



INSTRUCTION SHEET

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PRECAUTIONS ON SAFETY

⚠ WARNING

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- **Alert Statements in this Sheet / Messages d'alerte**

⚠ WARNING / AVERTISSEMENT

Ne pas démonter ce produit. Cela pourrait provoquer une exposition à la source lumineuse intégrée, qui peut endommager les yeux et la peau. Ne jamais le démonter.

PRECAUTIONS FOR SAFE USE

1. Do not use the product in environments where it can be exposed to inflammable/explosive gas.
2. Do not disassemble, repair or modify this product.
3. Be sure to make sure that locking mechanisms are locked before use.
4. Dispose of this product as industrial waste.

PRECAUTIONS FOR CORRECT USE

1. Do not install the product in locations subjected to the following conditions:
 - Reflection of intense light (such as other laser beams or electric arc-welding machines)
 - Presence of dust, oil droplets or spray on the filter on the front of the Sensor Head
 - Presence of corrosive or flammable gases
 - Direct vibration or shock
2. Pre-installation Checks
 - The product cannot accurately measure the following types of objects: (transparent objects, objects having an extremely low reflection factor, objects smaller than the spot diameter, objects with a large curvature, excessively inclined objects, etc.)
3. Wiring
 - Avoid wiring the cable between the Sensor Head and Sensor Controller including this product near high voltage lines and power lines.
Wiring them together or placing them in the same duct may cause induction, resulting in malfunction or damage.
 - Before connecting/disconnecting the Sensor Head, make sure that the Smart Sensor is turned OFF. The Smart Sensor may break down if the Sensor Head is connected or disconnected while the power is ON.
4. Cleaning
 - Do not use paint thinner, benzene, acetone or kerosene to clean the Sensor Head. Doing so will melt the surface of the Sensor Head.
 - To remove dust particles, use a blower brush.
 - To remove stubborn dirt, wipe gently with a soft cloth moistened with a small amount of alcohol.
5. Compatibility
 - The Sensor Head is compatible with the Sensor Controller, and can be used if purchased separately.

LASER SAFETY / SÉCURITÉ LASER

- The ZS-LD350S emits a visible laser beam. Do not stare directly into the laser. Make sure that the laser beam path is terminated.
- A non-reflective matte painted surface is ideal at the end of the laser beam path.
- If specular objects are present in the laser beam path, make sure that they are prevented from reflecting the laser beam. When used without an enclosure, make sure the laser path from eye level is avoided.

- Laser safety measures for laser devices are stipulated both in Japan and overseas. Here, five cases are described.

■ Specifications

Item	Model	ZS-LD50S
Optical system		Diffuse reflection Regular reflection
Measuring center distance		50mm 47mm
Measuring range		±5mm ±4mm
Light source		Visible semiconductor laser (wavelength 650 nm, 1mW max. , JIS Class2, IEC/EN Class2, FDA Class II)
Beam diameter (*1)		50 μm dia.
Linearity (*2)		±0.1%F.S.
Resolution (*3)		0.8μm
Temperature characteristic (*4)		0.02%F.S./°C
Sampling cycle (*5)		110μs
Indicators	NEAR indicator	Lit near measuring center distance, and nearer than measuring center distance inside the measuring range Blinks when the measurement target is outside of the measuring range or when the received light amount is insufficient
	FAR indicator	Lit near measuring center distance, and further than measuring center distance inside the measuring range Blinks when the measurement target is outside of the measuring range or when the received light amount is insufficient
Operating ambient illumination		Illumination on received light surface 3000 lx or less (incandescent light)
Ambient temperature		Operating: 0 to +50°C, Storage: -15 to +60°C (with no icing or condensation)
Ambient humidity		Operating and storage: 35% to 85% RH (with no condensation)
Degree of protection		Cable length 0.5 m: IP66, cable length 2 m: IP67
Vibration resistance (destructive)		10 to 150 Hz, 0.7-mm double amplitude 80 min each in X, Y, and Z directions
Shock resistance (destruction)		150m/s ² , for 3 times each in X,Y and Z directions
Materials		Case: aluminum die-cast, front cover: glass
Cable length		0.5 m, 2 m
Weight		Approx. 350 g
Accessories		Laser label (1 each for JIS/EN&IEC/GB,3 for FDA), Ferrite core (2 pcs), Insure Lock (2 pcs), Instruction Sheet

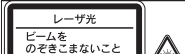
*1 Defined as $1/e^2$ (13.5 %) of the center optical intensity in the measurement center distance (effective value). The beam diameter is sometimes influenced by the ambient conditions of the workpiece such as leaked light from the main beam.

*2 This is the error on the measured value with respect to an ideal straight line. In the diffuse reflection mode, the standard workpiece is white aluminum ceramic, and is glass in the regular reflection mode. Linearity may change according to the workpiece.

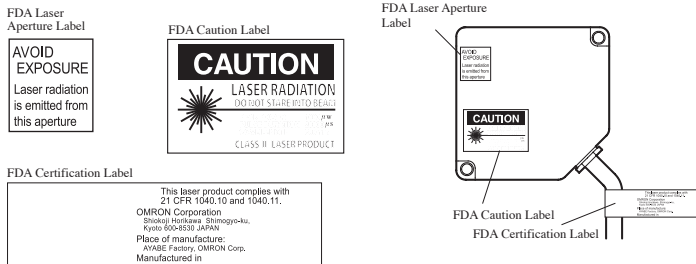
*3 This is the "peak-to-peak" displacement conversion value of the displacement output in the measuring center distance when the number of samples to average is set to 128, and the measuring mode is set to the high-resolution mode. In diffuse reflection mode, the standard workpiece is white aluminum ceramics, and glass in the regular reflection mode. Minimum resolution is $0.25\mu\text{m}$.


*4 This is the typical value obtained in the measuring center distance when the sensor and workpiece are fixed by an aluminum tool.

*5 This value is obtained when the measuring mode is set to the high speed mode.

- (1) Usage in Japan
The JIS C6802:2014 standard stipulates the safety precautions that users must take according to the class of the laser product. The ZS-LD50S is classified into class 2 defined by this standard.
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- (2) USA
When a laser device is exported to the USA, it falls under the laser regulations of the FDA (Food and Drug Administration). The ZS-LD50S is classified as a class-II laser by 21CFR1040, and it has already been registered with the CDRH (Center for Devices and Radiological Health). Ask your OMRON representative for details.

Technical standards have been provided with the ZS-LD50S. When exporting to the USA, refer to the following illustration and replace the label with the caution label. It is assumed that the ZS-LD50S will be incorporated into a final system device. When incorporating the ZS-LD50S, comply with the following technical standards: US Federal Law 21 CFR 1040.10 and 1040.11.



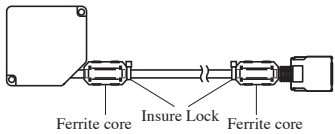
- (3) China
The ZS-LD50S is classified into Class 2 by the GB/T 7247.1-2024 standard.
When using in China, warning labels must be replaced by Chinese ones supplied with the product.
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- The image shows a warning label for Class 2 Laser Radiation. At the top, there is a warning symbol (a triangle with an exclamation mark) and the text '警告' (Warning). Below this, the text '激光辐射' (Laser Radiation) is centered. The label is divided into two main sections. The left section lists the hazard type '半导体激光' (Semiconductor Laser), the laser class 'II类激光' (Class II Laser), the maximum power '最大输出功率: 1.0mW', the pulse duration '脉宽: 1.8msec', and the wavelength '波长: 650nm'. The right section contains the text '2类激光产品' (Class 2 Laser Product) and the standard 'GB/T 7247.1-2024'.
- (4) Canada
The ZS-LD50S is Classified into Class 2 by the IEC60825-1:2014 standard.
Le ZS-LD50S est classé dans la classe 2 selon la norme IEC 60825-1:2014.



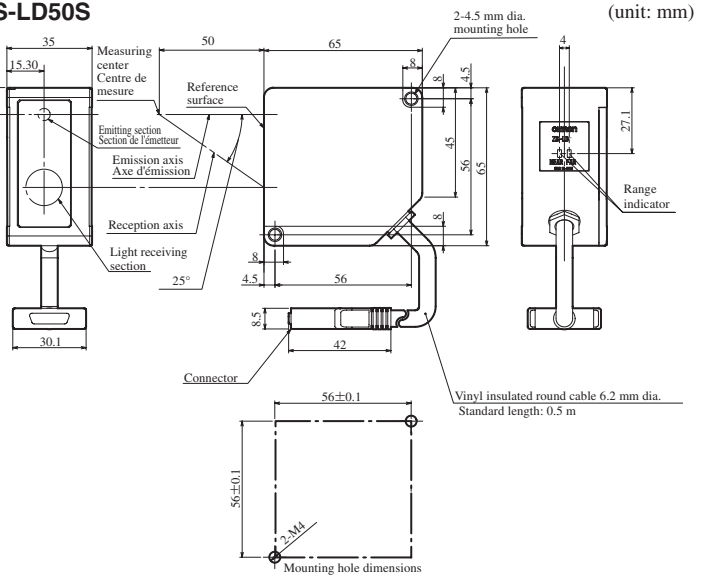
- (5) For countries other than Japan, U.S., China and Canada
When usage in countries other than Japan, U.S., China
and Canada, labels must be replaced by suitable for
the area ones supplied with the ZS-LD50S. When
exporting to Europe, labels fall under EU standard EN
60825-1:2014+A11:2021. The ZS-LD50S is classified
into Class 2 by the IEC 60825-1:2014 / EN
60825-1:2014+A11:2021 standard.



If the ferrite core comes loose from the cable, fasten the ferrite core in place with the Insure Lock (supplied).



■ Dimensions



The serial number "SSSSMY" on the label on the product indicates the date of manufacture.
SSSS: identification number
M: Months of production 1-9 for Jan.-Sep., X for Oct., Y for Nov., Z for Dec.
YY: Year of manufacture (last 2 digits of A.D.)

Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

OMRON Corporation Industrial Automation Company
Kyoto, JAPAN Contact: www.ia.omron.com

Regional Headquarters

OMRON EUROPE B.V.
Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31)2356-81-300/Fax: (31)2356-81-388

OMRON ELECTRONICS LLC
2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900/Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.
438B Alexandra Road, #08-01/02 Alexandra
Technopark, Singapore 119968
Tel: (65) 6835-3011 / Fax: (65) 6835-3011

OMRON (CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-6023-0333 / Fax: (86) 21-5037-2388

OMRON Canada Inc.
1675 Trans Canada Route Suite 105,
Dorval, Quebec H9P 1J1, Canada

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