

OMRON

ZG2-WDS3V/WDS3VT

Sensor Head for
Profile Measuring Sensor
ZG2-WDC□□

INSTRUCTION SHEET

Please read and understand this instruction sheet before storing, installing, programming, operating, maintaining, or disposing of the products. Please consult your OMRON representative if you have any questions or comments.

Please refer to the Controller Operating Manual for detailed instructions on usage.

TRACEABILITY INFORMATION:
Importer in EU :
Omron Europe B.V.
Wegalaan 67-69
2132 JD Hoofddorp,
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

●Meaning 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.

●Meanings of Alert Symbols

Laser beam

Cautions to indicate potential laser beam hazard

Do not disassemble

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

●Alert Statements / 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.

SAFETY PRECAUTIONS FOR USING LASER EQUIPMENT
PRÉCAUTIONS DE SÉCURITÉ POUR L'UTILISATION D'ÉQUIPEMENTS LASER

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

(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 ZG2-WDS3V/WDS3VT is classified into class 2 defined by this standard. The ZG2-WDS3V/WDS3VT has the following warning label on the side of sensors.

(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 ZG2-WDS3V/WDS3VT 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 ZG2-WDS3V/WDS3VT. When exporting to the USA, refer to the following illustration and replace the label with the caution label. It is assumed that the ZG2-WDS3V/WDS3VT will be incorporated into a final system device. When incorporating the ZG2-WDS3V/WDS3VT, comply with the following technical standards: US Federal Law 21 CFR 1040.10 and 1040.11.
Laser Emission Opening Label

(3)China
The ZG2-WDS3V/WDS3VT 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.

(4)Canada
The ZG2-WDS3V/WDS3VT is Classified into Class 2 by the IEC60825-1:2014 standard. Le ZG2-WDS3V/WDS3VT est classé dans la classe 2 selon la norme IEC 60825-1:2014.

レーザ光

ビームを
のぞきこまないこと

Max.10mW 5msec
半導体レーザ 650nm
クラス2レーザ製品
JIS C 6802:2014

警告

Class II Caution Label

Class II Caution Label

Certification Label

Certification Label

This laser product complies with
General Certification
from 6000 series onwards.
Place of manufacture:
Loughborough, Leicestershire,
Manufactured in

警告

激光辐射

勿直视光束

最大輸出
:10mW
脈長
:5msec
波長
:650nm
2 类激光产品
GB/T 7247.1-2024

警告

RAYONNEMENT LASER

NE PAS REGARDER DANS LE FAISCEAU

ÉMISSION 10mW DURÉE D'IMPULSION 50ms
LONGUEUR D'ONDE 650nm
APPAREIL À LASER DE CLASSE 2
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, warning labels must be replaced by suitable for the area ones supplied with the ZG2-WDS3V/WDS3VT. When exporting to Europe, labels fall under EU standard EN 60825-1:2014+A11:2021. The ZG2-WDS3V/WDS3VT is classified into Class 2 by the IEC 60825-1:2014 / EN 60825-1:2014+A11:2021 standard.

WARNING

LASER RADIATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT
MAXIMUM OUTPUT:10mW
PULSE DURATION :5msec
WAVE LENGTH: 650nm
EN 60825-1:2014+A11:2021
IEC 60825-1:2014

- Safety Devices
- The ZG2 is equipped with laser radiation warning lamp and laser off input circuit. Interlocking unit can be configured in the external circuit.
- Usage
- Use laser enclosure device to prevent specular object from reflecting laser beam. When used without an enclosure, be sure to avoid a laser path from eye level.
- Although the safety distance (NOHD) is approximately 1 m; it is advisable, however, to terminate the laser on its path if possible. Non-reflective, flattening material is recommendable for termination.

Classification										
Required Items	Class 1	Class 1M	Class 2	Class 2M	Class 3R	Class 3B	Class 4			
Laser safety officer	Not required				Not required for visible light type. Required for invisible light type.					
Remote interlock	Not required				Connect to room or door circuits.					
Key control	Not required				Remove key when not in use.					
Beam attenuator	Not required				When in use prevents inadvertent exposure.					
Emission indicator device	Not required				Not required for visible light type. Required for invisible light type.					
Warning signs	Not required				Follow precautions on warning signs.					
Beam path	Not required	Note1	Not required	Note2	Terminate beam at end of useful length.					
Specular reflection	Not required	Note1	Not required	Note2	Prevent unintentional reflections.					
Eye protection	Not required				Required if engineering and administrative procedures not practicable and MPE exceeded.					
Protective clothing	Not required				Sometimes Specific required requirements					
Training	Not required	Note1	Not required	Note2	Required for all operator and maintenance personnel					
Note1. Class 1M laser product on condition 1 in table 10 in IEC 60825-1 is required. Class 1M laser product on condition 2 is not required.										
Note2. Class 2M laser product on condition 1 in table 10 in IEC 60825-1 is required. Class 2M laser product on condition 2 is not required.										

PRECAUTION FOR SAFE USE

Please observe the following precautions for safe use of the products.

(1) Do not use the product in environments where it can be exposed to inflammable/explosive gas.

(2) Do not install the product close to high-voltage devices and power devices in order to secure the safety of operation and maintenance.

(3) Make sure to use the product with the power supply voltage specified.

(4) Make sure to tighten all installation screws securely.

(5) Do not disassemble, repair, or modify the product.

(6) Dispose of this product as industrial waste.

PRECAUTION FOR CORRECT USE

Please observe the following precautions to prevent failure to operate, malfunctions, or undesirable effects on product performance.

(1) Do not install the product in locations subjected to the following conditions:

- ・Condensation caused by high humidity
- ・Sudden changes in humidity
- ・Cold conditions that may cause freezing
- ・Presence of corrosive or flammable gases
- ・Direct vibration or shock
- ・Build-up of dust or metal chips
- ・Spraying byorganic solvents,water,oil or other liquids
- ・Strong magnetic or electric field
- ・Reflection of intense light(such as other laser beams or electric arc-welding machines) or generation of strong electromagnetic waves

(2) Component
Use only products that have been made expressly for the controller.

(3) Sensor
Install the sensor in a clean environment and keep the optical filter on the front panel of the sensor free from oil and dust.

- ・If affected by oil or dust,clean the filter as follows:
Use a blower brush (normally used to clean camera lenses) to blow large dust particles away from the surface.Do not blow the dust away with your mouth.
- ・Gently wipe small dirt or dust particles off with a soft cloth (such as a lens cleaning cloth) dampened with a small amount of alcohol.

Do not wipe too vigorously.Scratches on the filter may cause errors later.

(4) Environment
The sensor cannot detect the following types of objects accurately:Materials with extremely small reflectances, objects with small curvatures,or objects tilted to a large degree.

(5) Warming Up
After turning on the power supply,allow the Controller to stand for at least 30 minutes before use.The circuits are unstable immediately after the power supply is turned on and attempting measurement may result in inconsistent measurement values.

(6)Influence of external light

- ・Do not install a sensor head under the condition that strong light.
- ・When a target is glossy,the target might reflect another light such as fluorescent from ceiling into the sensor head,which might cause malfunction. In this case,prerent the light from being incident into the sensor head.

Sensor Specifications		
Model		ZG2-WDS3V/WDS3VT
Sensor Installation		Mirror reflection
Reference distance (direction of height)		22.3mm
Measure-	Direction of width	3mmTYP
ment range	Direction of height	
Light source		Visible Semiconductor Laser (Wave length:650nm,1mW max,JIS class2, IEC/EN class 2,FDA classII)
Beam dimensions		*1 25μm×4mm typical at the reference distance
Resolution in the direction of width		5μm(3mm/631pix)
Resolution in the direction of hight		*2 0.2μm
Linearity in the direction of hight		*3 ±0.1%FS
LED indicator lamp		*4 There are two indicators for the laser status. “STANDBY”:The laser is ready to emit light."LD ON":The laser is emitting light. Both indicators are OFF until the sensor is ready to work after power turns ON.
Detection object		Opaque object/ Transparent object
Temperature characteristic *5		0.08°F.S/°C
Operation environment robustness	Degree of protection	IP67(IEC60529)
	Ambient operating illumination	Illumination at light-receiving surface:7,000 lx max,incandescent light
	Ambient temperature	Operating:0 to +50°C Storage: -15 to +60°C(no freezing and condensation)
	Ambient humidity	Operating and strage:35% to 85%(no condensation)
	Vibration(durability)	10 to 150Hz (amplitude of one side:0.35mm)X,Y,Z Direction 80min each
Materials	Impact(durability)	150m/s ² (6direction and 3times for each)
		Body:Aluminum die-cast Cable sheathing:Heart-resistant PVC Connector:Zinc alloy and brass Front Cover:glass
Cable length		0.5m / 2m (Cooked-proof cable)
Minimum bending radius		68mm
Weight		Approx.300g
Accessories		Laser Label (EN:1, FDA:3, GB:1),Ferrite core (Big and Small size : each 1pcs)

- *1 Defined as 1/e² (13.5%) of the central light intensity. Leakage of light is also present in areas other than those defined. Thus, there are some influences in cases where the reflection factor of the area surrounding the workpiece is higher than that of the workpiece itself.
- *2 When an OMRON-standard workpiece (Mirror reflection object(Mirror reflection mode)or witch our standard diffuse reflection object(diffuse reflection mode))is placed at reference distance, and its average height of all lines is measured. The average of 64 measurements is taken. Note that the resolution performance may not be satisfied in the presence of strong magnetic fields.Minimum resolution of ZG2-WDS3VT is 0.25μm.The CCD mode is HI-RESO.
- *3 The error in relation to the ideal straight line when the average height of all lines on an OMRON-standard workpiece (Mirror reflection object(Mirror reflection mode)or witch our standard diffuse reflection object(diffuse reflection mode)) is measured. The degree of linearity may change depending on the workpiece.(Drawing1) The CCD mode is HI-RESO.
- *4 The lighting operation is Table1.

Mirror reflection mode (Drawing1)

(Table1)

Indicator	During start-up	RUN/ADJ/FUN mode	
		LD is OFF.	LD is ON.
Standby Indicator	OFF	ON	ON
Laser Indicator	OFF	OFF	ON

*5 The value obtained at measurement with the space between the sensor and the workpiece fixed with an aluminum jig. The CCD mode is nomal.

External Dimensions

SENSOR CONNECTIONS

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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