

Through-beam Type Fiber Optic Units








FT/GT Series PRODUCT MANUAL














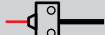



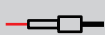





For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Icon Overview

-  **Std.** Standard:
Fiber optic units for general purpose
-  **Heat-resistant:**
Fiber optic units for the high-temperature environment (-60 to 350°C)
-  **Vacuum-resistant:**
Fiber optic units for the high-temperature (-60 to 250°C) and vacuum environment
-  **Bending-resistant (R5):**
Fiber optic units for withstanding repeated bending
-  **Flexible (R1, R2):**
Fiber optic units for withstanding repeated flexing

Line Up

	Standard	Heat-resistant	Vacuum-resistant	Bending-resistant	Flexible
Threaded head 	Std.				
Cylindrical head 	Std.				
Flat head 					
L-shaped head 	Std.				
Molded plastic head 	Std.				
Perpendicular head 					
SUS head 	Std.				
U-shaped head 					
Wide area head 					

Selection Guide

- The model starts with F is plastic, G is glass optical fibers. Glass fibers are for BF5 and BF4 series.
- Be sure to use the vacuum-resistant fiber mounting with the fiber optic coupler and the atmospheric side fiber (sold separately). For more information on the fiber optic coupler, refer to the 'fiber optic sensor guide.'
- The testing environments for sensing distance vary depending on the amplifiers.

Amplifier	Testing environment
BF5	Red LED, Standard (STD) mode, Non-glossy white paper
BF4	Red LED, Maximum sensitivity, Non-glossy white paper Green LED has 10% of sensing distance compare to the Red LED. In case of BF3, apply 40% of sensing distance.

- The minimum detectable target came out with the maximum sensitivity of the BF4 series.
- For the detailed drawings and dimensions, follow the Autonics website.
- Be sure to use offered fiber cutter (FC-3) for FREE CUT models.
- Be sure to connect offered fiber optic adaptor for Adaptor models.
- Be sure to consider the diameter of the fiber optic cable and select a suitable protection tube for cable (sold separately).
Diameter of cable: Protection tube for cable > Fiber optic unit
- The installation of the fiber optic unit may vary depending on the fiber optic amplifier. See the manual of the amplifier that you are using.

Through-beam Type: Threaded head

Standard

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT/ Adaptor
FT-310-05	R10	-40 to 70 °C	150 mm (BF4)	Ø 0.5 mm		FREE CUT/ Adaptor
FT-320-05	R10	-40 to 70 °C	150 mm (BF4)	Ø 0.5 mm		FREE CUT/ Adaptor
FT-420-10	R25	-40 to 70 °C	500 mm (BF4)	Ø 1 mm		FREE CUT

Heat-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT/ Adaptor
FT-420-10H	R25	-40 to 105 °C	760 mm (BF5)	Ø 0.1 mm		FREE CUT
FT-420-15H1	R35	-40 to 150 °C	830 mm (BF5)	Ø 0.2 mm		FREE CUT
GT-420-13H2	R25	-40 to 250 °C	825 mm (BF5)	Ø 0.15 mm		—

Vacuum-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT/ Adaptor
GT-410-12V2	R25	-60 to 250 °C	420 mm ⁰¹⁾ (BF5) 340 mm ⁰²⁾ (BF5)	Ø 0.15 mm Ø 0.2 mm		—

01) Equipped with the atmospheric-side fiber optic unit (FU-VA01)

02) Equipped with the atmospheric-side fiber optic unit (FU-VA02)

Through-beam Type: Threaded head

■ Bending-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FT-320-06B	R5	-40 to 60 °C	110 mm (BF5)	Ø 0.3 mm		FREE CUT
FT-420-13B	R5	-40 to 60 °C	400 mm (BF5)	Ø 0.6 mm		FREE CUT

■ Flexible

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FT-320-05R	R1	-40 to 60 °C	110 mm (BF5)	Ø 0.3 mm		FREE CUT / Adaptor
FT-420-10R	R1	-40 to 60 °C	500 mm (BF5)	Ø 0.5 mm		FREE CUT

Through-beam Type: Cylindrical head

■ Standard

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTC-1520-05	R10	-40 to 70 °C	150 mm (BF4)	Ø 0.5 mm		FREE CUT/ Adaptor
FTC-220-05	R10	-40 to 70 °C	150 mm (BF4)	Ø 0.5 mm		FREE CUT/ Adaptor
FTC-320-10	R30	-40 to 70 °C	150 mm (BF4)	Ø 1 mm		FREE CUT

■ Bending-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTC-1520-06B	R5	-40 to 60 °C	110 mm (BF4)	Ø 0.3 mm		FREE CUT

■ Flexible

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTC-220-05R	R1	-40 to 60 °C	110 mm (BF5)	Ø 0.3 mm		FREE CUT/ Adaptor

Through-beam Type: Flat head

Flexible

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTF-210-05R	R1	-40 to 60 °C	100 mm (BF5)	Ø 0.04 mm	<p>• Hood material: SUS303, flat view</p>	FREE CUT/ Adaptor
FTFB-210-05R	R1	-40 to 60 °C	110 mm (BF5)	Ø 0.04 mm	<p>• Hood material: AL, side view + top view (Bending)</p>	FREE CUT/ Adaptor
FTFN-210-05R	R1	-40 to 60 °C	110 mm (BF5)	Ø 0.04 mm	<p>• Hood material: SUS303, side view</p>	FREE CUT/ Adaptor
FTFU-210-05R	R1	-40 to 60 °C	110 mm (BF5)	Ø 0.04 mm	<p>• Hood material: SUS303, top view</p>	FREE CUT/ Adaptor
FTLU-310-10R	R1	-40 to 60 °C	500 mm (BF5)	Ø 0.06 mm	<p>• Hood material: AL, top view</p>	FREE CUT
FTLU1-310-10R	R1	-40 to 60 °C	500 mm (BF5)	Ø 0.06 mm	<p>• Hood material: AL, top view</p>	FREE CUT
FTLU2-310-10R	R1	-40 to 60 °C	500 mm (BF5)	Ø 0.06 mm	<p>• Hood material: AL, top view</p>	FREE CUT

Through-beam Type: L-shaped head

■ Standard

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTL-420-10	R20	-30 to 70 °C	710 mm (BF5)	Ø 0.1 mm		FREE CUT

■ Heat-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
GTL-420-12H2	R25	-60 to 250 °C	670 mm (BF5)	Ø 0.08 mm		—
GTL-420-12H3	R25	-60 to 350 °C	680 mm (BF5)	Ø 0.08 mm		—

■ Vacuum-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
GTL-410-12V2	R25	-60 to 250 °C	420 mm ⁰¹⁾ (BF5) 340 mm ⁰²⁾ (BF5)	Ø 0.1 mm		—

01) Equipped with the atmospheric-side fiber optic unit (FU-VA01)

02) Equipped with the atmospheric-side fiber optic unit (FU-VA02)

Through-beam Type: Molded plastic head

■ Standard

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTP-320-10	R30	-40 to 70 °C	500 mm (BF4)	Ø 1 mm	<p>Technical drawing showing dimensions (unit: mm):</p> <ul style="list-style-type: none"> Total length: 2000 Head length: 14 Head height: 19 Head height (excluding top chamfer): 13 Head height (excluding top chamfer and bottom chamfer): 10 Four holes in head: 4-Ø3.1 Tail diameter: Ø2.2 Detail view: Ø1 hole, 7.5 mm distance from top edge 	FREE CUT

Through-beam Type: Perpendicular head

■ Heat-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
GTR-420-12H2	R25	-60 to 250 °C	650 mm (BF5)	Ø 0.08 mm		—
GTR-420-12H3	R25	-60 to 350 °C	630 mm (BF5)	Ø 0.08 mm		—

■ Flexible

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTR-410-10R	R1	-40 to 60 °C	460 mm (BF5)	Ø 0.5 mm	<p>• Hood material: SUS303</p>	FREE CUT

Through-beam Type: SUS head

■ Standard

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTS-320-05	R10 (SUS part R10)	-40 to 70 °C	150 mm (BF4)	Ø 0.5 mm		FREE CUT / Adaptor
FTS1-320-05	R10 (SUS part R10)	-40 to 70 °C	150 mm (BF4)	Ø 0.5 mm		FREE CUT / Adaptor
FTS2-320-05	R10 (SUS part R10)	-40 to 70 °C	150 mm (BF4)	Ø 0.5 mm		FREE CUT / Adaptor
FTS-420-10	R30 (SUS part R10)	-40 to 70 °C	500 mm (BF4)	Ø 1 mm		FREE CUT
FTS2-420-10	R30 (SUS part R10)	-40 to 70 °C	500 mm (BF4)	Ø 1 mm		FREE CUT
FTCS-220-05	R10 (SUS part R10)	-40 to 70 °C	150 mm (BF4)	Ø 0.5 mm		FREE CUT / Adaptor
FTCSN-2520-05	R15	-40 to 60 °C	120 mm (BF5)	Ø 0.0125 mm	<p>• Side view</p>	—

Through-beam Type: U-shaped head

■ Heat-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
GTU3-320-H2	R25	-60 to 250 °C	20 mm (BF5)	Ø 2.5 mm		—

Through-beam Type: Wide area head

■ Bending-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTW5-320-02B	R5	-30 to 70 °C	730 mm (BF5)	Ø 0.8 mm		FREE CUT

■ Flexible

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FTW11-210-10R	R2	-40 to 60 °C	1,400 mm (BF5)	Ø 0.07 mm		FREE CUT

Sold Separately

■ Lens unit for long distance detection

Model	Ambient temperature	Magnification ⁰¹⁾	Dimensions (unit: mm)
FTL-M26	-40 to 100 °C	×5	<p>• Mount the lens unit on the 3 mm of sensor tip at the front hood.</p>
FTL-M26V3	-60 to 350 °C	×10	
FTL-M4V3	-60 to 350 °C	×15	

01) The sensing distance may vary depending on the detection environment.

■ Fiber optic coupler (vacuum fiber optics component)

Model	Ambient temperature	Dimensions (unit: mm)
FU-VC01	-60 to 200 °C	
FU-VC02	-60 to 300 °C	

Sold Separately

■ Atmospheric-side fiber optic units

Model	Bend radius	Ambient temperature	Dimensions (unit: mm)	FREE CUT
FU-VA01	R30	-30 to 70 °C		FREE CUT
FU-VA02	R20	-30 to 70 °C		FREE CUT

■ Protection tube for cable

Model	Dimensions (unit: mm)
FTH-305	
FTH-310	
FTH-405	
FTH-410	

Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website.

• Example of ordering information: FT-420-10H

F	T	<input type="checkbox"/>	-	4	20	-	10	H	<input type="checkbox"/>
①	②	③	-	④	⑤	-	⑥	⑦	⑧

①	Fiber material	F	Plastic
		G	Glass
②	Sensing type	D	Retroreflective type
		L	Convergent reflective type
		T	Through-beam type
③	Head shape		
		· Threaded head	No mark Standard
	· Cylindrical head	C	Standard
		CS	Cylinder+SUS head (SUS length 15 mm)
		CSN	Cylinder+SUS head (SUS length 15 mm, side view)
	· Flat head	F	Flat view
		FB	Side view+Top view (bending)
		FN	Side view
		FU	Top view (up)
		LU	L-shaped head top view (height 12.2 mm)
		LU1	L-shaped head top view (height 17.2 mm)
	· L-shaped head	LU2	L-shaped head top view (height 22.2 mm)
		L	Standard
	· Molded plastic head	P	Standard
		PF	Flat view
	· Perpendicular head	R	Standard
		RT	Protection tube mounted
	· SUS head	S	SUS length 90 mm
		S1	SUS length 35 mm
		S2	SUS length 45 mm
	· U-shaped head	U3	Beam width 3 mm
		W5	Beam width 5 mm
	· Wide area head	W10	Beam width 10 mm
		W10T	Beam width 10 mm, protection tube mounted
		W11	Beam width 11 mm
	· Protection tube	H	Protection tube for fiber cable (sold separately)
④	Hood diameter	15	Ø 1.5 mm
		2	Ø 2 mm (M2)
		3	Ø 3 mm (M3)
		4	Ø 4 mm (M4)
		6	Ø 6 mm (M6)

⑤	Cable length	5	0.5 m
		10	1 m
		20	2 m
		10M	10 m
⑥	Fiber diameter	2	Ø 0.2 mm
		5	Ø 0.5 mm
		6	Ø 0.6 mm
		10	Ø 1.0 mm
		12	Ø 1.2 mm
		13	Ø 1.3 mm
		14	Ø 1.4 mm
		15	Ø 1.5 mm
		17	Ø 1.7 mm
		20	Ø 2.0 mm
		F	Ø 0.5 mm, Ø 0.25 mm × 4 (coaxial type)
		F1	Ø 0.5 mm, Ø 0.25 mm × 9 (coaxial type)
		F2	Ø 1.0 mm, Ø 0.265 mm × 16 (coaxial type)
⑦	Unit type	No mark	Standard
		B	Bending-resistant (R5)
		R	Flexible (R1, R2)
		H	Heat-resistant (40 to 105 °C)
		H1	Heat-resistant (40 to 150 °C)
		H2	Heat-resistant (60 to 250 °C)
		H3	Heat-resistant (60 to 350 °C)
		V	Vacuum-resistant (60 to 100 °C)
		V1	Vacuum-resistant (60 to 150 °C)
		V2	Vacuum-resistant (60 to 250 °C)
V3	Vacuum-resistant (60 to 350 °C)		
⑧	Convergent reflective type size option	A	R20 / 12×18×3
		L	Over 30 mm of the product length
		Waterproof sealing	WP Water resistance supported