

Model F3UV-XA

Fiber-type UV Power Monitor Amplifier

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.

This product is the amplifier unit to monitor the intensity of UV illumination and intended for use in combination with the head unit (F3UV-HM) and Fiber unit (hereinafter stated for model numbers).

TRACEABILITY INFORMATION:
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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 FOR SAFE USE

Be sure to follow the safety precautions below for the added safety.

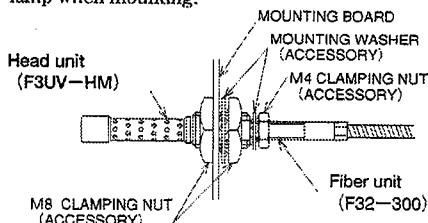
- (1) Do not use the product under the environment with explosive or ignition gases.
- (2) Do not use the product in the water.
- (3) Never disassemble, repair, nor tamper with the product.
- (4) Keep the supply voltage within the specified range.
Do not use the product with AC power supply.
- (5) Do not wire the product improperly such as reversing polarity.
- (6) Connect the load correctly.
- (7) Do not short-circuit the load.
- (8) Do not install the product in places exposed to UV light.

PRECAUTIONS FOR CORRECT USE

- (1) Do not use the product under the following conditions:
 - ① Places exposed to the direct sunlight.
 - ② Places with high humidity where condensation is likely to occur.
 - ③ Places exposed to corrosive gases.
 - ④ Places exposed to excessive vibration or shock.
- (2) Connections
 - ① Before turning on the power, make sure the supply voltage is below the maximum voltage level.
 - ② Make sure that the polarity of each terminal is correct.
 - ③ Be sure to route the switch wires separated from the power line or through exclusive conduit. If not separated, inductive effects may cause malfunction or damage to the product.
 - ④ For extending wires, use a cable with 0.3mm² in diameter and 5m max. in length.
- (3) Cleaning
Do not use thinners.
- (4) Power supply
When using a commercially available switching regulator, be sure to ground the FG (frame Ground) and G (Ground) terminals. If not, the output signal may be affected by noise.
- (5) Turn on the power and wait for 1 sec. until the product gets in stable detecting condition. If the load and the F3UV are connected with the different power supplies, be sure to turn on the F3UV power first.
- (6) Water tightness
The product is not water-proof. Avoid using it in water, rain, and outdoors.

■ Mounting

- (1) Mounting the amplifier unit
Install the amplifier on the accessory mounting bracket or DIN rail.
- (2) Mounting the head unit and fiber unit
 - Mounting the head unit
The tightening torque for the head unit and fiber unit is 0.78N · m max. For safety's sake, put out the UV lamp when mounting.



Note: Do not loosen the screws at the tip and between the body and mounting parts.

● Bending the fibers

- For F32-300 and F32-70, keep the bending radius over 25mm.
- For F32-150, keep the bending radius over 35mm.

(3) Cutting the fiber

In the case of F32-150 and F32-70

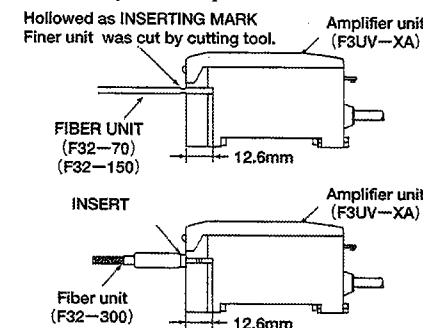
- Insert the fiber through a hole of the Fiber Cutter (E39-F4 optionally available). Pull the fiber through the hole to the desired length.
- Push the blade down in one stroke to cut off the fiber.
- To cut another fiber, use a different hole to assure blade sharpness. Otherwise, the sensing characteristics may be reduced because of the rough surface of the cut fiber produced by the dulled cutting tool blade.

(4) Connection of the amplifier unit and fiber unit.

Insert the fiber unit into the amplifier unit securely. Sensing characteristics are strongly influenced by connection

● Inserting position of fiber

When inserting the fiber unit into the amplifier, insert the fiber to the deepest point it does not move further as shown in the following figures. Failure to do this causes the sensitivity of the amplifier to be decreased.



(5) Protection against UV light

This amplifier unit is not protected against UV light. Avoid install the amplifier in places exposed to UV light.

■ RATINGS

(1) Amplifier unit (F3UV-X)

Item	Rated Value
Supply voltage	12 TO 24V DC ± 10%
Current consumption	15mA max.
Incident light power range (*1)	30 to 300mW/cm ²
Incident light wavelength range (*2)	200 to 370nm
Control output (*3)	Analog 1 to 5V (Connection impedance must be 100kΩ or more)
Repeatability (*4)	± 2% F.S. max.
Offset voltage (*5)	0.2V min. 1V max.
Response time (*6)	300ms max.
Temperature drift	0.2% F.S./°C max.
Operating temperature	-10 to 55°C (With no freezing or condensation)
Operating humidity	35 to 85%RH (With no freezing or condensation)
Storage temperature	-25 to 70°C (With no freezing or condensation)
Operating external illumination (*7)	1000lx max. with fluorescent lamp
Insulation resistance	20 MΩ min.
Dielectric strength	No breakdown shall occur after the following dielectric testing: 50/60Hz 1000V AC for 1min.
Vibration resistance	10 to 150Hz, single amplitude 0.1mm, 8min. for 1 sweep, 10 sweeps each in X, Y and Z directions.
Shock resistance	150m/s ² for 30times each in ±X, ±Y and ±Z directions.

- (*1) ... For measuring Incident light power range, the standard UV light source and UV illuminometer of OMRON were used. Main measurement wavelength λ_p=360nm. The Measurement point is the surface of the detecting part of the head unit (F3UV-HM).
- (*2) ... This indicates Incident light wavelength range of the head unit (F3UV-HM).
- (*3) ... Output voltage available up to 6 V. Adjust the sensitivity so that the output is lower than 5V.
- (*4) ... F.S. (Full Scale) = 4V (1 to 5V)
- (*5) ... No disturbance light exists.
- (*6) ... Rise time for 10-90% of output signal
- (*7) ... Measured on the detecting surface of the head unit (F3UV-HM). This indicates fluorescent light level to keep the offset voltage at 1V max.

(2) Head unit (F3UV-HM)

Item	Rated value
Incident light wavelength range	200 to 370nm
Temperature drift	-0.15%/°C max.
Operating temperature	-40 to +300°C
Operating humidity range	with no freezing and condensation 35 to 85 %RH
Vibration resistance	with no freezing and condensation 10 to 55Hz, single amplitude 0.75mm or 100m/s, X, Y directions 15 min./sweep 10times
Shock resistance	500m/s ² ±X ±Y directions: 3times

(3) Head unit (F3UV-HM) + Fiber unit

Fiber unit	Incident power range	Usage temperature range
F32-300	10~300mW/cm ² *1	-40~+300°C *2 with no freezing
F32-150	25~300mW/cm ² *1	-40~+150°C *3 with no freezing
F32-70	10~300mW/cm ² *1	-40~+70°C with no freezing

- *1. Incident power range shows basic ability of head unit (F3UV-HM) + fiber unit. Incident power range in combination with the amplifier unit is controlled by amplifier unit rating.
- *2. Refer to catalogs of each product for more information about operating temperature range.
- *3. When choosing this fiber unit, keep the operating temperature in the range of -40 to +130 °C.

■ Fiber unit connectable to Head unit (F3UV-HM)

- F32-300
- F32-150
- F32-70

If the side of the fiber, resin part, is exposed to UV light, protect it with the spiral tube F39-FU1M (except for F39-300). For the specification, refer to the catalogs and so on for each product.

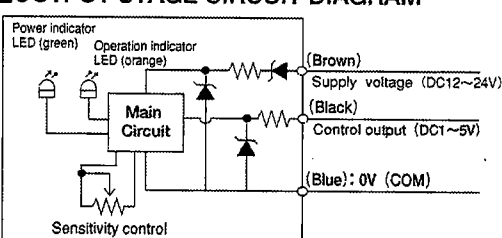
■ Adjusting sensitivity

Decreases in incident UV light power can be monitored by checking the output level. To do this, adjust the SENSITIVITY CONTROL, at the initial setting or replacement of the UV light source so that the control output is 4-5V and compare this level with the levels in the future.

● Sensitivity adjustment

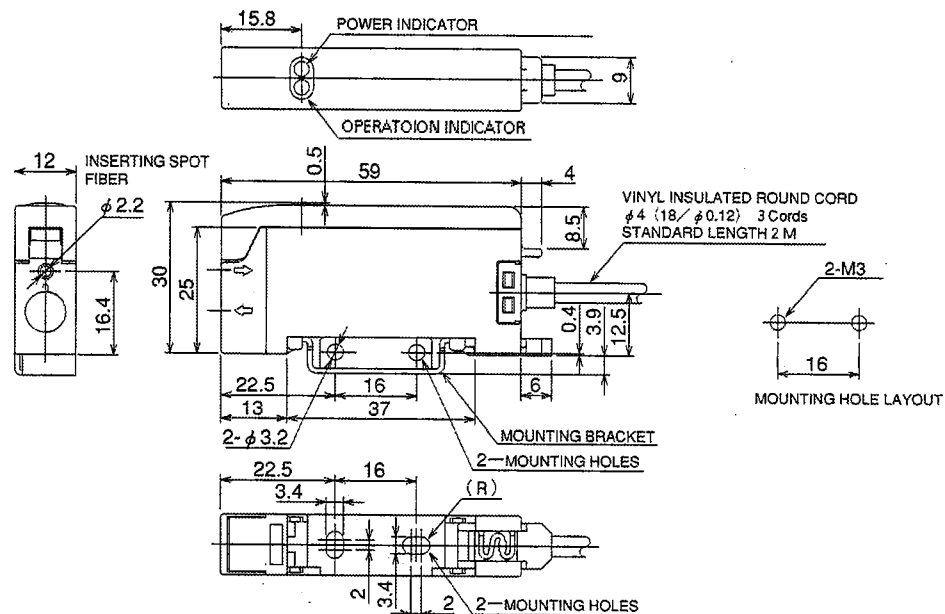
Adjust the SENSITIVITY CONTROL of the installed amplifier so that the control output falls in the range of 4-5V. Make sure the orange OPERATION INDICATOR lights up. (The amplifier output is available up to 6V or so. This means that the OPERATION INDICATOR does not light up if the sensitivity level is too high.) Adjustment becomes easier by finely adjusting the SENSITIVITY CONTROL after confirming the OPERATION INDICATOR is lit.

■ OUTPUT STAGE CIRCUIT DIAGRAM

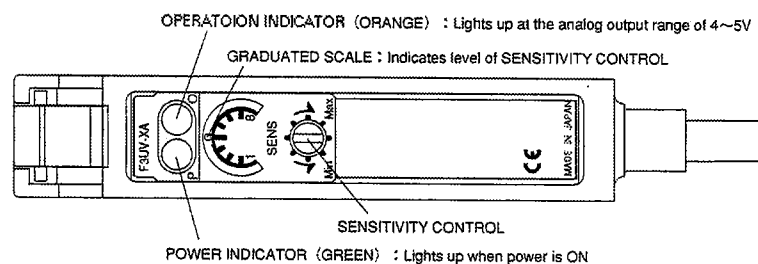


■ OUTLINE DRAWING

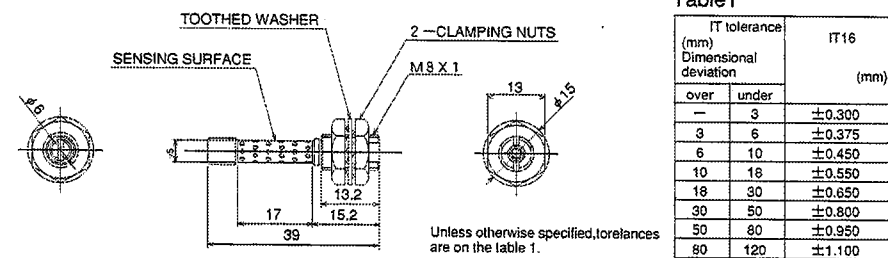
(1) AMPLIFIER UNIT (F3UV-XA)



(2) OPERATION PANEL OF AMPLIFIER UNIT (F3UV-XA)

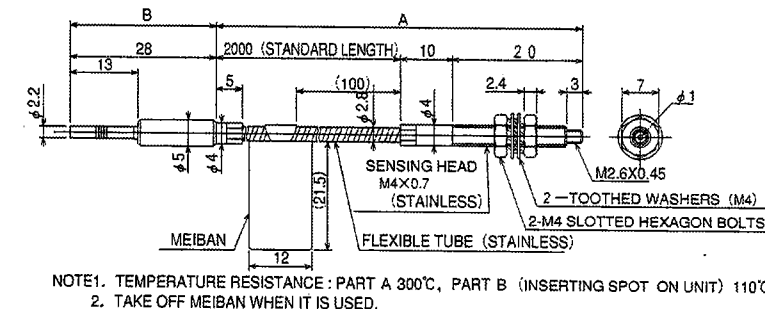


(3) HEAD UNIT (F3UV-HM)



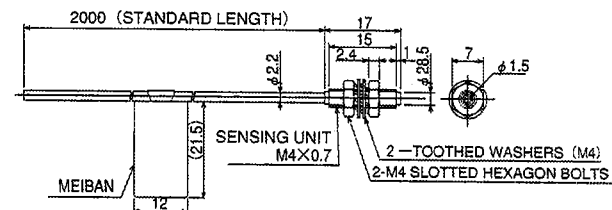
(4) FIBER UNIT OUTLINE DRAWING

● F32-300



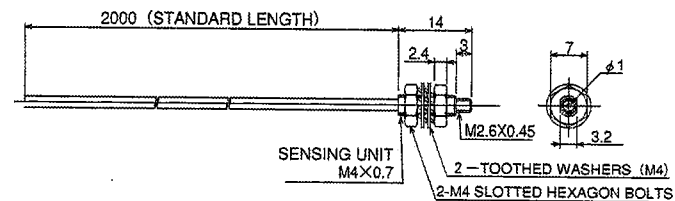
NOTE1. TEMPERATURE RESISTANCE: PART A 300°C, PART B (INSERTING SPOT ON UNIT) 110°C
2. TAKE OFF MEIBAN WHEN IT IS USED.

● F32-150



NOTE1. TEMPERATURE RESISTANCE 150°C. 2. TAKE OFF MEIBAN WHEN IT IS USED.

● F32-70



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.

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