

Autonics

INDUCTIVE PROXIMITY SENSOR (Spatter Resistant DC 3-wire Connector Type) PRACM/PRDACM 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.

※⚠ 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.

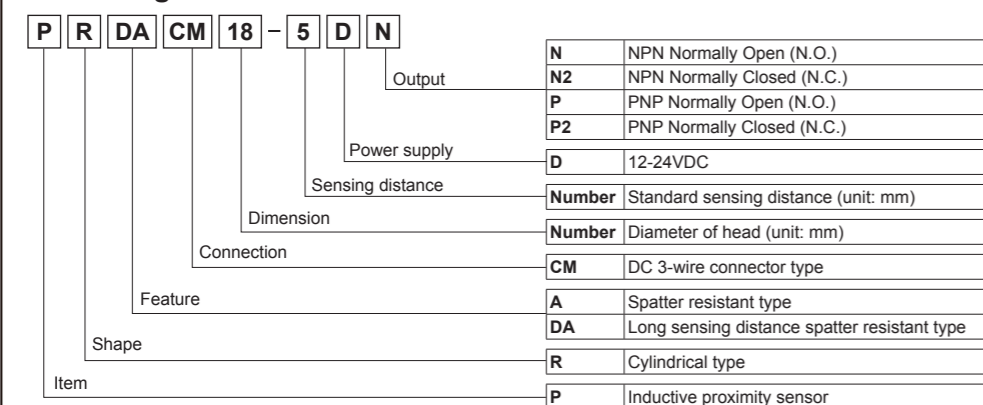
2. Use dry cloth to clean the unit, and do not use water or organic solvent.

Failure to follow this instruction may result in fire.

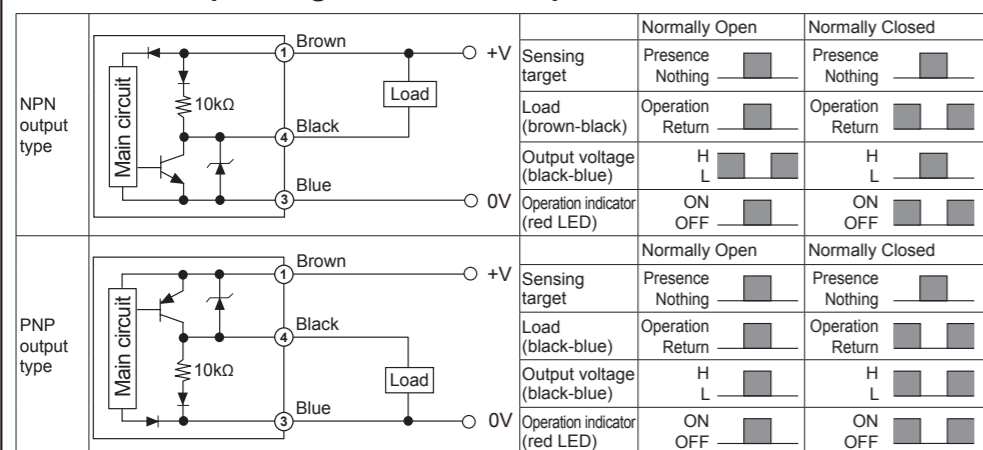
3. Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.

Failure to follow this instruction may result in fire or explosion.

■ Ordering Information



■ Control Output Diagram and Load Operation



※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

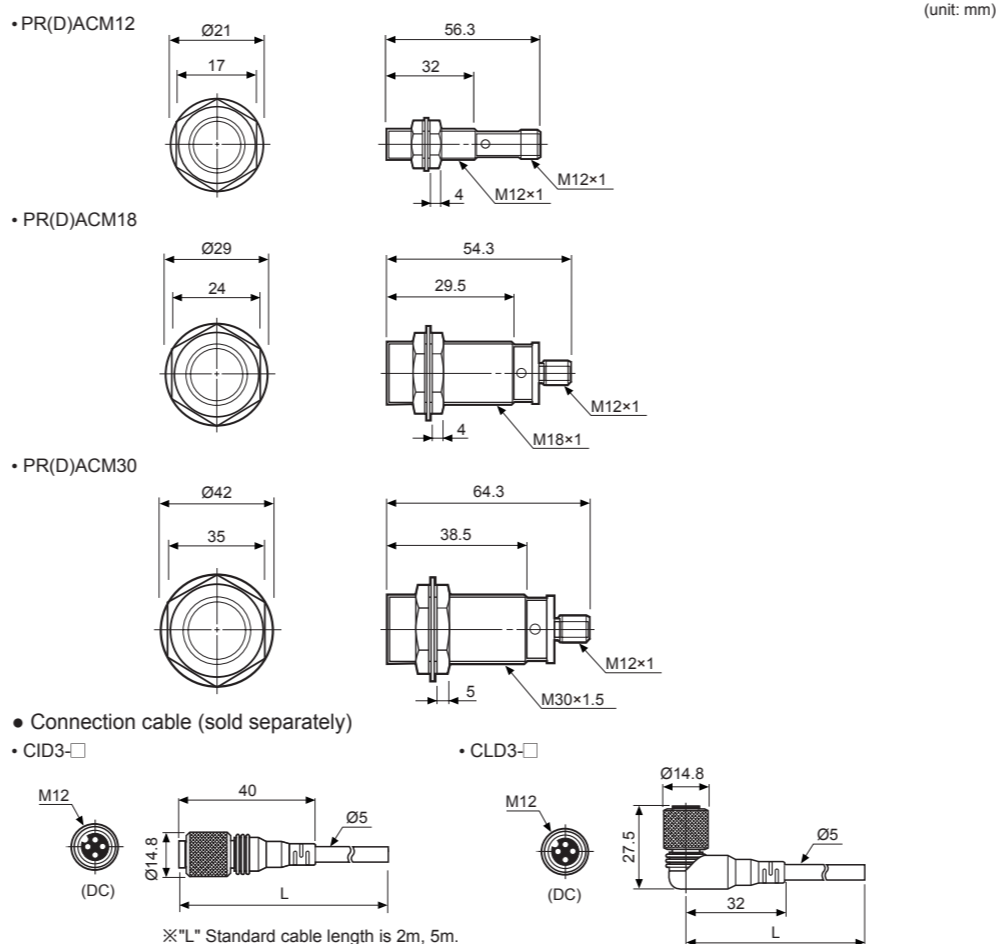
Model	PRACM12-2DN PRACM12-2DP PRACM12-2DN2 PRACM12-2DP2	PRDACM12-4DN PRDACM12-4DP	PRACM18-5DN PRACM18-5DP PRACM18-5DN2 PRACM18-5DP2	PRDACM18-7DN PRDACM18-7DP PRDACM18-7DN2 PRDACM18-7DP2	PRACM30-10DN PRACM30-10DP PRACM30-10DN2 PRACM30-10DP2	PRDACM30-15DN PRDACM30-15DP PRDACM30-15DN2 PRDACM30-15DP2
Sensing 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=)					
Current consumption	Max. 10mA					
Response frequency*1	1.5kHz	500Hz	500Hz	300Hz	400Hz	100Hz
Residual voltage	Max. 1.5V					
Affection by temp.	Max. ±10% for sensing distance at ambient temperature 20°C					
Control output	Max. 200mA					
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)					
Environ-ment	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, Reverse polarity 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.

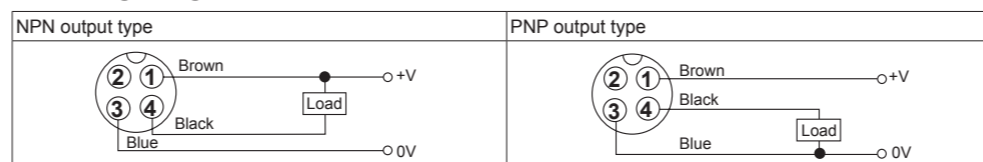
*2: The weight includes packaging. The weight in parentheses is for unit only.

※Environment resistance is rated at no freezing or condensation.

■ Dimensions



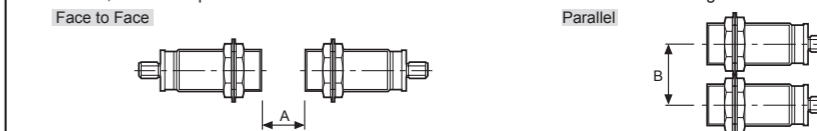
■ Wiring Diagram



■ Mutual-interference and Influence By Surrounding Metals

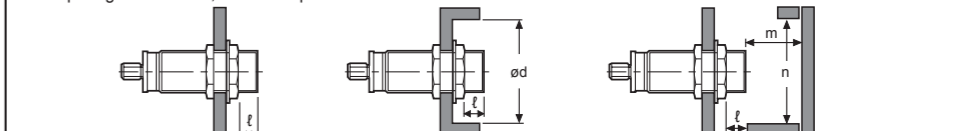
● Mutual-interference

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.



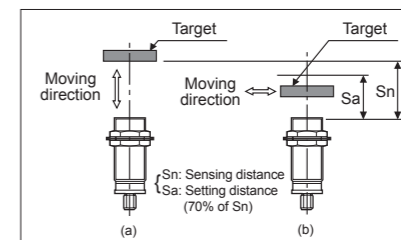
● Influence by surrounding metals

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	PRACM12-2□	PRDACM12-4□	PRACM18-5□	PRDACM18-7□	PRACM30-10□	PRDACM30-15□
Item						
A	12	24	30	42	60	90
B	24	24	36	36	60	60
ℓ	0	0	0	0	0	0
ød	12	12	18	18	30	30
m	6	12	15	21	30	45
n	18	18	27	27	45	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).

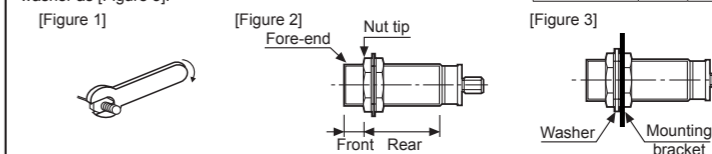
● Setting distance (Sa) : Sensing distance (Sn) × 70%
E.g.) PRACM30-10DN
Setting distance (Sa) = 10mm × 0.7 = 7mm

■ 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. [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].



Model	Strength	
	Front	Rear
PR(D)ACM12 Series	13mm	6.37N·m
PR(D)ACM18 Series	Flush	14.7N·m
PR(D)ACM30 Series	26mm	49N·m

■ Caution 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.
- If the surface of the product is rubbed with a hard object, PTFE coating can be worn out.
- 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
- 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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