

INSTRUCTION MANUAL

Thru-beam type fiber Reflective type fiber

FT-□ FD-□

Thank you very much for using SUNX 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.

1 CAUTIONS FOR FIBER

- Keep the sensing surface intact. If it is scratched, the detectability will deteriorate.
- If the sensing surface gets dirty, wipe dirt or stains from the sensing faces with a soft cloth.
- Do not expose the fiber cable to any organic solvent. (except for chemical-resistant fiber)
- Do not apply excessive tensile force to the fiber cable.
- When the emitter fiber cable and receiver fiber cable are split, place the blade of the cutter etc. at the center of the fiber, and pull it toward the amplifier insert side. Do not attempt to split the fiber cables by hand, since they could be damaged.
- The bending radius of the fiber cable must be R25mm or more. If the bending radius is smaller than the specification, the sensing ability is decreased. However, as there are fibers which can be bent at less than R25mm, their bending radius should be equal to or more than the value specified in their catalog.
- The sleeve part bending radius of fiber with sleeve must be 10mm or more. (Note that the sleeves of side-view, narrow-view and ultra-small diameter fiber are not bendable.)
- Take care that the sensor is not directly exposed to fluorescent light from a rapid-starter lamp or a high frequency lighting device, as it may affect the sensing performance.
- The free-cut type fibers must be cut with a fiber cutter before insertion into the amplifier.
- Do not move or bend the fiber cable after sensitivity adjustment. Detection may become unstable.
- The tightening torque must not exceed the values given below.
- In case the thru-beam type fiber is used with the expansion lens, take care that the beam becomes narrow. Particularly, when the multi-core thru-beam type fiber (the sharp bending type and the heat-resistant type) is used, make sure to align the beam axis beforehand.

For fibers other than those given below, please refer to the instruction manual enclosed with each fiber.

Mounting with a nut (threaded head type)

	Tightening torque
M3	0.39N·m
M4	0.58N·m (350°C heat-resistant fiber: 0.98N·m)
M5 · M6	0.98N·m (350°C heat-resistant fiber: 1.96N·m)
M14	1.47N·m

Mounting with a M3 screw

	Tightening torque
FT-AFM2(E), FD-AFM2(E)	0.58N·m

Mounting with a set screw (M3 or less)

	Tightening section	Tightening torque
General fiber	—	0.29N·m
FT-P2, FT-P20, FD-P2 FD-P20	—	0.20N·m
FT-SFM2L	—	0.19N·m
FT-V22, FT-V41 FT-SFM2SV2, FD-V41	10mm	0.19N·m
FT-PS1	3mm (Note 1)	0.1N·m
FT-V10	13mm (Note 2)	0.29N·m
FD-EG1	10mm (Note 1)	0.29N·m
FD-SFM2SV2	7mm (Note 1)	0.34N·m
FD-E12	4mm (Note 1)	0.29N·m

Notes: 1) The tightening section is given from the mounting section tip. However, for **FD-E12**, the sleeve part is excluded.
2) This indicates the range over which tightening cannot be done from the mounting section tip.

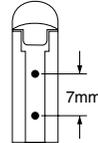
2 FIBER ATTACHMENT (FX-AT□)

Product outline

- When the emitter and receiver fibers are inserted into the fiber sensor amplifier (**FX-300** series etc.), the enclosed fiber attachment (**FX-AT2/AT3/AT4/AT5/AT6**) facilitates insertion of the fibers and reduces the possibility of incorrect fiber insertion.

Cautions

- Take care that **FX-AT2**, **FX-AT3**, **FX-AT4**, **FX-AT5** and **FX-AT6** cannot be used with fiber sensor amplifiers having a pitch, between the emitter and the receiver fibers, other than 7mm. In case of fiber sensor amplifiers having a pitch other than 7mm, please use attachments **FX-AT10** or **FX-AT13**.



Component description

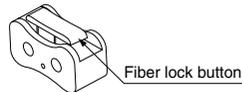
FX-AT2

(Attachment for mounting fixed-length fiber plug: Orange)



FX-AT3

(Attachment for ø2.2mm free-cut fiber: Clear orange)



FX-AT4

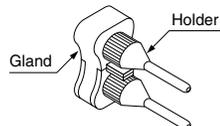
(Attachment for ø1.0mm free-cut fiber: Black)

FX-AT5

(Attachment for ø1.3mm free-cut fiber: Gray)

FX-AT6

(Compound attachment for ø1.0mm / ø1.3mm free-cut fiber)
(For ø1.0mm fiber: Black / for ø1.3mm fiber: Gray)

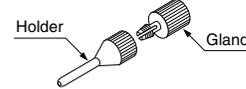


FX-AT10

(Attachment for ø1.0mm free-cut fiber: Black)

FX-AT13

(Attachment for ø1.3mm free-cut fiber: Gray)



Method of mounting

For the method of connection to the fiber sensor amplifier, please refer to the instruction manual enclosed with the fiber sensor amplifier.

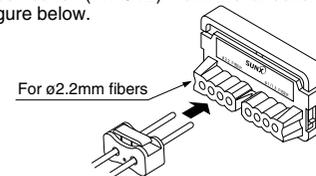
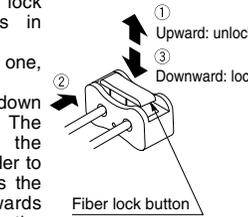
FX-AT2

- 1) Mount the plug part of the fibers in **FX-AT2**, as shown in the figure below. (The resin plug has a groove to hold it in place.)
- 2) Connect the fibers, in condition ①, to the fiber sensor amplifier.



FX-AT3

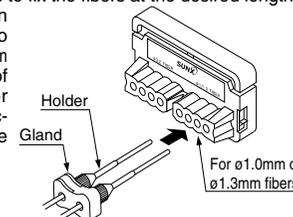
- 1) Confirm that the fiber lock button of **FX-AT3** is in unlock side.
- 2) Insert the fibers one by one, in condition ①.
- 3) After inserting, press down the fiber lock button. The fibers are fixed at the desired position. (In order to unlock the fibers, press the fiber lock button towards unlock direction from the opposite side.)
- 4) Insert the fibers into the holes for ø2.2mm fibers of the fiber cutter (**FX-CT2**) from the direction shown in the figure below.



- 5) Cut both fibers simultaneously. (At this time, place the attachment without any gap against the fiber cutter. The fibers will be cut at a position approx. 10.5mm from the tip of the fiber.)
- 6) After cutting, connect the fibers to the fiber sensor amplifier immediately.

FX-AT4, FX-AT5, FX-AT6

- 1) Mount the holders on the gland lightly.
- Notes: 1) If both long holders and short holders are enclosed with the fiber, use the short holders.
2) In case of **FX-AT6**, match the colors of the holders and the gland. The black color is for ø1.0mm fiber and the gray color is for ø1.3mm fiber.
- 2) Insert the fibers into the holders, in condition ①.
- 3) Tighten the holders to fix the fibers at the desired length.
- 4) Insert the fibers, in condition ③, into the holes for ø1.0mm or ø1.3mm fibers of the fiber cutter (**FX-CT2**) from direction shown in the figure right.



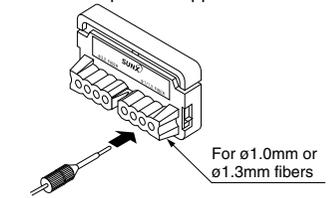
- 5) Cut both fibers simultaneously. (At this time, insert the attachment to a position at which it stops. The fibers will be cut at a position approx. 0.5mm from the holder.)
- 6) After cutting, insert the fibers to the fiber sensor amplifier immediately.

FX-AT10, FX-AT13

- 1) Thread the fiber through the gland and holder separately, and screw the gland into the holder clockwise.



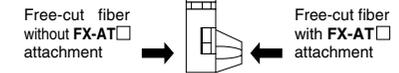
- 2) Insert the fibers one by one into the holes for ø1.0mm or ø1.3mm fiber of the fiber cutter (**FX-CT2**) from the direction shown in the figure below. (At this time, insert the attachment to a position at which it stops. The fibers will be cut at a position approx. 0.5mm from the holder.)



3 FIBER CUTTER (FX-CT2)

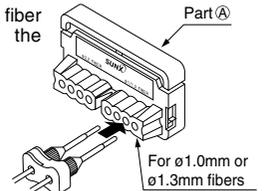
- To cut the fibers, insert them from the direction shown below.

(Fiber insertion direction)



How to use fiber cutter (FX-CT2)

- 1) Slide part ① of the fiber cutter fully upward till it stops.
- 2) Insert the fibers, mounted in the attachment, till they stop.
- Take care that there are separate fiber insertion holes for ø2.2mm and ø1.0mm or ø1.3mm fibers.
- 3) Slide part ① of the fiber cutter down to cut the fibers.



- Notes: 1) The fibers should be cut in one stroke.
2) Once a fiber is cut off at a hole, do not use the hole again. If used, it degrades the cut surface quality and the detectability may deteriorate.
3) The blade cannot be replaced. Please purchase an additional fiber cutter, if required.
4) Note that the sensing range may be reduced by up to 20% depending on the cut condition. Hence, decide the setting distance by taking sufficient margin.

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