

# LED Sensing Fiber Sensor FX2-A3R-LED

MJE-FX2LED No.0033-30V

Thank you very much for purchasing Panasonic products. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

## WARNING

- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

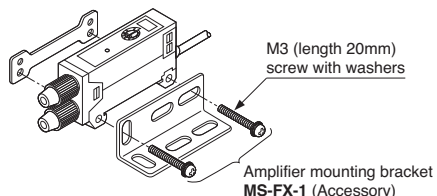
Since **FX2-A3R-LED** is unmodulated and high sensitivity type, take sufficient care against extraneous light. Do not install at places where extraneous light may be directly incident on the receiver. In such cases use a light blocking plate.

## 1 MOUNTING

### How to mount the amplifier

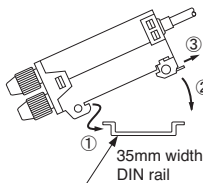
#### <Using MS-FX-1 (Amplifier mounting bracket)>

- The tightening torque should be 0.78N·m or less.



#### <Using DIN rail>

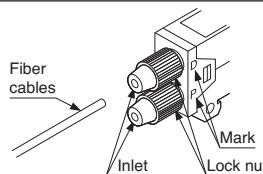
- ① Fit the front part of the amplifier mounting section on the 35mm width DIN rail.
- ② Press down the rear part of the amplifier mounting section on the DIN rail to fit it.
- ③ In order to remove the amplifier, insert a flat-head screwdriver into the groove of the stopper at the rear part of the amplifier mounting section and pull out the stopper.



### How to connect the fiber cable

Insert the fiber cable into the inlet slowly without any excessive force, because a receiving element having a thin glass film is used at the receiving part.

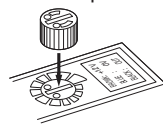
- ① Loosen the lock nut.
- ② Insert the fiber cable slowly into the inlet of the lock nut.
- ③ Tighten up the lock nut.



Note: There is no need to insert a fiber cable into the inlet for emitter (indicated as P) since this product is only for receiving light.

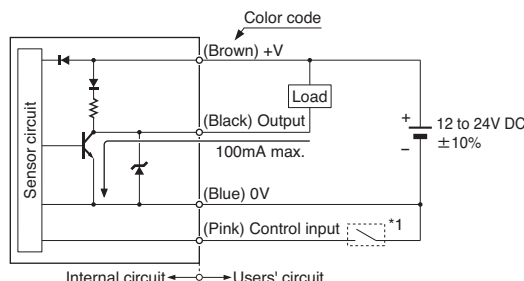
## 2 HOW TO CONNECT THE ADJUSTER KNOB

- It is used for manual sensitivity adjustment. The adjuster knob cannot be detached once it is fitted on the amplifier.



Aligning the marks accurately, press in the knob with force.

## 3 I/O CIRCUIT DIAGRAM



\*1: Connection of control input and output operation

Connection	Output operation
Connection to +V, or open	Light-ON
Connection to 0V	Dark-ON

## 4 SENSITIVITY ADJUSTMENT

As the sensing sensitivity changes after the power supply is switched on, for fine sensing, adjust the sensitivity after warming-up for 15 min. approx.

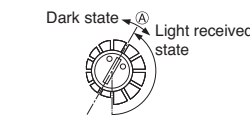
### ● Sensitivity adjuster

- The sensitivity adjuster is of 3-turn type.  
(The adjuster can be rotated more than 3 times, as it has no stoppers.)
- For maximum sensitivity:  
Rotate the adjuster clockwise for more than 3 rotations.
- For minimum sensitivity:  
Rotate the adjuster counterclockwise for more than 3 rotations.

### ● Sensitivity adjustment

- ① Turn the adjuster clockwise for 3 rotations or more.  
  - Turn the adjuster for 3 rotations or more and stop. This is the maximum sensitivity point. Confirm that the sensor enters the light received state operation in the LED light received condition.  
(The sensitivity adjustment range is up to 3 counterclockwise rotations from this point.)

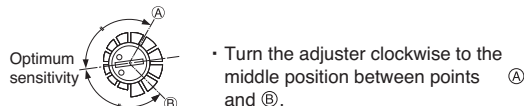
- ② Confirm point ① where the sensor enters the dark state operation in the no LED light received condition.  
  - In case the sensor is in the light received state operation with the dark condition, turn the adjuster counterclockwise slowly to determine the point ① where the sensor enters the dark state operation.
  - If the sensor is already in the dark state operation from the beginning with the dark condition, the position mentioned previously at ① is the point ①.



- ③ Confirm point ② where the sensor enters the light received state operation in the LED light received condition.

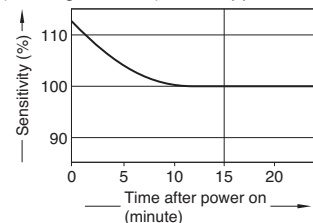
- In the LED light received condition, turn the adjuster further counterclockwise till the sensor enters the dark state operation once, and then turn the adjuster clockwise slowly to determine point ② where the sensor enters the light received state operation.

- ④ The optimum sensitivity adjuster position is at the middle of points ① and ②.



## 7 CAUTIONS

- If slight difference between light and dark levels is to be sensed, supply the power 15 min. before commencing the sensing. When power is just supplied, the sensitivity (sensing distance) is approx. 10% higher.



- The sensing sensitivity is affected by the amplifier's ambient temperature fluctuation. Avoid use of the amplifier where the temperature fluctuation is large and the sensing tolerance is small.
- Make sure that the power supply is off while wiring.
- Take care that wrong wiring will damage the sensor.
- Verify that the supply voltage variation is within the rating.

- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.
- Do not use during the initial transient time (0.5 sec.) after the power supply is switched on.
- Extension up to total 10m, or less, is possible with 0.3mm<sup>2</sup>, or more, cable.
- Make sure that stress by forcible bend or pulling is not applied directly to the sensor cable joint.
- This sensor is suitable for indoor use only.
- Do not use this sensor in places having excessive vapor, dust, etc., or where it may come in direct contact with water, or corrosive gas.
- Take care that the sensor does not come in direct contact with water, oil, grease, organic solvents, such as, thinner etc., strong acid or alkaline.

## 6 SPECIFICATIONS

Type	LED sensing
Item	Model No. <b>FX2-A3R-LED</b>
Applicable fibers	<b>FT-42 (Note)</b>
Sensing capability	Using a combination of <b>FT-42</b> and <b>FX-LE1</b> , amber colored LED having a luminous intensity of 2 mcd or more (peak wavelength: 590nm) can be detected. (Setting distance: 10mm, with no extraneous light)
Supply voltage	12 to 24V DC ± 10% Ripple P-P10 % or less
Current consumption	20mA or less
Output	NPN transistor universal <ul style="list-style-type: none"> <li>● Maximum sink current: 100mA</li> <li>● Applied voltage: 30V DC or less (between output and 0V)</li> <li>● Residual voltage: 1V or less (at 100mA sink current)</li> </ul>
Response time	50ms or less when light is received 100ms or less when light is interrupted
Protection	IP62 (IEC)
Ambient temperature	0 to +50°C (No dew condensation), Storage: -30 to +70°C
Ambient humidity	35 to 85% RH, Storage: 35 to 95% RH
Material	Polycarbonate
Cable	0.2mm <sup>2</sup> 4-core cabtyre cable, 3m long
Weight	120g approx.
Accessories	<b>MS-FX-1</b> (Amplifier mounting bracket): 1 set Adjusting screwdriver: 1 pc., Adjusting knob: 1 pc.

Note: Although **FT-42** contains 2 fiber cables as a set, only one cable is used.

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