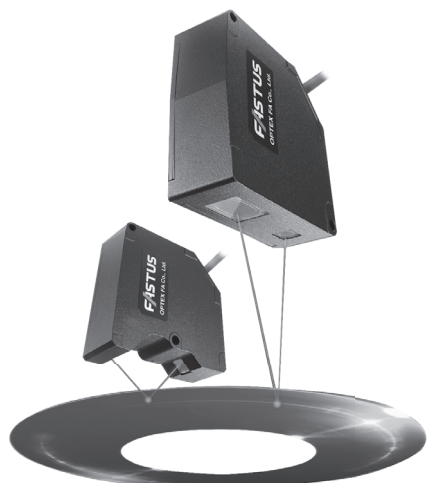




คุณสมบัติ

- CDX-SERIES เป็น Laser Displacement Sensor ที่ถูกพัฒนาขึ้นมาใหม่ เพื่อความแม่นยำสูง
- สามารถเชื่อมต่อกับ Ethernet ได้โดยตรง
- มีความละเอียดในการตรวจวัด (Resolution) $0.3\mu\text{m}$

ข้อมูลทางเทคนิค

■ Sensor head (model based specifications)

Model		CDX-85A		CDX-W85A		CDX-150A	CDX-W150A
Optical method		Diffuse installation	Specular installation	Diffuse installation	Specular installation	Diffuse installation	
Measurement range ^{*1}		85 +/-20 mm	81.5 +/-10.0 mm	85 +/-20 mm	81.5 +/-10.0 mm	150 +/-40 mm	
Light source	Medium	Red semiconductor laser					
	Wavelength	655 nm					
	Maximum output	0.39 mW					
Laser class	JIS/IEC	Class 1					
	FDA ^{*2}	Class 1					
Spot size ^{*3}		ø70 μm		70 × 2000 μm		ø120 μm	120 × 4000 μm
Linearity		Meas. range 65 to 85 mm: +/-0.018% of F.S. (+/-7.2 μm) Meas. range 85 to 105 mm: +/-0.03% of F.S. (+/-12.0 μm)	+/-0.03% of F.S. (+/-6.0 μm)	+/-0.015% of F.S. (+/-6.0 μm)	+/-0.03% of F.S. (+/-6.0 μm)	Meas. range 110 to 150 mm: +/-0.03% of F.S. (+/-24 μm) Meas. range 150 to 190 mm: +/-0.04% of F.S. (+/-32 μm)	+/-0.015% of F.S. (±12 μm)
Resolution ^{*4}		0.3 μm					
Repeat accuracy ^{*5}		0.3 μm					
Sampling period		12.5 μs / 25 μs / 50 μs / 100 μs / 200 μs / 500 μs / 1 ms / Auto					
Temperature drift		+/-0.01% F.S./°C (at -10 to +40°C), +/-0.03% F.S./°C (at +40 to +50°C)					
Weight		Approx. 280 g (including 500 mm connector cable)					

Measurement conditions

The measurement conditions are as follows unless otherwise designated:

Ambient temperature: 25°C (normal temperature), Supply voltage: 24 VDC, Sampling period: 25 μs , Moving average performed: 256, Median filter: 31, Center of measurement range, Measurement target (specular reflection: aluminum deposition mirror, diffuse reflection: visible light shielding ceramic).

*1. The measurement range will become narrower when the sampling period is set to the maximum speed of 12.5 μs . Please use by selecting from Near/Center/Far below.

Model		Measurement range		
		Near	Center	Far
CDX-85A-W85A	Diffuse installation	65.0 to 77.7 mm	73.5 to 90.8 mm	84.8 to 105.0 mm
	Specular installation	71.5 to 74.3 mm	70.6 to 86.9 mm	81.0 to 91.5 mm
CDX-150A-W150A		110.0 to 134.4 mm	124.8 to 166.3 mm	150.2 to 190.0 mm

*2. In accordance with the FDA provisions of Laser Notice No. 50, the laser is classified as Class 1 per the IEC 60825-1:2007 standard.

*3. Defined with center strength $1/e^2$ (13.5%) at the center of measurement range. There may be leak light other than the specified spot size.

The sensor may be affected when there is a highly reflective object close to the detection area.

*4. The minimum step that can be identified when the distance between the sensor and target changes one step at a time (when performing moving average 65,536 times)

*5. Peak-to-peak value of measured value when measuring in stationary state (when performing moving average 65,536 times)

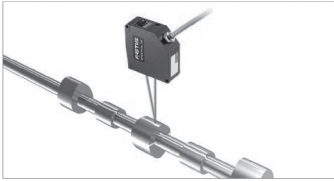
■ Sensor head (common specifications)

Supply voltage	12 to 24 VDC (+/-10%, including ripple)	
Current consumption	180 mA (at 24 VDC)	
Communication interface	Ethernet (100BASE-TX) / Corresponding to IEEE1588	
External input	Selectable from laser OFF, hold/reset, start storage, and offset	
Indicators	Link indicator (green) / power indicator (orange/green/blue/red)	
Degree of protection	IP67 (including connector part)	
Ambient temperature/humidity	-10 to +50°C / 35 to 85% RH (no condensation or freezing)	
Storage temperature/humidity	-20 to +60°C / 35 to 85% RH (no condensation or freezing)	
Ambient illuminance	Incandescent lamp: 3,000 lx or less, fluorescent lamp: 10,000 lx or less	
Vibration resistance	10 to 55 Hz; double amplitude 1.5 mm; 2 hours in each of the X, Y, and Z directions	
Shock resistance	50 G (500 m/s ²), 3 times in each of the X, Y, and Z directions	
Applicable regulations	EMC	EMC directive (2014/30/EU)
	Environment	RoHS directive (2011/65/EU), Battery directive (2006/66/EC), China RoHS (Directive No. 32)
	Safety	FDA regulations (21 CFR 1040.10 and 1040.11) ^{*6}
Applicable standards	EN 60947-5-2:2007 / A1:2012, IEC 60825-1:2007 and 2014	
Warm-up time	Approx. 30 minutes	
Material	Housing: Aluminum die-cast, Optical window: Glass	

*6. Excluding differences per Laser Notice No. 50.

Application

Shape measurement
of cam shafts



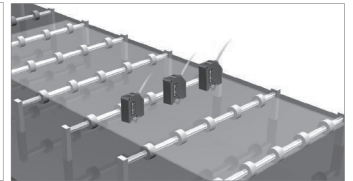
Flatness measurement
of transmission parts



Height inspection of smartphone
frames (specular reflection type)



Warpage measurement of glass
substrates (specular reflection type)



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System Configuration

Sensor head



CDX-L15A/LW15A



CDX-30A/W30A



CDX-85A/W85A



CDX-150A/W150A

If extending the cable

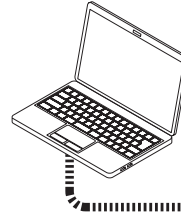
Sensor head extension cable

DSC-1208-G02MA
DSC-1208-G05MA
DSC-1208-G10MA

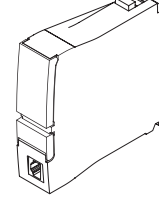
Branch connector
(included with
sensor head)

SYL-1208-G0M

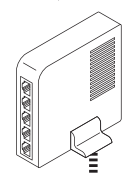
PC



PLC



Hub, router



Ethernet cable

SSL-2J04-G02ME-R
SSL-2J04-G05ME-R
SSL-2J04-G10ME-R

Power supply/external input cable

DOL-1204-G02M
DOL-1204-G05M

If using an amplifier

Sensor/amplifier connection cable

DSL-1204-G02M

If extending the cable

Sensor-to-amplifier extension cable

DSL-0804-G02M
DSL-0804-G05M

Amplifier unit

CDA-M



(Diffuse installation)

Technical drawing of the SCS-1000 sensor showing front, side, and detail views with dimensions in mm.

Front View Dimensions:

- Overall width: 29
- Distance from left edge to center of sensor array: 15
- Height of sensor array: 61
- Distance from bottom edge to center of sensor array: 85 ± 20

Side View Dimensions:

- Overall width: 75
- Distance from left edge to center of sensor array: 66.6
- Distance from center of sensor array to right edge: 4.2
- Overall height: 78
- Distance from top edge to center of sensor array: 69.6
- Distance from center of sensor array to bottom edge: 4.2
- Mounting holes: 2-ø4.3
- Mounting hole diameter: ø4.3

Detail View Dimensions:

- Mounting hole diameter: ø4.3
- Mounting hole depth: 10.5

Optical Axis Diagram:

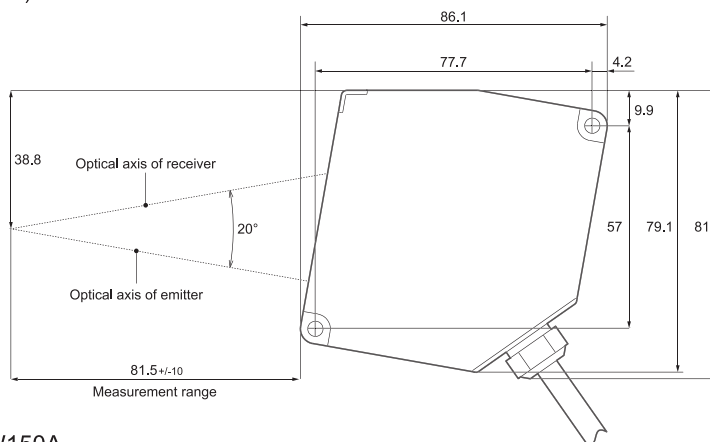
- Optical axis of receiver
- Optical axis of emitter
- Angle between optical axes: 20°

Indicator Labels:

- Link indicator (green)
- Power indicator (orange/green/blue)

(Unit: mm)

(Specular installation)



Technical drawing of the LK-1000 sensor, showing front, side, and top views with dimensions in mm.

Front View (Left): Shows a rectangular sensor with a width of 29 mm. The top section has a width of 15 mm. The sensor features a central square area with a crosshair and a smaller square area below it.

Side View (Middle): Shows the sensor's profile with a height of 61 mm. The measurement range is indicated as 150 ± 40 mm. The optical axis of the receiver is shown at an angle of 13° to the horizontal. The optical axis of the emitter is shown at the bottom. The sensor is mounted on a base with a width of 75 mm and a height of 78 mm. The mounting bracket has a width of 66.6 mm and a height of 4.2 mm. The sensor's mounting hole is 2-ø4.3 mm.

Top View (Right): Shows the sensor's top surface with a width of 29 mm. It includes a link indicator (green) and a power indicator (orange/green/blue). The sensor is mounted on a base with a width of 75 mm and a height of 78 mm. The mounting bracket has a width of 66.6 mm and a height of 4.2 mm. The sensor's mounting hole is 2-ø4.3 mm.

[illegible]

Options

■ Connectors/Connector Cables

Type	Specifications	Cable length	Model
Sensor head extension cable 	Dedicated cable for extension between the sensor head and branch connector. Extension up to 20 m is possible. Robot cable specifications. • Sensor side: M12, 8-pin socket • Branch connector side: M12, 8-pin plug	2 m	DSC-1208-G02MA
		5 m	DSC-1208-G05MA
		10 m	DSC-1208-G10MA
Ethernet cable 	Dedicated cable for connecting from the branch connectors to the Ethernet port. Robot cable specifications. • Branch connector side: M12, 4-pin socket • Host side: RJ45 plug	2 m	SSL-2J04-G02ME-R
		5 m	SSL-2J04-G05ME-R
		10 m	SSL-2J04-G10ME-R
Power supply/external input cable 	Power supply/external input cable for connecting to branch connector. • Branch connector side: M12, 4-pin socket • Power supply/external device side: discrete wire	2 m	DOL-1204-G02M
		5 m	DOL-1204-G05M
Branch connector 	Branch connector for connecting sensor heads and various cables. Included with sensor head.	-	SYL-1208-G0M

■ Amplifier unit, connector cables for amplifier unit

Type	Specifications	Cable length	Model
Amplifier unit 	An amplifier unit to which up to two sensor heads can be connected. Control can be performed using either analog or control outputs, while thickness and height difference measurements can be performed using two sensor heads.	2 m	CDA-M
Sensor/amplifier connection cable 	Connector cable for connecting branch connectors and amplifier units. Robot cable specifications. • Branch connector side: M12, 5-pin socket • Amplifier unit side: M8, 4-pin plug	2 m	DSL-1204-G02M
Sensor-to-amplifier extension cable 	Extension cable for connection to DSL-1204-G02M. Robot cable specifications. • Sensor/amplifier connection cable side: M8, 4-pin socket • Amplifier unit side: M8, 4-pin plug	2 m	DSL-0804-G02M
		5 m	DSL-0804-G05M

- Please ensure that the overall cable length when an amplifier unit is used is within 10 m (sensor head extension cable + sensor/amplifier connection cable + sensor-to-amplifier extension cable).
- If using an amplifier unit, some settings for the CDX series cannot be confirmed or changed. For details, see the CDX series user's manual.
- On the CDX series, CH1 is the only output that can be set and used with an amplifier unit.
- The CDX series does not support CC-Link communication.
- The resolution of the analog outputs (shown below) will be lower than that when using Ethernet communication.
 CDX-85A/-W85A: 10 μm, CDX-150A/-W150A: 10 μm