Autonics

INDUCTIVE PROXIMITY SENSOR
DC 2-WIRE TYPE
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

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

⚠ Caution

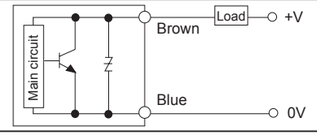
1. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or product damage.
2. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
   Failure to follow this instruction may result in fire.
3. **Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
   Failure to follow this instruction may result in fire or explosion.
4. **Do not supply power without load.**
   Failure to follow this instruction may result in fire or product damage.

■ Ordering Information

P R CMT 12 – 2 D O U – IV

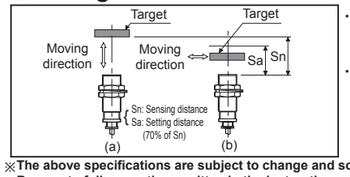
Cable type	**No mark**	Standard cable
	I	Standard cable(IEC standards model)
	V	Oil resistant cable
	IV	Oil resistant cable(IEC standards model)
Sensing side	**No mark**	Standard type
	U	Upper sensing type
Control output	**O**	Normally Open(N.O.)
	C	Normally Closed(N.O.)
Power supply	**X**	12-24VDC(Non-polarity type)
	D	12-24VDC
Sensing distance	**Number**	Standard sensing distance(Unit: mm)
Dimension	**Number**	Diameter of head(Unit: mm)
	Number	One side length(Unit: mm)
Connection	**T**	DC 2-wire, cable type
	WT	DC 2-wire, cable connector type
	CMT	DC 2-wire, connector type
Shape	**R**	Cylindrical type
	SN	Square new design type
Item	**P**	Inductive proximity sensor

■ Control Output Diagram & Load Operation



	Normally Open	Normally Closed
Sensing target	Presence / Nothing	Presence / Nothing
Load	Operation / Return	Operation / Return
Operation indicator (Red RED)	ON / OFF	ON / OFF

■ Setting Distance



- Detecting distance can be changed by the shape, size or material of the target. Therefore please check the detecting distance like (a), then pass the target within range of setting distance(Sa).
- Setting distance(Sa)
  = Sensing distance(Sn)× 70%
  E.g.)PRCMT12-2DC
  Setting distance(Sa) = 2mm × 0.7 = 1.4mm

※**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).**

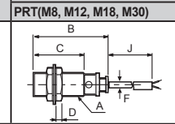
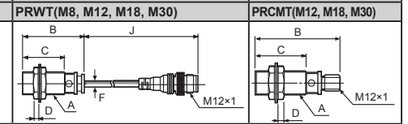
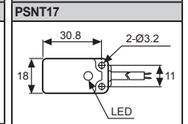
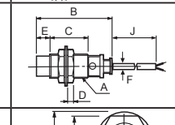
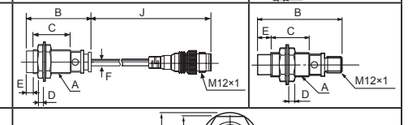
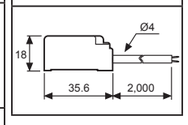
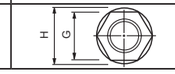
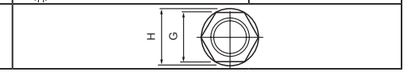
■ Specifications

Model	PRT08-1.5DO PRT08-1.5DC PRWT08-1.5DO PRWT08-1.5DC PRWT08-1.5DO-V PRWT08-1.5DC-V PRWT08-1.5DO-IV PRWT08-1.5DC-IV	PRT08-2DO PRT08-2DC PRWT08-2DO PRWT08-2DC PRWT08-2DO-V PRWT08-2DC-V PRWT08-2DO-IV PRWT08-2DC-IV	PRT12-2□O PRT12-2□C PRWT12-2□O PRWT12-2□C PRWT12-2□O-I PRWT12-2□C-I PRCMT12-2DO PRCMT12-2DC PRCMT12-2DO-I PRCMT12-2DC-I	PRT12-4□O PRT12-4□C PRWT12-4□O PRWT12-4□C PRWT12-4□O-I PRWT12-4□C-I PRCMT12-4DO PRCMT12-4DC PRCMT12-4DO-I PRCMT12-4DC-I	PRT18-5□O PRT18-5□C PRWT18-5□O PRWT18-5□C PRWT18-5□O-I PRWT18-5□C-I PRCMT18-5DO PRCMT18-5DC PRCMT18-5DO-I PRCMT18-5DC-I	PRT18-8□O PRT18-8□C PRWT18-8□O PRWT18-8□C PRWT18-8□O-I PRWT18-8□C-I PRCMT18-8DO PRCMT18-8DC PRCMT18-8DO-I PRCMT18-8DC-I	PRT30-10□O PRT30-10□C PRWT30-10□O PRWT30-10□C PRWT30-10□O-I PRWT30-10□C-I PRCMT30-10DO PRCMT30-10DC PRCMT30-10DO-I PRCMT30-10DC-I	PRT30-15□O PRT30-15□C PRWT30-15□O PRWT30-15□C PRWT30-15□O-I PRWT30-15□C-I PRCMT30-15DO PRCMT30-15DC PRCMT30-15DO-I PRCMT30-15DC-I	PSNT17-5DO PSNT17-5DC PSNT17-5DOU PSNT17-5DCU
Sensing distance	1.5mm	2mm	2mm	4mm	5mm	8mm	10mm	15mm	5mm	
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)	18×18×1mm (Iron)	
Setting distance	0 to 1.05mm	0 to 1.4mm		0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm	0 to 3.5mm	
Power supply (Operating voltage)	12-24VDC⎓ (10-30VDC⎓)									
Leakage current	Max. 0.6mA									
Response frequency※1	1.5kHz	1.0kHz	1.5kHz	500Hz	350Hz	400Hz	200Hz	700Hz		
Residual voltage※2	Max. 3.5V(Non-polarity type is Max. 5V)									
Affection by Temp.	Within ±10℃ max. of sensing distance at 20℃ in temperature range of -25 to 70℃(PRT08 Series: Max. ±20%)									
Control output	2 to 100mA									
Insulation resistance	Min. 500MΩ(500VDC megger)									
Dielectric strength	1,500VAC 50/60Hz for 1minute									
Vibration	1mm amplitude at frequency 10 to 55Hz in each of X, Y, Z directions for 2 hours									
Shock	500m/s²(approx. 50G) X, Y, Z directions for 3 times									
Indicator	Operating indicator(Red LED)									
Environment: Ambient temp.	-25 to 70℃, Storage: -30 to 80℃									
Environment: Ambient humi.	35 to 95%RH, Storage: 35 to 95%RH									
Protection circuit	Surge protection		Surge protection circuit, overload & short circuit protection							
Protection	IP67(IEC Standard)									
Cable※3 PRT	Ø3.5mm, 3-wire, 2m (AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator diameter: Ø1mm)		Ø4mm, 2-wire, 2m		Ø5mm, 2-wire, 2m				Ø4mm, 2-wire, 2m	
Cable※3 PRWT	(AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator diameter: Ø1.25mm)									
Cable※3 PRWT	Ø4, 2-wire, 300mm, M12 connector				Ø5, 2-wire, 300mm, M12 connector				-	
Materials	Case/Nut : Nikel plated Brass, Washer : Nikel plated Iron, Sensing surface : PBT, Standard cable(Black) : Polyvinyl chloride(PVC), Oil resistant cable(Gray) : Oil resistant Polyvinyl chloride(PVC)									
Approval	CE									
Weight※4	PRT: Approx. 64g(Approx. 52g) PRWT: Approx. 44g(Approx. 32g)		PRT: Approx. 84g(Approx. 72g) PRWT: Approx. 54g(Approx. 42g) PRCMT:Approx. 38g(Approx. 26g)		PRT:Approx. 122g(Approx. 110g) PRWT:Approx. 70g(Approx. 58g) PRCMT:Approx. 60g(Approx. 48g)		PRT:Approx. 207g(Approx. 170g) PRWT:Approx. 134g(Approx. 122g) PRCMT:Approx. 154g(Approx.142g)		PSNT: Approx. 92g (Approx. 71g)	

※**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 with packaging and the weight in parentheses is only unit weight.
※Environment resistance is rated at no freezing or condenstion.

■ Dimensions

(Unit: mm)

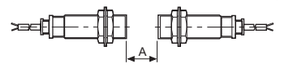
Type	Cable type PRT(M8, M12, M18, M30)	Cable connector type PRWT(M8, M12, M18, M30)	Connector type PRCMT(M12, M18, M30)	Cable type PSNT17
Flush				
Non-flush				
Nut & Washer				

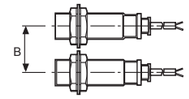
Type			A	B	C	D	E	F	G	H	J
Flush	M8	PRT	M8×1	30	30	4	–	3.5	13	15	2,000
		PRWT	M8×1	30	30	4	–	4	13	15	300
	M12	PRT	M12×1	46	31.5	4	–	4	17	21	2,000
		PRWT	M12×1	46	31.5	4	–	4	17	21	300
		PRCMT	M12×1	55.8	31.5	4	–	–	17	21	–
	M18	PRT	M18×1	47.5	29.5	4	–	5	24	29	2,000
		PRWT	M18×1	47.5	29.5	4	–	5	24	29	300
		PRCMT	M18×1	54.3	29.5	4	–	–	24	29	–
	M30	PRT	M30×1.5	58	38	5	–	5	35	42	2,000
		PRWT	M30×1.5	58	38	5	–	5	35	42	300
		PRCMT	M30×1.5	63.8	38	5	–	–	35	42	–
Non-flush	M8	PRT	M8×1	30	26	4	4	3.5	13	15	2,000
		PRWT	M8×1	30	26	4	4	4	13	15	300
	M12	PRT	M12×1	46	24.5	4	7	4	17	21	2,000
		PRWT	M12×1	46	24.5	4	7	4	17	21	300
		PRCMT	M12×1	55.8	24.5	4	7	–	17	21	–
	M18	PRT	M18×1	47	19	4	10	5	24	29	2,000
		PRWT	M18×1	47	19	4	10	5	24	29	300
		PRCMT	M18×1	53.8	19	4	10	–	24	29	–
	M30	PRT	M30×1.5	58	28	5	10	5	35	42	2,000
		PRWT	M30×1.5	58	28	5	10	5	35	42	300
		PRCMT	M30×1.5	63.8	28	5	10	–	35	42	–

■ Mutual-interference & Influence by Surrounding Metals

◎**Mutual-interference**

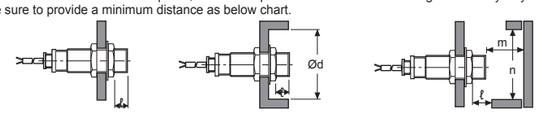
When plural proximity sensors are mounted in a close row, malfunction of sensor may be caused due to mutual interference.
Therefore, be sure to provide a minimum distance between the two sensors, as below table.

Face to Face 

Parallel 

◎**Influence by surrounding metals**

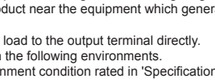
When sensors are mounted on metallic panel, it must be prevented sensors from being affected by any metallic object except target.
Therefore, be sure to provide a minimum distance as below chart.

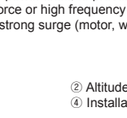


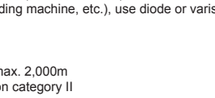
(Unit: mm)

Item \ Model	PRT08-1.5D□ PRWT08-1.5D□	PRT08-2D□ PRWT08-2D□	PRT12-2□□ PRWT12-2□□ PRCMT12-2□□	PRT12-4□□ PRWT12-4□□ PRCMT12-4□□	PRT18-5□□ PRWT18-5□□ PRCMT18-5□□	PRT18-8□□ PRWT18-8□□ PRCMT18-8□□	PRT30-10□□ PRWT30-10□□ PRCMT30-10□□	PRT30-15□□ PRWT30-15□□ PRCMT30-15□□
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
Ød	8	24	12	36	18	54	30	90
m	4.5	6	6	12	15	24	30	45
n	12	24	18	36	27	54	45	90

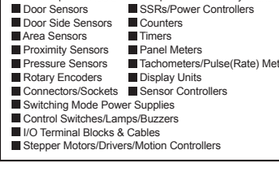
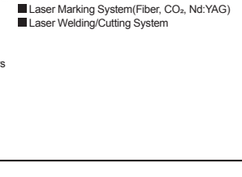
Item \ Model	PSNT17-5D□
A	30
B	36
C	5
d	15
ℓ	24
m	18

Face to Face 

Parallel 

Influence by surrounding metals 

■ Connections

DC 2-wire standard	Connector connection for standard type model	Connector connection for IEC standards model
		

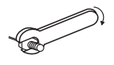
※Load can be wired to any direction.
※①,② are not used terminals.
※②,③ of N.O. type and ③,④ of N.C. type are not used terminals.
※No need to consider polarity for non-polarity type of power supply.

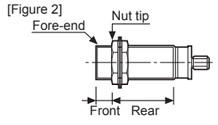
■ Installation and Tightening Torque

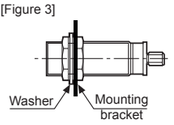
When tightening the nut, use the provided washer as [Figure 1].
When installing the product, the tightening torque of the nut varies according to the distance from the fore-end.
The front part of the product is from the fore-end to the dimension on the below table, and the rear part is from the tip of 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].

[Table 1]

Model \ Strength		Front: Size	Front: Torque	Rear: Torque
PRT08 Series	Flush	7mm	3.92N·m	8.82N·m
	Non-flush	5mm		
PRT12 Series	Flush	13mm	6.37N·m	11.76N·m
	Non-flush	7mm		
PRT18 Series	Flush	-	14.7N·m	
	Non-flush	-		
PRT30 Series	Flush	26mm	49N·m	78.4N·m
	Non-flush	12mm		

[Figure 1] 

[Figure 2] 

[Figure 3] 

■ 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. Do not connect capacity load to the output terminal directly.
6. 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, CO_2, Nd:YAG)
- Laser Welding/Cutting System

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