Panasonic INSTRUCTION MANUAL

General-purpose Fiber Head

Thru-beam type fiber	Reflective type fiber	Retroreflective type fiber
FT-□	FD-□	FR-□

MJEC-FXAT4567 No.0089-08V

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.

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 this product to a fiber amplifier, use fiber attachment (optional).
- 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-L12W (Note 1)	M2 countersunk head screw	0.15N·m
FT-Z20W, **FT-Z20HBW** **FD-Z20W**, **FD-Z20HBW** (Note 1)	M2 pan head screw	
FT-Z30, **FT-Z30W**, **FT-Z30E** **FT-Z30EW**, **FT-Z30H**, **FT-Z30HW**		
FD-L20H	M2.6 pan head screw	0.29N·m
FT-A11, **FT-A11W**, **FT-A32**, **FT-A32W** **FD-L21**, **FD-L22A**, **FD-L11** **FD-L10**, **FD-L30A**, **FD-L21W**	M3 countersunk head screw	0.30N·m
FD-L23		0.50N·m
FT-Z40W, **FT-Z40HBW** **FD-Z40W**, **FD-Z40HBW** (Note 1)	M3 pan head screw	0.30N·m
FT-KV40, **FT-KV40W** (Note 2)		
FR-KZ50H, **FR-KZ50E** (Note 3)		

Notes: 1) This is one point fixing type having a boss on a side.
2) This is case of using an exclusive mounting bracket **MS-FD-3** (optional).
3) This is case of using an exclusive mounting bracket **MS-FD-2** (accessory).

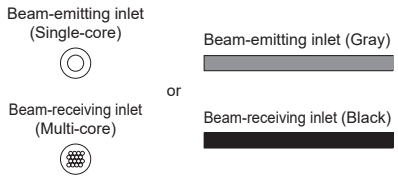
Mounting with a M3 set screw (cup point)

Model No.	Tightening range (Note)	Tightening torque
FT-S22	–	0.10N·m
FT-KV26	–	0.19N·m
FD-S34G	8mm	0.20N·m
FT-S21	2 to 5mm	0.25N·m
FD-S31	2 to 6mm	
FD-31, **FD-41W**	–	0.29N·m
FD-S33GW, **FD-S32**, **FD-S32W**	7mm	
FT-V24W, **FD-V30W**	10mm	
FD-32G	12mm	
FT-KS40	12 to 20mm	
FT-V23, **FD-V30**	–	
FT-31, **FT-31S**, **FT-31W** **FD-31W**, **FD-41**, **FD-41S** **FD-41SW**	–	0.34N·m
FT-V25	15～25mm	
FD-42G, **FD-42GW**	5 to 17mm	0.49N·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.



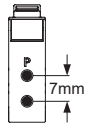
4 FIBER ATTACHMENT FX-AT□ (Accessory)

<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>

- Use a fiber in condition the end of fiber is 0.5mm from holder tip.
- 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 (Recommended)>

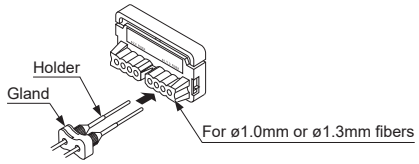
For details, refer to instruction manual enclosed with the fibers amplifier.

FX-AT4, FX-AT5, FX-AT6, FX-AT7

1. Mount the holders on the gland lightly.

Notes: 1) 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) On the **FX-AT7**, the colors of the holders and gland are different. Dark blue holders are for ø0.7mm fiber. Use in combination with the black gland.
3) The colors of the fiber cable and attachment may differ in some cases. Please take note of this when attaching the attachment.

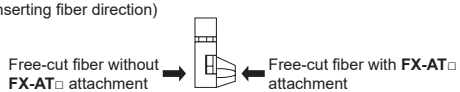
2. Insert the fibers into the holders, in condition 1.
3. Tighten the holders to fix the fibers at the desired length.
4. Insert the fibers, in condition 3, into the holes for ø1.0mm or ø1.3mm fibers of the fiber cutter **FX-CT2** from direction shown in the figure below.



4) Insert ø0.7mm fibers into the holes for ø1.0 / ø1.3mm fiber on the **FX-CT2**.

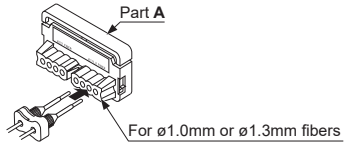
5 FIBER CUTTER FX-CT2 (Accessory)

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



[How to use fiber cutter FX-CT2]

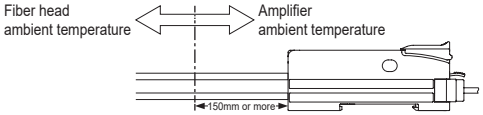
1. Slide part **A** of the fiber cutter fully upward till it stops.
2. Insert the fibers, mounted in the attachment, till they stop. (Take care that there are separate fiber insertion holes for ø2.2mm and ø1.0 or ø1.3mm fibers.)
3. Slide part **A** of the fiber cutter **FX-CT2** down to cut the fibers. The fiber will be cut at a position approx. 0.5mm 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.
5) Insert ø0.7mm fibers into the holes for ø1.0 / ø1.3mm fibers and cut.

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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