

Autonics

INDUCTIVE PROXIMITY SENSOR

PS SERIES

INSTRUCTION MANUAL



[PS08]

[PS12]

[PS50]

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

■ 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.

4. Do not supply power without load.  
Failure to follow this instruction may result in fire or product damage.

■ Ordering Information

P S 08 - 2.5 D N

Sensing position

Output

Power supply

Sensing distance

Dimension

Shape

Item

No mark

U

N

N2

P

P2

D

Number

Number

S

P

Standard type

Upper sensing type

NPN Normally Open (N.O.)

NPN Normally Closed (N.C.)

PNP Normally Open (N.O.)

PNP Normally Closed (N.C.)

12-24VDC

Sensing distance (unit: mm)

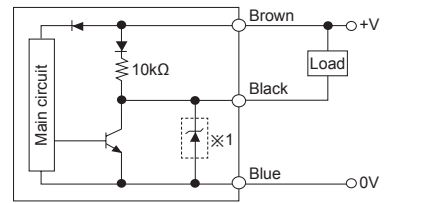
A side length of sensing side (unit: mm)

Square

Inductive proximity sensor

■ Control Output Diagram and Load Operation

NPN output type



Sensing target

Load (Brown-Black)

Output voltage (Black-Blue)

Operation Indicator (Red LED)

Presence Nothing

Operation Return

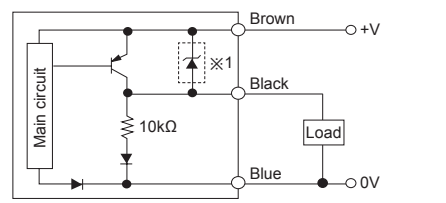
H L

ON OFF

N.O.

N.C.

PNP output type



Sensing target

Load (Black-Blue)

Output voltage (Black-Blue)

Operation Indicator (Red LED)

Presence Nothing

Operation Return

H L

ON OFF

N.O.

N.C.

※1: For PS08 model, there is no zener diode.  
※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                            | PS08-2.5DN<br>PS08-2.5DP<br>PS08-2.5DN2<br>PS08-2.5DP2                             | PS08-2.5DNU<br>PS08-2.5DPU<br>PS08-2.5DN2U<br>PS08-2.5DP2U | PS12-4DN<br>PS12-4DP<br>PS12-4DN2                                              | PS12-4DNU<br>PS12-4DPU<br>PS12-4DN2U | PS50-30DN<br>PS50-30DN2<br>PS50-30DP<br>PS50-30DP2                                 |
| Sensing distance                 | 2.5mm                                                                              |                                                            | 4mm                                                                            |                                      | 30mm                                                                               |
| Hysteresis                       | Max. 20% of sensing distance                                                       |                                                            | Max. 10% of sensing distance                                                   |                                      |                                                                                    |
| Standard sensing target          | 8×8×1mm (Iron)                                                                     |                                                            | 12×12×1mm (Iron)                                                               |                                      | 90×90×1mm (Iron)                                                                   |
| Setting distance                 | 0 to 1.7mm                                                                         |                                                            | 0 to 2.8mm                                                                     |                                      | 0 to 21mm                                                                          |
| Power supply (Operating voltage) | 12-24VDC≒ (10-30VDC≒)                                                              |                                                            |                                                                                |                                      |                                                                                    |
| Current consumption              | Max. 10mA                                                                          |                                                            |                                                                                |                                      |                                                                                    |
| Response frequency※1             | 1,000Hz                                                                            |                                                            | 500Hz                                                                          |                                      | 50Hz                                                                               |
| Residual voltage                 | Max. 1.5V                                                                          |                                                            |                                                                                |                                      |                                                                                    |
| Affection by Temp.               | Max. ±10% for sensing distance at ambient temperature 20°C                         |                                                            |                                                                                |                                      |                                                                                    |
| Control output                   | Max. 100mA                                                                         |                                                            | Max. 200mA                                                                     |                                      |                                                                                    |
| Insulation resistance            | Min. 50MΩ (at 500VDC megger)                                                       |                                                            |                                                                                |                                      |                                                                                    |
| Dielectric strength              | 1,500VAC 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/s² (approx. 50G) in X, Y, Z directions for 3 times                            |                                                            |                                                                                |                                      |                                                                                    |
| Indicator                        | Operation 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               | Reverse polarity protection, Surge protection circuit, Overcurrent protection      |                                                            |                                                                                |                                      |                                                                                    |
| Protection structure             | IP67 (IEC standard)                                                                |                                                            |                                                                                |                                      |                                                                                    |
| Cable※2                          | Ø2.5mm, 3-wire, 1m                                                                 |                                                            | Ø4mm, 3-wire, 2m                                                               |                                      | Ø5mm, 3-wire, 2m                                                                   |
|                                  | AWG28, Core diameter: 0.08mm, Number of cores: 19, Insulator diameter: Ø0.9mm      |                                                            | AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator diameter: Ø1.25mm |                                      |                                                                                    |
| Material                         | Case: Polycarbonate<br>General cable (gray): Polyvinyl chloride (PVC)              |                                                            | Case: Heat-resistant ABS<br>General cable (gray): Polyvinyl chloride (PVC)     |                                      | Case: Polybutylene terephthalate<br>General cable (gray): Polyvinyl chloride (PVC) |
| Approval                         | CE                                                                                 |                                                            |                                                                                |                                      |                                                                                    |
| Weight※3                         | Approx. 30g (approx. 16g)                                                          |                                                            | Approx. 77g (approx. 62g)                                                      |                                      | Approx. 265g (approx. 220g)                                                        |

※1: The response frequency is the average value. The standard sensing distance 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 includes packaging. The weight in parentheses in for unit only.  
※Environment resistance is rated at no freezing or condensation.

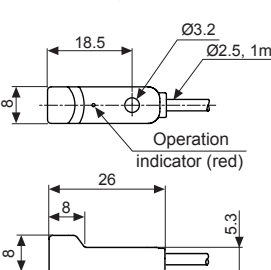
■ Dimensions

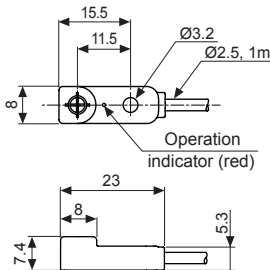
• PS08

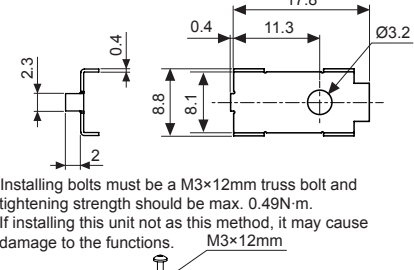
Standard type

Upper sensing type

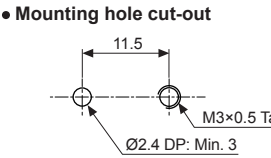
Bracket





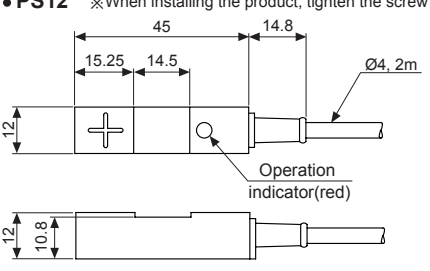


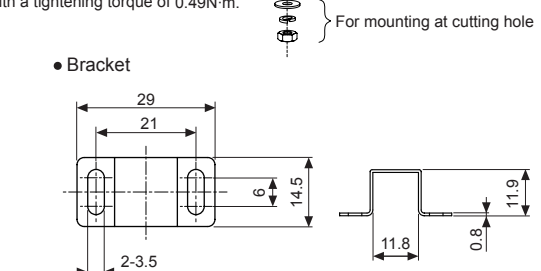
• Mounting hole cut-out



• PS12

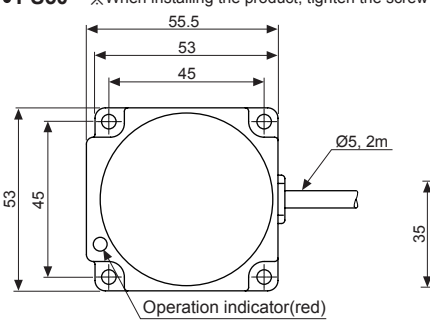
When installing the product, tighten the screw with a tightening torque of 0.49N·m.

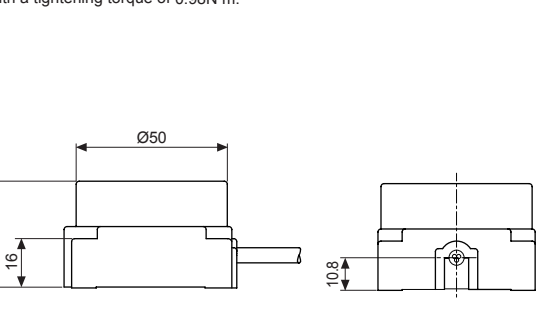




• PS50

When installing the product, tighten the screw with a tightening torque of 0.98N·m.



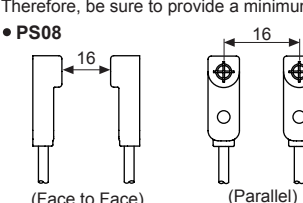


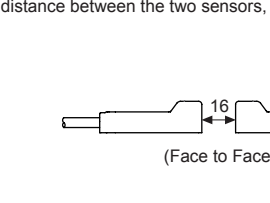
■ Mutual-Interference and Influence By Surrounding Metals

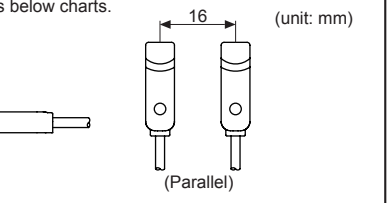
● Mutual-interference

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.

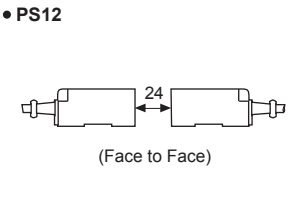
• PS08

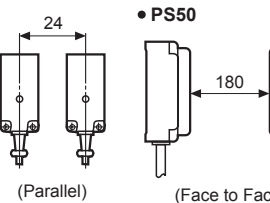




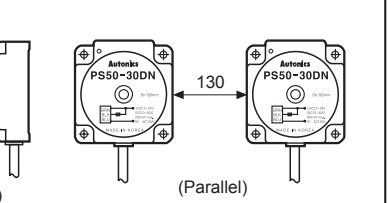


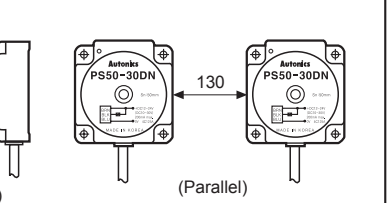
• PS12





• PS50

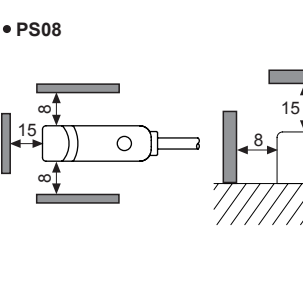




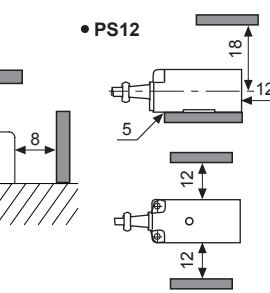
● Influence by surrounding metals

When sensors are mounted on metallic panel, it must be prevented sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as a right picture.

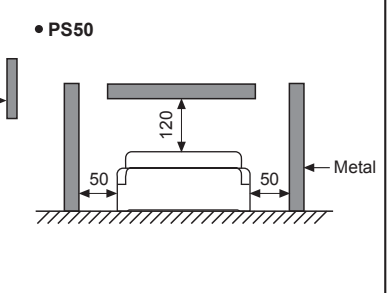
• PS08



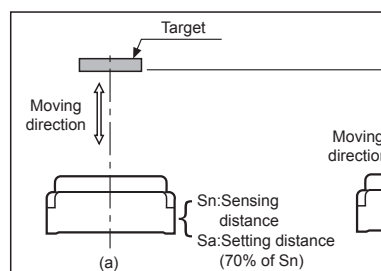
• PS12

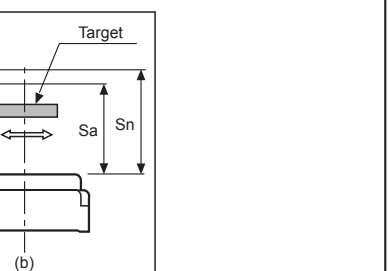


• PS50



■ 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.)PS50-30DN  
Setting distance(Sa)= 30mm × 0.7 = 21mm

■ Caution during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.  
2. 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.  
3. Use the product, after 0.8 sec of supplying power.  
4. 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.  
5. 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

■ Connectors/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<sub>2</sub>, Nd: YAG)

■ Laser Welding/Cutting System

■ Temperature Controllers

■ Temperature/Humidity Transducers

■ SSRs/Power Controllers

■ Counters

■ Timers

■ Panel Meters

■ Tachometers/Pulse (Rate) Meters

■ Display Units

■ Sensor Controllers

Autonics Corporation

http://www.autonics.com

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