

Laser Sensor

Z-L / BGS-ZL series

M8 Connector type



Cable type

- The Laser light source projects a 2 mm spot at 400 mm distance (Diffuse mode).
- BGS (Background Suppression) sensing is also available in the BGS-ZL series.

Applications



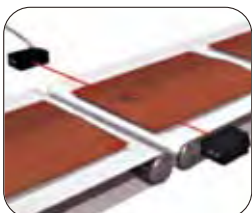
Edge control
(BGS-ZL30)



Height control of
multi-colored object
(BGS-ZL30)



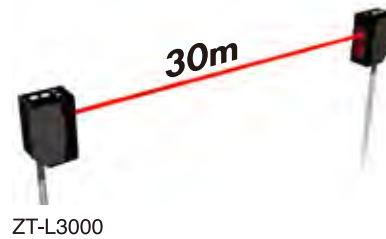
Counting metal parts
(ZR-L1000)



Thin plates counting
(ZT-L3000)

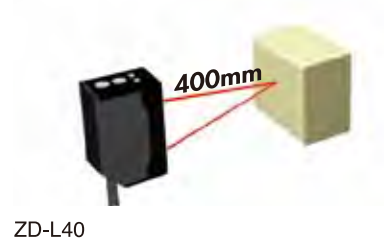
Features

Thru-Beam type



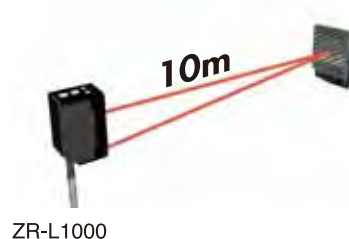
ZT-L3000

Diffuse type



ZD-L40

Retro Reflective type



ZR-L1000

BGS type



BGS-ZL30
BGS-ZL10

Class 2/Class II IEC, FDA Regulation

Conforms to Class 2 (IEC) and Class II (FDA) regulations.
(Class 1 for Thru-beam type)



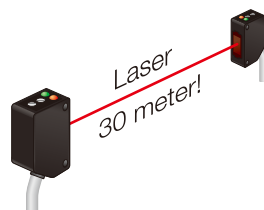
Laser Thru-beam / RetroType

- **30 meter sensing distance (Thru-beam type), fast 250 μ sec. response time.**
- **Compact size with Laser source, small 2 mm diameter projected beam.**
- **IP67 rating**
- **M8 QD types are available**

Features

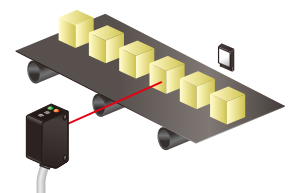
Thru-beam type, ZT-L series

30mm spot size at 30 meter sensing distance



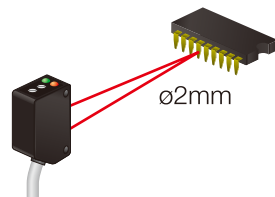
250 μ sec response

Good for fast moving objects.



Diffuse Reflective, ZD-L type

Fine 2mm spot at 400mm sensing distance



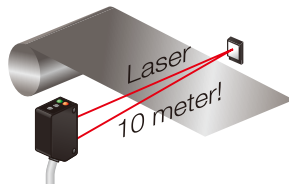
Cross-talk prevention

2 sensors can be mounted side-by-side.



Retro Reflective, ZR-L type

10mm spot size at 10 meter sensing distance



IP67 rating

Hose it down!
Water-tightness is tested to IP67.



Specifications

Model		Thru-beam	Polarized Retro-reflective	Diffuse-reflective
Cable type	NPN	ZT-L3000N	ZR-L1000N	ZD-L40N
	PNP	ZT-L3000P	ZR-L1000P	ZD-L40P
M8 connector type	NPN	ZT-L3000CN	ZR-L1000CN	ZD-L40CN
	PNP	ZT-L3000CP	ZR-L1000CP	ZD-L40CP
Supply voltage		DC10~30V Inc. 10% ripple		
Power consumption		30mA max.	20mA max.	
Sensing distance		30meter	10meter (Reflector : P250F)	400mm
Spot size		30mm/30m	10mm/8m	2mm/400mm
Response time		250 μ sec		
Hysteresis		-		
Operating temp		-10 to +50°C		
Operating humidity		35 to 85%		
Storage temp / humidity		-25 to +70°C/35 to 95%		
Vibration resistance		10 to 55Hz width 1.5mm		
Shock resistance		50 G (500 m/s ²)		
Protection category		IP67		
Light source		Laser (650nm)		
Laser class (IEC)		class 1	class 2	
Laser class (FDA)		class I	class II	
Output indicator		Orange(Yellow) LED		
Laser power indicator		Green LED		
Sensitivity adjustment		Single turn potentiometer		
Operating mode		Light On / Dark On selectable (switch)		
Connection		2m cable / M8 connector		

BGS - Laser Type

Fine spot / high speed applications

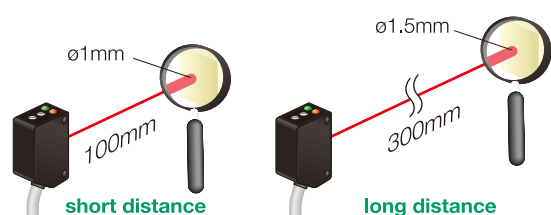
- **BGS (Background Suppression Type) Sensors are not influenced by the background, available with conventional Laser light source.**
- **250 μ sec fast response (Laser light source models)**
- **1 mm projected spot size with BGS optical system (BGS-ZL Laser types)**

Features

1 mm projected spot size

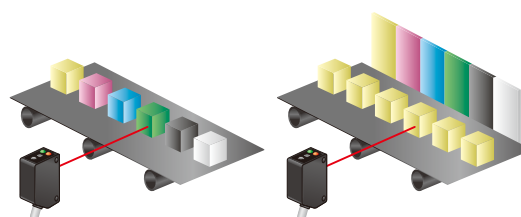
The Short distance BGS Laser sensor projects a very small $\phi 1$ mm spot at 100 mm distance.

Ideal for the detection of small targets at long distance without being influenced by the background. The Long distance type projects a $\phi 1.5$ mm spot at 300 mm.



BGS optical system designed with Laser light source

Extremely small BGS type sensors are only 17 x 10 x 20mm. Ideal for use in OEM equipment such as Printed Circuit Board processing machines.



External control of Laser Beam

External control of laser OFF is possible by connecting gray wire to GND (NPN type) or DC10-30V (PNP type).

(This function is not available in 3 pin types)



4 Turn adjustment pot.

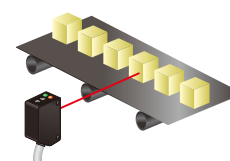
A four turn adjustment pot. is built-in for precise adjustment of the sensing distance.

The potentiometer has a slip clutch that protects it from damage when it is turned past the end.



250 μ sec response

Good for fast moving objects.



Specifications

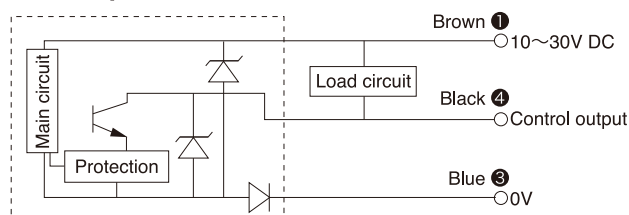
Model		long distance		short distance	
		2m Cable	M8QD 4pin	2m Cable	M8QD 4pin
Type	NPN	BGS-ZL30N	BGS-ZL30CN	BGS-ZL10N	BGS-ZL10CN
	PNP	BGS-ZL30P	BGS-ZL30CP	BGS-ZL10P	BGS-ZL10CP
Adjustable distance		50 - 300 mm (*1)		20 -100 mm (*1)	
Sensing distance		10 - 300 mm (*1)		5 -100 mm (*1)	
Response time		250μs			
Spot size		φ1.5mm/300mm		φ1mm/100mm	
Hysteresis (white to white)		5%		3%	
Operating mode		Light On / Dark On selectable			
Output indicator		Output : orange, Laser Power : green			
Sensitivity adjustment		4-turn, endless pot.			
Control output		NPN or PNP open collector, 100mA max / DC30V			
Supply voltage		DC 10 - 30V, including 10% ripple			
Power consumption		30mA max			
Protection category		IP 67			
Shock resistance		50G			
Operating temp / humidity		-10 to 55°C / 35 to 85% RH			
Materials		Housing : ABS with glass, Lens : PMMA			

*1 white paper 100 X 100mm

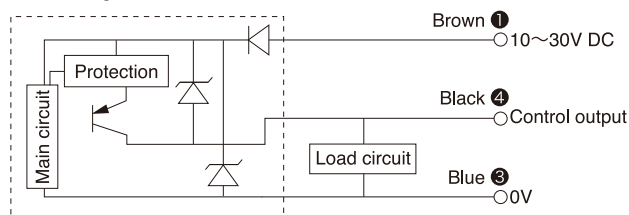
"M8-QD in 3 pins for European machines " are available with extension code of -CN(P)3, for instance, "BGS-ZL30CN3".

Circuit diagram

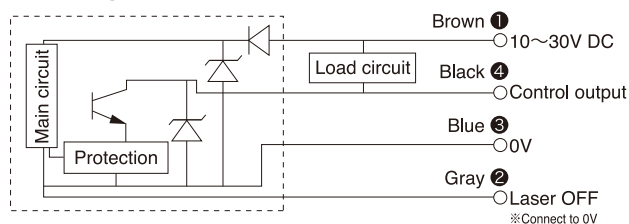
NPN output Thru-beam receiver



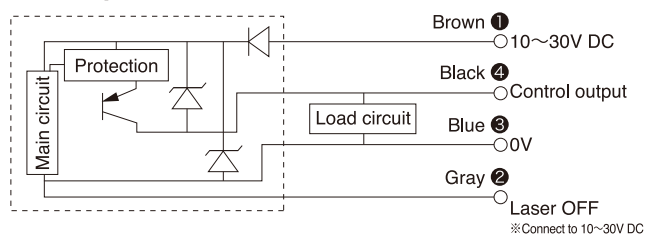
PNP output Thru-beem receiver



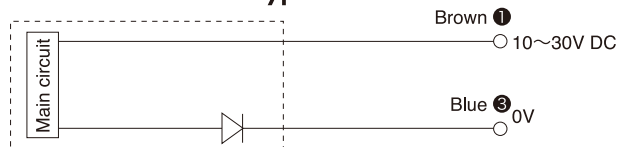
NPN output (other type)



PNP output (other type)



Emitter of Thru-beam type

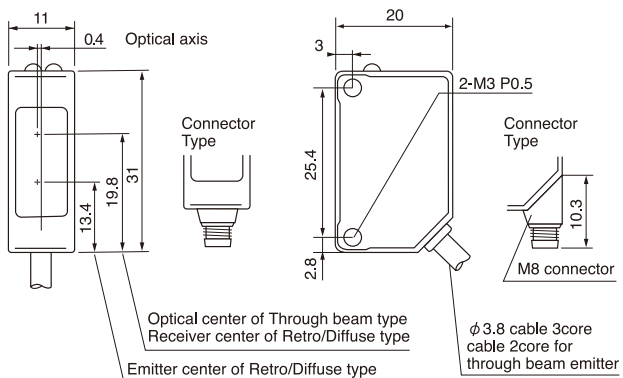


Dimensions

General Use Type except BGS



Remark : ZR-QX type (coaxial beam for transparent detection) has single LED (orange for output indicator).



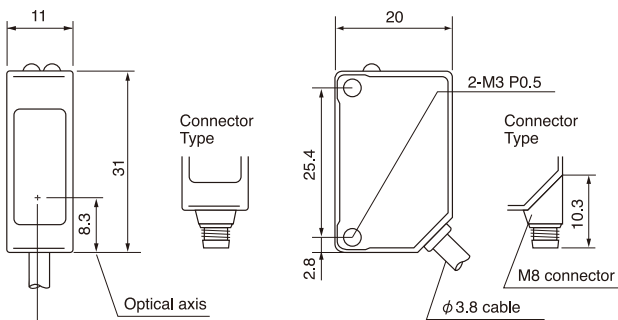
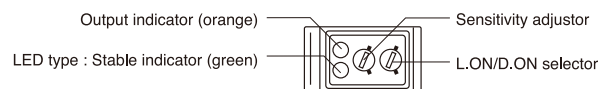
<Cable>

Brown : DC10~30V
Blue : GND
Black : Control Output
Gray : Laser OFF (Laser type only)
(NPN connect to GND / PNP connect to DC10~30V)

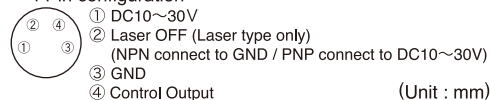
<3 Pin configuration>



BGS Type



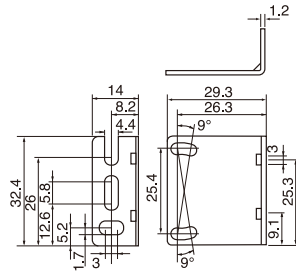
<4 Pin configuration>



(Unit : mm)

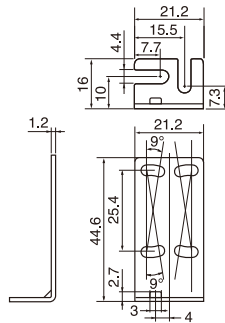
Standard bracket BEF-W-100-A

For M8 QD type sensors



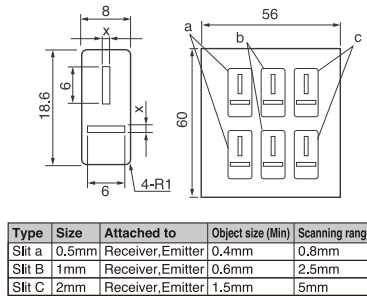
Standard bracket BEF-W-100-B

For cabled type sensors

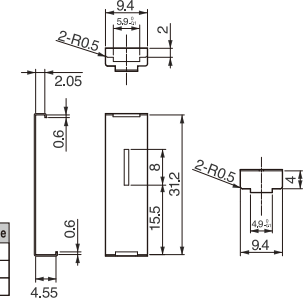


Slit mask BL-160-SK

(for Thru-beam type)



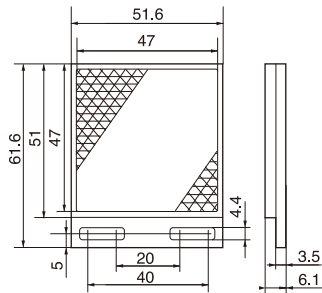
Slit mask BL-100-M1



Reflectors for Laser Type

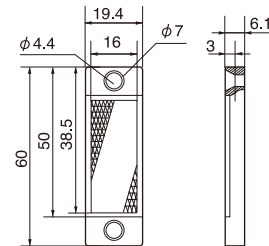
P250F

(Standard, 0.2-10m)



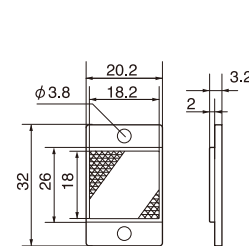
PL20F

(Optional, 0.2-8m)



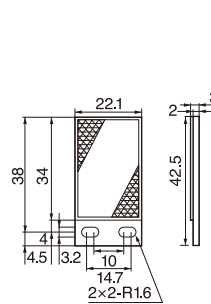
PL10F

(Optional, 0.2-7m)



V-42F

(Optional, 0.1-5m)



Options

P250F



JCN-S : M8 Straight type



JCN-S : 2 meter
JCN-5S : 5 meter
JCN-10S : 10 meter

PL20F



JCN-L : L-shape M8 type



JCN-L : 2 meter
JCN-5L : 5 meter
JCN-10L : 10 meter

PL10F



Protective mounting brackets

LK-S01



V-42F



LK-S02



Sensor stand

PLN-1

Fixture of Reflector

PLN-1M



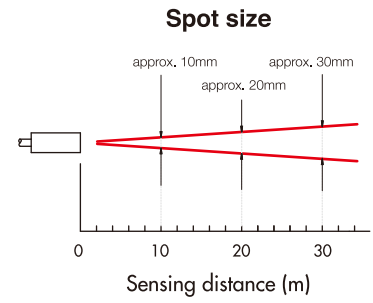
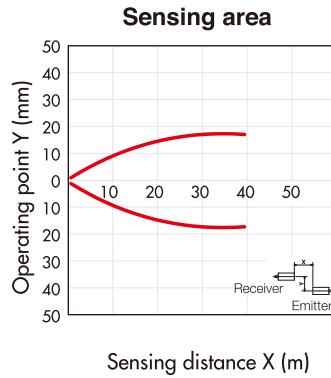
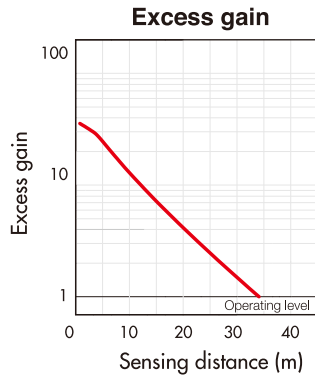
Reference (typical)

D

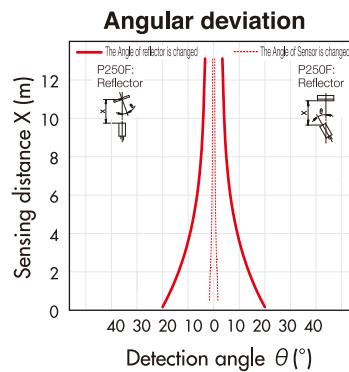
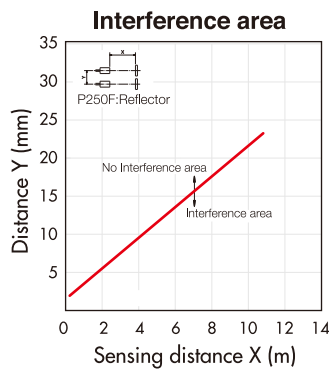
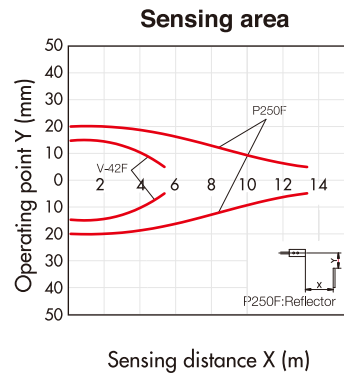
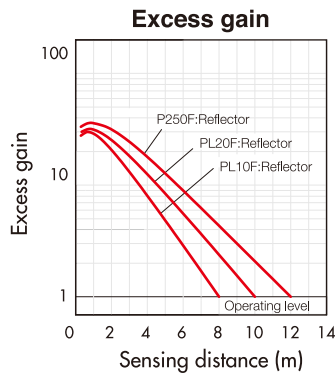
D2SA

Z-L
BGS-ZL

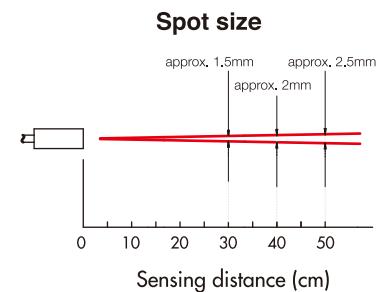
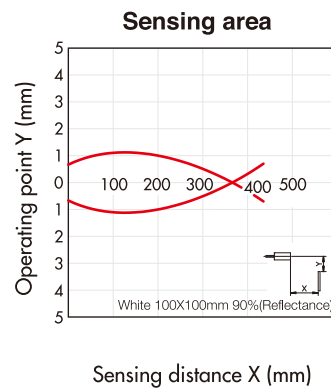
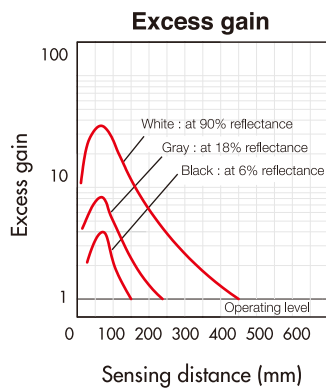
ZT-
L3000N



ZR-
L1000



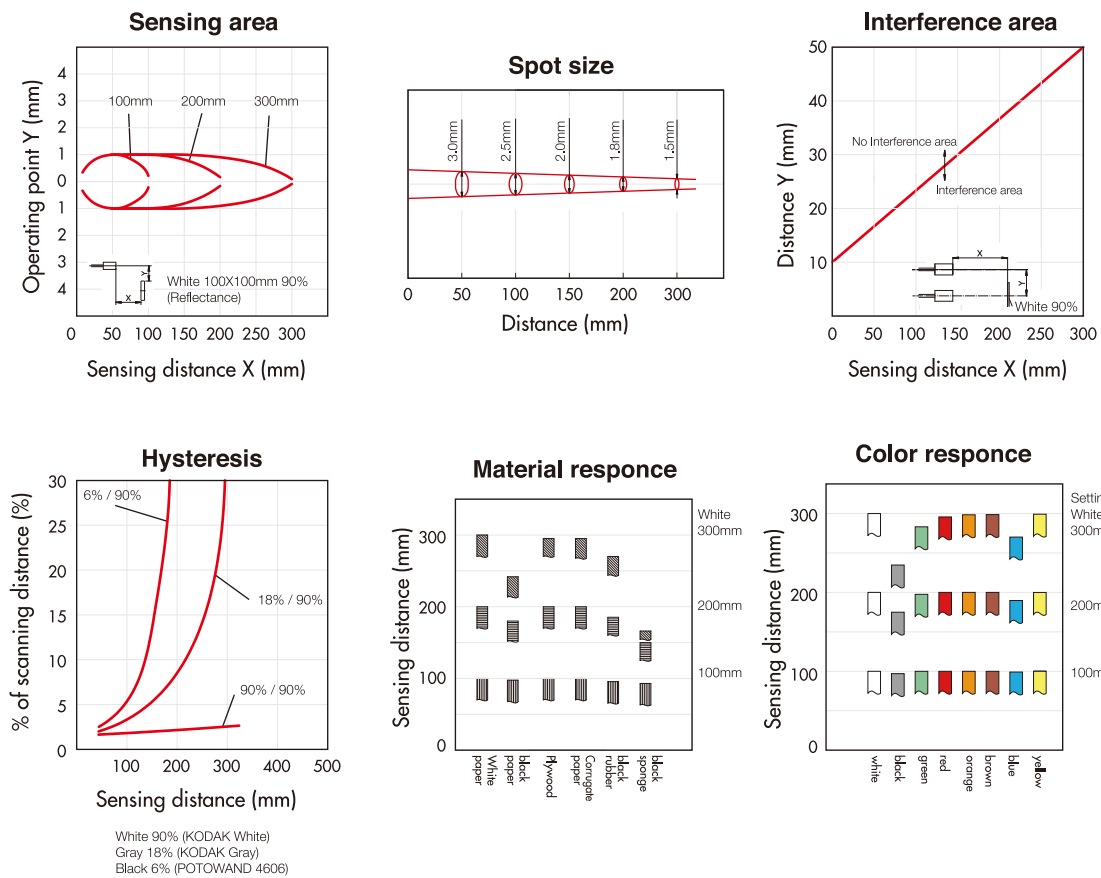
ZD-L40



Reference (typical)

D

D2SA

Z-L
BGS-ZLBGS-
ZL30NBGS-
ZL10N