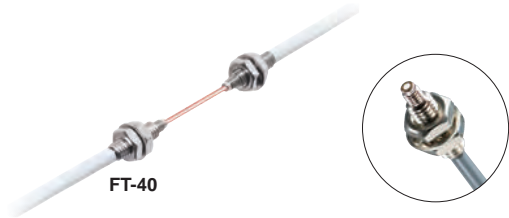


New product introduction
Tough Fiber

Super Quality

- It is a fiber with superior light intensity stability and simple digital management when combined with the **FX-500** series amplifier.
- It offers stable sensing with an extremely small beam axis curvature and gap.



Fiber Selection Guide
Model
Choose by shape/application
How to read Model No
Earlier models comparison table

Fibers
Super Quality

Threaded Type
Square Head Type
Cylindrical Type
Sleeve
Flat Type
Small Spot
Narrow Beam
Wide Beam
Convergent Reflective Type
Retroreflective Type
Chemical / Oil-resistant
Heat-resistant
Vacuum-resistant
Liquid Leak / Liquid Detection

Fiber Options

Semi-custom fibers

Fiber Dimensions

Thru-beam Type
Retroreflective Type
Reflective Type
Others

Amplifiers

FX-500 series
FX-100 series

INDEX

Digital management is simple due to small differences in body.

When connected with the **FX-500** series amplifiers, it has up to 4 times improved stability of incident light intensity compared with traditional fibers. Management is simple even when replacing amplifiers because the digital display shows the approximate value.

Emitter intensity is also stable due to few curvatures and gaps in the beam axis.

Super quality fiber + FX-500 series

"Stabilized incident light intensities" even in multiple units



Stable emission amount within ±10 %

Variation in emission amount of the fiber core is controlled down to less than ±10 %, achieving a stable detection.

- Beam axis deviation: Thru-beam type within ±2°, Reflective type within ±3°
- Beam axis centering precision: within ±150 μm

Expanded temperature range

Ambient temperature [-40 to +70 °C -40 to +158 °F in previous model]

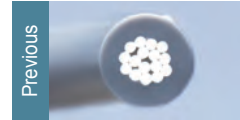
-55 to +80 °C
-67 to +176 °F

1.2 times more than previous model

ø2.2 mm ø0.087 in standard fiber



New material
Single core standard fiber with high flexibility



Previous
In general, high-flexibility types adopt a multi-fiber core, which may result in large variation in light emission.

More flexible! R4

Bending radius [Previous model is R25 mm R0.984 in]

R4 mm
R0.157 in

1/6 of that of previous model



Integrated high-precision plug

The centering precision of the fiber core attached to the inserting plug is doubled. As the insertion precision is increased, the variation among units can be greatly suppressed.



- Centering precision: within ±40 μm

More bendable!

Bending durability [Previous model is 1,000 times]

10 million times

10,000 times more than previous model

* Bending conditions
Bending radius: R10 mm R0.394 in,
Reciprocating bending 180°

LIST OF FIBERS

Thru-beam type (one pair set)

Type	Shape of fiber head (mm)	Model No.	Bending radius (mm)	Fiber cable length	Sensing range (mm in)			Beam axis dia. (mm)	Beam axis position/Inclination of beam axis	Optical transmission loss	Protection	Ambient temp.	Dimensions
					FX-500 series	U-LG LONG FAST H-SP	FX-101 (Upper value) FX-102 (Lower value)						
Threaded	M3	Tough FT-30	R2 Bending durability	2 m	STD 400 15.748	810 31.890 650 25.915 210 8.268	135 5.315 400 15.748	ø0.5	150 μm ±2°	±10 %	IP67	-55 to +80 °C	P.48
			HYPR 1,350 53.150		75 2.953								
	M4	Tough FT-40	R4 Bending durability		STD 1,200 47.244	2,200 86.614 1,700 66.929	320 12.598 870 34.252	ø1					
			HYPR (Note) 3,600 141.732		190 7.480								
Cylindrical	ø1.5	Tough FT-S20	R2 Bending durability		STD 400 15.748	810 31.890 650 25.915 210 8.268	135 5.315 400 15.748	ø0.5					
					HYPR 1,350 53.150	75 2.953							
	ø3	Tough FT-S30	R4 Bending durability		STD 1,200 47.244	2,200 86.614 1,700 66.929	320 12.598 870 34.252	ø1					
					HYPR (Note) 3,600 141.732	190 7.480							

Note: The fiber cable length practically limits the sensing range.

Reflective type

Type	Shape of fiber head (mm)	Model No.	Bending radius (mm)	Fiber cable length	Sensing range (mm in) (Note)			Beam axis position/Inclination of beam axis	Optical transmission loss	Protection	Ambient temp.	Dimensions
					FX-500 series	U-LG LONG FAST H-SP	FX-101 (Upper value) FX-102 (Lower value)					
Threaded	M3	Tough FD-30	R2 Bending durability	2 m	STD 160 6.299	330 12.992 250 9.843 80 3.150	45 1.772 155 6.102	150 μm ±3°	±10 %	IP67	-55 to +80 °C	P.56
			HYPR 600 23.622		25 0.984							
		M4	Tough FD-40									
	M6	Tough FD-60	R4 Bending durability		STD 520 20.472	900 35.433 740 29.134 260 10.236	140 5.512 420 16.535					P.57
			HYPR (Note) 1,550 61.024		90 3.543							
Cylindrical	ø3	Tough FD-S30	Bending durability	STD 160 6.299	330 12.992 250 9.843 80 3.150	45 1.772 155 6.102	P.64					
				HYPR 600 23.622	25 0.984							

Note: The sensing range is specified for white non-glossy paper.

Tough : Refers to a fiber which possesses both unbreakable (bending radius: R10 mm R0.394 in, reciprocating bending: 180°) and more flexible (bending radius: R4 mm R0.157 in or less) features.