

OMRON

Model FQ2-S4□□□□□□-□

Smart Camera

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:

Manufacturer: Omron Corporation, Shiohji Horikawa, Shimogyo-ku, Kyoto 600-8530 JAPAN
Importer in EU: Omron Europe B.V., Wegalaan 67-69, 2132 JD Hoofddorp, The Netherlands

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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SAFETY PRECAUTIONS

Keys to Warning Symbols

WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.

Warning Symbols

WARNING

The Sensor emits visible light which may on rare occasions have a harmful effect on the eyes. Do not look directly at the light emitted by the sensor. If the light projects onto a reflective surface, prevent the reflected light from entering a person's eyes.



Precautions for Safe Use

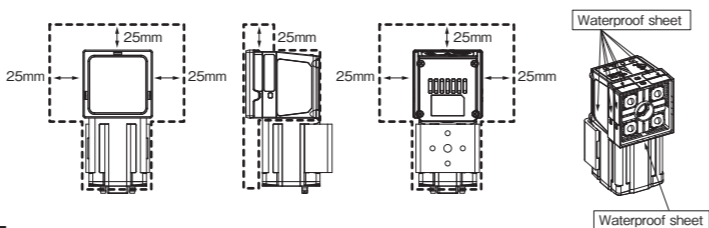
Always follow the rules below to ensure safety.

- 1. Installation environment
- Do not use in a location where there is flammable or explosive gas.
- To ensure safe operation and maintenance, install away from high-voltage equipment and power equipment.
- Tighten the mounting screws to the torque specified in these instructions.
2. Power and cable connections
- Always turn off the power of the unit before connecting or disconnecting cables.
- Do not reverse the polarity of the power connection. Do not short the load of the open collector output.
- Wire this product separately from the wiring of high-voltage wires and power wires. If wired together or in the same conduit, induction may occur and cause malfunctioning or damage.
- Use a load that is equal to or less than the rating.
- Use the specified power voltage.
- Use the specified size of crimp terminals for wiring connections. Do not connect wires that have been simply twisted together directly to the power supply or terminal block.
- Supply power from a DC power supply for which measures have been applied to prevent high voltages (e.g., a safety extra low voltage circuit).
- If UL certification is required for the overall system, use a UL Class II DC power supply.
- Use an independent power source for this product. Do not use a shared power source.
3. Handling
- Do not peel off or damage the waterproof sheet attached to the side of the unit. Doing so may result in dirt, dust or water droplet entering inside the device, causing a failure of the unit.
- Always attach the covers of I/O cable connector and Ethernet cable connector. This prevents extraneous material from making a failure of the sensor.
4. Other Rules
- Do not use in safety circuits for atomic energy or that are critical for human life.
- Do not attempt to disassemble, deform by pressure, incinerate, repair, or modify this product.
- Use the dedicated touch finder (FQ-L-D), cable (FQ-WN, FQ-WD or FQ-WU) and sensor data unit (FQ-SDU). Sensor malfunction or damage may occur if any other devices or cables are used.
- When disposing of the product, treat as industrial waste.
- If you notice an abnormal condition such as a strange odor, extreme heating of the unit, or smoke, immediately stop using the product, turn off the power, and consult your dealer.
- The device surface becomes hot during use. Do not touch.

Precautions for Correct Use

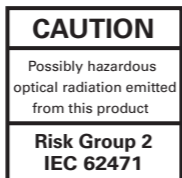
Observe the following to prevent failure, malfunctioning, and adverse effects on performance and the device.

- 1. Installation site
- Do not install in the following locations:
- Locations where the ambient temperature exceeds the rated temperature range.
- Locations subject to sudden temperature changes (where condensation will form).
- Locations where the relative humidity is below or above 35 to 85% RH.
- Locations where there are corrosive or flammable gases.
- Locations where there is dust, salt, or iron powder.
- Locations where the device will be subject to direct vibration or shock.
- Locations where there is strong scattered light (laser light, arc welding light, ultraviolet light, etc.)
- Locations exposed to direct sunlight or next to a heater.
- Locations where there is splashing or spraying of water, oil, or chemicals.
- Locations where there is a strong electrical or magnetic field.
2. Power and cable connections
- When using a switching regulator, ground the FG pin of the switching regulator.
- If there are surges on your power line, connect a surge absorber as appropriate for your conditions of use.
- Before turning on the power after the wiring is completed, verify that the power is correct, that there are no incorrect connections such as a shorted load circuit, and that the load current is suitable. Incorrect wiring may cause damage and failures.
- Before use, mount ferrite cores (TDK's ZCAT2035-0930A or equivalent) at the both ends of the Ethernet cable and the camera side of the input/output cable.
3. Optical axis and detection range
- There is a certain amount of deviation among sensors in the center of the optical axis. For this reason, when installing the sensor, be sure to check the center of the image and the detection range in the LCD monitor of the Touch Finder and in the sensor software.
4. Focus adjustment screw
- Rotate the focus adjustment screw with the force of 0.1 N·m max. Otherwise damage may result.
5. Maintenance and inspection
- Do not use thinner, alcohol, benzene, acetone, or kerosene to clean the sensor or Touch Finder.
- If considerable foreign matter or dust collects on the image elements, use a blower brush (for camera lenses) to blow off the foreign matter. Avoid blowing it off with your breath.
- Use a soft cloth or cotton for small dust or dirt and carefully wipe it off. Do not wipe it strong. If scratch occurs, it may cause false detection.
6. Influence on optical axis variation due to ambient temperature changes
- By the nature of the materials of this product, the number of pixels on the center of the optical axis may vary due to ambient temperature changes.
7. Image elements
- By the nature of specifications of the CMOS image sensor (light receiving element), lines may appear due to measurement conditions or sensitivity. This is not a defect or malfunction. Also pixel defects may exist, but this is not a defect or malfunction.
8. Installation of camera
- In the environment with high humidity and intense temperature change, the inside of a front plate might uncommonly become cloudy.
- Do not install an object (except for the dedicated mounting bracket) inside the dotted areas shown on the under figures. Doing so may result in fogging inside the front plate.



Safety of LED

The product is considered to be classified as Risk Group 2 by IEC62471.



Part Names and Functions

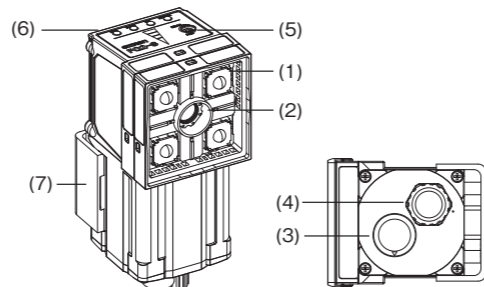


Table with 3 columns: No., Name, Description. Lists parts (1) through (7) and their functions.

Power connection(when a switching regulator is connected)

The following power supply is recommended (option)

Table with 2 columns: Item, Description. Lists Recommended Power Supply (S8VS-06024) and External power supply terminal screws (M4).

Ratings/Performance

Main specification table with columns for Item, Color type (NPN, PNP), and Monochrome type (NPN, PNP). Includes sections for Main functions, Image input, Illumination, Auxiliary Functions, Data logging, Measurement trigger, I/O specifications, Indicator, Ratings, Environmental immunity, Materials, Weight, Accessories, and LED Safety.

*1. Allocations of the three output signals (OUT0 to 2) can be changed to individual judgment of each inspection item, image input enable output (READY), or external illumination timing output (STGOUT).
*2. The following table gives the I/O specifications.

Table for I/O specifications comparing NPN and PNP types for Input, Output, and specifications.

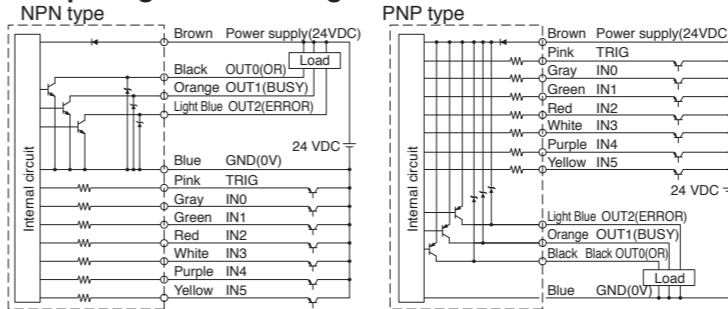
*3. The allocation of the BUSY indicator can be changed to the RUN indicator (green).
*4. All scene may not be possible to be registered according to some settings.

Connection with external devices

Use only the dedicated external connecting devices.

Table for connection with external devices showing Model and Name for dedicated external connecting devices like Touch finder, Sensor data unit, I/O cable, Ethernet cable, and Sensor data unit cable.

Input signal circuit diagram



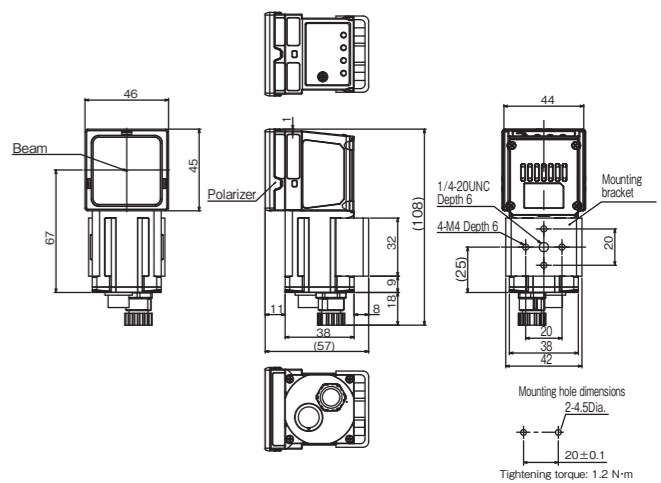
Important

Measures to prevent chattering: Although the sensor has a chatter prevention function, an incorrect input by chattering cannot be prevented when chattering of 100 μs or more occurs. (An input signal of less than 100 μs is ignored, and 100 μs or more is judged as an input signal.) Be sure to use a non-contact relay (SSR, PLC transistor output) for input signals. Using a relay with contacts may allow for additional trigger inputs during measurement due to a bound of the contacts.

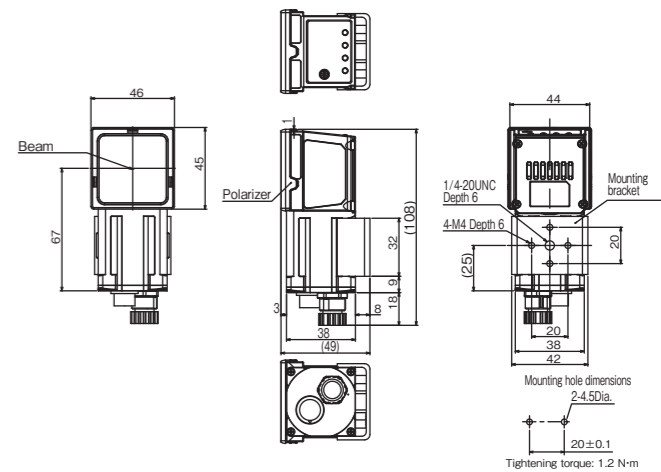
Dimensions

* Dimension diagram with mounting bracket (rear-side attachment) and polarizing filter attachment is shown. (Unit: mm)

FQ2-S4□010F-□/FQ2-S4□050F-□



FQ2-S4□100F-□/□/□/□ FQ2-S4□100N-□



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. See also Product catalog for Warranty and Limitation of Liability.

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

- Regional Headquarters
- OMRON EUROPE B.V. Sensor Business Unit
- OMRON ELECTRONICS LLC
- OMRON ASIA PACIFIC PTE. LTD.
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