

Panasonic INSTRUCTION MANUAL

General-purpose Fiber Head

Thru-beam type fiber

Reflective type fiber

Retroreflective type fiber

FT-□

FD-□

FR-□

MJEC-FXAT4567 No.0060-84V

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. For the detail, refer to specification of each product.

<Example>

Fiber diameter	Tensile force	Fiber diameter	Tensile force
ø0.7mm	2.95N or less	ø1.3mm	20N or less
ø1.0mm	10N or less	ø2.2mm	30N or less

- 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 (Single-core)	R2mm or more	R4mm or more	R10mm or more
ø2.2mm / ø1.3mm (Multi-core)	R4mm or more	R10mm or more	R25mm or more
Sharp bending wire	R1mm or more		R2mm or more

- Mount to fiber an amplifier after cleaning up end of fiber with 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-2** (optional).
3) This is case of using an exclusive mounting bracket **MS-FD-3** (optional).

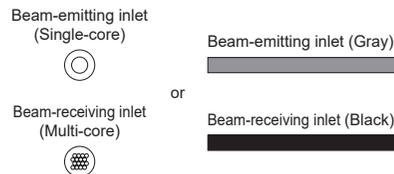
Mounting with a M3 set screw (cup point)

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	-	0.34N·m
FT-31, FT-31S, FT-31W FD-31W, FD-41, FD-41S FD-41SW	-	
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.



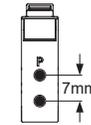
4 FIBER ATTACHMENT FX-AT□ (Accessory)

<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.

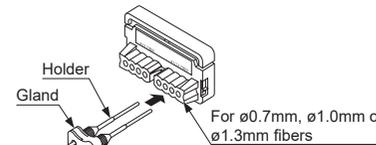


<How to connect (Recommended)>

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

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

- Mount the holders on the gland lightly.
- Insert the fibers into the holders, in condition 1.
- Tighten the holders to fix the fibers at the desired length.
- 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.

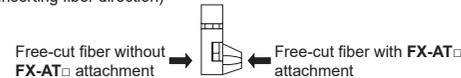


4) Insert ø0.7mm fibers into the holes for ø1.0 / ø1.3mm fiber on the FX-CT2.

5 FIBER CUTTER FX-CT2 (Accessory)

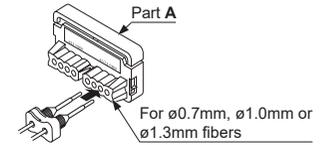
- To cut the fibers, insert them from the direction shown below.

(Inserting fiber direction)



[How to use fiber cutter FX-CT2]

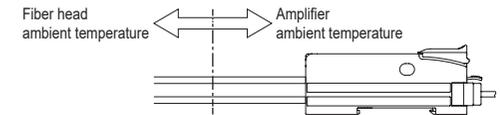
- Slide part A of the fiber cutter fully upward till it stops.
- Insert the fibers, mounted in the attachment, till they stop. (Take care that there are separate fiber insertion holes for ø2.2mm and ø1.0 or ø1.3mm fibers.)
- Slide part A of the fiber cutter FX-CT2 down to cut the fibers. The fiber will be cut at a position approx. 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 reflective type or retroreflective type fiber may be displayed in "Non-sensing object condition" by characteristic of the structure of the sensing condition. It is not malfunction. However, in order to conduct stable sensing, we recommend the setting like shown in the table below.

Incident light intensity in a sensing object absent condition	Setting of fiber amplifier
Under 20	Add 10 or more to the threshold value of the non-sensing condition.
20 or more, under 100	Add 20 or more to the threshold value of the non-sensing condition.
100 or more, under 400	Add 40 or more to the threshold value of the non-sensing condition.
400 or more	By using adjustment function of the incident light intensity incorporated fiber amplifier, set the incident light intensity "400 or less" in non-sensing object condition.

Note: The threshold values are just rough indication. Be sure to check the operation with a sensing object actually to be used.

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