

Autonics

INDUCTIVE PROXIMITY SENSOR

CYLINDRICAL TYPE DC 3WIRE

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 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	W	L	18	-	5	DN	-	V	
										Cable type
										No mark
										V
										S
										Output
										DN
										DN2
										DP
										DP2
										Sensing distance
										Number
										Number
										Dimension
										No mark
										S
										L
										Body size
										No mark
										W
										Connection
										No mark
										R
										Shape
										P
										Item

■ Control Output Diagram & Load Operation

NPN output	Main circuit	Sensing target	Normally Open		Normally Closed	
			Presence	Nothing	Presence	Nothing
NPN output	Brown Black Blue	Load	Operation	Return	Operation	Return
		Output voltage (Black-Blue)	H	L	H	L
		Operation indicator (RED LED)	ON	OFF	ON	OFF
PNP output	Main circuit	Sensing target	Normally Open		Normally Closed	
			Presence	Nothing	Presence	Nothing
PNP output	Brown Black Blue	Load	Operation	Return	Operation	Return
		Output voltage (Black-Blue)	H	L	H	L
		Operation indicator (RED LED)	ON	OFF	ON	OFF

■ Connections

Cable type		Cable connector type	
NPN		PNP	
Brown Black Blue		Brown Black Blue	
+V		+V	
0V		0V	

※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	PR08-1.5DN PR08-1.5DP PR08-1.5DN2 PR08-1.5DP2 PRL08-1.5DN PRL08-1.5DP PRL08-1.5DN2 PRL08-1.5DP2 PRW08-1.5DN PRW08-1.5DP PRW08-1.5DN2 PRW08-1.5DP2 PRW08-1.5DN-V PRW08-1.5DP-V PRWL08-1.5DN PRWL08-1.5DP PRWL08-1.5DN2 PRWL08-1.5DP2	PR08-2DN PR08-2DP PR08-2DN2 PR08-2DP2 PRL08-2DN PRL08-2DP PRL08-2DN2 PRL08-2DP2 PRW08-2DN PRW08-2DP PRW08-2DN2 PRW08-2DP2 PRW08-2DN-V PRW08-2DP-V PRWL08-2DN PRWL08-2DP PRWL08-2DN2 PRWL08-2DP2	PR12-2DN PR12-2DP PR12-2DN2 PR12-2DP2 PRS12-2DN PRS12-2DP PRS12-2DN2 PRS12-2DP2 PRW12-2DN PRW12-2DP PRW12-2DN2 PRW12-2DP2 PRW12-2DN-V PRW12-2DP-V PRL12-2DN PRL12-2DP	PR12-4DN PR12-4DP PR12-4DN2 PR12-4DP2 PRS12-4DN PRS12-4DP PRS12-4DN2 PRS12-4DP2 PRW12-4DN PRW12-4DP PRW12-4DN2 PRW12-4DP2 PRW12-4DN-V PRW12-4DP-V PRL12-4DN PRL12-4DP	PR18-5DN PR18-5DP PR18-5DN2 PRL18-5DN PRL18-5DP PRL18-5DN2 PRL18-5DP2 PRW18-5DN PRW18-5DP PRW18-5DN2 PRW18-5DP2 PRW18-5DN-V PRW18-5DP-V PRWL18-5DN PRWL18-5DP PRWL18-5DN2 PRWL18-5DP2	PR18-8DN PR18-8DP PR18-8DN2 PRL18-8DN PRL18-8DP PRL18-8DN2 PRL18-8DP2 PRW18-8DN PRW18-8DP PRW18-8DN2 PRW18-8DP2 PRW18-8DN-V PRW18-8DP-V PRWL18-8DN PRWL18-8DP PRWL18-8DN2 PRWL18-8DP2	PR30-10DN PR30-10DP PR30-10DN2 PR30-10DP2 PRL30-10DN PRL30-10DP PRL30-10DN2 PRL30-10DP2 PRW30-10DN PRW30-10DP PRW30-10DN2 PRW30-10DP2 PRW30-10DN-V PRW30-10DP-V PRWL30-10DN PRWL30-10DP PRWL30-10DN2 PRWL30-10DP2	PR30-15DN PR30-15DP PR30-15DN2 PR30-15DP2 PRL30-15DN PRL30-15DP PRL30-15DN2 PRL30-15DP2 PRW30-15DN PRW30-15DP PRW30-15DN2 PRW30-15DP2 PRW30-15DN-V PRW30-15DP-V PRWL30-15DN PRWL30-15DP PRWL30-15DN2 PRWL30-15DP2	
	Sensing distance	1.5mm	2mm	2mm	4mm	5mm	8mm	10mm	15mm
	Hysteresis	Max. 10% of sensing distance							
	Standard sensing target	8×8×1mm (Iron)		12×12×1mm (Iron)		18×18×1mm (Iron)		25×25×1mm (Iron)	
	Setting distance	0 to 1.05mm		0 to 1.4mm		0 to 2.8mm		0 to 3.5mm	
	Power supply (Operating voltage)	12-24VDC= (10-30VDC=)							
	Current consumption	Max. 10mA							
	Response frequency※1	1.5kHz		1kHz		1.5kHz		500Hz	
	Residual voltage	Max. 2.0V		Max. 1.5V		Max. 1.5V		Max. 1.5V	
	Affection by Temp.	Within ±10°C max. of sensing distance at 20°C in temperature range of -25 to 70°C (PR_08 Series: Max. ±20%)							
	Control output	Max. 200mA							
	Insulation resistance	Min. 50MΩ(at 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/s ² (approx. 50G) X, Y, Z directions for 3 times							
	Indicator	Operation indicator(Red LED)							
Environ- ment	-25 to 70°C, Storage: -30 to 80°C								
Ambient temp.	35 to 95%RH, Storage: 35 to 95%RH								
Ambient humi.									
Protection circuit	Surge protection, Reverse polarity protection, Overload & short circuit protection								
Protection	IP67(IEC Standards)								
Cable ※2	PR, PRL	Ø3.5mm, 3-wire, 2m (AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator diameter: Ø1mm)		Ø4mm, 3-wire, 2m (AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator diameter: Ø1.25mm)		Ø5mm, 3-wire, 2m			
	PRW, PRWL	Ø4mm, 3-wire, 300mm, M12 Connector				Ø5mm, 3-wire, 300mm, M12 Connector			
Materials	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: PBT, Standard cable(Black): Polyvinyl chloride(PVC), Oil resistant cable(Gray): Oil resistant Polyvinyl chloride(PVC)								
Approval	CE								
Weight※3	PR: Approx. 64g(Approx. 52g)		PR: Approx. 84g(Approx. 72g)		PR: Approx. 122g(Approx. 110g)		PR: Approx. 207g(Approx. 170g)		
	PRL: Approx. 66g(Approx. 54g)		PRL: Approx. 82g(Approx. 70g)		PRL: Approx. 142g(Approx. 130g)		PRL: Approx. 247g(Approx. 210g)		
	PRW: Approx. 44g(Approx. 32g)		PRW: Approx. 54g(Approx. 42g)		PRW: Approx. 70g(Approx. 58g)		PRW: Approx. 134g(Approx. 122g)		
	PRWL: Approx. 46g(Approx. 34g)		PRL: Approx. 88g(Approx. 76g)		PRWL: Approx. 90g(Approx. 78g)		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 Ø3.5mm cable with a tensile strength of 25N, 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

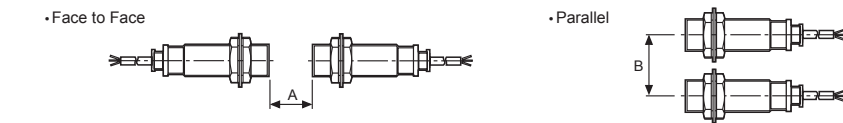
Type	Cable type	Cable connector type	Nut & Washer
Flush	M8, M12, M18, M30	M8, M12, M18, M30	
Non-flush	M8, M12, M18, M30	M8, M12, M18, M30	

(Unit: mm)

■ Mutual-interference & Influence by Surrounding Metals

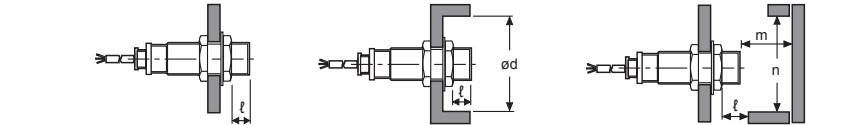
● Mutual-interference

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 with referring to the chart below.



● Influence by surrounding metals

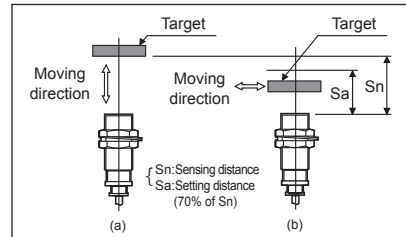
When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart.



(Unit: mm)

Model	PR_08-1.5D	PR_08-2D	PR_12-2D	PR_12-4D	PR_18-5D PRW_18-5D	PR_18-8D PRW_18-8D	PR_30-10D PRW_30-10D	PR_30-15D PRW_30-15D
A	9	12	12	24	30	48	60	90
B	16	24	24	36	36	54	60	90
ℓ	0	8	0	11	0	14	0	15
ød	8	24	12	36	18	54	30	90
m	4.5	6	6	12	15	24	30	45
n	12	24	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.) PR30-10DN (See ordering information)

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]