

OMRON

Model ZFX-SR10-1

Smart Sensor
For Model ZFX-C□□
Sensor head unit

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.

TRACEABILITY INFORMATION:

Representative 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
Ayabe Factory
3-2 Narutani, Nakayama-cho,
Ayabe-shi, Kyoto 623-0105 JAPAN

NOTICE:
This product meets CISPR11 class A. The intended use of this product is in an industrial environment only.



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PRECAUTIONS FOR SAFE USE

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

- Installation Environment**
 - Do not use the product in environments where it can be exposed to inflammable / explosive gas.
 - To secure the safety of operation and maintenance, do not install the product close to high-voltage devices and power devices.
 - During installation, make sure that screws are tightened firmly.
- Power Supply and Wiring**
 - High-voltage lines and power lines must be wired separately from this product. Wiring them together or placing them in the same duct may cause induction, resulting in malfunction or damage.
- Others**
 - Do not attempt to dismantle, repair, or modify the product.
 - Dispose of this product as industrial waste.
 - If abnormal odors, heating, or smoke occurs, stop using the Smart Sensor immediately, turn OFF the power, and consult with your OMRON representative.

PRECAUTIONS FOR CORRECT USE

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

- Installation Site**

Do not install the product in locations subjected to the following conditions.

 - Ambient temperature outside the rating
 - Rapid temperature fluctuations (causing condensation)
 - Relative humidity outside the range of 35 to 85%
 - Presence of corrosive or flammable gases
 - Presence of dust, salt, or iron particles
 - Direct vibration or shock
 - Reflection of intense light (such as other laser beams, electric arc welding machines or ultraviolet rays)
 - Direct sunlight or near heaters
 - Water, oil, or chemical fumes or spray
 - Strong magnetic or electric field
- Power Supply and Wiring**
 - 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.
 - Use only combinations of Sensor Heads and Sensor Controllers specified in this sheet.

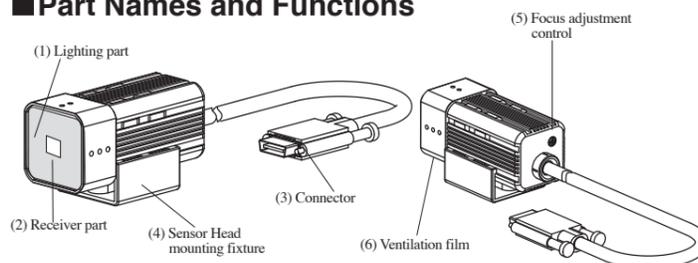
- Optical Axis and Detection Range**

The center of the optical axis sometimes differs according to each Sensor Head. During installation, be sure to check the center of the image and the detection range on the LCD monitor of the Amplifier Unit. The center of the guide light and detection range are for reference only.
- Ventilation Film**
 - Do not peel off or probe the ventilation film with a sharp-pointed object. If you do so, the specifications of the protective structure may no longer be satisfied.
 - Do not block the ventilation film. Doing so might cause the front panel to be con-densed.
- Focus Adjustment Control**
 - Do not exert the torque of 5N·m or more as this might damage the control.
- Maintenance and Inspection**
 - Do not use thinner, benzene, acetone or kerosene to clean the Sensor Head and Amplifier Unit.
 - If large dust particles adhere to the front Panel of the Sensor Head, use a blower brush (used to clean camera lenses) to blow them off. Do not blow off the dust particles with your mouth.
 - To remove smaller dust particles, wipe gently with a soft cloth. Do not use excessive force to wipe off dust particles. Scratches on the front Panel may cause errors.

(7) Installation Precautions

Tighter mounting screws at the torque specified.
Recommended screw tightening torque
M4:1.2N·m, 1/4"-20UNC:2.6N·m

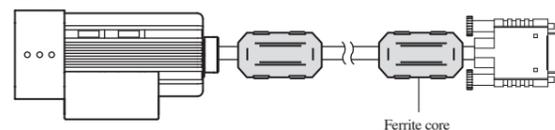
Part Names and Functions



- Lighting part**
This section emits light.
- Receiver part**
This section captures the image.
- Connector**
This connector is connected to the Amplifier Unit.
- Sensor Head mounting fixture**
This fixture is for mounting the Sensor Head. This fixture can be mounted on all of the four mounting surfaces.
- Focus adjustment control**
This control is used for adjusting the focus of the image.
- Ventilation film**
This film prevents the front panel from condensation.

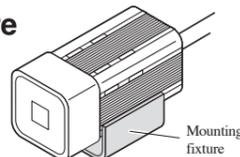
Attaching the ferrite core

Attach the ferrite core (provided with the Smart Sensor) to the connector side of the Sensor Head.

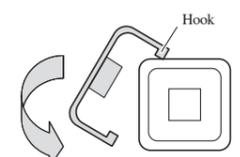


Installing the mounting fixture

Attach the mounting fixture (provided with the Smart Sensor) to the side of the Sensor Head. The mounting fixture can be installed on all of the four mounting surfaces.

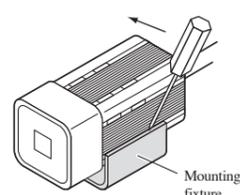


- Align the two hooks on one side of the mounting fixture with the two grooves on the Sensor Head body (light emitting side).
- Press in the other hook. Push down until you hear it snap into place.
- Make sure that the mounting fixture is firmly fixed on the Sensor Head.



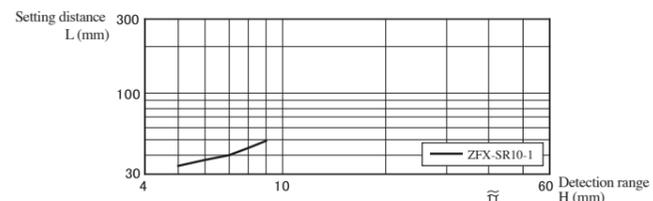
Removal procedure

Insert a regular screwdriver into the gap (one of the two gaps) between the mounting fixture and the Sensor Head case, and remove the mounting fixture.

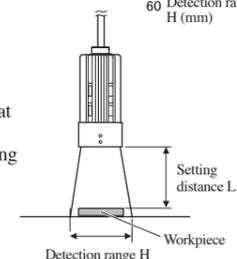


Installation distance

The following graphs show the relationship between detection range and setting distance for each model of Sensor Head. Values differ according to each model of Sensor Head, so fully check the model before using these graphs.



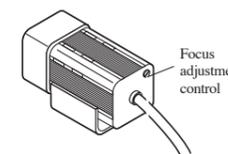
(Example)
When using a ZFX-SR10-1 Sensor Head at a detection range of 7 mm required for the location of the sensing object, the setting distance of Sensor Head becomes 40mm.



Installation procedure

(1) Install the Sensor Head at the installation distance obtained in the above graphs.

(2) Turn the focus adjustment control to the left and right to adjust the focus.

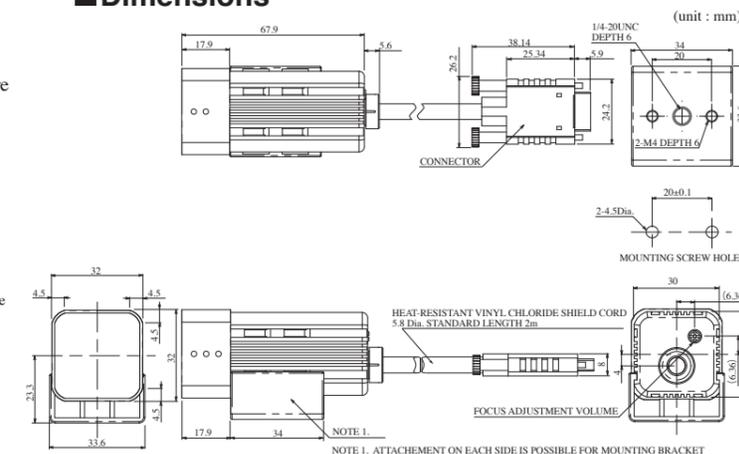


CHECK! Before turning the focus adjustment control slightly to the left and right, make sure that the guide light is not at the upper or lower limit positions. The focus adjustment control is a multi-turn variable resistor. However, the control stops turning at the upper or lower limit positions. Do not exert unnecessary force to turn the control at the upper or lower limit positions as this might damage the control.

Specifications

Item	ZFX-SR10-1 (Narrow View)
Setting distance (L)	34 to 49 mm
Detection range (H V)	4.9×4.9 mm to 8.9×8.9 mm
Relation between setting distance and detection range	
Guide light	Not available
Object lighting method	Pulse lighting
Object light source	Eight red LEDs
Sensing element	1/3-inch interline color CCD (reading all pixels)
Shutter	Electronic shutter, shutter time: 1/170 to 1/20,000s
Power supply voltage	15 VDC (Supplied from Amplifier Unit.)
Current consumption	Approx. 200 mA
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min
Vibration resistance (destruction)	10 to 150 Hz, 0.35-mm single amplitude, 10 times each in X, Y, and Z directions for 8 min
Shock resistance (destruction)	150 m/s ² , three times each in six directions (up/down, left/right, forward/backward)
Ambient temperature	Operating: 0 to 40 °C, Storage: -20 to 65 °C (with no icing or condensation)
Ambient humidity	Operating and storage: 35% to 85% (with no condensation)
Ambient atmosphere	Must be free of corrosive gas.
Connection method	Prewired, Standard cable (length: 2 m)
Degree of protection	IEC60529, IP65
Materials	Case: ABS, Mounting bracket: PBT
Weight	Approx. 200 g (including mounting bracket and cord)
Accessories	Mounting bracket (1), Ferrite core (2), Instruction sheet

Dimensions



Suitability for Use

THE PRODUCTS CONTAINED IN THIS SHEET ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PERSONS, AND SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES. Please refer to separate catalogs for OMRON's safety rated products.

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the product.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used. Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS 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 IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

See also Product catalog for Warranty and Limitation of Liability.

- EUROPE**
OMRON EUROPE B.V. Sensor Business Unit
Carl-Benz Str.4, D-71154 Nufringen Germany
Phone:49-7032-811-0 Fax: 49-7032-811-199
- NORTH AMERICA**
OMRON ELECTRONICS LLC
One Commerce Drive Schaumburg, IL 60173-5302 U.S.A.
Phone:1-847-843-7900 Fax : 1-847-843-7787
- ASIA-PACIFIC**
OMRON ASIA PACIFIC PTE. LTD.
No. 438A Alexandra Road #05-05-08(Lobby 2),
Alexandra Technopark, Singapore 119967
Phone : 65-6835-3011 Fax :65-6835-2711
- CHINA**
OMRON(CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Phone : 86-21-5037-2222 Fax :86-21-5037-2200

OMRON Corporation

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