Rectangular, Standard Type Proximity Sensor

▣ Features

- Excellent noise immunity with specialized sensor IC
- Long life cycle, reliable performance, economical, and easy-to-install
- Operation indicator (red LED)
- Built-in surge protection circuit
- Built-in output short over current protection circuit (DC types)
- Built-in reverse polarity protection circuit (DC 3-wire types)
- IP67 protection structure (IEC standard)

[PSN17]

- Alternate frequency models allow adjacent installation of multiple sensors without interference (PSN17-□-F)

Please read "Safety Considerations" in the instruction manual before using.

▣ Specifications

※The existing PST17 is upgraded its function and design and changed as PSNT17.
※The case color of Normal Close type is changed from orange to gray.

• DC 2-wire type

Model		PSNT17-5DO PSNT17-5DC	PSNT17-5DOU PSNT17-5DCU
Sensing side		Front side	Upper side
Sensing distance		5mm	
Hysteresis		Max. 10% of sensing distance	
Standard sensing target		18×18×1mm (iron)	
Setting distance		0 to 3.5mm	
Power supply (operating voltage)		12-24VDC⎓ (10-30VDC⎓)	
Leakage current		Max. 0.6mA	
Response frequency※1		700Hz	
Residual voltage		Max. 3.5V	
Affection by Temp.		Max. ±10% for sensing distance at ambient temperature 20℃	
Control output		2 to 100mA	
Insulation resistance		Over 50MΩ (at 500VDC megger)	
Dielectric strength		1,500VAC 50/60Hz for 1 min	
Vibration		1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
Shock		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times	
Indicator		Operation indicator: Red LED	
Environment	Ambient temperature	-25 to 70℃, storage: -30 to 80℃	
	Ambient humidity	35 to 95%RH, storage: 35 to 95%RH	
Protection circuit		Surge protection circuit, output short over current protection circuit	
Protection structure		IP67 (IEC standard)	
Cable		Ø4mm, 2-wire, 2m (AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm)	
Approval		CE	
Unit weight		Approx. 71g	

※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.

▣ Specifications

● DC 3-wire type

● PS Series

※The existing PST17 is upgraded its function and design and changed as PSN17.
※The case color of PNP output type is changed from orange to gray.

Environment		PS12-4DN PS12-4DP PS12-4DN2	PS12-4DNU PS12-4DPU PS12-4DN2U	PS50-30DN PS50-30DP PS50-30DN2 PS50-30DP2
Sensing side		Front side	Upper side	Front side
Sensing distance		4mm		30mm
Hysteresis		Max. 10% of sensing distance		
Standard sensing target		12×12×1mm (iron)		90×90×1mm (iron)
Setting distance		0 to 2.8mm		0 to 21mm
Power supply (operation voltage)		12-24VDC⎓ (10-30VDC⎓)		
Current consumption		Max. 10mA		
Response frequency※1		500Hz		50Hz
Residual voltage		Max. 1.5V		
Affection by Temp.		Max. ±10% for sensing distance at ambient temperature 20℃		
Control output		Max. 200mA		
Insulation resistance		Over 50MΩ (at 500VDC megger)		
Dielectric strength		1,500VAC 50/60Hz for 1 min		
Vibration		1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Shock		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times		
Indicator		Operation indicator: Red LED		
Environment	Ambient temperature	-25 to 70℃, storage: -30 to 80℃		
	Ambient humidity	35 to 95%RH, storage: 35 to 95%RH		
Protection circuit		Surge protection circuit, output short over current protection circuit, reverse polarity protection circuit		
Protection structure		IP67 (IEC standard)		
Cable		Ø4mm, 3-wire, 2m		Ø5mm, 3-wire, 2m
		AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm		
Material		Case: Heat-resistant acrylonitrile butadiene styrene, Standard cable (black): Polyvinyl chloride (PVC)		Case: Polybutylene terephthalate, Standard cable (black): Polyvinyl chloride (PVC)
Approval		CE		
Weight※2		Approx. 77g (approx. 62g)		Approx. 256g (approx. 220g)

● PSN Series (frame size 17mm)

※The case color of Normally Closed type is changed from orange to gray.

Model		PSN17-5DN PSN17-5DP PSN17-5DN2 PSN17-5DP2 PSN17-5DN-F	PSN17-5DNU PSN17-5DPU PSN17-5DN2U PSN17-5DP2U	PSN17-8DN PSN17-8DP PSN17-8DN2 PSN17-8DP2	PSN17-8DNU PSN17-8DPU PSN17-8DN2U PSN17-8DP2U	PSN17-8DN-F PSN17-8DP-F PSN17-8DN2-F	PSN17-8DNU-F PSN17-8DPU-F PSN17-8DN2U-F
Sensing side		Front side	Upper side	Front side	Upper side	Front side	Upper side
Sensing distance		5mm		8mm			
Hysteresis		Max. 10% of sensing distance					
Standard sensing target		18×18×1mm (iron)		25×25×1mm (iron)			
Setting distance		0 to 3.5mm		0 to 5mm			
Power supply (operation voltage)		12-24VDC⎓ (10-30VDC⎓)					
Current consumption		Max. 10mA					
Response frequency※1		700Hz		200Hz			
Residual voltage		Max. 1.5V					
Affection by Temp.		Max. ±10% for sensing distance at ambient temperature 20℃					
Control output		Max. 200mA					
Insulation resistance		Over 50MΩ (at 500VDC megger)					
Dielectric strength		1,500VAC 50/60Hz for 1 min					
Vibration		1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours					
Shock		500m/s² (approx. 50G) in X, Y, Z direction for 3 times					
Indicator		Operation indicator: Red LED					
Environment	Ambient temperature	-25 to 70℃, storage: -30 to 80℃					
	Ambient humidity	35 to 95%RH, storage: 35 to 95%RH					
Protection circuit		Surge protection circuit, output short over current protection circuit, reverse polarity protection circuit					
Protection structure		IP67 (IEC standard)					
Cable		Ø4mm, 3-wire, 2m (AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm)					
Material		Case: Heat-resistant acrylonitrile butadiene styrene, Standard cable (black): Polyvinyl chloride (PVC)					
Approval		CE					
Weight※2		Approx. 71g		Approx. 70g			

▣ Specifications

● PSN Series (frame size 25/30/40mm)

※The case color of Normally Closed type is changed from orange to gray.

Model		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
Sensing side		Front side			
Sensing distance		5mm	10mm	15mm	20mm
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 to 3.5mm	0 to 7mm	0 to 10.5mm	0 to 14mm
Power supply (operation voltage)		12-24VDC⎓ (10-30VDC⎓)			
Current consumption		Max. 10mA			
Response frequency※1		300Hz	250Hz	200Hz	100Hz
Residual voltage		Max. 1.5V			
Affection by Temp.		Max. ±10% for sensing distance at ambient temperature 20℃			
Control output		Max. 200mA			
Insulation resistance		Over 50MΩ (at 500VDC megger)			
Dielectric strength		1,500VAC 50/60Hz for 1 min			
Vibration		1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours			
Shock		500m/s² (approx. 50G) in X, Y, Z direction for 3 times			
Indicator		Operation indicator: Red LED			
Environment	Ambient temperature	-25 to 70℃, storage: -30 to 80℃			
	Ambient humidity	35 to 95%RH, storage: 35 to 95%RH			
Protection circuit		Surge protection circuit, output short over current protection circuit, reverse polarity protection circuit			
Protection structure		IP67 (IEC standard)			
Cable		Ø4mm, 3-wire, 2m (AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm)			
Material		Case: Heat-resistant acrylonitrile butadiene styrene, Standard cable (black): Polyvinyl chloride (PVC)			
Approval		CE			
Weight※2		Approx. 70g	Approx. 111g		Approx. 185g

● AC 2-wire type

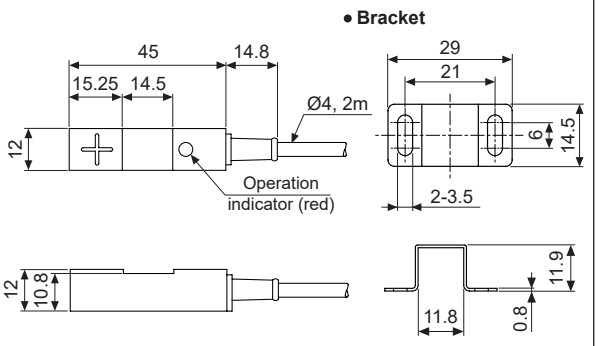
Model		PSN25-5AO PSN25-5AC	PSN30-10AO PSN30-10AC	PSN30-15AO PSN30-15AC	PSN40-20AO PSN40-20AC
Sensing side		Front side			
Sensing distance		5mm	10mm	15mm	20mm
Hysteresis		Max. 10% of sensing distance			
Standard sensing target		25×25×1mm (iron)	30×30×1mm (iron)	45×45×1mm (iron)	60×60×1mm (iron)
Setting distance		0 to 3.5mm	0 to 7mm	0 to 10.5mm	0 to 14mm
Power supply (operating voltage)		100-240VAC～ (85-264VAC～)			
Leakage current		Max. 2.5mA			
Response frequency※1		20Hz			
Residual voltage		Max. 10V			
Affection by Temp.		Max. ±10% for sensing distance at ambient temperature 20℃			
Control output		5 to 200mA			
Insulation resistance		Over 50MΩ (at 500VDC megger)			
Dielectric strength		1,500VAC 50/60Hz for 1 min			
Vibration		1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours			
Shock		500m/s² (approx. 50G) in X, Y, Z direction for 3 times			
Indicator		Operation indicator: Red LED			
Environment	Ambient temperature	-25 to 70℃, storage: -30 to 80℃			
	Ambient humidity	35 to 95%RH, storage: 35 to 95%RH			
Protection circuit		Surge protection circuit			
Protection structure		IP67 (IEC standard)			
Cable		Ø4mm, 2-wire, 2m (AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: Ø1.25mm)			
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.
※Environment resistance is rated at no freezing or condensation.

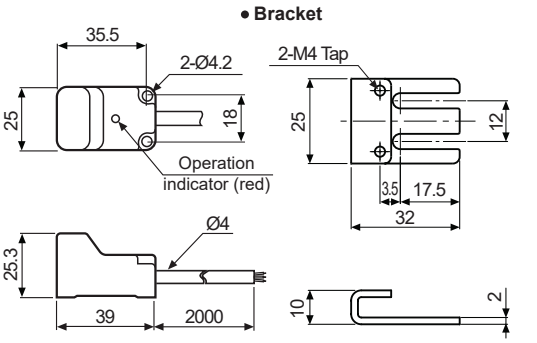
▣ Dimensions

(unit: mm)

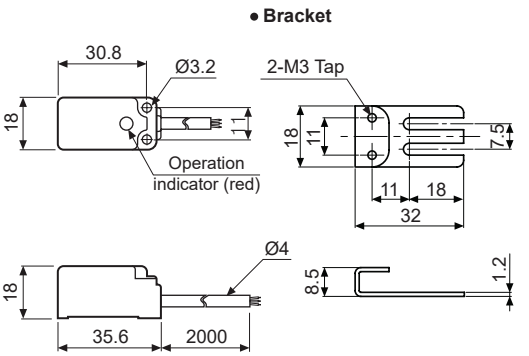
● PS12



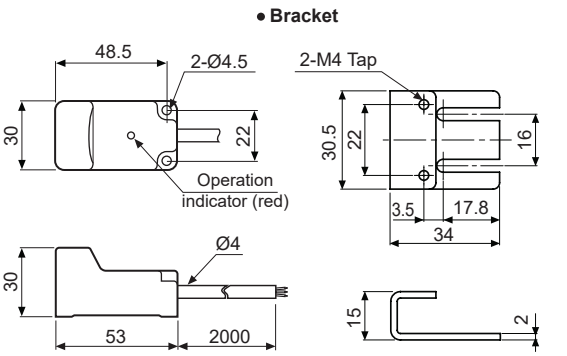
● PSN25



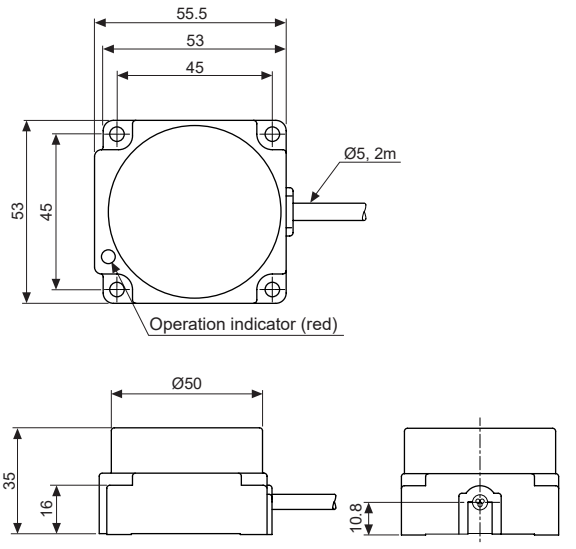
● PSN17 / PSNT17(former: PS17/ PST17)



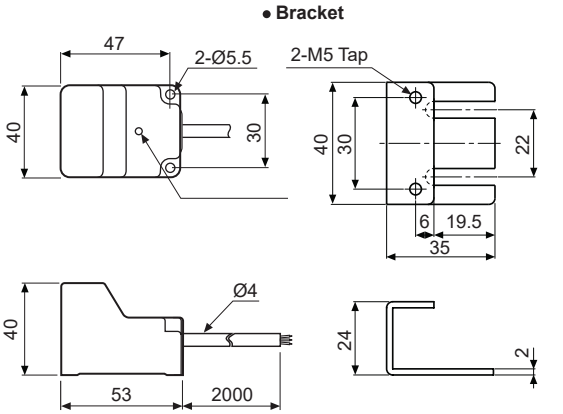
● PSN30



● PS50



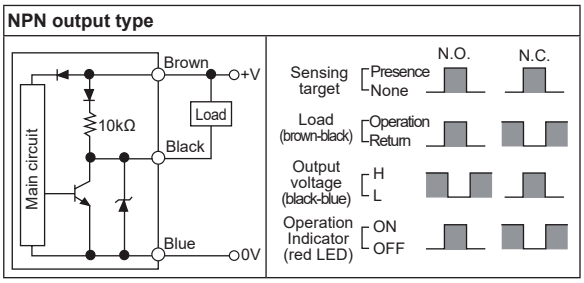
● PSN40



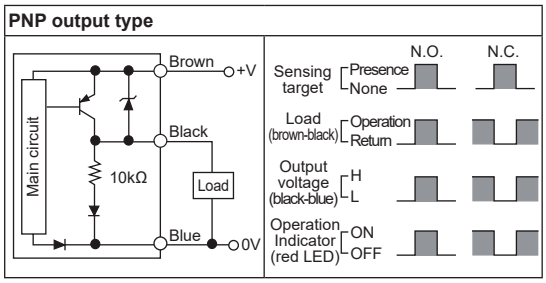
▣ Control Output Diagram and Load Operation

◎ DC 3-wire type

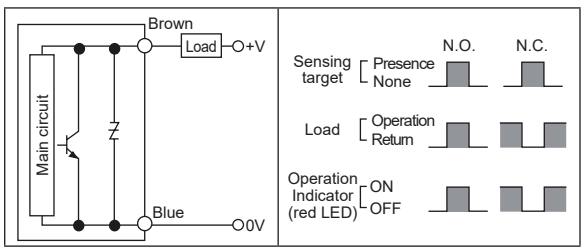
NPN output type



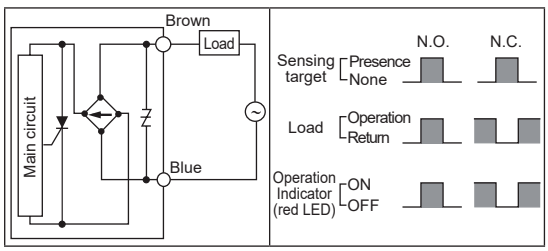
PNP output type



◎ DC 2-wire type

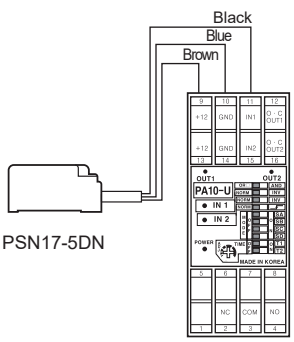


◎ AC 2-wire type



▣ Connections

◎ DC 3-wire type



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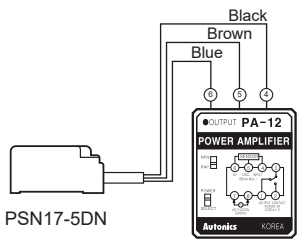
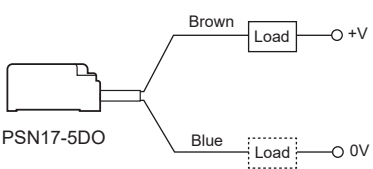


< PA-12 >

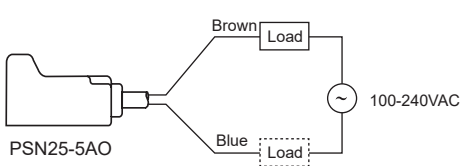
※There is NPN/PNP selection switch in PA-12.

◎ DC 2-wire type



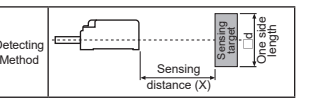
※The load can be connected to either wire.

◎ AC 2-wire type

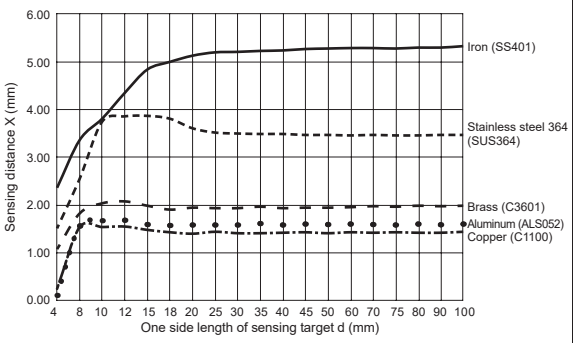


※The load can be connected to either wire.

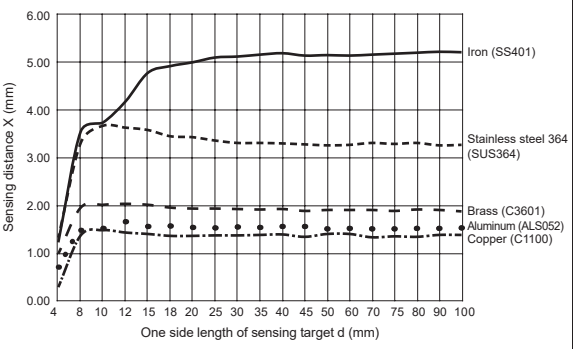
▣ Sensing Distance Feature Data by Target Material and Size



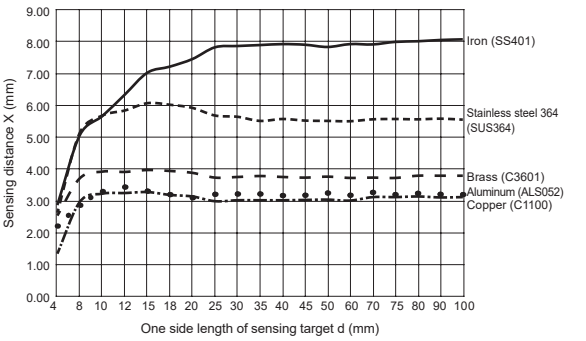
● PSNT17-5D□



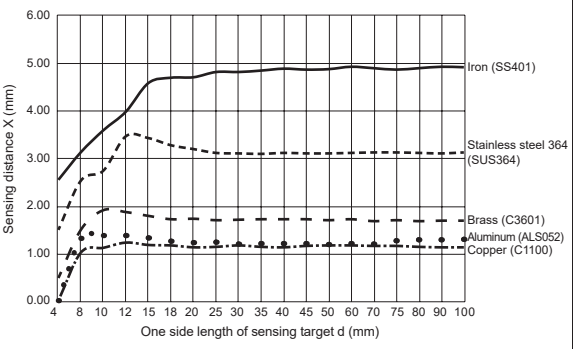
● PSN17-5D□



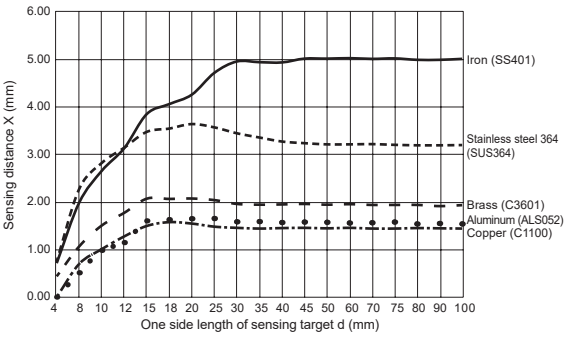
● PSN17-8D□



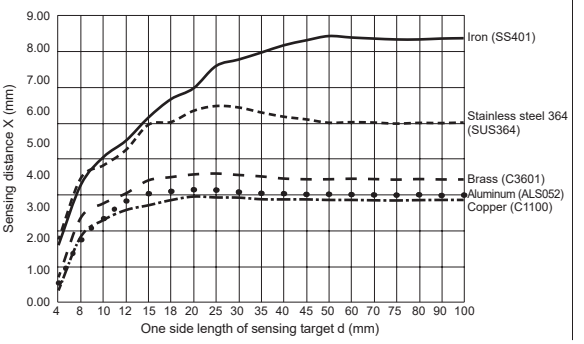
● PSN25-5□



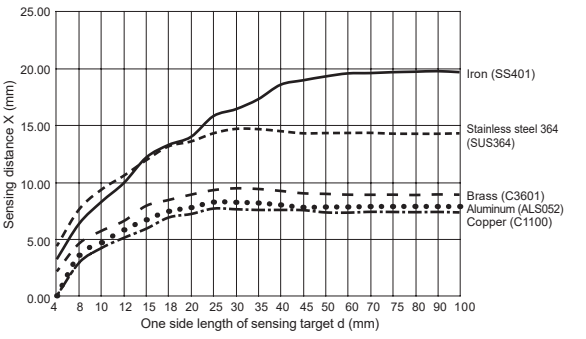
● PSN30-10□



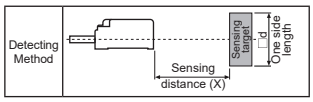
● PSN30-15□



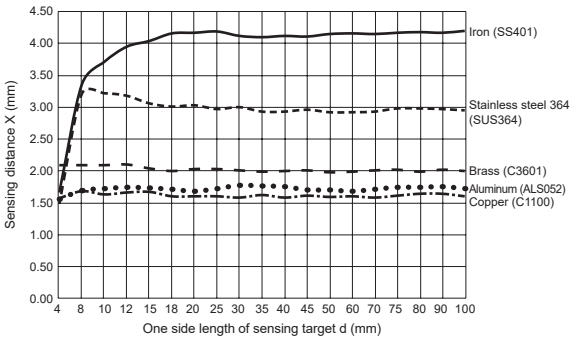
● PSN40-20□



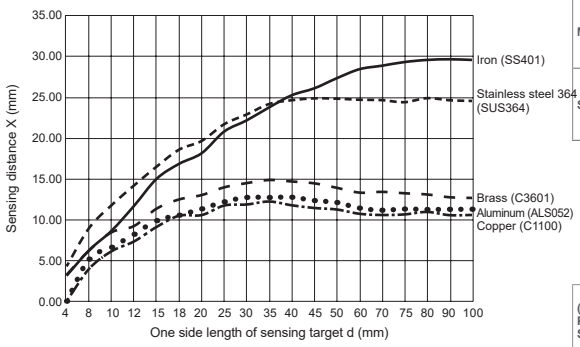
■ Sensing Distance Feature Data by Target Material and Size



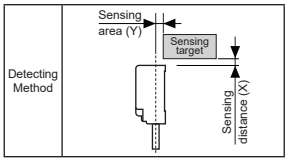
● PS12-4D□



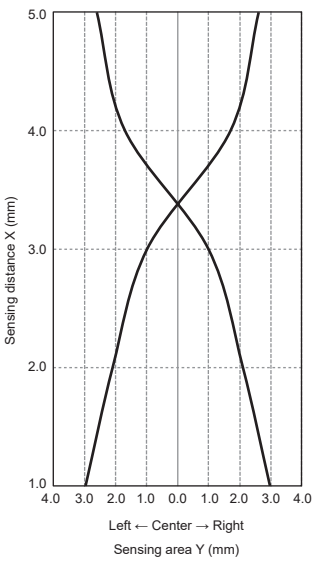
● PS50-30D□



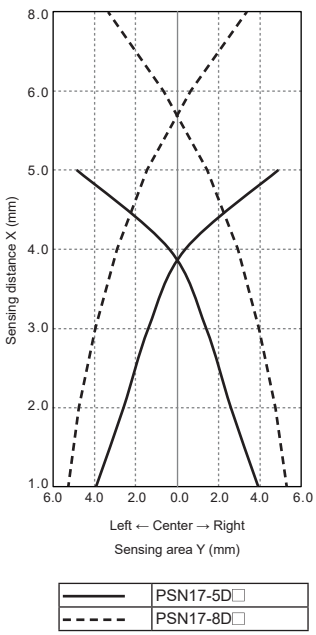
■ Sensing Distance Feature Data by Parallel (Left/Right) Movement



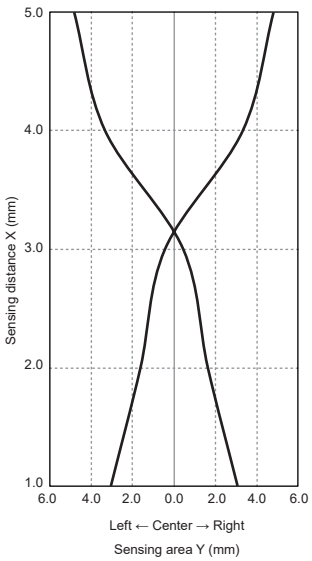
● PSNT17-5D□



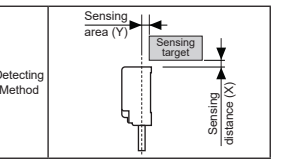
● PSN17-5D□/8D□



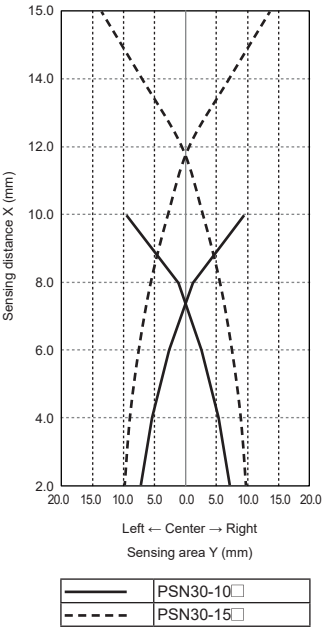
● PSN25-5□



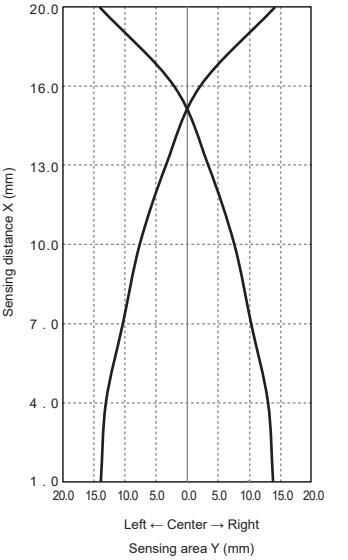
▣ Sensing Distance Feature Data by Parallel (Left/Right) Movement



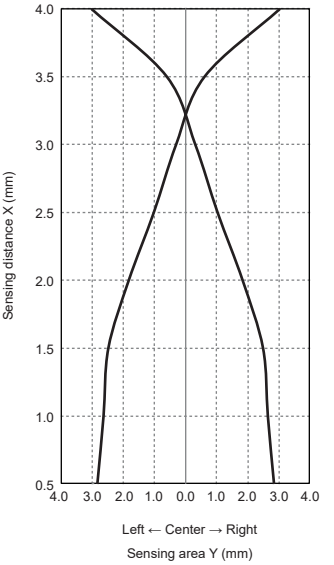
● PSN30-10□/15□



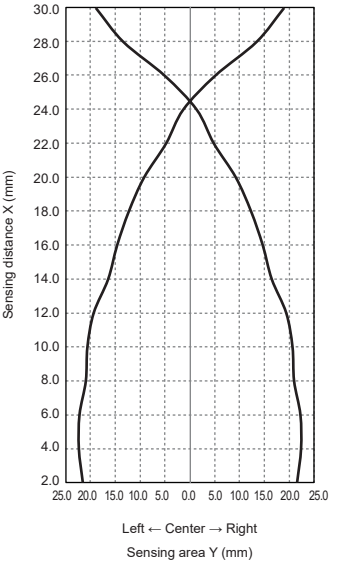
● PSN40-20□



● PS12-4D□

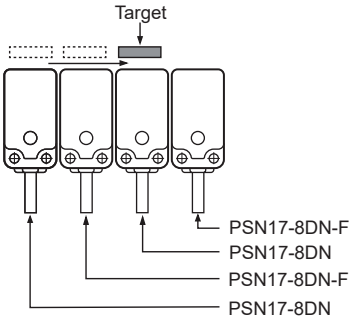


● PS50-30D□



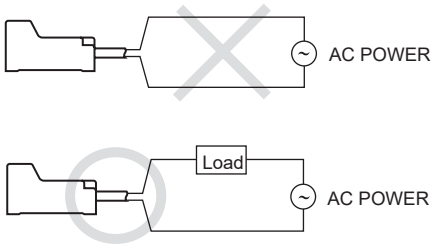
▣ Proper Usage

◎ 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.

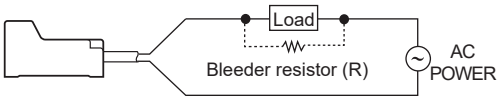
◎ Connection of the power supply



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



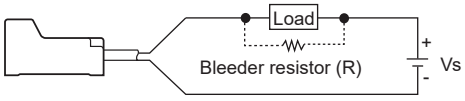
110VAC: Min. 20kΩ 3W
220VAC: Min. 39kΩ 10W

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.

$$R \le \frac{Vs}{I}(k\Omega) \qquad P > \frac{Vs^2}{R}(W)$$

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

● DC 2-wire type



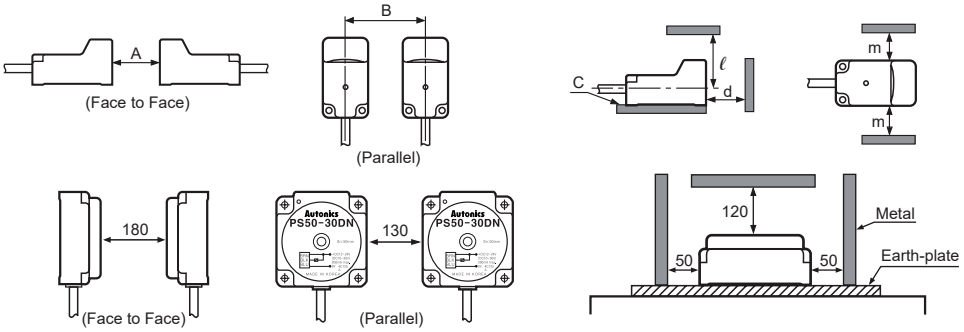
Please make the current on proximity sensor smaller than the return current of load by connecting a Bleeder resistor in parallel.
※W value of Bleeder resistor should be bigger for proper heat dissipation.

$$R \le \frac{Vs}{Io\text{-}Ioff}(k\Omega) \qquad P > \frac{Vs^2}{R}(W)$$

[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 close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.



(unit: mm)

Item \ Model	PS12	PSN17 / PSNT17		PSN25	PSN30		PSN40
	4mm	5mm	8mm	5mm	10mm	15mm	20mm
A	24	30	48	30	60	90	120
B	24	36	40	40	50	65	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