DF Series

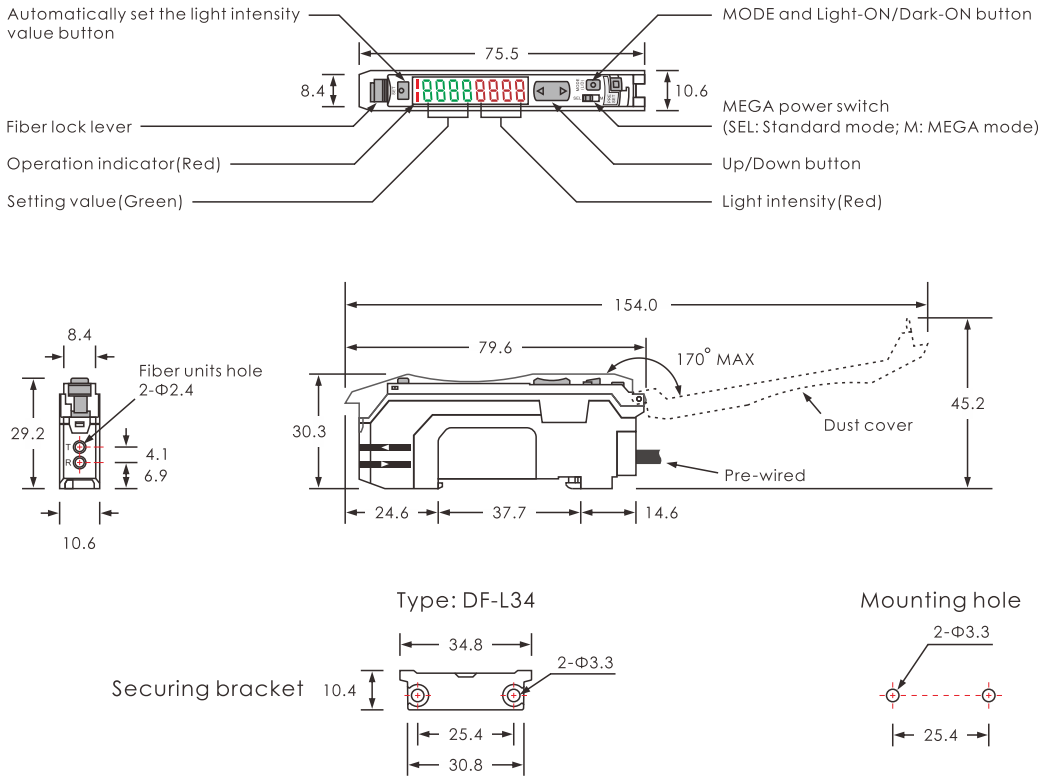
SPECIFICATIONS

MODEL	DF-N / DF-P
LIGHT SOURCE	Red LED
RESPONSE TIME	200μs max.
CONTROL OUTPUT	NPN NO or NC, PNP NO or NC (L-ON and D-ON pushbutton switch)
OPERATING VOLTAGE	12~24VDC ripple(P-P)10% max.
CURRENT CONSUMPTION	40mA max.
PROTECTION CIRCUITS	Power supply reverse polarity protection
LOAD CURRENT MAX.	50mA max.
RESIDUAL VOLTAGE	1.5V max.
INDICATOR	Setting value(displayed in green), Light intensity(displayed in red), Operation(red)
AMBIENT TEMPERATURE	-25℃~+55℃
AMBIENT HUMIDITY	35~85%RH
AMBIENT ILLUMINATION	Incandescent lamp: 10000 lx max./ Sunlight: 20000 lx max.
VIBRATION RESISTANCE	Destruction: 10~55 Hz, 1.5mm double amplitude for 2 hours each in X,Y and Z directions
SHOCK RESISTANCE	Destruction: 500 m/S^2 3 time each in X,Y and Z directions
DEGREE OF PROTECTION	IP50
MATERIAL	ABS/ PC
CONNECTION METHOD	Pre-wired Φ3.8 x 2m x 0.23mm 3wire
WEIGHT	Approx. 60g
ACCESSORIES	Manual, Screws, Securing bracket

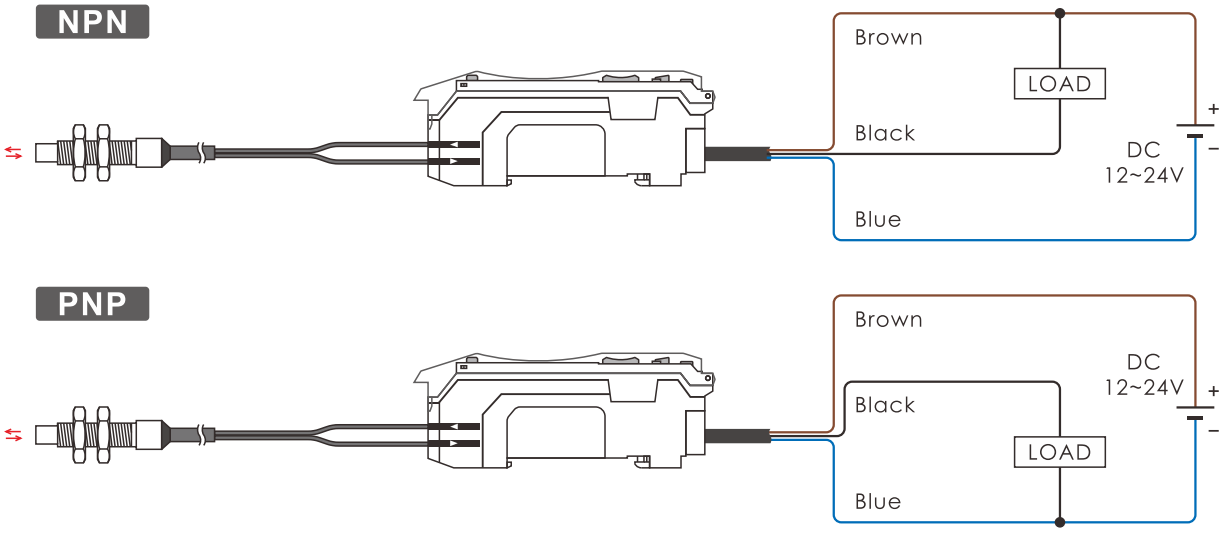
DIMENSIONS

(Units: mm)

DF Series



CONNECTION DIAGRAMS

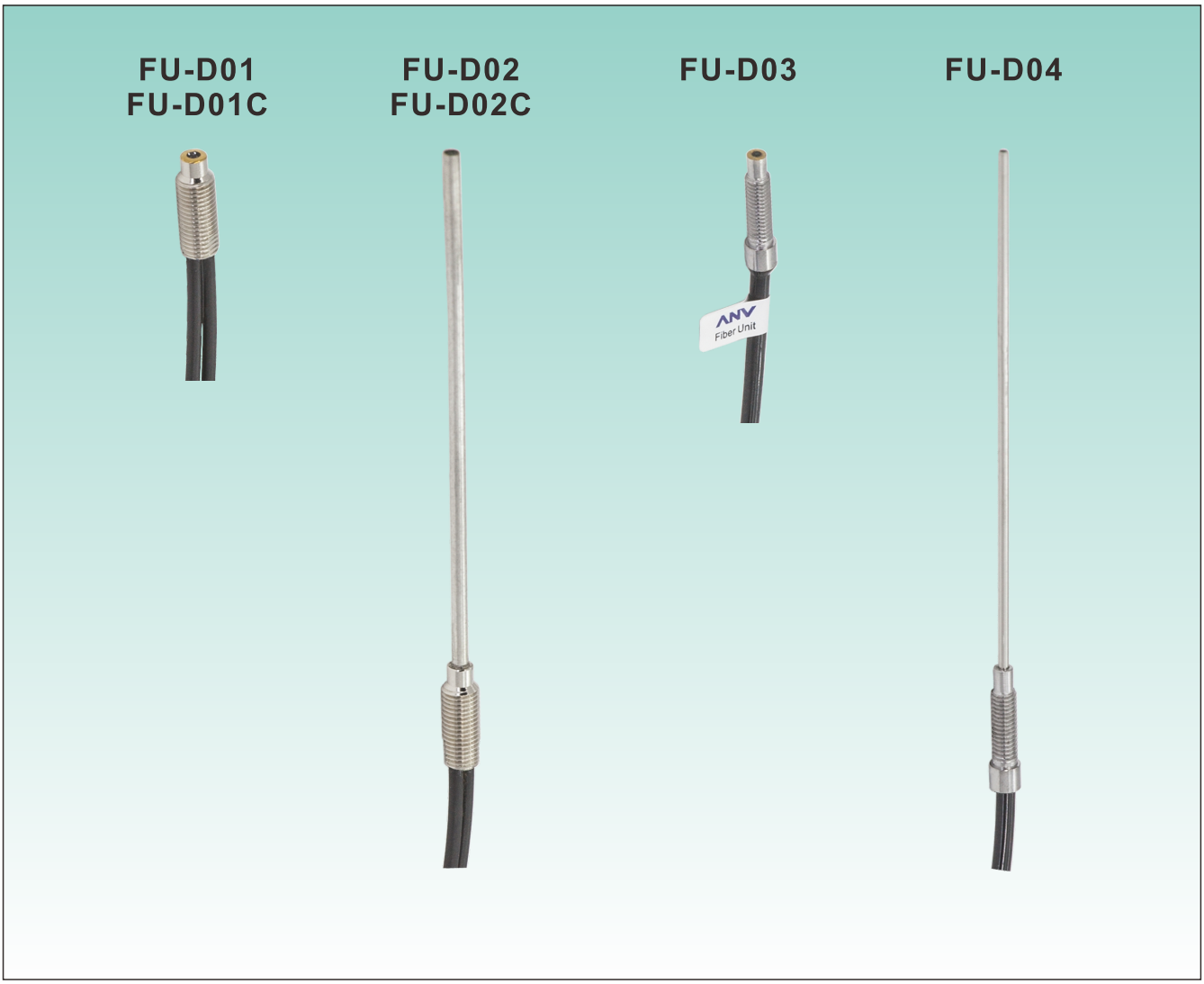


ORDER INFOMATION

DF	—	N
①		②

① **Type**
DF: Optic fiber sensor

② **Output method**
N: NPN
P : PNP



SPECIFICATIONS

MODEL	FU-D01	FU-D02	FU-D01C	FU-D02C	FU-D03	FU-D04
SENSING METHOD	Reflective		Coaxial reflective		Reflective	
SENSING DISTANCE	4cm		4cm		12mm	
FIBER LENGTH	50cm/ 100cm/ 200cm					
STANDARD SENSING OBJECTS	3 x 3cm white mat paper					
BENDING RADIUS OF CABLE	>R: 1/5mm					
AMBIENT TEMPERATURE	-25℃~+55℃					
AMBIENT HUMIDITY	35~85%RH					
DEGREE OF PROTECTION	IP65					
MATERIAL	Plastic					
WEIGHT	Approx. 15g				Approx. 10g	
ACCESSORIES	Nuts				Nuts, Thin fiber attachment	

FU-T01

FU-T02

FU-T04

FU-T05

FU-T03

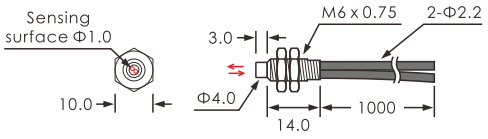
FU-T06

SPECIFICATIONS

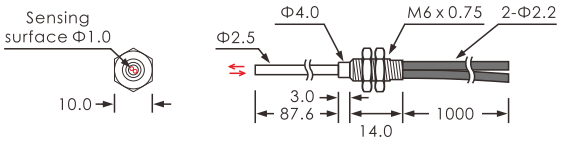
MODEL	FU-T01	FU-T02	FU-T03	FU-T04	FU-T05	FU-T06
SENSING METHOD	Through-beam					
SENSING DISTANCE	15cm			5mm		
FIBER LENGTH	50cm/ 100cm/ 200cm					
STANDARD SENSING OBJECTS	Opaque material 1.0mm dia			Opaque material 0.5mm dia		
BENDING RADIUS OF CABLE	>R: 1/5mm					
AMBIENT TEMPERATURE	-25℃~+55℃					
AMBIENT HUMIDITY	35~85%RH					
DEGREE OF PROTECTION	IP65					
MATERIAL	Plastic					
WEIGHT	Approx. 25g		Approx. 20g	Approx. 10g		Approx. 20g
ACCESSORIES	Nuts		- - -	Nuts, Thin fiber attachment		Thin fiber attachment

DIMENSIONS

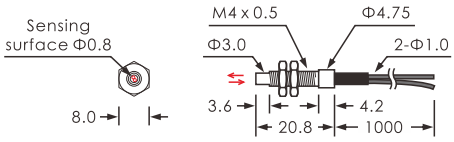
FU-D01, FU-D01C



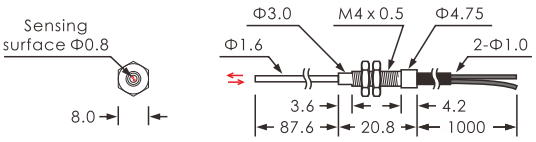
FU-D02, FU-D02C



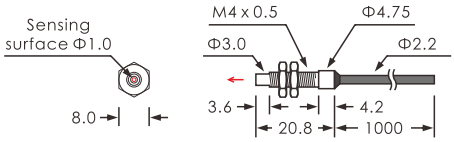
FU-D03



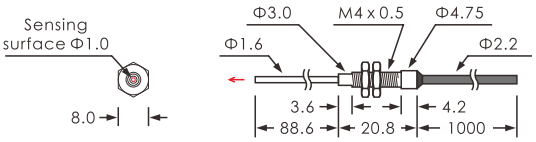
FU-D04



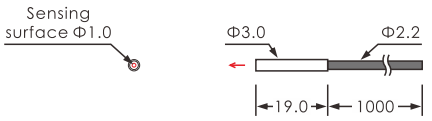
FU-T01



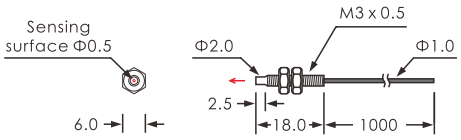
FU-T02



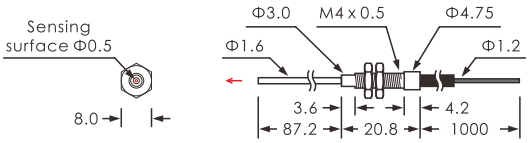
FU-T03



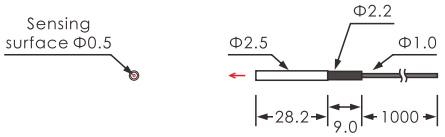
FU-T04



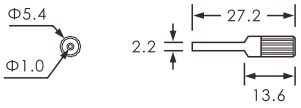
FU-T05



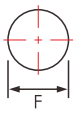
FU-T06



Thin Fiber Attachment

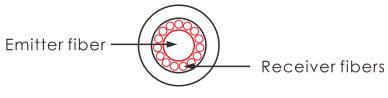


Mounting hole



Mounting hole	Screw teeth			Type: FU-T03	Type: FU-T06
	M3	M4	M6		
F	Φ3.5 $^{+0.5}_{0}$	Φ4.5 $^{+0.5}_{0}$	Φ6.5 $^{+0.5}_{0}$	Φ3.5 $^{+0.5}_{0}$	Φ3.0 $^{+0.5}_{0}$

Coaxial reflective



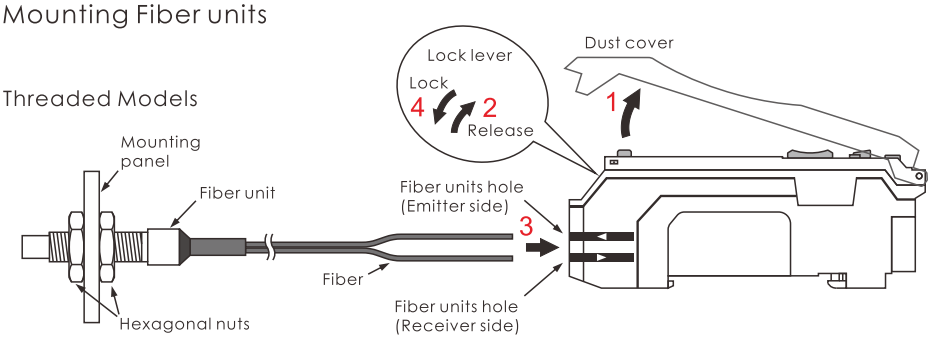
Coaxial reflective type: FU-D01C, FU-D02C

The receiver fibers are arranged around the emitter fiber as shown left.
They also detect glossy surfaces even if the surface is tilted.
These Fiber Units offer better detection of small objects at close distances (of 2 mm or less) than Standard Reflective Fiber Units.

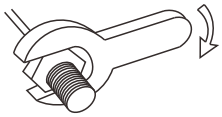
MOUNTING

Mounting Fiber units

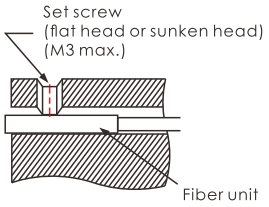
Threaded Models



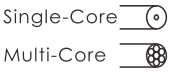
Use a proper-sized wrench for the nut.
Refer to the table parameters for the tightening torque



Cylindrical Models



1. Open the dust cover.
2. Raise the lock lever.
3. Insert the Fiber Unit in the fiber unit hole to the bottom.
4. Lock lever to fix the Fiber Unit.

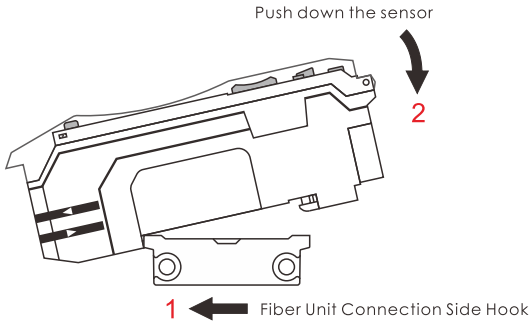


When removing the Fiber Unit, follow the above steps in reverse order.

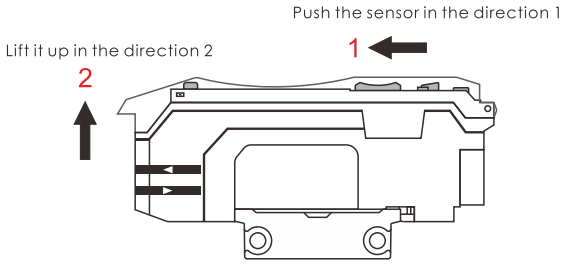
When mounting a coaxial reflective Fiber Unit, insert the single-core Fiber Unit to the upper hole (Emitter side) and the multi-core Fiber Unit to the lower hole (Receiver side).

Screw teeth	Tightening torque
M6	0.98N · m
M4	0.78N · m
M3	0.78N · m

Mounting Optic fiber sensor

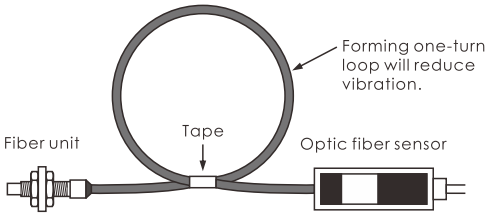


Removing Optic fiber sensor

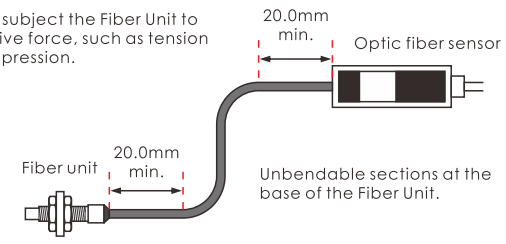


Connections

The method shown below is an ef fective way to prevent the Fiber Unit from breaking due to vibration.

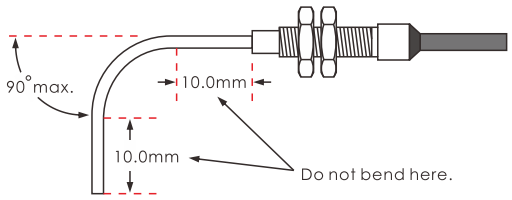


Do not subject the Fiber Unit to excessive force, such as tension or compression.



Stainless steel tube

The bending radius of the stainless steel tube should be as large as possible. The smaller the bending radius is, the shorter the sensing distance will be.



Fiber cutter

The fiber must be carefully cut to ensure the correct amount of light intensity.
The cutter can precisely cut the desired length.
The used holes cannot be reused, otherwise the surface of the fiber will be irregular, which will reduce the sensing distance.

1. Insert to the desired cutting position and cut.
2. Cutting.