

Square type

Square type proximity sensor

■ Features

- Surge protection function (DC 2-wire)
- Reverse power polarity protection function (DC 3-wire)
- Long life cycle and High reliability
- Able to check the status of operation by Red LED indicator
- Wide range of applications, for replacement of Micro switch and Limit switch.
- Driving the load of 200mA directly within range of 12–24VDC power source (Resistive load)
- Water proof structure by IP 67 (IEC specification)



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



■ Specifications

● DC 3-wire type

Model	PS12-4DN PS12-4DP PS12-4DN2 PS12-4DNU PS12-4DPU PS12-4DN2U	PS17-5DN PS17-5DP PS17-5DN2 PS17-5DNU PS17-5DPU PS17-5DN2U PS17-5DN-F	PS17-8DN PS17-8DP PS17-8DN2 PS17-8DNU PS17-8DPU	PS17-8DN-F PS17-8DP-F PS17-8DN2-F PS17-8DNU-F PS17-8DPU-F PS17-8DN2U-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
Detecting distance	4mm ±10%	5mm ±10%	8mm ±10%		5mm ±10%	10mm ±10%	15mm ±10%	20mm ±10%	30mm ±10%
Hysteresis	Max. 10% of detecting distance								
Standard detecting 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 (10–30VDC)								
Leakage current	Max. 10mA								
Response frequency	500Hz	700Hz	200Hz	300Hz	250Hz	200Hz	100Hz	50Hz	
Residual voltage	Max. 1.5V								
Affection by Temp.	±10% Max. of detecting distance at +20°C within temperature range of -25 ~ +70°C								
Control output	200mA								
Insulation resistance	Min. 50MΩ (at 500VDC)								
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 ² (50G) X, Y, Z directions 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, Reverse polarity protection				Surge protection circuit, Reverse polarity protection, Overload & short circuit protection				
Protection	IP67 (IEC specification)								
Approval	CE								
Weight	Approx. 62g	Approx. 71g	Approx. 70g		Approx. 111g		Approx. 158g	Approx. 220g	

■ Specifications

● DC 2-wire type

Model	PST17-5DO PST17-5DC	PST17-5DOU PST17-5DCU
Detecting distance	5mm ±10%	
Hysteresis	Max. 10% of detecting distance	
Standard detecting target	18×18×1mm (Iron)	
Setting distance	0 ~ 3.5mm	
Power supply (Operation voltage)	24VDC (15-30VDC)	
Leakage current	Max. 0.9mA	
Response frequency	500Hz	
Residual voltage	Max. 7V	
Affection by Temp.	±10% Max. of detecting distance at +20°C within temperature range of -25 ~ +70°C	
Control output	2~50mA	
Insulation resistance	Min. 50MΩ (at 500VDC)	
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 ² (50G) in X, Y, Z directions 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 specification)	
Weight	Approx. 69g	

● AC 2-wire type

Model	PSN25-5AO PSN25-5AC	PSN30-10AO PSN30-10AC	PSN30-15AO PSN30-15AC	PSN40-20AO PSN40-20AC
Detecting distance	5mm ±10%	10mm ±10%	15mm ±10%	20mm ±10%
Hysteresis	Max. 10% of detecting distance			
Standard detecting 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 (Operation voltage)	100-240VAC (85-264VAC)			
Leakage current	Max. 2.5mA			
Response frequency	20Hz			
Residual voltage	Max. 10V			
Affection by Temp.	±10% Max. of detecting distance at +20°C within temperature range of -25 ~ +70°C			
Control output	5~200mA			
Insulation resistance	Min. 50MΩ (at 500VDC)			
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 ² (50G) in X, Y, Z directions 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 specification)			
Weight	Approx. 65g	Approx. 106g		Approx. 152g

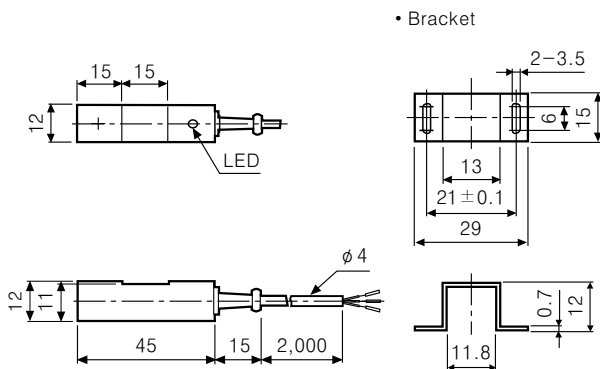
(A)
Counter(B)
Timer(C)
Temp.
controller(D)
Power
controller(E)
Panel
meter(F)
Tacho/
Speed/
Pulse
meter(G)
Display
unit(H)
Sensor
controller(I)
Proximity
sensor(J)
Photo
electric
sensor(K)
Pressure
sensor(L)
Rotary
encoder(M)
5-Phase
stepping
motor &
Driver &
Controller

Square type

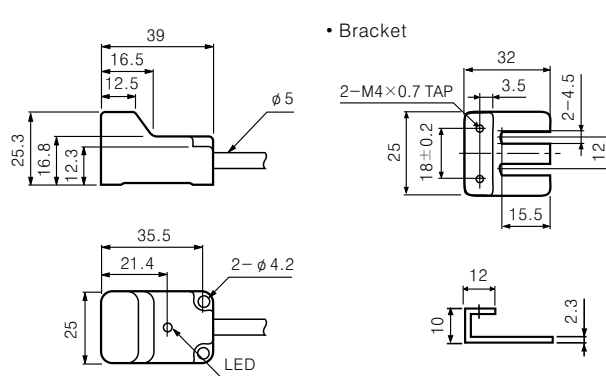
■ Dimensions

Unit:mm

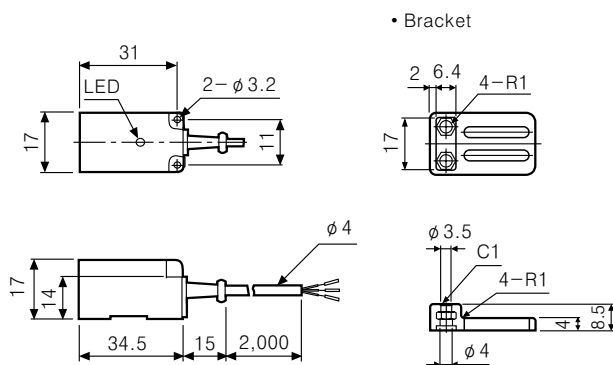
●PS12



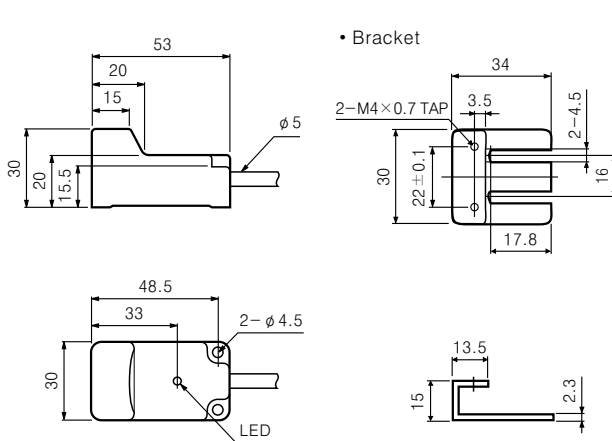
●PSN25



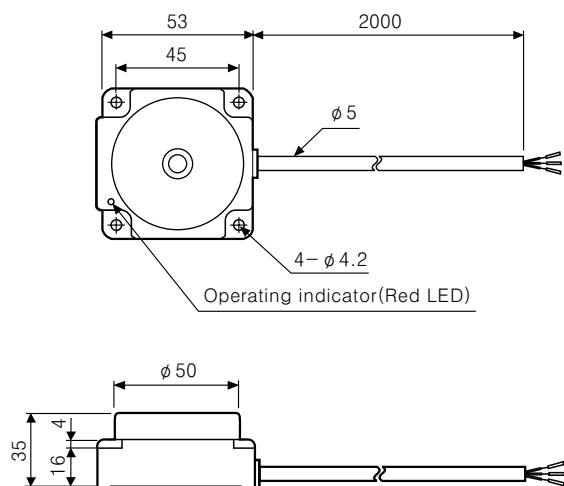
●PS17 / PST17



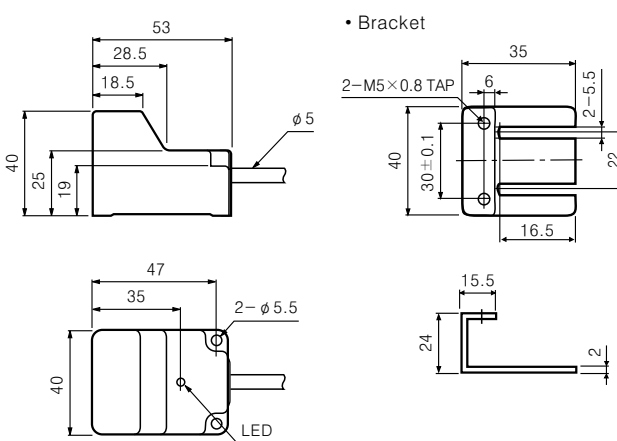
●PSN30



●PS50

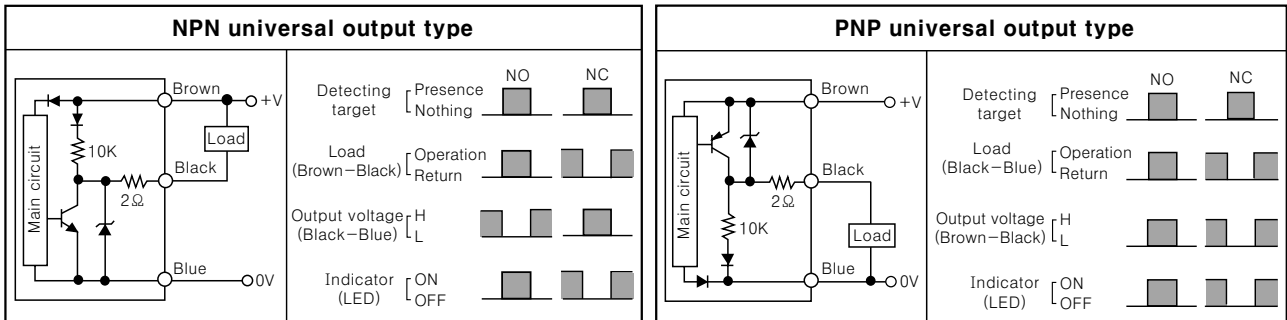


●PSN40

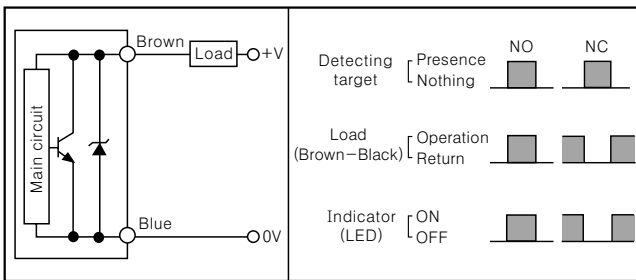


Control output diagram

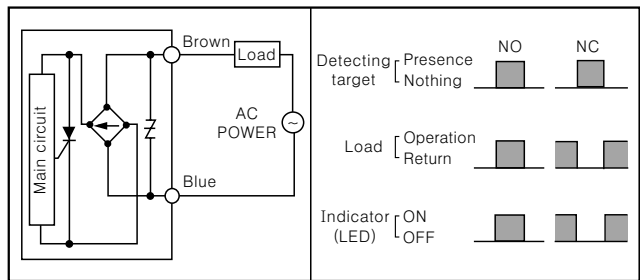
DC 3-wire type



DC 2-wire type

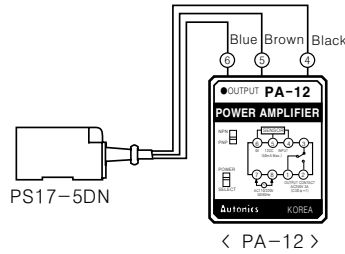
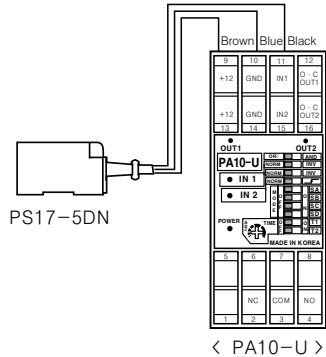


AC 2-wire type



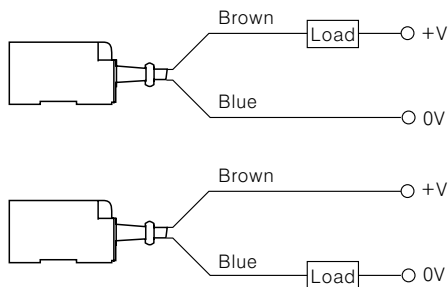
Connections

DC 3-wire type



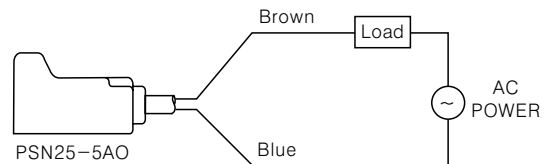
※ There is NPN/PNP selection switch in PA-12.

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) Proximity sensor

(J) Photo electric sensor

(K) Pressure sensor

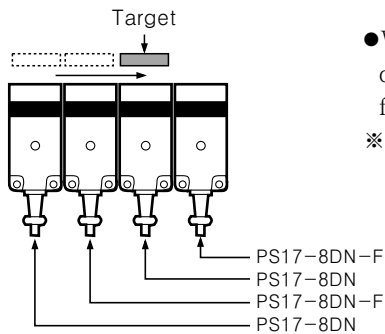
(L) Rotary encoder

(M) 5-Phase stepping motor & Driver & Controller

Square type

■ Proper usage

○ Differential frequency

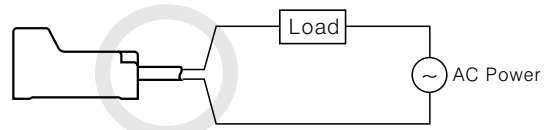


● When install several proximity sensor near by, it may cause malfunction due to mutual interference. Therefore please use Differential frequency for the application.

※ Differential frequency type is only for 17 square.

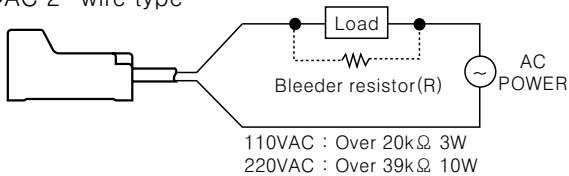
○ Connection of the power supply

When using AC 2-wire type proximity sensor, the load must be connected other wise internal components may be damaged.



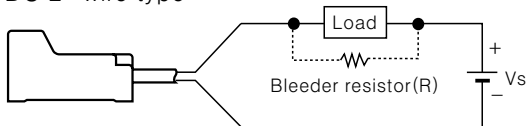
○ In case of the load current is small

● 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.

● 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.

$$R \leq \frac{V_s}{I_o - I_{off}} \quad (\text{k}\Omega)$$

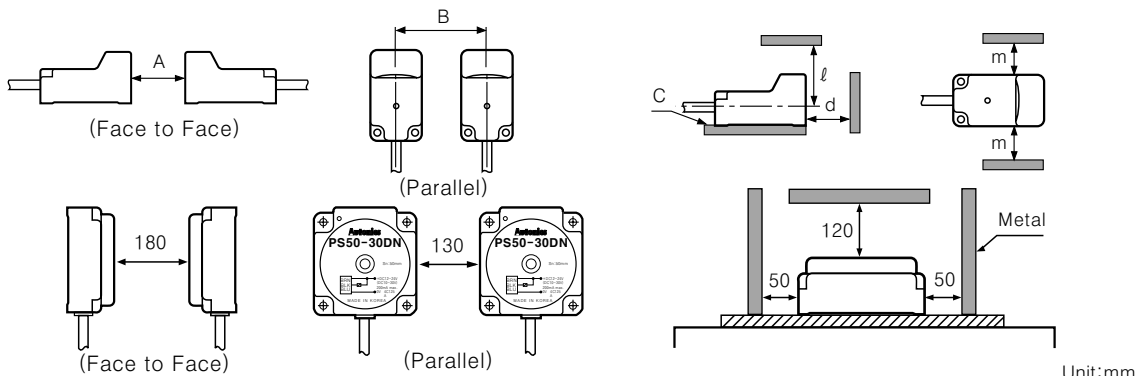
$$P > \frac{V_s^2}{R} \quad (\text{mW})$$

* Vs : Power supply
P : Bleeder resistor, number of W
Io : Operating current of proximity sensor (2.5mA but, PRT08, PST17 is 0.9mA)
Ioff : Return current of load

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

○ Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted close together, 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	PS12	PS17			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	