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

Through-beam Type Line Up

Head shape	Standard	Heat-resistance	Vacuum-resistant	Bending-resistant	Flexible
Threaded head	Std.	●	●	●	●
Cylindrical head	Std.			●	●
Flat head					●
L-shaped head	Std.	●	●		
Molded plastic head	Std.				
Perp. head		●			●
SUS head	Std.				
U-shaped head		●			
Wide area head				●	●

Selection Guide

⚠ The installation method for the fiber optic units may vary depending on the fiber optic amplifiers. Be sure to refer to the 'Product manual' of the amplifiers you are using. For detailed information on the fiber optic units, refer to the 'Fiber optic sensor guide'.

00. When using the vacuum-resistant fibers
Be sure to connect with the vacuum-resistant fiber, the fiber optic coupler, and the atmospheric side fiber.

01. Model name
The model name starting with 'F' indicates plastic-type optical fibers, while starting with 'G' indicates glass-type optical fibers.

02. Minimum target size
The minimum detectable target came out with the maximum sensitivity setting of the BF4 series.

03. Sensing distance
The sensing distance of the optical fibers varies depending on the testing environments of each amplifier. Apply 10% of the BF4R□-□ sensing distance to the fiber optic amplifiers BF4G□-□ model.
Errors in the sensing distance may occur due to the sensing environment as below.
- Fiber optic units: Bend radius of cable, condition of cutting surface, amplifier insertion depth, etc.
- Detectable objects: Material, shape or inclination, bending, gloss, etc.

04. FREE CUT
Be sure to cut the cable using the provided fiber cutter (FC-3) for FREE CUT type models.

05. Adapter
Be sure to connect the provided adapter for the adapter-compatible models.
When checking the product components or ordering the sold separately, refer to the marks below.
●: It is possible to use the Product Components and the adapter (sold separately).
○: Only the adapter included with the product is available and cannot be purchased separately.
-: The adapter is not supported.

06. Dimensions
For detailed information on the drawings and dimensions, follow the Autonics website.

Product Components

- Fiber optic units
- Fiber cutter (for FREE CUT type model)
- Adapter (for Adapter-compatible model)

Sold Separately

- Included items for the vacuum-resistant fiber
  - Fiber optic coupler: FU-VC□
  - Atmospheric side fiber: FU-VA□
- Lens unit for increasing sensing distance: FTL-M□□
- Fiber cutter: FC-3
- Cable protection tube: FTH-□□
- Adapter

Threaded head: Standard

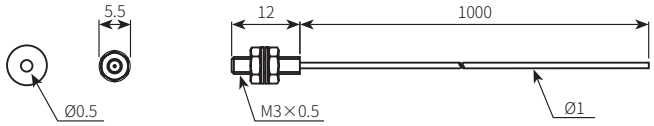
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FT-310-05	1 m (FREE CUT)	R10	-40 to 70 °C	Ø 0.5 mm	U-FST	45	55	-	-	●
						FAST	75	95			
						STD	120	195			
						LONG	260	355			
						U-LG / MAX.	390	500	150	25	
	FT-320-05	2 m (FREE CUT)	R10	-40 to 70 °C	Ø 0.5 mm	U-FST	40	50	-	-	●
						FAST	65	80			
						STD	115	170			
						LONG	245	315			
						U-LG / MAX.	360	425	150	110	
	FT-420-10	2 m (FREE CUT)	R25	-40 to 70 °C	Ø 1.0 mm	U-FST	185	220	-	-	-
						FAST	280	360			
						STD	475	715			
						LONG	1045	1560			
						U-LG / MAX.	1440	1960	500	125	

01) When setting the maximum sensitivity for each amplifier.

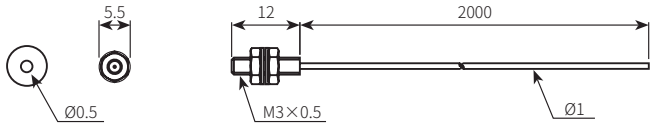
■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

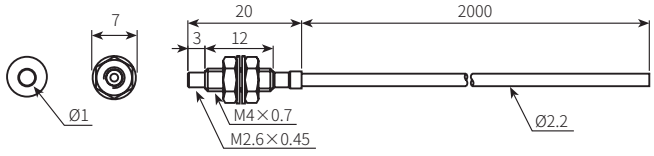
• FT-310-05



• FT-320-05



• FT-420-10



Threaded head: Heat-resistant

Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Amp. / Mode	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FT-420-10H	2 m (FREE CUT)	R25	-40 to 105 °C	Ø 0.1 mm	U-FST	160	220	-	-	-
						FAST	245	360			
						STD	410	760			
						LONG	940	1150			
						U-LG / MAX.	1375	1330	500	420	
	FT-420-15H1	2 m (FREE CUT)	R35	-40 to 150 °C	Ø 0.2 mm	U-FST	180	260	-	-	-
						FAST	280	410			
						STD	465	830			
						LONG	1070	1595			
						U-LG / MAX.	1515	2305	470	320	
	GT-420-13H2	2 m	R25	-40 to 250 °C	Ø 0.15 mm	U-FST	155	235	-	-	-
						FAST	235	370			
						STD	385	825			
						LONG	880	1510			
						U-LG / MAX.	1255	2285	460	N.A	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

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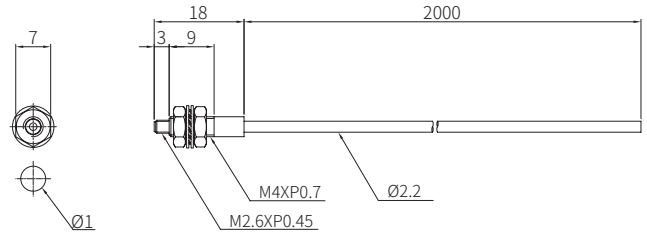
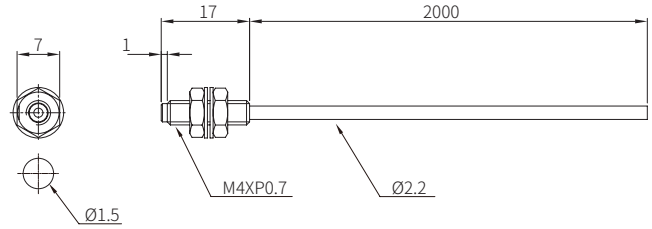
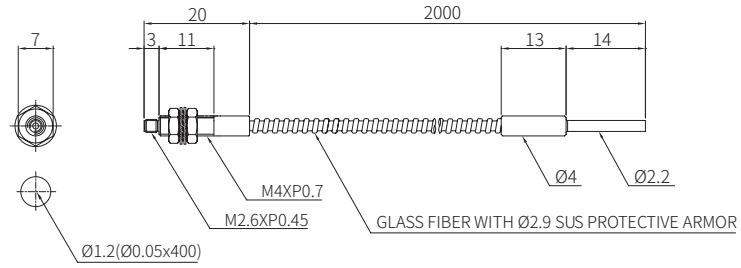
• FT-420-10H



• FT-320-15H1



• GT-420-13H2



Threaded head: Vacuum-resistant

- Be sure to connect with the vacuum-resistant fiber, the fiber optic coupler, and the atmospheric side fiber.
- The sensing distance of the vacuum-resistant fiber unit is based on the installation of the atmospheric side fiber unit (FU-VA0□, sold separately).

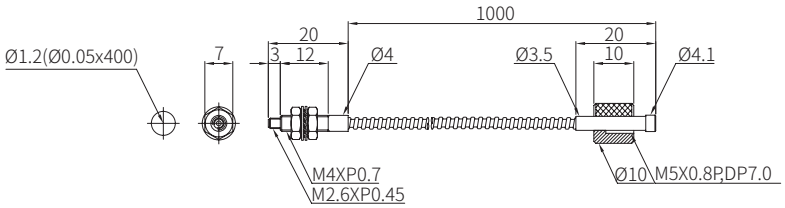
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	GT-410-12V2	1 m	R25	-60 to 250 °C	Ø 0.15 mm (+ FU-VA01)	**U-FST**	80	130	-	-	-
						FAST	120	210			
						STD	210	420			
						LONG	445	900			
						U-LG / MAX.	675	1410	275	220	
					Ø 0.2 mm (+ FU-VA02)	**U-FST**	60	100	-	-	
						FAST	100	170			
						STD	165	340			
						LONG	340	670			
						U-LG / MAX.	495	1060	175	165	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

• GT-410-12V2



Threaded head: Bending-resistant

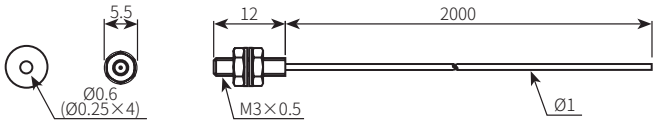
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Amp. / Mode	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FT-320-06B	2 m (FREE CUT)	R5	-40 to 60 °C	Ø 0.3 mm	U-FST	55	50	-	-	-
						FAST	80	80			
						STD	140	110			
						LONG	280	300			
						U-LG / MAX.	400	440	100	20	
	FT-420-13B	2 m (FREE CUT)	R5	-40 to 60 °C	Ø 0.6 mm	U-FST	170	130	-	-	-
						FAST	255	210			
						STD	430	400			
						LONG	975	950			
						U-LG / MAX.	1465	1360	405	100	

01) When setting the maximum sensitivity for each amplifier.

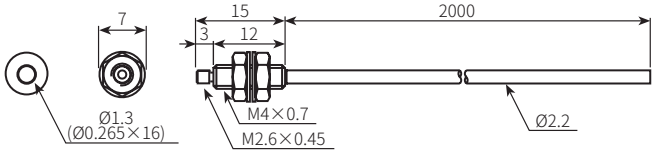
■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

• FT-320-06B



• FT-420-13B



Threaded head: Flexible

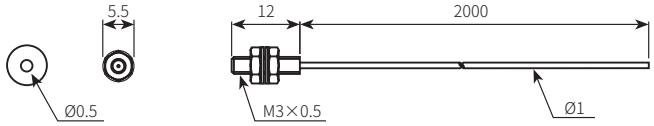
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FT-320-05R	2 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.3 mm	U-FST	20	40	-	-	●
						FAST	45	65			
						STD	80	110			
						LONG	135	260			
						U-LG / MAX.	185	385	120	10	
	FT-420-10R	2 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.5 mm	U-FST	180	180	-	-	-
						FAST	275	285			
						STD	455	500			
						LONG	945	1120			
						U-LG / MAX.	1380	1495	460	60	

01) When setting the maximum sensitivity for each amplifier.

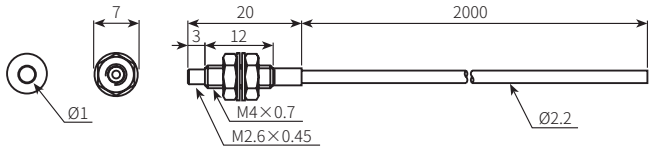
■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

• FT-320-05R



• FT-420-10R



Cylindrical head: Standard

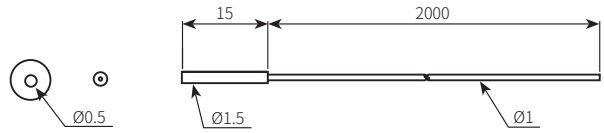
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Amp. / Mode	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTC-1520-05	2 m (FREE CUT)	R10	-40 to 70 °C	Ø 0.5 mm	U-FST	45	40	-	-	●
						FAST	70	70			
						STD	115	145			
						LONG	255	275			
						U-LG / MAX.	380	425	150	20	
	FTC-220-05	2 m (FREE CUT)	R10	-40 to 70 °C	Ø 0.5 mm	U-FST	55	60	-	-	●
						FAST	80	100			
						STD	140	205			
						LONG	305	365			
						U-LG / MAX.	410	550	150	20	
	FTC-320-10	2 m (FREE CUT)	R30	-40 to 70 °C	Ø 1.0 mm	U-FST	160	200	-	-	-
						FAST	240	330			
						STD	400	660			
						LONG	875	1440			
						U-LG / MAX.	1290	1815	150	160	

01) When setting the maximum sensitivity for each amplifier.

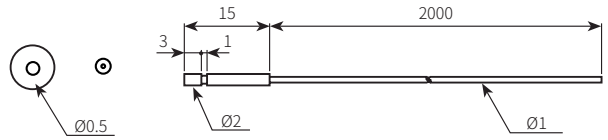
■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

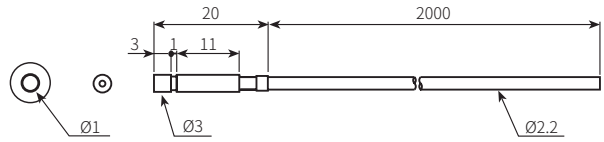
• FTC-1520-05



• FTC-220-05



• FTC-320-10



Cylindrical head: Bending-resistant

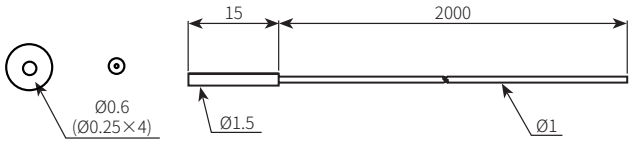
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTC-1520-06B	2 m (FREE CUT)	R5	-40 to 60 °C	Ø 0.3 mm	U-FST	50	60	-	-	-
						FAST	75	90			
						STD	135	185			
						LONG	280	340			
						U-LG / MAX.	380	495	110	15	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

• FTC-1520-06B



Cylindrical head: Flexible

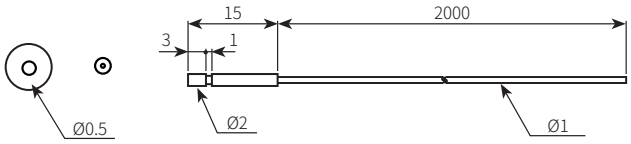
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)				Adapter
		Length	Bend radius			Amp. / Mode	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTC-220-05R	2 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.3 mm	U-FST	35	45	-	-	●
						FAST	50	75			
						STD	90	110			
						LONG	200	300			
						U-LG / MAX.	305	445	165	15	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

• FTC-220-05R



Flat head: Flexible

Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTF-210-05R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.04 mm	**U-FST**	10	15	-	-	●
						FAST	20	30			
						STD	40	100			
						LONG	95	105			
						U-LG / MAX.	135	150	50	40	
	FTFB-210-05R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.04 mm	**U-FST**	20	25	-	-	●
						FAST	30	40			
						STD	65	110			
						LONG	120	150			
						U-LG / MAX.	200	215	105	80	
	FTFN-210-05R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.04 mm	**U-FST**	50	45	-	-	●
						FAST	80	75			
						STD	130	110			
						LONG	290	295			
						U-LG / MAX.	420	440	60	85	
	FTFU-210-05R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.04 mm	**U-FST**	25	30	-	-	●
						FAST	40	50			
						STD	80	110			
						LONG	160	190			
						U-LG / MAX.	240	280	95	85	
	FTLU-310-10R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.06 mm	**U-FST**	80	195	-	-	-
						FAST	120	320			
						STD	195	500			
						LONG	420	880			
						U-LG / MAX.	660	1005	185	100	
	FTLU1-310-10R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.06 mm	**U-FST**	165	160	-	-	-
						FAST	245	270			
						STD	420	500			
						LONG	890	840			
						U-LG / MAX.	1250	990	295	120	
	FTLU2-310-10R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.06 mm	**U-FST**	140	180	-	-	-
						FAST	215	305			
						STD	365	500			
						LONG	785	1120			
						U-LG / MAX.	1100	1380	275	160	

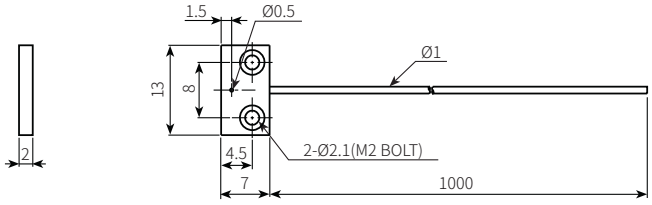
01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

• Unit: mm, For the detailed drawing, follow the Autonics website.

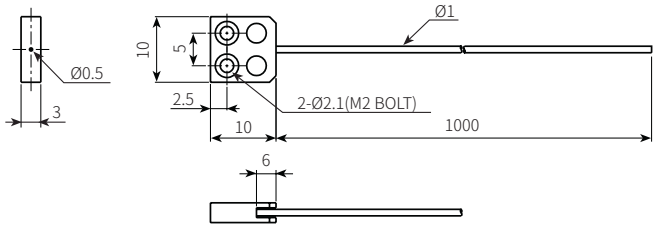
• FTF-210-05R

Hood material: SUS303, flat view



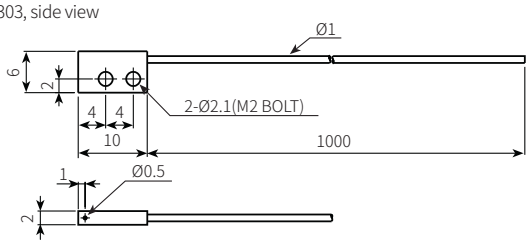
• FTFB-210-05R

Hood material: AL, side view + top view (Bending)



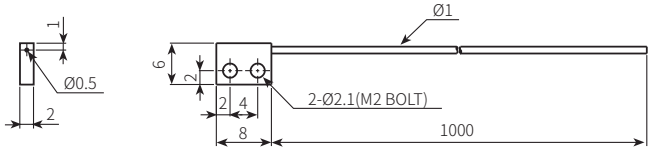
• FTFN-210-05R

Hood material: SUS303, side view



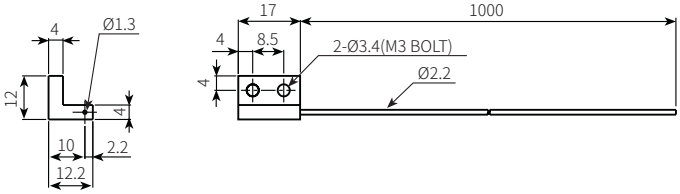
• FTFU-210-05R

Hood material: SUS303, top view



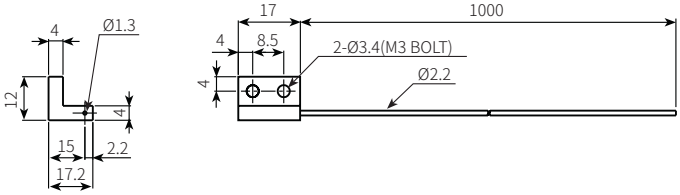
• FTLU-310-10R

Hood material: AL, top view



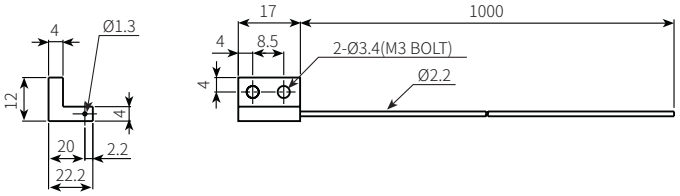
• FTLU1-310-10R

Hood material: AL, top view



• FTLU2-310-10R

Hood material: AL, top view



L-Shaped head: Standard

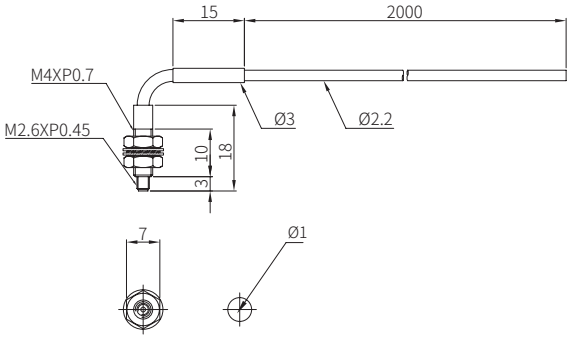
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTL-420-10	2 m (FREE CUT)	R20	-30 to 70 °C	Ø 0.1 mm	U-FST	10	210	-	-	-
						FAST	15	360			
						STD	25	710			
						LONG	55	1540			
						U-LG / MAX.	80	2440	30	25	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

• FTL-420-10



L-Shaped head: Heat-resistant

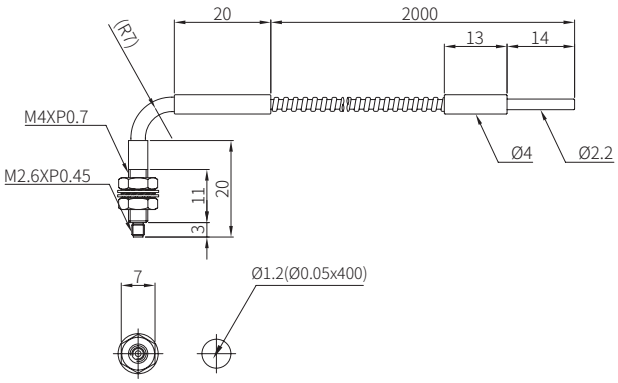
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	GTL-420-12H2	2 m	R25	-60 to 250 °C	Ø 0.08 mm	U-FST	160	200	-	-	-
						FAST	235	320			
						STD	395	670			
						LONG	860	1460			
						U-LG / MAX.	1250	2600	490	N.A	
	GTL-420-12H3	2 m	R25	-60 to 350 °C	Ø 0.08 mm	U-FST	140	200	-	-	-
						FAST	210	320			
						STD	360	680			
						LONG	820	1470			
						U-LG / MAX.	1170	2640	500	N.A	

01) When setting the maximum sensitivity for each amplifier.

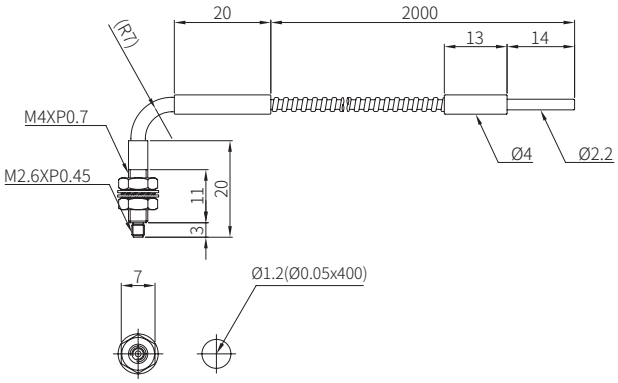
■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

• GTL-420-12H2



• GTL-420-12H3



L-shaped head: Vacuum-resistant

- Be sure to connect with the vacuum-resistant fiber, the fiber optic coupler, and the atmospheric side fiber.
- The sensing distance of the vacuum-resistant fiber unit is based on the installation of the atmospheric side fiber unit (FU-VA0□, sold separately).

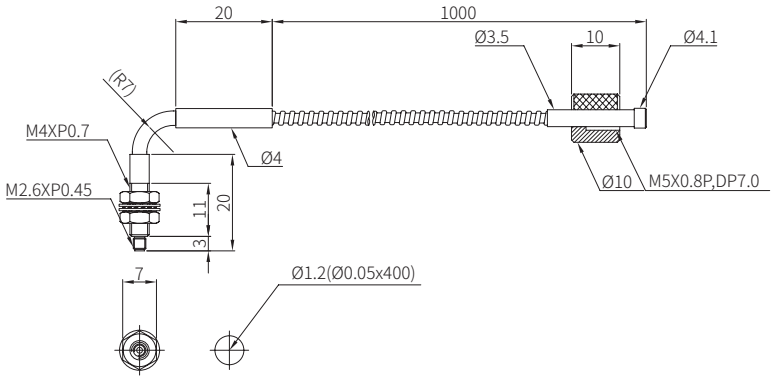
Appearance	Model	Cable		Ambient temperature	Min. target size (atmospheric unit)	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Amp. / Mode	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	GTL-410-12V2	1 m	R25	-60 to 250 °C	Ø 0.1 mm (+ FU-VA01)	U-FST	80	130	-	-	-
						FAST	130	210			
						STD	220	420			
						LONG	465	900			
						U-LG / MAX.	650	1440	245	205	
					Ø 0.1 mm (+ FU-VA02)	U-FST	60	110	-	-	
						FAST	95	170			
						STD	160	340			
						LONG	350	710			
						U-LG / MAX.	505	1100	205	185	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

• GTL-410-12V2



Molded plastic head: Standard

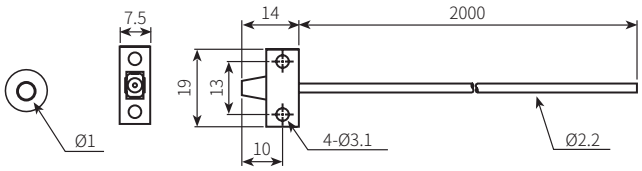
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTP-320-10	2 m (FREE CUT)	R30	-40 to 70 °C	Ø 1.0 mm	U-FST	140	190	-	-	-
						FAST	220	300			
						STD	365	640			
						LONG	840	1280			
						U-LG / MAX.	1215	1985	500	165	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

• FTP-320-10



Perpendicular head: Heat-resistant

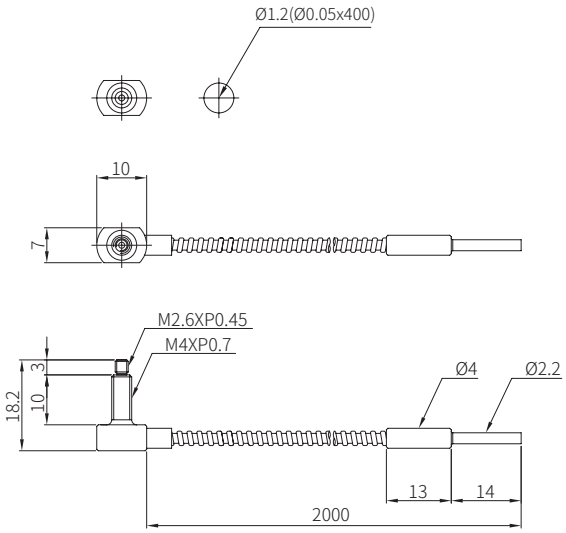
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	GTR-420-12H2	2 m	R25	-60 to 250 °C	Ø 0.08 mm	U-FST	160	200	-	-	-
						FAST	230	310			
						STD	395	650			
						LONG	880	1380			
						U-LG / MAX.	1335	2580	485	N.A	
	GTR-420-12H3	2 m	R25	-60 to 350 °C	Ø 0.08 mm	U-FST	145	190	-	-	-
						FAST	220	300			
						STD	375	630			
						LONG	855	1400			
						U-LG / MAX.	1270	2620	450	N.A	

01) When setting the maximum sensitivity for each amplifier.

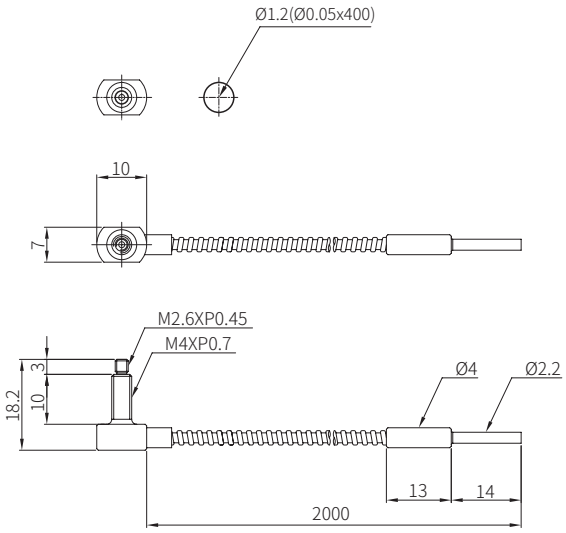
■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

• GTR-420-12H2



• GTR-420-12H3



Perpendicular head: Flexible

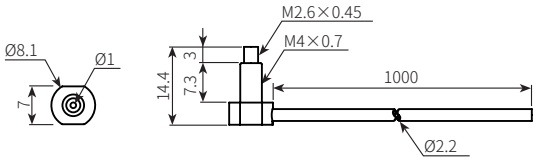
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)				Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTR-410-10R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.5 mm	U-FST	125	180	-	-	-
						FAST	200	300			
						STD	320	460			
						LONG	710	1120			
						U-LG / MAX.	990	1515	290	185	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

- **FTR-410-10R**
  Hood material: SUS303



SUS head: Standard

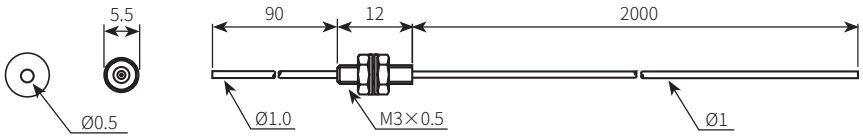
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTS-320-05	2 m (FREE CUT)	R10 (SUS part R10)	-40 to 70 °C	Ø 0.5 mm	**U-FST**	45	60	-	-	●
						FAST	65	95			
						STD	120	200			
						LONG	255	355			
						U-LG / MAX.	400	520	150	20	
	FTS1-320-05	2 m (FREE CUT)	R10 (SUS part R10)	-40 to 70 °C	Ø 0.5 mm	**U-FST**	40	55	-	-	●
						FAST	65	95			
						STD	120	190			
						LONG	245	345			
						U-LG / MAX.	380	515	150	25	
	FTS2-320-05	2 m (FREE CUT)	R10 (SUS part R10)	-40 to 70 °C	Ø 0.5 mm	**U-FST**	45	50	-	-	●
						FAST	70	80			
						STD	120	175			
						LONG	255	310			
						U-LG / MAX.	420	465	150	20	
	FTS-420-10	2 m (FREE CUT)	R30 (SUS part R10)	-40 to 70 °C	Ø 1.0 mm	**U-FST**	185	230	-	-	-
						FAST	280	380			
						STD	470	755			
						LONG	1015	1545			
						U-LG / MAX.	1480	2140	500	415	
	FTS2-420-10	2 m (FREE CUT)	R30 (SUS part R10)	-40 to 70 °C	Ø 1.0 mm	**U-FST**	160	195	-	-	-
						FAST	230	320			
						STD	385	645			
						LONG	840	1220			
						U-LG / MAX.	1390	1820	500	365	
	FTCS-220-05	2 m (FREE CUT)	R10 (SUS part R10)	-40 to 70 °C	Ø 0.5 mm	**U-FST**	40	50	-	-	●
						FAST	60	85			
						STD	100	180			
						LONG	220	340			
						U-LG / MAX.	305	500	150	25	
	FTCSN-2520-05	2 m	R15	-40 to 60 °C	Ø 0.0125 mm	**U-FST**	35	15	-	-	○ 02)
						FAST	50	25			
						STD	95	120			
						LONG	180	150			
						U-LG / MAX.	230	275	120	5	

01) When setting the maximum sensitivity for each amplifier.
02) The adapter for this model is not compatible with the separately sold adapter and cannot be purchased separately, so be careful not to lose it.

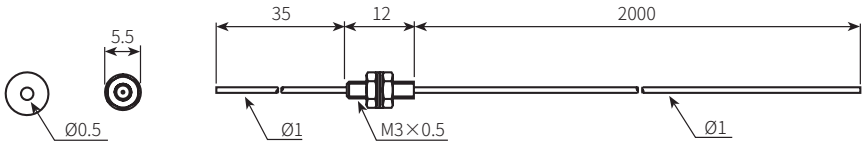
■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

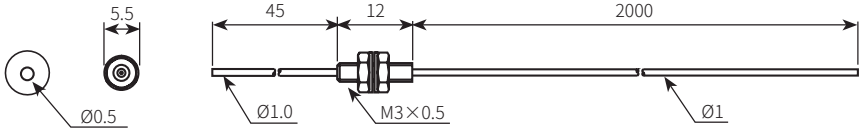
• FTS-320-05



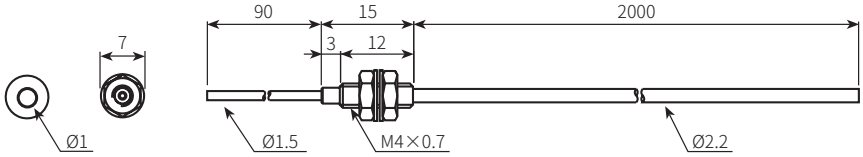
• FTS1-320-05



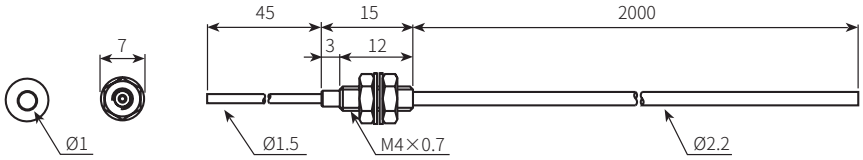
• FTS2-320-05



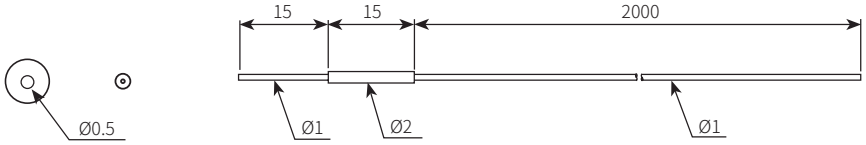
• FTS-420-10



• FTS2-420-10

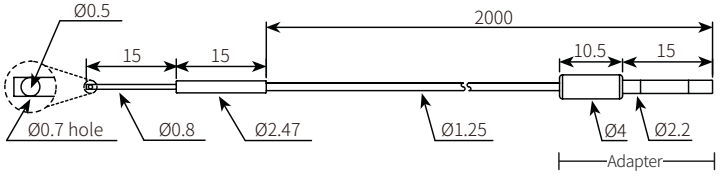


• FTCS-220-05



• FTCSN-2520-05

Side view



U-shaped head: Heat-resistant

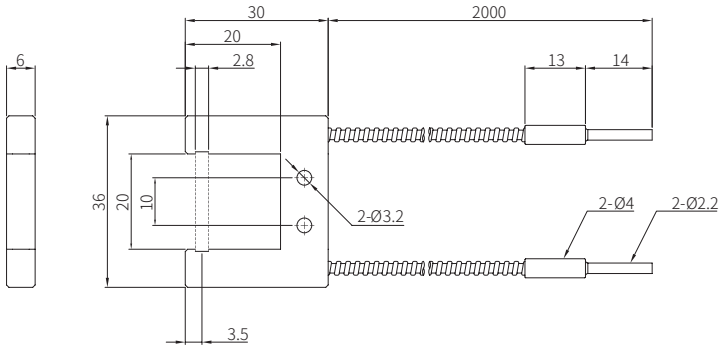
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Amp. fier / Mode	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	GTU3-320-H2	2 m	R25	-60 to 250 °C	Ø 2.5 mm	U-FST	20	20	-	-	-
						FAST	20	20			
						STD	20	20			
						LONG	20	20			
						U-LG / MAX.	20	20	20	20	

01) When setting the maximum sensitivity for each amplifier

■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

• GTU3-320-H2



Wide area head: Bending-resistant

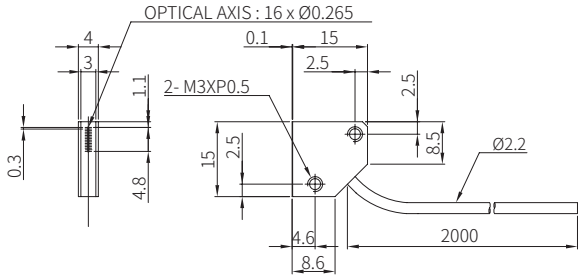
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTW5-320-02B	2 m (FREE CUT)	R5	-30 to 70 °C	Ø 0.8 mm	U-FST	140	220	-	-	-
						FAST	215	350			
						STD	360	730			
						LONG	765	1520			
						U-LG / MAX.	1165	2600	380	200	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

• FTW5-320-02B



Wide area head: Flexible

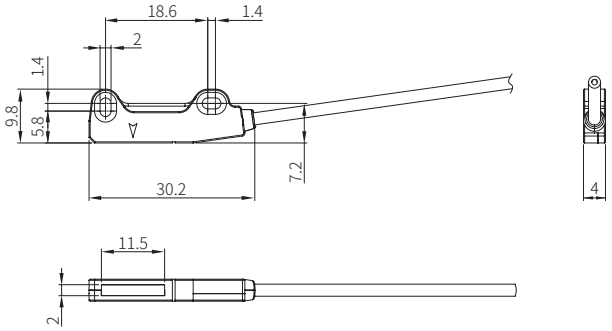
Appearance	Model	Cable		Ambient temperature	Min. target size	Sensing distance (unit: mm)					Adapter
		Length	Bend radius			Mode \ Amp.	BFX-D1-□	BF5R-□1-□	BF4R□-□ 01)	BF3RX-□ 01)	
	FTW11-210-10R	1 m (FREE CUT)	R2	-40 to 60 °C	Ø 0.07 mm	U-FST	495	600	-	-	-
						FAST	680	900			
						STD	860	1400			
						LONG	1060	1400			
						U-LG / MAX.	1095	1600	975	855	

01) When setting the maximum sensitivity for each amplifier.

■ Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

• FTW11-210-10R



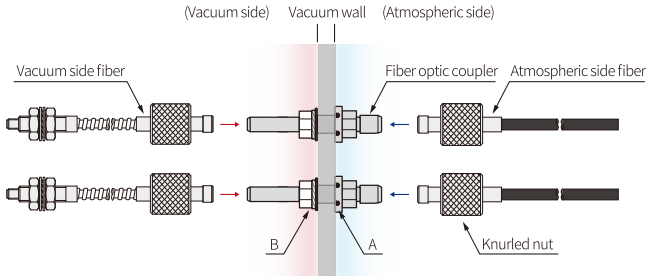
Sold Separately: Fiber Optic Coupler, Atmospheric side fiber

■ Cautions during installation

- When using the vacuum-resistant fibers, be sure to connect with the fiber optic coupler and the atmospheric side fibers.
- The fiber optic coupler is a device that seals the vacuum side and the atmospheric side to transmit light, and it is equipped with an O-ring. Be sure not to blur the glass rod inside by welding on the vacuum wall and weld joints.
- When installing the fiber optic coupler, following the environmental requirements below.
  - Thickness of the installation wall: 8 to 10 mm
  - Diameter of the mounting hole: Ø 5.0 + 0.1, - 0.1 mm
  - Surface roughness in contact with the O-ring: 1.6 Ry
- Be sure to install the fiber optic coupler and fiber optic units by checking the specified connection points below. Failure to follow this instruction may result in product damage.
  - Vacuum side fibers → Long side of the fiber optic coupler
  - Atmospheric side fibers → Short side of the fiber optic coupler

■ Example of usage

01. Insert the fiber optic coupler into the mounting hole of the vacuum wall.
02. From the long side of the fiber optic coupler, insert a flat washer, followed by a spring washer, and then a nut to the direction of the vacuum wall. Tighten the nut to secure the fiber optic coupler.
03. Turn the knurled nuts of the vacuum side and atmospheric side fibers to connect them with the fiber optic coupler.



A. O-ring
B. An M5 nut + a spring washer+ a flat washer

■ Fiber optic coupler

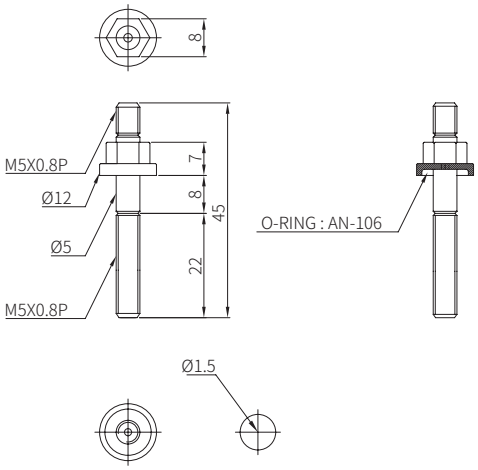
Appearance	Ambient temperature	Applicable cable	Model
	-60 to 200 °C	Vacuum-resistant type, Atmospheric side type	FU-VC01
	-60 to 300 °C	Vacuum-resistant type, Atmospheric side type	FU-VC02

- Helium leak testing: ≤ 10^{-11} Pa · m³/s
- Product components: Fiber optic coupler, M5 nut, spring washer, flat washer (each × 2)

■ Dimensions

Unit: mm, For the detailed drawing, follow the Autonics website.

• FU-VC01, FU-VC02



■ Atmospheric side fiber

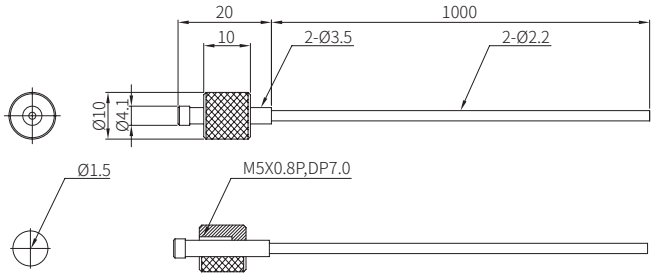
Appearance	Bend radius	Ambient temperature	FREE CUT	Model
	R30	-30 to 70 °C	FREE CUT	FU-VA01
	R20	-30 to 70 °C	FREE CUT	FU-VA02

- Product components: Atmospheric side fiber × 2, Fiber cutter (FC-3) × 1

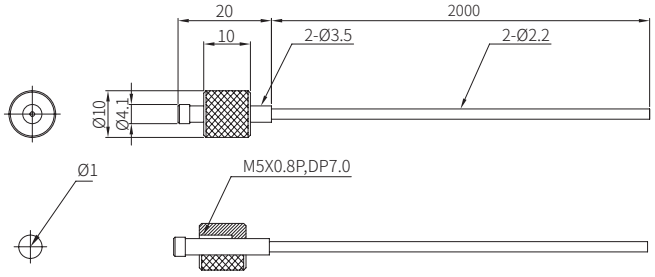
■ Dimensions

Unit: mm, For the detailed drawing, follow the Autonics website.

• FU-VA01



• FU-VA02



Sold Separately: Lens Unit

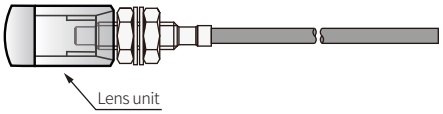
You can increase the sensing distance of the fiber optic units with the lens unit.

Appearance	MAG. 01)	Ambient temperature	Recommended cable	Model
	×5	-40 to 100 °C	Standard type	FTL-M26
	×10	-60 to 350 °C	Standard type, Vacuum-resistant type	FTL-M26V3
	×15	-60 to 350 °C	Standard type, Vacuum-resistant type	FTL-M4V3

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

■ Example of mounting

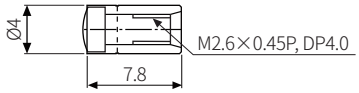
Mount the lens unit onto the protrusion of the front hood.
Refer to the dimensions of the fibers.



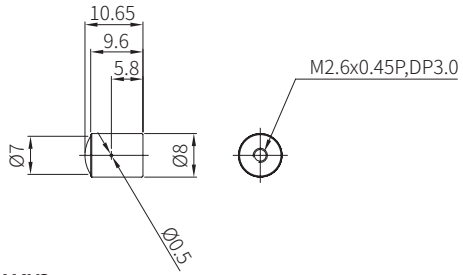
■ Dimensions

Unit: mm, For the detailed drawing, follow the Autonics website.

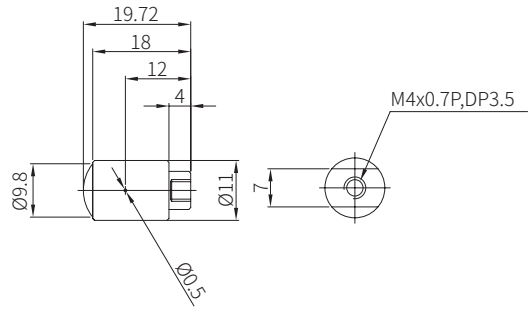
• FTL-M26



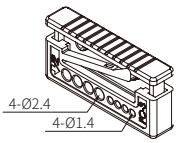
• FTL-M26V3



• FTL-M4V3



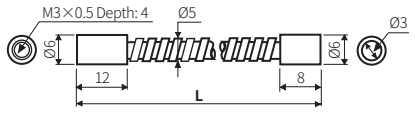
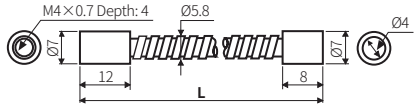
Sold Separately: Fiber Cutter

Model	Hole diameter	Appearance
FC-3	Ø2.4 X 4 Ø1.4 X 4	

Sold Separately: Cable Protection Tube

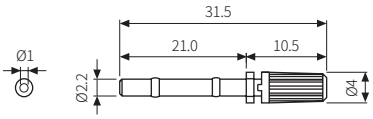
Be sure to consider the diameter of the fiber optic cable and choose a suitable protection tube for the fiber cable.

• Diameter of cable: Cable protection tube > Fiber optic unit

Model	Length (L)	Dimensions (unit: mm)
FTH-305	500 mm	
FTH-310	1,000 mm	
FTH-405	500 mm	
FTH-410	1,000 mm	

Sold Separately: Adapter

The additional adapter for the Adapter-compatible models can be purchased through an authorized distributor of Autonics.

Model	Feature	Dimensions (unit: mm)
B1700000047	Inner diameter: Ø1 Color: black	

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	□	-	4	20	-	10	H	□
❶	❷	❸	-	❹	❺	-	❻	❼	❽

❶	**Fiber material**	F	Plastic
		G	Glass
❷	**Sensing type**	D	Retroreflective type
		L	Convergent reflective type
		T	Through-beam type
❸	**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)
		LU2	L-shaped head top view (height 22.2 mm)
	· L-shaped head	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
	· Wide area head	W5	Beam width 5 mm
		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)
❹	**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)

❺	**Cable length**	5	0.5 m
		10	1 m
		20	2 m
		10M	10 m
❻	**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)
❼	**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)
❽	**Convergent reflective type size option**	A	R20 / 12×18×3
		L	Over 30 mm of the product length
	Waterproof sealing	WP	Water resistance supported