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, output short 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 (except for PRDWT08-□DO-□)

Please read "Safety Considerations" in the instruction manual before using.

CE

▣ Specifications

● DC 2-wire type

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

Model	PRDWT08-2DO PRDWT08-2DC PRDWT08-2DO-I PRDWT08-2DC-I PRDWT08-2DO-V PRDWT08-2DC-V PRDWT08-2DO-IV PRDWT08-2DC-IV	PRDWT08-4DO PRDWT08-4DC PRDWT08-4DO-I PRDWT08-4DC-I PRDWT08-4DO-V PRDWT08-4DC-V PRDWT08-4DO-IV PRDWT08-4DC-IV	PRDWT12-4[D]O PRDWT12-4[D]C PRDWT12-4[D]O-I PRDWT12-4[D]C-I PRDWT12-4[D]O-IV PRDWT12-4[D]C-IV PRDWT12-4DO-V PRDWT12-4DC-V	PRDWT12-8[D]O PRDWT12-8[D]C PRDWT12-8[D]O-I PRDWT12-8[D]C-I PRDWT12-8[D]O-IV PRDWT12-8[D]C-IV PRDWT12-8DO-V PRDWT12-8DC-V	PRDWT18-7[D]O PRDWT18-7[D]C PRDWT18-7[D]O-I PRDWT18-7[D]C-I PRDWT18-7[D]O-IV PRDWT18-7[D]C-IV PRDWT18-7DO-V PRDWT18-7DC-V PRDWLT18-7DO-IV	PRDWT18-14[D]O PRDWT18-14[D]C PRDWT18-14[D]O-I PRDWT18-14[D]C-I PRDWT18-14[D]O-IV PRDWT18-14[D]C-IV PRDWT18-14DO-V PRDWT18-14DC-V	PRDWT30-15[D]O PRDWT30-15[D]C PRDWT30-15[D]O-I PRDWT30-15DC-I PRDWT30-15[D]O-IV PRDWT30-15DC-IV PRDWT30-15DO-V PRDWT30-15DC-V	PRDWT30-25DO PRDWT30-25DC PRDWT30-25DO-I PRDWT30-25DC-I PRDWT30-25DO-IV PRDWT30-25DC-IV PRDWT30-25DO-V PRDWT30-25DC-V
Diameter of sensing side	8mm		12mm		18mm		30mm	
Sensing distance	2mm	4mm	4mm	8mm	7mm	14mm	15mm	25mm
Installation	Shield (flush)	Non-Shield (non-flush)	Shield (flush)	Non-Shield (non-flush)	Shield (flush)	Non-Shield (non-flush)	Shield (flush)	Non-Shield (non-flush)
Hysteresis	Max. 15% of sensing distance		Max. 10% of sensing distance					
Standard sensing target	8×8×1mm (iron)	12×12×1mm (iron)	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 1.4mm	0 to 2.8mm	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. 0.8mA		Max. 0.6mA					
Response frequency※1	1kHz	800Hz	450Hz	400Hz	250Hz	200Hz	100Hz	
Residual voltage※2	Max. 3.5V (non-polarity type is max. 5V)							
Affection by Temp.	Max. ±15% for sensing distance at ambient temperature 20℃		Max. ±10% for sensing distance at ambient temperature 20℃					
Control output	2 to 100mA							

※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.

● DC 2-wire type

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

Model		PRDWT08-2DO PRDWT08-2DC PRDWT08-2DO-I PRDWT08-2DC-I PRDWT08-2DO-V PRDWT08-2DC-V PRDWT08-2DO-IV PRDWT08-2DC-IV	PRDWT08-4DO PRDWT08-4DC PRDWT08-4DO-I PRDWT08-4DC-I PRDWT08-4DO-V PRDWT08-4DC-V PRDWT08-4DO-IV PRDWT08-4DC-IV	PRDWT12-4 D O PRDWT12-4 D C PRDWT12-4 D O-I PRDWT12-4 D C-I PRDWT12-4 D O-IV PRDWT12-4 D C-IV PRDWT12-4DO-V PRDWT12-4DC-V	PRDWT12-8 D O PRDWT12-8 D C PRDWT12-8 D O-I PRDWT12-8 D C-I PRDWT12-8 D O-IV PRDWT12-8 D C-IV PRDWT12-8DO-V PRDWT12-8DC-V	PRDWT18-7 D O PRDWT18-7 D C PRDWT18-7 D O-I PRDWT18-7 D C-I PRDWT18-7 D O-IV PRDWT18-7 D C-IV PRDWT18-7DO-V PRDWT18-7DC-V PRDWLT18-7DO-IV	PRDWT18-14 D O PRDWT18-14 D C PRDWT18-14 D O-I PRDWT18-14 D C-I PRDWT18-14 D O-IV PRDWT18-14 D C-IV PRDWT18-14DO-V PRDWT18-14DC-V	PRDWT30-15 D O PRDWT30-15 D C PRDWT30-15 D O-I PRDWT30-15DC-I PRDWT30-15 D O-IV PRDWT30-15DC-IV PRDWT30-15DO-V PRDWT30-15DC-V	PRDWT30-25DO PRDWT30-25DC PRDWT30-25DO-I PRDWT30-25DC-I PRDWT30-25DO-IV PRDWT30-25DC-IV PRDWT30-25DO-V PRDWT30-25DC-V
Insulation resistance		Over 50MΩ (at 500VDC megger)							
Dielectric strength		1,500VAC 50/60Hz for 1 min							
Vibration		1mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours							
Shock		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times							
Indicator		Operation indicator: Red LED							
Environment	Ambient temp.	-25 to 70℃, storage: -30 to 80℃							
	Ambient humi.	35 to 95% RH, storage: 35 to 95% RH							
Protection circuit		Surge protection circuit, reverse polarity protection circuit, output short over current protection circuit							
Material		Case/Nut: Nickel plated brass (case of PRDT08: SUS303), Washer: Nickel plated iron, Sensing surface: Polybutylene terephthalate, Standard cable (black): Polyvinyl chloride (PVC), Oil resistant cable (gray): Oil resistant polyvinyl chloride (PVC)							
Cable※3		Ø3.5mm, 2-wire, 300mm, M12 connector (AWG24, core diameter: 0.08mm, number of cores: 40, insulator diameter: Ø1.0mm)		Ø4mm, 2-wire, 300mm, M12 connector (AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm)		Ø5mm, 2-wire, 300mm, M12 connector (AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm)			
Approval		CE							
Protection structure		IP67 (IEC standard)							
Weight※4	PRDWT	Approx. 28g (approx. 20g)	Approx. 44g (approx. 32g)	Approx. 42g (approx. 30g)	Approx. 80g (approx. 62g)	Approx. 75g (approx. 57g)	Approx. 140g (approx. 130g)	Approx. 145g (approx. 108g)	
	PRDWLT	—	—	—	Approx. 110g (approx. 92g)	—	—	—	

※3: Do not pull the Ø3.5mm cable with a tensile strength of 25N, the Ø4mm cable with a tensile strength of 30N or over and the Ø5mm cable with a tensile strength of 50N or over.
It may result in fire due to the broken wire. When extending wire, use AWG22 cable or over within 200m.
※4: The weight includes packaging. The weight in parenthesis in for unit only.
※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.

● DC 3-wire type

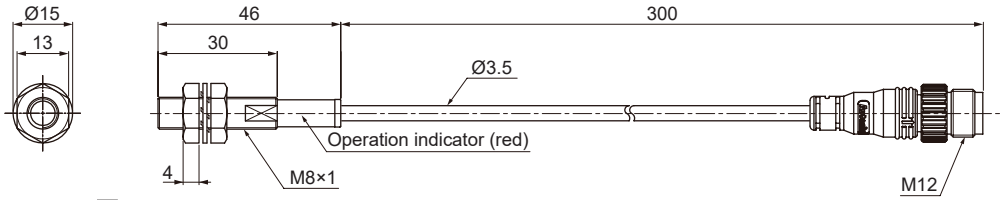
Model		PRDW12-4DN PRDW12-4DP PRDW12-4DN2 PRDW12-4DP2 PRDW12-4DN-V PRDW12-4DP-V PRDW12-4DN2-V PRDW12-4DP2-V PRDWL12-4DN PRDWL12-4DP PRDWL12-4DN2 PRDWL12-4DP2	PRDW12-8DN PRDW12-8DP PRDW12-8DN2 PRDW12-8DP2 PRDW12-8DN-V PRDW12-8DP-V PRDW12-8DN2-V PRDW12-8DP2-V PRDWL12-8DN PRDWL12-8DP PRDWL12-8DN2 PRDWL12-8DP2	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
Diameter of sensing side		12mm		18mm		30mm	
Sensing distance		4mm	8mm	7mm	14mm	15mm	25mm
Installation		Shield (flush)	Non-Shield (non-flush)	Shield (flush)	Non-Shield (non-flush)	Shield (flush)	Non-Shield (non-flush)
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℃					
Control output		200mA					
Insulation resistance		Over 50MΩ (at 500VDC megger)					
Dielectric strength		1,500VAC 50/60Hz for 1 min					
Vibration		1mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours					
Shock		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times					
Indicator		Operation indicator: Red LED					
Environment	Ambient temp.	-25 to 70℃, storage: -30 to 80℃					
	Ambient humi.	35 to 95%RH, storage: 35 to 95%RH					
Protection circuit		Surge protection circuit, reverse polarity protection circuit, output short over current protection circuit					
Protection structure		IP67 (IEC standard)					
Material		Case/Nut: Nickel plated brass, Washer: Nickel plated iron, Sensing surface: Polybutylene terephthalate, Standard cable (black): Polyvinyl chloride (PVC), Oil resistant cable (gray): Oil resistant polyvinyl chloride (PVC)					
Cable※2		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		CE					
Unit weight	PRDW	Approx. 44g	Approx. 42g	Approx. 80g	Approx. 75g	Approx. 140g	Approx. 145g
	PRDWL	Approx. 64g	Approx. 62g	Approx. 110g	Approx. 105g	Approx. 180g	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.
※2: Do not pull the Ø4mm cable with a tensile strength of 30N or over and the Ø5mm cable with a tensile strength of 50N or over. It may result in fire due to the broken wire. When extending wire, use AWG22 cable or over within 200m.
※The last 'V' of model name is for the model with oil-resistance reinforced cable.
※Environment resistance is rated at no freezing or condensation.

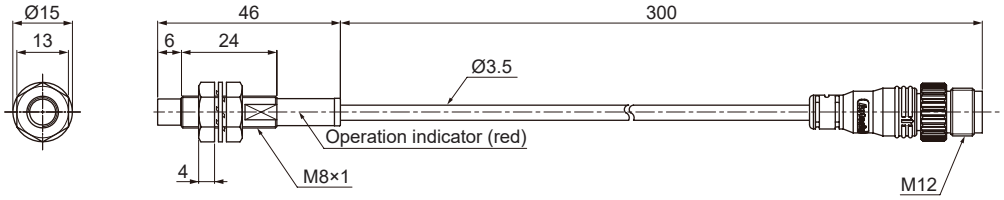
▣ Dimensions

(unit: mm)

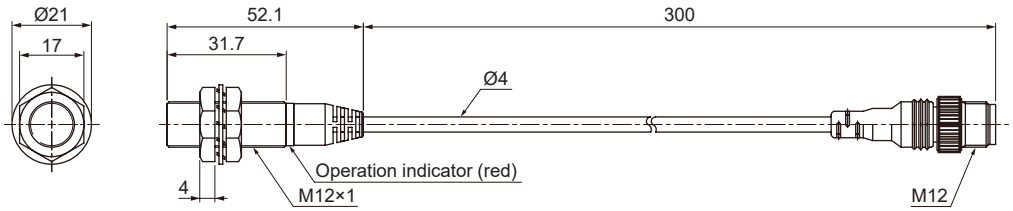
● **PRDWT08-2D□**



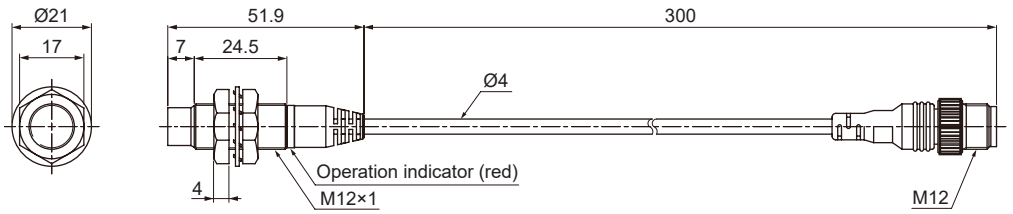
● **PRDWT08-4D□**



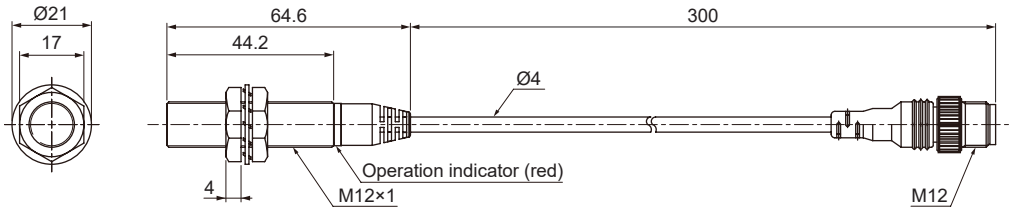
● **PRDW(T)12-4D□**



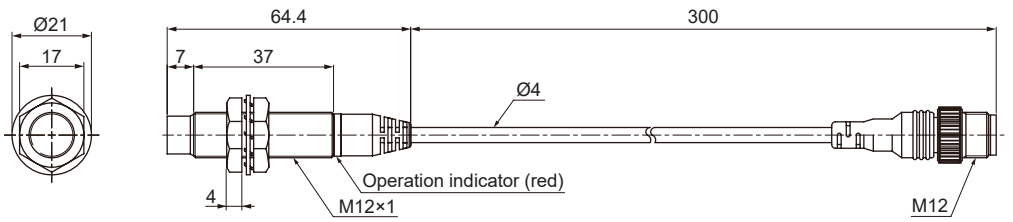
● **PRDW(T)12-8D□**



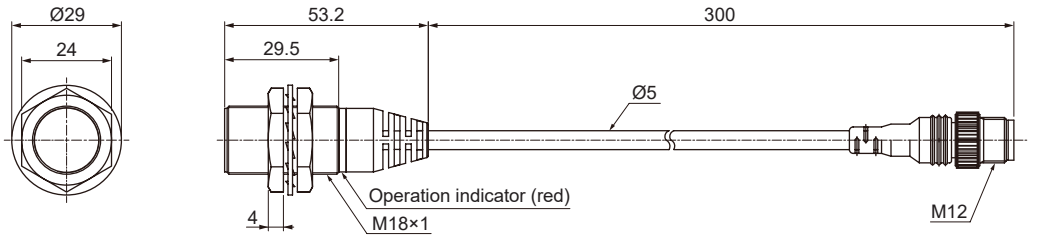
● **PRDWL12-4D□**



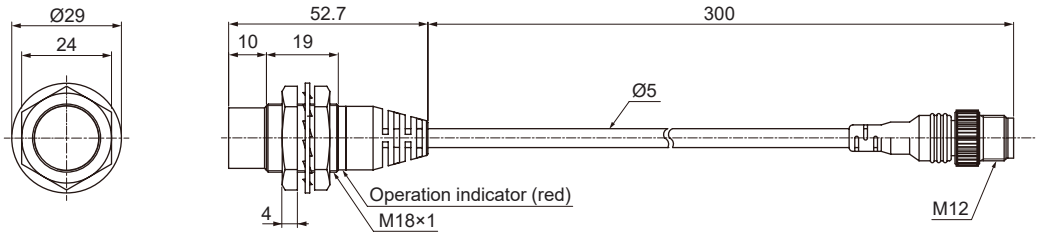
● **PRDWL12-8D□**



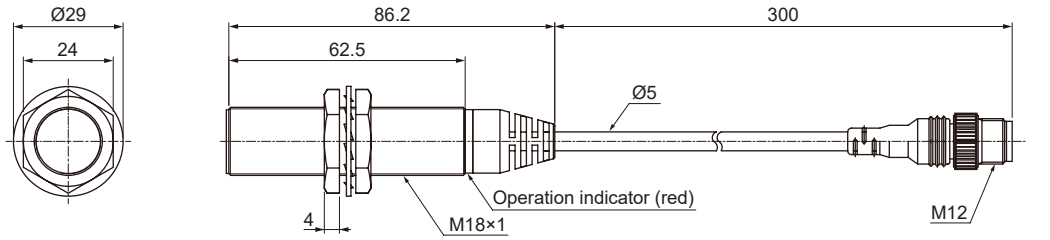
● **PRDW(T)18-7D□**



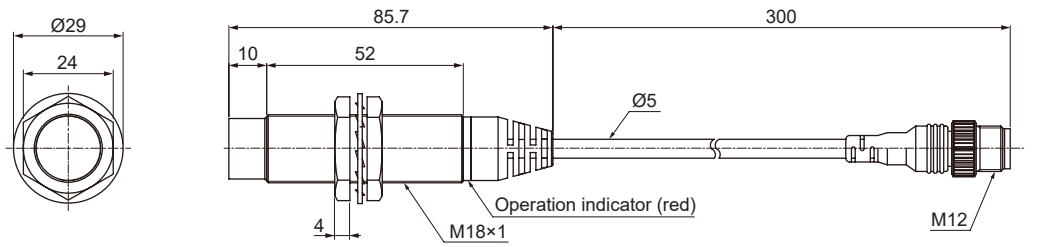
● **PRDW(T)18-14D□**



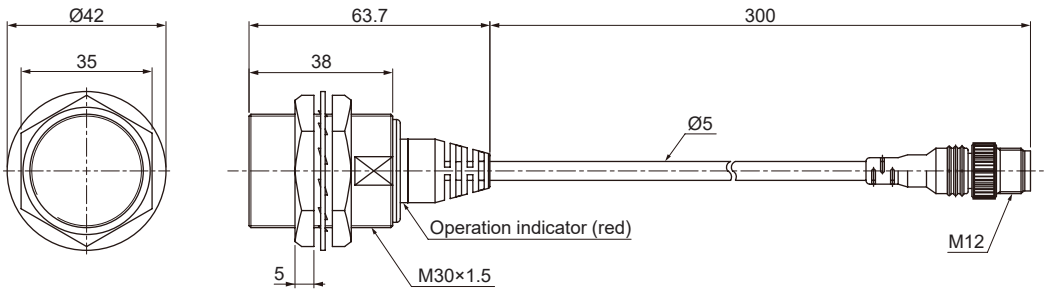
● **PRDWL(T)18-7D□**



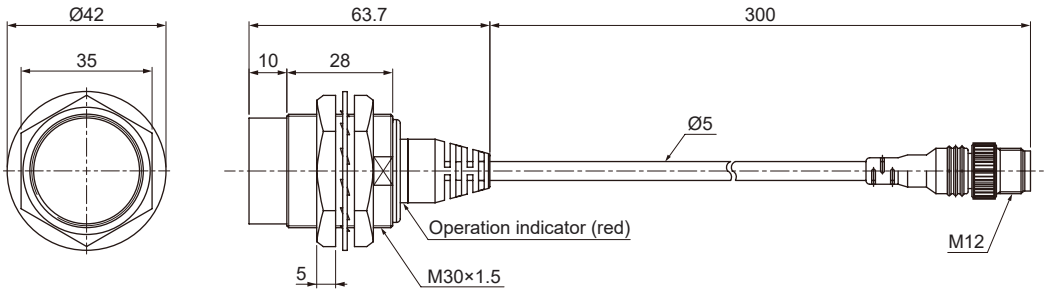
● **PRDWL18-14D□**



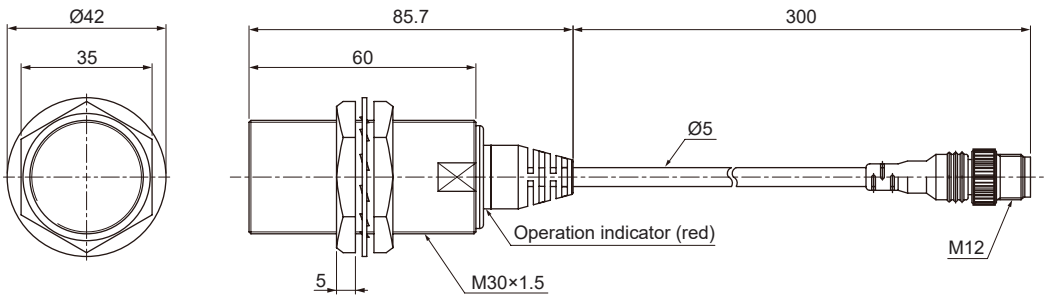
● **PRDW(T)30-15D□**



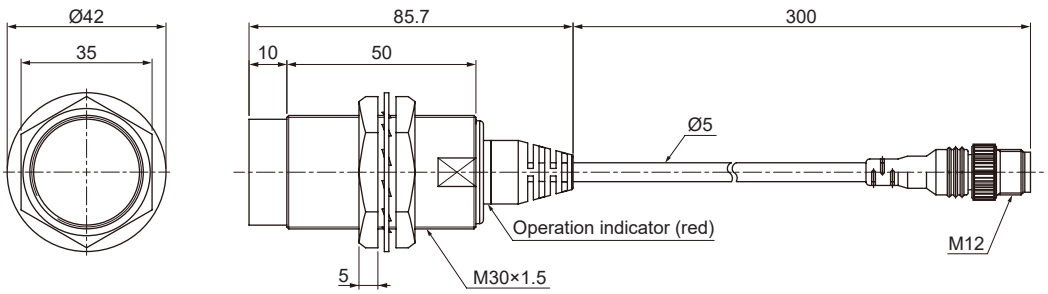
● **PRDW(T)30-25D□**



● **PRDWL30-15D□**

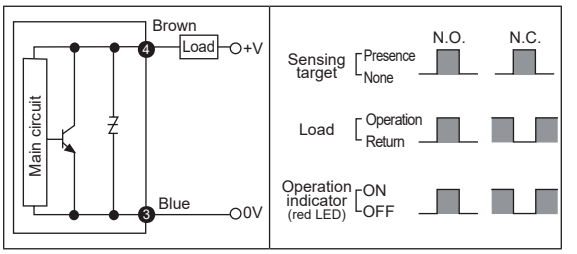


● **PRDWL30-25D□**



▣ Control Output Diagram and Load Operation

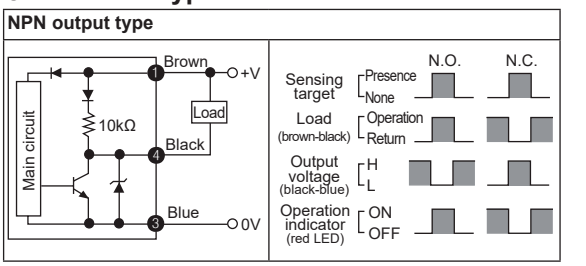
◎ DC 2-wire type



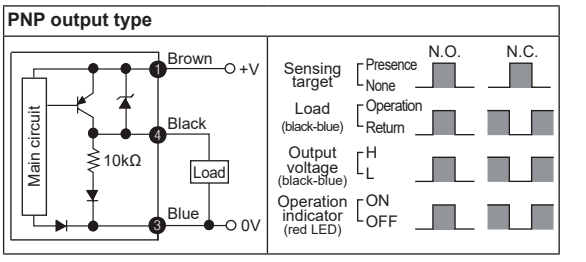
※The number in a circle is pin no. of connector.

◎ DC 3-wire type

NPN output type



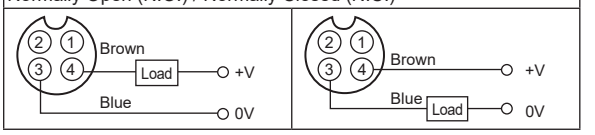
PNP output type



▣ Wiring Diagram

◎ DC 2-wire type (standard type)

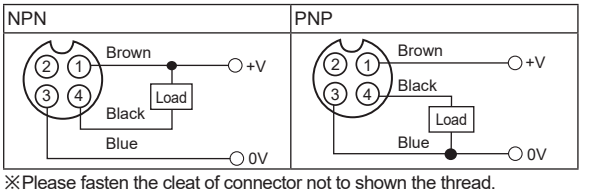
Normally Open (N.O.) / Normally Closed (N.C.)



※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 3-wire type

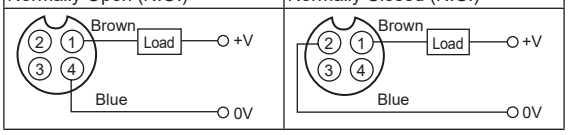
NPN | PNP



※Please fasten the cleat of connector not to shown the thread. (0.39 to 0.49N·m)
※Please fasten the vibration part with PEFT tape.
※For more information about cable and specification, refer to the (I) Connectors/Cable Connectors/Sensor Distribution Boxes/Sockets

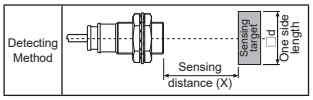
◎ DC 2-wire type (IEC standard type)

Normally Open (N.O.) | Normally Closed (N.C.)

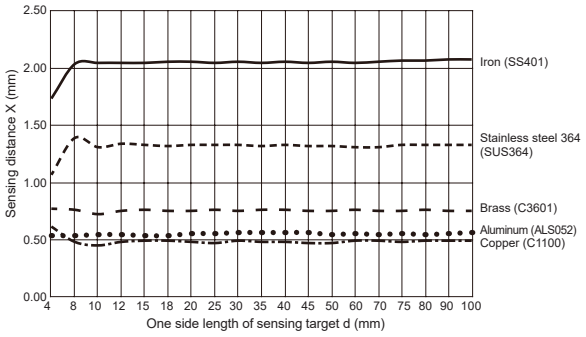


※②,③ of N.O. type and ③,④ of N.C. type are not used terminals.
※The type, pin arrangement of connector based upon IEC standard is being developed.
※Please put "I" behind of standard type for purchasing IEC standard product. E.g.) PRDWT12-4DO-I
※Please put "I" behind of model name for selecting proximity sensor by IEC standard. E.g.) CID2-2-I, CLD2-2-I

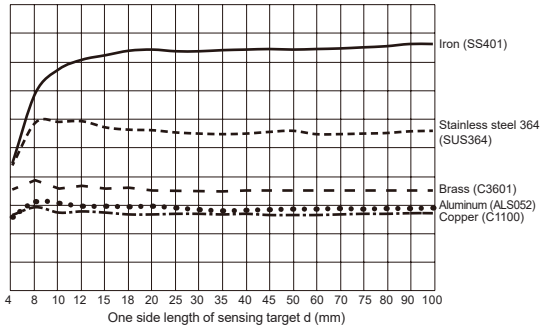
▣ Sensing Distance Feature Data by Target Material and Size



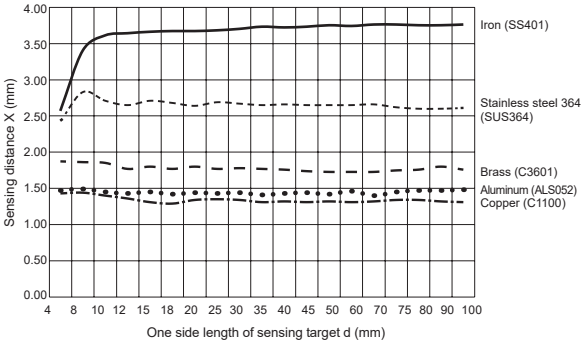
● PRDWT08-2D□



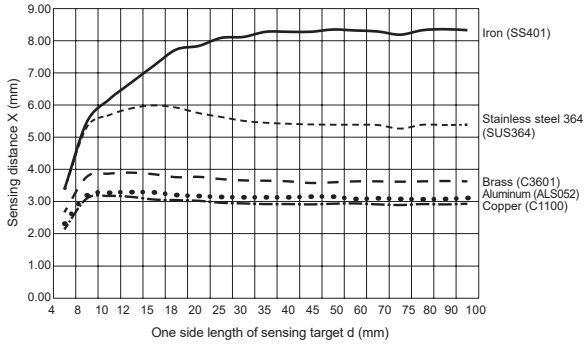
● PRDWT08-4D□



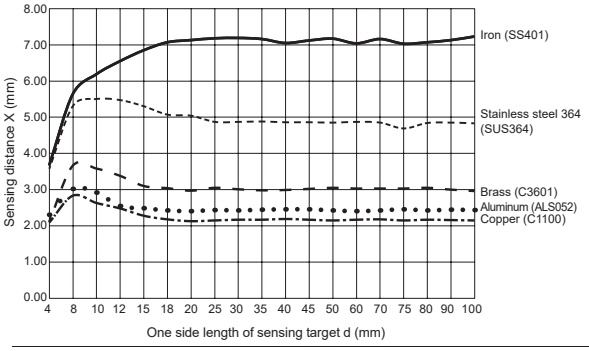
● PRDWT12-4D□



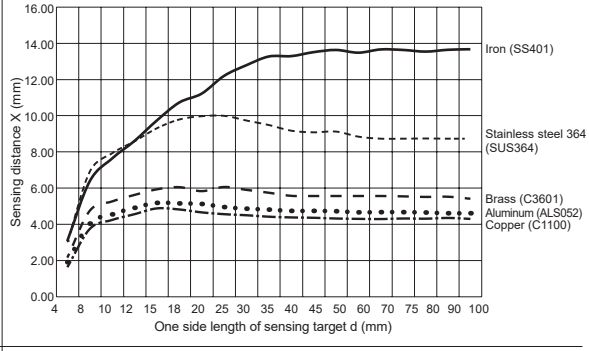
● PRDWT12-8D□



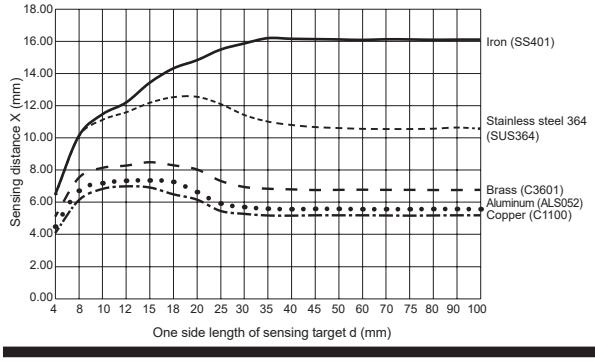
● PRDW(L)T18-7D□



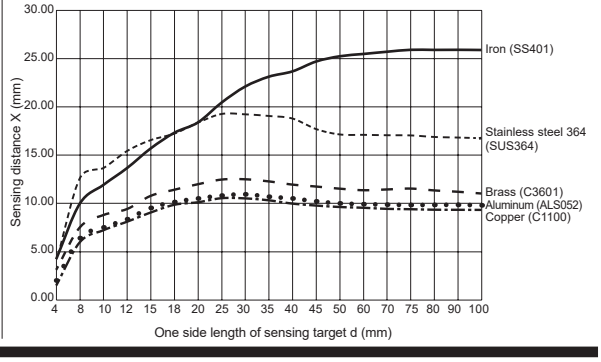
● PRDWT18-14D□



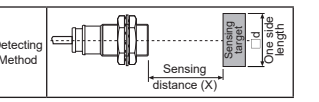
● PRDWT30-15D□



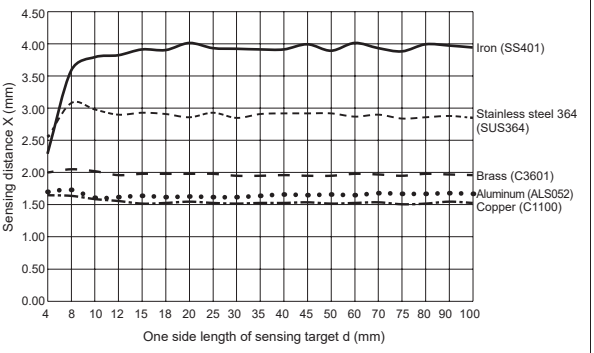
● PRDWT30-25D□



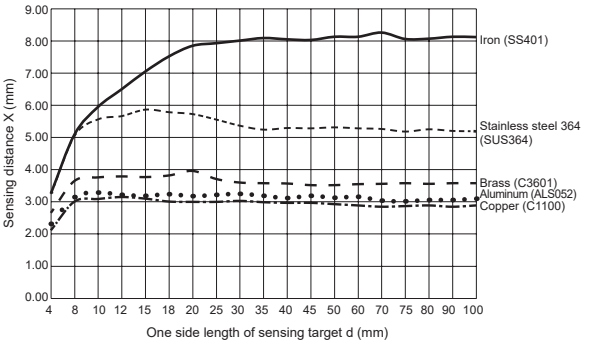
▣ Sensing Distance Feature Data by Target Material and Size



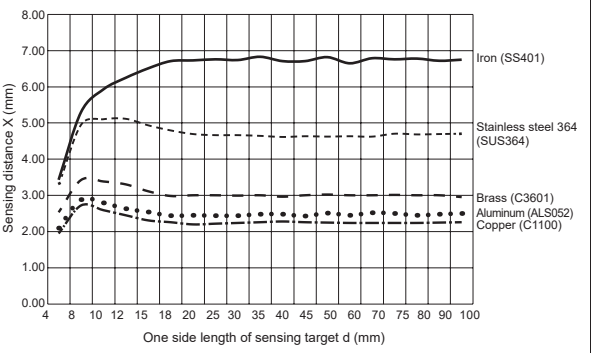
● PRDW(L)12-4D□



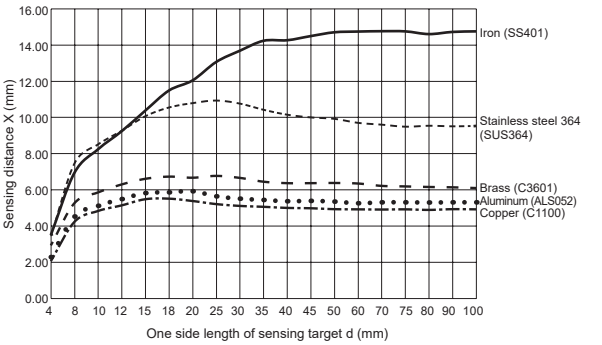
● PRDW(L)12-8D□



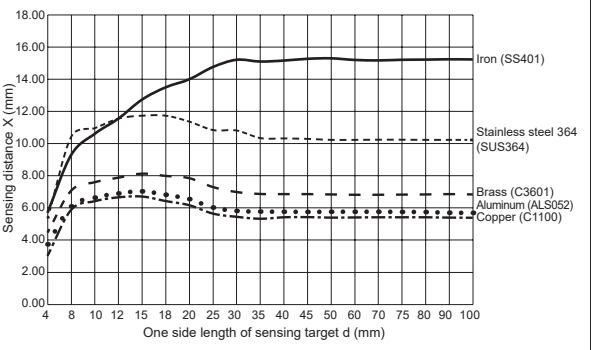
● PRDW(L)18-7D□



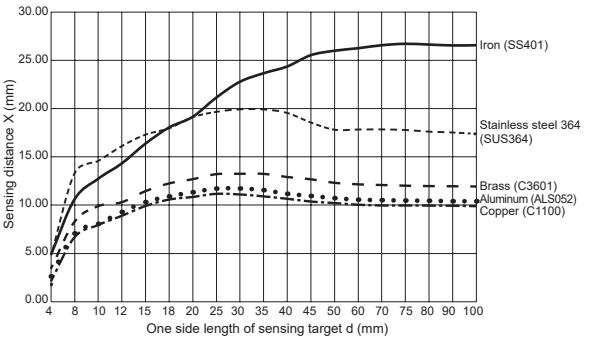
● PRDW(L)18-14D□



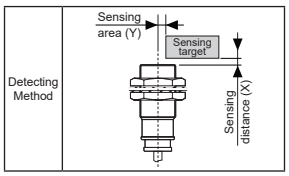
● PRDW(L)30-15D□



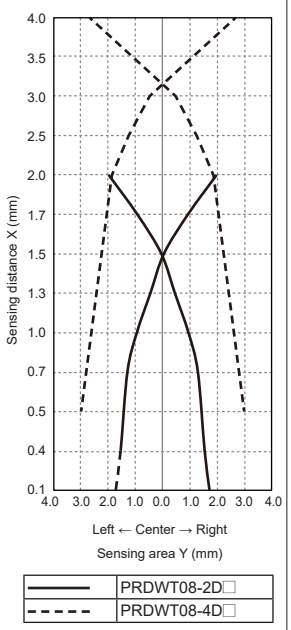
● PRDW(L)30-25D□



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

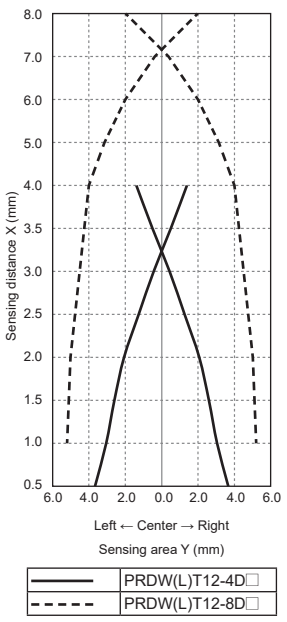


● PRDWT08-2D□/4D□



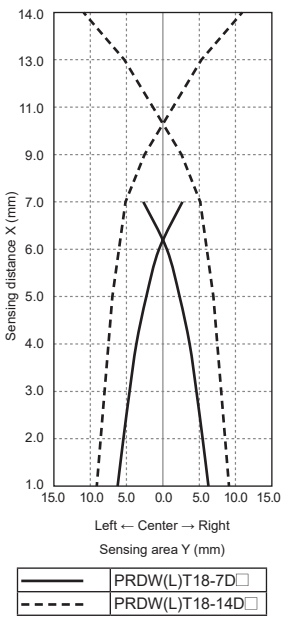
———	PRDWT08-2D□
- - - - -	PRDWT08-4D□

● PRDWT12-4D□/8D□



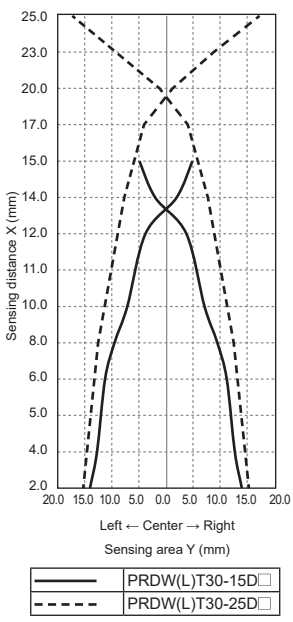
———	PRDW(L)T12-4D□
- - - - -	PRDW(L)T12-8D□

● PRDW(L)T18-7D□ PRDWT18-14D□



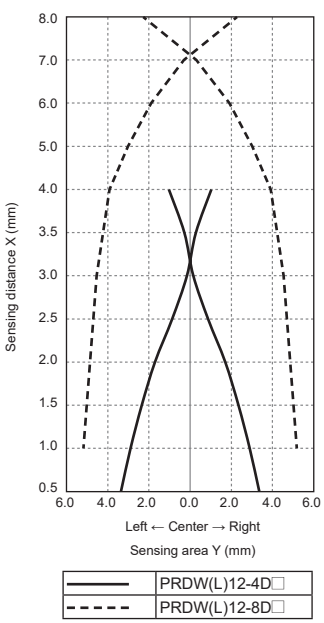
———	PRDW(L)T18-7D□
- - - - -	PRDW(L)T18-14D□

● PRDWT30-15D□/25D□



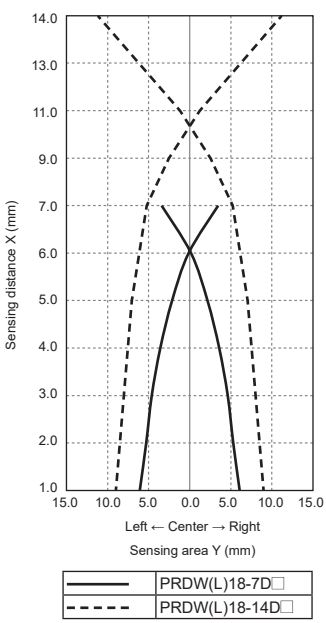
———	PRDW(L)T30-15D□
- - - - -	PRDW(L)T30-25D□

● PRDW(L)12-4D□/8D□



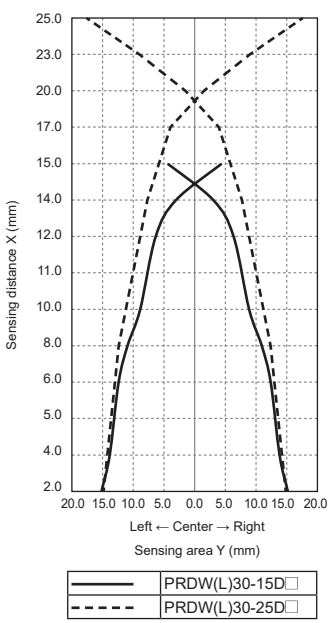
———	PRDW(L)12-4D□
- - - - -	PRDW(L)12-8D□

● PRDW(L)18-7D□/14D□



———	PRDW(L)18-7D□
- - - - -	PRDW(L)18-14D□

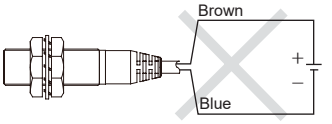
● PRDW(L)30-15D□/25D□



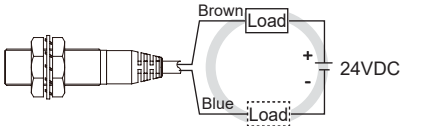
———	PRDW(L)30-15D□
- - - - -	PRDW(L)30-25D□

▣ Proper Usage

◎ Load connections



< DC 2-wire type >

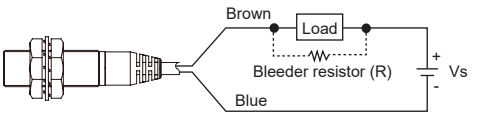


< DC 2-wire type >

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.

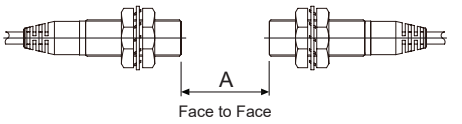
※W value of Bleeder resistor should be bigger for proper heat dissipation.

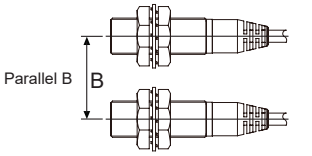
$$R \leq \frac{Vs}{Io\text{-}Ioff}\ (k\Omega) \qquad P > \frac{Vs^2}{R}\ (W)$$

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

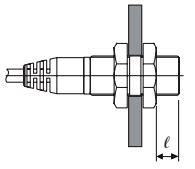
◎ Mutual-interference & Influence by surrounding metals

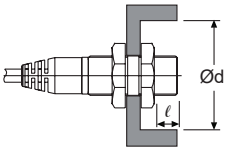
When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to keep a minimum distance between the two sensors as below chart indicates.

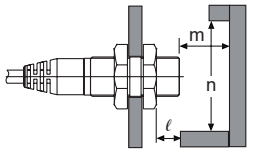




When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.







(unit: mm)

Item \ Model	PRDWT08-2D□	PRDWT08-4D□	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	20	80	25	120	50	200	110	350
B	15	60	25	100	35	110	90	300
ℓ	0	12	2.5	15	3.5	14	6	20
Ød	8	24	18	40	27	70	45	120
m	6	8	12	20	24	40	45	90
n	12	24	18	40	27	70	45	120