

Autonics

**INDUCTIVE PROXIMITY SENSOR
(SPATTER RESISTANT TYPE)**

PRA SERIES

M A N U A L



(AC type approved only)



Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

*Please keep "Caution for your safety" to avoid accidents or damages as using it correctly.

*The meaning of 'Warning' and 'Caution' is as follows:

Warning In case a serious injury or dead may be occurred.

Caution In case a little injury or damage of this unit may be occurred.

*The meaning of the mark on the product and manual is as follows:

⚠ is a caution mark for danger in special condition.

Warning

1. Please use it with double safety devices when it is used at the equipments which may cause damages to human life or assets(Ex:Nuclear power control, Medical equipment, Vehicle, Train, Air plane, Combustion apparatus, Entertainment or Safety device etc.) It may cause a fire, human life or assets.

2. Do not connect power directly without load.

It may result in damage to inner components or burn them out.

Caution

1. Do not use this unit in place where there is flammable, explosive gas, chemical or strong alkalis, acids.

It may cause a fire or explosion.

2. Do not impact on this unit.

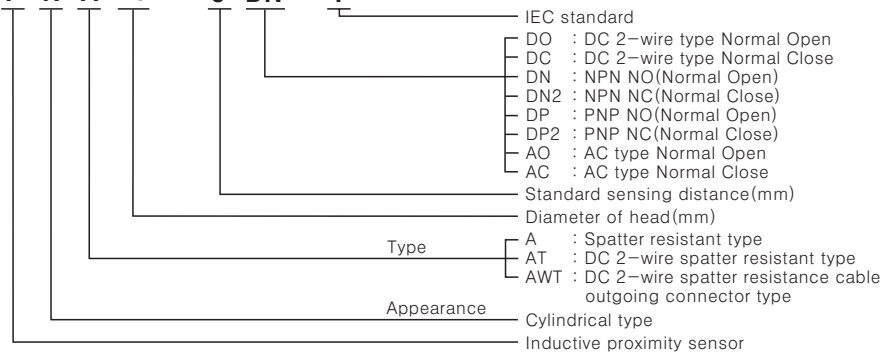
It may result in malfunction or damage to the product.

3. Do not use this product beyond rated voltage or apply AC power to DC power.

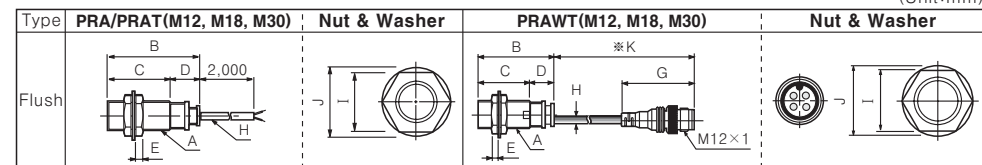
It may result in serious damage to the product.

Ordering information

P R A 18 - 5 DN - I



Dimensions



Type	PRA/PRAT(M12, M18, M30)	Nut & Washer	PRAWT(M12, M18, M30)	Nut & Washer							
DC type	M12	PRA	M12×1	42.5	31.5	11	4	4	17	21	-
		PRAT	M12×1	42.5	31.5	11	4	4	17	21	-
	M18	PRA	M18×1	47	29	18	4	5	24	29	-
		PRAT	M18×1	47	29	18	4	5	24	29	-
	M30	PRA	M30×1.5	58	38	20	5	5	35	42	-
		PRAT	M30×1.5	58	38	20	5	5	35	42	-
AC type	M12	PRA	M12×1	59.5	48.5	11	4	4	17	21	-
	M18	PRA	M18×1	53.3	35.3	18	4	5	24	29	-
	M30	PRA	M30×1.5	58	38	20	5	5	35	42	-

* 300mm of cable outgoing connector type is a standard for "K".

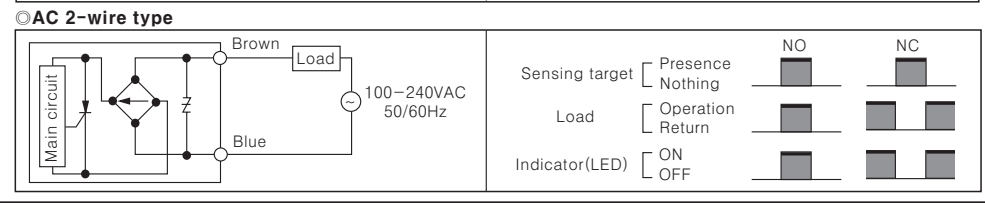
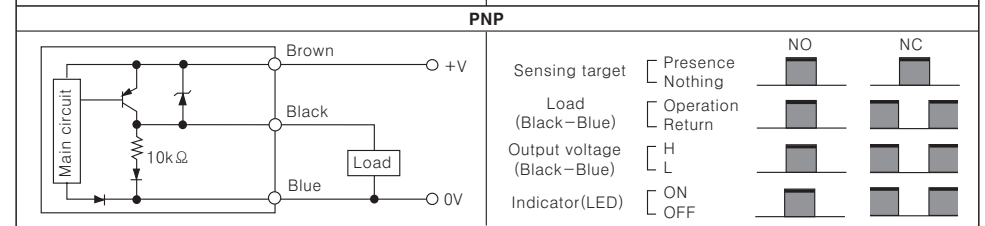
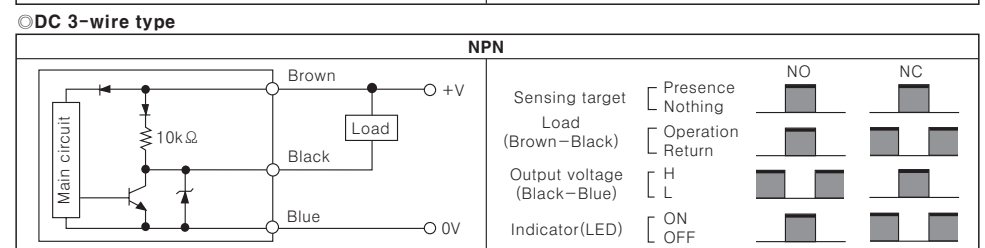
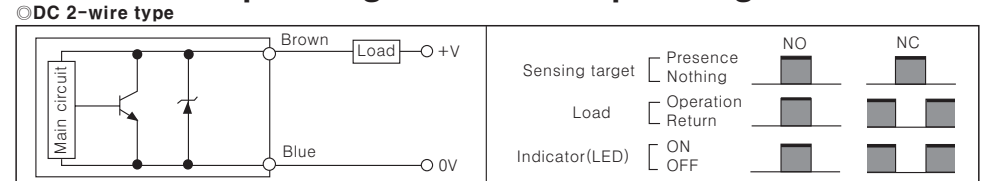
*The above specifications are changeable at anytime without notice.

Specifications

Model	PRAT12-2DO PRAT12-2DC PRAWT12-2DC PRAWT12-2DO PRAT18-5DO PRAT18-5DC PRAWT18-5DC PRAWT18-5DO PRAT18-5DP2 PRAT18-5DCP2 PRAWT18-5DCP2 PRAWT18-5DOP2 PRAT30-10DO PRAT30-10DC PRAWT30-10DC PRAWT30-10DO PRA12-2DN PRA12-2DP PRA12-2DN2 PRA12-2DP2 PRA18-5DN PRA18-5DP PRA18-5DN2 PRA18-5DP2 PRA30-10DN PRA30-10DP PRA30-10DN2 PRA30-10DP2 PRA12-2AO PRA12-2AC PRA18-5AO PRA18-5AC PRA30-10AO PRA30-10AC	Sensing distance	Hysteresis	Standard sensing target	Setting distance	Power supply (Operating voltage)	Current consumption	Leakage current	Response frequency	Residual voltage	Affection by temp.	Control output	Insulation resistance	Dielectric strength	Vibration	Shock	Indicator	Ambient temperature	Storage temperature	Ambient humidity	Protection circuit	Protection	Insulation type	Unit weight	
		2mm±10%	Max. 10% of sensing distance	12×12×1mm (Iron)	0 to 1.4	24VDC (15-30VDC)	Max. 10mA	Max. 0.9mA	800Hz	Max. 7V	±10% Max. of sensing distance at +20°C within temperature range of -25 to +70°C	50mA	Min. 50MΩ (500VDC)	1500VAC 50/60Hz for 1 minute	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours	500m/s ² (50G) X, Y, Z direction for 3 times	Operating indicator (RED LED)	-25 to +70°C (non-freezing condition)	-30 to +80°C (non-freezing condition)	35 to 95%RH	Surge protection circuit, Overload & short circuit protection.	Reverse polarity protection, Surge protection circuit, Overload & short circuit protection	IP67 (IEC standard)	□	PRAT: Approx. 63g PRAWT: Approx. 45g PRAT: Approx. 122g PRAWT: Approx. 65g PRAT: Approx. 181g PRAWT: Approx. 130g
		5mm±10%		18×18×1mm (Iron)	0 to 3.5	12-24VDC (10-30VDC)			350Hz	Max. 1.5V		200mA												Approx. 70g	
		10mm±10%		30×30×1mm (Iron)	0 to 7	100-240VAC 50/60Hz (85-264VAC)			250Hz			150mA												Approx. 119g	
		2mm±10%		12×12×1mm (Iron)	0 to 1.4				20Hz			200mA												Approx. 184g	
		5mm±10%		18×18×1mm (Iron)	0 to 3.5																			About 66g	
		10mm±10%		30×30×1mm (Iron)	0 to 7																			About 130g	
																								About 185g	

* (+) □ □ Mark indicated that equipment protected throughout by double insulation or reinforced insulation.

Control output diagram & Load operating



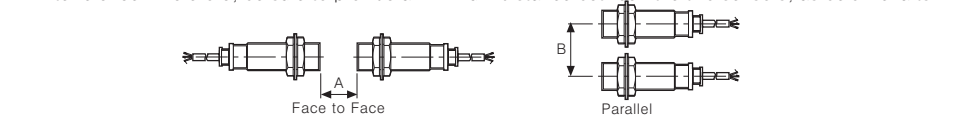
Connection of the power supply

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.

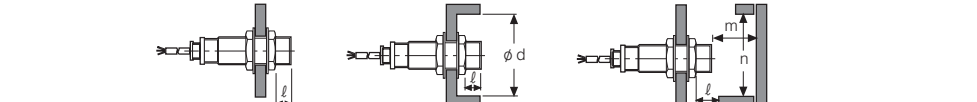


Mutual-interference & Influence by surrounding metals

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.



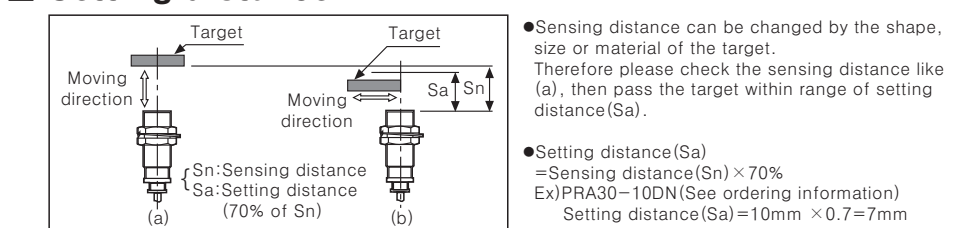
Influence by surrounding metals
When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart.



Item	Model	PRA□12-2□□	PRA□18-5□□	PRA□30-10□□
A		12	30	60
B		24	36	60
l		0	0	0
φ d		12	18	30
n		18	27	45
m		6	15	30

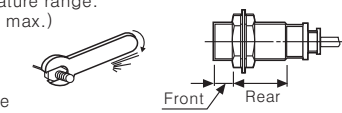
(Unit:mm)

Setting distance



Caution for using

- This equipment shall not be used outdoors or beyond specified temperature range.
- Do not load over than tensile strength of cord. (φ4:30N max., φ5:50N max.)
- Do not use the same conduit with cord of this unit and electric power line or power line. Also avoid the same connection.
- Do not put overload to tighten nut, please use washer for tightening. Note1) Allowable strength may be different by the length of head. As see the picture, allowable tightening strength of front part and rear part are in (Chart 1). Rear part includes head nut as like picture. Note2) (Chart 1) is for using washer.
- Please check the voltage changes of power source in order not to excess rating power input.
- Do not use this unit during transient time (80ms) after apply power.
- Do not connect capacity load to output part directly.
- It may result in damage to the product, if use automatic transformer. So please use insulated transformer.
- Please make wire short as much as possible in order to avoid noise.
- Be sure to cable as indicated specification on this product. If use wrong cable or bended cable, it shall not maintain the water-proof.
- It is possible to extend cable with over 0.3mm² and max. 200m.
- If the target is plated, the operating distance can be changed by the plating material.
- It may result in malfunction by metal particle on product.
- If there are machines (motor, welding etc), which occurs big surge around this unit, please install the varistor or absorber to source of surge, even though there is built-in surge absorber in this unit.
- If connect the load with big inrush current (DC type bulb) to this unit, the big inrush current will flow due to the initial resistance is low. If the current flows, the resistance of load will be bigger, then it will return to standard current. In this case, proximity sensor might be damaged by inrush current. If you use DC type bulb, please connect extra relay or resistance in order to protect proximity sensor from.
- In case of the load current is small (AC type): When the load current is under 5mA, make the residual voltage is less than return voltage to connect the bleeder resistor to load in parallel. *110VAC 50/60Hz : 20kΩ, Min. 3W, 220VAC 50/60Hz : 39kΩ, Min. 5W
- In case of the load current is small (DC 2 wire) : Please make flowing current in proximity sensor less than return current of load to connect bleeder resistor and load in parallel. *R ≤ Vs / (Io - Ioff) (kΩ) P > Vs² / R (mW) (Vs: Power supply, Io: Min. operating current for proximity sensor, Ioff: Return current of load, P: Resistance W of Bleeder resistor)
- If make a transceiver close to proximity sensor or wire connection, it may cause malfunction.



Strength Model	Size	Front Torque	Rear Torque
PRA12 Series	13mm	65kgf·cm	120kgf·cm
PRA18 Series	22mm	150kgf·cm	150kgf·cm
PRA30 Series	26mm	500kgf·cm	800kgf·cm

(Chart1)

*It may cause malfunction if above instructions are not followed.

Major products

- PROXIMITY SENSOR
- PHOTOELECTRIC SENSOR
- AREA SENSOR
- FIBER OPTIC SENSOR
- DOOR/DOOR SIDE SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- TEMPERATURE/HUMIDITY TRANSDUCER
- POWER CONTROLLER
- PANEL METER
- TACHO/LINE SPEED/PULSE METER
- DISPLAY UNIT
- SENSOR CONTROLLER
- SWITCHING POWER SUPPLY
- GRAPHIC PANEL
- STEPPING MOTOR & DRIVER & CONTROLLER
- LASER MARKING SYSTEM (CO₂, Nd:YAG)

Autonics Corporation
http://www.autonics.com

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