

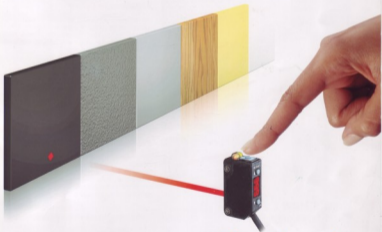
**KEYENCE**

Cat No. PZ3-C2

**NEW** Self-contained  
Photoelectric Sensors  
PZ-V/M Series

# **Smart & Simple** **NEW Photoelectric Sensors**

Unaffected by **Angle, Color, or Dirt**



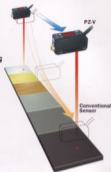
**One-touch**  
fully-automatic calibration

CE

# Unaffected by Angle, Colour, or Dirt

## Introducing Multi-reflective Photoelectric Sensors

Provide Solutions to All the Problems Experienced with Conventional Reflective Types.



### Stable Detection Unaffected by Variations in Colour

With conventional reflective type sensors, the detecting distance greatly varies for some dark-coloured targets such as black rubber. However, the PZ-M/V multi-functional reflective type offer almost the same detecting distance for all targets.

### Excellent Angle Characteristics

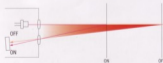
With conventional reflective type sensors, the detecting distance greatly varies when a target is tilted or has a slanted surface. However, the PZ-M/V multi-functional reflective type offer almost the same detecting distance regardless of target orientation.

### Excellent Resistance to Dust and Dirt

With conventional reflective type sensors, the detecting distance varies greatly when the sensor head surface becomes dirty due to harsh environments. However, the PZ-M/V multi-functional reflective type sensors offer almost the same detecting distance even when the surface of the sensor head is dirty.

## Here's How :

PSD (the Position-Sensitive Detector)



Target distance is detected according to the angle of the reflected light beam.

- Unaffected by highly reflective target background
- Stable detection of targets with colours and materials of varying reflectance
- Highly accurate detection of minute objects

A.P.R. circuit (Automatic Power Reinforcement)



Stable detection is possible due to the A.P.R. circuit that automatically adjust the amount of light emitted according to the colour and angle of the target.

# One-touch, fully-automatic calibration allows anyone to adjust the sensor.

## Fully-automatic calibration (To calibrate on a moving target)

Calibration does not require a production delay.



Easy calibration to start operation.



## Two-point calibration (To calibrate on a stationary target)

2 point calibration is used to make minute sensitivity adjustments that cannot be done with conventional automatic calibration.



## Maximum sensitivity setting

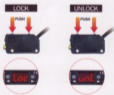
The sensitivity is set to the maximum value so that everything other than the background is detected.



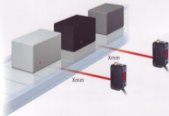
### Key lock function

During facility operation, the key-lock function prevents the setting from being accidentally changed.

Lock the operation buttons to avoid the preset value from being changed accidentally.

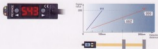


## Digital display allows a visual check of settings



When any problem occurs, the status of the sensor can even be checked by telephone, after the digital value is noted.

Fine sensitivity adjustment is simple.



# More than 40 models available

including thrubeam and retro-reflective types.

## Wide model variation



- NPN/PNP type
- Five types of optional brackets
- Optional slit plate/polarizing filter is available
- M8/M12 connector models available

	Cable Length	Model Name
M8 connector cable	2m	OP-2281
	5m	OP-4088
M12 connector cable	2m	OP-2474
	5m	OP-5781

## High-power custom E-max LED

Unbeatable detecting distance of 10m. All models feature a high-power red LED as the light source to achieve radically high power so unaffected by dust.



## Waterproof

All models of the PZ-M/V, including the reflector of the retro-reflective type conform to IP-67. The sensors can be used in harsh environments where they are subjected to water or other liquids.



## High-intensity indicator

The indicator features a large-size smoke lens and high-intensity LED to dramatically improve visibility. The improved visibility allows you to monitor the sensor operation from a remote position.



## Visible red beam \*

Enables quick and easy alignment of optical axis or positioning of beam spot on the target.

\*Not available on PZ-V4 or PZ-M7 models.



## M3 S.Steel internal thread

To ensure that the device is securely mounted, an M3 thread is integrally moulded within the PZ-V/M in order to double the mounting strength.



## Sensor Variations

**Reflective** (fully-automatic calibration)  
type: 18 models

Detecting distance	Output	Model	Cable/Connector
100mm	NPN	PZ-V11	2m Cable
		PZ-V12	M8 connector
		PZ-V13	M12 connector
	PNP	PZ-V19	2m Cable
		PZ-V20	M8 connector
		PZ-V21	M12 connector
300mm	NPN	PZ-V31	2m Cable
		PZ-V32	M8 connector
		PZ-V33	M12 connector
	PNP	PZ-V39	2m Cable
		PZ-V40	M8 connector
		PZ-V41	M12 connector
500mm <b>NEW</b>	NPN	PZ-V71	2m Cable
		PZ-V72	M8 connector
		PZ-V73	M12 connector
	PNP	PZ-V79	2m Cable
		PZ-V70	M8 connector
		PZ-V71	M12 connector



**Reflective** (manual calibration)  
type: 15 models

Detecting distance	Output	Model	Cable/Connector
100mm	NPN	PZ-M11	2m Cable
		PZ-M12	M8 connector
		PZ-M13	M12 connector
	PNP	PZ-M19	2m Cable
		PZ-M20	M8 connector
		PZ-M21	M12 connector
300mm	NPN	PZ-M31	2m Cable
		PZ-M32	M8 connector
		PZ-M33	M12 connector
	PNP	PZ-M39	2m Cable
		PZ-M40	M8 connector
		PZ-M41	M12 connector
500mm <b>NEW</b>	NPN	PZ-M71	2m Cable
		PZ-M72	M8 connector
		PZ-M73	M12 connector
	PNP	PZ-M79	2m Cable
		PZ-M80	M8 connector
		PZ-M81	M12 connector



# All models designed for toughness and for ease of use.

## Mounting brackets (Optional)



PZ 843  
Standard L-shaped  
mounting bracket



PZ 851  
Small L-shaped  
mounting bracket



PZ 811  
Landscape  
mounting bracket



PZ 823(Left Type)  
PZ 823(Right Type)  
Side-mounting bracket  
L/R



PZ 833(Left Type)  
PZ 833(Right Type)  
Side-mounting landscape  
mounting bracket L/R



PZ 851  
Reverse L-shaped



PZ 861  
Protective



PZ 870(L/R) PZ 4(M7k)  
Small L-shaped  
mounting bracket



PZ 871(L/R) PZ 4(M7k)  
Landscape  
mounting bracket



PZ 870(L/R) PZ 4(M7k)  
Protective



PZ 510(100mm Type) PZ 520(200mm Type)  
Bracket Support Arm

## Polarized Retro-reflective (manual calibration)

type: 6 models



Detecting distance	Output	Model	Cable/Connector
1500mm	NPN	PZ 8A1	3m-Cable
		PZ 8A2	5M-connector
		PZ 8A3	5M2-connector
	PNP	PZ 8B1	3m-Cable
		PZ 8B2	5M-connector
		PZ 8B3	5M2-connector

## Through-beam (manual calibration)

type: 6 models



Detecting distance	Output	Model	Cable/Connector
10000mm	NPN	PZ 8S1	3m-Cable
		PZ 8S2	5M-connector
		PZ 8S3	5M2-connector
	PNP	PZ 8T1	3m-Cable
		PZ 8T2	5M-connector
		PZ 8T3	5M2-connector

## Specifications

Type	Throughbeam	Retroreflective	Multi-reflective					
Model	PZ-M51	PZ-M61 <sup>1</sup>	PZ-M11 <sup>1</sup>	PZ-M31 <sup>1</sup>	PZ-M71 <sup>1</sup>	PZ-V11 <sup>1</sup>	PZ-V31 <sup>1</sup>	PZ-V71 <sup>1</sup>
Detecting distance <sup>2</sup>	10 m	0.1 to 1.5 m (When R-5 reflector is used)	5 to 100 mm (10 x 10 cm white paper)	5 to 300 mm (10 x 10 cm white paper)	5 to 900 mm (30 x 30 cm white paper)	5 to 100 mm (10 x 10 cm white paper)	5 to 300 mm (10 x 10 cm white paper)	20 to 900 mm (30 x 30 cm white paper)
Setting distance	—	—	30 to 100 mm (10 x 10 cm white paper)	40 to 300 mm (10 x 10 cm white paper)	150 to 900 mm (30 x 30 cm white paper)	30 to 100 mm (10 x 10 cm white paper)	40 to 300 mm (10 x 10 cm white paper)	150 to 900 mm (30 x 30 cm white paper)
Light source	Red LED				Infrared LED		Red LED	
Sensitivity adjustment	1-turn trimmer (230°)				Automatic calibration			
Response time	1.5 ms max. (1.2 ms max. with alternate-frequency type, 2 ms max. with M55 only <sup>1</sup> )							
Operation mode	LIGHT-ON/DARK-ON (selectable by wiring)							
Indicators <sup>3</sup>	Output: Orange LED; Stable operation: Green LED							
Digital monitor	—							
Control output	NPN open-collector 100 mA max. (30 V max.), Residual voltage 1 V max. PNP open-collector <sup>4</sup> 100 mA max. (26.4V max.), Residual voltage 1 V max.							
Protective circuit	Reversed polarity protection, Overcurrent protection, Surge absorber							
Power supply	12 to 24 VDC ±10%, Ripple (P-P) 10% max.							
Current consumption	T: 34 mA max. R: 27 mA max.	34 mA max.	30 mA max.	36 mA max.	37 mA max.	37 mA max.	37 mA max.	45 mA max.
Enclosure rating	IP-67							
Ambient light	Incandescent lamp: 5000 lux max., Sunlight: 20000 lux max.							
Ambient temperature	-20 to +55°C (-4 to 130°F), No freezing							
Relative humidity	35 to 85%, No condensation							
Vibration	10 to 55 Hz, 1.5 mm double amplitude in X, Y and Z directions, 2 hours respectively							
Shock	1000 m/s <sup>2</sup> in X, Y and Z directions, six times each							
Housing material	Glass-fiber reinforced resin							
Weight (including 3-m cable)	T: Approx. 50 g R: Approx. 55 g	Approx. 55 g			Approx. 70 g	Approx. 55 g		Approx. 70 g

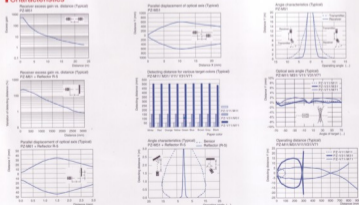
1. The alternate frequency type is indicated by replacing "1" at the end of model name with "0". The models are PZ-M60, M10, M30, M70, V10, V30 and V70. 2. The detecting distance is obtained with the maximum sensitivity. 3. The transmitter of the PZ-M51 features a power indicator only. 4. The PNP output type sensor is suffixed with F after the model name.

## SI-A-4 (Optional)

An optional all plate and/or polarizing filter is available for the throughbeam type sensors (PZ-M51). Model No. A-4 (Set of 3-pieces of all plates and a polarizing filter)

SI width (mm)	SI plate			SI width (mm)	SI plate and polarizing filter		
	0.5	1	2		0.5	1	2
Detecting distance (mm)	500	1000	2000	4000	200	500	1300
Target size (mm)	0.5 X 5	1 X 5	2 X 5	6 X 6	0.5 X 5	1 X 5	2 X 5

## Characteristics





# Mounting bracket (Optional)

PZ-801

Stainless steel  
S4.2



PZ-8701

Stainless steel  
S4.2



PZ-811

Stainless steel  
S4.2



PZ-8711

Stainless steel  
S4.2



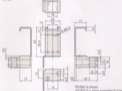
PZ-821/822

Stainless steel  
S4.2



PZ-821/822

Stainless steel  
S4.2



PZ-861

Stainless steel  
S4.0



PZ-8701

Stainless steel  
S4.0



PZ-841

Stainless steel  
S4.2



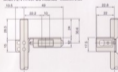
PZ-851

Stainless steel  
S4.2



PZ-801+PZ-831

When PZ-911/921 are installed



PZ-801+PZ-832

When PZ-911/921 are installed

L: 100mm or less

L: 100mm or more

