

A CMOS Laser Sensor That's Optimum for Simple Measurements

- A resolution of 0.002 mm that's suitable for simple measurements.
- Stable measurements for any type of workpiece.
- Models available with four different distance specifications.
- Long-distance model for up to 1,000 mm.



Refer to **Safety Precautions** on page 4.

This datasheet contains information only for selecting the appropriate model.
Be sure to read the instruction sheet for usage precautions prior to using the product.



Ordering Information

Sensors (Refer to Dimensions on page 5.)

Appearance	Connection method	Cable length	Sensing distance	Model	
				NPN output	PNP output
	Pre-wired	2 m		ZX1-LD50A61 2M *	ZX1-LD50A81 2M *
		5 m		ZX1-LD50A61 5M	ZX1-LD50A81 5M
	Pre-wired connector	0.5 m		ZX1-LD50A66 0.5M	ZX1-LD50A86 0.5M
		0.5 m		ZX1-LD50A66 0.5M	ZX1-LD50A86 0.5M
	Pre-wired	2 m		ZX1-LD100A61 2M *	ZX1-LD100A81 2M *
		5 m		ZX1-LD100A61 5M	ZX1-LD100A81 5M
	Pre-wired connector	0.5 m		ZX1-LD100A66 0.5M	ZX1-LD100A86 0.5M
		0.5 m		ZX1-LD100A66 0.5M	ZX1-LD100A86 0.5M
	Pre-wired	2 m		ZX1-LD300A61 2M *	ZX1-LD300A81 2M *
		5 m		ZX1-LD300A61 5M	ZX1-LD300A81 5M
	Pre-wired connector	0.5 m		ZX1-LD300A66 0.5M	ZX1-LD300A86 0.5M
		0.5 m		ZX1-LD300A66 0.5M	ZX1-LD300A86 0.5M
	Pre-wired	2 m		ZX1-LD600A61 2M *	ZX1-LD600A81 2M *
		5 m		ZX1-LD600A61 5M	ZX1-LD600A81 5M
	Pre-wired connector	0.5 m		ZX1-LD600A66 0.5M	ZX1-LD600A86 0.5M
		0.5 m		ZX1-LD600A66 0.5M	ZX1-LD600A86 0.5M

* Sensors with Class 1 lasers are also available.

Add an "L" to the end of the model number when ordering. (Example: ZX1-LD50A61L 2M)

Accessories (sold separately)

Extension Cables for Pre-wired Connector Models An Extension Cable is not provided with the Sensor. Order an Extension Cable separately.
(Refer to Dimensions on page 6.)

Cable length	Model
10 m	ZX0-XC10R
20 m	ZX0-XC20R

Mounting Brackets A Mounting Bracket is not provided with the Sensor. Order a Mounting Bracket separately if required.
(Refer to Dimensions on page 6.)

Applicable sensors	Appearance	Model	Remarks
ZX1-LD50□ ZX1-LD100□		E39-L180	Mounting Bracket: 1 Nut plate: 1 Phillips screws (M3×30): 2
ZX1-LD300□ ZX1-LD600□		E39-L181	Mounting Bracket: 1 Nut plate: 1 Phillips screws (M4×35): 2

ZX1

Ratings and Specifications

Model		NPN output	ZX1-LD50A61 ZX1-LD50A66	ZX1-LD100A61 ZX1-LD100A66	ZX1-LD300A61 ZX1-LD300A66	ZX1-LD600A61 ZX1-LD600A66
Item		PNP output	ZX1-LD50A81 ZX1-LD50A86	ZX1-LD100A81 ZX1-LD100A86	ZX1-LD300A81 ZX1-LD300A86	ZX1-LD600A81 ZX1-LD600A86
Measurement range			50 ± 10 mm	100 ± 35 mm	300 ± 150 mm	600 ± 400 mm
Light source (wave length)			Visible-light semiconductor laser (wavelength: 660 nm, 1 mW max., IEC/EN Class 2, FDA Class 2 *1)			
Spot diameter (typical) (Defined at the measurement center distance) *2			0.17 mm dia.	0.33 mm dia.	0.52 mm dia.	0.56 mm dia.
Power consumption			2,500 mW max. (105 mA max. at 24 VDC, 210 mA max. at 12 VDC)			
Current consumption			250 mA max. (at power supply voltage 10 VDC)			
Control output			Load power supply voltage: 30 VDC max., Load current: 100 mA max. (Residual voltage: 1 V max. (load current 10 mA or less), 2 V max. (load current of 10 to 100 mA))			
Analog output			Current output: 4 to 20 mA, maximum load resistance: 300 Ω (The output is 20 mA for the nearest point in the measurement range in respect to the Sensor and 4 mA for the farthest point.)			
Functions			Smart tuning, keep function, scaling setting, background removal, OFF-delay timer, ON-delay timer, one-shot timer, ON/OFF-delay timer, zero reset, area output, eco function, hysteresis width setting, and setting initialization			
Indicators			Digital display (red), output indicator (OUT1, OUT2) (orange), zero reset indicator (orange), menu indicator (orange), laser ON indicator (green), and smart tuning indicator (blue)			
Response time	Judgment output	Super-high-speed (SHS) Mode: 1 ms High-speed (HS) Mode: 10 ms Standard (Std) Mode : 100 ms				
	Laser OFF input	200 ms max.				
	Zero reset input	200 ms max.				
Temperature characteristic *3			0.03% F.S./°C			0.04% F.S./°C
Linearity *4			±0.15% F.S.		±0.25% F.S.	±0.25% F.S. (200 to 600 mm) ±0.5% F.S. (entire range)
Resolution *5			2 μm	7 μm	30 μm	80 μm
Ambient illumination			Illumination on received light surface: 7,500 lx or less (incandescent light)		Illumination on received light surface: 5,000 lx or less (incandescent light)	
Ambient temperature			Operating: -10 to +55°C, Storage: -15 to +70°C (with no icing or condensation)			
Ambient humidity			Operating and storage: 35% to 85% (with no condensation)			
Dielectric strength			1,000 VAC, 50/60 Hz, 1 minute			
Vibration resistance (destruction)			10 to 55 Hz, 1.5-mm double amplitude, 2 hours each in X, Y, and Z directions			
Shock resistance (destruction)			500 m/s ² 3 times each in X, Y, and Z directions			
Degree of protection *6			IEC 60529, IP67			
Connection method *7			Pre-wired model (Standard cable length: 2 m, 5 m) Pre-wired connector model (Standard cable length: 0.5 m)			
Weight (packed state/ sensor only)	Pre-wired models (2 m)	Approx. 240 g / Approx. 180 g			Approx. 270 g / Approx. 210 g	
	Pre-wired models (5 m)	Approx. 450 g / Approx. 330 g			Approx. 480 g / Approx. 360 g	
	Pre-wired connector models (0.5 m)	Approx. 170 g / Approx. 110 g			Approx. 200 g / Approx. 140 g	
Materials			Case and cover: PBT (polybutylene terephthalate), Optical window: Glass, Cable: PVC, Mounting hole part: SUS303			
Accessories			Instruction sheet and Laser warning label (English)			

Note: 1. False detection outside the measurement range can occur in the case of an object with high reflectance.

2. Refer to the next page for the ratings and specifications of Sensors with Class 1 lasers.

*1. Classified as Class 2 by IEC60825-1 criteria in accordance with the FDA standard provisions of Laser Notice No. 50. CDRH registration has been completed. (Center for Devices and Radiological Health) (Accession Number: 1210041)

*2. Spot diameter: Defined as 1/e² (13.5%) of the central intensity at the measurement center distance.

False detections can occur in the case there is light leakage outside the defined region and the surroundings of the target object have a high reflectance in comparison to the target object.

Accurate measurements may not be possible for workpieces that are smaller than the spot diameter.

*3. Temperature characteristic: Value for the case the space between the sensor and Omron's standard target object is secured by an aluminum jig. (Measured at the measurement center distance)

*4. Linearity: Indicates the error with respect to the ideal straight line of the displacement output in the case of measuring Omron's standard target object (white ceramic) at a temperature of 25 °C.

Linearity and measured value may vary depending on target object.

*5. Resolution: Defined in Standard Mode for Omron's standard target object (white ceramic) after executing Smart Tuning.

The resolution indicates the repetition accuracy for a still workpiece. Not an indication of the distance accuracy.

Resolution performance may not be satisfied in a strong electromagnetic field.

*6. IP67 protection applies to the connector on pre-wired connector models if an extension cable is connected.

*7. Use a Pre-wired Connector Model together with an Extension Cable (10 m or 20 m).