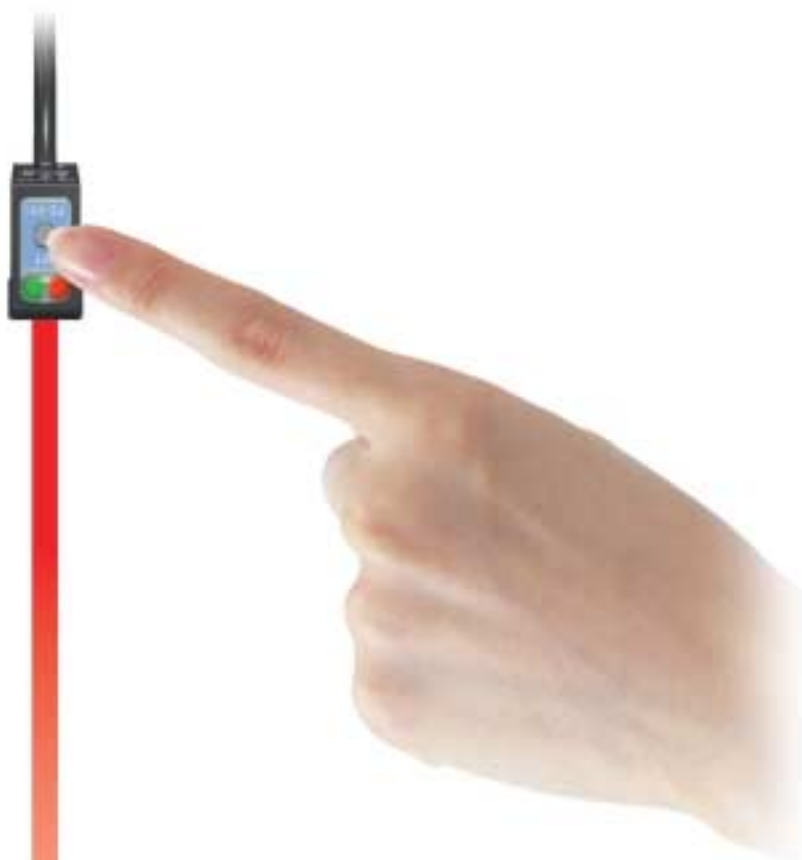


More Stability, *Intelligent Reflective* *Photoelectric Sensor* **Less Trouble**

One-touch



**Can your sensor
detect these targets?**



Unstable Detection Is Unavoidable with Conventional Photoelectric Sensors.



Slanted surfaces will deflect the beam in the wrong direction.

Dark colored targets will not reflect the beam.

Dirty or oily conditions increase the risk of unstable detection.

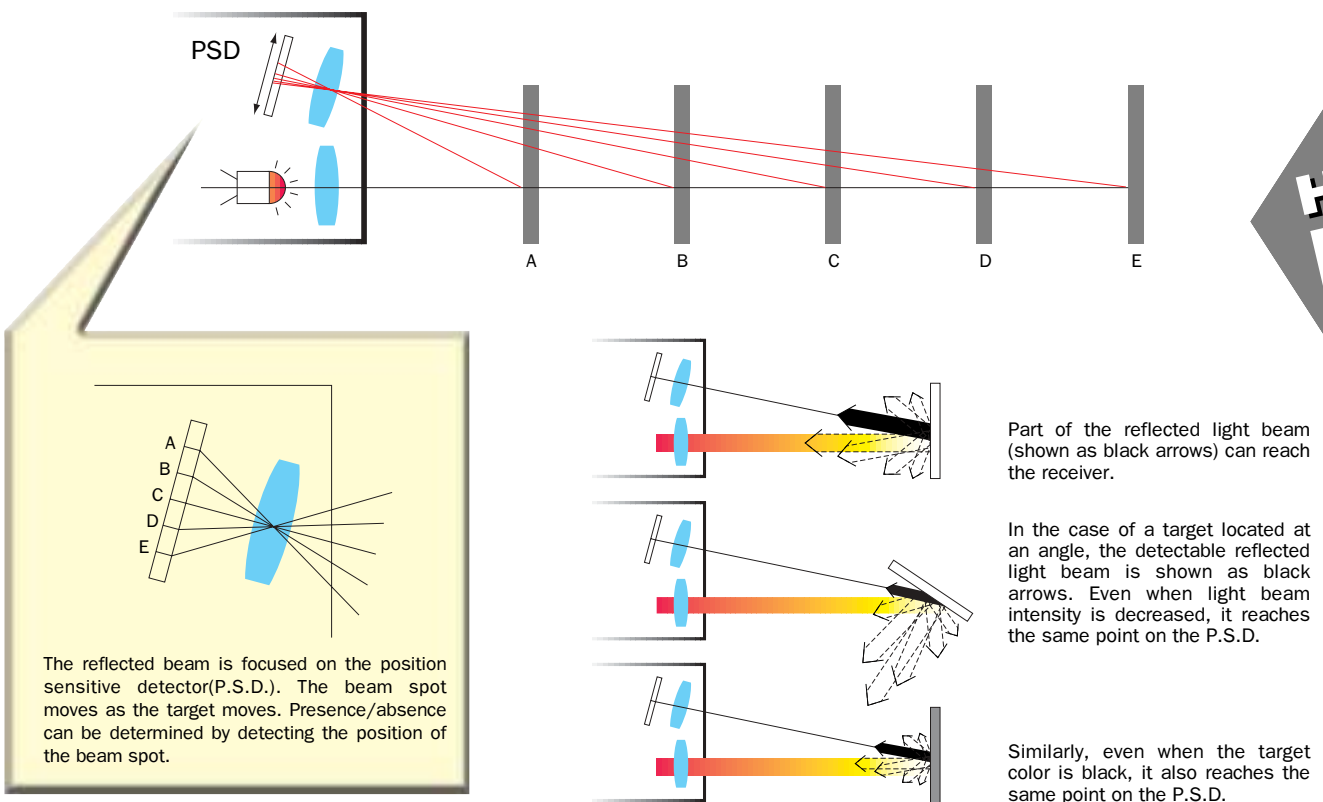
Shiny backgrounds cause targets to be misdected.

Two New Technologies Enable PZ-V/M to Detect More Reliably.

Using P.S.D. & A.P.R. circuit, the PZ-V/M Series is unaffected by a target's color, angle, background, or dirt.

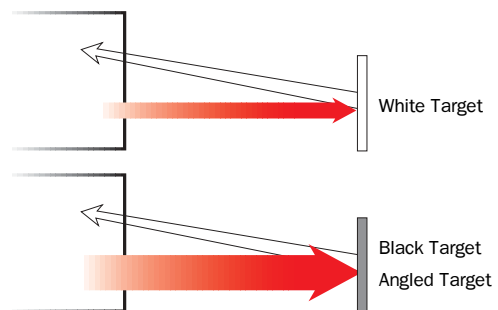
The PZ-V/M Series sets a new standard as the most dependable sensor in harsh environments.

P.S.D. (Position Sensitive Detector)



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

Stable detection is possible due to the A.P.R. circuit which automatically adjusts the amount of light emitted according to the color and angle of the target.



Emitted light intensity is increased when minimum received light intensity cannot be gained.

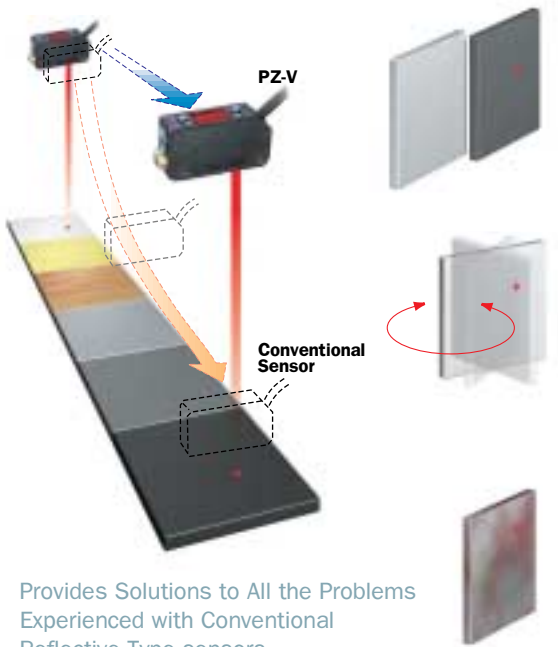
Only the PZ-V/M Series Provides Reliable Detection Without Re-adjusting the Setting.



e's
OW

Unaffected by Angle, Color, or Dirt

Introducing Multi-reflective Photoelectric Sensors



Provides Solutions to All the Problems Experienced with Conventional Reflective Type sensors.

Stable Detection Unaffected by Variations in Color

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

Excellent Angle Characteristics

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

One-touch, Fully-Automatic Calibration

Allows Anyone to Adjust the Sensor.



Easy calibration to start operation.

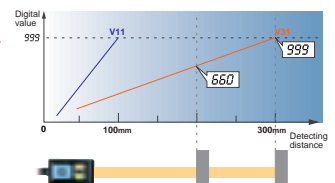
Fully-Automatic Calibration (To calibrate on a moving target)
Calibration does not cause a production delay.

Two-Point Calibration (To calibrate on a stationary target)
Two 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 optimum value so that everything other than the background is detected.

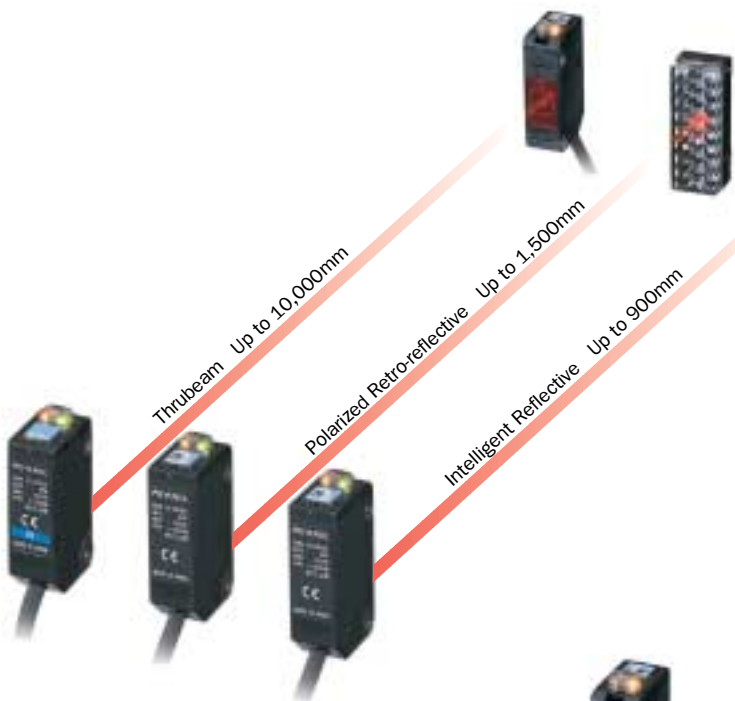
Digital display allows a visual check of settings
If a problem occurs, the status of the sensor can easily be checked by noting the display value.

Fine sensitivity adjustment is simple.



Available in 48 Models

including thru-beam and retro-reflective types.



Visible red beam*

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

Not available on PZ-V7 or PZ-M7* models.



M3 Stainless Steel internal thread

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



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-42187
	10m	OP-42188
M12 connector cable	2m	OP-94734
	5m	OP-97491

High-power custom E-max LED

Unbeatable detecting distance of 10m. Most models feature a high-power red LED light source to achieve radically high power.



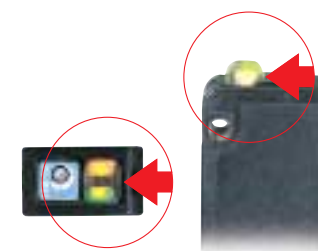
Waterproof

All models are IP-67 rated. 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.



Sensor Variations

Intelligent 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-V11P	2m Cable
PZ-V12P		M8 connector	
300mm	NPN	PZ-V31	2m Cable
		PZ-V32	M8 connector
900mm NEW	NPN	PZ-V71	2m Cable
		PZ-V72	M8 connector
	PNP	PZ-V13P	M12 connector
		PZ-V31P	2m Cable
	PZ-V32P	M8 connector	
	PZ-V33P	M12 connector	
	PNP	PZ-V71P	2m Cable
		PZ-V72P	M8 connector
		PZ-V73P	M12 connector



Intelligent Reflective (manual calibration)
type: 18 models

Detecting distance	Output	Model	Cable/Connector
100mm	NPN	PZ-M11	2m Cable
		PZ-M12	M8 connector
		PZ-M13	M12 connector
	PNP	PZ-M11P	2m Cable
PZ-M12P		M8 connector	
PZ-M13P		M12 connector	
300mm	NPN	PZ-M31	2m Cable
		PZ-M32	M8 connector
	PNP	PZ-M31P	2m Cable
		PZ-M32P	M8 connector
900mm NEW	NPN	PZ-M71	2m Cable
		PZ-M72	M8 connector
	PNP	PZ-M71P	2m Cable
		PZ-M72P	M8 connector
		PZ-M73P	M12 connector



All Models Designed for Toughness and for ease of use.

Mounting brackets (Optional)

					
					
PZ-B41 Standard L-shaped mounting bracket	PZ-B01 Small L-shaped mounting bracket	PZ-B11 Landscape mounting bracket	PZ-B21(Left Type) PZ-B22(Right Type) Side-mounting bracket L/R	PZ-B31(Left Type) PZ-B32(Right Type) Side-mounting landscape mounting bracket L/R	PZ-B51 Reverse L-shaped
					
				PZ-S10(100mm Type) PZ-S20(200mm Type) Bracket Support Arm	
PZ-B61 Protective	PZ-B701(for PZ-V/M7*) Small L-shaped mounting bracket	PZ-B711(for PZ-V/M7*) Landscape mounting bracket	PZ-B761(for PZ-V/M7*) Protective		

Polarized Retro-reflective (manual calibration) type: 6 models



Detecting distance	Output	Model	Cable/Connector
1,500mm	NPN	PZ-M61	2m Cable
		PZ-M62	M8 connector
		PZ-M63	M12 connector
	PNP	PZ-M61P	2m Cable
		PZ-M62P	M8 connector
		PZ-M63P	M12 connector

Thrubeam (manual calibration) type: 6 models



Detecting distance	Output	Model	Cable/Connector
10,000mm	NPN	PZ-M51	2m Cable
		PZ-M52	M8 connector
		PZ-M53	M12 connector
	PNP	PZ-M51P	2m Cable
		PZ-M52P	M8 connector
		PZ-M53P	M12 connector

Specifications

Type	Thrubeam	Retroreflective	Multi-reflective					
Model	PZ-M51	PZ-M61 ¹	PZ-M11 ¹	PZ-M31 ¹	PZ-M71 ¹	PZ-V11 ¹	PZ-V31 ¹	PZ-V71 ¹
Detecting distance ²	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)	20 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 (10 x 10 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 (10 x 10 cm white paper)
Light source	Red LED				Infrared LED	Red LED		Infrared LED
Sensitivity adjustment	1-turn trimmer (230°)					Automatic calibration		
Response time	1.5 ms max.	1 ms max. (1.2 ms max. with alternate-frequency type, 2 ms max. with M65 only ¹)						
Operation mode	LIGHT-ON/DARK-ON (selectable by wiring)							
Indicators ³	Output: Orange LED, Stable operation: Green LED							
Digital monitor	—					7-segment 3-digit red LED		
Control output	NPN open-collector 100 mA max. (30 V max.), Residual voltage 1 V max. PNP open-collector ⁴ 100mA 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: 24 mA max. R: 27 mA max.	34 mA max.	30 mA max.	38 mA max.	37 mA max.	37 mA max.	45 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 158°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 ² in X, Y and Z directions, six times each							
Housing material	Glass-fiber reinforced resin							
Weight (including 2-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 "5". The models are PZ-M65, M15, M35, M75, V15 V35 and V75. 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 P after the model name.

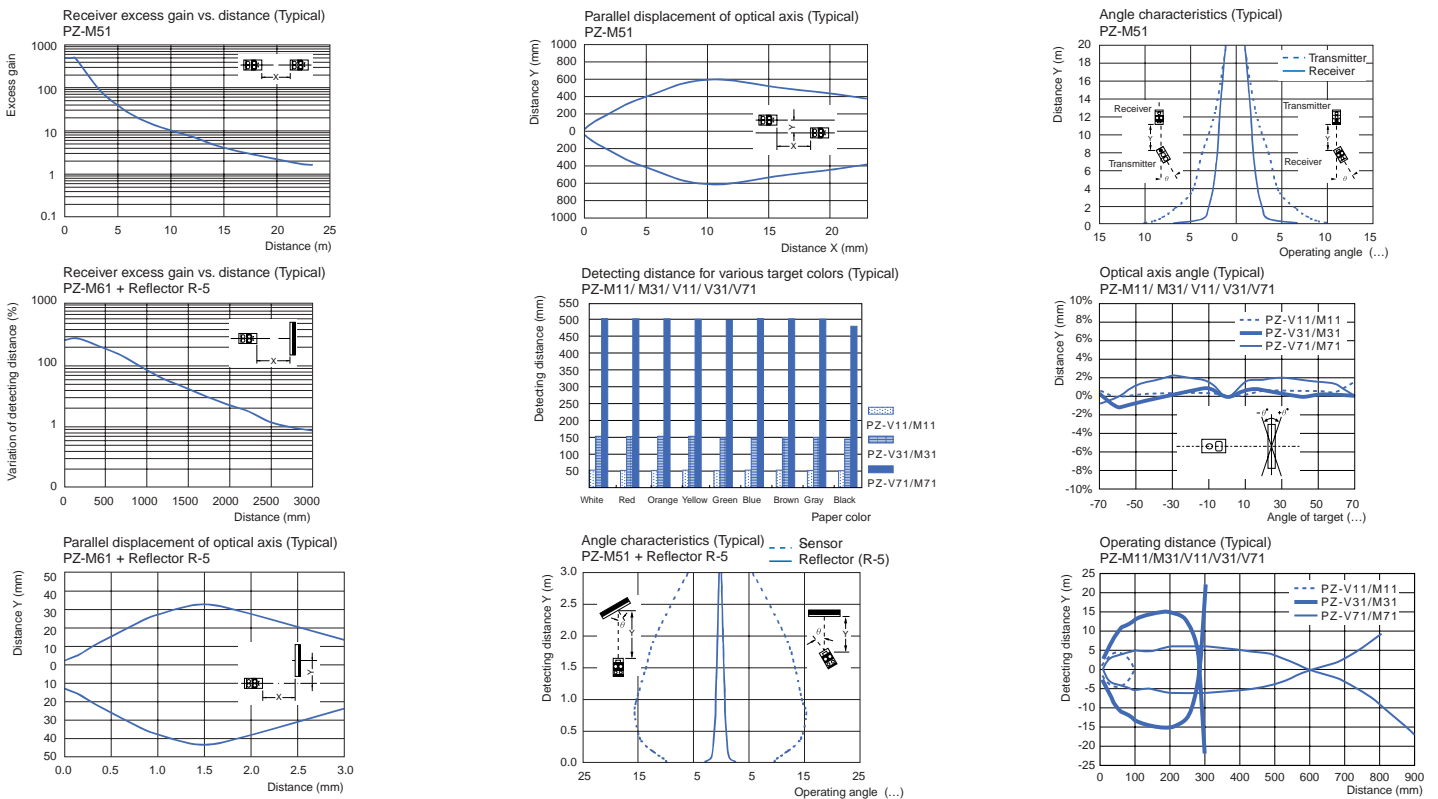
Slit A-4 (Optional)

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

	Slit plate		
Slit width (mm)	0.5	1	2
Detecting distance (mm)	500	1000	2000
Target size (mm)	0.5 X 5	1 X 5	2 X 5

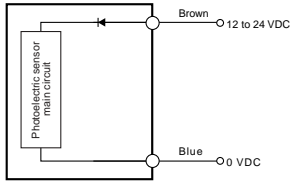
	Slit plate and polarizing filter			
Slit width (mm)	—	0.5	1	2
Detecting distance (mm)	4000	200	600	1300
Target size (mm)	6 X 6	0.5 X 5	1 X 5	2 X 5

Characteristics

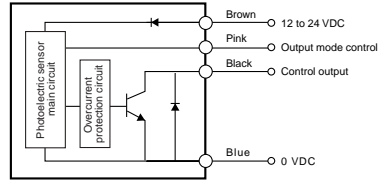


Input/output circuits

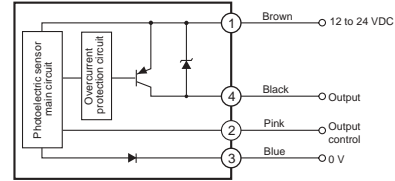
PZ-M51(P) (Transmitter)



PZ-M51 (Receiver) /M61/M11/M31/V11/V31/V71/M71

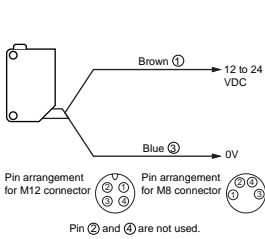


PZ-M51P (Receiver) M61P/M11P/M31P/V11P/V31P/V71P/M71P

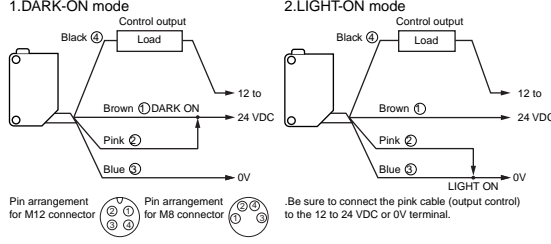


Main circuit

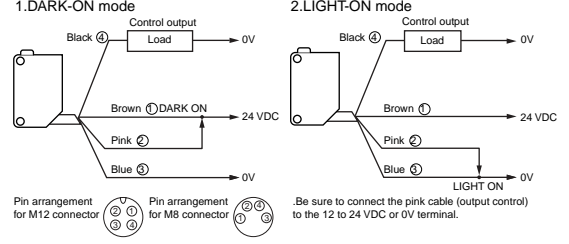
PZ-M51(P) (Transmitter)



PZ-M51(Receiver) /M61/M11/M31/V11/V31/V71/M71



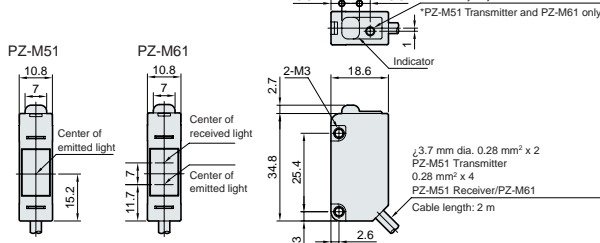
PZ-M51P(Receiver) /M61P/M11P/M31P/V11P/V31P/V71P/M71P



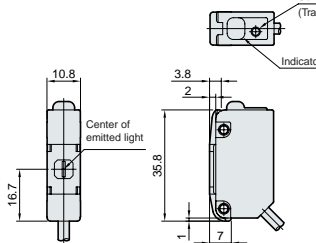
Dimensions

Sensors

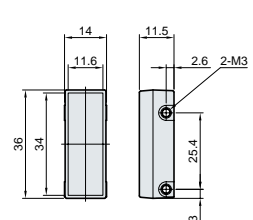
PZ-M51(P)/M61(P)



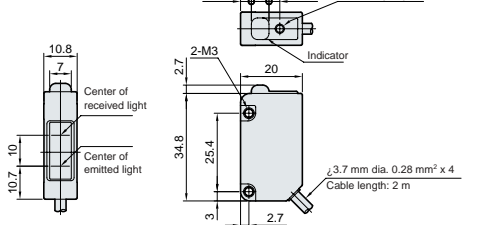
PZ-M51(P)+A-4



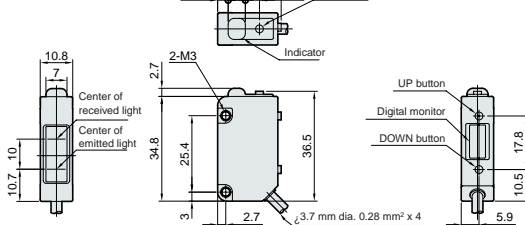
Reflector R-5 (accessory for PZ-M61)



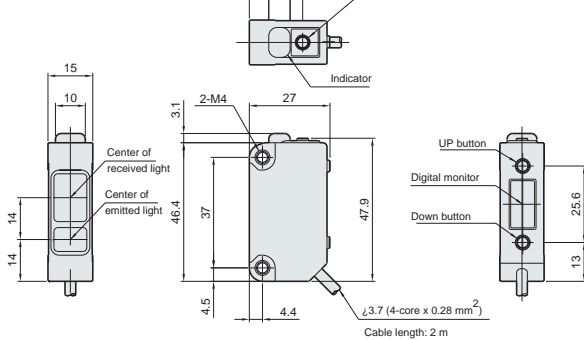
PZ-M11(P)/M31(P)



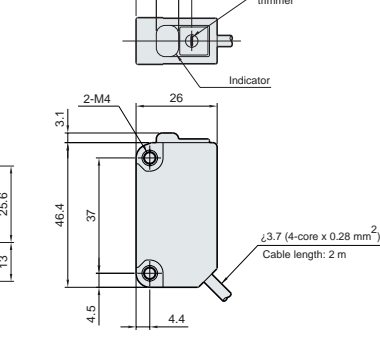
PZ-V11(P)/V31(P)



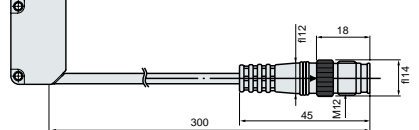
PZ-V71



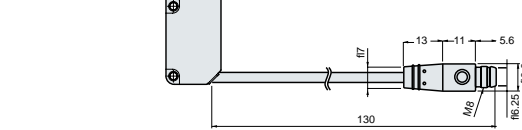
PZ-M71



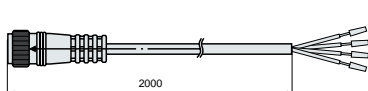
M12 Connector type



M8 Connector type



M12 Connector Cable OP-94734 (Optional)

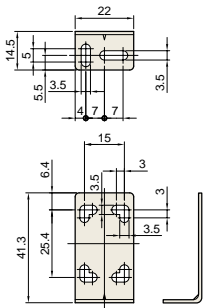


M8 Connector Cable OP-42187 (Optional)

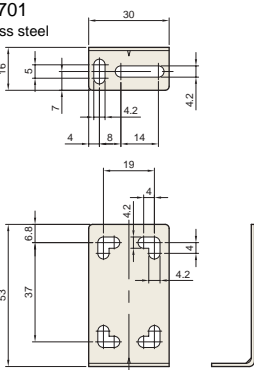


Mounting bracket (Optional)

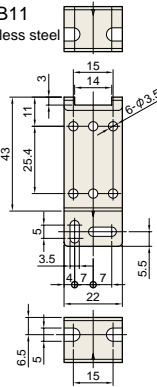
PZ-B01
Stainless steel
t=1.2



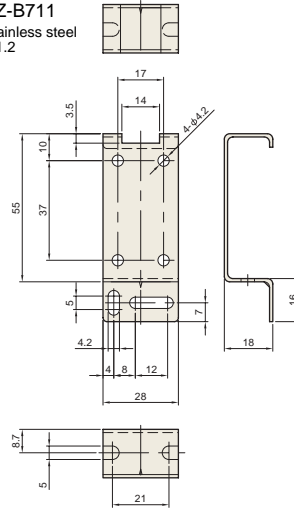
PZ-B701
Stainless steel
t=1.2



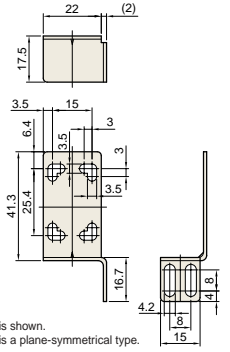
PZ-B11
Stainless steel
t=1.2



PZ-B711
Stainless steel
t=1.2

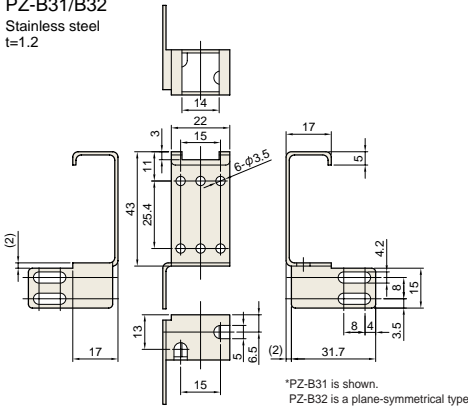


PZ-B21/B22
Stainless steel
t=1.2



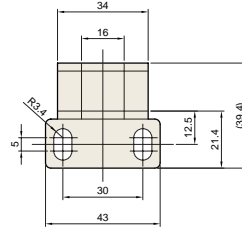
*PZ-B21 is shown.
PZ-B22 is a plane-symmetrical type.

PZ-B31/B32
Stainless steel
t=1.2

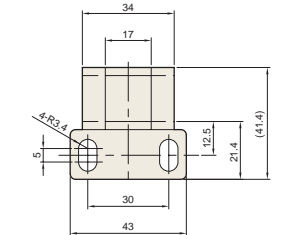


*PZ-B31 is shown.
PZ-B32 is a plane-symmetrical type.

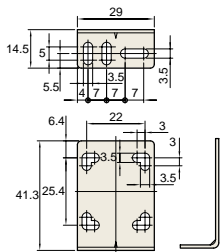
PZ-B61
Stainless steel
t=3.0



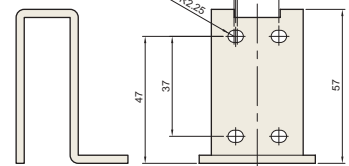
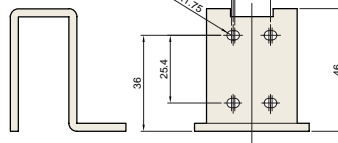
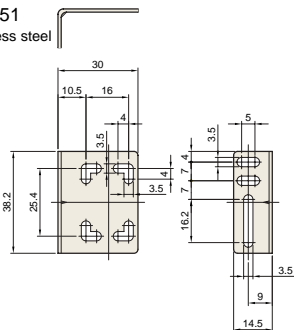
PZ-B761
Stainless steel
t=3.0



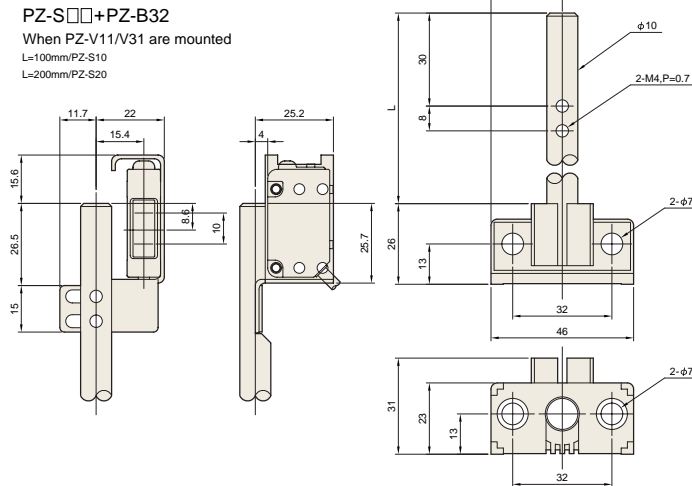
PZ-B41
Stainless steel
t=1.2



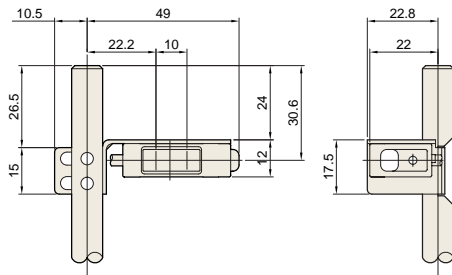
PZ-B51
Stainless steel
t=1.2



PZ-S□□+PZ-B32
When PZ-V11/V31 are mounted
L=100mm/PZ-S10
L=200mm/PZ-S20



PZ-S□□+PZ-B31
When PZ-V11/V31 are mounted
L=100mm/PZ-S10
L=200mm/PZ-S20



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