

Autonics

INDUCTIVE PROXIMITY SENSOR
PFI SERIES

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 machinery(Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device. It may cause a fire, human injury or damage to property.
- Do not connect power directly without load. It may result in damage to inner components or burn them out.

Caution

- 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.
- Do not impact on this unit. It may result in malfunction or damage to the product.
- Do not use this product beyond rated voltage or apply AC power to DC power. It may result in serious damage to the product.

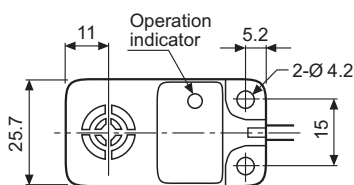
Ordering information

PFI25-8DN

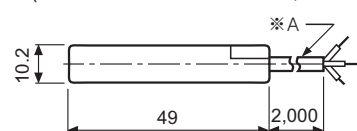
| | |
|---------------|-------------------------------|
| O | Normally open |
| C | Normally closed |
| N | NPN Normally open |
| N2 | NPN Normally closed |
| P | PNP Normally open |
| P2 | PNP Normally closed |
| D | 12-24VDC |
| A | 100-240VAC |
| Number | Sensing distance(Unit: mm) |
| Number | A width of the case(Unit: mm) |
| FI | Flat type(Plastic case) |
| P | Inductive proximity sensor |

Dimensions

(Unit: mm)



※'A' type: ø 4, 2 cores/ø 4, 3 cores
(Conductor cross section: 0.3mm², Insulator diameter: ø 1.25)



※The above specifications are changeable at anytime without notice.

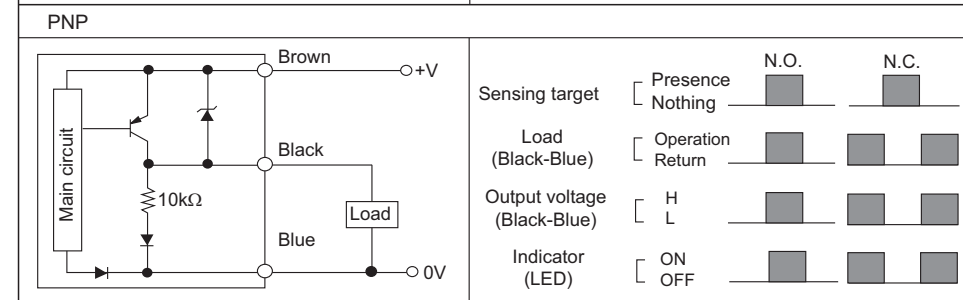
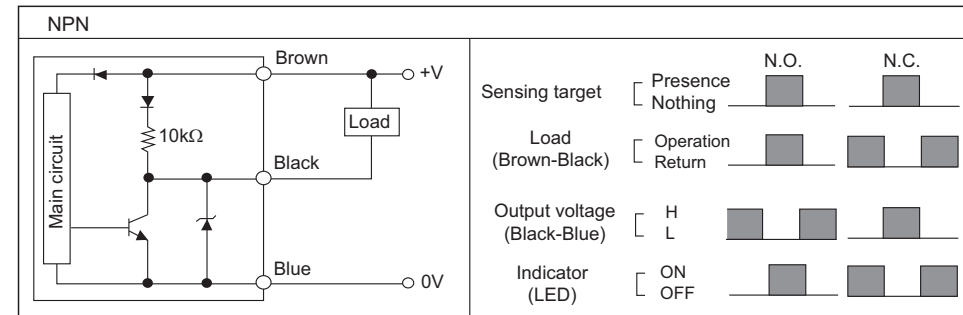
Specifications

| | | |
|----------------------------------|--|-----------------------------------|
| Model | PFI25-8DN, PFI25-8DN2, PFI25-8DP, PFI25-8DP2 PFI25-8AO, PFI25-8AC | |
| sensing distance | 8mm | |
| Hysteresis | Max. 10% of sensing distance | |
| Standard sensing target | 25X25X1mm(Iron) | |
| Setting distance | 0 to 5.6mm | |
| Power supply (Operating voltage) | 12-24VDC(10-30VDC) | 100-240VAC 50-60Hz (85-264VAC) |
| Power consumption | Max. 10mA | - |
| Current consumption | - | Max. 2.5mA |
| Response frequency ^{※1} | 200Hz | 20Hz |
| Residual voltage | Max. 1.5V | Max. 10V |
| Affection by Temp. | When it is 20°C at the rated ambient temperature, it is below 10%. | |
| Control output | Max. 200mA | 5 to 150mA |
| Insulation resistance | 50MΩ Min(at 500VDC megger) | |
| Dielectric strength | 1,500VAC 50/60Hz for 1 minute | 2,500VAC 50/60Hz for 1 minute |
| Vibration | 1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours | |
| Shock | 500m/s ² (50G) in X, Y, Z directions for 3 times | |
| Indicator | Operating indicator : Red LED | |
| Environ-ment | Ambient temperature | -25 to 70°C, Storage: -30 to 80°C |
| | Ambient humidity | 35 to 95%RH, Storage: 35 to 95%RH |
| Protection circuit | Surge protection circuit, Reverse polarity protection, Overload & Short protection circuit | Surge protection circuit |
| Protection | IP67(IEC standards) | |
| Material | Case: PPS, General cable(Black): Polyvinyl chloride(PVC) | |
| Approval | CE | |
| Weight | Approx. 70g | |

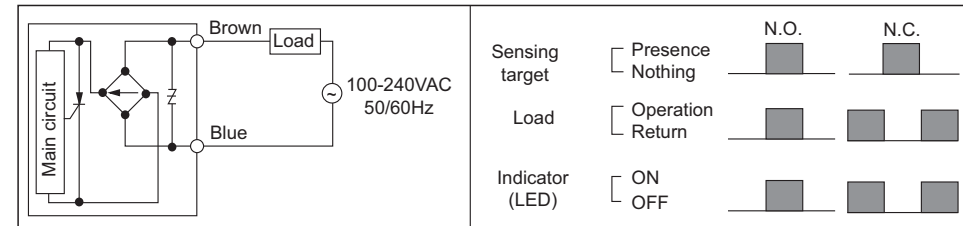
※1: The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.
※Environment resistance is rated at no freezing or condensation.

Control output diagram & Load operating

DC 3 wire type



AC 2 wire type



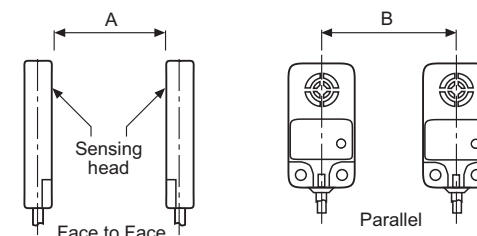
Connection of the power supply

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

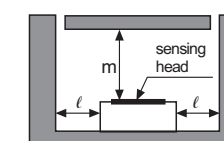
Mutual-interference
When several proximity sensors are mounted closely, sensors may cause a malfunction due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors, as below chart.



(Unit:mm)

| | |
|-------|-------|
| Model | PFI25 |
| Item | |
| A | 100 |
| B | 80 |

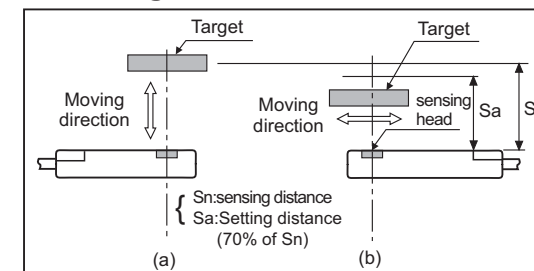
Influence by surrounding metals
When sensors are mounted on metallic panel, it may cause malfunction affected by any metallic object except target. Therefore, be sure to provide a minimum as below chart.



(Unit:mm)

| | |
|-------|-------|
| Model | PFI25 |
| Item | |
| l | 5 |
| m | 15 |

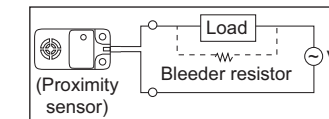
Setting distance



- 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%
Ex)PFI25-8DN sensing distance(Sa) = 8mm × 0.7 = 5.6mm

Caution for using

- This equipment shall not be used outdoors or beyond specified temperature range.
- Do not load over than tensile strength of cord. (ø 4: 30N max.)
- Do not use the same conduit with cord of this unit and electric power line or power line. Also avoid the same connection.
- Tighten strength of installing bolts should be under 15kgf·cm.
- 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.
- 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(DC type bulb 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.
- If make a transceiver close to proximity sensor or wire connection, it may cause malfunction.
- 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



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

Major products

- Proximity sensors
- Area sensors
- Door/Door side sensors
- Counters
- Rotary encoders
- Power controllers
- Panel meters
- Temperature controllers
- Temperature/Humidity transducers
- Stepping motors/drivers/motion controllers
- Laser marking system(CO₂, Nd:YAG)
- Laser welding/soldering system
- Photoelectric sensors
- Fiber optic sensors
- Pressure sensors
- Timers
- Display units
- Sensor controllers
- Graphic/Logic panels
- Tachometer/Pulse(Rate) meters

Autonics Corporation
http://www.autonics.com

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