

## One-touch Calibration Separate Amplifier Photoelectric Sensor

# PS01

ZERO ONE



*The new PS01 series amplifier in TURBO MODE provides twice the detecting distance when used with a TURBO-ready sensor head.*

*A powerful beam makes optical axis alignment easier and ensures rock-solid detection, even in dusty environments.*

### Stable detection in a variety of harsh environments



# Innovative design and high performance for stable detection in harsh environments

Teflon®-sheathed  
**PS-201/PS-201C**  
(Connector type)



The sensor head and cable are covered with a Teflon® sheath ensuring trouble-free operation in areas exposed to chemicals, solvents, or oil splashes.

Max. detecting distance: 4 m

Teflon®-sheathed,  
visible spot  
**PS-206**



The housing is highly resistant to chemicals and the 6 mm red beam spot simplifies sensor positioning.

Max. detecting distance: 70 mm

Long-range,  
definite-reflective  
**PS-49 / PS-49C**  
(Connector type)



The 1.5 mm diameter beam spot simplifies sensor positioning. Targets as small as 0.1 mm diameter can be detected from a distance of 50 mm.

Max. detecting distance: 50 mm

Long-range  
**PS-55/PS-55C**  
(Connector type)



The powerful and highly directional beam penetrates dirt or dust. The unit is compact, yet allows detection at distances of up to 4 m.

Max. detecting distance: 4 m

## Superb ease-of-use in setup operation

### Fully automatic calibration for precise detection



Anyone can calibrate easily and reliably. Fully automatic, positioning, or external calibration can be selected, based on the application.

### Fine adjustment of every sensor head



If the FS-V1 digital calibration fiberoptic sensor is configured as the main unit with several expansion units connected to it, the light quantity and sensitivity of the expansion units can be checked on the FS-V1's monitor. While viewing the monitor, the sensitivity of the expansion units can be finely adjusted.

### Precise adjustment & sensitivity monitoring

The sensitivity of 3rd PS-T2 (Photo) is shown on the FS-V monitor.



### Fine adjustment of the expansion units

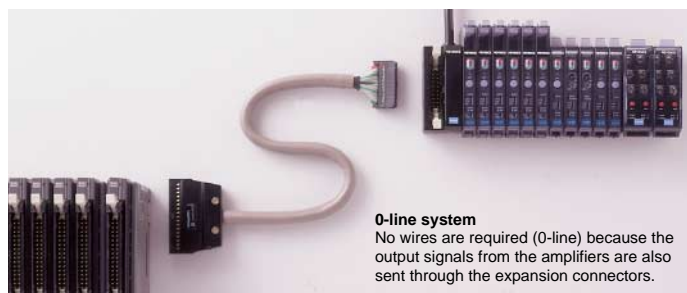
After for additional minute sensitivity adjustments, just press the UP/DOWN keys for precise sensitivity adjustment.

### Quick wiring with a single cable

#### 0-line sensors\* can be used without wiring.

By connecting an FS-R0 unit, the output signals from the sensors will be sent through this connector. Therefore, no wiring is required for each amplifier. A cable with a MIL connector enables connection to the I/O card of a PLC or a special board without complicated conventional wiring.

\* Model: PS-T0, FS-T0, FS-M0



#### 0-line system

No wires are required (0-line) because the output signals from the amplifiers are also sent through the expansion connectors.

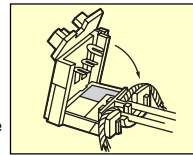
### Simple plug-in sensor head

The PS01 series employs a snap-on connector which improves the reliability of the connection to the sensor head. The secure connector eliminates problems such as connection failures and the sensor head can be easily replaced for maintenance.



#### The sensor cable can be cut to any length.

After the sensor cable is cut to the required length, the newly designed crimp connector allows simple snap-on connection. (Patent-pending)



# Specifications

## Sensor head

Model <sup>1.</sup>	Teflon <sup>®</sup> -sheathed				Definite reflective		Long-range			Thin, small			
	Thrubeam		Reflective		PS-47(C)	PS-49(C)	Thrubeam		PS-45	Thrubeam		Reflective	
	PS-201(C)	PS-202	PS-205	PS-206			PS-55(C)	PS-05		PS-58	PS-52(C)	PS-56	PS-46
Light source	Infrared LED				Red LED		Infrared LED						
Detecting distance (mm)	FINE	2,000	500	200	70	10 ± 4	32 to 53	2,000	200	700	300	100	25
	TURBO <sup>2.</sup>	4,000	1,000	400	—	—	—	4,000	400	—	600	—	—
Smallest detectable object <sup>3.</sup> (mm)	FINE	0.8 dia.	0.5 dia.	—	—	—	—	1.0 dia.	—	0.5 dia.	0.3 dia.	—	—
	TURBO	1.2 dia.	0.5 dia.	—	—	—	—	2.0 dia.	—	—	0.3 dia.	—	—
Enclosure rating	IP-67				—		IP-64			IP-67		—	
Mutual interference suppression <sup>4.</sup> (When expansion units are connected)	Built-in				No interference (side-by-side mounting)		Built-in			—		Built-in	
Ambient temperature	-10 to +60°C												
Relative humidity	35 to 85%												
Weight (including 2-m cable)	Approx. 40 g		Approx. 60 g		—			Approx. 30 g			—		

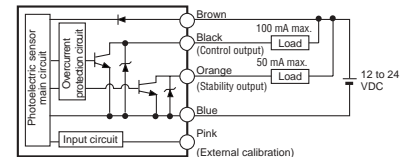
- Models with a (C) come with plug-in connectors. (For other models, use the connector included with the amplifier.)
- Use FINE MODE for models which do not feature TURBO MODE.
- Gives the size of the object which can be detected at the maximum detecting distance.
- Mutual interference suppression function: Up to three expansion units used without mutual interference. Models without mutual interference suppression function: Even when several expansion units are used in close proximity, chattering will not occur. However, sensitivity may vary due to mutual interference. Check the performance using actual machines before performing detection.

## Amplifier

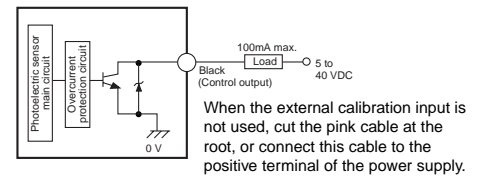
Model	PS-T1	PS-T2	PS-T0
Response time	500 μs		660 μs to 1.2 ms <sup>1.</sup>
Operation mode	LIGHT ON/DARK ON (switch-selectable)		
Indicators	Output indicator: Red LED, Stable operation indicator: Green LED, Calibration indicator: Yellow LED		
Timer function	ON-delay: 40 ms, OFF-delay: 40 ms, Timer OFF (switch-selectable)		
External calibration input signal	Non-voltage input (contact, solid state)		—
Output	Control output	NPN open-collector 100 mA max. (40 V max.) Residual voltage: 1 V max. <sup>2.</sup>	
	Stability output	NPN open-collector 50 mA max. (40 V max.) Residual voltage: 1 V max. <sup>3.</sup>	
Protection circuit	Reverse polarity protection, Over-current protection, Surge absorber		
Power supply voltage	12 to 24 VDC ±10%, Ripple (P-P) 10% max. <sup>4.</sup>		
Current consumption	35 mA max.		
Ambient temperature	-10 to +55°C <sup>5.</sup>		
Relative humidity	35 to 85%		
Vibration	10 to 55 Hz, 1.5 mm double amplitude in X, Y and Z directions, 2 hours respectively		
Shock immunity	500 m/s <sup>2</sup> (Approx. 50 G) in X, Y and Z directions, 3 times respectively		
Housing material	Body/Cover: Polycarbonate		
Weight (including 2 m cable)	Approx. 75 g	Approx. 40 g	Approx. 20 g <sup>6.</sup>

- The response speed varies depending on the number of units connected.
- There is no control output cable for the PS-T0. Control output for the PS-T0 is sent from the FS-R0.
- Stability output is only provided by the PS-T1. Stability output for the PS-T2/T0 is sent from the PS-T1, FS-T1, FS-M1 or FS-R0.
- Power for the PS-T2/T0 is supplied through the PS-T1, FS-T1, FS-M1 or FS-R0.
- When several units are connected, the ambient temperature requirement varies depending on the total number of units connected. When 3 to 10 units: -10 to +50°C. When 11 to 16 units: -10 to +45°C. When connecting several units, be sure to mount the units to a metallic DIN rail. Make sure that the output current does not exceed 20 mA.
- The PS-T0 has no cable.

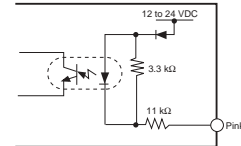
## I/O Circuit



When the stability output is not used, cut the orange cable at the root, or connect this cable to the 0 V terminal of the power supply.



### (External calibration input circuit)

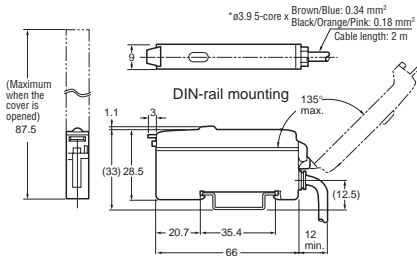


Power to the PS-T2 is supplied through the PS-T1, FS-T1 or FS-M1.

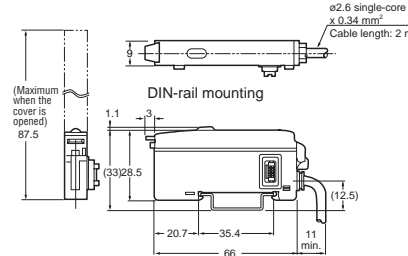
## Dimensions: Amplifier

Unit: mm

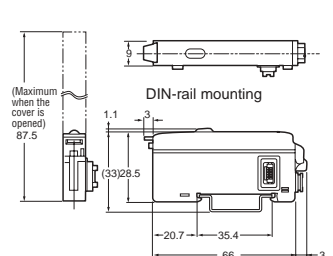
### PS-T1



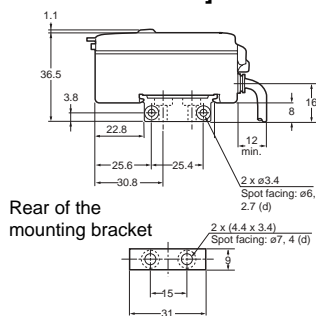
### PS-T2



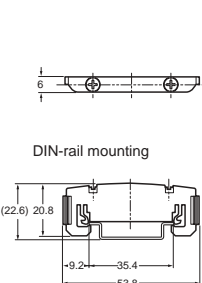
### PS-T0



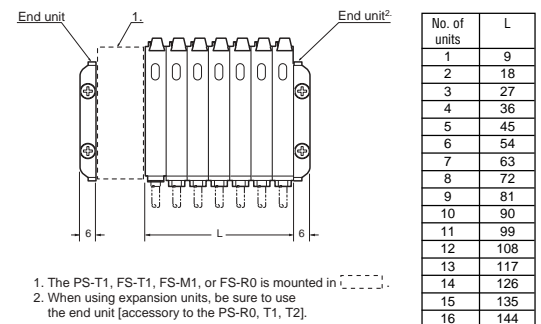
When the mounting bracket [included in the PS-T1] is attached:



End unit [Included in the PS-T2]



When several units are connected:

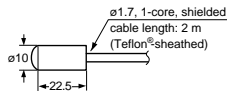


- The PS-T1, FS-T1, FS-M1, or FS-R0 is mounted in [ ].
- When using expansion units, be sure to use the end unit [accessory to the PS-R0, T1, T2].

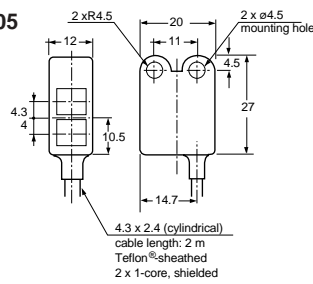
# Dimensions: Sensor head

Unit: mm

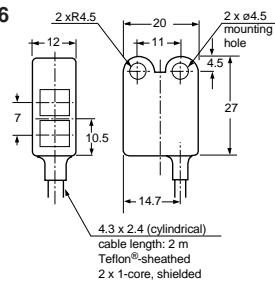
## PS-201(C) / PS-202



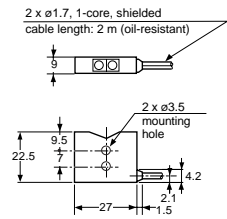
## PS-205



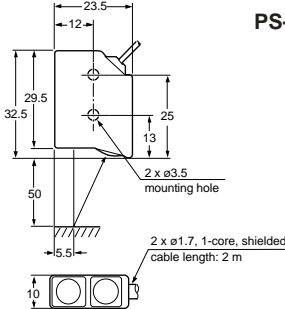
## PS-206



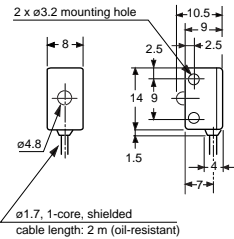
## PS-47(C)



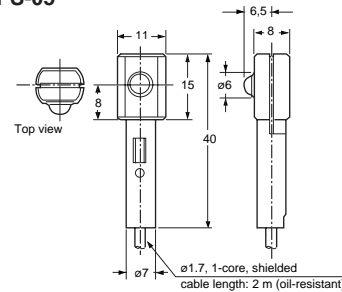
## PS-49(C)



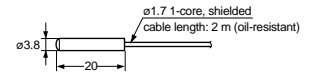
## PS-55(C)



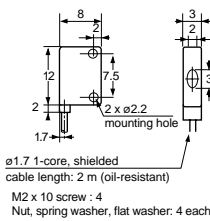
## PS-05



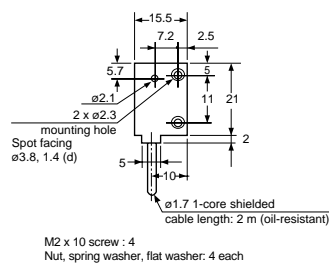
## PS-58



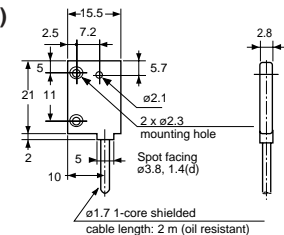
## PS-52(C)



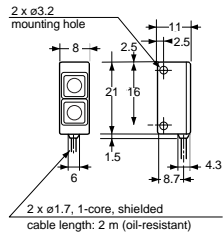
## PS-56(R)



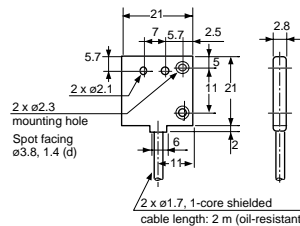
## PS-56(T)



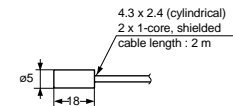
## PS-45



## PS-46



## PS-48



Teflon® is a trademark of E.I. du Pont de Nemours & Company.

## Amplifier Selection For The 01 Series



### One-touch Calibration FS-T1(P)

Fully automatic calibration with extraordinarily high resolution



### Manual Calibration FS-M1(P)

Manual calibration with fine sensitivity adjustment indicator



### Digital Calibration FS-V1(P)

Next generation unit with new LCD display and digital calibration.



### Terminal Block FS-R3

Terminal block unit for input devices such as sensors other than 01 series or limit switches.

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Specifications are subject to change without notice.



KEYENCE CORPORATION OF AMERICA  
Corporate Office  
50 Tice Blvd., Woodcliff Lake, NJ 07677, U.S.A.

**Boston Office**  
Phone: 781-453-2244 Fax: 781-453-2255  
**New Jersey Office**  
Phone: 201-291-4000 Fax: 201-291-8860  
**Pennsylvania Office**  
Phone: 610-768-8993 Fax: 610-337-1067  
**Charlotte Office**  
Phone: 704-423-0070 Fax: 704-423-0066

**Atlanta Office**  
Phone: 770-951-1222 Fax: 770-951-1958  
**Tampa Office**  
Phone: 813-998-9886 Fax: 813-998-9887  
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Phone: 216-464-7530 Fax: 216-464-7540  
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**Cincinnati Office**  
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Phone: 317-843-2616 Fax: 317-843-2647  
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Phone: 847-969-0001 Fax: 847-969-0453

**Minneapolis Office**  
Phone: 952-924-9779 Fax: 952-249-9143  
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Phone: 503-699-0500 Fax: 503-699-8400  
**Northern California Office**  
Phone: 925-225-1550 Fax: 925-225-1440  
**Los Angeles Office**  
Phone: 310-851-8635 Fax: 310-851-8681