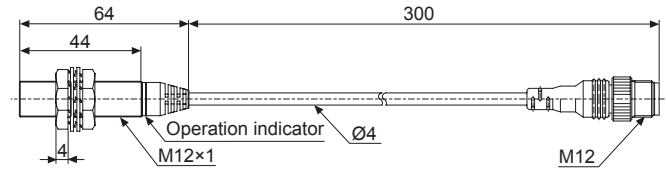
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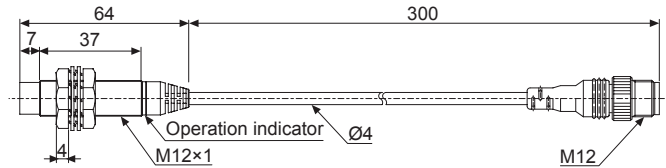
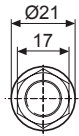
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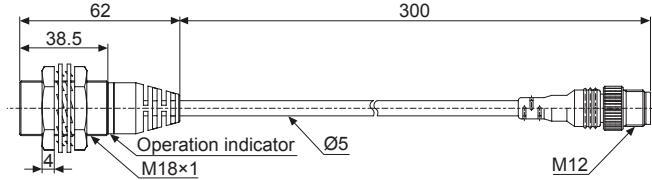
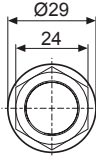
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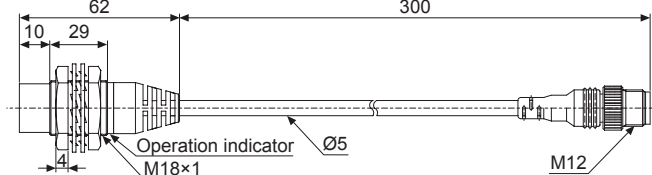
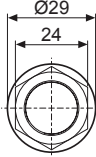
### ● PRDWL12-8D□



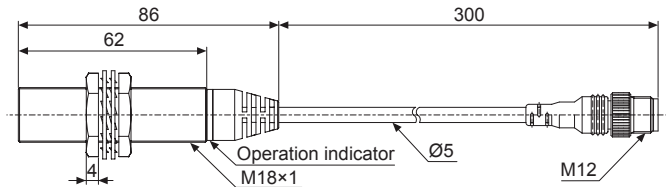
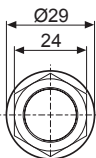
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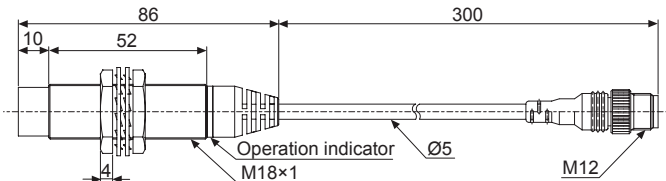
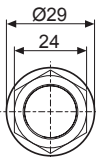
### ● PRDW(T)18-14D□



### ● PRDWL(T)18-7D□



### ● PRDWL(T)18-14D□

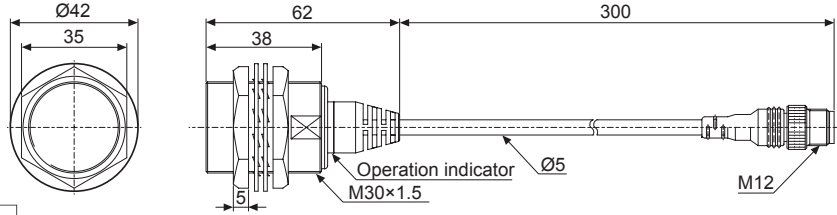


# Cylindrical, Long Sensing Distance, Cable Connector Type

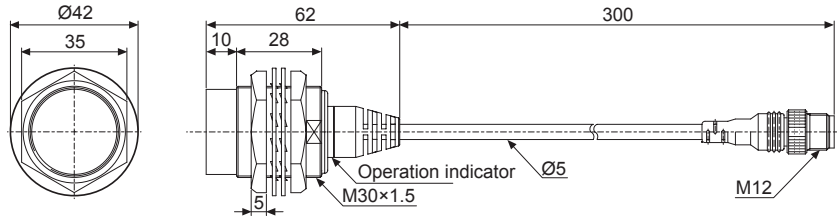
## ■ Dimensions

(unit: mm)

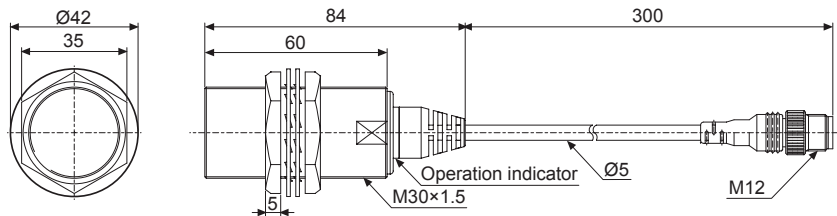
### ● PRDW(T)30-15D □



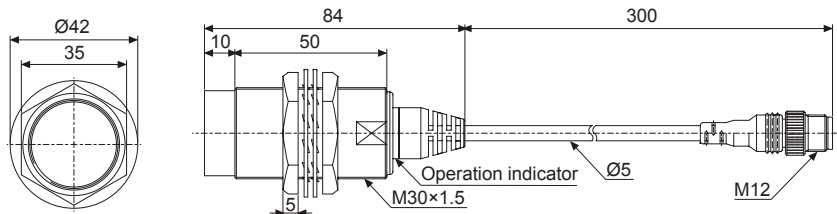
### ● PRDW(T)30-25D □



### ● PRDWL(T)30-15D □



### ● PRDWL(T)30-25D □

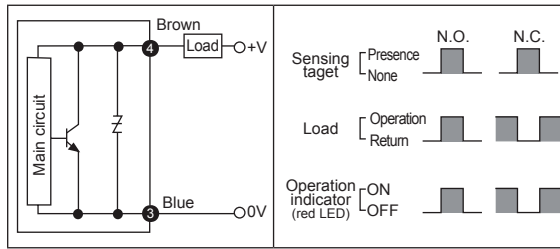


(A)	Photoelectric Sensors
(B)	Fiber Optic Sensors
(C)	Door/Area Sensors
(D)	Proximity Sensors
(E)	Pressure Sensors
(F)	Rotary Encoders
(G)	Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
(H)	Temperature Controllers
(I)	SSRs / Power Controllers
(J)	Counters
(K)	Timers
(L)	Panel Meters
(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

# PRDW Series

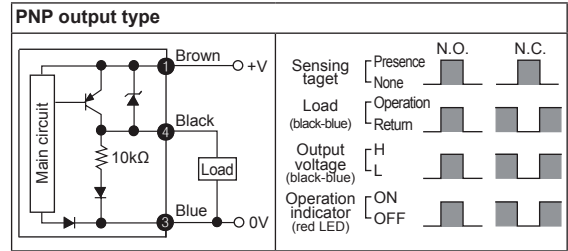
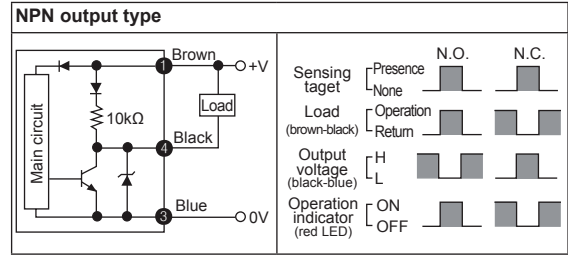
## Control Output Diagram and Load Operation

### DC 2-wire type



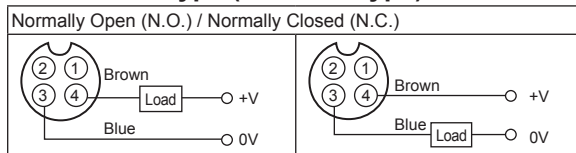
※The number in a circle is pin no. of connector.

### DC 3-wire type



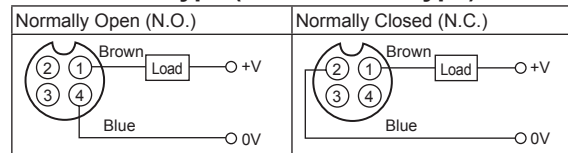
## Wiring Diagram

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



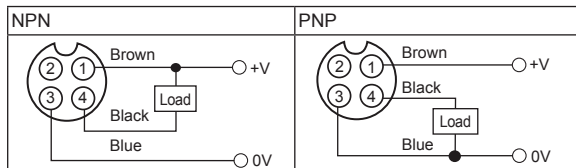
- ※Pin ①, ② are not used terminals.
- ※When using DC 3-wire type of connector cable, black (12-24VDC) and blue (0V) cables can be used.

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



- ※②, ③ of N.O. type and ③, 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.) PRDWT12-4DO-I
- ※Please put "I" behind of model name for selecting proximity sensor by IEC standard. E.g.) CID2-2-I, CLD2-2-I

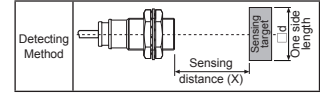
### DC 3-wire type



- ※Please fasten the cleat of connector not to shown the thread. (0.39 to 0.49N·m)
- ※Please fasten the vibration part with PTFE tape.
- ※Refer to the G-6 for IEC standard connector cables and specifications.

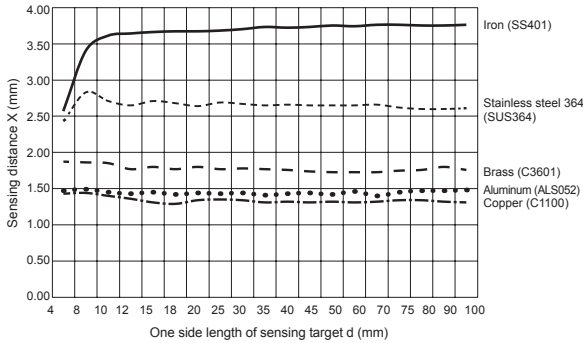
# Cylindrical, Long Sensing Distance, Cable Connector Type

## ■ Sensing Distance Feature Data by Target Material and Size

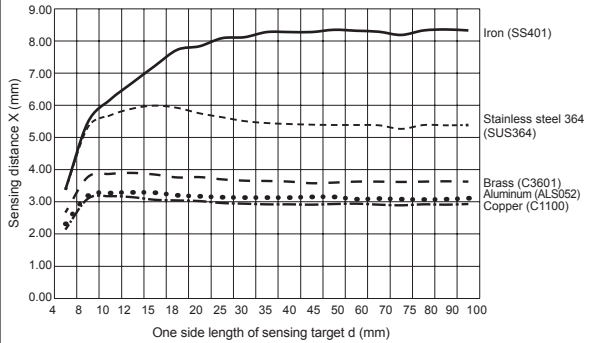


- (A) Photoelectric Sensors
- (B) Fiber Optic Sensors
- (C) Door/Area Sensors
- (D) Proximity Sensors**
- (E) Pressure Sensors
- (F) Rotary Encoders
- (G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
- (H) Temperature Controllers
- (I) SSRs / Power Controllers
- (J) Counters
- (K) 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

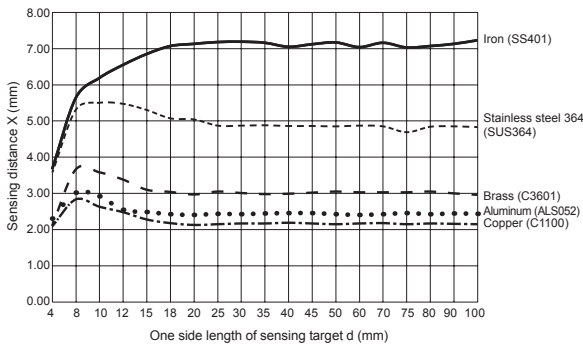
### ● PRDWT12-4D



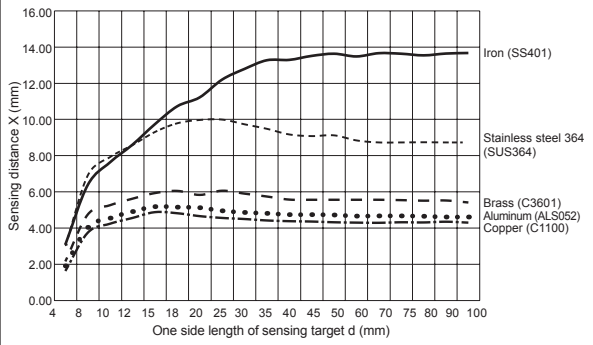
### ● PRDWT12-8D



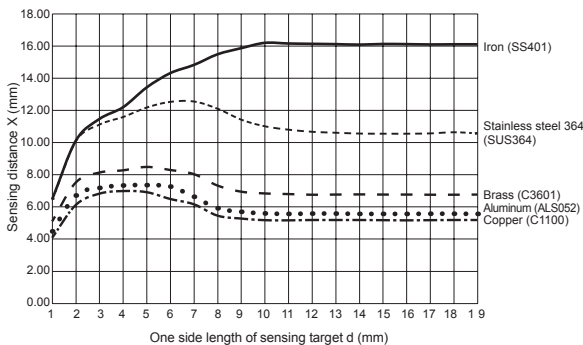
### ● PRDW(L)T18-7D



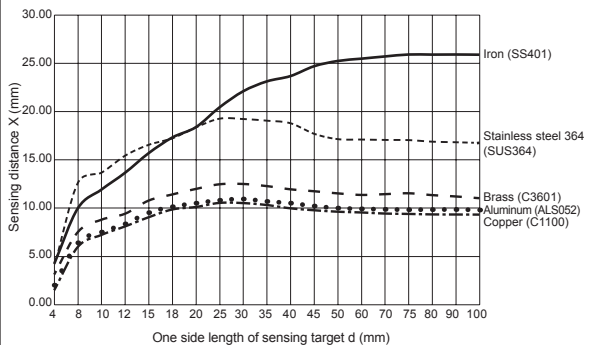
### ● PRDWT18-14D



### ● PRDWT30-15D

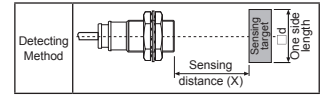


### ● PRDWT30-25D

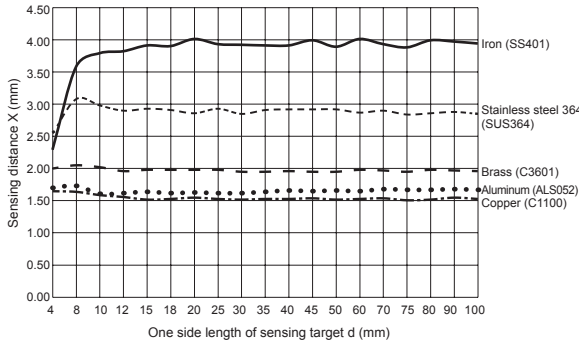


# PRDW Series

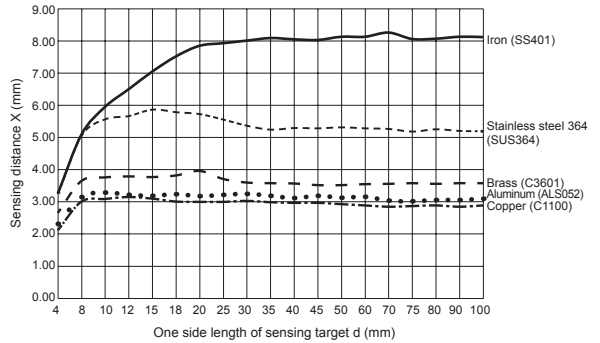
## ■ Sensing Distance Feature Data by Target Material and Size



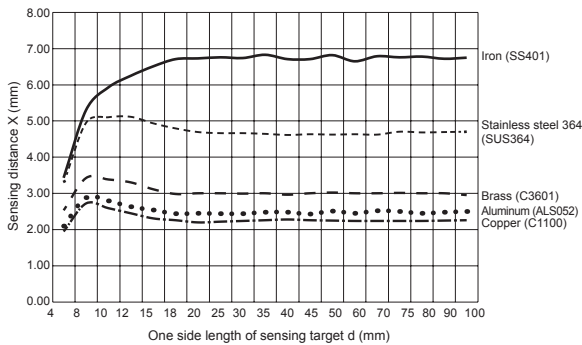
### ● PRDW(L)12-4D



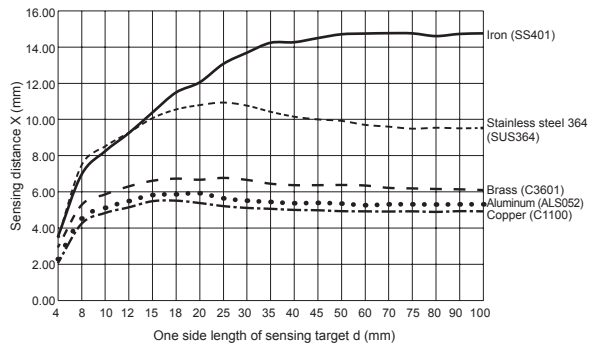
### ● PRDW(L)12-8D



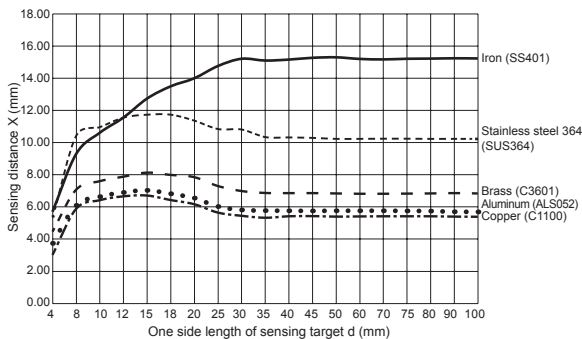
### ● PRDW(L)18-7D



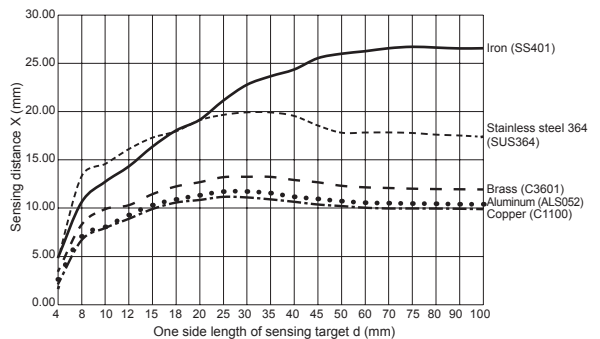
### ● PRDW(L)18-14D



### ● PRDW(L)30-15D

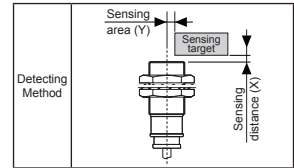


### ● PRDW(L)30-25D



# Cylindrical, Long Sensing Distance, Cable Connector Type

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



(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

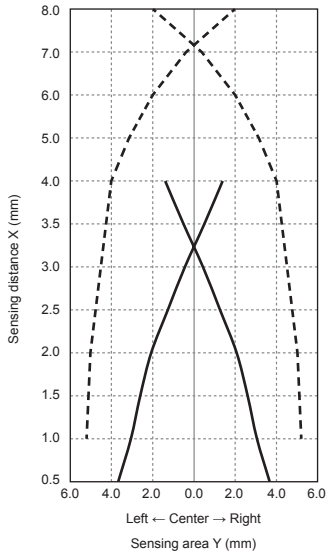
(Q) Stepper Motors & Drivers & Controllers

(R) Graphic/ Logic Panels

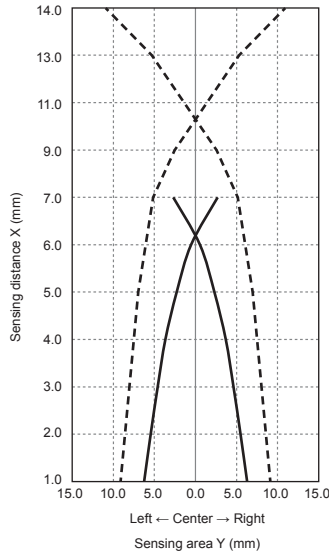
(S) Field Network Devices

(T) Software

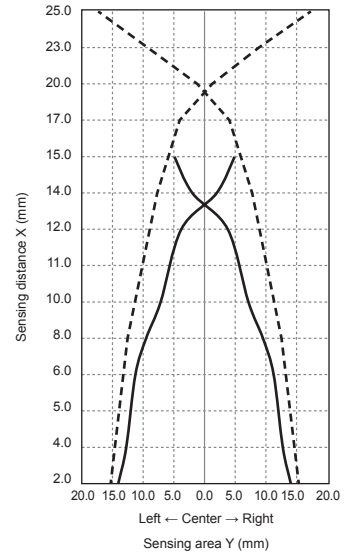
### ● PRDWT12-4D□/8D□



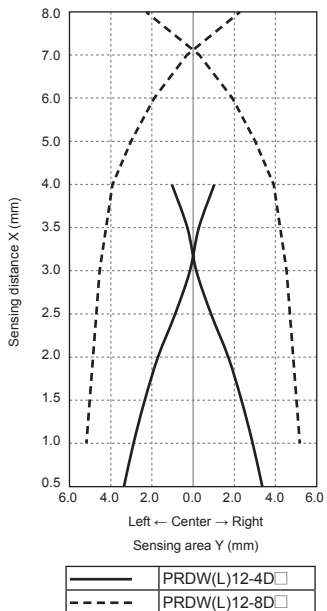
### ● PRD(L)T18-7D□ PRDWT18-14D□



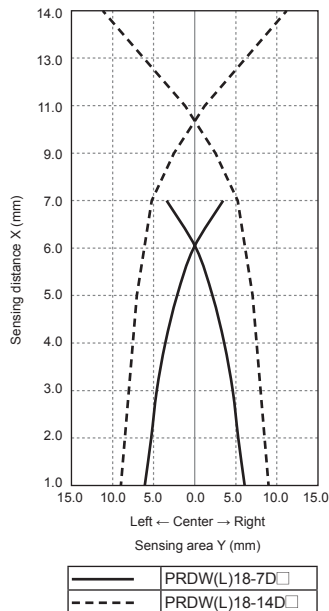
### ● PRDWT30-15D□/25D□



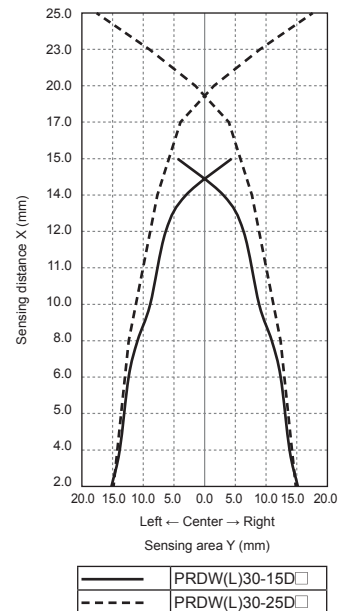
### ● PRD(L)12-4D□/8D□



### ● PRD(L)18-7D□/14D□



### ● PRD(L)30-15D□/25D□

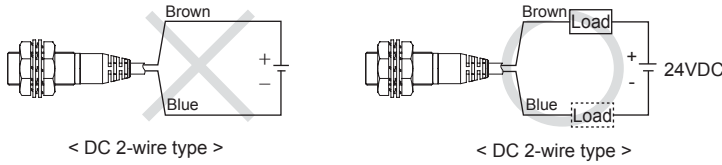




# PRDW Series

## ■ Proper Usage

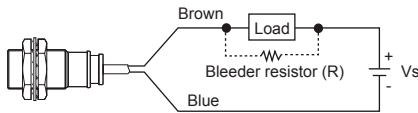
### ◎ Load connections



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.

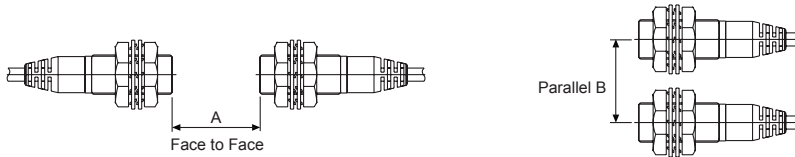
※W value of Bleeder resistor should be bigger for proper heat dissipation.

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

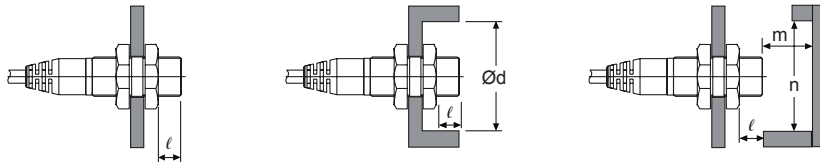
[Vs: Power supply, Io: Min. action current of proximity sensor, Ioff: Return current of load, P: Number of Bleeder resistance watt]

### ◎ 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)

Model	PRDWT12-4D□ PRDW(L)12-4D□	PRDWT12-8D□ PRDW(L)12-8D□	PRDW(L)T18-7D□ PRDW(L)18-7D□	PRDWT18-14D□ PRDW(L)18-14D□	PRDWT30-15D□ PRDW(L)30-15D□	PRDWT30-25D□ PRDW(L)30-25D□
A	24	48	42	84	90	150
B	24	36	36	54	60	90
l	0	11	0	14	0	15
∅d	12	36	18	54	30	90
m	12	24	21	42	45	75
n	18	36	27	54	45	90