

Autonics INDUCTIVE PROXIMITY SENSOR LONG DISTANCE CYLINDRICAL TYPE DC 3-WIRE INSTRUCTION MANUAL

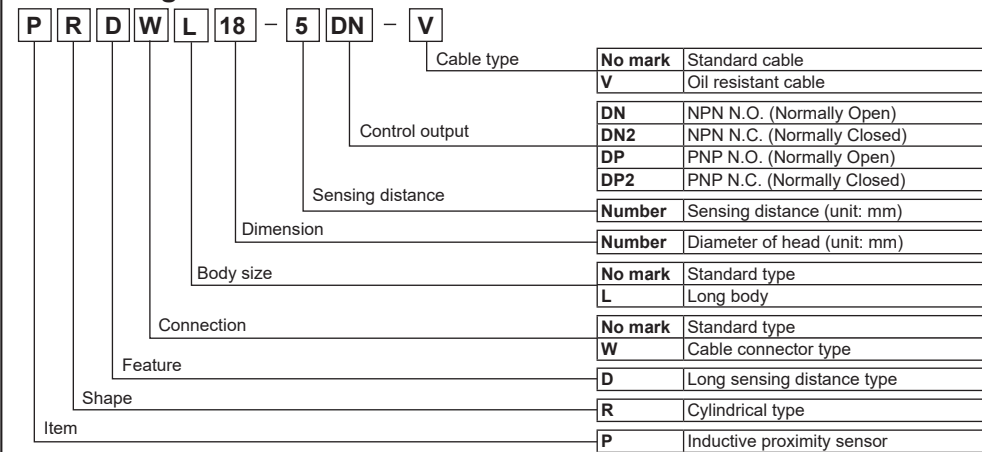


Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

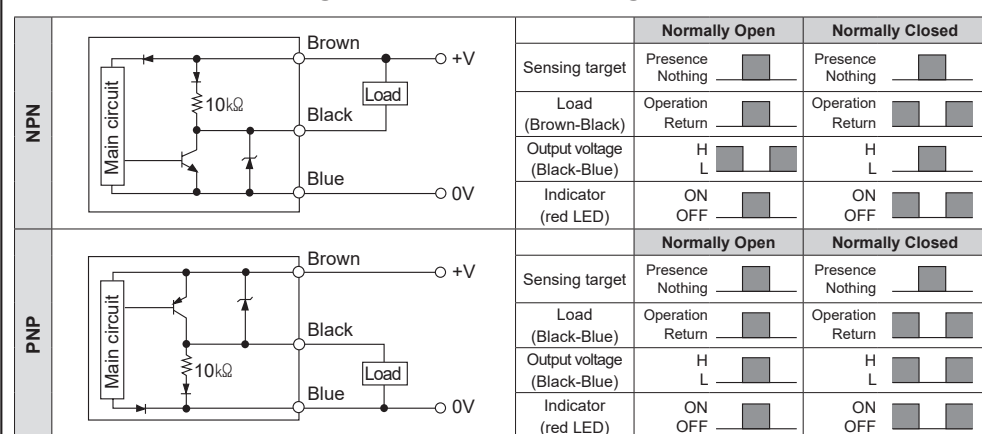
■ Safety Considerations

- ※Please observe all safety considerations for safe and proper product operation to avoid hazards.
- ※⚠ symbol represents caution due to special circumstances in which hazards may occur.
- ⚠ **Warning** Failure to follow these instructions may result in serious injury or death.
- ⚠ **Caution** Failure to follow these instructions may result in personal injury or product damage.
- ⚠ **Warning**
 - Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.) Failure to follow this instruction may result in personal injury, fire or economic loss.
 - Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present. Failure to follow this instruction may result in explosion or fire.
 - Do not disassemble or modify the unit. Failure to follow this instruction may result in fire.
 - Do not connect, repair, or inspect the unit while connected to a power source. Failure to follow this instruction may result in fire.
 - Check 'Connections' before wiring. Failure to follow this instruction may result in fire.
- ⚠ **Caution**
 - Use the unit within the rated specifications. Failure to follow this instruction may result in fire or product damage.
 - Use dry cloth to clean the unit, and do not use water or organic solvent. Failure to follow this instruction may result in fire.
 - Do not supply power without load. Failure to follow this instruction may result in fire or product damage.

■ Ordering Information



■ Control Output Diagram & Load Operating



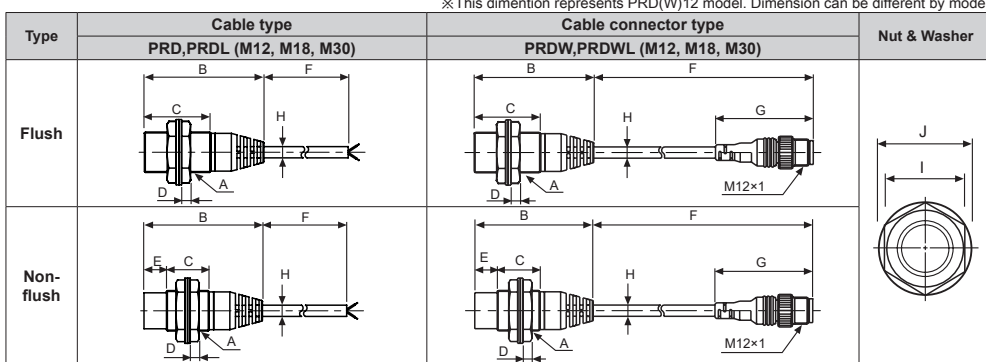
※The above specifications are subject to change and some models may be discontinued without notice.
※Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

■ Specifications

Model	PRD12-4DN PRD12-4DP PRD12-4DN2 PRD12-4DP2 PRDL12-4DN PRDL12-4DP PRDL12-4DN2 PRDL12-4DP2 PRDW12-4DN PRDW12-4DP PRDW12-4DN2 PRDW12-4DP2 PRDWL12-4DN PRDWL12-4DP PRDWL12-4DN2 PRDWL12-4DP2	PRD12-8DN PRD12-8DP PRD12-8DN2 PRD12-8DP2 PRDL12-8DN PRDL12-8DP PRDL12-8DN2 PRDL12-8DP2 PRDW12-8DN PRDW12-8DP PRDW12-8DN2 PRDW12-8DP2 PRDWL12-8DN PRDWL12-8DP PRDWL12-8DN2 PRDWL12-8DP2	PRD18-7DN PRD18-7DP PRD18-7DN2 PRD18-7DP2 PRDL18-7DN PRDL18-7DP PRDL18-7DN2 PRDL18-7DP2 PRDW18-7DN PRDW18-7DP PRDW18-7DN2 PRDW18-7DP2 PRDWL18-7DN PRDWL18-7DP PRDWL18-7DN2 PRDWL18-7DP2	PRD18-14DN PRD18-14DP PRD18-14DN2 PRD18-14DP2 PRDL18-14DN PRDL18-14DP PRDL18-14DN2 PRDL18-14DP2 PRDW18-14DN PRDW18-14DP PRDW18-14DN2 PRDW18-14DP2 PRDWL18-14DN PRDWL18-14DP PRDWL18-14DN2 PRDWL18-14DP2	PRD30-15DN PRD30-15DP PRD30-15DN2 PRD30-15DP2 PRDL30-15DN PRDL30-15DP PRDL30-15DN2 PRDL30-15DP2 PRDW30-15DN PRDW30-15DP PRDW30-15DN2 PRDW30-15DP2 PRDWL30-15DN PRDWL30-15DP PRDWL30-15DN2 PRDWL30-15DP2	PRD30-25DN PRD30-25DP PRD30-25DN2 PRD30-25DP2 PRDL30-25DN PRDL30-25DP PRDL30-25DN2 PRDL30-25DP2 PRDW30-25DN PRDW30-25DP PRDW30-25DN2 PRDW30-25DP2 PRDWL30-25DN PRDWL30-25DP PRDWL30-25DN2 PRDWL30-25DP2
Diameter of sensing side	12mm	18mm	18mm	30mm	30mm	25mm
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=)					
Current consumption	Max. 10mA					
Response frequency ^{*1}	500Hz	400Hz	300Hz	200Hz	100Hz	100Hz
Residual voltage	Max. 1.5V					
Affection by Temp.	Within ±10°C max. of sensing distance at 20°C in temperature range of -25 to 70°C					
Control output	Max. 200mA					
Insulation resistance	Min. 50MΩ (500VDC megger)					
Dielectric strength	1 500VAC 50/60Hz for 1minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each X, Y, Z directions for 2 hours					
Shock	500m/s ² (approx. 50G) in each X, Y, Z directions for 3 times					
Indicator	Operating indicator (red LED)					
Environ-ment	Ambient temp. -25 to 70°C, storage: -30 to 80°C					
Protection circuit	Surge protection, reverse polarity protection, output short over current protection circuit					
Protection	IP67 (EC Standard)					
Cable #2	Cable type: AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm		Cable connector type: AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm		Materials: 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)	
Approval	CE					
Unit Weight	PRD: Approx. 74g	PRDL: Approx. 72g	PRDW: Approx. 115g	PRDWL: Approx. 110g	PRD30: Approx. 175g	PRD30-25: Approx. 180g

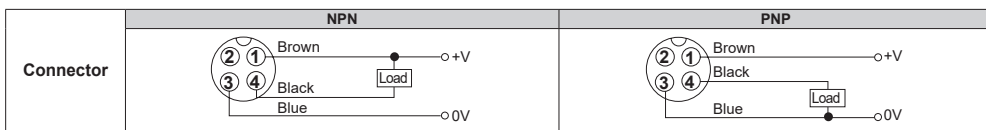
※1: The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.
※2: Do not pull the Ø4mm cable with a tensile strength of 30N or over and the Ø5mm cable with a tensile strength of 50N or over. It may result in fire due to the broken wire. When extending wire, use AWG22 cable or over within 200m.
※Environment resistance is rated at no freezing or condensation.

■ Dimensions



Type	Cable type	PRD, PRDL (M12, M18, M30)	PRDW, PRDWL (M12, M18, M30)	Nut & Washer							
Flush	M12	PRD M12×1	52.1	31.7	4	—	2,000	—	4	17	21
		PRDW M12×1	52.1	31.7	4	—	300	43.5	4		
		PRDL M12×1	64.6	44.2	4	—	2,000	—	4		
	M18	PRD M18×1	64.6	44.2	4	—	300	43.5	4	24	29
		PRDW M18×1	53.2	29.5	4	—	2,000	—	5		
		PRDL M18×1	86.2	62.5	4	—	2,000	—	5		
M30	PRD M30×1.5	86.2	62.5	4	—	300	43.5	5	35	42	
	PRDW M30×1.5	63.7	38	5	—	2,000	—	5			
	PRDL M30×1.5	85.7	60	5	—	2,000	—	5			
Non-flush	M12	PRD M12×1	51.9	24.5	4	7	2,000	—	4	17	21
		PRDW M12×1	51.9	24.5	4	7	300	43.5	4		
		PRDL M12×1	64.4	37	4	7	2,000	—	4		
	M18	PRD M18×1	64.4	37	4	7	300	43.5	4	24	29
		PRDW M18×1	52.7	19	4	10	2,000	—	5		
		PRDL M18×1	85.7	52	4	10	2,000	—	5		
M30	PRD M30×1.5	85.7	52	4	10	300	43.5	5	35	42	
	PRDW M30×1.5	63.7	28	5	10	2,000	—	5			
	PRDL M30×1.5	85.7	50	5	10	2,000	—	5			

■ Connections

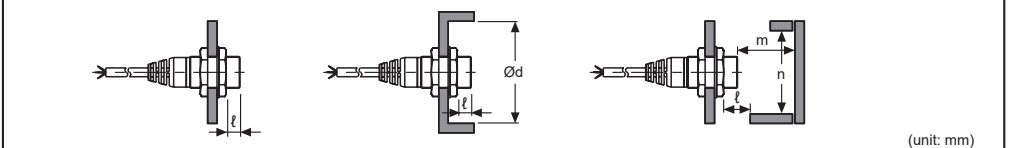


■ Mutual-interference & Influence by Surrounding Metals

○ **Mutual-interference**
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 with referring to the chart below.

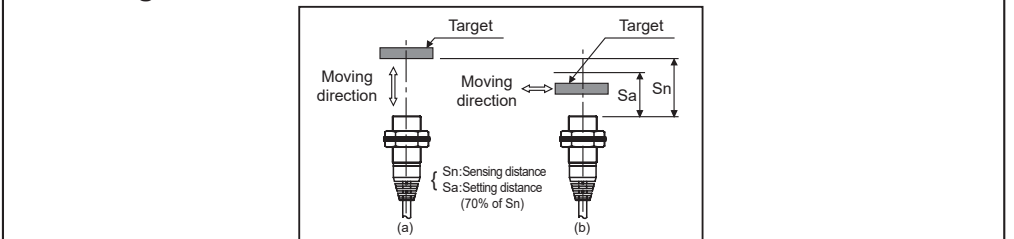


○ **Influence by surrounding metals**
When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart.



tem	Model	PRD_12-4D□ PRDW_12-4D□	PRD_12-8D□ PRDW_12-8D□	PRD_18-7D□ PRDW_18-7D□	PRD_18-14D□ PRDW_18-14D□	PRD_30-15D□ PRDW_30-15D□	PRD_30-25D□ PRDW_30-25D□
A	25	120	50	200	110	350	
B	25	100	35	110	90	300	
ℓ	2.5	15	3.5	14	6	20	
Ød	18	40	27	70	45	120	
m	12	20	24	40	45	90	
n	18	40	27	70	45	120	

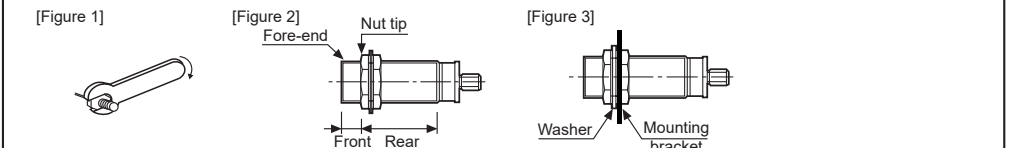
■ Setting Distance



• Sensing distance can be changed by the shape, size or material of the target. Therefore please check the sensing distance like (a), then pass the target within range of setting distance (Sa).
• Setting distance (Sa) = Sensing distance (Sn) × 70%
E.g.) PRD18-7DN
Setting distance (Sa) = 7mm × 0.7 = 4.9mm

■ Installation and Tightening Torque

When tightening the nut, use the provided washer as [Figure 1]. When installing the product, the tightening torque of the nut varies according to the distance from the fore-end. The front part of the product is from the fore-end to the dimension on the below table, and the rear part is from the tip of the nut to the end of the product. [Figure 2]
In case the nut is placed in the front part of the product, apply tightening torque for front part. [Table 1] the allowable tightening torque table is for inserting the washer as [Figure 3].



■ Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Use the product, after 0.8 sec of supplying power.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise. Do not use near the equipment which generates strong magnetic force or high frequency noise (transceiver, etc.). In case installing the product near the equipment which generates strong surge (motor, welding machine, etc.), use diode or varistor to remove surge.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in 'Specifications')
 - Altitude max. 2,000m
 - Pollution degree 2
 - Installation category II

■ Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connectors/Sockets
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometers/Pulse(Rate) Meters
- Display Units
- Sensor Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System(Fiber, CO₂, Nd:YAG)
- Laser Welding/Cutting System