

Autonics

INDUCTIVE PROXIMITY SENSOR (Spatter Resistant DC 2-wire Connector Type) PRACMT/PRDACMT SERIES

INSTRUCTION MANUAL



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

■ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.

※Safety considerations are categorized as follows.

⚠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.

※The symbols used on the product and instruction manual represent the following

⚠ symbol represents caution due to special circumstances in which hazards may occur.

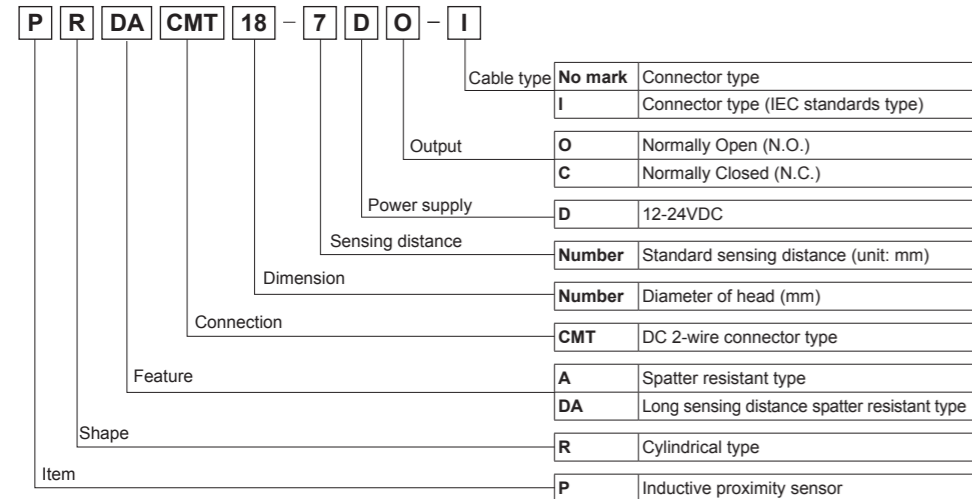
⚠Warning

- 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 supply power directly without load.**
It may burn or damage internal components.

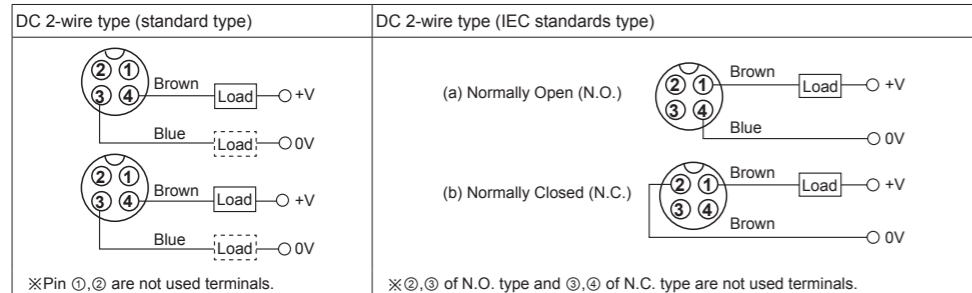
⚠Caution

- Do not use the unit where flammable or explosive gas, chemical, strong alkalis, or acids may be present.**
Failure to follow this instruction may result in fire or explosion.
- Do not impact on the unit.**
Failure to follow this instruction may result in product damage or malfunction.
- Do not use loads beyond the rated voltage range. Do not supply AC power to DC power unit.**
Failure to follow this instruction may result in product damage.

■ Ordering Information



■ Wiring Diagram



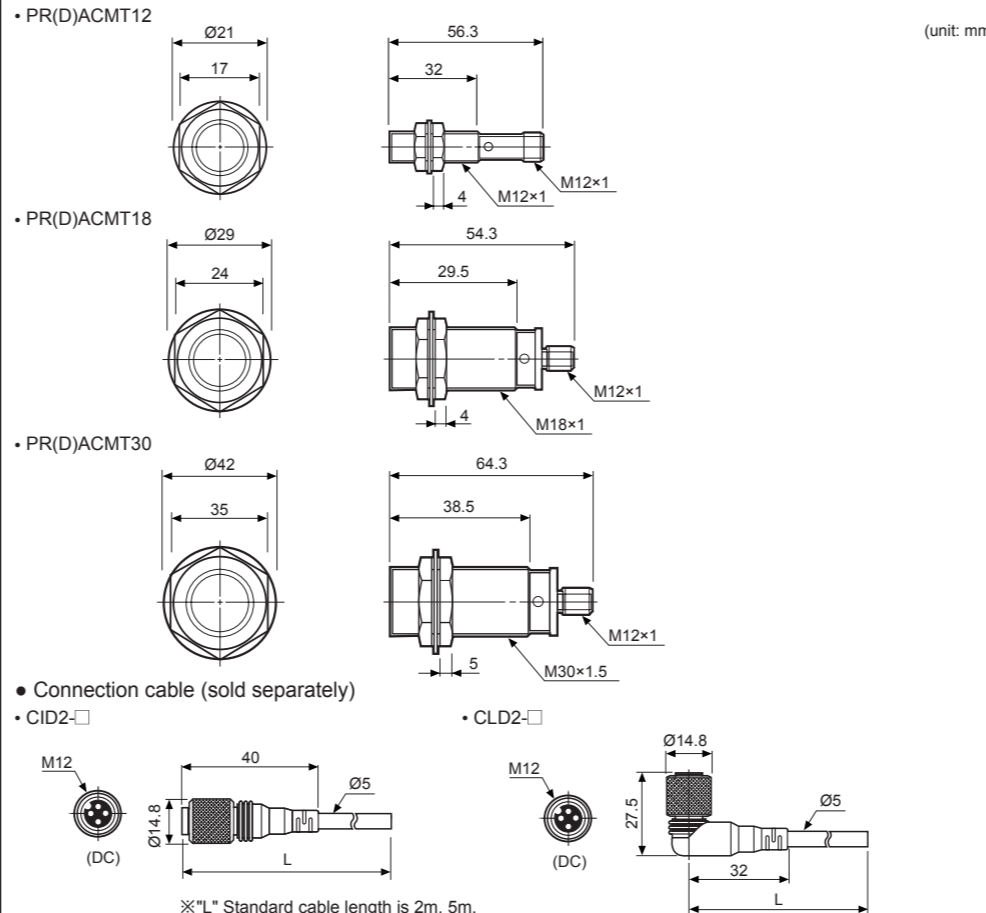
※The above specifications are subject to change and some models may be discontinued without notice.

■ Specifications

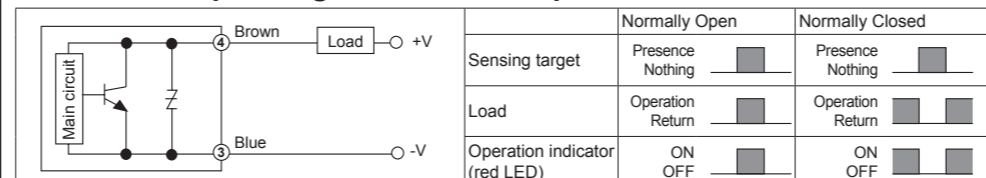
Model	PRACMT12-2DO PRACMT12-2DC PRACMT12-2DC-I PRACMT12-2DC-I	PRDACMT12-4DO PRDACMT12-4DC PRDACMT12-4DC-I PRDACMT12-4DC-I	PRACMT18-5DO PRACMT18-5DC PRACMT18-5DC-I PRACMT18-5DC-I	PRDACMT18-7DO PRDACMT18-7DC PRDACMT18-7DC-I PRDACMT18-7DC-I	PRACMT30-10DO PRACMT30-10DC PRACMT30-10DC-I PRACMT30-10DC-I	PRDACMT30-15DO PRDACMT30-15DC PRDACMT30-15DC-I PRDACMT30-15DC-I
Sensing distance	2mm	4mm	5mm	7mm	10mm	15mm
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm (iron)	18×18×1mm (iron)	20×20×1mm (iron)	30×30×1mm (iron)	45×45×1mm (iron)	
Setting distance	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 4.9mm	0 to 7mm	0 to 10.5mm
Power supply (operating voltage)	12-24VDC (10-30VDC)					
Leakage current	Max. 0.6mA					
Response frequency*1	1.5kHz	450Hz	500Hz	250Hz	400Hz	100Hz
Residual voltage	Max. 3.5V					
Affection by temp.	Max. ±10% for sensing distance at ambient temperature 20°C					
Control output	2 to 100mA					
Insulation resistance	Min. 500MΩ (at 500VDC megger)					
Dielectric strength	1,500VAC 50/60Hz for 1 minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours					
Shock	500m/s ² (approx. 50G) in each X, Y, Z direction for 3 times					
Indicator	Operation indicator (red LED)					
Environment	Ambient temperature: -25 to 70°C, storage: -30 to 80°C Ambient humidity: 35 to 95%RH, storage: 35 to 95%RH					
Protection circuit	Surge protection circuit, Overcurrent protection circuit					
Protection	IP67 (IEC standards)					
Materials	Case/Nut: Teflon coated brass, Washer: Teflon coated iron, Sensing surface: Teflon					
Approval	CE					
Weight*2	Approx. 38g (approx. 26g)		Approx. 61g (approx. 49g)		Approx. 146g (approx. 134g)	

※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: The weight includes packaging. The weight in parentheses is for unit only.
※Environment resistance is rated at no freezing or condensation.

■ Dimensions



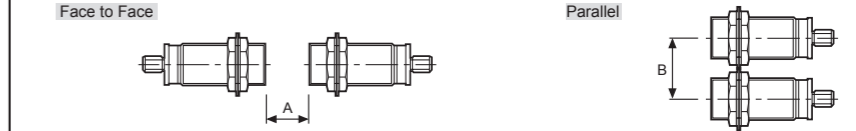
■ Control Output Diagram and Load Operation



■ Multi-interference and Influence By Surrounding Metals

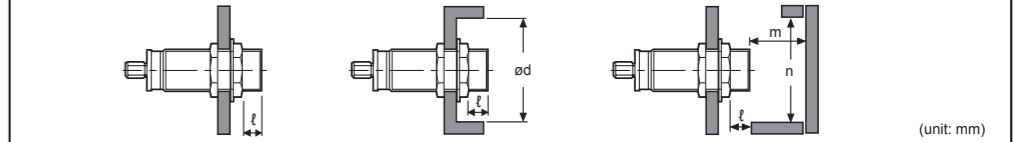
● Mutual-interference

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.



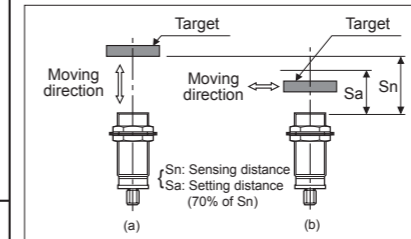
● Influence by surrounding metals

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.



Model	PRACMT12-2D□	PRDACMT12-4D□	PRACMT18-5D□	PRDACMT18-7D□	PRACMT30-10D□	PRDACMT30-15D□
Item	A: 12, B: 24, ℓ: 0, ød: 12, m: 6, n: 18	A: 24, B: 24, ℓ: 0, ød: 12, m: 12, n: 18	A: 30, B: 36, ℓ: 0, ød: 18, m: 15, n: 27	A: 42, B: 36, ℓ: 0, ød: 18, m: 21, n: 27	A: 60, B: 60, ℓ: 0, ød: 30, m: 30, n: 45	A: 90, B: 60, ℓ: 0, ød: 30, m: 45, n: 45

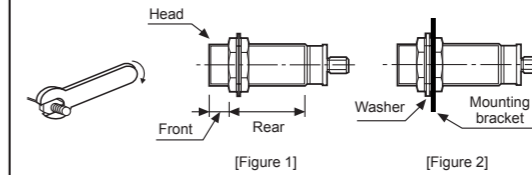
■ Setting Distance



- Sensing distance can be changed by the shape, size or material of the target. 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.) PRDACMT18-7DO
Setting distance (Sa) = 7mm × 0.7 = 4.9mm

■ Caution During Use

- This equipment shall not be used outdoors or beyond specified temperature range.
- Do not apply over tensile strength of cord. (Ø4: max. 30N, Ø5: max. 50N)
- Do not use the same conduit with cord of the unit and electric power line or power line. Also avoid the same connection.
- Do not put overload to tighten nut, use washer for tightening.



Model	Strength		Front Torque	Rear Torque
	Size	Torque		
PR(D)ACMT12 Series	13mm	65kgf·cm (6.37N·m)	120kgf·cm (11.76N·m)	
PR(D)ACMT18 Series	Flush	150kgf·cm (14.7N·m)		
PR(D)ACMT30 Series	26mm	500kgf·cm (49N·m)	800kgf·cm (78.4N·m)	

[Table 1]

Note 1) Allowable tightening torque of a nut may be different by the distance from the head. For allowable tightening torque and the range of front and rear parts, refer to [Table 1] and above [Figure 1] respectively. The rear part includes a nut on the head side (see above [Figure 1]). Apply a tightening torque of the front part when the nut on the head is located in the front part.

- Note 2) The allowable tightening torque denotes a torque value when using a provided washer as above [Figure 2].
- Check the voltage changes of power source in order not to exceed rating power input.
 - Do not use the unit during transient time (80ms) after apply power.
 - It may result in damage to the unit, if use automatic transformer. Use insulated transformer.
 - Make wire as short as possible in order to avoid noise.
 - Be sure to use cable as indicated specification on the unit. If wrong cable or bent cable is used, it shall not maintain the water-proof.
 - It is possible to extend cable with over 0.3mm² and max. 200m.
 - If the target is plated, the operating distance can be changed by the plating material.
 - If there are machines (motor, welding etc), which occurs big surge around the unit, install the varistor or absorber to source of surge, even though there is built-in surge absorber in the unit.
 - If connecting the load with big inrush current (DC type bulb) to the unit, the big inrush current will flow since the initial resistance is low. If the current flows, the resistance of load will be bigger, then it will return to standard current. In this case, proximity sensor might be damaged by inrush current.
If using a DC type bulb, connect extra relay or resistance in order to protect proximity sensor from.
 - If making a transceiver close to proximity sensor or wire connection, it may cause malfunction.
 - In case of the load current is small : Make the residual current is less than return current to connect the bleeder resistor to load in parallel.

Vs: Power supply, Io: Min. operating current for proximity sensor, Io:ff: Return current of load, P: Wattage of bleeder resistor

$$R \leq \frac{Vs}{Io - Io:ff} \text{ (k}\Omega\text{)} \quad P > \frac{Vs^2}{R} \text{ (mW)}$$

※Failure to follow these instructions may result in product damage.

■ Major Products

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

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http://www.autonics.com

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HEADQUARTERS:
18, Bansong-ro 513beon-gil, Haedun-gu, Busan, South Korea, 48002

OVERSEAS SALES:
#402-303, Bucheon Techno Park, 655, Pyeongcheon-ro, Wonmi-gu, Bucheon, Gyeonggi-do, South Korea, 14502
TEL: 82-32-610-2730 / FAX: 82-32-329-0728
E-mail: sales@autonics.com