Laser Photoelectric Sensor

ZL series

ZR-L1000□□
ZD-L40□□
ZT-L3000□□

OPTEX FA

INSTRUCTION MANUAL

- Thank you for purchasing the ZL series.
- Please read this manual before using the sensor, and retain it for future reference.
- Carefully read and understand the safety precautions before operation.
  The important information is provided to protect your health and property.

■Meanings of Safety Symbol

⚠WARNINGS	Indicates a possible hazard that may result in death, serious injury, 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 semiconductor laser. Do not allow the laser beam to enter an eye, either directly or reflected from reflective object. If the laser beam enters an eye, it may cause blindness.
- This product is not an explosion-proof construction. Do not use the product under flammable explosive gas or liquid environment.
- Do not disassemble or modify the product since it is not designed to automatically stop the laser emission when open. Disassembling or modifying at customer's end may cause personal injury, fire or electric shock.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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

Operating Precautions

- Never fail to turn OFF the power supply when wiring or disconnecting.
- The sensor performance may depend on the individual units.
- Wipe off dirt on the emitting/receiving parts to maintain correct detection. Also, avoid direct impact on the product.

Precautions for using laser

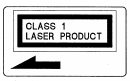
■ Laser label

This product is classified as Class 2 (II) Laser Product by JIS C6802/IEC/FDA Laser Safety Standard.

＊The emitters of through beam ZL−DL／DLC are rated as Class II by the FDA standard (when exporting to the US). However, the class 1is applied for the JIS/IEC standard. Exchange the label enclosed with the product.

● Japan

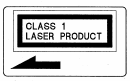
ZT-DL/DLC



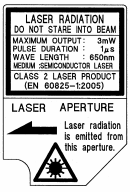
Others

● Other countries (except US)

ZT-DL/DLC

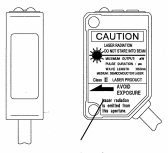


Others

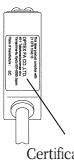


● US

When exporting laser devices to the US, the US laser control, FDA (Food and Drug Administration) is applied. This product has been already reported to CDRH (Center for Devices and Radiological Health). For details, contact our Customer Service.



FDA warning/Laser open

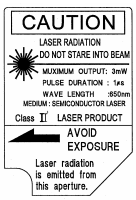


Certification label (3)

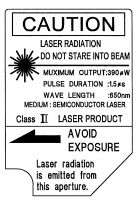
FDA warning / Laser open label (1)
ZR-L1000N/P ZR-L1000CN/CP
ZD-L40N/P ZD-L40CN/CP

FDA warning / Laser open label (2)
ZT-DL/DLC

(1)



(2)



(3)

Specifications

Model		Retro ref. type	Diffuse ref. type	Through beam type
	Cable	ZR-L1000N/P	ZD-L40N/P	ZT-L3000N/P (Emitter:ZT-DL)
	M8 Connector	ZR-L1000CN/CP	ZD-L40CN/CP	ZT-L3000CN/CP (Emitter:ZT-DLC)
Light source		Visible light semiconductor laser 650nm		
Peak power		3mW max.		390μW 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.
Sensing range		0.08～10m *1	400mm *2	30m
Response time		0.25ms max.		
Hysteresis		-	20% max. /400mm	-
Spot size		φ12mm/10m	φ2mm/400mm	φ30mm/30m
Operation mode		Light ON/ Dark ON selectable		
Sensitivity adjustment		1-turn trimmer		
Control output		NPN/PNP open collector 100mA max. /30V DC		
Indicator light		Laser radiation indicator light(Receiver of Through beam type :Stable indicator) :Green Output indicator light :Orange		
Operating temp./humidity		-10～+50°C/35～85%RH (No condensation or freezing)		
Storage temp./humidity		-25～+70°C/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)

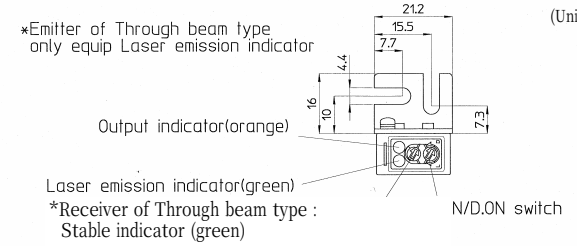
*1 With the reflector P250F (accessory)

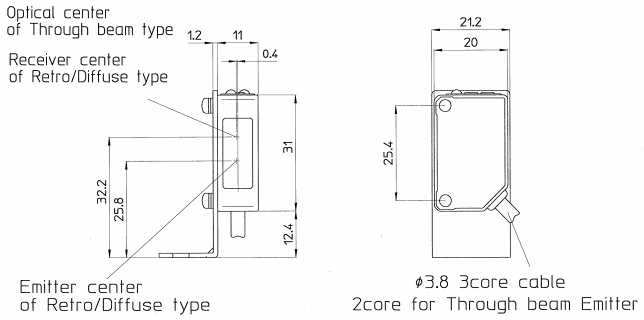
*2 With white paper 100x100mm

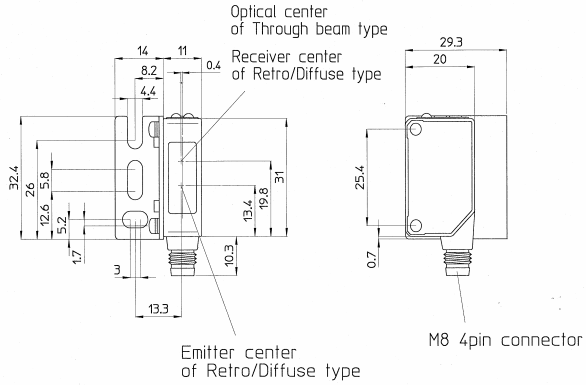
*3 Defined with center strength $1/e^2$ (13.5%). There may be leak light other than the specified spot size.
The sensor may be damaged when there is a highly reflective object around the targets.

Dimensions

(Unit :mm)







● The product specification may change without notice for improvement.

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