Autonics

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# INDUCTIVE PROXIMITY SENSOR (CYLINDRICAL METAL AC CONNECTOR TYPE)

# PRCM SERIES

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

### ⚠ Caution

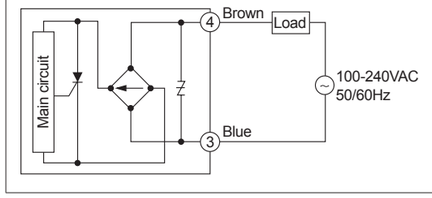
1. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or product damage.
2. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
   Failure to follow this instruction may result in electric shock or fire.
3. **Do not use 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.

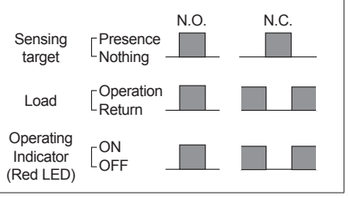
## ■ Ordering Information

**P R CM L 18 – 5 A O**

| | | |
|---|---|---|
| Output | **O** | Normally open |
| | **C** | Normally closed |
| Power supply | **A** | 100-240VAC |
| Sensing distance | **Number** | Sensing distance(Unit: mm) |
| Dimension | **Number** | Diameter of head(Unit: mm) |
| Body size | **No mark** | Standard type |
| | **L** | Long body |
| Connection | **CM** | Connector type |
| Shape | **R** | Cylindrical type |
| Item | **C** | Inductive proximity sensor |

## ■ 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).**

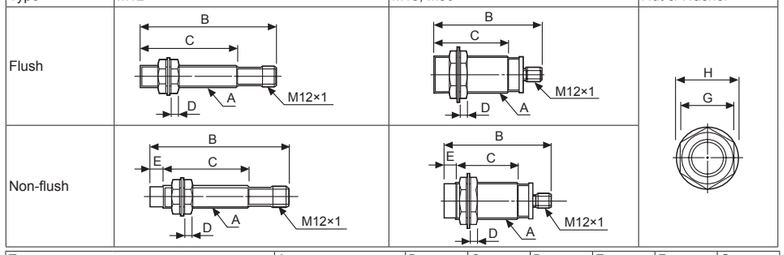
## ■ Specifications

| Model | | PRCM12-2AO<br>PRCM12-2AC | PRCM12-4AO<br>PRCM12-4AC | PRCM18-5AO<br>PRCM18-5AC<br>PRCML18-5AO<br>PRCML18-5AC | PRCM18-8AO<br>PRCM18-8AC<br>PRCML18-8AO<br>PRCML18-8AC | PRCM30-10AO<br>PRCM30-10AC<br>PRCML30-10AO<br>PRCML30-10AC | PRCM30-15AO<br>PRCM30-15AC<br>PRCML30-15AO<br>PRCML30-15AC |
|---|---|---|---|---|---|---|---|
| Sensing distance | | 2mm | 4mm | 5mm | 8mm | 10mm | 15mm |
| Hysteresis | | Max. 10% of sensing distance | | | | | |
| Standard sensing target | | 12×12×1mm(Iron) | | 18×18×1mm (Iron) | 25×25×1mm (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 5.6mm | 0 to 7mm | 0 to 10.5mm |
| Power supply (Operating voltage) | | 100-240VAC～ 50/60Hz(85-264VAC～) | | | | | |
| Leakage current | | Max. 2.5mA | | | | | |
| Response frequency※1 | | 20Hz | | | | | |
| Residual voltage | | Max. 10V | | | | | |
| Affection by Temp. | | When it is 20°C at the rated ambient temperature, it is below 10% | | | | | |
| Control output | | 5 to 150mA | | 5 to 200mA | | | |
| Insulation resistance | | Min. 50MΩ(at 500VDC megger) | | | | | |
| Dielectric strength | | 2,500VAC 50/60Hz for 1minute | | | | | |
| Vibration | | 1mm amplitude at frequency of 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 temperature | -25 to 70°C, Storage: -30 to 80°C | | | | | |
| | Ambient humidity | 35 to 95%RH, Storage: -30 to 95%RH | | | | | |
| Protection circuit | | Surge protection circuit | | | | | |
| Protection | | IP67(IEC standards) | | | | | |
| Insulation type | | Double insulation or reinfored insulation (Mark: ⊡, dielectric strength between the measuring input part and the power part: 1kV) | | | | | |
| Material | | Case and nut: Nickel-plated brass, Washer: Nickel-plated steel, Sensing part: PBT | | | | | |
| Approval | | CE | | | | | |
| Unit weight※2 | | Approx. 42g(Approx. 30g) | | PRCM: Approx. 66g(Approx. 54g)<br>PRCML: Approx. 78g(Approx. 66g) | | PRCM: Approx. 154g(Approx. 142g)<br>PRCML: Approx. 194g(Approx. 182g) | |

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

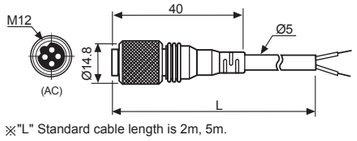
## ■ Dimensions

(Unit: mm)

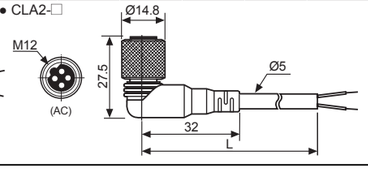



| Type | | | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| Flush | M12 | PRCM | M12×1 | 72.8 | 48.5 | 4 | - | 17 | 21 |
| | M18 | PRCM | M18×1 | 60.6 | 35.8 | 4 | - | 24 | 29 |
| | | PRCML | M18×1 | 87.3 | 62.5 | 4 | - | 24 | 29 |
| | M30 | PRCM | M30×1.5 | 63.8 | 38 | 5 | - | 35 | 42 |
| | | PRCML | M30×1.5 | 85.8 | 60 | 5 | - | 35 | 42 |
| Non-flush | M12 | PRCM | M12×1 | 72.8 | 41.5 | 4 | 7 | 17 | 21 |
| | M18 | PRCM | M18×1 | 60.1 | 25.3 | 4 | 10 | 24 | 29 |
| | | PRCML | M18×1 | 86.8 | 52 | 4 | 10 | 24 | 29 |
| | M30 | PRCM | M30×1.5 | 63.8 | 28 | 5 | 10 | 35 | 42 |
| | | PRCML | M30×1.5 | 85.8 | 50 | 5 | 10 | 35 | 42 |

● CIA2-□



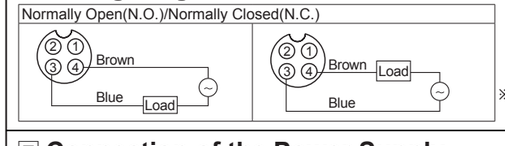

● CLA2-□




※"L" Standard cable length is 2m, 5m.

## ■ Wiring Diagram

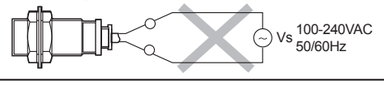
Normally Open(N.O.)/Normally Closed(N.C.)

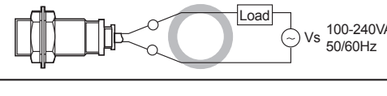



※In AC switching type, 2 and 3, 1 and 4 are connected inside of the connector cable.

## ■ Connection of the Power Supply

Be sure to connect the power after connecting the load, because direct connection of the proximity sensor may cause damage to the inner elements of this product.

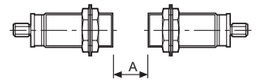


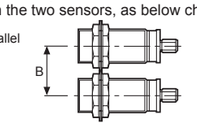

## ■ Mutual-interference & Influence by Surrounding Metals

◎ **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, as below charts.

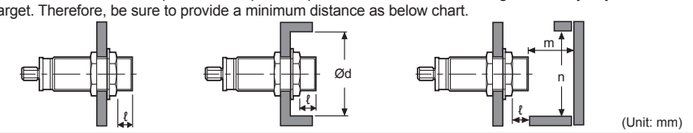
Face to Face




Parallel



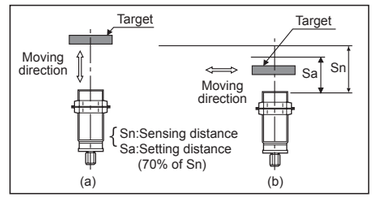

◎ **Influence by surrounding metals**
When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart.




(Unit: mm)

| Item \ Model | PRCM12-2A□ | PRCM12-4A□ | PRCM(L)18-5A□ | PRCM(L)18-8A□ | PRCM(L)30-10A□ | PRCM(L)30-15A□ |
|---|---|---|---|---|---|---|
| A | 12 | 24 | 30 | 48 | 60 | 90 |
| B | 24 | 36 | 36 | 54 | 60 | 90 |
| ℓ | 0 | 11 | 0 | 14 | 0 | 15 |
| Ød | 12 | 36 | 18 | 54 | 30 | 90 |
| m | 6 | 12 | 15 | 24 | 30 | 45 |
| n | 18 | 36 | 27 | 54 | 45 | 90 |

## ■ Setting Distance




- Sensing distance can be changed by the shape, size or materia l 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.)PRCM30-10AO
  Setting distance(Sa)=10mm×0.7=7mm

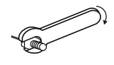
## ■ Installation and Tightening Torque

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, 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].

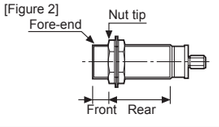
[Table 1]

| Model \ Strength | | Front Size | Front Torque | Rear Torque |
|---|---|---|---|---|
| PRCM12 Series | Flush | 13mm | 6.37N·m | 11.76N·m |
| | Non-flush | 7mm | | |
| PRCM18 Series | Flush | - | 14.7N·m | |
| | Non-flush | - | | |
| PRCM30 Series | Flush | 26mm | 49N·m | 78.4N·m |
| | Non-flush | 12mm | | |

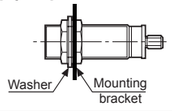
[Figure 1]



[Figure 2]




[Figure 3]




## ■ Caution during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 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.
3. Do not connect capacity load to the output terminal directly.
4. 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
■ 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, $CO_2$, Nd:YAG)
■ Laser welding/soldering system
■ Temperature controllers
■ Temperature/Humidity transducers
■ SSR/Power controllers
■ Counters
■ Timers
■ Panel meters
■ Tachometer/Pulse(Rate) meters
■ Display units
■ Sensor controllers

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