

LED Type Optical Displacement Sensor **Sensor Head**
LH-50 Series

For details, please refer to the User's Manual of the controller **LH-CL6(P)** or **LH-CS6(P)/LH-CD6(P)**.

1 MAJOR PECIFICATIONS

Item	Type	40mm type	80mm type	120mm type	
Model No.		LH-54	LH-58	LH-512	
Applicable Controller (Note 2)		LH-CL6(P), LH-CS6(P), LH-CD6(P)			
Center measuring distance		40mm	80mm	120mm	
Measuring range		±10mm (30 to 50mm)	±20mm (60 to 100mm)	±30mm (90 to 150mm)	
Emitting element		Red LED (modulated, peak wavelength: 650nm)			
Spot diameter (Note 3)		φ 1.6mm or less	φ 2.0mm or less	φ 3.0mm or less	
Resolution (Note 4)	Controller response time	300ms	2 μm	4 μm	20 μm
		100ms	4 μm	8 μm	40 μm
		40ms	5 μm	14 μm	65 μm
		30ms	6 μm	16 μm	75 μm
		20ms	7 μm	28 μm	92 μm
		10ms	10 μm	40 μm	130 μm
		1ms	20 μm	120 μm	400 μm
0.5ms	40 μm	160 μm	580 μm		
Linearity (Note 5)		Within ± 0.2% F.S.			
Ambient temperature		0 to +45° (No dew condensation allowed) Storage: -20 to +60°C			
Ambient humidity		35 to 85% RH, Storage: 35 to 85% RH			
Ambient illuminance (Incandescent light)		3,000 lx or less	2,000 lx or less		
Protection (Except connector part)		IP67 (IEC)			
Material		Enclosure: PEI, Enclosure cover: Aluminum			
Cable		0.22mm ² 11-core composite cable, 0.2m long, with a connector at the end			
Cable extension		Extension up to total 10.2m is possible with optional cable.			
Weight		70g approx. (with cable), 45g approx. (without cable)			

- Notes:
- Conditions which have not been specified are to be taken as: use of an applicable controller, 24V DC supply voltage, +20°C ambient temperature, SELECT gain setting, 300ms response time setting, center measuring distance, interference prevention function not used and white ceramic board object.
 - For details of the applicable controller, please refer to the instruction manual of the controller.
 - This is the value at the center measuring distance, and is based on the definition of 1/e² (13.5%) of the beam axis light intensity. Take care that some amount of light spreads out of the specified spot diameter and, depending on the conditions around the measured object, may affect the measurement accuracy.
 - This is the typical value at the center measuring distance for a white ceramic board object. The given values are for the analog output of the applicable controller.
 - This is the value for white ceramic board object. The linearity may differ depending on the measured object. The given value is for the analog output of the applicable controller.

3 CAUTIONS

The sensor head has been designed to meet the specifications when used along with the optional exclusive controller. In case it is used in a combination that does not use the optional exclusive controller, not only the specifications may not be met, but it may also cause an accident, etc. Hence, always use the sensor head along with the exclusive controller.

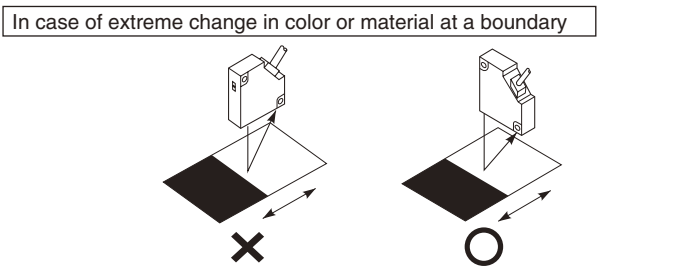
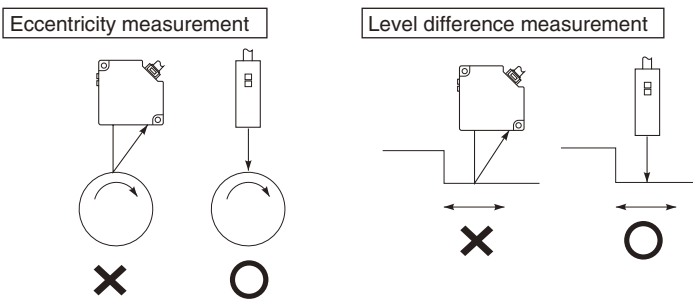
- This product has been developed/produced for industrial use only.
- Take care that wrong wiring will damage the sensor.
- Use this product 10min. after the power is supplied. Immediately on supply of power, the electrical circuit is yet to stabilize, which may cause variation in measured values.
- Do not allow any water, oil, fingerprints, etc., which may refract light, or dust, dirt, etc., which may block light, to stick to the emitting/receiving surfaces of the sensor head. In case they are present, wipe them with a clean, soft cloth or lens paper.
- Take care that in case the measured object has a highly reflective surface or is transparent, accurate measurement may not be possible.

Thank you very much for using our product. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this sensor. Kindly keep this manual in a convenient place for quick reference.

! This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

2 MOUNTING

- Install the sensor head such that the sensing surface of the sensor head and the measured object are parallel. The screw tightening torque should be 0.5N·m or less.
- In case the measured object is moving as shown below, take care of the mounting direction of the sensor head, as an error may be generated depending on the mounting direction.



- In case several sensor heads are arranged in a row, mount them by keeping the minimum distance given below.

Note: The above values are for the case when the interference prevention function is used.

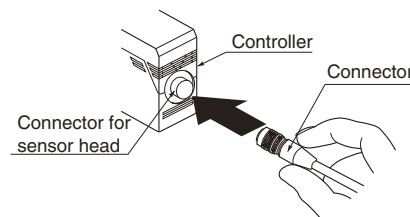
- Although this sensor uses a red LED as the beam source, do not directly see the beam emitted from the sensor head, since it has been focused and has high optical intensity.
- Take care that extraneous light, such as sunlight or light having the same wavelength, does not fall on the receiving part of the sensor head. Especially for accurate measurements, install a shield, etc., to block extraneous light.
- Although the sensor head has IP67 protection, measurement in water or rain is not possible. Further, the connector part is not water-proof.
- Avoid use at places subject to intense vibrations or shock.
- Avoid dust, dirt, and steam.
- Take care that the sensor head does not come in direct contact with water, oil, grease, or organic solvents, such as thinner, etc.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.
- This sensor is suitable for indoor use only.

4 CONNECTION

- Connection of sensor head to controller

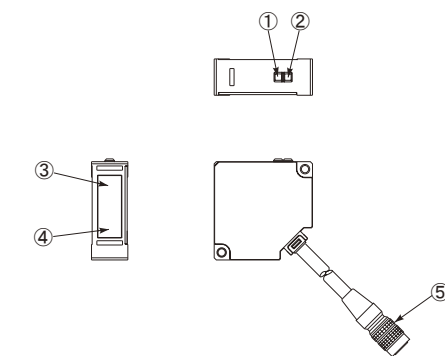
Make sure to connect or disconnect the connector to the controller in the power supply off condition.

- Hold the sensor head's connector and insert it into the connector provided on the controller for sensor head connection. Insert till it locks.



- To remove the sensor head, hold its connector by the outer ring and pull it straight out. While removing the connector from the controller, take care not to touch the terminals inside the connector. (Do not pull by holding the cable, as this can result in cable disconnection.)

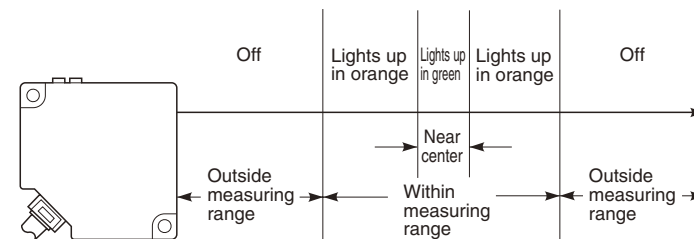
5 FUNCTIONAL DESCRIPTION



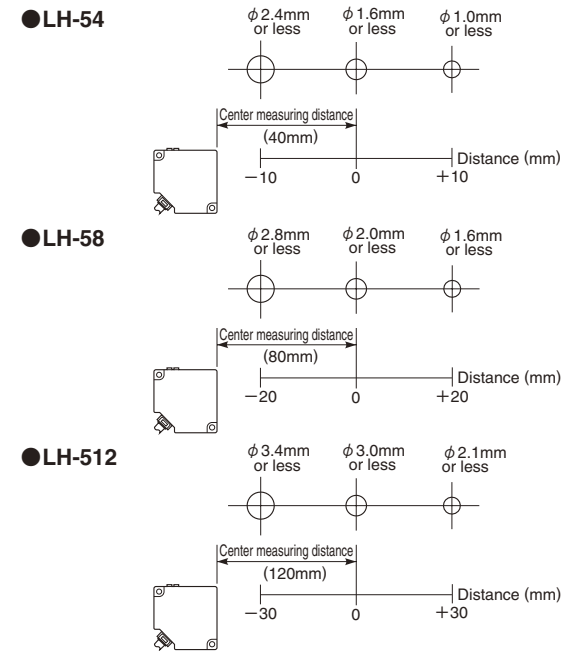
No.	Description	Function
①	Emitting indicator (Yellow)	Lights up during emission.
②	Operation indicator 2-color (Green, Orange)	Lights up in green when object is at center measuring distance. Lights up in orange when object is within measuring range. Turns off when object is outside measuring range.
③	Emitting part	Emits the LED beam
④	Receiving part	Receives the reflected beam
⑤	Connector for controller	It connects to the controller or the extension cable.

6 MEASURING DISTANCE

- Adjust the distance between the sensor head and the measured object to be within the measuring range, by checking the operation indicator. Further, adjusting the reference position (center of displacement) of the measured object near the center measuring distance (LH-54: 40mm, LH-58: 80mm, LH-512: 120mm) results in stable measurement.

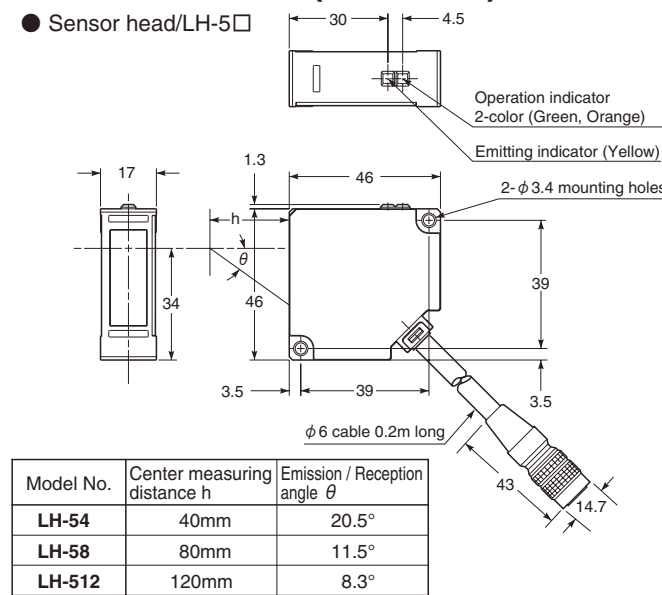


7 SPOT DIAMETER

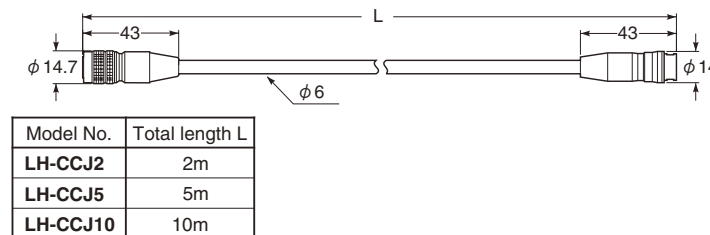


Note: The spot diameter is based on the definition of 1/e² (13.5%) of the beam axis light intensity. Take care that some amount of light spreads out of the specified spot diameter and, depending on the conditions around the measured object, may affect the measurement accuracy.

8 DIMENSIONS (Unit: mm)



- Extension cable/LH-CCJ□ (Optional)



9 INTENDED PRODUCTS FOR CE MARKING

- The models listed under 'z MAJOR SPECIFICATIONS' come with CE Marking.
- As for all other models, please contact our office.



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