

# Panasonic INSTRUCTION MANUAL

## General-purpose Fiber Head

Thru-beam type fiber FT-□ Reflective type fiber FD-□ Retroreflective type fiber FR-□  
MJEC-FXAT23 No.0089-07V

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.

### 1 CAUTIONS FOR FIBER

- This product has been developed / produced for industrial use only.
  - Take care that the sensing performance may deteriorate depending on the connecting condition to the fiber amplifier.
  - Keep the sensing surface intact. If it is scratched, the detectability will deteriorate.
  - If the sensing surface gets dirty, wipe dirt or stain from the sensing faces with a soft cloth. Do not expose the fiber cable to any organic solvent.
  - Do not apply excessive tensile force to the fiber head.
  - The allowable bending radius of the fiber is shown in table below. If using this product around maximum detecting distance, use at the bending radius shown in the table below or more.
- Furthermore, when stable displayed value is desired, we recommend the bending radius in the table below of the fiber since the displayed values may have variation with using hardly bending fibers.

<Example> Free cut type

Fiber diameter	Allowable bending radius		
	Maximum sensing distance	To reduce variation in displays	
ø1.0mm / ø1.3mm (Multi-core)	R2mm or more	R4mm or more	R10mm or more
ø2.2mm / ø1.3mm (Single-core)	R4mm or more	R10mm or more	R25mm or more
Sharp bending wire	R1mm or more		R2mm or more

- Mount the fiber head to a fiber amplifier after cleaning up the end of the fiber with an air blow gun.
- When inserting a fiber attaching a fiber attachment, use the fiber attachment (accessory).
- Do not cut off a fixed length fiber type with a tool such as nipper.
- Furthermore, do not use the cut fiber.
- Make sure not applying an excessive stress like bending or tension after installing to a fiber amplifier.
- Avoid dust, dirt, and steam.
- Take care that the product does not come in contact with oil, grease, organic solvents such as thinner, etc., strong acid or alkaline.
- Avoid using this product at vibrating or impact location.

### 2 MOUNTING

- Tightening torque should be less than value in tables below.

#### Mounting with nuts (screw type)

Fiber head size	Tightening torque
M3	0.36N·m
M4	0.58N·m
M6	0.98N·m
M14	2.16N·m

#### Mounting with a screw

Model No.	Use screw	Tightening torque
FD-L31A	M3 countersunk head screw	0.36N·m
FD-A16	M3 pan head screw	0.30N·m
FD-Z50HW, FR-Z50HW (Note)		0.50N·m
FD-L32H		0.58N·m
FT-AL05, FD-AL11		0.58N·m

Note: This is case of using an exclusive mounting bracket MS-FD-2 (accessory).

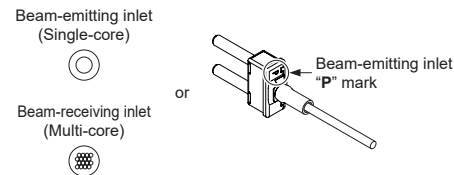
#### Mounting with a M3 set screw (cup point)

Model No.	Tightening range (Note)	Tightening torque
FT-S21	2 to 6mm	0.10N·m
FT-S11	3mm	
FD-E13	4mm	0.15N·m
FT-S32	6mm	0.20N·m
FD-EG30	2 to 6mm	
FT-45X FD-64X, FD-EG30S, FD-EG31	-	0.29N·m
FT-V40	13 to 25mm	0.34N·m
FT-V30	10mm	
FT-S31W	5mm	
FT-42, FT-42S, FT-42W, FT-43 FD-61, FD-61S, FD-61W FD-62, FD-E23	-	0.49N·m
FD-61G	2 to 17mm	0.78N·m
FD-V50	10mm	
FT-40R, FD-60R	-	0.78N·m

Note: Tightening range is distance from end of the fiber.

### 3 FIBER, HAS DIFFERENTIATION FOR EMITTER AND RECEIVER

- There are fibers having differentiation for emitter or receiver. The differentiation is shown in following diagrams. Be sure to confirm before mounting to fiber amplifier.



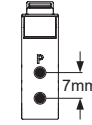
### 4 FIBER ATTACHMENT FX-AT□ (Accessory)

#### <Summary of product characteristics>

- When inserting fibers for emitter and receiver into fiber amplifier (FX-500 series etc.), by inserting fibers together with an included attachment, workability can be increased and it can reduce probability of wrong-inserting of fibers.

#### <Cautions>

- Take care that it is not possible to use the fiber amplifier whose distance between emitter and receiver is other than 7mm.



#### <How to connect>

For details, refer to instruction manual enclosed with the fibers amplifier.

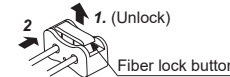
#### FX-AT2

- Mount the plug part of the fibers in the fiber attachment. (The resin plug has a groove to be held.)
- Mount to fiber amplifier in 1 condition.



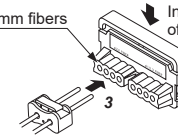
#### FX-AT3

- Be sure that the fiber lock button of FX-AT3 is in unlock side.
- Insert the fibers one by one, in condition 1.

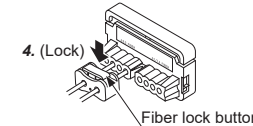


- Insert the fiber to hole for ø2.2mm fiber in condition that a blade of fiber cutter is dropped.

In condition that a blade of fiber cutter is dropped.

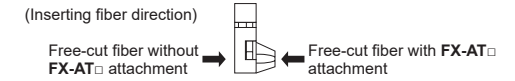


- Push the fiber lock button in condition that pushing the fiber on the blade of the fiber cutter. The fiber is approx.10mm from the attachment. (In case releasing fiber lock, push back the fiber lock button from back side.)



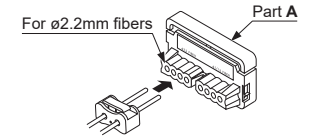
### 5 FIBER CUTTER FX-CT2 (Accessory)

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



#### [How to use fiber cutter FX-CT2]

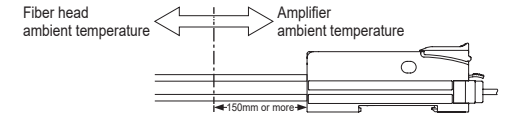
- Slide part A of the fiber cutter fully upward till it stops.
- Insert the fibers, mounted in the attachment, till they stop. (Take care that there are separate fiber insertion holes for ø2.2mm and ø1.0 or ø1.3mm fibers.)
- Slide part A of the fiber cutter FX-CT2 down to cut the fibers. The fiber will be cut at a position approx. 10mm from the attachment.



- 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.

### 6 OPERATION TEMPERATURE

- Keep the amplifier and the fiber of length 150mm or more under the rated amplifier ambient temperature range.



### 7 SETTING FOR NON-SENSING OBJECT CONDITION

(Reflective type fiber FD-□, Retroreflective type fiber FR-□)

- Incident light intensity of the reflective type or retroreflective type fiber may be displayed in "Non-sensing object condition" depending on the characteristic of the structure or the sensing condition of the fiber amplifier. Even in that case, it is not a malfunction.
- However, in order to achieve stable sensing, set the fiber amplifier threshold considering the incident light intensity under "Non-sensing object condition".
- When setting the threshold, it is recommended that operation check be performed on the sensing object actually used and in the environment where the product is used. It is also recommended to periodically review the set threshold.

Notes: 1) "Non-sensing object and no-reflector condition" when connected with retroreflective type fiber FR-□.

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