

# PS/PSN Series

## Rectangular type proximity sensor

### Features

- Shorten the time of maintenance with the body
- Improved the noise resistance by adopting dedicated IC (DC 3-wire type)
- Reverse power polarity (DC), surge (DC/AC), overcurrent protection (DC type—Except for PS12 Series.)
- Long life cycle and high reliability
- Red LED status indication
- IP67 rated waterproof structure (IEC standard)
- Replacer for micro switches and limit switches



**⚠ Please read "Caution for your safety" in operation manual before using.**



### Specifications

#### DC 3-wire type

※ The existing PS17 is upgraded its function and design and changed as PSN17.  
 ※ The case color of PNP output type is changed from orange to gray.

Model	PS12-4DN PS12-4DP PS12-4DN2 PS12-4DNU PS12-4DPU PS12-4DN2U	PSN17-5DN PSN17-5DP PSN17-5DN2 PSN17-5DP2 PSN17-5DNU PSN17-5DPU PSN17-5DN2U PSN17-5DN-F	PSN17-8DN PSN17-8DP PSN17-8DN2 PSN17-8DNU PSN17-8DPU	PSN17-8DN-F PSN17-8DP-F PSN17-8DN2-F PSN17-8DNU-F PSN17-8DPU-F PSN17-8DN2U-F	PSN25-5DN PSN25-5DP PSN25-5DN2 PSN25-5DP2	PSN30-10DN PSN30-10DP PSN30-10DN2 PSN30-10DP2	PSN30-15DN PSN30-15DP PSN30-15DN2 PSN30-15DP2	PSN40-20DN PSN40-20DP PSN40-20DN2 PSN40-20DP2	PS50-30DN PS50-30DP PS50-30DN2 PS50-30DP2
Sensing distance	4mm ±10%	5mm ±10%	8mm ±10%		5mm ±10%	10mm ±10%	15mm ±10%	20mm ±10%	30mm ±10%
Hysteresis	Max. 10% of sensing distance								
Standard sensing target	12×12×1mm (Iron)	18×18×1mm (Iron)	25×25×1mm (Iron)			30×30×1mm (Iron)	45×45×1mm (Iron)	60×60×1mm (Iron)	90×90×1mm (Iron)
Setting distance	0~2.8mm	0~3.5mm	0~5.6mm	0~3.5mm	0~7mm	0~10.5mm	0~14mm	0~21mm	
Power supply (Operation voltage)	12~24VDC (1~30VDC)								
Current consumption	Max. 10mA								
Response frequency(*1)	500Hz	700Hz	200Hz	300Hz	250Hz	200Hz	100Hz	50Hz	
Residual voltage	Max. 1.5V								
Affection by Temp.	±10% Max. for sensing distance at +20℃ within temperature range of -25 ~ +70℃								
Control output	Max. 200mA								
Insulation resistance	Min. 50MΩ (at 500VDC mega)								
Dielectric strength	1500VAC 50/60Hz for 1minute								
Vibration	1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours								
Shock	500m/s <sup>2</sup> (50G) in X, Y, Z direction for 3 times								
Indicator	Operation indicator (Red LED)								
Ambient temperature	-25 ~ +70℃ (at non-freezing status)								
Storage temperature	-30 ~ +80℃ (at non-freezing status)								
Ambient humidity	35 ~ 95%RH								
Protection circuit	Surge, Reverse power polarity protection circuit			Surge, Reverse power polarity, Overcurrent protection circuit					
Protection	IP67 (IEC standard)								
Cable spec.	φ 4 × 2P, 2m					φ 5 × 2P, 2m			
Approval	<b>CE</b>								
Unit weight	Approx. 62g	Approx. 71g	Approx. 70g		Approx. 111g	Approx. 158g	Approx. 220g		

※ (\*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.

# Rectangular Type

## ■ Specifications

### ● DC 2-wire type

※The existing PS17 is upgraded its function and design and changed as PSN17.  
 ※The case color of Normal Close type is changed from orange to gray.

Model	PSNT17-5DO PSNT17-5DC	PSNT17-5DOU PSNT17-5DCU
Sensing distance	5mm ±10%	
Hysteresis	Max. 10% of sensing distance	
Standard sensing target	18×18×1mm (Iron)	
Setting distance	0 ~ 3.5mm	
Power supply (Operating voltage)	24VDC (15~30VC)	
Leakage current	Max. 0.6mA	
Response frequency(*1)	700Hz	
Residual voltage	Max. 3.5V	
Affection by Temp.	±10% Max. for sensing distance at +20°C within temperature range of -25 ~ +70°C	
Control output	2~100mA	
Insulation resistance	Min. 50MΩ (at 500VDC mega)	
Dielectric strength	1500VAC 50/60Hz for 1 minute	
Vibration	1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours	
Shock	500m/s <sup>2</sup> (50G) in X, Y, Z direction for 3 times	
Indicator	Operation indicator (Red LED)	
Ambient temperature	-25 ~ +70°C (at non-freezing status)	
Storage temperature	-30 ~ +80°C (at non-freezing status)	
Ambient humidity	35 ~ 95%RH	
Protection circuit	Surge protection circuit	
Protection	IP67 (IEC standard)	
Cable	φ 4×3P, 2m	
Approval	CE	
Unit weight	Approx. 69g	

※(\*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.

### ● AC 2-wire type

※The case color of Normal Close type is changed from orange to gray.

Model	PSN25-5AO PSN25-5AC	PSN30-10AO PSN30-10AC	PSN30-15AO PSN30-15AC	PSN40-20AO PSN40-20AC
Sensing distance	5mm ±10%	10mm ±10%	15mm ±10%	20mm ±10%
Hysteresis	Max. 10% of sensing distance			
Standard sensing target	25×25×1mm (Iron)	30×30×1mm (Iron)	45×45×1mm (Iron)	60×60×1mm (Iron)
Setting distance	0 ~ 3.5mm	0 ~ 7mm	0 ~ 10.5mm	0 ~ 14mm
Power supply (Operating voltage)	100~240VDC (85~264VC)			
Leakage current	Max. 2.5mA			
Response frequency(*1)	20Hz			
Residual voltage	Max. 10V			
Affection by Temp.	±10% Max. for sensing distance at +20°C within temperature range of -25 ~ +70°C			
Control output	5 ~ 200mA			
Insulation resistance	Min. 50MΩ (at 500VDC mega)			
Dielectric strength	2500VAC 50/60Hz for 1 minute			
Vibration	1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours			
Shock	500m/s <sup>2</sup> (50G) in X, Y, Z direction for 3 times			
Indicator	Operation indicator (Red LED)			
Ambient temperature	-25 ~ +70°C (at non-freezing status)			
Storage temperature	-30 ~ +80°C (at non-freezing status)			
Ambient humidity	35 ~ 95%RH			
Protection circuit	Surge protection circuit			
Protection	IP67 (IEC standard)			
Cable	φ 4×2P, 2m	φ 5×2P, 2m		
Approval	CE			
Unit weight	Approx. 65g	Approx. 106g	Approx. 152g	

※(\*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.

(A)  
Counter

(B)  
Timer

(C)  
Temp.  
controller

(D)  
Power  
controller

(E)  
Panel  
meter

(F)  
Tacho/  
Speed/  
Pulse  
meter

(G)  
Display  
unit

(H)  
Sensor  
controller

(I)  
Switching  
power  
supply

(J)  
Proximity  
sensor

(K)  
Photo  
electric  
sensor

(L)  
Pressure  
sensor

(M)  
Rotary  
encoder

(N)  
Stepping  
motor &  
Driver &  
Controller

(O)  
Graphic  
panel

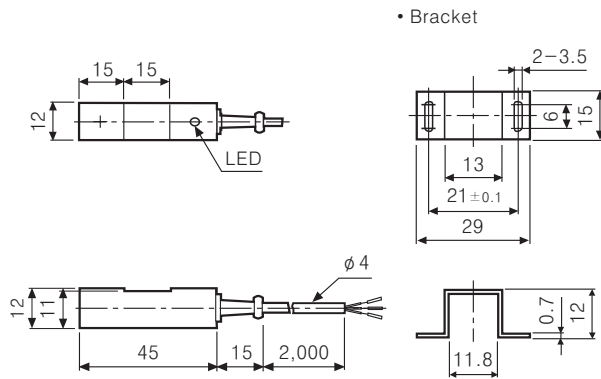
(P)  
Production  
stoppage  
models &  
replacement

# PS/PSN Series

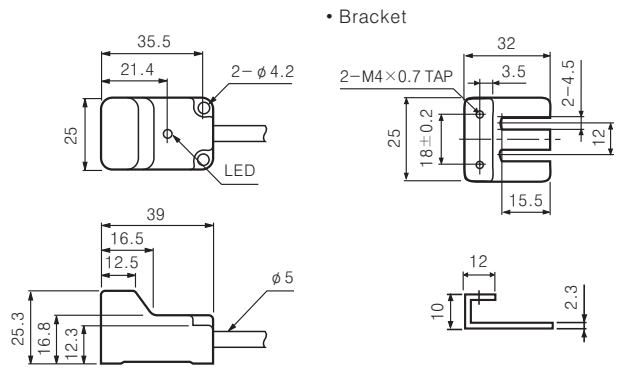
## Dimensions

(Unit:mm)

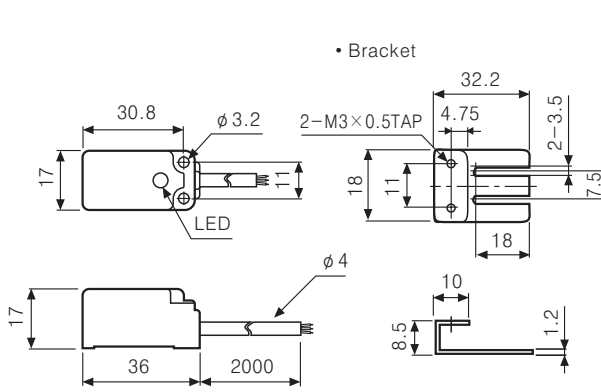
### ●PS12



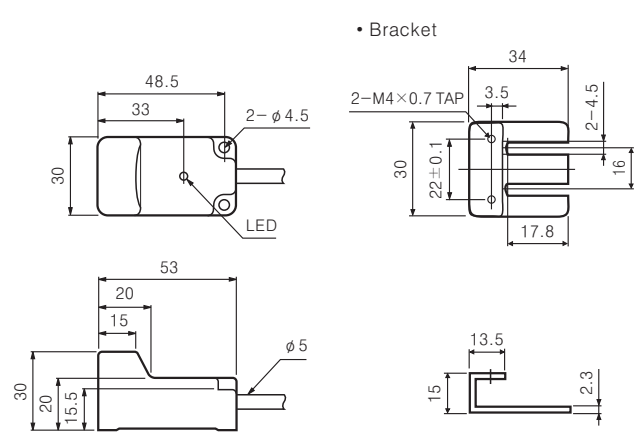
### ●PSN25



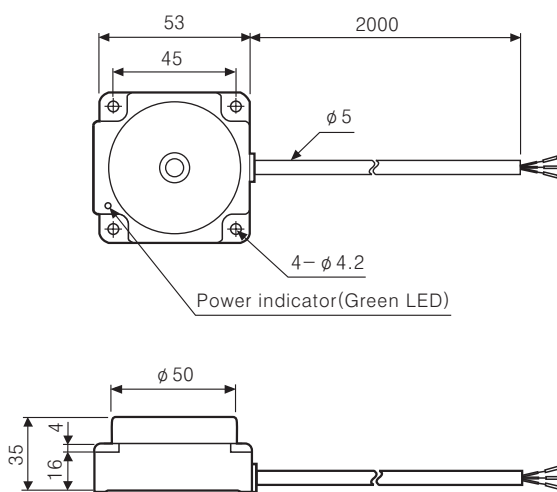
### ●PSN17 / PSNT17 (Former : PS17/ PST17)



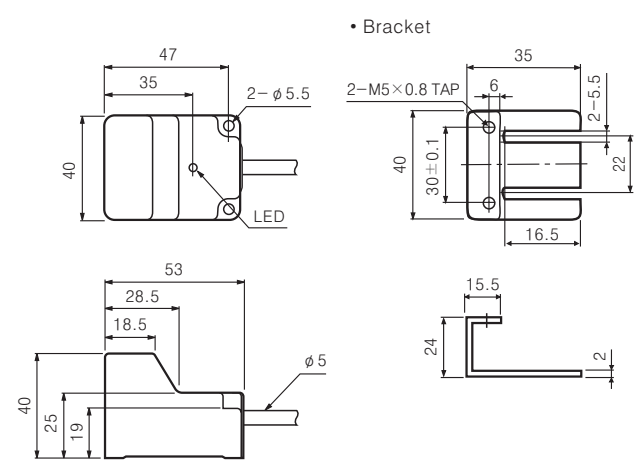
### ●PSN30



### ●PS50



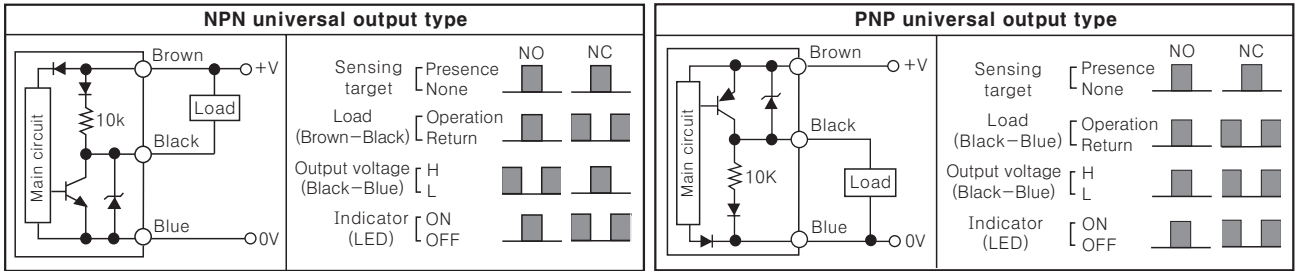
### ●PSN40



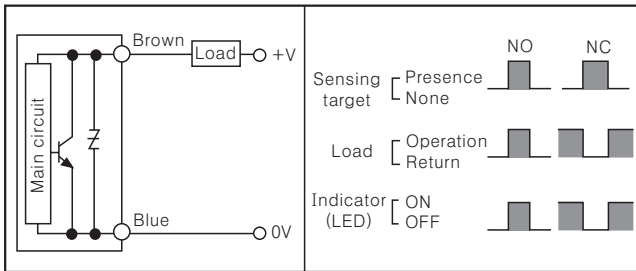
# Rectangular Type

## Control output diagram

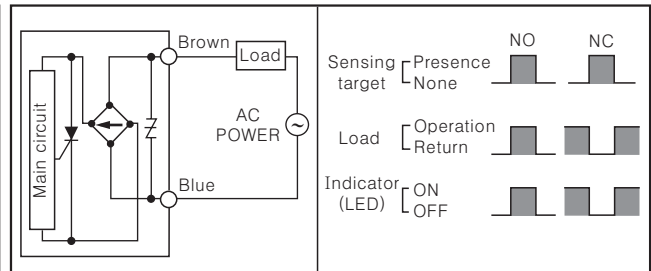
### DC 3-wire type



### DC 2-wire type

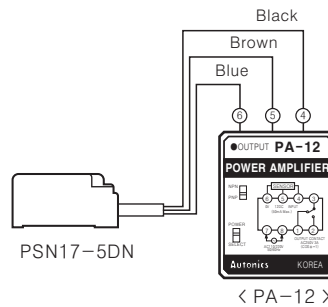
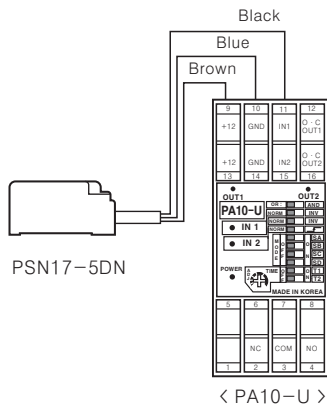


### AC 2-wire type



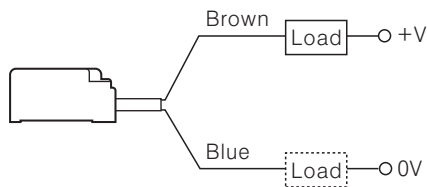
## Connections

### DC 3-wire type



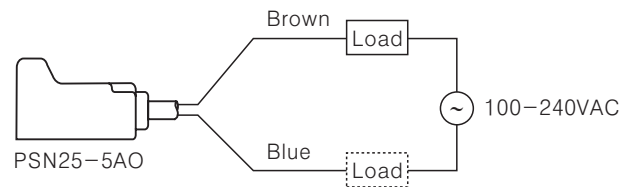
※ There is NPN/PNP selection switch in PA-12.

### DC 2-wire type



※ The load can be connected to either wire.

### AC 2-wire type



※ The load can be connected to either wire.

(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

(L) Pressure sensor

(M) Rotary encoder

(N) Stepping motor & Driver & Controller

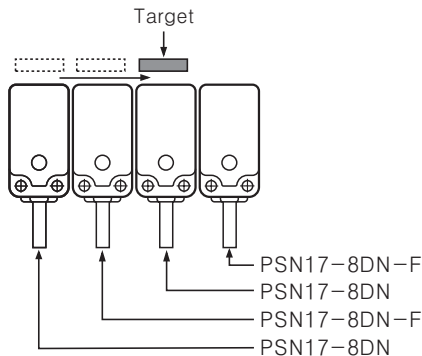
(O) Graphic panel

(P) Production stoppage models & replacement

# PS/PSN Series

## ■ Proper usage

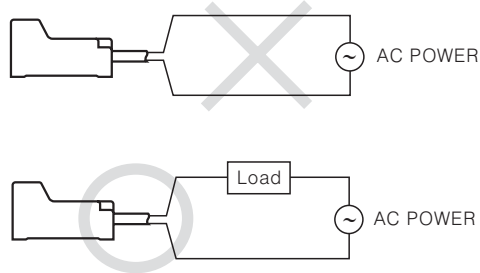
### ◎ Differential frequency



When installing several proximity sensor closely, it may cause malfunction due to mutual interference. Therefore, please use differential frequency for the application.

※Differential frequency type is only for 17 square.

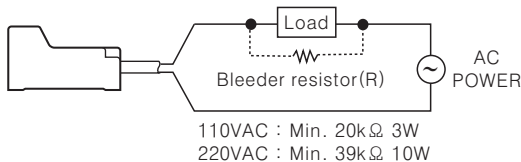
### ◎ Connection of the power supply



When using DC 2-wire and AC 2-wire type, a load must be connected before applying power; otherwise, components can be damaged.

### ◎ In case of the load current is small

#### ● AC 2-wire type



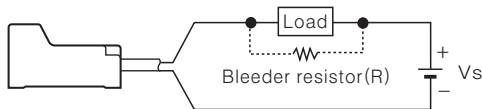
It may cause return failure of load by residual voltage.

If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

$$R = \frac{V_s}{I} \text{ (}\Omega\text{)} \quad P = \frac{V_s^2}{R} \text{ (W)}$$

[ I: Action current of load, R: Bleeder resistance, P: Permissible power]

#### ● DC 2-wire type



Please make the current on proximity sensor smaller than the return current of load by connecting a Bleeder resistor in parallel.

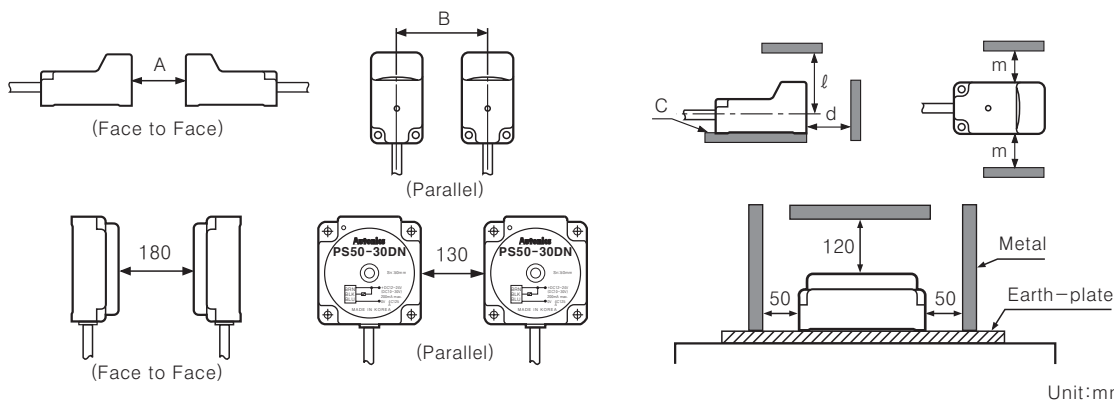
※W value of Bleeder resistor should be bigger for proper heat dissipation.

$$R = \frac{V_s}{I_o - I_{off}} \text{ (}\Omega\text{)} \quad P = \frac{V_s^2}{R} \text{ (W)}$$

[ Vs : Power supply, Io : Min. action current of proximity sensor  
Ioff : Return current of load, P : Number of Bleeder resistance watt ]

### ◎ Mutual-interference & Influence by surrounding metals

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.



Item	Model	PSN17			PSN25	PSN30		PSN40
		4mm	5mm	8mm	5mm	10mm	15mm	20mm
A		24	30	48	30	60	90	120
B		24	36	40	40	50	85	70
C		5	5	5	5	5	5	5
d		12	15	24	15	30	45	60
l		18	24	33	25	30	45	45
m		12	18	20	20	25	35	35