

High Accuracy Laser Displacement Sensor

LXA SERIES CE

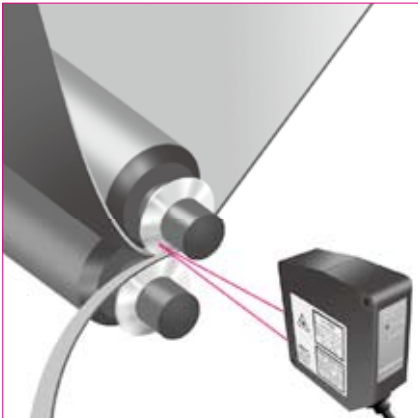
High accuracy measurement with high sensitivity linear image sensor and electronic shutter

- Linearity $\pm 0.1\%$ of FS with high sensitivity image sensor.
- Less affected by color, gloss or material because of electronic shutter.
- High-speed displacement sensor with sampling cycle 100μ sec.
- Amplifier integrated monitor with controller.
- Bank function with 8 channels.
- 5 kinds of individual comparator output.
- Easy to handle with simple button and color LCD.
- IP67 for sensor head.



Applications

Swing measurement [Swing of slitler]



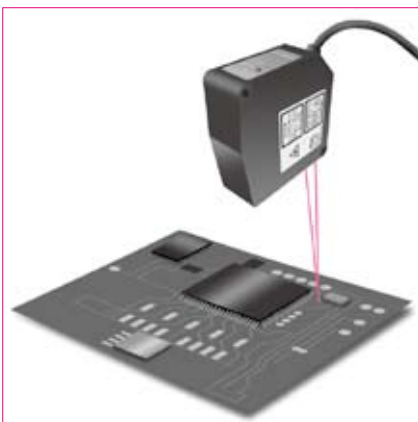
Slip measurement [Slip of roller]



Height measurement [Incomplete pulltop]



Warp measurement [Warp of PCB]



Thickness measurement
[Thickness of board]



Thickness measurement
[Thickness of wafer]



■ Specifications

Sensor head

Kinds		Ultra-high accuracy	High accuracy (short)	High accuracy (middle)	High accuracy (long)
Model No.		HXA-25KL	HXA-30K	HXA-85K	HXA-350K
Optical system		Direct reflection	Coaxial reflection		
Measuring range		25mm±1mm	30mm±5mm	85mm±20mm	350mm±100mm
Light source		Visible red semiconductor laser 650nm			
Laser class		JIS/IEC class1	JIS/IEC class2		
Max.power		390 μW	3mW		
Laser life		Approx. 50,000 hours (at 40°C)			
Spot diameter*1		Approx.25×35 μm	Approx.30×100 μm	Approx.70×290 μm	Approx.300×700 μm
Linearity*2		±0.1%F.S			
Resolution*3		0.1 μm	1 μm	3 μm	40 μm
Temperature drift		±0.01%FS/°C			
Indication lamps	Laser emitting lamp	Green LED (Lights up when emitting)			
	Measuring range lamp	Red LED (short side), orange LED (center), green LED (long side) Red/green mutual blinking (out of measuring and impossible measuring)			
Ambient illuminance		Incandescent lamp: 3,000lux or less, sun light: 10,000lux or less			
Ambient temperature/humidity		-10 to +45°C (-20 to +60°C when stored), 35 to 85%RH (35 to 95%RH when stored) Not icing, not condensing			
Insulation resistance		20M Ω (DC500V) or more			
Withstand voltage		1,000VAC/min.			
Vibration resistance		Double amplitude 1.5mm, 10 to 55Hz, each 2 hour in X, Y and Z directions			
Impact resistance		498m/s ² , each 3 time in X, Y and Z directions			
Protective structure		IP67 (IEC standard)			
Case materials		Body: Aluminum die-casting, window: glass			
Weight		250g (including cable)			
Cable extension		Up to 10m max.with available extension cable			
Accessory		Screw (M4×35)			

*1. This is defined with 1/e (13.5%) of center strength at center of measuring.It may be affected if there are any objects with high reflectance.

*2. Mean numbers 256(exclusive amplifier),white ceramic.

*3. Mean numbers 256(exclusive amplifier),typical value at center of measuring.It may be changed depending on objects.

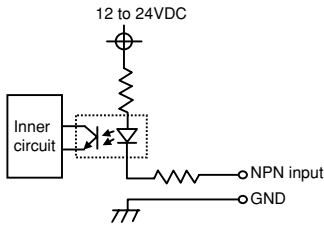
Amplifier

Kinds		Amplifier for ultra-high accuracy (HXA-25KL)	Amplifier for high accuracy (HXA-30K/80K/350K)
Model No.		LXA-DCL	LXA-DC
Power source		12 to 24VDC (+10%, -10%, ripple 10% or less)	
Current consumption		270mA when 24VDC (including 2 pcs of sensor head and analog output current)	
Sensor connectable numbers		Max.2 pcs	
Sampling cycle		100 μsec	
Temperature drift		±0.01% F.S/°C	
Control output		NPN open-collector output, 100mA 24VDC or less (residual voltage 1.8V or less) 5 output (individual setting is available), Hysteresis setting is available	
Analog output		Voltage output: ±5V/F.S. (Output impedance 100 Ω, resolution 1mV) Current output: 4 to 20mA/F.S. (Load impedance 300 Ω, resolution 1.5 μA)	
Alarm output		NPN open-collector output 100mA 24VDC or less (residual voltage 1.8V or less) ON when head can't measure	
Bank input		ON when connecting to GND, 8 banks (8 patterns of measuring condition can be registered or changed)	
Hold input		ON when connecting to GND, Laser off or measuring value is held (set by menu)	
Zero reset input		ON when connecting to GND, Zero reset is available for Head A value, head B value and calculating value	
Optional functions		Average sampling times, filter mode (cut-off frequency), calculation, hold setting output during alarm, output control (hysteresis), Analog output, sensor head sensitivity control, timer function, memory function, bank function, auto-zero reset	
Circuit stable time		5 min. or less	
Display		LCD	
Connection		Terminal stand	
Ambient temperature/humidity		-10 to +45°C (-20 to +60°C at stored), 35 to 85%RH (35 to 85% at stored) Not icing, not condensing	
Withstand voltage		1,000VAC/min.	
Insulation resistance		20M Ω (500VDC) or more	
Vibration resistance		Double amplitude 1.5mm, 10 to 55Hz, each 2 hour in X, Y and Z directions	
Impact resistance		196m/s ² , each 3 time in X, Y and Z directions	
Protective structure		IP20 (IEC standard)	
Case materials		Body: Polycarbonate, terminal stand: nylon66	
Weight		240g (including terminal stand)	
Accessory		Terminal stand	

Input/output circuit

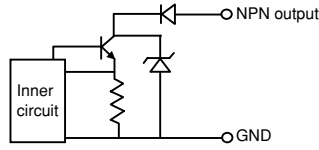
Input circuit

- Bank input, hold input, zero reset input

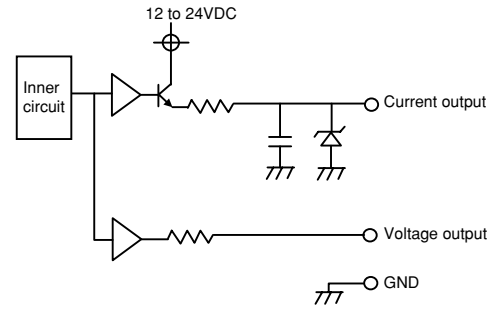


Output circuit

- Control output, alarm output



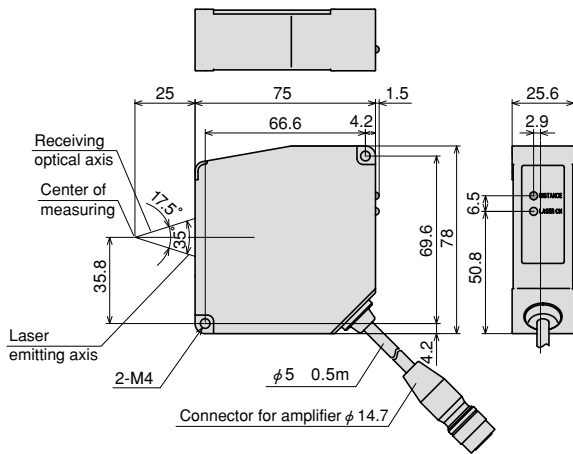
- Analog output (A/B)



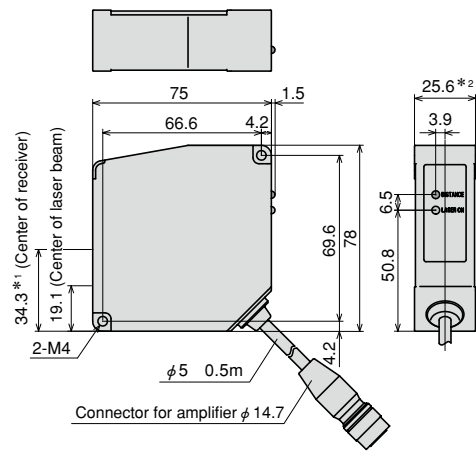
External dimension

Sensor head

- HXA25KL

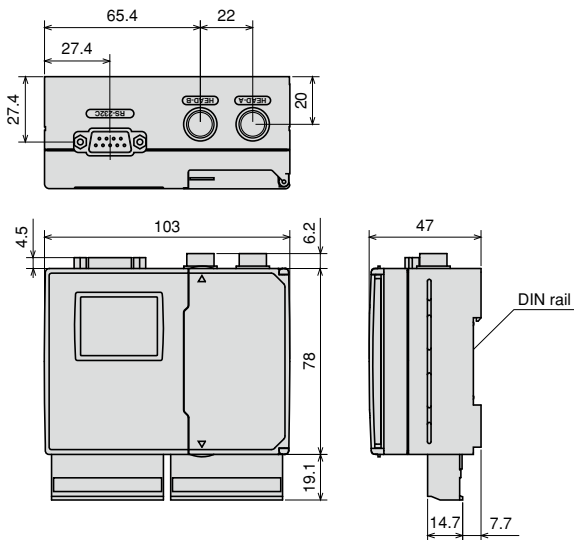


- HXA-30K · HXA-85K · HXA-350K



* 1. For HXA-30K, 42.3 for HXA-85K, 50 for HXA-350K.
* 2. For HXA-30K/HXA-85K, 27 for HXA-350K.

Amplifier



Cautions for Laser Product

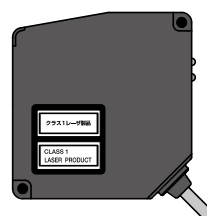
This product is radiating the infrared laser beam and is classified as Class 1/2 by JIS C6802:2005/IEC 60825-1 Laser Safety Standard. Refer to Page 159.



Warning

Don't view the laser beam directly or expose it to human eyes. It may injure human eyes or damage health.

HXA-25KL



HXA-30K/ 85K/ 350K

