

A⊗ 2024年12月



OMRON

Model ZS-HLDS5/HLDS5T

Sensor Head for Smart Sensor ZS-HLDC□□

INSTRUCTION SHEET

Thank you for selecting OMRON product. This sheet primarily describes precautions required in installing and operating the product.

Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience, keep the sheet at your disposal.

■Export and Trade Control Laws

The ZS-HLDS5 is classed as a commodity (or technology) requiring acquisition of export permission in accordance with foreign exchange and overseas trade control laws. When the ZS-HLDS5 is to be taken outside of Japan, adopt the required procedures such as application for export permission by the Japanese government.  
\* Contact your OMRON representative.

TRACEABILITY INFORMATION:


Importer in EU : Omron Europe B.V.  
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The Netherlands  
Manufacturer: Omron Corporation,  
Shiokoji Horikawa, Shimogyo-ku,  
Kyoto 600-8530 JAPAN

The following notice applies only to products that carry the CE mark:  
Notice:  
This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.

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PRECAUTIONS ON SAFETY


●Meanings of Signal Words




**WARNING**

Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally, there may be significant property damage.

●Meaning of Alert Symbols





● Laser beam  
Cautions to indicate potential Laser beam hazard.



● Resolution prohibition  
Indicates prohibition when there is a risk of minor injury from electrical shock or other source if the product is disassembled.

●Alert Statements in this Sheet / Messages d'alerte

WARNING / AVERTISSEMENT	
Looking into the Outgoing light continuously may cause visual impairment. Do not look directly into the Outgoing light. Caution-Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.	
Fixer en continu la lumière sortante peut provoquer des troubles visuels. Ne pas fixer directement la lumière sortante. Attention-L'utilisation des commandes ou réglages ou l'exécution des procédures autres que celles spécifiées dans les présentes exigences peuvent être la cause d'une exposition à un rayonnement dangereux.	
Do not disassemble this product. Doing so may cause exposure to the built-in light source which can damage eyes and skin. Never disassemble it.	
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

Please observe the following precautions for safe use of the product:

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

PRECAUTIONS FOR CORRECT USE

- 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
- 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.)
- 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.
- 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.
- Compatibility
  - The Sensor Head is compatible with the Sensor Controller, and can be used if purchased separately.
- Cable extend
  - This product can't be connected to long extension cables for sensor head (Model ZS-XC□□CR, Model ZS-XC02D and Model ZS-XEQ).

LASER SAFETY / SÉCURITÉ LASER

■Handling Precautions

- The ZS-HLDS5/HLDS5T 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-HLDS5	
Optical system		Diffuse reflection	Regular reflection
Measuring center distance		50mm	44mm
Measuring range		±5mm	±4mm
Light source		Visible semiconductor laser (wavelength 650 nm, 1mW max. , JIS Class2, IEC/EN Class2, FDA ClassII)	
Beam diameter (*1)		30×1000 μm	
Linearity (*2)		±0.1%F.S.	
Resolution (*3)		0.1μm	0.25μm
Temperature characteristic (*4)		±0.01%F.S./℃	
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℃, Storage: -15 to +60℃ (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, 0.35-mm half amplitude 80 min each in X, Y, and Z directions	
Shock resistance (destructive)		150m/s <sup>2</sup> 3times each in six directions (up/down, left/right, toward/backward)	
Materials		Case: aluminum die-cast, front cover: glass	
Cable length		0.5 m, 2 m	
Weight		Approx. 600 g	
Accessories		Laser label (1 each for JIS/EN/GB, 3 for FDA), Ferrite core (4 pcs), Insure Lock (2 pcs), Instruction Sheet	

\*1 Defined as 1/e<sup>2</sup>(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.

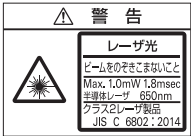
\*2 This is the error on the measured value with respect to an ideal straight line. In the diffuse reflection mode, the standard workpiece is white aluminumceramic, and is glass in the regular reflection mode. Linearity may change according to the workpiece.

\*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 512, and the measuring mode is set to high-resolution mode. In diffuse reflection mode, the standard workpiece is white aluminum ceramics, and glass in the regular reflection mode.

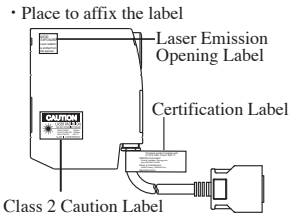
\*4 This is the typical value obtained in the measuring center distance when the sensor and workpiece are fixed by an aluminum tool.

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

- 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-HLDS5/HLDS5T is classified into class 2 defined by this standard. labeling on Laser Use  
The ZS-HLDS5/HLDS5T has the following warning label on the side of the sensors.



- 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-HLDS5/HLDS5T 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-HLDS5/HLDS5T. When exporting to the USA, refer to the following illustration and attach the caution label, Certification label and Laser Emission Opening label.  
It is assumed that the ZS-HLDS5/HLDS5T will be incorporated into a final system device. When incorporating the ZS-HLDS5/HLDS5T, comply with the following technical standards: US Federal Law 21 CFR 1040.10 and 1040.11.



- China  
The ZS-HLDS5/HLDS5T 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.



- Canada  
The ZS-HLDS5/HLDS5T is Classified into Class 2 by the IEC60825-1:2014 standard. Le ZS-HLDS5/HLDS5T est classé dans la classe 2 selon la norme IEC 60825-1:2014.

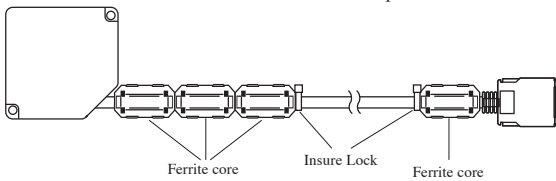


- For countries other than Japan, U.S., China and Canada  
When usage in countries other than Japan, U.S., China and Canada, warning labels must be replaced by suitable for the area ones supplied with the ZS-HLDS5/HLDS5T. When exporting to Europe, labels fall under EU standard EN 60825-1:2014+A11:2021. The ZS-HLDS5/HLDS5T is classified into Class 2 by the IEC 60825-1:2014 / EN 60825-1:2014+A11:2021 standard.



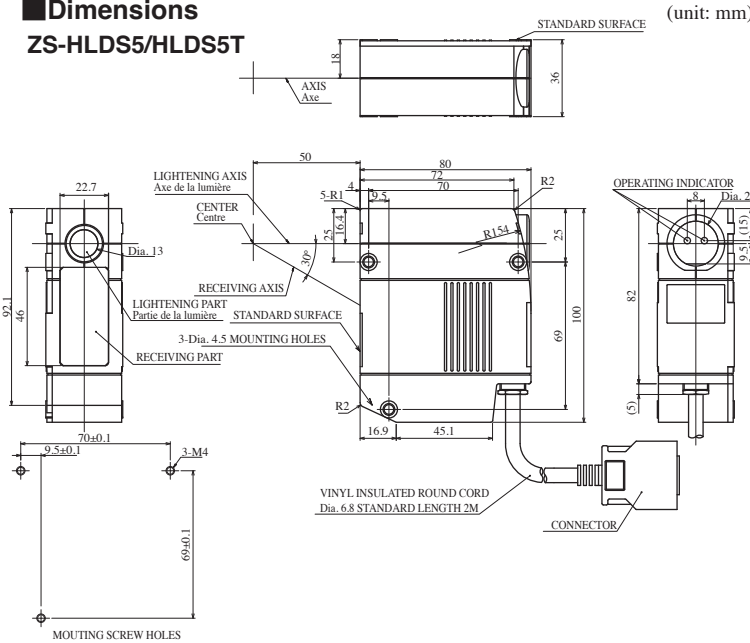
■Attaching the ferrite core

Attach three ferrite cores (provided with the Sensor Head) to the Sensor Head side of the Sensor Head cable, and attach one ferrite core to the connector side of the Sensor Head cable.  
If the ferrite core comes loose from the cable, fasten the ferrite core in place with the Insure Lock (supplied).



■Dimensions

ZS-HLDS5/HLDS5T



■ Serial number

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.

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