

Autonics

**INDUCTIVE PROXIMITY SENSOR
CYLINDRICAL TYPE DC 3WIRE**

M A N U A L



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

Caution for your safety

- *Please keep these instructions and review them before using this unit.
- *Please observe the cautions that follow;
 - Warning** Serious injury may result if instructions are not followed.
 - Caution** Product may be damaged, or injury may result if instructions are not followed.
- *The following is an explanation of the symbols used in the operation manual.
 - Caution: Injury or danger may occur under special conditions.

Warning

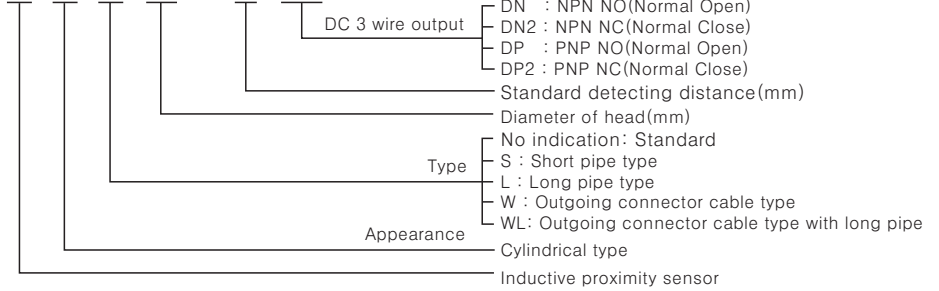
- In case of using this unit with machineries(Nuclear power control, medical equipment vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information on type required.**
It may result in serious damage, fire or human injury.

Caution

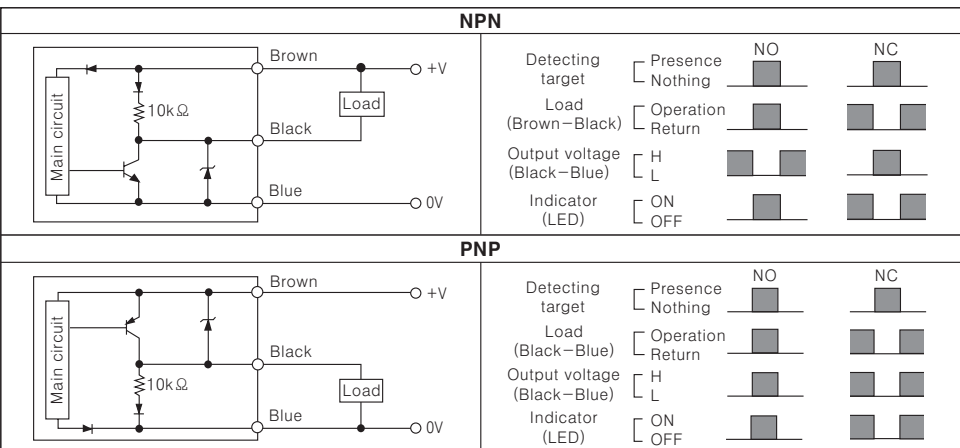
- Do not use this unit in place where there are flammable, explosive gas, chemical or strong alkalis, acids.**
It may cause a fire or explosion.
- Do not impact on this unit.**
It may result in malfunction or damage to the product.
- Do not apply AC power and observe specification rating.**
It may result in serious damage to the product.

Ordering information

P R L 18 - 5 DN



Control output diagram & Load operating

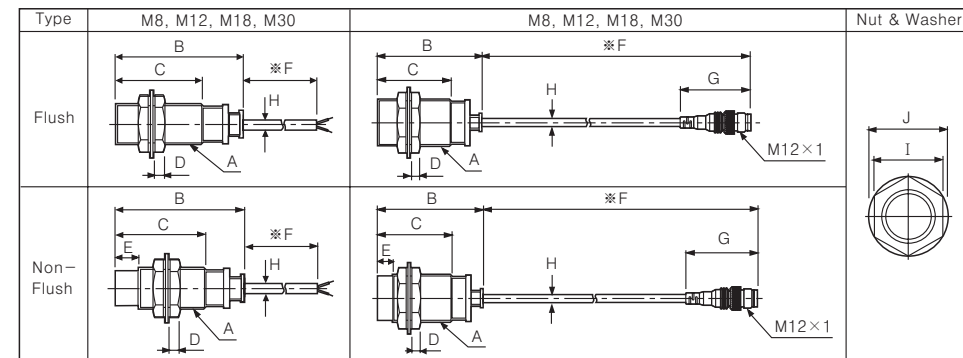


*The above specification are changeable without notice anytime.

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 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 PRWL08-2DN PRWL08-2DP PRWL08-2DN2 PRWL08-2DP2 | PR12-2DN PR12-2DP PR12-2DN2 PR12-2DP2 PR12-2DN PR12-2DP PR12-2DN2 PR12-2DP2 PR12-2DN PR12-2DP PR12-2DN2 PR12-2DP2 PR12-2DN PR12-2DP PR12-2DN2 PR12-2DP2 | PR12-4DN PR12-4DP PR12-4DN2 PR12-4DP2 PR12-4DN PR12-4DP PR12-4DN2 PR12-4DP2 PR12-4DN PR12-4DP PR12-4DN2 PR12-4DP2 PR12-4DN PR12-4DP PR12-4DN2 PR12-4DP2 | PR18-5DN PR18-5DP PR18-5DN2 PR18-5DP2 PRL18-5DN PRL18-5DP PRL18-5DN2 PRL18-5DP2 PRW18-5DN PRW18-5DP PRW18-5DN2 PRW18-5DP2 PRWL18-5DN PRWL18-5DP PRWL18-5DN2 PRWL18-5DP2 | PR18-8DN PR18-8DP PR18-8DN2 PR18-8DP2 PRL18-8DN PRL18-8DP PRL18-8DN2 PRL18-8DP2 PRW18-8DN PRW18-8DP PRW18-8DN2 PRW18-8DP2 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 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 PRWL30-15DN PRWL30-15DP PRWL30-15DN2 PRWL30-15DP2 |
|----------------------------------|--|--|--|--|--|--|--|--|
| Detecting distance | 1.5mm ±10% | 2mm ±10% | 2mm ±10% | 4mm ±10% | 5mm ±10% | 8mm ±10% | 10mm ±10% | 15mm ±10% |
| Hysteresis | Max. 10% of detecting distance | | | | | | | |
| Standard detecting target | 8×8×1mm (Iron) | | 12×12×1mm (Iron) | | 18×18×1mm (Iron) | | 25×25×1mm (Iron) | |
| Setting distance | 0 to 1.05 | | 0 to 1.4 | | 0 to 2.8 | | 0 to 3.5 | |
| Power supply (Operating voltage) | 12-24VDC (10-30VDC) | | | | | | | |
| Current consumption | Max. 10mA | | | | | | | |
| Response frequency | 800Hz | | 400Hz | | 350Hz | | 200Hz | |
| Residual voltage | Max. 2.0V | | | | Max. 1.5V | | | |
| Affection by Temp. | ±10% max. of detecting distance at +20°C within temperature range of -25 to +70°C (PR□08 series : ±20% max.) | | | | | | | |
| Control output | Max. 200mA | | | | | | | |
| Insulation resistance | Min. 50MΩ (500VDC) | | | | | | | |
| Dielectric strength | 1500VAC 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 (50G) X, Y, Z directions for 3 times | | | | | | | |
| Indicator | Operating indicator : Red LED | | | | | | | |
| Ambient temperature | -25 to +70°C (non-freezing condition) | | | | | | | |
| Storage temperature | -30 to +80°C (non-freezing condition) | | | | | | | |
| Ambient humidity | 35 to 95%RH | | | | | | | |
| Protection circuit | Reverse polarity protection, surge protection, overload & short circuit protection | | | | | | | |
| Protection | IP67(IEC specification) | | | | | | | |
| Weight | PR:Approx. 68g PRL:Approx. 149g PRW:Approx. 30g PRWL:Approx. 32g | | PR:Approx. 70g PRL:Approx. 149g PRW:Approx. 40g PRWL:Approx. 68g | | PR:Approx. 119g PRL:Approx. 149g PRW:Approx. 84g PRWL:Approx. 108g | | PR:Approx. 118g PRL:Approx. 142g PRW:Approx. 84g PRWL:Approx. 108g | |

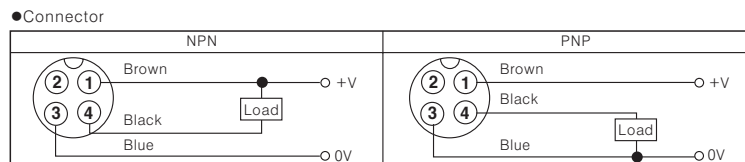
Dimensions



| Type | | A | B | C | D | E | F | G | H | I | J |
|------|------|---------|------|------|---|-----|------|-----|---|----|------|
| M8 | PR | M8×1 | 30 | 30 | 4 | --- | 2000 | --- | 4 | 13 | 15 |
| | PRL | M8×1 | 40 | 40 | 4 | --- | 2000 | --- | 4 | 13 | 15 |
| | PRW | M8×1 | 30 | 30 | 4 | --- | 300 | 44 | 4 | 13 | 15 |
| | PRWL | M8×1 | 40 | 40 | 4 | --- | 300 | 44 | 4 | 13 | 15 |
| M12 | PR | M12×1 | 42.5 | 31.5 | 4 | --- | 2000 | --- | 4 | 17 | 20.5 |
| | PRS | M12×1 | 35.5 | 24.5 | 4 | --- | 2000 | --- | 4 | 17 | 20.5 |
| | PRW | M12×1 | 42.5 | 31.5 | 4 | --- | 300 | 44 | 4 | 17 | 20.5 |
| | PRWL | M12×1 | 42.5 | 31.5 | 4 | --- | 300 | 44 | 4 | 17 | 20.5 |
| M18 | PR | M18×1 | 47 | 29 | 4 | --- | 2000 | --- | 5 | 24 | 29 |
| | PRL | M18×1 | 80 | 62 | 4 | --- | 2000 | --- | 5 | 24 | 29 |
| | PRW | M18×1 | 47 | 29 | 4 | --- | 300 | 44 | 5 | 24 | 29 |
| | PRWL | M18×1 | 80 | 62 | 4 | --- | 300 | 44 | 5 | 24 | 29 |
| M30 | PR | M30×1.5 | 58 | 38 | 5 | --- | 2000 | --- | 5 | 35 | 42 |
| | PRL | M30×1.5 | 80 | 60 | 5 | --- | 2000 | --- | 5 | 35 | 42 |
| | PRW | M30×1.5 | 58 | 38 | 5 | --- | 300 | 44 | 5 | 35 | 42 |
| | PRWL | M30×1.5 | 80 | 60 | 5 | --- | 300 | 44 | 5 | 35 | 42 |
| M8 | PR | M8×1 | 30 | 30 | 4 | 4 | 2000 | --- | 4 | 13 | 15 |
| | PRL | M8×1 | 40 | 40 | 4 | 4 | 2000 | --- | 4 | 13 | 15 |
| | PRW | M8×1 | 30 | 30 | 4 | 4 | 300 | 44 | 4 | 13 | 15 |
| | PRWL | M8×1 | 40 | 40 | 4 | 4 | 300 | 44 | 4 | 13 | 15 |
| M12 | PR | M12×1 | 42.5 | 31.5 | 4 | 7 | 2000 | --- | 4 | 17 | 20.5 |
| | PRS | M12×1 | 35.5 | 24.5 | 4 | 7 | 2000 | --- | 4 | 17 | 20.5 |
| | PRW | M12×1 | 42.5 | 31.5 | 4 | 7 | 300 | 44 | 4 | 17 | 20.5 |
| | PRWL | M12×1 | 42.5 | 31.5 | 4 | 7 | 300 | 44 | 4 | 17 | 20.5 |
| M18 | PR | M18×1 | 47 | 29 | 4 | 10 | 2000 | --- | 5 | 24 | 29 |
| | PRL | M18×1 | 80 | 62 | 4 | 10 | 2000 | --- | 5 | 24 | 29 |
| | PRW | M18×1 | 47 | 29 | 4 | 10 | 300 | 44 | 5 | 24 | 29 |
| | PRWL | M18×1 | 80 | 62 | 4 | 10 | 300 | 44 | 5 | 24 | 29 |
| M30 | PR | M30×1.5 | 58 | 38 | 5 | 10 | 2000 | --- | 5 | 35 | 42 |
| | PRL | M30×1.5 | 80 | 60 | 5 | 10 | 2000 | --- | 5 | 35 | 42 |
| | PRW | M30×1.5 | 58 | 38 | 5 | 10 | 300 | 44 | 5 | 35 | 42 |
| | PRWL | M30×1.5 | 80 | 60 | 5 | 10 | 300 | 44 | 5 | 35 | 42 |

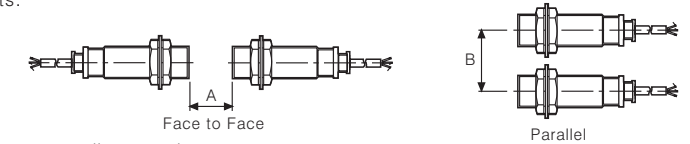
*"F" standard : Cable outgoing connector type 300mm.

Connections

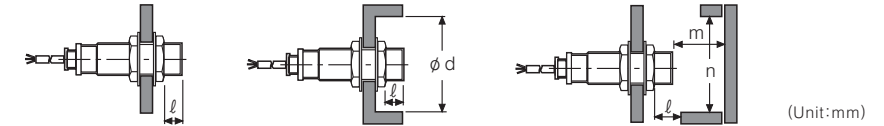


Mutual-interference & Influence by surrounding metals

○Mutual-interference
When plural proximity sensors are mounted in a close row, 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.

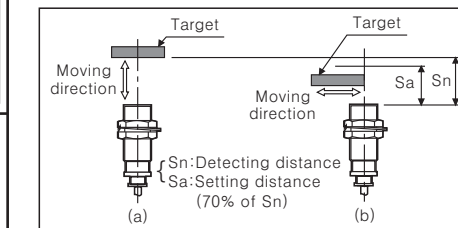


○Influence by surrounding metals
When sensors are mounted on metallic panel, it must be prevented switches from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart.



| Model Item | PR□08-1.5□ | PR□08-2□ | PR□12-2□ | PR□12-4□ | PR□18-5□ PRW□18-5□ | PR□18-8□ PRW□18-8□ | PR□30-10□ PRW□30-10□ | PR□30-15□ PRW□30-15□ |
|------------|------------|----------|----------|----------|-----------------------|-----------------------|-------------------------|-------------------------|
| 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 |
| φ d | 8 | 12 | 12 | 36 | 18 | 54 | 30 | 90 |
| m | 4.5 | 6 | 6 | 12 | 15 | 24 | 30 | 54 |
| n | 12 | 18 | 18 | 36 | 27 | 54 | 45 | 90 |

Setting distance



- Detecting distance can be changed by the shape, size or material of the target. Therefore please check the detecting distance like (a), then pass the target within range of setting distance(Sa).
- Setting distance(Sa)
= Detecting distance(Sn) × 70%
ex)PR30-10DN(See ordering information)
Setting distance(Sa) = 10mm × 0.7 = 7mm

Caution for using

- This equipment shall not be used outdoors or beyond specified temperature range.
- Do not load over than tensile strength of cord. (φ 4:30N max., φ 5:50N 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 exceed rating power input.
- Do not use this unit during transient time(80ms) after apply power.
- It might result in damage to this 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 machinery), 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.
- If make a transceiver close to proximity sensor or wire connection, it may cause malfunction.

Main products

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

Autonics Corporation
http://www.autonics.com

Satisfiable Partner For Factory Automation

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