Autonics

INDUCTIVE PROXIMITY SENSOR (CYLINDRICAL DC 3WIRE CONNECTOR)

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 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

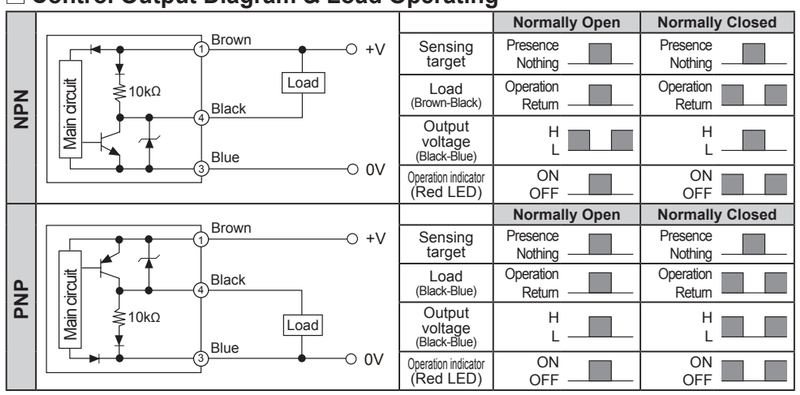
1. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or product damage.
2. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
   Failure to follow this instruction may result in fire.
3. **Do not use the unit in the place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

P R CM L 18 – 5 DN

Output	**DN**	NPN N.O.(Normally Open)
	DN2	NPN N.C.(Normally Closed)
	DP	PNP N.O.(Normally Open)
	DP2	PNP N.C.(Normally Closed)
Sensing distance	**Number**	Standard sensing distance(Unit: mm)
Dimension	**Number**	Diameter of head(Unit: mm)
Body size	**No mark**	Standard
	L	Long body
Connection	**CM**	Connector type
Shape	**R**	Cylindrical type
Item	**P**	Inductive proximity sensor

Control Output Diagram & Load Operating



	Normally Open	Normally Closed
Sensing target	Presence / Nothing	Presence / Nothing
Load (Brown-Black)	Operation / Return	Operation / Return
Output voltage (Black-Blue)	H / L	H / L
Operation indicator (Red LED)	ON / OFF	ON / OFF

	Normally Open	Normally Closed
Sensing target	Presence / Nothing	Presence / Nothing
Load (Black-Blue)	Operation / Return	Operation / Return
Output voltage (Black-Blue)	H / L	H / L
Operation indicator (Red LED)	ON / OFF	ON / OFF

※**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).**

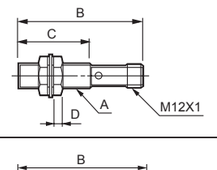
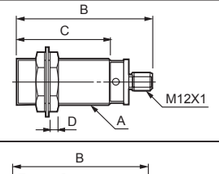
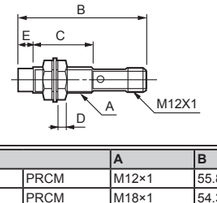
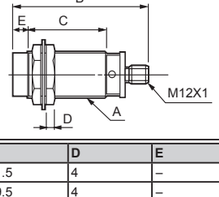
Specifications

Model						
	PRCM12-2DN PRCM12-2DP PRCM12-2DN2 PRCM12-2DP2	PRCM12-4DN PRCM12-4DP PRCM12-4DN2 PRCM12-4DP2	PRCM18-5DN PRCM18-5DP PRCM18-5DN2 PRCM18-5DP2 PRCML18-5DN PRCML18-5DP PRCML18-5DN2 PRCML18-5DP2	PRCM18-8DN PRCM18-8DP PRCM18-8DN2 PRCM18-8DP2 PRCML18-8DN PRCML18-8DP PRCML18-8DN2 PRCML18-8DP2	PRCM30-10DN PRCM30-10DP PRCM30-10DN2 PRCM30-10DP2 PRCML30-10DN PRCML30-10DP PRCML30-10DN2 PRCML30-10DP2	PRCM30-15DN PRCM30-15DP PRCM30-15DN2 PRCM30-15DP2 PRCML30-15DN PRCML30-15DP PRCML30-15DN2 PRCML30-15DP2
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)	12-24VDC⎓ (10-30VDC⎓)					
Current consumption	Max. 10mA					
Response frequency※1	1.5kHz	500kHz	500kHz	350kHz	400kHz	200kHz
Residual voltage	Max. 1.5V					
Affection by Temp.	Within ±10℃ max. of sensing distance at 20℃ in temperature range of -25 to 70℃					
Control output	Max. 200mA					
Insulation resistance	Min. 50MΩ(500VDC megger)					
Dielectric strength	1,500VAC 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	Operation indicator(Red LED)					
Environment: Ambient temperature	-25 to 70℃, Storage: -30 to 80℃					
Environment: Ambient humidity	35 to 95%RH, Storage: 35 to 95%RH					
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overcurrent protection					
Protection	IP67(IEC Standards)					
Materials	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: PBT					
Approval	CE					
Unit weight※2	Approx. 38g(Approx. 26g)		PRCM:Approx. 61g(Approx. 49g) PRCML:Approx. 85g(Approx. 73g)		PRCM:Approx. 146g(Approx. 134g) PRCML:Approx. 181g(Approx. 169g)	

※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.

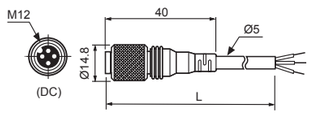
Dimensions

(Unit:mm)

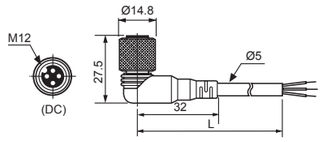
Type	Connector type: M12	Connector type: M18, M30	Nut & Washer
Flush			
Non-flush			

Type			A	B	C	D	E	G	H
Flush	M12	PRCM	M12×1	55.8	31.5	4	–	17	21
	M18	PRCM	M18×1	54.3	29.5	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	55.8	24.5	4	7	17	21
	M18	PRCM	M18×1	53.8	19	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

• CID3- □

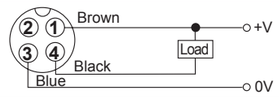
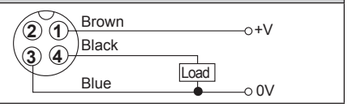


• CLD3- □



※"L" Standard cable length is 2m, 5m.

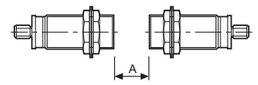
Wiring Diagram

NPN	PNP
	

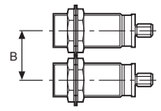
Multi-interference & Influence by Surrounding Metals

◎ **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.

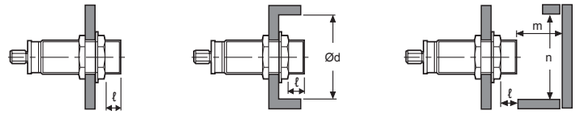
Face to Face



Parallel



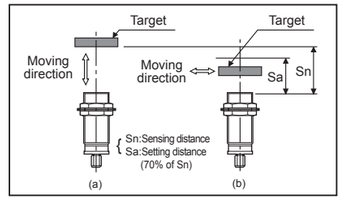
◎ **Influence by surrounding metals**
When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart.



(Unit:mm)

Item \ Model	PRCM12-2D□	PRCM12-4D□	PRCM(L)18-5D□	PRCM(L)18-8D□	PRCM(L)30-10D□	PRCM(L)30-15D□
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 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.)PRCM30-10DN
  Setting distance(Sa) = 10mm × 0.7 = 7mm

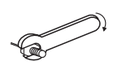
Installation and Tightening Torque

[Table 1]

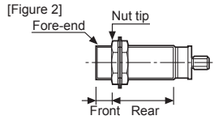
When tightening the nut, use the provided washer as [Figure 1].
When installing the product, the tightening torque of the nut varies according to the distance from the fore-end.
The front part of the product is from the fore-end to the dimension on the below table, and the rear part is from the tip of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

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		

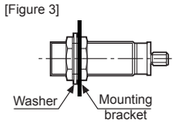
[Figure 1]



[Figure 2]



[Figure 3]



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

- Proximity sensors
- Area sensors
- Photoelectric sensors
- Fiber optic sensors
- Door/Door side sensors
- Sensor controllers
- Graphic/Logic panels
- Temperature controllers
- Tachometer/Pulse(Rate) meters
- Temperature/Humidity transducers
- Switching power supplies
- Stepping motors/drivers/motion controllers
- Field network devices
- Laser marking system(CO_2, Nd:YAG)
- Laser welding/soldering system
- Counters
- Timers
- Display units
- Panel meters
- Pressure sensors
- Rotary encoders
- Power controllers

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