Autonics
INDUCTIVE PROXIMITY SENSOR
LONG CYLINDRICAL TYPE DC 2-WIRE
INSTRUCTION MANUAL

CE

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

1. 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.
2. 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.
3. Do not disassemble or modify the unit.
Failure to follow this instruction may result in fire.
4. Do not connect, repair, or inspect the unit while connected to a power source.
Failure to follow this instruction may result in fire.
5. Check 'Connections' before wiring.
Failure to follow this instruction may result in fire.

⚠ Caution

1. Use the unit within the rated specifications.
Failure to follow this instruction may result in fire or product damage.
2. Use dry cloth to clean the unit, and do not use water or organic solvent.
Failure to follow this instruction may result in fire.
3. Do not supply power without load.
Failure to follow this instruction may result in fire or product damage.

■ Ordering Information

P R D W L T 18 - 7 D O - I

	No-mark	Standard cable
Standard/ Cable material	I	Standard cable (IEC standard)
	V	Oil resistant cable
	IV	Oil resistant cable (IEC standard)
Control output	O	Normally Open (N.O.)
	C	Normally Closed (N.C.)
Power supply	X	12-24VDC (non-polarity)
	D	12-24VDC
Sensing distance	Number	Sensing distance (unit: mm)
Dimension	Number	Diameter of head (unit: mm)
Cable form	T	DC 2-wire
Body size	No mark	Standard
	L	Long body
Cable type	No mark	Cable type
	W	Cable connector type
Feature	D	Long sensing distance type
Shape	R	Cylindrical type
Item	P	Inductive proximity sensor

■ Connections

Cable type (standard)	Cable connector type (standard)	Cable connector type (IEC standard)

Brown — Load — +24VDC
Blue — 0V

(a).N.O.(Normally Open)Type

Brown — Load — +24VDC
Blue — 0V

(b).N.C.(Normally Closed)Type

※①,④ are N·C(Not Connected) Terminals.
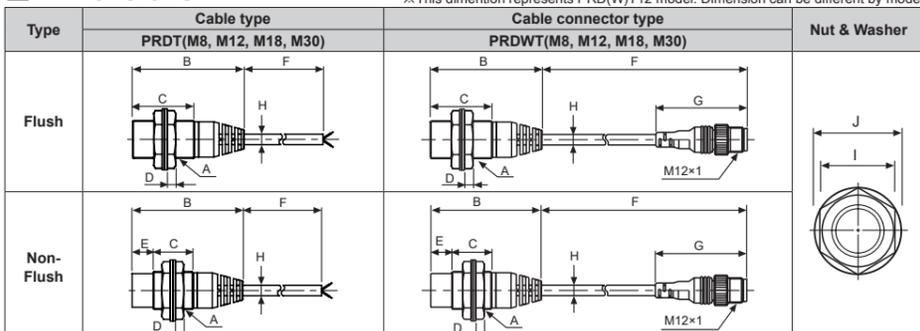※②,③ of N.O. Type and ③,④ of N.C. Type are N·C(Not Connected) Terminals.
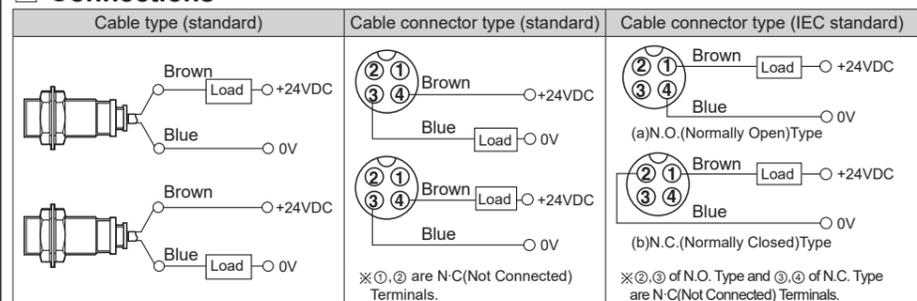
※Load can be wired to any direction.
※No need to consider polarity for non-polarity type of power supply.

※**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	PRDT08-2DO PRDT08-2DC PRDT08-2DO-V PRDT08-2DC-V PRDWT08-2DO PRDWT08-2DC PRDWT08-2DO-I PRDWT08-2DC-I PRDWT08-2DO-V PRDWT08-2DC-V PRDWT08-2DO-IV PRDWT08-2DC-IV	PRDT08-4DO PRDT08-4DC PRDT08-4DO-V PRDT08-4DC-V PRDWT08-4DO PRDWT08-4DC PRDWT08-4DO-I PRDWT08-4DC-I PRDWT08-4DO-V PRDWT08-4DC-V PRDWT08-4DO-IV PRDWT08-4DC-IV	PRDT12-4□O PRDT12-4□C PRDT12-4□O-V PRDT12-4□C-V PRDLT12-4□O PRDLT12-4□C PRDLT12-4□O-V PRDLT12-4□C-V PRDWT12-4□O PRDWT12-4□C-I PRDWT12-4□O-V PRDWT12-4□C-V PRDWT12-4□O-IV PRDWT12-4□C-IV	PRDT12-8□O PRDT12-8□C PRDT12-8□O-V PRDT12-8□C-V PRDLT12-8□O PRDLT12-8□C PRDLT12-8□O-V PRDLT12-8□C-V PRDWT12-8□O PRDWT12-8□C-I PRDWT12-8□O-V PRDWT12-8□C-V PRDWT12-8□O-IV PRDWT12-8□C-IV	PRDT18-7□O PRDT18-7□C PRDT18-7□O-V PRDT18-7□C-V PRDLT18-7□O PRDLT18-7□C PRDLT18-7□O-V PRDLT18-7□C-V PRDWT18-7□O PRDWT18-7□C-I PRDWT18-7□O-V PRDWT18-7□C-V PRDWT18-7□O-IV PRDWT18-7□C-IV PRDWLT18-7□O-V PRDWLT18-7□C-IV	PRDT18-14□O PRDT18-14□C PRDT18-14□O-V PRDT18-14□C-V PRDLT18-14□O PRDLT18-14□C PRDLT18-14□O-V PRDLT18-14□C-V PRDWT18-14□O PRDWT18-14□C-I PRDWT18-14□O-V PRDWT18-14□C-V PRDWT18-14□O-IV PRDWT18-14□C-IV	PRDT30-15□O PRDT30-15□C PRDT30-15□O-V PRDT30-15□C-V PRDLT30-15□O PRDLT30-15□C PRDLT30-15□O-V PRDLT30-15□C-V PRDWT30-15□O PRDWT30-15□C-I PRDWT30-15□O-V PRDWT30-15□C-V PRDWT30-15□O-IV PRDWT30-15□C-IV	PRDT30-25□O PRDT30-25□C PRDT30-25□O-V PRDT30-25□C-V PRDLT30-25□O PRDLT30-25□C PRDLT30-25□O-V PRDLT30-25□C-V PRDWT30-25□O PRDWT30-25□C-I PRDWT30-25□O-V PRDWT30-25□C-V PRDWT30-25□O-IV PRDWT30-25□C-IV
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	100Hz
Residual voltage[2]	Max. 3.5V (Max.5V non-polarity type)							
Affection by Temp.	Max. ±15% for sensing distance at ambient temperature 20℃		Max. ±20% for sensing distance at ambient temperature 20℃					
Control output	2 to 100mA							
Insulation resistance	Max. 50MΩ (at 500VDC megger)							
Dielectric strength	1,500VAC 50/60Hz for 1 min							
Vibration	1mm amplitude at frequency 10 to 55Hz in each X, Y, Z direction for 2 hours							
Shock	500m/s² (approx. 50G) in each X, Y, Z direction for 3 times							
Indicator	Operating 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 proteciton circuit, output short over current protection circuit							
Protection	IP67 (IEC standard)							

Cable type	Standard	Ø3.5mm, 2-wire, 2m (AWG24, core diameter: 0.08mm, number of cores: 40, insulator diameter: Ø1.0mm)		Ø4mm, 2-wire, 2m (AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm)		Ø5mm, 2-wire, 2m (AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm)		
	Oil resistant							
Cable connector type		Ø3.5mm, 2-wire, 300mm, M12 (AWG24, core diameter: 0.08mm, number of cores: 40, insulator diameter: Ø1.0mm)		Ø4mm, 2-wire, 300mm, M12 connector		Ø5mm, 2-wire, 300mm, M12 connector		
		AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm						
Materials		Case/Nut: Nikel plated Brass (case of PRD□T08: SUS303), Washer: Nikel plated Iron, Sensing surface: Polybutylene terephthalate, Standard cable(Black): Polyvinyl chloride(PVC), Oil resistant cable(Gray): Oil resistant Polyvinyl chloride(PVC)							
Approval		CE						

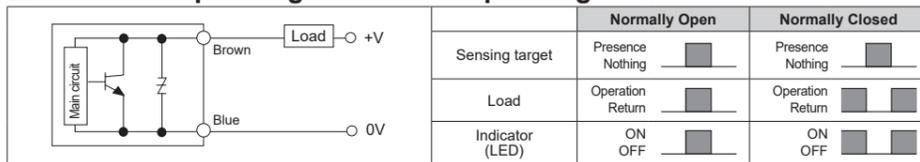| Weight[4] PRDT	Approx. 58g (approx. 50g)		Approx. 74g (approx. 62g)	Approx. 72g (approx. 60g)	Approx. 115g (approx. 97g)	Approx. 110g (approx. 92g)	Approx. 175g (approx. 138g)	Approx. 180g (approx. 143g)
PRDLT	—		Approx. 94g (approx. 82g)	Approx. 92g (approx. 80g)	Approx. 145g (approx. 127g)	Approx. 140g (approx. 122g)	Approx. 215g (approx. 178g)	Approx. 220g (approx. 183g)
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)			

※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.
※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 is for unit only.
※The temperature and humidity of environment resistance are rated at non-freezing or condensation.
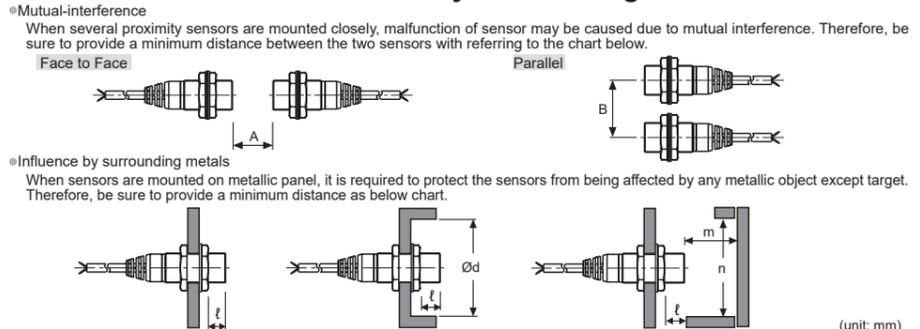
■ Dimensions

(unit: mm)
※This dimention represents PRD(W)T12 model. Dimension can be different by model.

Type		Cable type PRDT(M8, M12, M18, M30)	Cable connector type PRDWT(M8, M12, M18, M30)	Nut & Washer
Flush			M12×1	
Non-Flush			M12×1	

Type		A	B	C	D	E	F	G	H	I	J
Flush	M8	PRDT	M8×1	46	30	4	—	2,000	—	3.5	13	15
		PRDWT	M8×1	46	30	4	—	300	43.5	4		
	M12	PRDT	M12×1	52.1	31.7	4	—	2,000	—	4	17	21
		PRDWT	M12×1	52.1	31.7	4	—	300	43.5	4		
		PRDLT	M12×1	64.6	44.2	4	—	2,000	—	4		
	M18	PRDT	M18×1	53.2	29.5	4	—	2,000	—	5	24	29
		PRDWT	M18×1	53.2	29.5	4	—	300	43.5	5		
		PRDLT	M18×1	86.2	62.5	4	—	2,000	—	5		
		PRDWLT	M18×1	86.2	62.5	4	—	300	43.5	5		
	M30	PRDT	M30×1.5	63.7	38	5	—	2,000	—	5	35	42
		PRDWT	M30×1.5	63.7	38	5	—	300	43.5	5		
		PRDLT	M30×1.5	85.7	60	5	—	2,000	—	5		
Non-Flush	M8	PRDT	M8×1	46	24	4	6	2,000	—	3.5	13	15
		PRDWT	M8×1	46	24	4	6	300	43.5	4		
	M12	PRDT	M12×1	51.9	24.5	4	7	2,000	—	4	17	21
		PRDWT	M12×1	51.9	24.5	4	7	300	43.5	4		
		PRDLT	M12×1	64.6	37	4	7	2,000	—	4		
	M18	PRDT	M18×1	52.7	19	4	10	2,000	—	5	24	29
		PRDWT	M18×1	52.7	19	4	10	300	43.5	5		
		PRDLT	M18×1	85.7	52	4	10	2,000	—	5		
	M30	PRDT	M30×1.5	63.7	28	5	10	2,000	—	5	35	42
		PRDWT	M30×1.5	63.7	28	5	10	300	43.5	5		
		PRDLT	M30×1.5	85.7	50	5	10	2,000	—	5		

■ Control Output Diagram & Load Operating

		Normally Open	Normally Closed
Sensing target	Presence Nothing		
Load	Operation Return		
Indicator (LED)	ON OFF		

■ Multi-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.

Face to Face   Parallel

◉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.

(unit: mm)

Model Item	PRDT08-2D□ PRDWT08-2D□	PRDT08-4D□ PRDWT08-4D□	PRDT12-4□□ PRDWT12-4□□ PRDLT12-4□□	PRDT12-8□□ PRDWT12-8□□ PRDLT12-8□□	PRDT18-7□□ PRDWT18-7□□ PRDLT18-7□□ PRDWLT18-7□□	PRDT18-14□□ PRDWT18-14□□ PRDLT18-14□□	PRDT30-15□□ PRDWT30-15□□ PRDLT30-15□□	PRDT30-25□□ PRDWT30-25□□ PRDLT30-25□□
A	20	80	25	120	50	200	110	350
B	15	60	25	100	35	110	90	300
ℓ	12	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

■ 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.)PRDT18-7DO
Setting distance(Sa) = 7mm × 0.7 = 4.9mm

Sn:Sensing distance
Sa:Setting distance (70% of Sn)
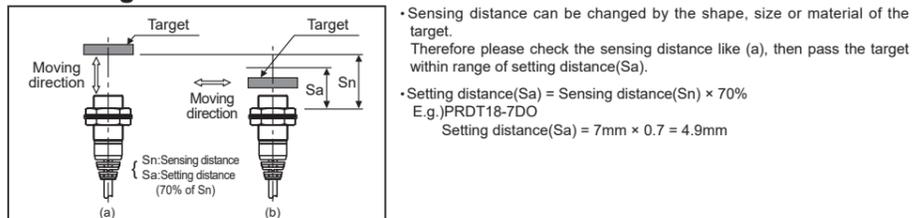
■ Installation and Tightening Torque

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].

[Figure 1]   [Figure 2]   [Figure 3]
Nut tip   Fore-end   Front Rear   Washer   Mounting bracket

[Table 1]

Model	Strength	Front Size	Front Torque	Rear Torque
PRDT08 Series	Flush	7mm	3.92N·m	8.82N·m
	Non-flush	5mm		
PRDT12 Series	Flush	13mm	6.37N·m	11.76N·m
	Non-flush	7mm		
PRDT18 Series	Flush	—	14.7N·m	
	Non-flush	—		
PRDT30 Series	Flush	26mm	49N·m	78.4N·m
	Non-flush	12mm		

■ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Use the product, after 0.8 sec of supplying power.
4. 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.
5. This unit may be used in the following environments.
① Indoors (in the environment condition rated in 'Specifications')   ② Altitude max. 2,000m
③ Pollution degree 2   ④ 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

Autonics Corporation
http://www.autonics.com
■ HEADQUARTERS:
18, Bansong-ro 513beon-gil, Haeundae-gu, Busan, South Korea, 48002
TEL: 82-51-519-3232
E-mail: sales@autonics.com

DRW180612AD