DRW171498AA

Autonics

INDUCTIVE PROXIMITY SENSOR

CYLINDRICAL TYPE AC 2WIRE

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 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

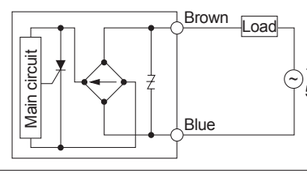
1. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or product damage.
2. **Use dry cloth to clean the unit, and do not use water or organic solvent.**
   Failure to follow this instruction may result in electric shock or fire.
3. **Do not use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

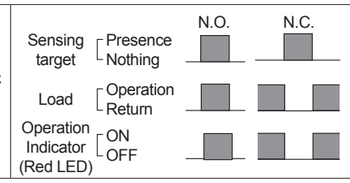
■ Ordering Information

P R W L 18 – 5 A O

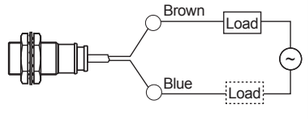
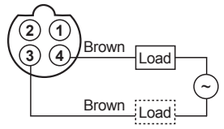
Output	O	Normally open
	C	Normally closed
Power supply	A	100-240VAC
Sensing distance	Number	Standard sensing distance(Unit: mm)
Dimension	Number	Diameter of head(Unit: mm)
Body size	No mark	Standard type
	L	Long body
Connection	No mark	Cable type
	W	Cable connector type
Shape	R	Cylindrical type
Item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

■ Control Output Diagram & Load Operation





■ Connections

Cable type	Cable connector type
	

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

※The load can be connected to either wire.

※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

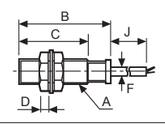
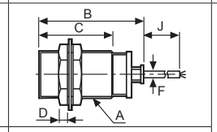
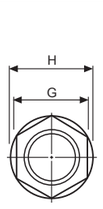
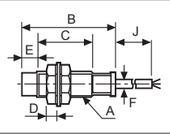
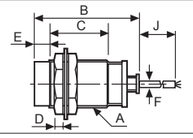
Model	PR12-2AO PR12-2AC PRW12-2AO PRW12-2AC	PR12-4AO PR12-4AC PRW12-4AO PRW12-4AC	PR18-5AO PR18-5AC PRL18-5AO PRL18-5AC PRW18-5AO PRW18-5AC PRWL18-5AO PRWL18-5AC	PR18-8AO PR18-8AC PRL18-8AO PRL18-8AC PRW18-8AO PRW18-8AC PRWL18-8AO PRWL18-8AC	PR30-10AO PR30-10AC PRL30-10AO PRL30-10AC PRW30-10AO PRW30-10AC PRWL30-10AO PRWL30-10AC	PR30-15AO PR30-15AC PRL30-15AO PRL30-15AC PRW30-15AO PRW30-15AC PRWL30-15AO PRWL30-15AC
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～ (85-264VAC～)					
Leakage current	Max. 2.5mA					
Response frequency※1	20Hz					
Residual voltage	Max. 10V					
Affection by Temp.	Max. ±10% of sensing distance at +20℃ within temperature range of -25 to +70℃					
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(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					
Protection	IP67(IEC standard)					
Cable※2: Cable type	Ø4mm, 2 cores, 2m		Ø5mm, 2 cores, 2m			
	AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm					
Cable※2: Cable connector type	Ø4mm, 2 cores, 300mm, M12 connector		Ø5mm, 2 cores, 300mm, M12 connector			
	AWG22, core diameter: 0.08mm, number of cores: 60, insulator diameter: Ø1.25mm					
Insulation type	Double insulation or reinforced 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, General cable(Black): Polyvinyl chloride (PVC)					
Approval	CE					
Unit weight※3	PR: Approx. 84g(Approx. 72g) PRW : Approx. 54g(Approx. 42g)		PR: Approx. 130g(Approx. 118g) PRL: Approx. 142g(Approx. 130g) PRW: Approx. 78g(Approx. 66g) PRWL: Approx. 90g(Approx. 78g)		PR: Approx. 207g(Approx. 170g) PRL: Approx. 245g(Approx. 208g) PRW: Approx. 134g(Approx. 122g) PRWL: Approx. 195g(Approx. 158g)	

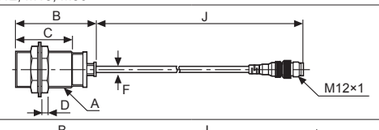
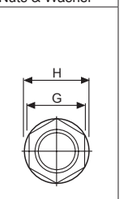
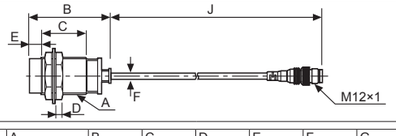
※1: The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

※2: Do not pull 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.

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

■ Dimensions

	Type	M12	M18, M30	Nuts & Washer
Cable connector type	Flush			
	Non-flush			

	Type	M12, M18, M30	Nuts & Washer
Cable connector type	Flush		
	Non-flush		

(Unit: mm)

Item			A	B	C	D	E	F	G	H	J
Flush	M12	PR	M12×1	63	48.5	4	-	4	17	21	2,000
		PRW									300
	M18	PR	M18×1	53.8	35.8	4	-	5	24	29	2,000
		PRW									300
		PRL	M18×1	80.5	62.5	4	-	5	24	29	2,000
		PRWL									300
	M30	PR	M30×1.5	58	38	5	-	5	35	42	2,000
		PRW									300
		PRL	M30×1.5	80	60	5	-	5	35	42	2,000
		PRWL									300
Non-flush	M12	PR	M12×1	63	41.5	4	7	4	17	21	2,000
		PRW									300
	M18	PR	M18×1	53.3	25.3	4	10	5	24	29	2,000
		PRW									300
		PRL	M18×1	80	52	4	10	5	24	29	2,000
		PRWL									300
	M30	PR	M30×1.5	58	28	5	10	5	35	42	2,000
		PRW									300
		PRL	M30×1.5	80	50	5	10	5	35	42	2,000
		PRWL									300

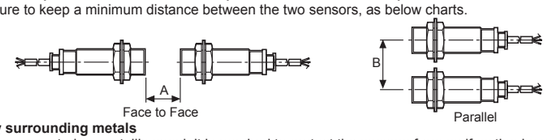
■ Connection of Power Supply

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

■ Mutual-interference & Influence by Surrounding Metals

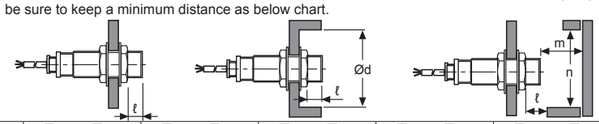
◎ **Mutual-interference**

When several proximity sensors are mounted closely, malfunction of sensor may be caused due to mutual interference. Therefore, be sure to keep a minimum distance between the two sensors, as below charts.



◎ **Influence by surrounding metals**

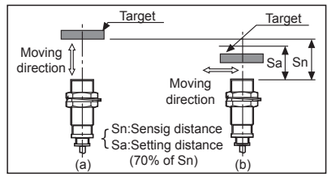
When sensors are mounted on metallic panel, it is required to protect the sensors from malfunction by any metallic object. Therefore, be sure to keep a minimum distance as below chart.



(Unit:mm)

Item \ Model	PR□12-2A□ PRW□12-2A□	PR□12-4A□ PRW□12-4A□	PR□18-5A□ PRW□18-5A□	PR□18-8A□ PRW□18-8A□	PR□30-10A□ PRW□30-10A□	PR□30-15A□ PRW□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 material of the target. Therefore please check the sensing distance as (a), then pass the target within range of setting distance(Sa) as (b).

- Setting distance(Sa) = Sensing distance(Sn)×70%
  E.g.)PR30-10AO
  Setting distance(Sa) = 10mm×0.7=7mm

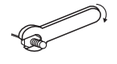
■ Installation and Tightening Torque

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].

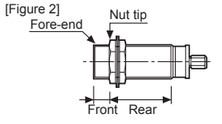
[Table 1]

Model \ Strength		Front Size	Front Torque	Rear Torque
PR12 Series	Flush	13mm	6.37N·m	11.76N·m
	Non -Flush	7mm		
PR18 Series	Flush	-	14.7N·m	
	Non -Flush	-		
PR30 Series	Flush	26mm	49N·m	78.4N·m
	Non -Flush	12mm		

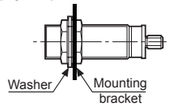
[Figure 1]



[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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