Low cost/Small type

Z3 series

New industry standard sensor

- **Longest sensing distance in class at 25 m***
- **Significantly reduced dead zone**
- **Indicators visible from any angle**

***Red LED type, with through-beam type**

FASTUS

FASTUS is a product brand of Optex FA.

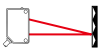
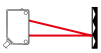
Related products

Laser type
Z-L
● P.272

Sensor head for amplifier separate type
Z3R-Q
● P.404

BGS type
BGS-Z
● P.326

Selection table

Type	Shape	Sensing distance	Model (Models in parentheses are connector types)	
			NPN type	PNP type
Through-beam		25 m	**Z3T-2500N** (Z3T-2500CN4)	**Z3T-2500P** (Z3T-2500CP4)
Retro-reflective		0.01 to 4 m	**Z3R-400N** (Z3R-400CN4)	**Z3R-400P** (Z3R-400CP4)
Diffuse-reflective		0 to 1 m	**Z3D-100N** (Z3D-100CN4)	**Z3D-100P** (Z3D-100CP4)
Limited diffuse reflective		10 to 90 mm	**Z3D-L09N** (Z3D-L09CN4)	**Z3D-L09P** (Z3D-L09CP4)
Wide angle diffuse reflective		1 to 200 mm	**Z3D-W20N** (Z3D-W20CN4)	**Z3D-W20P** (Z3D-W20CP4)
Transparent object detection		0.01 to 2 m	**Z3R-Q200N** (Z3R-Q200CN4) ● P.404	**Z3R-Q200P** (Z3R-Q200CP4) ● P.404

- A mounting bracket is not included. If necessary, please purchase separately.
- A reflector is not included with the retro-reflective type. Please purchase an optional reflector separately.
- For the connector type, please purchase an optional connector cable separately.
- For the sensor head for amplifier separate type, please refer to P.404.

Options/Accessories

Reflector

Standard
V-61
60.9 × 50.9 mm
Sensing distance:
Z3R-400□
0.01 to 4 m

Small type
V-42
42 × 35 mm
Sensing distance:
Z3R-400□
0.01 to 2.4 m

Vertical type
P45A
54 × 12.4 mm
Sensing distance:
Z3R-400□
0.01 to 1.4 m

Side mount
P25
32 × 14 mm
Sensing distance:
Z3R-400□
0.01 to 1.6 m

Ultra-small
V-30
43 × 23 mm
Sensing distance:
Z3R-400□
0.01 to 2.2 m

Reflective sheet

Diamond grade sheet
Sensing distance:
Z3R-400□
0.1 to 1 m
100 × 100 mm
(adhesive type)

Connector cables

Straight

JCN-S
Cable length: 2 m
JCN-5S
Cable length: 5 m
JCN-10S
Cable length: 10 m

L-shaped

JCN-L
Cable length: 2 m
JCN-5L
Cable length: 5 m
JCN-10L
Cable length: 10 m

World-renowned Z series basic photoelectric sensors continue to evolve.

Total volume of Z series photoelectric sensors sold around the world exceeds 3 million units.
The FASTUS Z3 series built-in amplifier photoelectric sensors with improved detection performance is the successor of the easy-to-use Z series.
This series takes the functionality, practicality and cost performance required of general purpose photoelectric sensors to the next level.

Sensing distance
Longest in class **25 m**

*Red LED type, with through-beam type

- Features an industry standard mounting pitch of 25.4 mm
- Indicators visible from any angle

Mounting bracket

For cable type
Floor-mounted

BEF-W100-B

For connector type
Back-mounted

BEF-W100-A
Cannot be used with connector cable JCN-□L.

Protective mounting bracket

LK series

LK-S01

LK-S02

- Ultra-durable 2 mm thick type
- Rust-resistant stainless steel
- Sensor is firmly secured using M3 Hex socket head cap screws
- The bracket is also firmly secured using M6 screws

Slit mask

Slit mask for through-beam type (adhesive type)

BL-W100
Shipped with two of each slit width (0.5 mm, 1 mm, 2 mm).

Stainless steel slit mask

Stainless steel slit mask for through-beam type

BL-100-M1-10pcs
BL-100-M05
10 pieces of slit masks are shipped for M1 with a slit width of 1 mm, and 1 piece of slit mask is shipped for M05 with a slit width of 0.5 mm.

Anti-interference filter

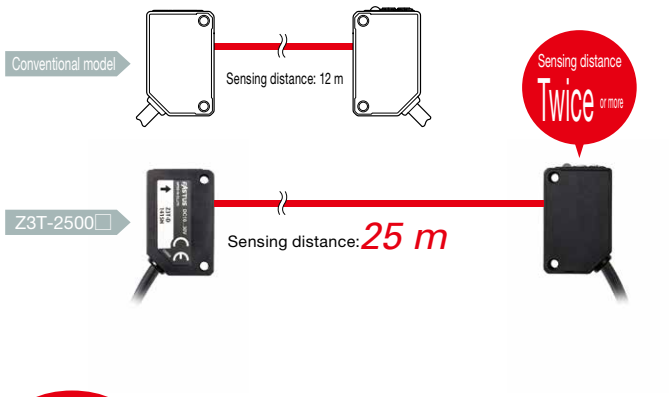
For through-beam type (4 pieces)

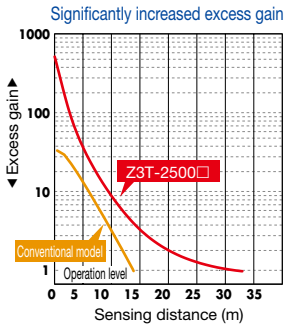
BL-100-POLF

Features

High power LED provides stable detection

The Z3 series through-beam type sensor has a 25 m sensing distance, the longest in its class.
The margin for the receiving light quantity has been increased significantly, helping the sensor overcome interference from dust or other fine particles.





Plus

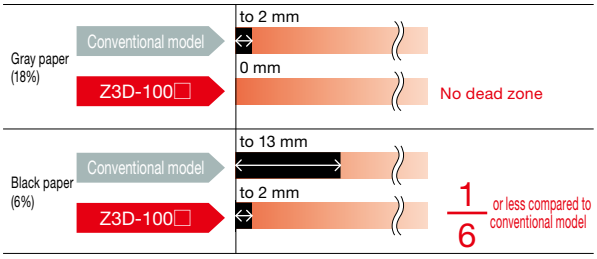
- Easy optical axis adjustment thanks to a large spot size with good visibility
- 4 element LED helps reduce emitting power degradation during long-term use

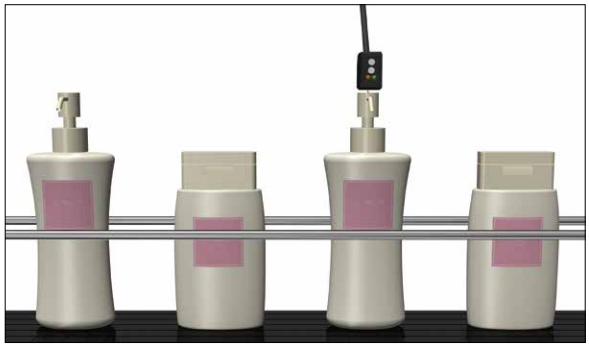
Through-beam type emitter

Significantly reduced dead zone

The diffuse-reflective type features an optimized optical receiver structure that successfully minimizes the dead zone in front of the lens.
This makes it easier to detect workpieces with a low reflectivity that pass close to the sensor, even on lines that convey workpieces of varying heights.

Close-range dead zone (typical value)



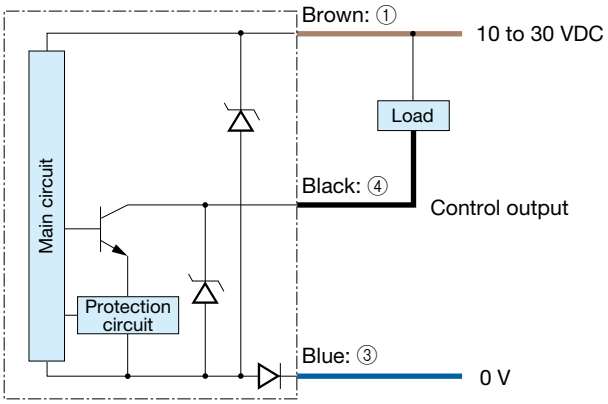


Type			Through-beam type	Retro-reflective type	Diffuse-reflective type	Limited diffuse reflective type	Wide angle diffuse reflective type
Model	NPN	Cable type	**Z3T-2500N**	**Z3R-400N**	**Z3D-100N**	**Z3D-L09N**	**Z3D-W20N**
		Connector type	**Z3T-2500CN4**	**Z3R-400CN4**	**Z3D-100CN4**	**Z3D-L09CN4**	**Z3D-W20CN4**
	PNP	Cable type	**Z3T-2500P**	**Z3R-400P**	**Z3D-100P**	**Z3D-L09P**	**Z3D-W20P**
		Connector type	**Z3T-2500CP4**	**Z3R-400CP4**	**Z3D-100CP4**	**Z3D-L09CP4**	**Z3D-W20CP4**
Sensing distance			25 m	0.01 to 4 m*1	0 to 1 m*2	10 to 90 mm*3	1 to 200 mm*4
Light source			4 element red LED, wavelength 632 nm				
Spot size			Approx. ø1800 mm (at distance of 25 m)	Approx. ø280 mm (at distance of 4 m)	Approx. ø75 mm (at distance of 1 m)	Approx. ø8 mm (at distance of 90 mm)	Approx. □45 mm (at distance of 50 mm)
Response time			500 µs or less				
Hysteresis			—	—	20% Max.	10% Max.	20% Max.
Distance adjustment			1-turn potentiometer				
Indicators			Output indicator: orange LED, Stability indicator: green LED (no indicator equipped on through-beam type emitter)				
Control output			NPN/PNP type Open collector Max. 100 mA/30 VDC				
Output mode			Light ON / Dark ON selection switch				
Connection type			Cable type: Cable length: 2 m ø3.8 mm / Connector type: M8, 4-pin				
Rating	Supply voltage		10 to 30 VDC, including 10% ripple (p-p)				
	Current consumption		Emitter: 20 mA or less Receiver: 15 mA or less	20 mA or less	25 mA or less	20 mA or less	20 mA or less
Applicable regulations			EMC directive (2004/108/EC)				
Applicable standards			EN 60947-5-2				
Company standards			Noise resistance: Feilen Level 3 cleared				
Environmental resistance	Ambient temperature/humidity		-25 to +55°C (no freezing) / 35 to 85% RH (no condensation)				
	Ambient illuminance		Sunlight: 10,000 lx Incandescent lamp: 3,000 lx				
	Vibration resistance		10 to 55 Hz; double amplitude 1.5 mm; 2 hours in each of the X, Y, and Z directions				
	Shock resistance		Approx. 100 G (1000 m/s^2); 3 times in each of the X, Y, and Z directions				
	Degree of protection		IP67				
Material			Housing: ABS, Front cover: PMMA				
Weight without cable			Approx. 10 g				
Included accessories			Instruction manual				

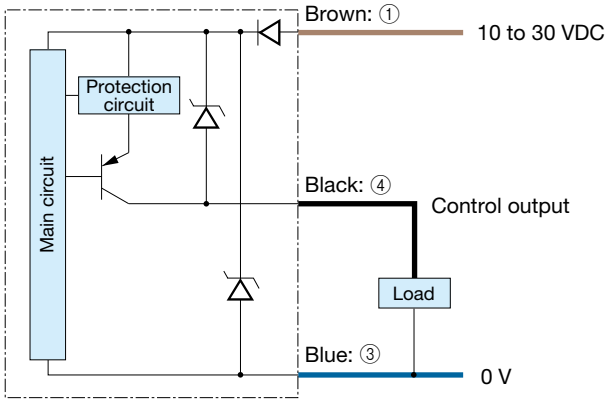
*1. With the V-61 reflector
*2. Using a 200 × 200 mm white sheet of paper.
*3. Using a 100 × 100 mm white sheet of paper.
*4. Using a 300 × 300 mm white sheet of paper.
● Specifications are subject to change without prior notice for product improvement purposes.

Output circuit diagram

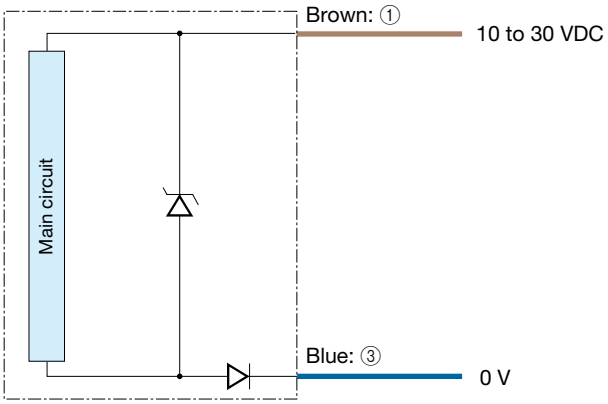
NPN output type



PNP output type

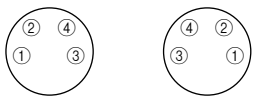


Through-beam type emitter



Connector type

(Pin configuration) Sensor side Connector cable side



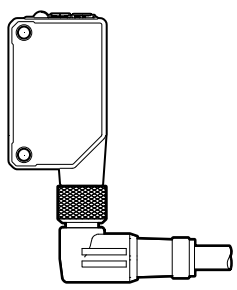
① 10 to 30 VDC
② —
③ 0 V
④ Control output

Connecting

■ ① to ④ are connector pin No.

Notes

- When using a switching regulator for the power supply, be sure to ground the frame ground terminal.
- Because wiring sensor wires with high-voltage wires or power supply wires can result in malfunctions due to noise, which can cause damage, make sure to wire separately.
- Avoid using the transient state while the power is on (approx. 100 ms).
- The connector direction is fixed as the drawing below when you use L-shaped connector cable. Be aware that rotation is not possible.

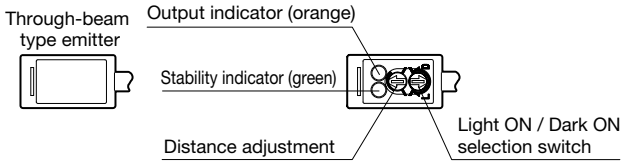


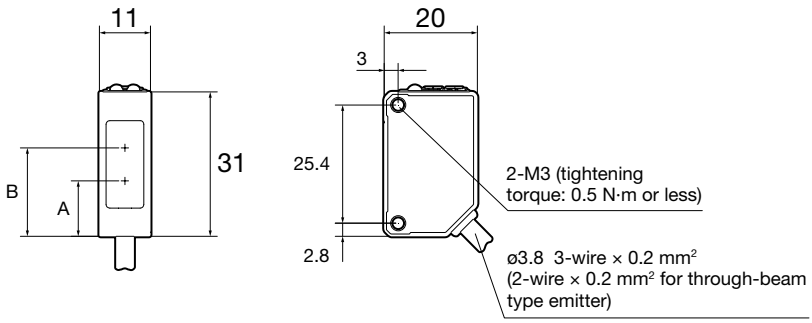
Dimensions

Sensor

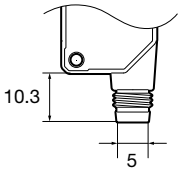
(Unit: mm)

Cable type





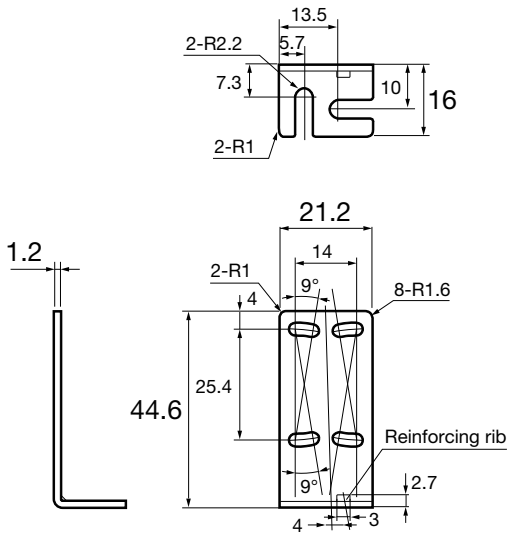
Connector type



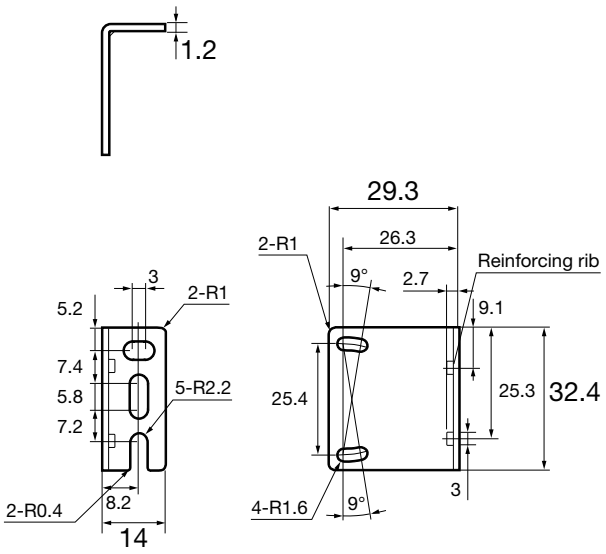
Detection type	A: optical axis of emitter	B: optical axis of receiver
Through-beam type	–	19 (optical axis of emitter/receiver)
Diffuse-reflective type	11.9	19
Retro-reflective type		
Wide angle diffuse reflective type		18.8
Limited diffuse reflective type		

Mounting bracket

BEF-W100-B



BEF-W100-A

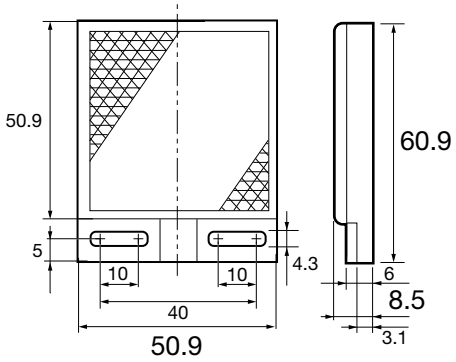


Dimensions

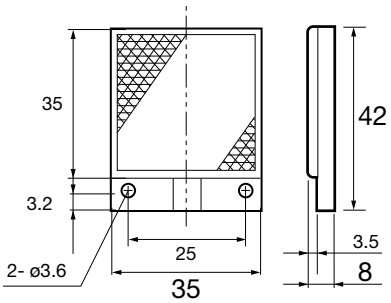
Reflector

(Unit: mm)

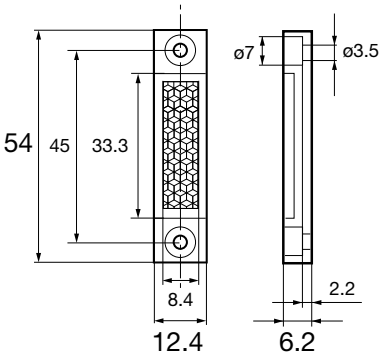
V-61: Standard type reflector



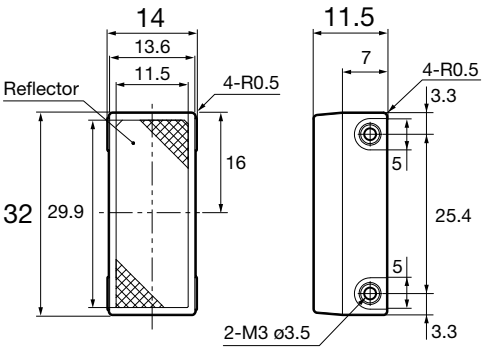
V-42: Small reflector



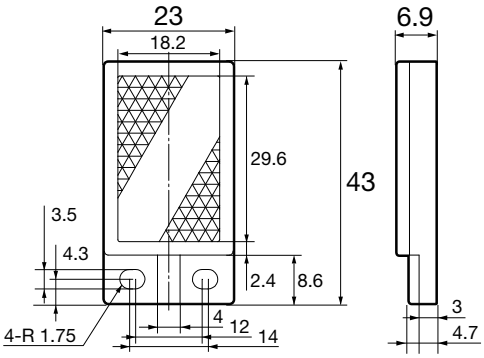
P45A: Vertical type reflector



P25: Side mount reflector

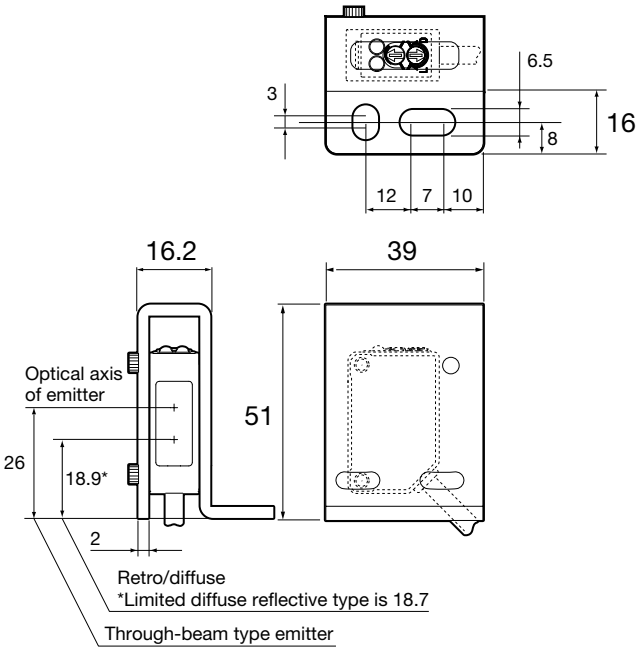


V-30: Ultra-small reflector

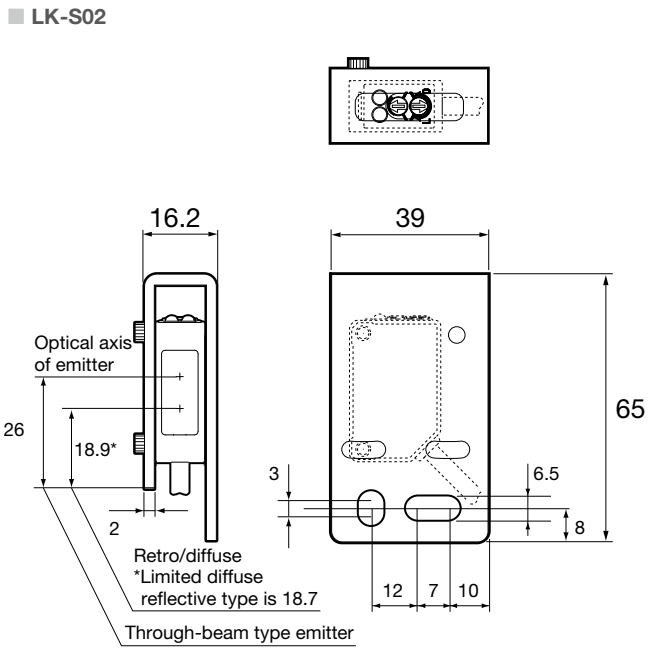


Protective mounting bracket

LK-S01



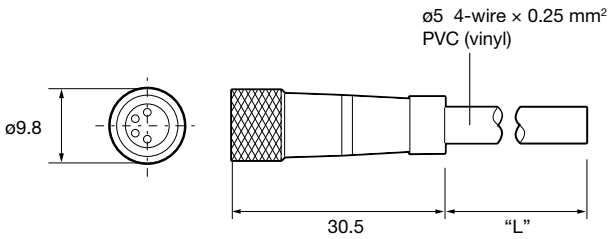
LK-S02



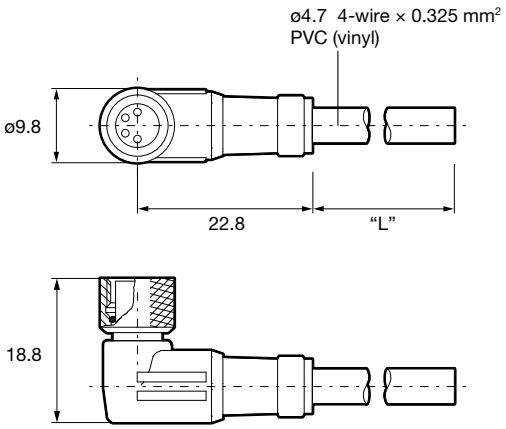
Connector cable

(Unit: mm)

JCN-S, JCN-5S, JCN-10S

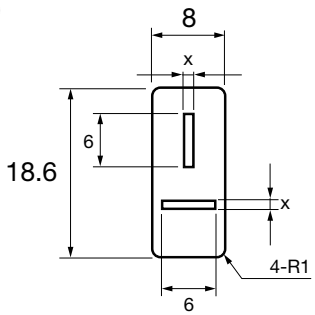


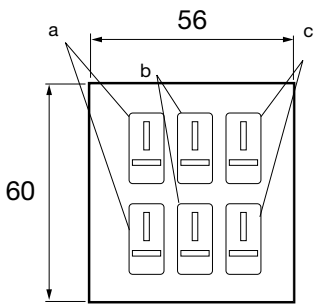
JCN-L, JCN-5L, JCN-10L



Slit mask

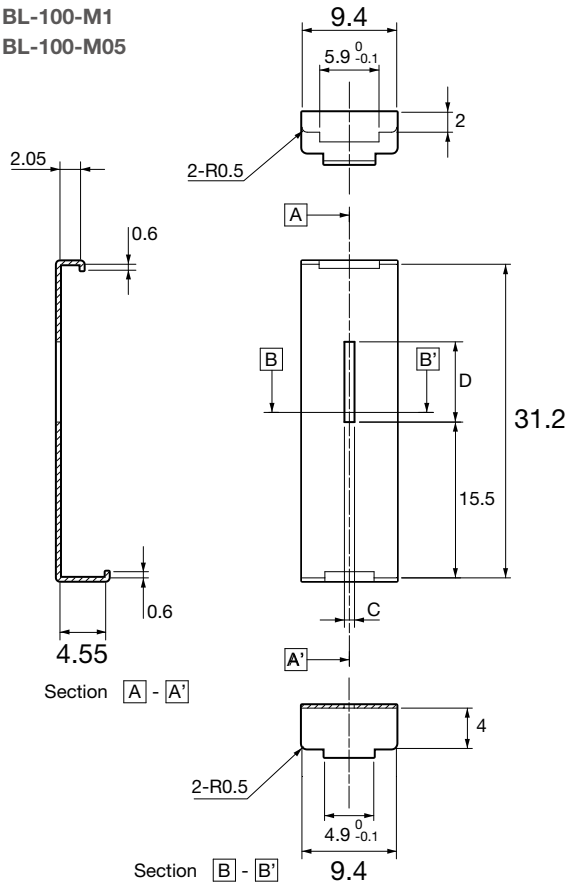
BL-W100





	a	b	c
Slit width X	0.5	1	2
Sensing distance	2 m	4 m	10 m

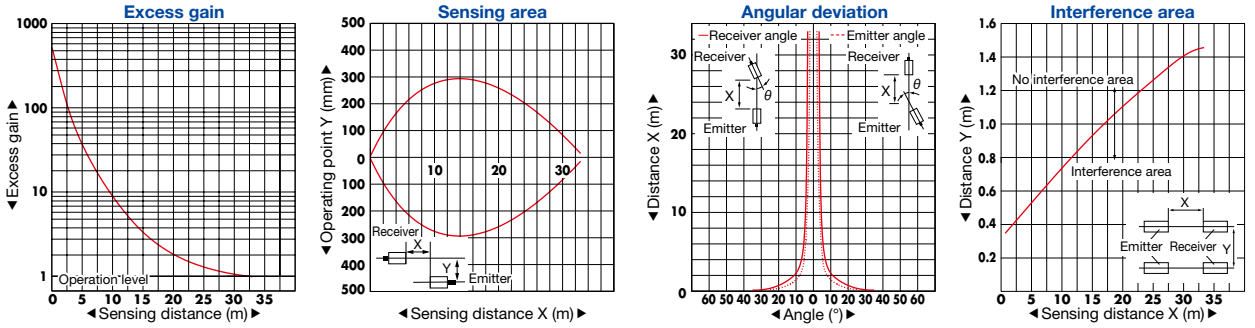
BL-100-M1
BL-100-M05



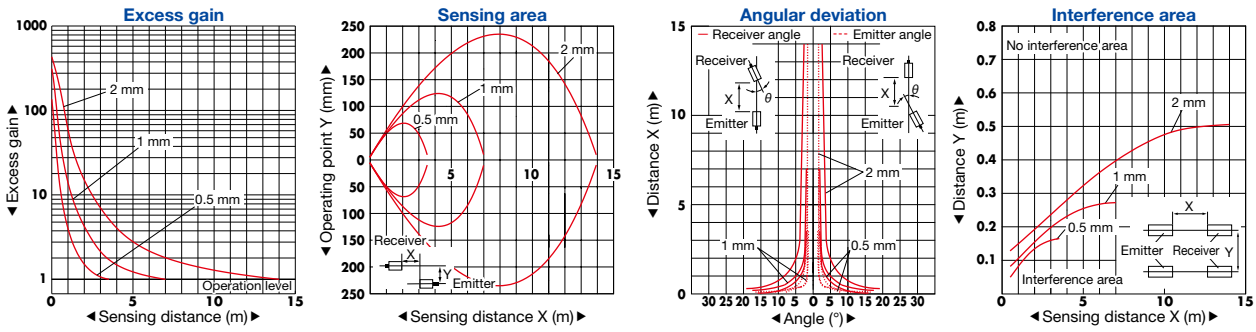
	Slit width C	Slit length D	Sensing distance
BL-100-M1	1.0	8	4 m
BL-100-M05	0.5	6	2 m

Typical characteristic data

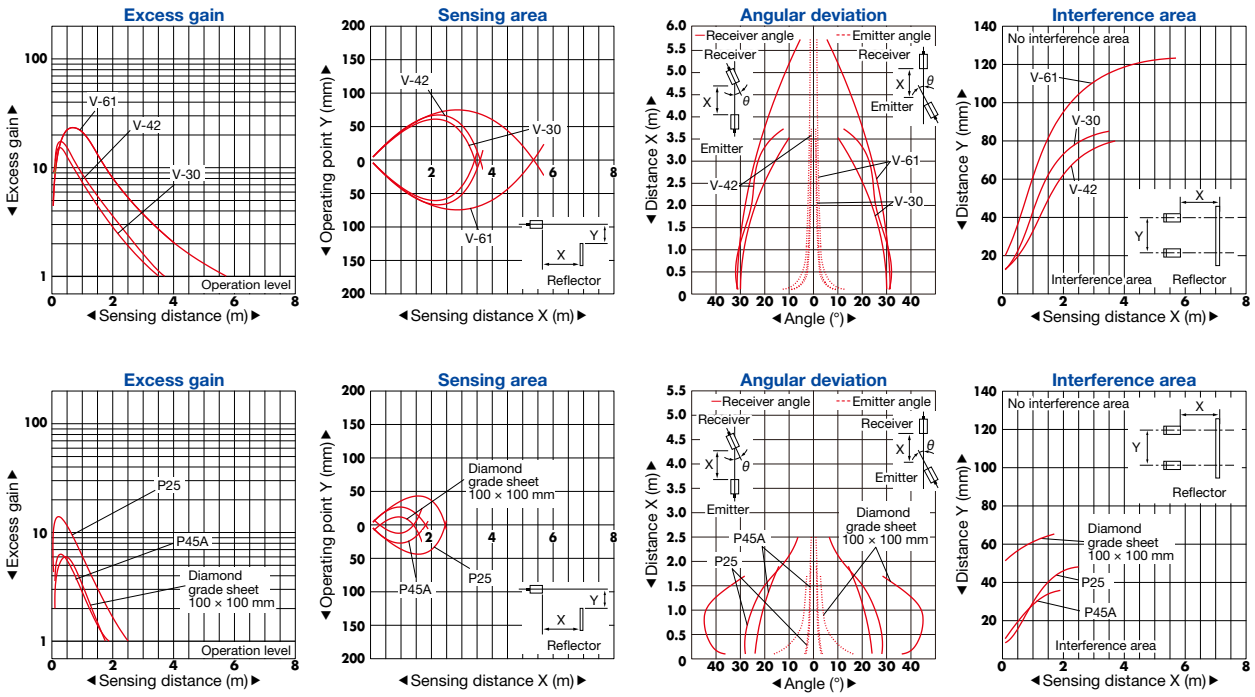
Z3T-2500□



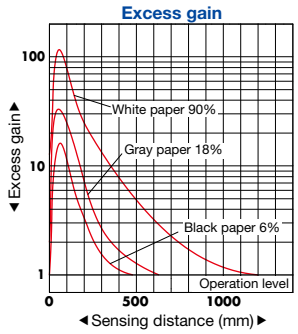
When slit mask is attached Z3T-2500□

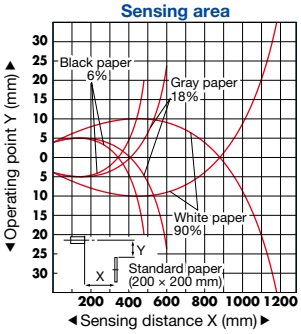


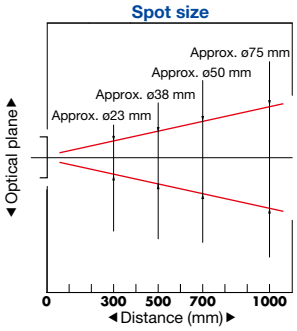
Z3R-400□

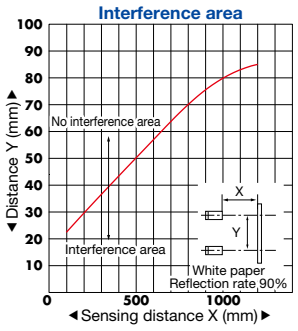


Z3D-100□

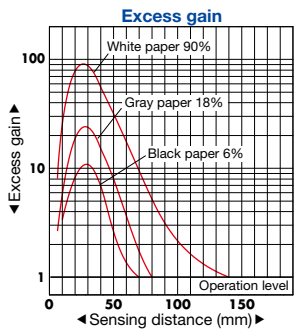


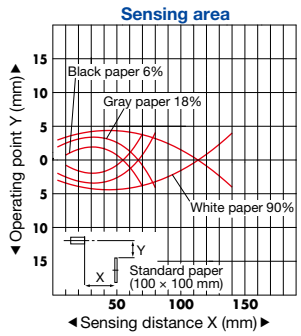


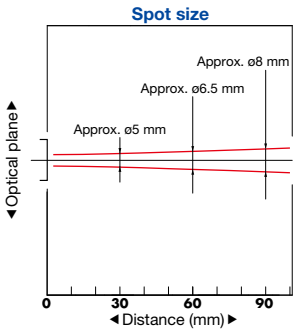


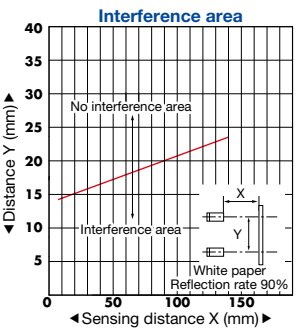


Z3D-L09□









Z3D-W20□