

Amplifier built-in type

Z-L series



Industry standard sized laser sensors with built-in amplifiers

- | Same low cost as LED light source types
- | Laser class 1 for through-beam type
- | Outstanding environmental resistance

Related products	BGS type BGS-ZL ● P.326	Amplifier separate type DS ● P.280	LED light source Z3 ● P.148
-------------------------	---	--	---

Selection table

Type	Shape	Sensing distance (Adjustable distance range shown in parentheses)	Light source	Model (Models in parentheses are connector types)	
				NPN type	PNP type
Laser Through-beam			Class 1 laser	ZT-L3000N (ZT-L3000CN)	ZT-L3000P (ZT-L3000CP)
Laser Retro-reflective			Class 2 laser	ZR-L1000N (ZR-L1000CN)	ZR-L1000P (ZR-L1000CP)
Laser Diffuse-reflective			Class 2 laser	ZD-L40N (ZD-L40CN)	ZD-L40P (ZD-L40CP)
Laser BGS			Class 1 laser	BGS-ZL10N (BGS-ZL10CN) ● P.326	BGS-ZL10P (BGS-ZL10CP) ● P.326
				BGS-ZL30N (BGS-ZL30CN) ● P.326	BGS-ZL30P (BGS-ZL30CP) ● P.326

● For the connector type, please purchase an optional JCN series connector cable.

Options/Accessories

Reflector

Standard P250F
Sensing distance: 0.2 to 10 m
61 × 51 mm
Included with retro-reflective type



Small (optional) PL20F
Sensing distance: 0.2 to 8 m
60 × 20 mm



Ultra-small (optional) PL10F
Sensing distance: 0.2 to 7 m
32 × 20 mm



Protective mounting bracket

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



Connector cables

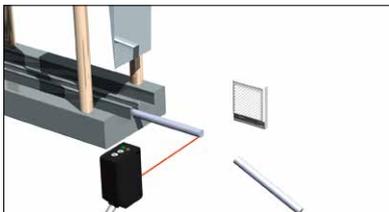
Straight

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

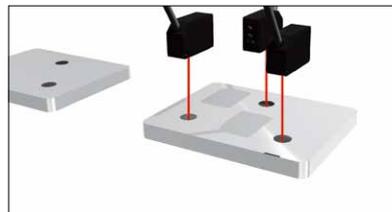
L-shaped

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

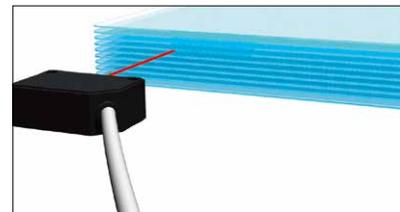
Parts cut sizing



Hole drilling detection for metal parts



Liquid crystal glass mapping

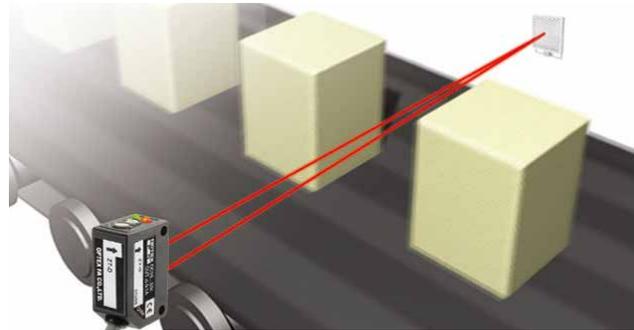


Small spot size that can be achieved by lasers
Approx. $\varnothing 2$ mm spot size at a distance of 400 mm (diffuse-reflective type)
 Optimal for applications that in which small object detection and high repeat accuracy are required.



For high-speed lines
Response time: 250 μ s

The laser sensor provides a top class response time. This feature makes detection in high speed production line possible.



Outstanding environmental resistance

Degree of protection: IP67, Shock resistance: 50 G
 Its integrally molded structure enables all models to conform to IP67 and achieve a shock resistance up to 50 G. It doesn't break even when wet and can be used in locations where vibrations are generated.



Standard specification size

25.4 mm standard pitch
 Features an industry standard pitch of 25.4 mm.



Photoelectric Sensors

Specialized Photoelectric Sensors

Laser Displacement Sensors

Laser Sensors

Z-L

DS

D

Specifications

Type		Through-beam type	Retro-reflective type	Diffuse-reflective type	
Model	NPN	Cable type	ZT-L3000N	ZR-L1000N	ZD-L40N
		Connector type	ZT-L3000CN	ZR-L1000CN	ZD-L40CN
	PNP	Cable type	ZT-L3000P	ZR-L1000P	ZD-L40P
		Connector type	ZT-L3000CP	ZR-L1000CP	ZD-L40CP
Sensing distance		30 m	0.2 to 10 m ¹	400 mm ²	
Light source		Red semiconductor laser Class 1 (IEC/JIS) ^{*3} Wavelength: 650 nm, Maximum output: 390 μW	Red semiconductor laser Class 2 (IEC/JIS) ^{*3} Wavelength: 650 nm, Maximum output: 3 mW		
Spot size (at focal distance)		Approx. ø2 mm ⁴ Distance: 2 m (at ordinal temperatures)	Approx. ø2.5 mm ⁴ Distance: 2 m (at ordinal temperatures)	Approx. ø2 mm ⁴ Distance: 400 mm (at ordinal temperatures)	
Response time		250 μs or less			
Hysteresis		—		20%	
Distance adjustment		1-turn potentiometer			
Indicators		Output indicator (orange LED), Laser emission indicator (green LED: stability indicator for through-beam type receiver)			
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: 15 mA or less Receiver: 15 mA or less	20 mA or less		
Applicable regulations		EMC directive (2004/108/EC) / FDA regulations (21 CFR 1040.10)			
Applicable standards		EN 60947-5-2			
Company standards		Noise resistance: Feilen Level 3 cleared			
Environmental resistance	Ambient temperature/humidity	-10 to +50°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. 50 G (500 m/s ²); 3 times in each of the X, Y, and Z directions			
	Degree of protection	IP67			
Material		Housing: ABS (glassfiber reinforced), Front cover: PMMA			
Weight without cable		Approx. 20 g	Approx. 10 g		
Included accessories		Mounting bracket: BEF-W100-B ^{*5}	Mounting bracket: BEF-W100-B ^{*5} Reflector: P250F	Mounting bracket: BEF-W100-B ^{*5}	

*1. With P250F reflector *2. 100 mm × 100 mm white paper *3. Classified as class II in the US FDA standards

*4. Defined with center strength 1/e² (13.5%).

There may be light leakage outside of the specified spot size. The sensor may be affected when there is a highly reflective object close to the target area.

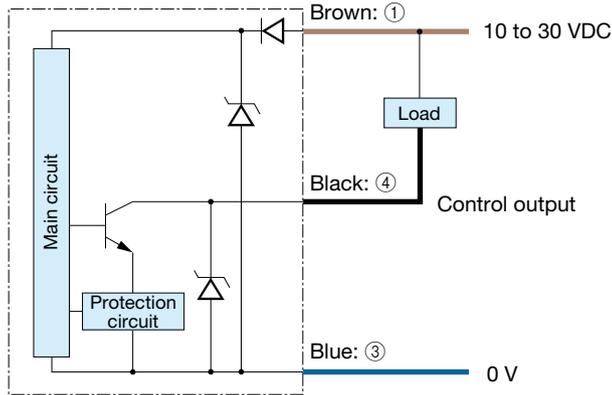
*5. Mounting bracket BEF-W100-A is included with the connector type.

● Specifications are subject to change without prior notice for product improvement purposes.

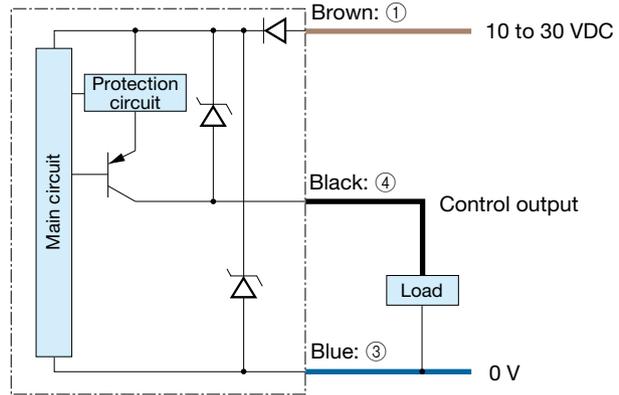
Output circuit diagram

Retro-reflective type/Diffuse-reflective type

■ NPN output type

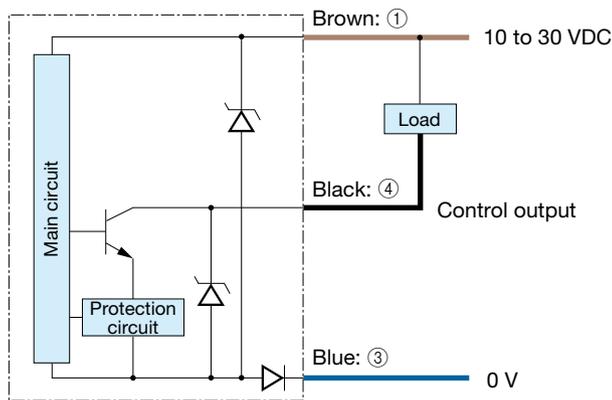


■ PNP output type

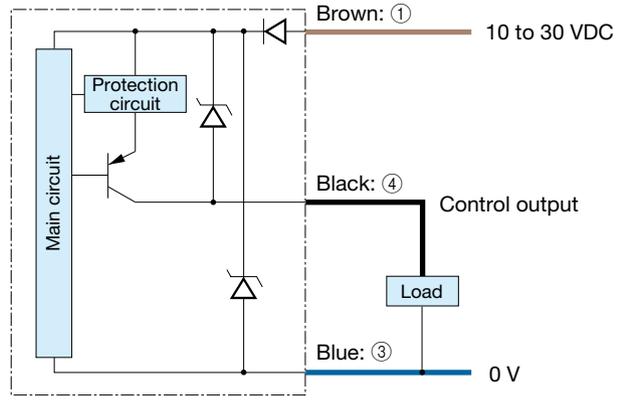


Through-beam type receiver

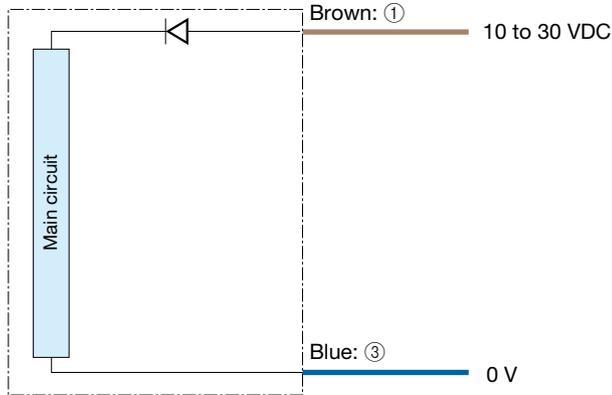
■ NPN output type



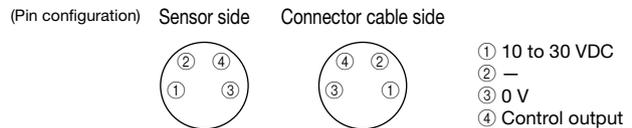
■ PNP output type



Through-beam type emitter



■ Connector type

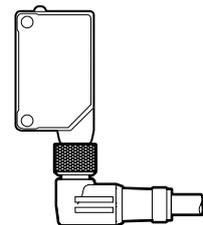


Connecting

■ 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.
- Avoid wiring in parallel with or in the same piping as high-voltage wires or power lines. Doing so may lead to malfunctions caused by noise. Also, shorten the power supply and signal wires as much as possible.
- Avoid using the transient state while the power is on (approx. 100 ms).
- The connector direction is fixed as in the drawing to the right when you use L-shaped connector cable. Be aware that rotation is not possible.

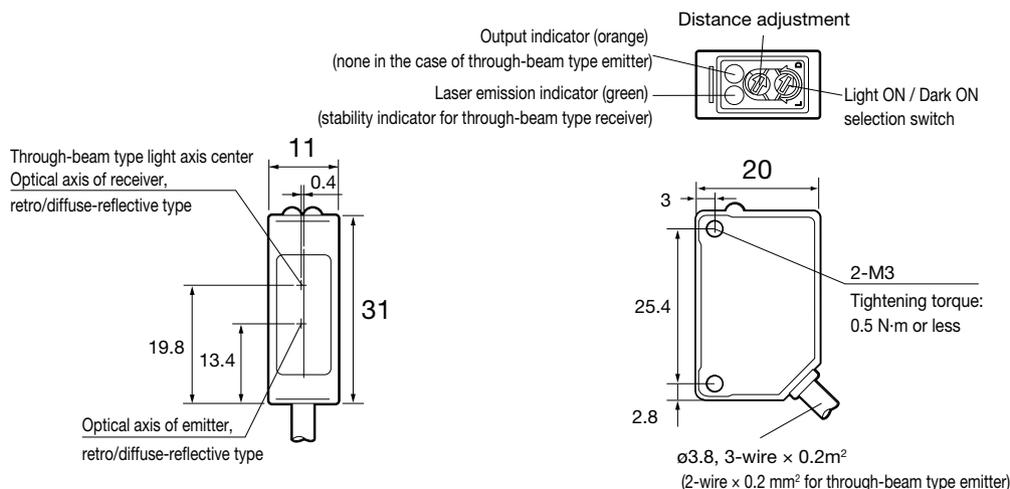


Dimensions

Sensor

Cable type

(Unit: mm)

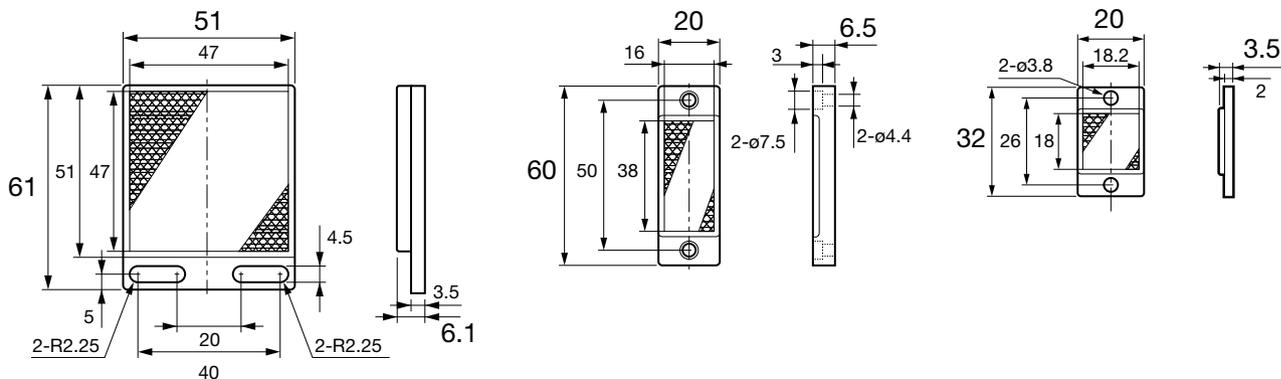


Reflector

P250F (included with ZR-L1000N)

PL20F (optional)

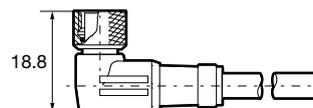
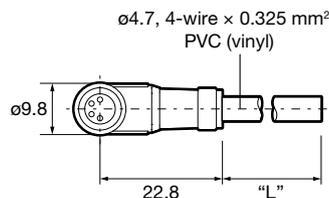
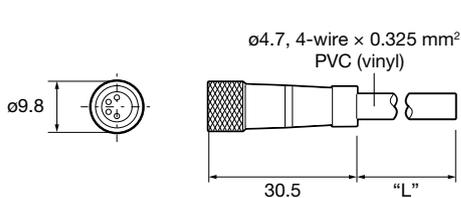
PL10F (optional)



Connector cable (optional)

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

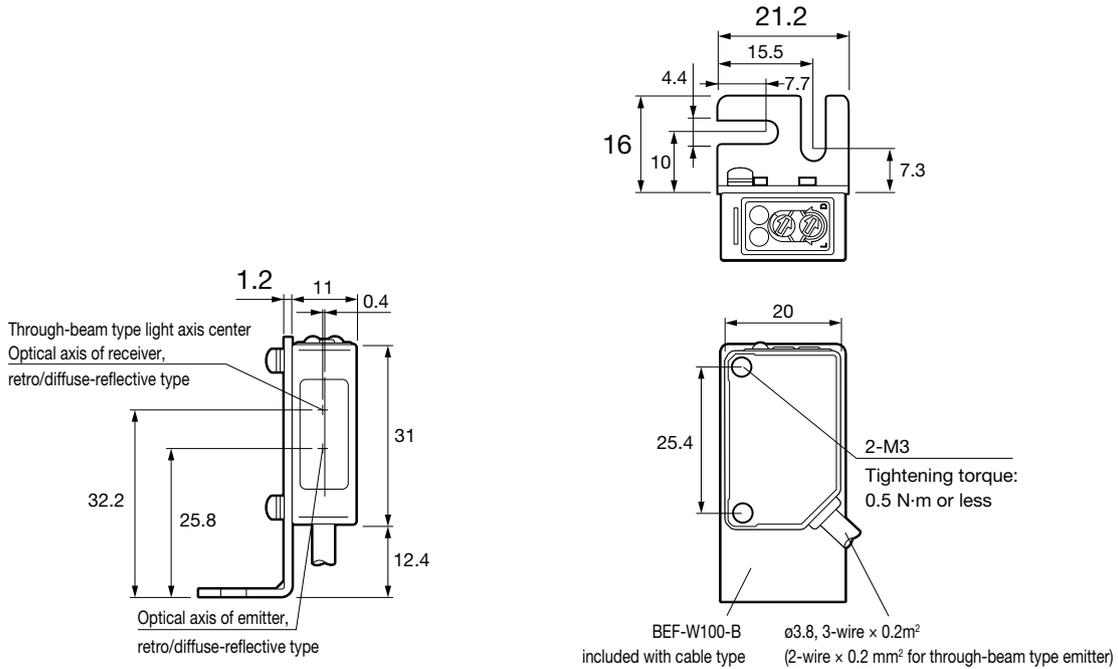
JCN-L, JCN-5L, JCN-10L



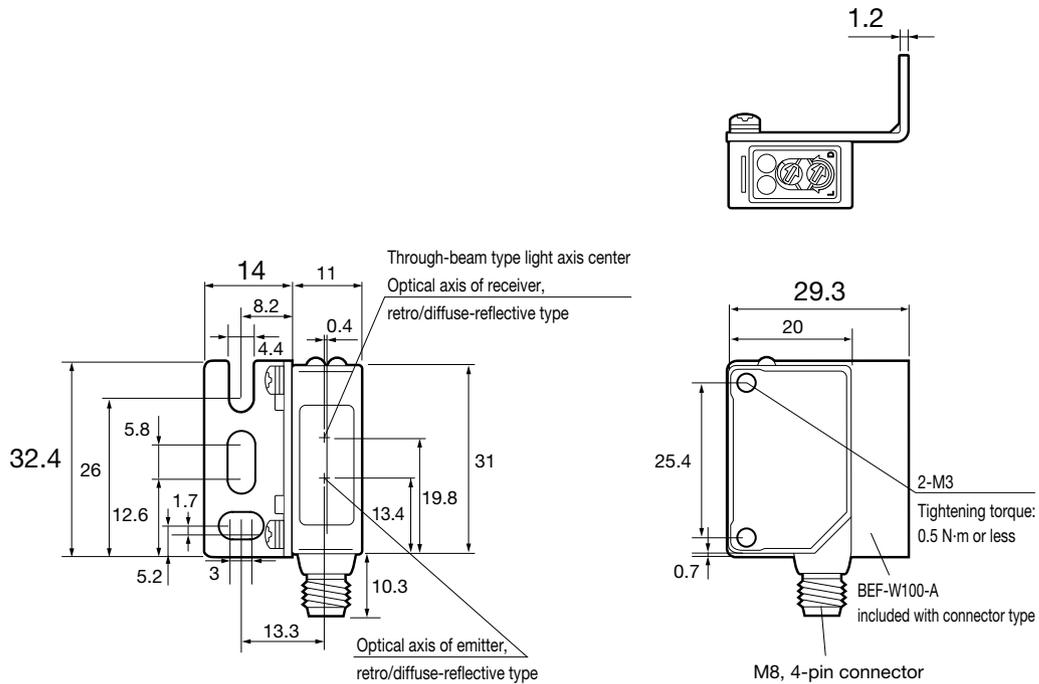
Mounting bracket

■ Cable type (when using BEF-W100-B)

(Unit: mm)



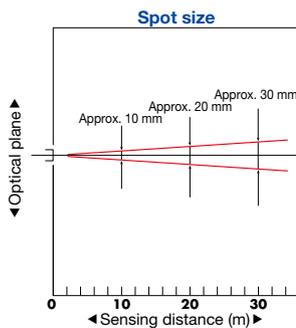
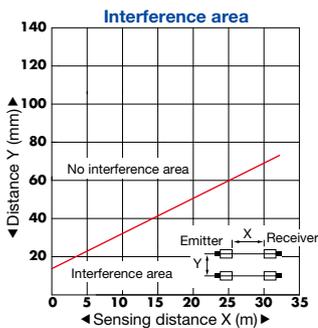
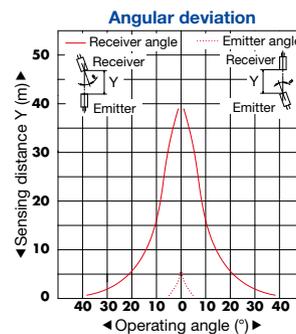
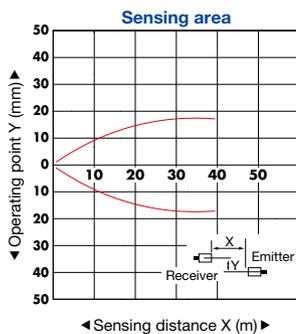
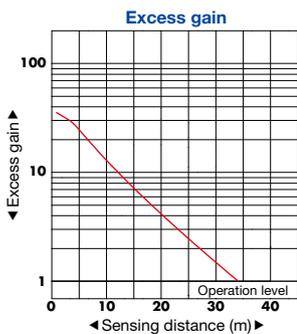
■ Connector type (when using BEF-W100-A)



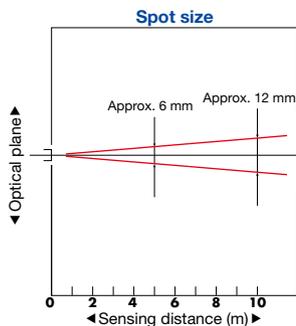
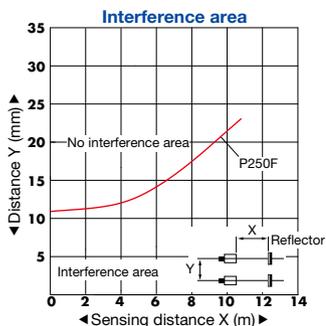
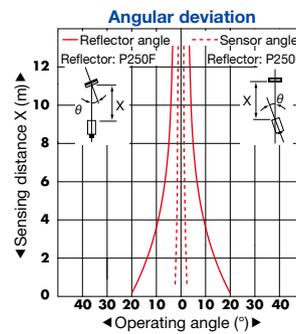
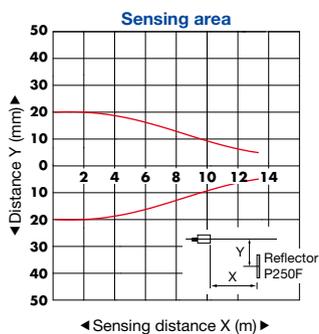
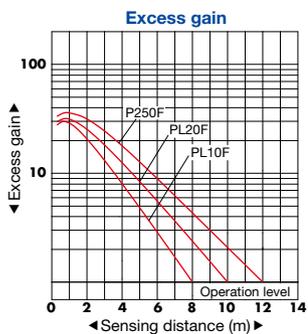
Typical characteristic data

*Contact us for any other characteristic data that may be required.

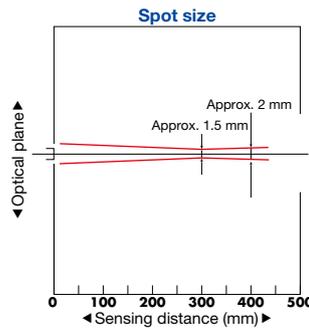
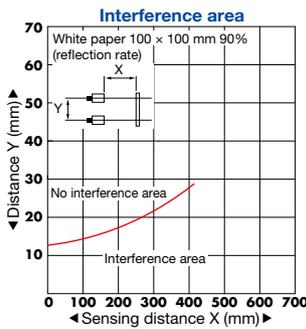
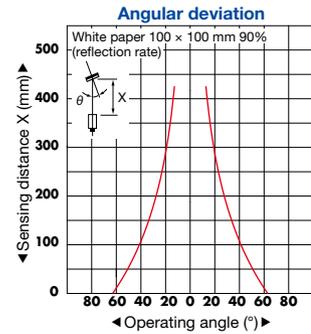
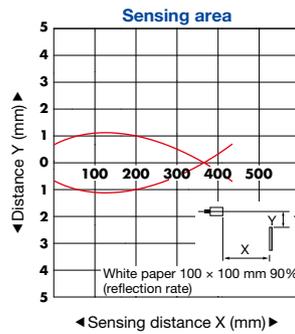
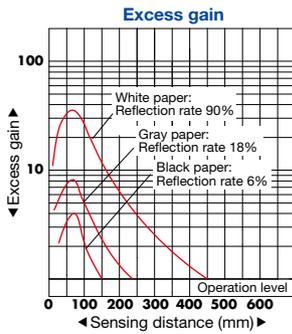
ZT-L3000□



ZR-L1000□



ZD-L40□



Notes for sensor usage



Warning

Do not look directly at the laser or intentionally shine the laser beam in another person's eyes. Doing so may cause damage to the eyes or health.



ZR-L1000N
ZD-L40N



ZT-L3000N

■ Regarding the laser label, this product emits a Class 2 (II) visible laser beam that is compliant with JIS C6802/IEC/FDA laser safety standards. A CLASS 2/CLASS II warning label and explanation label (English) is affixed to the side of the sensor head.

*The ZT-L3000N emitter is Class II in FDA standards (when exported to the United States), but is Class 1 according to JIS/IEC standards, so change the label that it is packaged with for use.