

OMRON

Model E3FC-□□□□

PHOTOELECTRIC SENSOR

INSTRUCTION MANUAL

Thank for you 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
Shioji Horikawa, Shimogyo-ku,
Kyoto 600-8530 JAPAN

Notice:
In a residential environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

5844950-9 A

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■ Rating Performance & Nomenclature

Control output (open-collector type)

N NPN type, 100 mA max.

P PNP type, 100 mA max.

E3FC-TN11-L

Connection method

1 Pre-wired cable

2 M12-connector

Emitter/Receiver for only T type

-L

Emitter

Receiver

Sensing method

T Through-beam type

D Diffuse-reflective type

R Retro-reflective type (with M.S.R.)

L BGS (Background-suppression) type

B Transparent-detection type

Sensing distance (light source is red LED, types with ** is infrared LED.)

	1	2	3	4	5	6	
T	20 m						
D		0.3 m	1.0 m	(**)0.1 m	(**)0.3 m	(**)1.0 m	with white paper
R	0.1 to 4 m						with E39-R1S
L	0.1 m	0.2 m	0.3 m				with white paper
B	0.5 m	0.1 to 2 m					with E39-RP1

Common

Supply voltage 10 to 30 VDC

Current Consumption Through-beam type: 40 mA max. Other types: 25 mA max. (See. Specification for details)

Operation Mode Light-On or Dark-On selectable by wiring*

Sensitivity Adjustment One turn trimmer (Diffuse-reflective type only)

Ambient Temperature Operation: -25 to 55 °C, Storage: -40 to 70 °C

Ambient Humidity Operation: 35 to 85 %RH, Storage: 35 to 95 %RH

Ambient illumination Incandescent lamp: 3,000 lx max., Sunlight: 10,000 lx max.

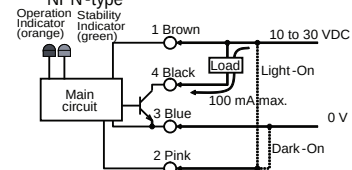
Degree of Protection IP67, IP68, IP69K

Material SUS 316L

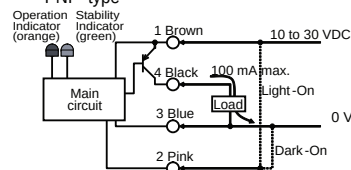
* Models indicated with "A" (e.g. E3FC-DP11A 2M) have fixed Light-On output (3-wire / pin2 without function)

■ Output Circuit diagram

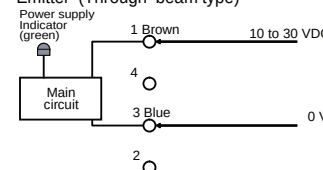
NPN-type



PNP-type



Emitter (Through-beam type)



[UNIT : mm]

Precautions on safety

● Meaning of Signal Words



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.



Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.

● Alert statements in this Manual

⚠ WARNING

This product is not designed or rated for directly or indirectly ensuring safety of persons. Do not use it for such a purpose.



⚠ CAUTION

Never use the product with an AC power supply. Do not use the product with voltage in excess of the rated voltage.

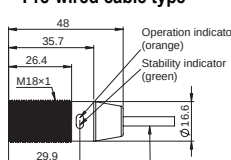


Do not use the product with incorrect wiring. Otherwise, explosion, fire, malfunction may result.

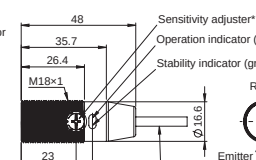


■ Dimensions

Pre-wired cable type



Vinyl insulated round cord 4 dia. 4 cores (conductor cross sectional area: 0.128 mm² (AWG26) insulation outside diameter: 0.85 dia.) standard length 2 m

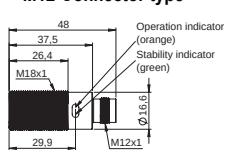


Vinyl insulated round cord 4 dia. 4 cores (conductor cross sectional area: 0.128 mm² (AWG26) insulation outside diameter: 0.85 dia.) standard length 2 m

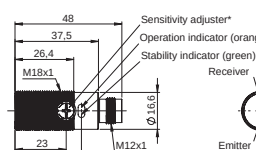
Suitable type
E3FC-T□1□
E3FC-R□11
E3FC-L□1□

*Suitable type
E3FC-D□1□
E3FC-B□1□

M12-Connector type

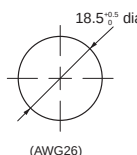


Suitable type
E3FC-T□2□
E3FC-R□21
E3FC-L□2□

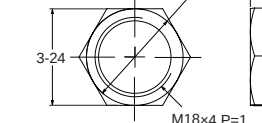


*Suitable type
E3FC-D□2□
E3FC-B□2□

Mounting Hole Dimensions

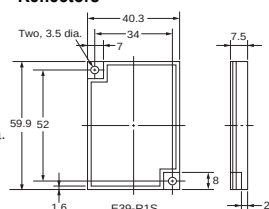


Attached Nut

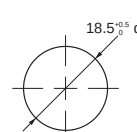


Recommended torque 0.3 to 0.4 N·m

Reflectors



Mounting Hole Dimensions



Terminal No.	Specification
1	+ V
2	L/on · D/on selectable
3	0 V
4	Output

Precautions for safe use

Be sure to follow the safety precautions below for added safety

- Do not use the sensor under the environment with explosive, flammable or corrosive gas.
- Do not use the sensor under the oil or chemical environment.
- Do not use the sensor in the water, rain or outdoors.
- Do not use the sensor in the environment where humidity is high and condensation may occur.
- Do not use the sensor under the environment under the other conditions in excess of rated.
- Do not use the sensor in place that is exposed by direct sunlight.
- Do not use the sensor in place where the sensor may receive direct vibration or shock.
- Do not use the thinner, alcohol, or other organic solvents.
- Never disassemble, repair nor tamper with the sensor.
- Please process it as industrial waste.

Precautions for correct use

- Laying Sensor wiring in the same conduit or duct as high-voltage wires or power lines may result in malfunction or damage due to conduit or use shielded cable.
- Do not pull on the cable with excessive force.
- If a commercial switching regulator is used, ground the FG (frame ground) terminal.
- The sensor will be available 100 ms after the power supply is tuned ON. Start to use the sensor 100ms or more after turning ON the power supply. If the load and the sensor are connected to separate power supplies, be sure to turn ON the sensor first.
- Output pulses may be generated even when the power supply is OFF. Therefore, it is recommended to first turn OFF the power supply for the load or the load line.

Precautions for Compliance with UL Standards and CSA Standards

Notice to Users of the E3FC in the USA and Canada

Please use the following installation information instead of the general information in the instruction manuals in order to use the product under certified conditions of UL and CSA when the product is installed in the USA or Canada.

- The terminals and wiring lead are not suitable for field wiring. The suitability of the connection (including spacings between factory connectors) shall be determined for end use application.
- These devices should be mounted in the intended manner within an enclosure having adequate strength and thickness and with acceptable spacings being provided.
- Statement of range of conditions as noted below:
Supply voltage: 10 to 26.4V DC Class2
Current consumption: 100mA max.
Operation ambient: Temperature 40 °C max., Humidity 85%RH max.
Output voltage: 26.4V DC max.
Altitude up to: 2000 meters
Pollution Degree: 3
Load type: General purpose
Enclosure: Type 1 Enclosure for indoor use only
The Strain Relief Test was not evaluated. The suitability of the leads shall be determined in the end product application.

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.

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