Photoelectric Sensor

ZL SERIES

- ZT-L3000 □□
- ZR-L1000 □□
- ZD- L40 □□
- BGS-Z □□

INSTRUCTION MANUAL

- Confirm if the item meets your needs.
- Before the use, you should first thoroughly read this manual and operate correctly as mentioned.
- You should keep this manual at hand for proper use.

Carefully read and understand the safety precautions before ope ration. The important information is provided to protect your health and property. Do not apply any other installing or operating procedure other than that described in this manual.

Meanings of Safety Symbol

⚠ WARNING	Indicates a possible hazard that may result in death,serious injury, WARNINGS or serious property damage if the product is used without observing the stated instructions.

⚠ WARNING Mandatory Requirements

- The light source of this product applies the visible light semi conductor laser. Do not allow the laser beam to enter an eye,either direc tly or reflected from reflective object. If the laser beam enters an eye ,it may cause blindness.
- Do not disassemble or modify the product since it is not design ed to automatically stop the laser emission when open. Disassembling or modifying at customer's end it may cause personal injury,fire o r electric shock.
- This product is not an explosionproof construction. Do not use the product under flammable , explosive gas or liquid environment.
- Use of controls or adjustments or performance of procedures oth er than those specified herein may result in hazardous radiation exposure.

⚠ CAUTION Safety Precautions

- It is dangerous to wire or attach/remove the connector with the power on. Make sure to turn off the power before operation.
- Installing in the following places may result in malfunction:
  1. A dusty or steamy place
  2. A place generating corrosive gas
  3. A place directly receiving scattering water or oil.
  4. A place suffered from heavy vibration or impact.
- The product is not designed for outdoor use.
- Do not use the sensor in transient state after power on (appro x.100 ms).
- Do not wire with the high voltage cable or the powerline. Failure to do this will cause malfunction by induction or dama ge.
- The sensor performance or digital display values may depend on the individual units or the condition of detected product.
- Do not use the product in water.
- Operate within the rated range.
- Wipe off dirt on the emitting/receiving parts to maintain corre ct detection. Also, avoid direct impact on the product.

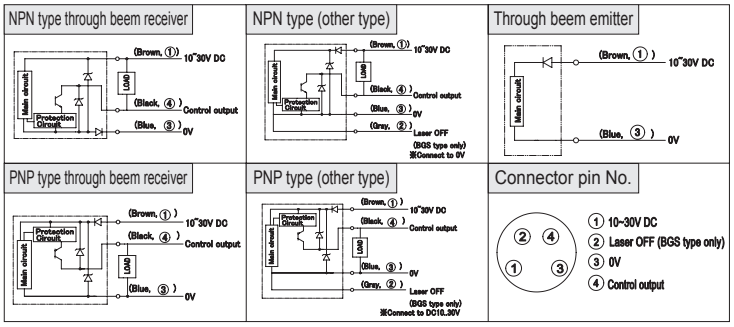
This product cannot be used as a safety device to protect human body.

SPECIFICATION

Model	Retro ref. type	Diffuse ref. type	Through beam type	BGS type	
Cable	ZR-L1000N/P	ZD-L40N/P	ZT-L3000N/P(Emitter:ZT-DL)	BGS-ZL10(N,P)	BGS-ZL30(N,P)
M8 Connector	ZR-L1000CN/CP	ZD-L40CN/CP	ZT-L3000CN/CP(Emitter:ZT-DLC)	BGS-ZL10C(N,P)	BGS-ZL30C(N,P)
Light source	Visible light semiconductor laser 655 nm				
Peak power	3mW max		390μW max	4.7mW max	
IEC/JIS CLASS	CLASS 2		CLASS 1		
FDA CLASS	Class Ⅱ				
Supply voltage	10~30VDC Including 10% ripple				
Current consumption	20mA max.		Emitter:15mA max./Receiver:15mA max.	30mA max.	
Sensing range	0.08~10m *1	400mm *2	30m	5~100mm *2	10~300mm *2
Setting range	-	-	-	20~100mm *2	50~300mm *2
Response time	250μs max.				
Hysteresis	-	20% max. /400mm	-	3% max. *2	5% max. *2
Spot size	φ12mm/10m	φ2mm/400mm	φ30mm/30m	φ1mm/100mm	φ1.5mm/300mm
Operation mode	Light ON/ Dark ON selectable				
Sensitivity adjustment	1-turn trimmer			4-turn(endless)	
Control output	NPN/PNP open collector 100mA max. /30V DC				
Indicator light	Laser emission indicator (Receiver of Through beam type :Stable indicator):Green Output indicator :Orange				
Operating temp./humidity	-10~+50℃/35~85%RH (No condensation or freezing)				
Storage temp./humidity	-25~+70℃/35~95%RH (No condensation or freezing)				
Ambient light	3,000 lx (Incandescent light) 10,000 lx (Sunlight)				
Protection category	IP67				
Material	ABS (Case) PMMA (front window)				
Weight	approx. 10g (cable is not included)		approx. 20g (cable is not included)	approx. 10g (cable is not included)	

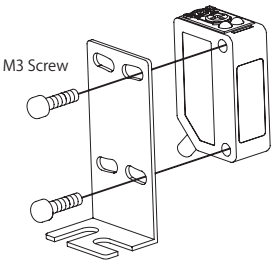
*1 With the reflector P250F (accessory)
*2 With white paper 100×100mm
*3 Defined with center strength 1/e ^{2}(13.5%). There may be leak light other than the specified spot s ize.
The sensor may be damaged when there is a highly reflective object around the targets.

INPUT AND OUTPUT CIRCUIT DIAGRAMS



Attachment

Tightening torque need to be under 0.5N•m.



Precautions for using laser

■Laser label

This product is classified as Class2(Ⅱ)Laser Product by JIS C6802/IEC/FDA Laser Safety Standard.
＊ZT-DL/DLC and BGS are rated as Class Ⅱ by the FDA standard (when exporting to the US). However, the CLASS1 is applied for the JIS/IEC standard. Exchange the label enclosed with the product.

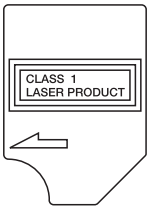
● Japan

ZT-DL/DLC/BGS-Z

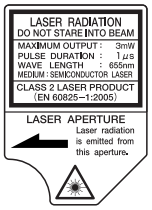
Others

● Other countries (except US)

ZT-DL/DLC/BGS-Z

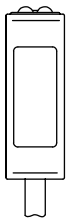


Others



●US

When exporting this product to USA, it's necessary to follow laser regulation of USA FDA.
This product has been already reported to CDRH (Center for Devices and Radio-logical Health).
For details, contact our customer service.



(1)

(2)

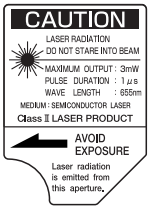
(3)

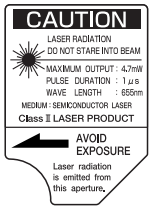
FDA warning/Laser open label
(1) (2) (3)

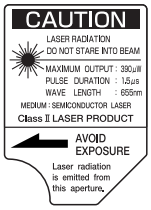
Certification label
(4)

FDA warning/Laser open label

(1)ZR-L1000N/P ZR-L1000CN/CP
ZD-L40N/P ZD-L40N/P
(2)BGS-Z
(3)ZT-DL/DLC



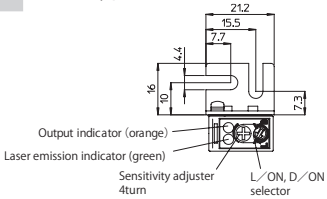




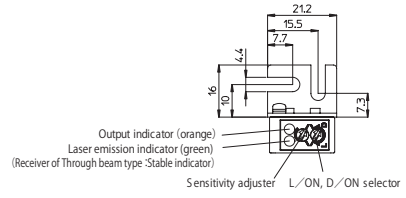
Dimensions

(Unit mm)

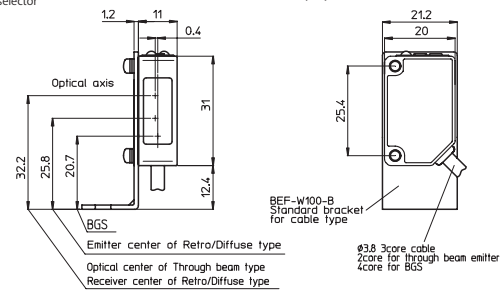
BGS type



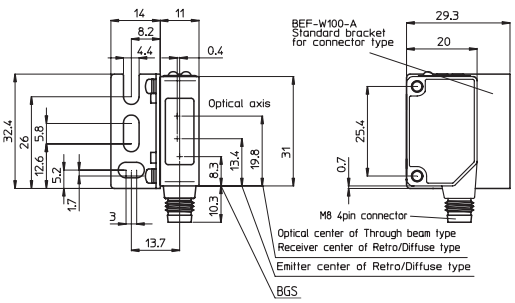
Other type



Cable type



Connector type



●Specifications and equipment are subject to change without any obligations on the part of manufacture.
●For more information, questions and comments regarding products, please contact us below.

ⓘ ⑩ → http://www.optex-fa.com/rohs_cn/

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