ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Keyence PS-25* at our website: ***Click HERE***

Ultra-small Separate Amplifier Photoelectric Sensors

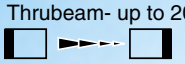
PS Series

Features

- Ultra-small sensor head
- Built-in alarm output
- Chemical- and water-resistant models
- Wide range of models

Detecting Distance

Thrubeam- up to 2000 mm (78.75")



Diffuse-reflective- up to 200 mm (7.88")



Definite-reflective-up to 53 mm (2.09")





CE

Refer to P.551 for a list of products complying with EMC directive.

Description

3-turn trimmer for precise adjustment

The wide adjustment range makes fine adjustment easier. (PS2-61, PS-X28)

0.5-ms quick response speed

Even minute workpieces can be reliably detected on a high-speed production line. (PS2-61, PS-X28)

Multi-mode timer increases versatility

The PS2-61 provides four timer modes; ON-delay, OFF-delay, one-shot, and timer OFF mode. The timer can be set to between 0.04 and 5 seconds. The ON-delay mode is ideal for detecting if a parts feeder is filled with parts.

Alternate-frequency mode

To prevent mutual interference, the frequency of the emission pulse can easily be changed. This mode enables sensors to be mounted in close proximity. (PS2-61)

Tool-free connection

Connect the sensor head wires to the amplifier without using any tools. Since the wires are locked to the amplifier, they cannot be easily pulled out. (PS-X28)



Easy sensitivity adjustment

The sensitivity adjustment trimmer can be turned with your fingers, greatly increasing working efficiency. (PS-X28)



Sensor design compatible with ES-X38 Series

The PS-X28 has the same design as ES-X38 sensors, enabling the units to be mounted side-by-side. Each model can easily be identified for wiring or maintenance by its product number entry label. (PS-X28)



Alarm output

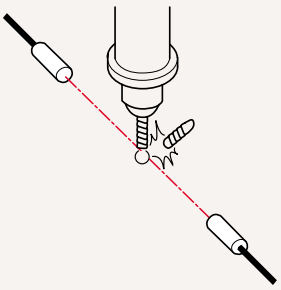
The PS2-61 amplifier outputs an alarm signal if the received light quantity drops below a specified level or if the sensor cable is disconnected. A misalignment of the optical axis or a dirty lens can cause this alarm. (PS2-61)

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Sensor Head Selection Guide (major models only)

Teflon®-sheath: PS-201, PS-202 (thrubeam), PS-205 (reflective)
The sensor head and cable provide trouble-free operation in harsh environments.

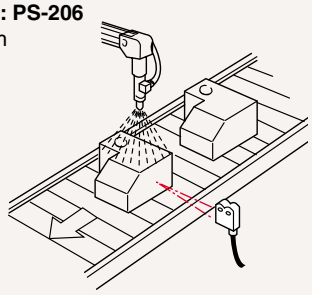




Detection of drill condition

Teflon®-sheath, visible spot: PS-206
Chemical-resistant model with a 6 mm 0.24" red beam spot for simple sensor positioning.

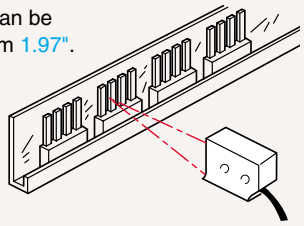




Detection of workpieces in coating line

Long-range, definite-reflective: PS-49
The 1.5 mm 0.06" dia. red beam spot simplifies positioning.
Targets of 0.1 mm 0.004" dia.can be detected at a distance of 50 mm 1.97".

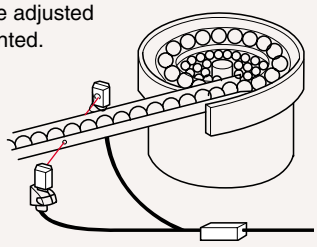




Detection of connector pins

Easy optical-axis adjustment: PS-05
The optical axis can easily be adjusted even after the sensor is mounted.

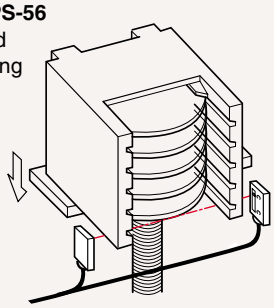




Detection of parts entering parts feeder

Ultra-thin type: PS-52, PS-46, PS-56
The sensor head can be mounted almost anywhere without interfering with targets.

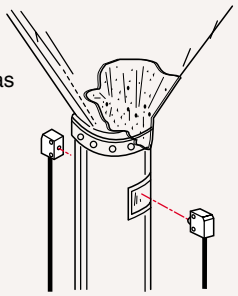




Positioning of lowering wafer rack

Long-range type: PS-55
The powerful highly directional beam penetrates dirt or dust. The compact unit allows detection from distances as far as 2 m 6.6'.

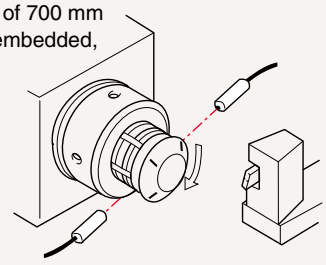




Detection in dusty areas

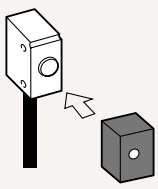
Small cylindrical type: PS-48, PS-58
The 3.8 mm 0.15" dia. sensorhead can detect a target at a distance of 700 mm 27.56" (PS-58) and can be embedded, increasing versatility.

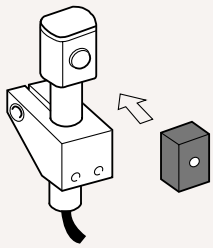




Detection of workpieces in chuck

Slit plate: OP2555 (for PS-55), OP93672 (for PS-05)
With the slit plate attached, 0.3 mm 0.01" dia. targets can be detected to a distance of 700 mm 27.56".

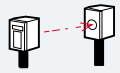
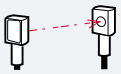
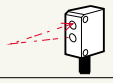
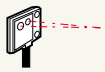
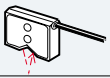




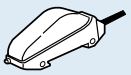
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PS Ultra-small Separate Amplifier Photoelectric Sensors

Sensor head

Type		Configuration	Detecting distance	Model
Thrubeam	Long-range		2 m 6.6'	PS-55
			2 m 6.6'	PS-05
	Ultra-thin		70cm 27.56"	PS-58
			30cm 11.81"	PS52
			30cm 11.81"	PS-56
	Teflon®-sheathed		2 m 6.6'	PS-201
			50cm 19.69"	PS-202
Diffuse-reflective	Long-range		20cm 7.87"	PS-45
	Ultra-thin		10cm 3.94"	PS-46
			2.5cm 0.98"	PS-48
	Environment-proof		20cm 7.87"	PS-205
			7cm 2.76"	PS-206
Definite-reflective	Small spot		10mm ± 4mm 0.39" ± 0.16"	PS-47
	Long-range		32 to 53mm 1.26" to 2.09"	PS-49

Amplifier

Shape	Power supply	Output [1]	Response time	Functions	Model
	12 to 24 VDC ±10%	NPN	0.5 ms	LIGHT-ON, DARK-ON Multi-mode timer Alternate frequency selectable Alarm output	PS2-61
		PNP			PS2-61P
		NPN		LIGHT-ON, DARK-ON ON-delay/OFF-delay timer	PS-X28
		NPN	1 ms	LIGHT-ON, DARK-ON Alarm output	PS-25
	85 to 240 VAC 50/60 Hz	Relay	Approx. 12 ms	LIGHT-ON, DARK-ON	PS-26 [2]

1. NPN output models can be converted to PNP output with the OP-5148 PNP output converter.
2. This product does not comply with EMC directive.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Specifications

Sensor head

Thrubeam type

Type	Long-range		Small		
	Standard	Free-positioning	Cylindrical	Side-to-side	Thin
Model	**PS-55**	**PS-05**	**PS-58**	**PS-52**	**PS-56**
Light source	Infrared LED	Infrared LED	Infrared LED	Infrared LED	Infrared LED
Detecting distance	2,000 mm 78.74"	2,000 mm 78.74"	700 mm 27.56"	300 mm 11.81"	300 mm 11.81"
Smallest detectable object	1.0 mm 0.04" dia. opaque	1.0 mm 0.04" dia. opaque	0.5 mm 0.02" dia. opaque	0.3 mm 0.01" dia. opaque	0.3 mm 0.01" dia. opaque
Enclosure rating	IP-64	IP-64	IP-67	—	—
Ambient light	Incandescent lamp: 4,000 lux max., Sunlight: 12,000 lux max.				
Ambient temperature	-10 to +60°C	-10 to +60°C	-10 to +60°C	-10 to +60°C	-10 to +60°C
Cable length	2 m 6.6'	2 m 6.6'	2 m 6.6'	2 m 6.6'	2 m 6.6'
Weight (including cable)	Approx. 42 g	Approx. 48 g	Approx. 24 g	Approx. 25 g	Approx. 27 g

Type	Teflon® -sheathed	
	Long-range	Aperture-incorporated
Model	**PS-201**	**PS-202**
Light source	Infrared LED	
Detecting distance	2,000 mm 78.74"	500 mm 19.69"
Smallest detectable object	0.8 mm 0.03" dia. opaque	0.5 mm 0.02" dia. opaque
Enclosure rating	IP-67	IP-67
Ambient light	Incandescent lamp: 4,000 lux max. Sunlight: 12,000 lux max.	
Ambient temperature	-10 to +60°C	-10 to +60°C
Cable length	2 m 6.6'	2 m 6.6'
Weight (including cable)	Approx. 36 g	Approx. 36 g

Diffuse-reflective type

Type	Diffuse-reflective			Teflon® -coated	
	Long-range	Cylindrical	Thin	Long-range	Short-range
Model	**PS-45**	**PS-48**	**PS-46**	**PS-205**	**PS-206**
Light source	Infrared LED	Infrared LED	Infrared LED	Infrared LED	Red LED
Spot diameter	—	—	—	—	6 x 6 mm [1] 0.24"
Detecting distance	200 mm 7.87"	25 mm 0.98"	100 mm 3.94"	200 mm 7.87"	70 mm 2.76"
Detectable object	Transparent and opaque				
Standard target	100 x 100 mm 3.94" white mat paper				
Hysteresis (of detecting distance)	15% max.	20% max.	10% max.	15% max.	15% max.
Enclosure rating	IP-64	IP-67	—	IP-67	IP-67
Ambient light	Incandescent lamp: 4,000 lux max., Sunlight: 12,000 lux max.				
Ambient temperature	-10 to +60°C	-10 to +60°C	-10 to +60°C	-10 to +60°C	-10 to +60°C
Cable length	2 m 6.6'	2 m 6.6'	2 m 6.6'	2 m 6.6'	2 m 6.6'
Weight (including cable)	Approx. 38 g	Approx. 37 g	Approx. 27 g	Approx. 60 g	Approx. 60 g

1. Detecting distance is 50 mm 1.97 ".

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PS Ultra-small Separate Amplifier Photoelectric Sensors

Type	Small-spot definite-reflective	
	Small-spot	Long-range
Model	**PS-47**	**PS-49**
Light source	Red LED	Red LED
Spot diameter	0.8 mm 0.03" dia.	1.5 mm 0.06" dia.[1]
Detecting distance	10 mm 0.39" (at center)	32 to 53 mm 1.26" x 2.09"
Detectable object	Transparent and opaque	
Standard target	10 x 10 mm 0.39" white mat paper	20 x 20 mm 0.79" white mat paper
Hysteresis (of detecting distance)	3% max.	6% max.
Enclosure rating	—	—
Ambient light	Incandescent lamp 4,000 lux max. Sunlight 5,000 lux max.	
Ambient temperature	-10 to +60°C	-10 to +50°C
Cable length	2 m 6.6'	2 m 6.6'
Weight (including cable)	Approx. 41 g	Approx. 38 g

1. Detecting distance is 50 mm 1.97 ".

Amplifier

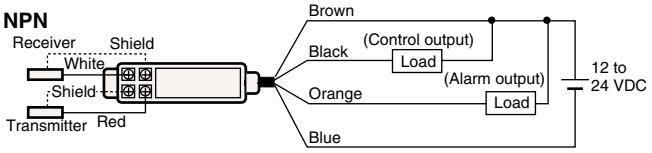
Type		DC type			AC type
Model	**NPN**	**PS2-61**	**PS-X28**	**PS-25**	**PS-26** [1]
	PNP	**PS2-61P**	**—**	**—**	**—**
Power supply		12 to 24 VDC ±10%	12 to 24 VDC ±10%	12 to 24 VDC ±10%	85 to 240 VAC 50/60 Hz
Current/Power consumption		45 mA max.	45 mA max.	45 mA max.	1.5 VA max.
Response time		0.5 ms (1 ms at an alternate frequency)	0.5 ms	1 ms	Approx. 12 ms.
Sensitivity adjustment		3-turn trimmer	3-turn trimmer	1-turn trimmer (240°)	1-turn trimmer (240°)
Operation mode		LIGHT-ON/DARK-ON (switch-selectable)			
Indicator		Output: Red LED, Stable operation: Green LED			
Control output		100 mA (40 V) max. Residual voltage: 1V max.	100 mA (40 V) max. Residual voltage: 1 V max.	200 mA (40 V) max. Residual voltage: 1 V max.	SPST-NO Relay contact 250 VAC 2A (resistive load)
Alarm output		50 mA (40 V) max. Residual voltage: 1 V max.	—	200 mA (40 V) max. Residual voltage: 1 V max.	—
Timer		ON-delay/OFF-delay/ One-shot/ Timer-OFF selectable (40 ms to 5 s)	ON-delay/OFF-delay/ Timer-OFF selectable (40 ms to 5 s)	—	—
Buzzer		Buzzer ON at control output-ON/ Buzzer ON at alarm output-ON/ Buzzer OFF selectable	—	—	—
Protection circuit		Reversed polarity, short-circuit protection, surge absorber		—	—
Ambient temperature		-10 to +50°C	-10 to +50°C	-10 to +50°C	-10 to +50°C
Weight		Approx. 65 g (including 2-m 6.6' cable)		Approx. 50 g	Approx. 120 g

1. This product does not comply with the EMC directive.

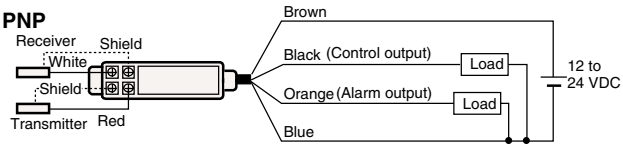
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Connections

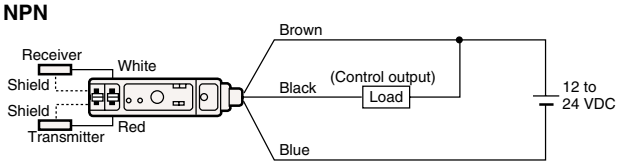
PS2-61
NPN



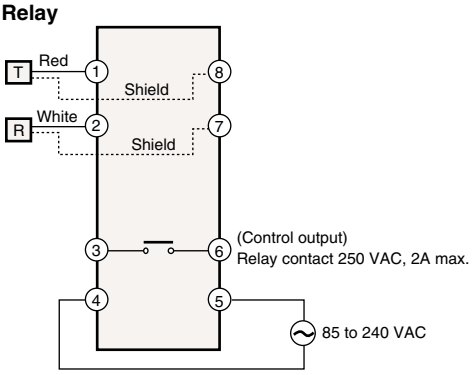
PS2-61P
PNP



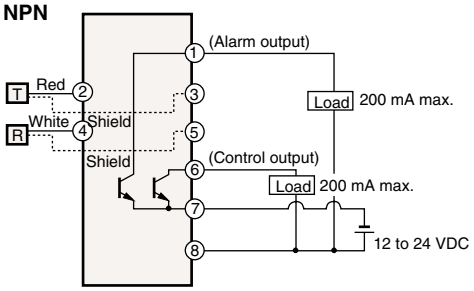
PS-X28
NPN



PS-26
Relay

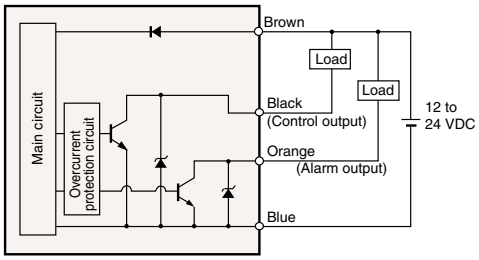


PS-25
NPN

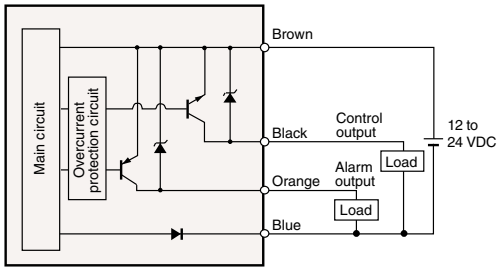


Output Circuits

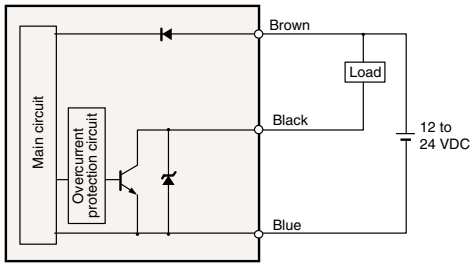
PS2-61
NPN



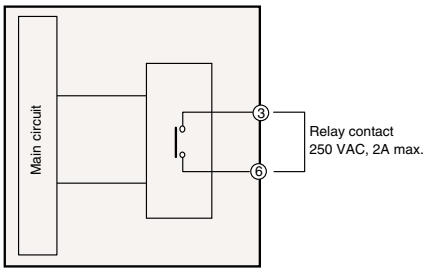
PS2-61P
PNP



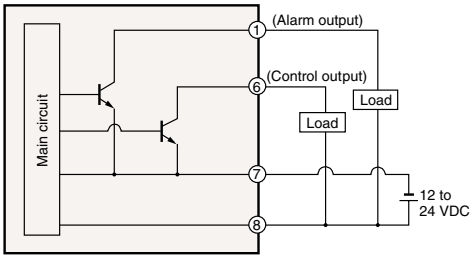
PS-X28
NPN



PS-26
Relay



PS-25
NPN

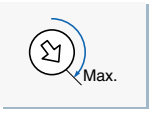


Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

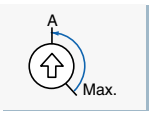
Adjustment

DARK-ON mode

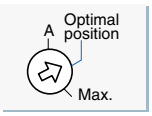
Thrubeam type



1. With no target, set the trimmer to Max. With the receiver secured in place, move the transmitter up/down and right/left. Then set and secure the trimmer at the midpoint of the range in which the green LED indicator lights.
*The PS2-61 uses a three-turn trimmer.



2. Turn the trimmer counterclockwise from the position of Max. and find point A at which the green LED turns off.



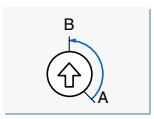
3. Set the trimmer midway between points A and B. Confirm sensor operation.

LIGHT-ON mode (When DARK-ON mode is specified, refer to words in parentheses.)

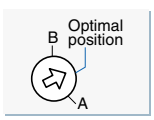
Reflective type



1. With no target, turn the trimmer until red LED lights (turns off). -Point A
If the red LED does not light (turn off) with the trimmer at max., use max. as point A.
* The PS2-61 uses a three-turn trimmer.



2. With the target in place, turn the trimmer counterclockwise until the green LED turns off.-Point B



3. Set the trimmer midway between points A and B. Confirm sensor operation.

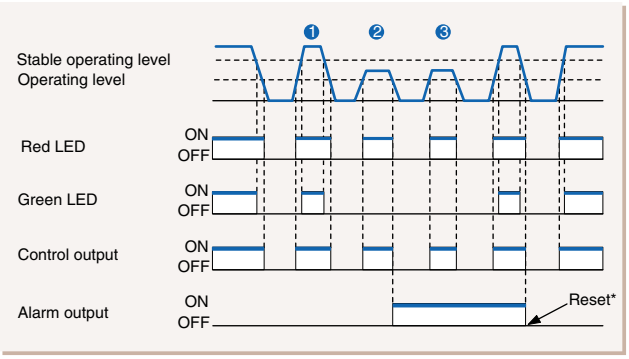
Alarm buzzer

When the ALM selector switch on the top of the amplifier is set to the OUT position the built-in buzzer will sound in conjunction with the output indicator.
If the received light quantity drops below a specified level due to misalignment of the optical axis (for thrubeams), or if the sensor cable is disconnected, the alarm buzzer sounds when the ALM selector switch is set to STB.

* To prevent the buzzer from sounding, set the ALM selector switch to OFF.

Timing Chart

LIGHT-ON mode

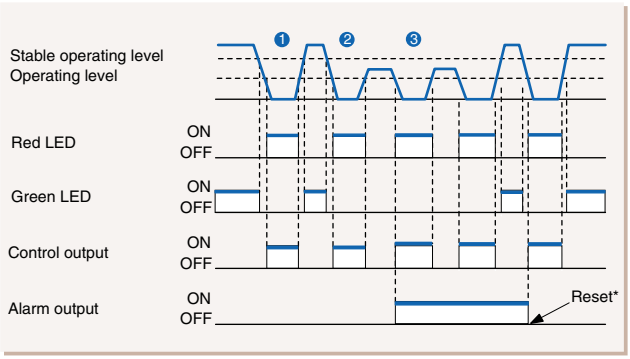


If the light quantity received by the receiver of the sensor drops from a stable level (1) to an unstable level (2), the alarm output is triggered.

* If the alarm output is triggered, clean the lens surface and/or realign the optical axis so that the stable operation indicator lights again. Operating the sensor with the green LED lit resets the alarm output.

Models equipped with an alarm output are the PS-61, 61P, and -25.

DARK-ON mode

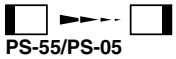


If the light quantity is not restored to a stable level after detection of a target (2), the alarm output is triggered when detecting a second target (3).

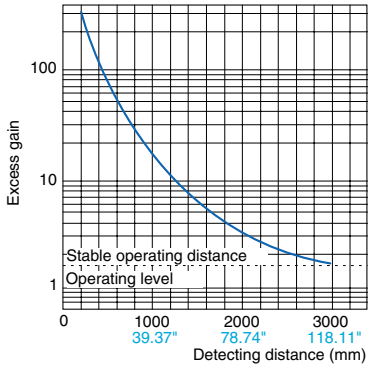
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Characteristics

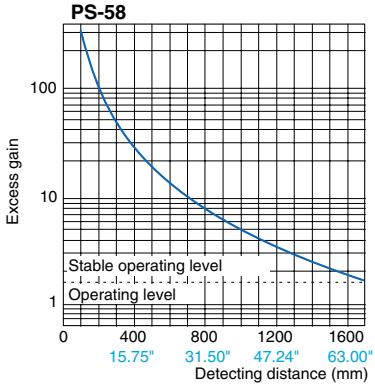
Receiver excess gain vs. detecting distance (Typical)



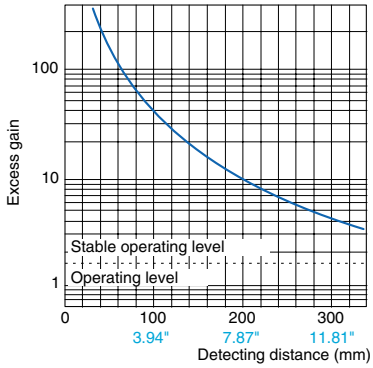
PS-55/PS-05



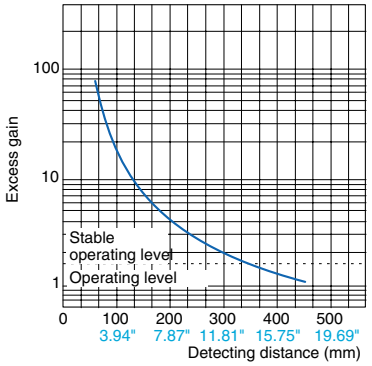
PS-58



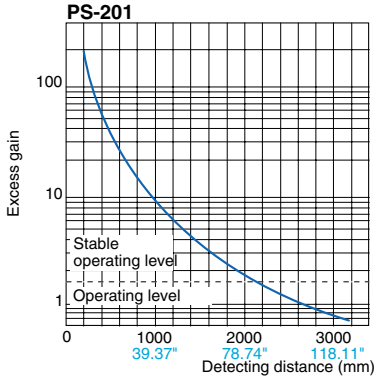
PS-52



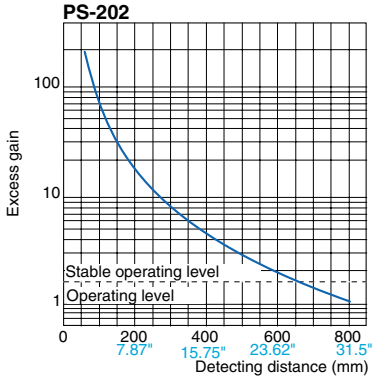
PS-56



PS-201

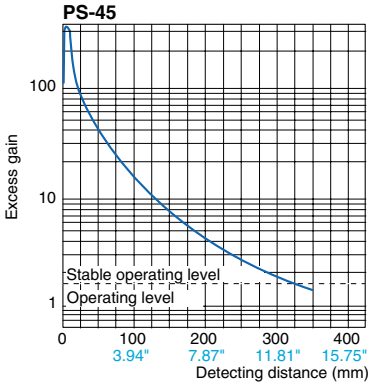


PS-202

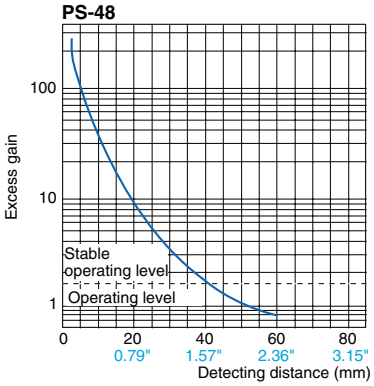




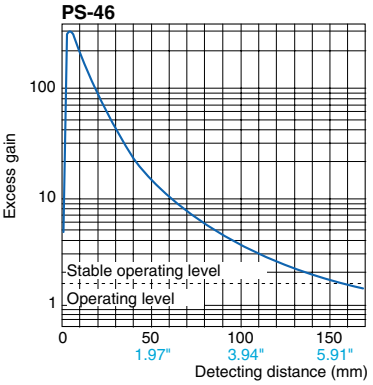
PS-45

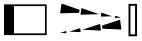


PS-48

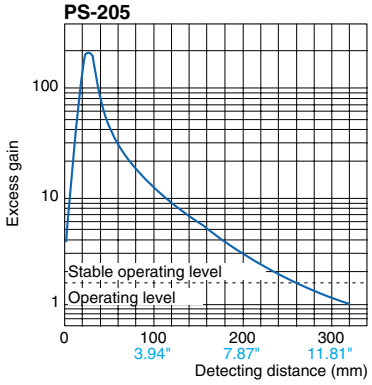


PS-46

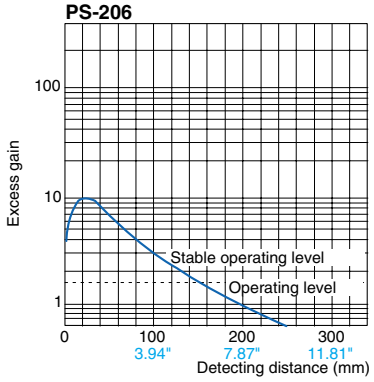




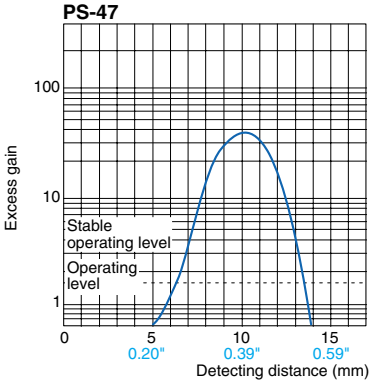
PS-205



PS-206



PS-47

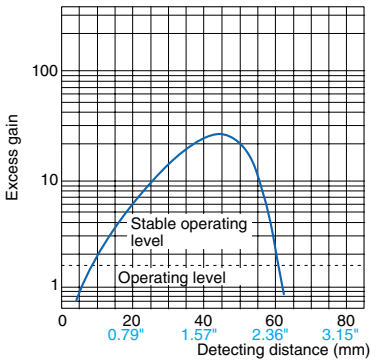


Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

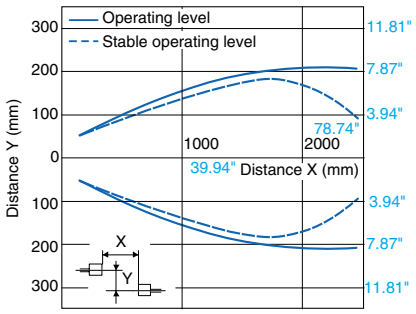
PS Ultra-small Separate Amplifier Photoelectric Sensors

Parallel displacement of optical axis (Typical)

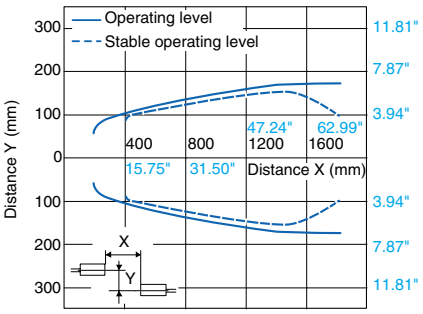
PS-49



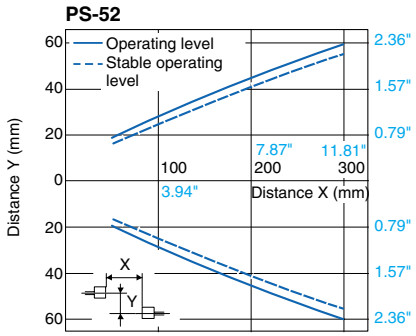
PS-55/05



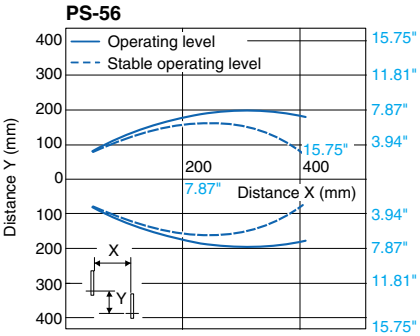
PS-58



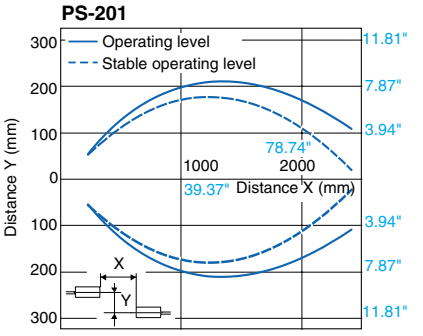
PS-52



PS-56

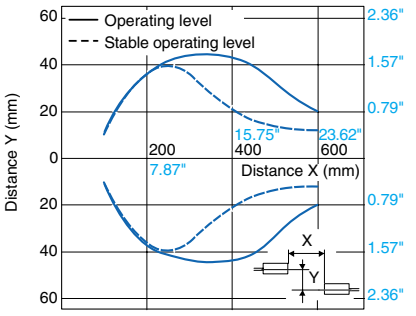


PS-201

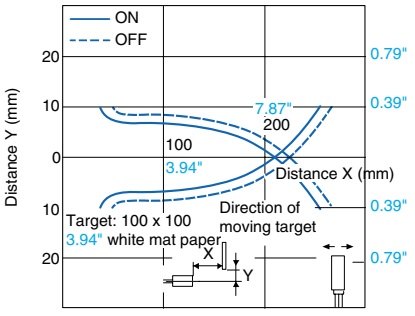


Operating distance vs. detecting distance (Typical)

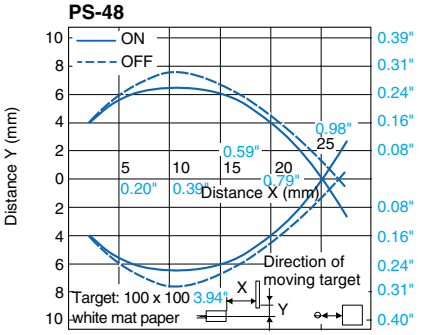
PS-202



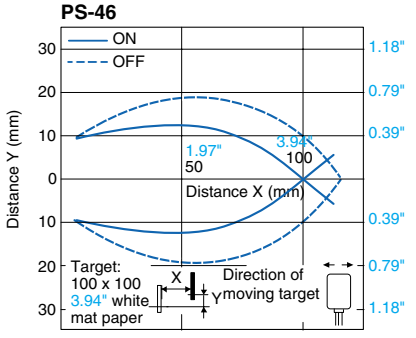
PS-45



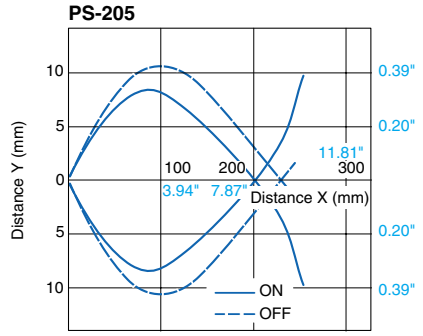
PS-48



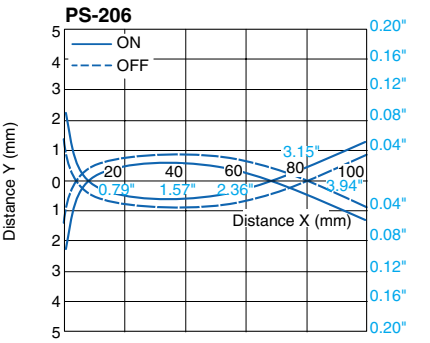
PS-46



PS-205

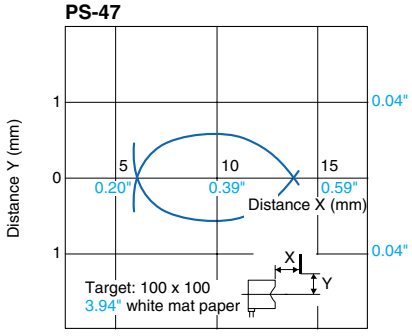


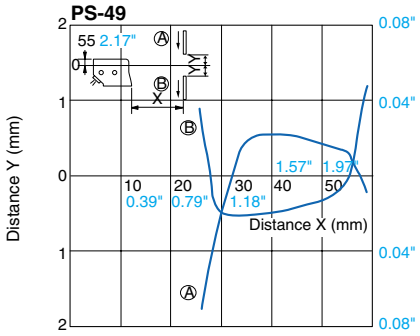
PS-206

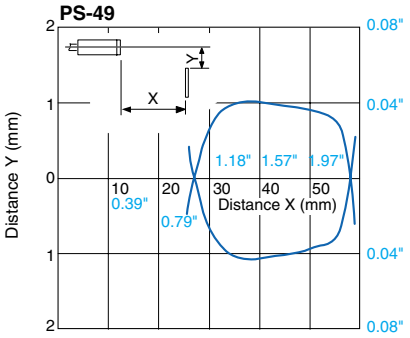


Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com









Hints on Correct Use

Wiring

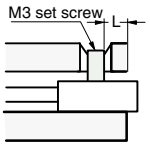
- Isolate amplifier wiring from power lines, and high-voltage lines; otherwise the sensor may malfunction due to noise interference.
- Limit the length of extension to within 100 m 328.1'.
- Sensor cable can be extended up to 10 m 32.8' in length.

Installation: PS-48, PS-58

As shown below, when embedding PS-48 or PS-58, set the sensor head so that the front face of the sensor head slightly protrudes from the area of installation.

Use an M3 screw when installing the sensor head with this method. Do not exceed the maximum tightening torque.

Model	L	Tightening torque
PS-48	5 mm 0.20" minimum	0.15 N•m
PS-58	7 mm 0.28" minimum	0.15 N•m



Tightening torque

When installing the sensor head using the built-in mounting holes, do not exceed the tightening torques specified below.

Model	Tightening torque	Screw
PS-45	0.6 N•m max.	M3
PS-46	0.3 N•m max.	M2
PS-47	0.6 N•m max.	M3
PS-49	0.6 N•m max.	M3
PS-52	0.15 N•m max.	M2
PS-55	0.6 N•m max.	M3
PS-56	0.3 N•m max.	M2
PS-205	0.5 N•m max.	M4
PS-206	0.5 N•m max.	M4

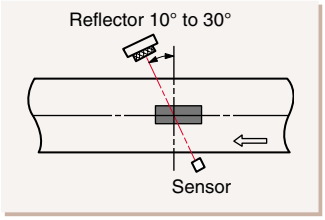
Reflector (optional)

The reflector option enables a reflective sensor to be used as a retro-reflective type.

Model	OP-529
Detecting distance	0 to 2 m 6.6' [1] (when using PS-45)
Smallest detectable object	18 mm 0.71" dia. opaque material[2]
Directional angle	±20°
Ambient light	Incandescent lamp : 10,000 lux max. Sunlight: 20,000 lux max.
Ambient temperature	-25 to +60°C
Material	Surface: Acrylic resin (red) Back: ABS resin
Weight	Approx. 20 g

1. 15% or less of detecting distance is in the undetectable zone.
2. Contact KEYENCE for information on detection of objects 18 mm 0.71" or less in diameter.

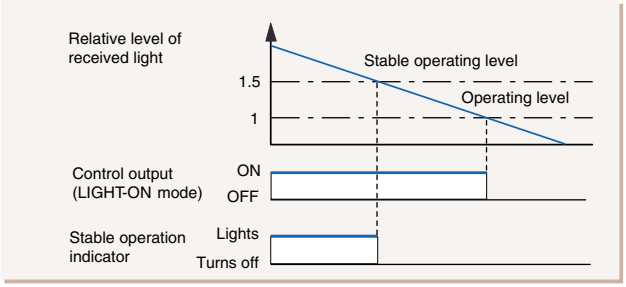
[Note]
When detecting a moving object with a highly reflective glossy surface, install the reflector at an angle of 10 to 30 degrees in relation to the moving object, as illustrated on the right.



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

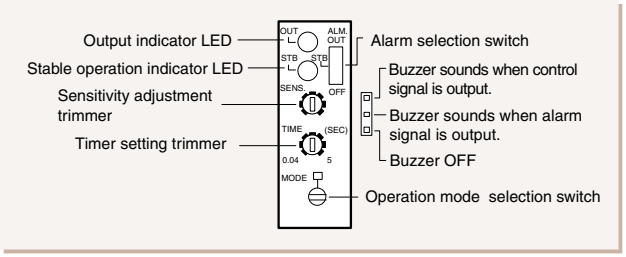
Stable operation indicator and output

The stable operation indicator (green LED) of the sensor lights when the quantity of light the receiver has received reaches or exceeds 150% of the operating level.
This indicator is used as an alarm for detection failure.
The stable operation indicator turns off when the received light quantity falls below 150% of the operating level due to soiled lens surface or misalignment of the optical axis.
If this happens, the alarm output is activated and the OUT indicator lights simultaneously.



[Note]
If the alarm output is triggered, clean the lens surface and/or realign the optical axis so that the stable operation indicator lights again. Operating the sensor with the green LED lit resets the alarm output.

PS2-61 Operation mode



Operation mode chart

Mode	No.	1	2	3	4	5	6	7	8	A	B	C	D	E	F	G	H
Out-put	LIGHT-ON	●	●	●	●					●	●	●	●				
	DARK-ON					●	●	●	●					●	●	●	●
Timer	Timer OFF	●				●				●				●			
	ON-delay		●				●				●				●		
	OFF-delay			●				●				●				●	
	One-shot				●				●				●				●
Normal frequency		●	●	●	●	●	●	●	●								
Alternate frequency										●	●	●	●	●	●	●	●

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions

CAD

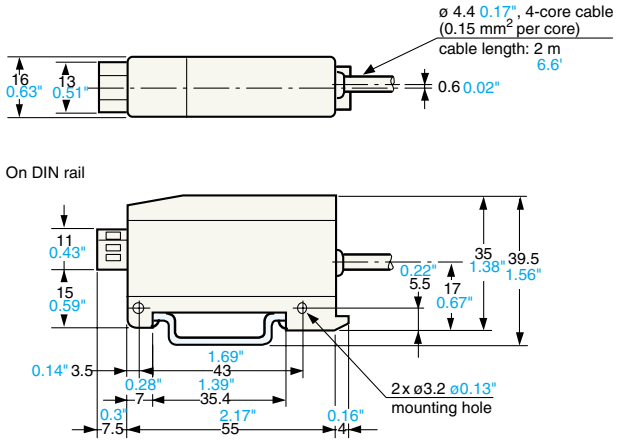
Unit: mm Inch

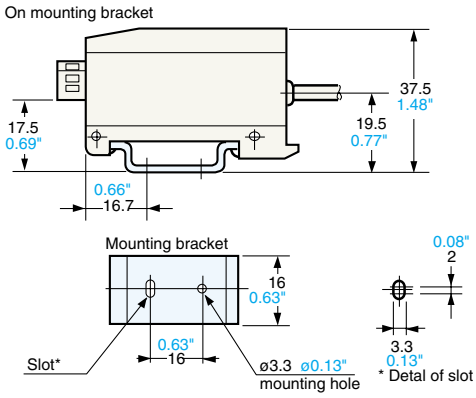
Sensor head

* See the PS01 Series sensor head dimensions pages.

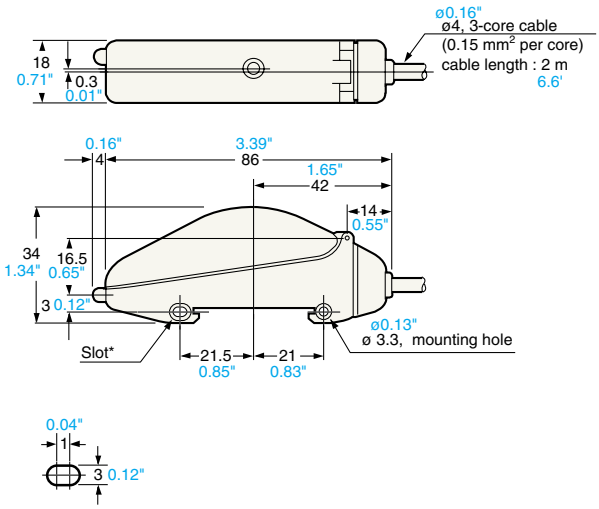
Amplifier

PS2-61/ PS2-61P

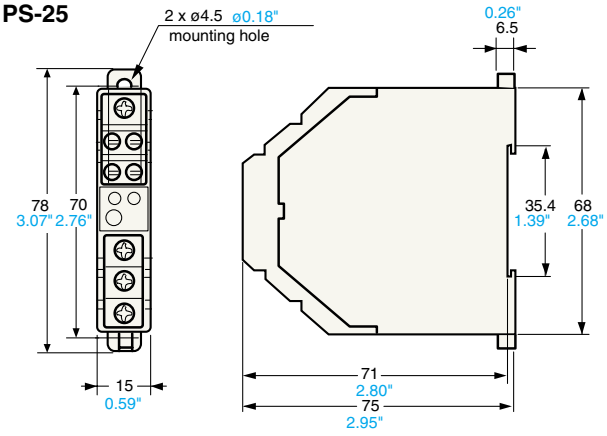




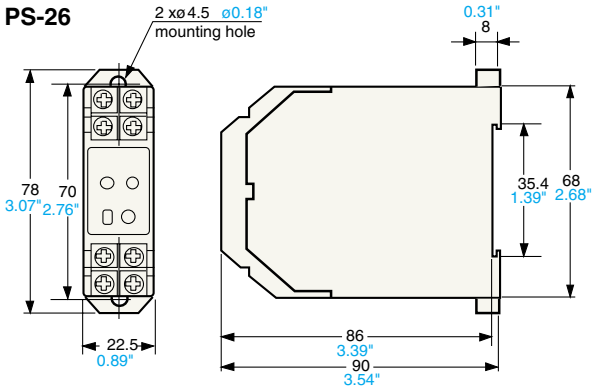
PS-X28



PS-25



PS-26



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP