

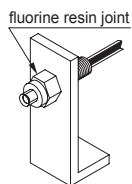
Thank you very much for purchasing Panasonic products. Read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

## 1 OUTLINE

- In this fiber series, we have 2 Thru-beam type fibers (top sensing and side sensing) and 1 reflective type fiber (top sensing). Each one should be combined with the fiber sensor amplifier.
- As the fiber head is covered with the protective fluorine resin jacket, superior chemical-proof is assured.
- The lenses on tips enable long sensing range.
- Any metal component is not used.

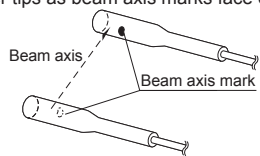
## 2 MOUNTING

- Use a commercial fluorine resin joint ( $\phi 6\text{mm}$  through type) to mount the fiber.
- The bending radius of the protective tube should be R30mm or more. It will be damaged under the value.
- The bending radius of the fiber cable Thru-beam type : R25 mm or more  
Reflective type : R4 mm or more  
It will be damaged under the value.
- Do not subject the fiber cable under tension.



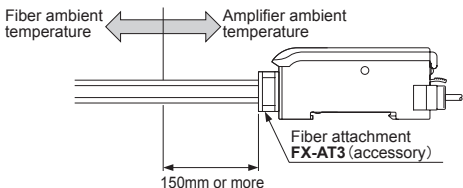
## 3 BEAM ALIGNMENT WITH SIDE SENSING TYPE FIBER (FT-V80Y)

- The beam axis marks point out the orientation that beam is emitted or received on each fiber tip. Fix both fiber tips as beam axis marks face each other.



## 4 USE OF HEAT-RESISTANT 115°C TYPE (FT-HL80Y)

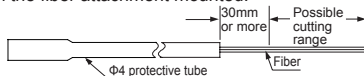
- Use by keeping 150mm, or more, of the heat-resistant fiber cable part at normal temperature to protect the amplifier.



- Protect the amplifier from heat radiation or hot air.

## 5 MOUNTING OF FIBER ATTACHMENT

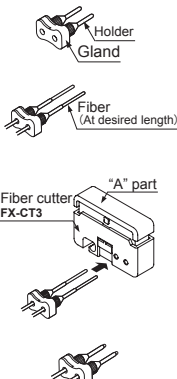
- Mount the fiber attachment FX-AT3 / FX-AT5 (accessory) on this product before connecting to a fiber amplifier. (There is no difference between emission fiber and reception fiber when mounting them on the fiber attachment.)
- This product must be cut with the fiber cutter FX-CT3/ FX-CT4 before insertion into the fiber amplifier.
- When cutting off the fiber cables ends, 30mm or more cables from the end of the protective tube should be left with the fiber attachment mounted.



- Take care that the sensing performance may deteriorate depending on the cutting condition of the fiber cables ends.

### <How to mount>

- Mount the holder on the gland lightly.
- Insert the fiber cables into the holder in the step 1 and push the fibers out till the desired length is reached.
- Tighten the holder.
- Insert the fiber cables into the holes "FIBER" on the fiber cutter with keeping the condition in the step 3.
- Slide "A" part of the fiber cutter down to cut the two fibers simultaneously. (The fibers will be cut at a position approx. 0.5mm from the holder tip.)
- After cutting off the fiber cables, connect them to the fiber amplifier immediately.

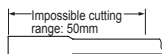


- Notes:
- The fibers should be cut in one stroke.
  - The fiber cutter can cut the fiber until 10 times. Using the fiber cutter which is used more than 10 times makes the cut surface rough and the sensing performance deteriorate.
  - The blade cannot be replaced. Please purchase an additional fiber cutter, if required.
  - Since a blade is used in the fiber cutter, take sufficient care when using it.

## 6 PREPARING PROTECTIVE TUBE

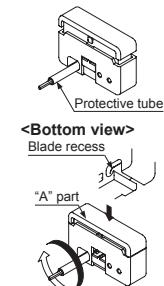
### Cutting off the protective tube

- Make sure to cut the protective tube by using the fiber cutter FX-CT3/FX-CT4 (accessory) Do not cut the protective tube by using other than the fiber cutter, since the fiber may get scratched.
- Impossible cutting range of the protective tube is 50mm from the tip of the protective tube.



### <How to cut>

- Insert the protective tube into "ø4 TUBE" side of the fiber cutter. Find desired cutting point by using the blade recess as a indicator.
- While pressing down "A" part of the fiber cutter and turn the protective tube once. The protective tube is cut.



## 7 SETTING FOR NON-SENSING OBJECT CONDITION

- Incident light intensity of reflective type may be displayed in "Non-sensing object condition" by characteristic of the structure or 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	Add 20% or more to the threshold value of the non-sensing condition. Or 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.

## 8 SPECIFICATIONS

### <Thru-beam type>

Type	Top sensing type	Side sensing type	Heat-resistant 115°C type
			Top sensing type
Model No.	FT-L80Y	FT-V80Y	FT-HL80Y
Applicable amplifier	FX-500 series, FX-300 series, FX-311 series FX-100 series, FX-410 series		
Allowable bending radius	Protective tube: R30mm or more Fiber cable: R25mm or more		
Protection (Note)	IP67 (IEC), IP68g(JEM)		
Ambient temperature	-40 to +70°C (No dew condensation or icing allowed)		-40 to +115°C (No dew condensation or icing allowed)
Ambient humidity	35~85%RH		
Fiber length	2m (1.5m covered with protective jacket from the tip)		
Material	Fiber core: Acrylic (FT-HL80Y: Polycarbonate) Fiber sheath: Polyethylene Protective tube sheath: PFA		
Accessories	FX-CT4(Fiber cutter) : 1 pc. FX-AT3(Fiber attachment) : 1 pc		

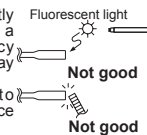
### <Reflective type>

Type	Top sensing type
Model No.	FD-S60Y
Applicable amplifier	FX-500 series, FX-300 series, FX-311 series FX-100 series, FX-410 series
Allowable bending radius	Protective tube: R30mm or more Fiber cable: R4mm or more
Protection (Note)	IP67 (IEC), IP68g(JEM)
Ambient temperature	-40 to +70°C (No dew condensation or icing allowed)
Ambient humidity	35~85%RH
Fiber length	2m (1.5m covered with protective jacket from the tip)
Material	Fiber core: Acrylic Fiber sheath: Polyethylene Protective tube sheath: PFA
Accessories	FX-CT3(Fiber cutter) : 1 pc. FX-AT5(Fiber attachment) : 1 pc.

Note: This is only for a protective tube.

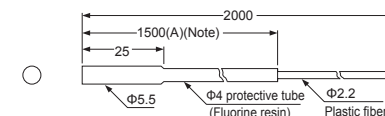
## 9 CAUTIONS

- Do not use the fiber under the environment including the following chemicals. Molten alkaline metal (sodium, potassium, lithium, etc.), chemicals which may penetrate PFA, such as Fluorine gas (F<sub>2</sub>), ClF<sub>3</sub>, OF<sub>2</sub> (also in gas) etc., or chemicals having strong permeability, such as high-temperature fluorine, nitric or chlorine etc.
- Do not expose the receiving surface of the fiber to intensive extraneous light.
- Take care that the sensor is not directly exposed to fluorescent lamp from a rapid-starter lamp, a high frequency lighting device or sunlight etc., as it may affect the sensing performance.
- Keep the sensing surfaces not to contact with anything. A flaw on surface degrades the sensing performance.
- Wipe dirt, or stain off the sensing surfaces with a cloth dampened with water.



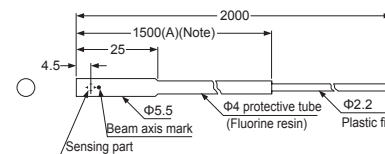
## 10 DIMENSIONS (Unit: mm)

- FT-L80Y, FT-HL80Y / Top sensing type



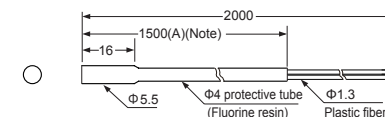
Note: Chemical-proof can be maintained at (A).

- FT-V80Y / Side sensing type



Note: Chemical-proof can be maintained at (A).

- FD-S60Y / Top sensing type



Note: Chemical-proof can be maintained at (A).