

Through-Beam Type Fiber Optic Units

FT/GT Series

PRODUCT MANUAL

Be sure to follow the instructions and precautions in the instruction manual, other manuals, and the Autonics website.
The specifications, dimensions, and other information in this document are subject to change without notice for product improvement. Certain models may be discontinued without notice.

Through-Beam Type Lineup

Head Type	Standard	Heat-Resistant	Vacuum-Resistant	Bend-Resistant	Flexible
Threaded	✓	✓	✓	✓	✓
Cylindrical	✓			✓	✓
Flat					✓
L-Type	✓	✓	✓		
Molded Plastic	✓				
Perpendicular		✓			✓
Stainless Steel	✓				
U-Shaped		✓			
Wide Area				✓	✓

Standard Type	For use in standard environmental conditions
Heat-Resistant Type	For use in high temperatures (-60 to 350 °C)
Vacuum-Resistant Type	For use in vacuum or high temperatures (-60 to 350 °C)
Bend-Resistant Type	(R5) For use in enviroments requiring frequent bends
Flexible Type	(R1, R2) For use in enviroments requiring frequent bends

Product Components

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

Sold Separately

- For vacuum-resistant type fiber units
  - Fiber optic coupler: FU-VC☐
  - Atmospheric fiber optic unit: FU-VA☐
- Distance extender lens: FTL-M☐☐
- Cable cutter: FC-3
- Cable protection tube: FTH-☐☐
- Adapter

RoHS

Ordering Information

For reference only. The actual product does not support all combinations. To check all supported models, please refer to the Autonics website.

- Reference model example: 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	Diffuse reflective
		L	Convergent reflective
		T	Through-beam
❸	**Head type**		
	· Threaded	No mark	Standard
	· Cylindrical	C	Standard
		CN	Side view
		CS	Cylindrical + stainless steel (stainless steel length 15 mm)
		CSN	Cylindrical + stainless steel (stainless steel length 15 mm, side view)
	· Flat	F	Flat view
		FB	Side view + top view (bending)
		FN	Side view
		FU	Top view (up)
		LU	L-type top view (height 12.2 mm)
		LU1	L-type top view (height 17.2 mm)
		LU2	L-type top view (height 22.2 mm)
	· L-type	L	Standard
	· Molded plastic	P	Standard
		PF	Flat view
	· Perpendicular	R	Standard
		RT	Mounted protection tube
	· Stainless steel	S	Stainless steel length 90 mm
		S1	Stainless steel length 35 mm
		S2	Stainless steel length 45 mm
	· U-shaped	U6	Sensing distance 6 mm
		U10	Sensing distance 10 mm
		U20	Sensing distance 20 mm
	· Wide area	W5	Beam width 5 mm
		W10	Beam width 10 mm
		W10T	Beam width 10 mm, mounted protection tube
		W11	Beam width 11 mm
		W20	Beam width 20 mm
		W40	Beam width 40 mm
		W60	Beam width 60 mm
		W100	Beam width 100 mm
	· Protection tube	H	Fiber cable protection tube (sold spearately)
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	**Cable type**	No mark	Standard
		B	Bend-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	**Misc.**	A	R20 / 12×18×3
		L	Product length: ≥ 30 mm
		LN	Built-in lens
		WP	Water-resistant [01]
		WF	Waterproof [01]

01) The waterproof performance is intended to prevent product damage and safety issues caused by external moisture ingress and does not guarantee maintenance of detection performance.
Due to the characteristics of optical sensors, in mist or condensation environments, moisture on the lens surface may cause refraction and scattering of light, resulting in fluctuations in the PV value.
- Water-resistant: Waterproof sealing structure applied to major joints.
- Waterproof: Integrated sealing structure applied using an external protective tube.

Selection Guide

⚠ The installation method of the fiber optic unit may vary depending on the fiber optic amplifier. Be sure to refer to the product manual of the fiber optic amplifier. For details on fiber optic units, refer to 'Fiber Optic Sensor Technical Overview.'

■ Model

- Refer to the Ordering Information for fiber material, sensing type, head type, hood diameter, cable length, fiber diameter, cable type, and other specifications.

■ Cable

- Check the length, bend radius, and FREE CUT compatibility of the cable.
- Use the included cable cutter (FC-3) when cutting FREE CUT compatible models.

■ Ambient Temperature

- Be sure to use the fiber optic sensors within the rated ambient temperature range.
- Physical property changes in the optical fiber and components may occur due to temperature variations (e.g., refractive index, optical loss, thermal expansion, component output/sensitivity, target reflectivity, etc.).

■ Minimum Target Object Size

- The mininum target object size specifications are based on the maximum sensitivity setting of BF4 Series fiber optic amplifiers.

■ Sensing Distance

- The sensing distance data is based on internal testing and for reference only. Performance may vary by installation and usage environment. Product testing prior to use is recommended.
- The sensing distance data is based on measurements using non-glossy white paper.
- The sensing distances may vary depending on the measurement standards of the tested amplifiers and sensing target objects.
- The sensing distances for each amplifier series are from the following models.
  : BFN-□, BFN-D□-□-□-IL3, BFX-D1-□, BF5R-□1-□, BF4R□-□, BF3RX-□
- The response time for each response mode are as shown:

MFST	UFST	FST	STD	LONG	ULOG	MLOG	MAX (BF4 / BF3)
25 µs	50 µs	150 µs	500 µs	4 ms	10 ms	20 ms	0.5 ms / 1 ms

- The sensing distances for BFN series are based on the reponse time setting of the equivalent response mode.
- The sensing mode of BF4/3 are based on maximum sensitivity settings.
- For BF4G□-□ models, apply 10% of the sensing distance of BF4R□-□ models.
- Deviations in sensing distance may occur due to the following conditions.
  - Fiber optic unit properties: cable bend radius, condition of cutting surface, amplifier insertion depth, etc.
  - Sensing target object properties: material, shape, inclination, bending, gloss, etc.
- For detection area characteristics, refer to the product manual of the fiber optic amplifiers.

■ Adapter

- For compatible models, be sure to attach the included adapter before use.
- Check the product components or the symbols below.

●: Supports included adapter or adapters sold separately.
(supports only fiber optic amplifiers BFN, BFX, BF5, BF4 Series. In case of BF3 Series, the adapter needs to be purchased separately.)
○: Only supports the included adapter. Cannot be purchased separately.
- : Adapters are not supported.

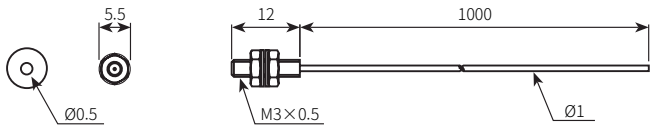
Threaded Head: Standard Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FT-310-05	1 m (FREE CUT)	R10	-40 to 70 °C	Ø 0.5 mm	MFST	-	160	-	-	-	-	●
						UFST	100	270	45	55	-	-	
						FST	190	445	75	95	-	-	
						STD	320	610	120	195	-	-	
						LONG	-	860	260	355	-	-	
						ULOG	-	1140	390	500	-	-	
						MLOG / MAX	-	1805	-	-	150	25	
	FT-320-05	2 m (FREE CUT)	R10	-40 to 70 °C	Ø 0.5 mm	MFST	-	160	-	-	-	-	●
						UFST	85	255	40	50	-	-	
						FST	175	405	65	80	-	-	
						STD	305	755	115	170	-	-	
						LONG	-	1020	245	315	-	-	
						ULOG	-	1260	360	425	-	-	
						MLOG / MAX	-	2055	-	-	150	110	
	FT-420-10	2 m (FREE CUT)	R25	-40 to 70 °C	Ø 1.0 mm	MFST	-	500	-	-	-	-	-
						UFST	390	815	185	220	-	-	
						FST	750	1080	280	360	-	-	
						STD	1255	2365	475	715	-	-	
						LONG	-	>3600	1045	1560	-	-	
						ULOG	-	>3600	1440	1960	-	-	
						MLOG / MAX	-	>3600	-	-	500	125	
	FT-420-10LN	2 m (FREE CUT)	R20	-30 to 70 °C	Ø 2.3 mm	MFST	-	2765	-	-	-	-	-
						UFST	1615	>3600	1325	1285	-	-	
						FST	>3600	>3600	1925	1870	-	-	
						STD	>3600	>3600	2720	2620	-	-	
						LONG	-	>3600	>3600	>3600	-	-	
						ULOG	-	>3600	>3600	>3600	-	-	
						MLOG / MAX	-	>3600	-	-	1925	1325	

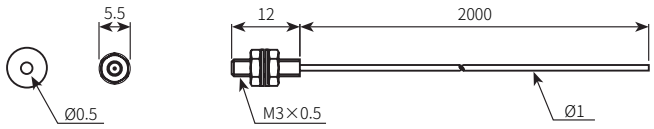
■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

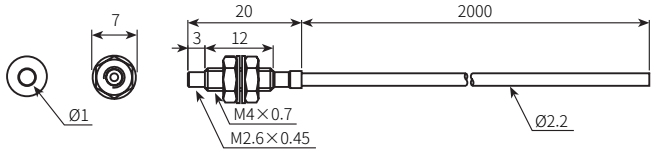
• FT-310-05



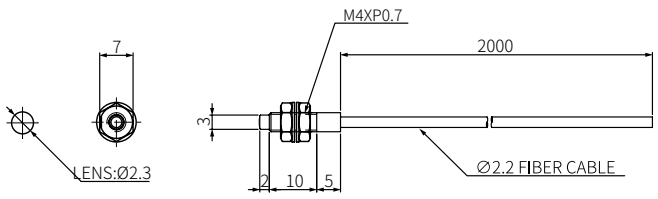
• FT-320-05



• FT-420-10



• FT-420-10LN



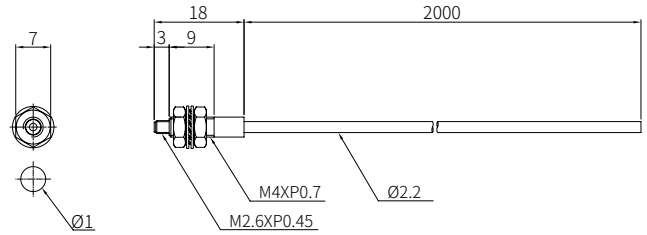
Threaded Head: Heat-Resistant Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Amp. / Mode	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FT-420-10H	2 m (FREE CUT)	R25	-40 to 105 °C	Ø 0.1 mm	MFST	-	495	-	-	-	-	-
						UFST	320	815	160	220	-	-	
						FST	640	1725	245	360	-	-	
						STD	1020	2600	410	760	-	-	
						LONG	-	>3600	940	1150	-	-	
						ULOG	-	>3600	1375	1330	-	-	
						MLOG / MAX	-	>3600	-	-	500	420	
	FT-420-15H1	2 m (FREE CUT)	R35	-40 to 150 °C	Ø 0.2 mm	MFST	-	590	-	-	-	-	-
						UFST	360	925	180	260	-	-	
						FST	780	1885	280	410	-	-	
						STD	1255	2420	465	830	-	-	
						LONG	-	>3600	1070	1595	-	-	
						ULOG	-	>3600	1515	2305	-	-	
						MLOG / MAX	-	>3600			470	320	
	GT-420-13H2	2 m	R25	-40 to 250 °C	Ø 0.15 mm	MFST	-	525	-	-	-	-	-
						UFST	270	840	155	235	-	-	
						FST	560	1880	235	370	-	-	
						STD	975	2285	385	825	-	-	
						LONG	-	>3600	880	1510	-	-	
						ULOG	-	>3600	1255	2285	-	-	
						MLOG / MAX	-	>3600	-	-	460	N/A	

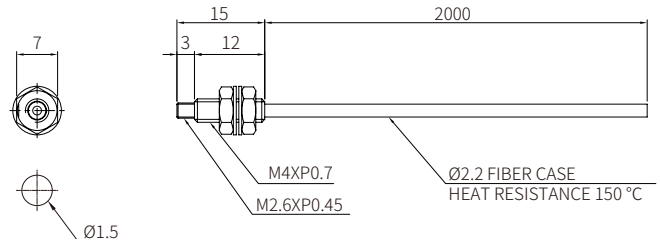
■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

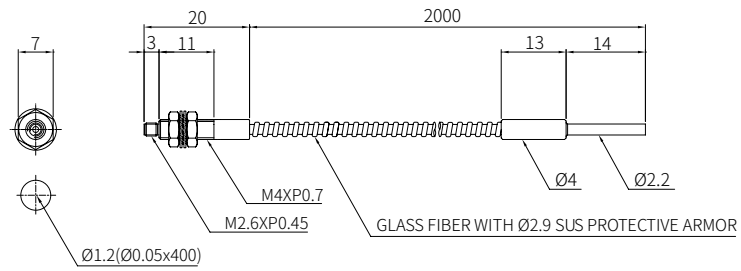
• FT-420-10H



• FT-420-15H1



• GT-420-13H2



Threaded Head: Vaccum-Resistant Type

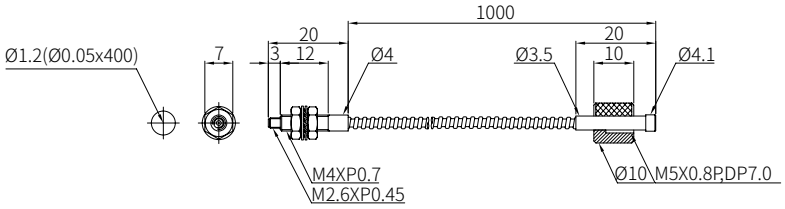
- Vaccum-resistant fiber optic units must be used in combination with fiber optic couplers and atmospheric fiber optic units.
- The sensing distances of vacuum-resistant fiber optic units are specified based on installation with atmospheric fiber optic units. (FU-VA0□, sold separately)

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	GT-410-12V2	1 m	R25	-60 to 250 °C	Ø 0.15 mm (+ FU-VA01)	MFST	-	295	-	-	-	-	-
						UFST	160	480	80	130	-	-	
						FST	270	950	120	210	-	-	
						STD	405	1365	210	420	-	-	
						LONG	-	2135	445	900	-	-	
						ULOG	-	>3600	675	1410	-	-	
						MLOG / MAX	-	>3600	-	-	275	220	
					Ø 0.2 mm (+ FU-VA02)	MFST	-	225	-	-	-	-	-
						UFST	255	385	60	100	-	-	
						FST	455	775	100	170	-	-	
						STD	720	1520	165	340	-	-	
						LONG	-	2365	340	670	-	-	
						ULOG	-	>3600	495	1060	-	-	
						MLOG / MAX	-	>3600	-	-	175	165	

■ Dimensions

- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• GT-410-12V2



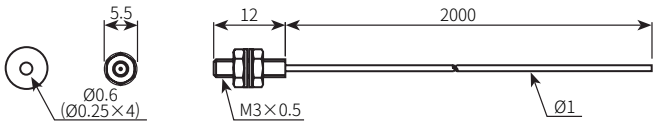
Threaded Head: Bend-Resistant Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FT-320-06B	2 m (FREE CUT)	R5	-40 to 60 °C	Ø 0.3 mm	MFST	-	95	-	-	-	-	-
						UFST	85	155	55	50	-	-	
						FST	160	215	80	80	-	-	
						STD	260	590	140	110	-	-	
						LONG	-	860	280	300	-	-	
						ULOG	-	1000	400	440	-	-	
						MLOG / MAX	-	1960	-	-	100	20	
	FT-420-13B	2 m (FREE CUT)	R5	-40 to 60 °C	Ø 0.6 mm	MFST	-	255	-	-	-	-	-
						UFST	405	410	170	130	-	-	
						FST	780	790	255	210	-	-	
						STD	1245	1875	430	400	-	-	
						LONG	-	2685	975	950	-	-	
						ULOG	-	>3600	1465	1360	-	-	
						MLOG / MAX	-	>3600	-	-	405	100	

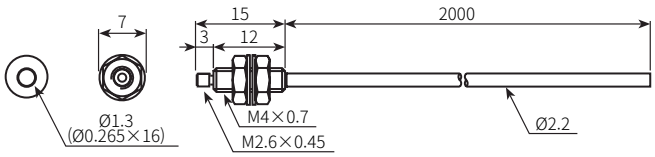
■ Dimensions

- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FT-320-06B



• FT-420-13B



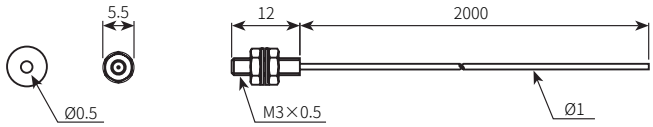
Threaded Head: Flexible Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)						Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FT-320-05R	2 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.3 mm	MFST	-	70	-	-	-	-	●
						UFST	70	120	20	40	-	-	
						FST	130	200	45	65	-	-	
						STD	210	480	80	110	-	-	
						LONG	-	720	135	260	-	-	
						ULOG	-	910	185	385	-	-	
						MLOG / MAX	-	1915	-	-	120	10	
	FT-420-10R	2 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.5 mm	MFST	-	335	-	-	-	-	-
						UFST	440	530	180	180	-	-	
						FST	735	935	275	285	-	-	
						STD	1120	2095	455	500	-	-	
						LONG	-	2790	945	1120	-	-	
						ULOG	-	>3600	1380	1495	-	-	
						MLOG / MAX	-	>3600	-	-	460	60	

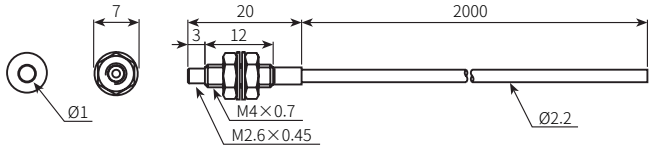
■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FT-320-05R



• FT-420-10R



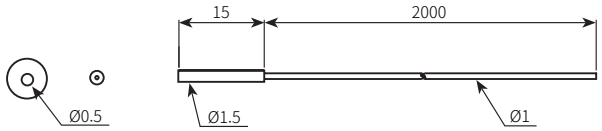
Cylindrical Head: Standard Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTC-1520-05	2 m (FREE CUT)	R10	-40 to 70 °C	Ø 0.5 mm	MFST	-	70	-	-	-	-	●
						UFST	85	130	45	40	-	-	
						FST	160	270	70	70	-	-	
						STD	260	510	115	145	-	-	
						LONG	-	795	255	275	-	-	
						ULOG	-	1130	380	425	-	-	
						MLOG / MAX	-	1805	-	-	150	20	
	FTC-220-05	2 m (FREE CUT)	R10	-40 to 70 °C	Ø 0.5 mm	MFST	-	110	-	-	-	-	●
						UFST	85	185	55	60	-	-	
						FST	160	380	80	100	-	-	
						STD	260	680	140	205	-	-	
						LONG	-	1025	305	365	-	-	
						ULOG	-	1925	410	550	-	-	
						MLOG / MAX	-	>3600	-	-	150	20	
	FTC-320-10	2 m (FREE CUT)	R30	-40 to 70 °C	Ø 1.0 mm	MFST	-	415	-	-	-	-	-
						UFST	375	685	160	200	-	-	
						FST	735	1370	240	330	-	-	
						STD	1280	>3600	400	660	-	-	
						LONG	-	>3600	875	1440	-	-	
						ULOG	-	>3600	1290	1815	-	-	
						MLOG / MAX	-	>3600	-	-	150	160	
	FTC-520-20WF	2 m	R50	-30 to 70 °C	Ø 0.6 mm	MFST	-	365	-	-	-	-	-
						UFST	525	1380	190	215	-	-	
						FST	910	2360	655	685	-	-	
						STD	1205	>3600	1215	1285	-	-	
						LONG	-	>3600	2070	2240	-	-	
						ULOG	-	>3600	>3600	>3600	-	-	
						MLOG / MAX	-	>3600	-	-	1120	1055	
	FTCN-520-20WF (Side View)	2 m	R50	-30 to 70 °C	Ø 3.5 mm	MFST	-	845	-	-	-	-	-
						UFST	640	1720	300	325	-	-	
						FST	1260	>3600	1030	1080	-	-	
						STD	1710	>3600	1725	1950	-	-	
						LONG	-	>3600	2760	>3600	-	-	
						ULOG	-	>3600	>3600	>3600	-	-	
						MLOG / MAX	-	>3600	-	-	1245	1165	

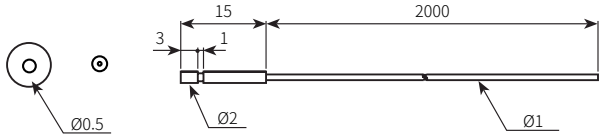
■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

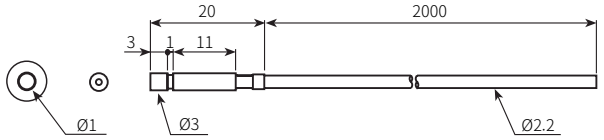
• FTC-1520-05



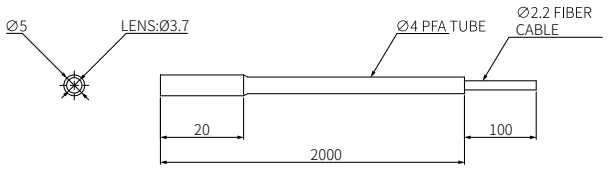
• FTC-220-05



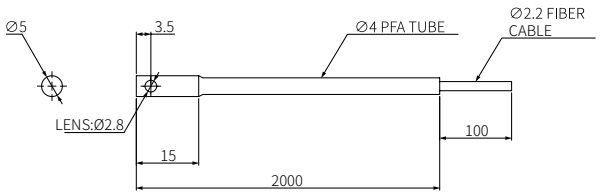
• FTC-320-10



• FTC-520-20WF



• FTCN-520-20WF



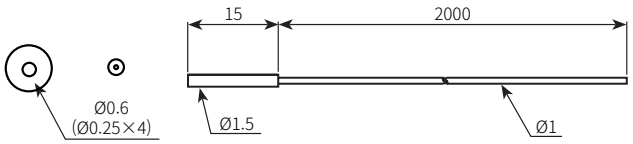
Cylindrical Head: Bend-Resistant Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)						Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTC-1520-06B	2 m (FREE CUT)	R5	-40 to 60 °C	Ø 0.3 mm	MFST	-	120	-	-	-	-	-
						UFST	80	185	50	60	-	-	
						FST	125	380	75	90	-	-	
						STD	180	705	135	185	-	-	
						LONG	-	1025	280	340	-	-	
						ULOG	-	1815	380	495	-	-	
						MLOG / MAX	-	>3600	-	-	110	15	

■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FTC-1520-06B



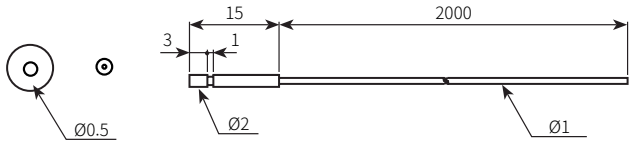
Cylindrical Head: Flexible Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)						Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTC-220-05R	2 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.3 mm	MFST	-	90	-	-	-	-	
						UFST	80	155	35	45	-	-	
						FST	150	225	50	75	-	-	
						STD	240	620	90	110	-	-	●
						LONG	-	925	200	300	-	-	
						ULOG	-	1885	305	445	-	-	
						MLOG / MAX	-	>3600	-	-	165	15	
	FTCN-220-10R (Side View)	2 m (FREE CUT)	R1	-30 to 70 °C	Ø 0.5 mm	MFST	-	85	-	-	-	-	
						UFST	20	160	15	20	-	-	
						FST	45	260	70	80	-	-	
						STD	80	430	135	150	-	-	●
						LONG	-	880	240	255	-	-	
						ULOG	-	1360	430	445	-	-	
						MLOG / MAX	-	1760	-	-	125	120	

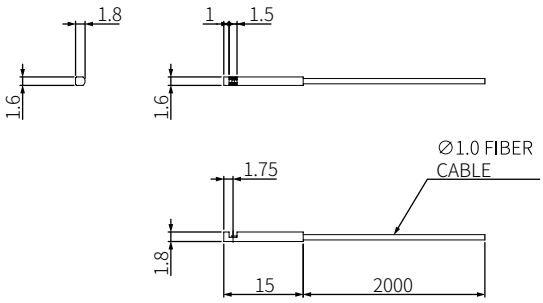
■ Dimensions

- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FTC-220-05R



• FTCN-220-10R



Flat Head: Flexible Type

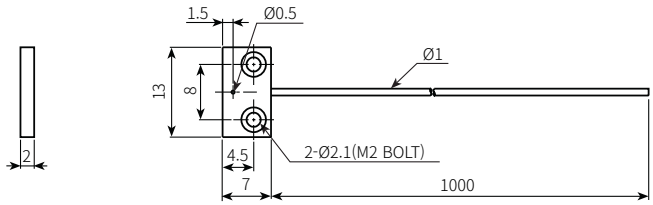
Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTF-210-05R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.04 mm	MFST	-	30	-	-	-	-	●
						UFST	40	60	10	15	-	-	
						FST	60	205	20	30	-	-	
						STD	100	215	40	100	-	-	
						LONG	-	310	95	105	-	-	
						ULOG	-	365	135	150	-	-	
						MLOG / MAX	-	470	-	-	50	40	
	FTFB-210-05R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.04 mm	MFST	-	50	-	-	-	-	●
						UFST	55	80	20	25	-	-	
						FST	110	225	30	40	-	-	
						STD	175	310	65	110	-	-	
						LONG	-	445	120	150	-	-	
						ULOG	-	560	200	215	-	-	
						MLOG / MAX	-	725	-	-	105	80	
	FTFN-210-05R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.04 mm	MFST	-	90	-	-	-	-	●
						UFST	60	155	50	45	-	-	
						FST	120	225	80	75	-	-	
						STD	180	610	130	110	-	-	
						LONG	-	915	290	295	-	-	
						ULOG	-	1125	420	440	-	-	
						MLOG / MAX	-	1470	-	-	60	85	
	FTFU-210-05R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.04 mm	MFST	-	60	-	-	-	-	●
						UFST	60	100	25	30	-	-	
						FST	120	225	40	50	-	-	
						STD	200	395	80	110	-	-	
						LONG	-	580	160	190	-	-	
						ULOG	-	775	240	280	-	-	
						MLOG / MAX	-	1045	-	-	95	85	
	FTLU-310-10R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.06 mm	MFST	-	405	-	-	-	-	-
						UFST	325	665	80	195	-	-	
						FST	630	1040	120	320	-	-	
						STD	965	1830	195	500	-	-	
						LONG	-	2090	420	880	-	-	
						ULOG	-	>3600	660	1005	-	-	
						MLOG / MAX	-	>3600	-	-	185	100	
	FTLU1-310-10R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.06 mm	MFST	-	330	-	-	-	-	-
						UFST	300	560	165	160	-	-	
						FST	560	1040	245	270	-	-	
						STD	880	1745	420	500	-	-	
						LONG	-	2055	890	840	-	-	
						ULOG	-	>3600	1250	990	-	-	
						MLOG / MAX	-	>3600	-	-	295	120	
	FTLU2-310-10R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.06 mm	MFST	-	370	-	-	-	-	-
						UFST	295	630	140	180	-	-	
						FST	540	1040	215	305	-	-	
						STD	895	2325	365	500	-	-	
						LONG	-	>3600	785	1120	-	-	
						ULOG	-	>3600	1100	1380	-	-	
						MLOG / MAX	-	>3600	-	-	275	160	

■ Dimensions

- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

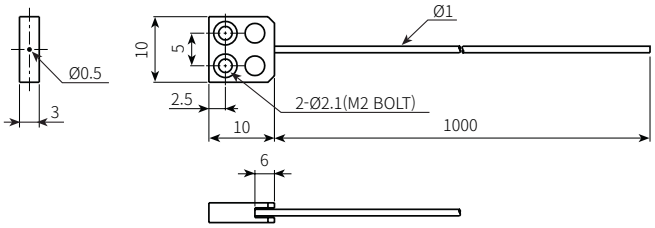
• FTF-210-05R

Hood material: Stainless steel 303, flat view



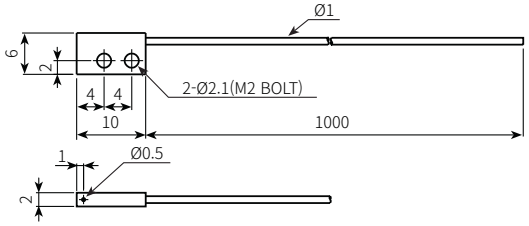
• FTFB-210-05R

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



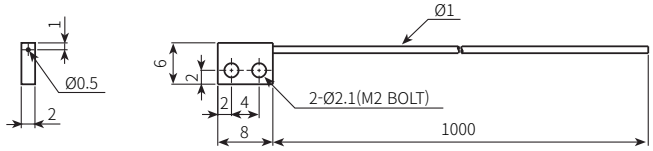
• FTFN-210-05R

Hood material: Stainless steel 303, side view



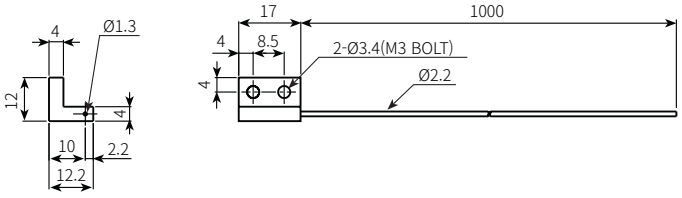
• FTFU-210-05R

Hood material: Stainless steel 303, top view



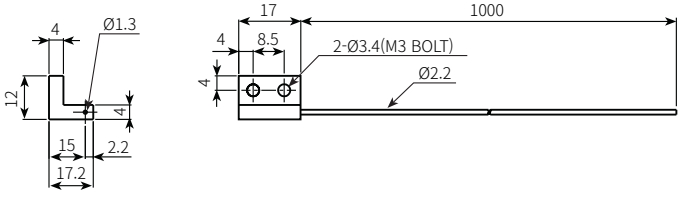
• FTLU-310-10R

Hood material: AL, top view



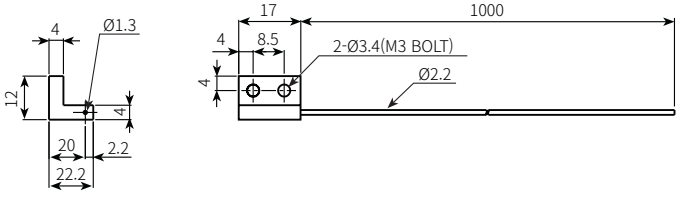
• FTLU1-310-10R

Hood material: AL, top view



• FTLU2-310-10R

Hood material: AL, top view



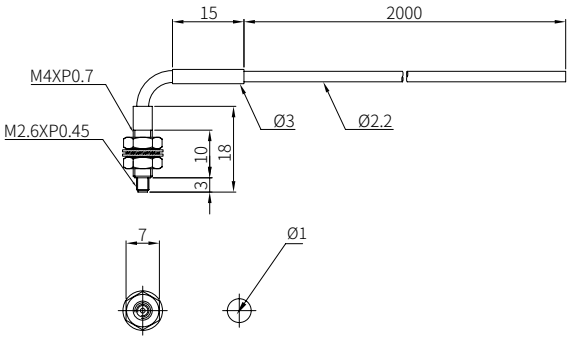
L-Type Head: Standard Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)						Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTL-420-10	2 m (FREE CUT)	R20	-30 to 70 °C	Ø 0.1 mm	MFST	-	435	-	-	-	-	-
						UFST	325	745	160	210	-	-	
						FST	605	1475	250	360	-	-	
						STD	975	>3600	390	710	-	-	
						LONG	-	>3600	770	1540	-	-	
						ULOG	-	>3600	960	2440	-	-	
						MLOG / MAX	-	>3600	-	-	30	25	

■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FTL-420-10



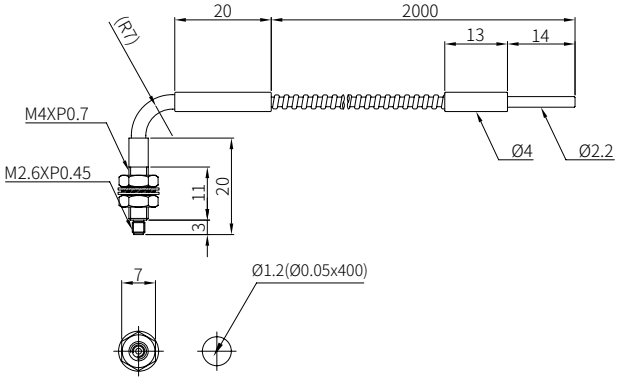
L-Type Head: Heat-Resistant Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)						Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	GTL-420-12H2	2 m	R25	-60 to 250 °C	Ø 0.08 mm	MFST	-	415	-	-	-	-	-
						UFST	295	665	160	200	-	-	
						FST	580	1390	235	320	-	-	
						STD	950	>3600	395	670	-	-	
						LONG	-	>3600	860	1460	-	-	
						ULOG	-	>3600	1250	2600	-	-	
						MLOG / MAX	-	>3600	-	-	490	N/A	
	GTL-420-12H3	2 m	R25	-60 to 350 °C	Ø 0.08 mm	MFST	-	270	-	-	-	-	-
						UFST	295	435	140	200	-	-	
						FST	560	870	210	320	-	-	
						STD	910	1870	360	680	-	-	
						LONG	-	>3600	820	1470	-	-	
						ULOG	-	>3600	1170	2640	-	-	
						MLOG / MAX	-	>3600	-	-	500	N/A	

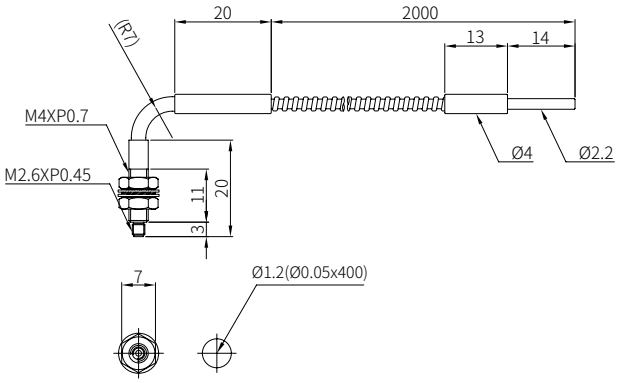
■ Dimensions

- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• GTL-420-12H2



• GTL-420-12H3



L-Type Head: Vacuum-Resistant Type

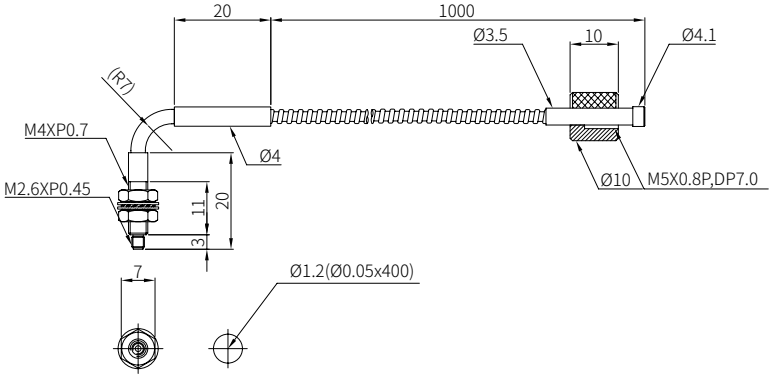
- Vaccum-resistant fiber optic units must be used in combination with fiber optic couplers and atmospheric fiber optic units.
- The sensing distances of vacuum-resistant fiber optic units are specified based on installation with atmospheric fiber optic units. (FU-VA0□, sold separately)

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Amp. / Mode	BFN	BFN-D	BFX	BF5	BF4	BF3	
	GTL-410-12V2	1 m	R25	-60 to 250 °C	Ø 0.1 mm (+ FU-VA01)	MFST	-	270	-	-	-	-	-
						UFST	160	435	80	130	-	-	
						FST	295	870	130	210	-	-	
						STD	460	1870	220	420	-	-	
						LONG	-	>3600	465	900	-	-	
						ULOG	-	>3600	650	1440	-	-	
						MLOG / MAX	-	>3600	-	-	245	205	
					Ø 0.1 mm (+ FU-VA02)	MFST	-	225	-	-	-	-	-
						UFST	255	350	60	110	-	-	
						FST	460	705	95	170	-	-	
						STD	760	1475	160	340	-	-	
						LONG	-	2285	350	710	-	-	
						ULOG	-	>3600	505	1100	-	-	
						MLOG / MAX	-	>3600	-	-	205	185	

■ Dimensions

- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• GTL-410-12V2



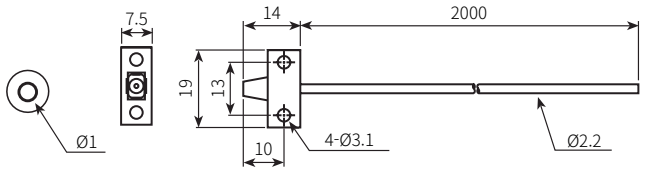
Molded Plastic Head: Standard Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)						Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTP-320-10	2 m (FREE CUT)	R30	-40 to 70 °C	Ø 1.0 mm	MFST	-	395	-	-	-	-	-
						UFST	320	620	140	190	-	-	
						FST	590	1330	220	300	-	-	
						STD	935	>3600	365	640	-	-	
						LONG	-	>3600	840	1280	-	-	
						ULOG	-	>3600	1215	1985	-	-	
						MLOG / MAX	-	>3600	-	-	500	165	

■ Dimensions

- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FTP-320-10



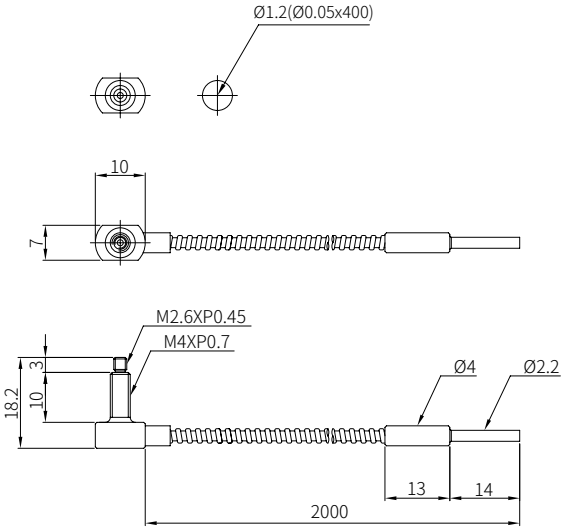
Perpendicular Head: Heat-Resistant Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	GTR-420-12H2	2 m	R25	-60 to 250 °C	Ø 0.08 mm	MFST	-	415	-	-	-	-	-
						UFST	325	640	160	200	-	-	
						FST	590	1350	230	310	-	-	
						STD	965	>3600	395	650	-	-	
						LONG	-	>3600	880	1380	-	-	
						ULOG	-	>3600	1335	2580	-	-	
						MLOG / MAX	-	>3600	-	-	485	N/A	
	GTR-420-12H3	2 m	R25	-60 to 350 °C	Ø 0.08 mm	MFST	-	395	-	-	-	-	-
						UFST	320	620	145	190	-	-	
						FST	565	1310	220	300	-	-	
						STD	910	>3600	375	630	-	-	
						LONG	-	>3600	855	1400	-	-	
						ULOG	-	>3600	1270	2620	-	-	
						MLOG / MAX	-	>3600	-	-	450	N/A	

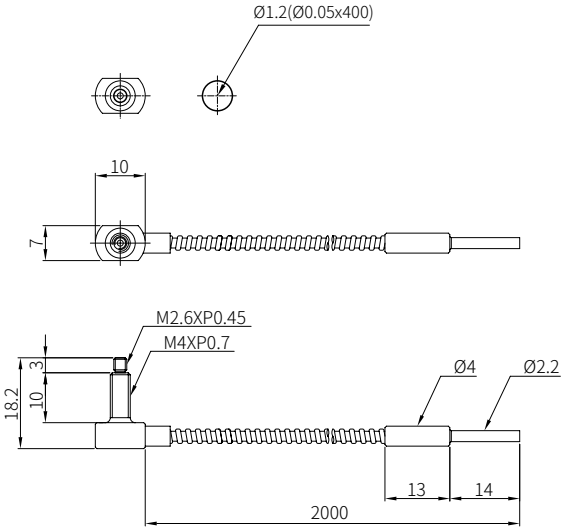
■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• GTR-420-12H2



• GTR-420-12H3



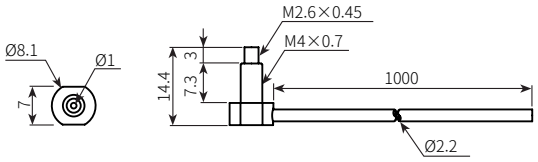
Perpendicular Head: Flexible Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)						Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTR-410-10R	1 m (FREE CUT)	R1	-40 to 60 °C	Ø 0.5 mm	MFST	-	370	-	-	-	-	-
						UFST	255	620	125	180	-	-	
						FST	470	955	200	300	-	-	
						STD	725	2325	320	460	-	-	
						LONG	-	>3600	710	1120	-	-	
						ULOG	-	>3600	990	1515	-	-	
						MLOG / MAX	-	>3600	-	-	290	185	
	FTR-420-10RLN	2 m (FREE CUT)	R2	-30 to 70 °C	Ø 2.3 mm	MFST	-	>3600	-	-	-	-	-
						UFST	1695	>3600	1215	1335	-	-	
						FST	>3600	>3600	2205	2310	-	-	
						STD	>3600	>3600	>3600	>3600	-	-	
						LONG	-	>3600	>3600	>3600	-	-	
						ULOG	-	>3600	>3600	>3600	-	-	
						MLOG / MAX	-	>3600	-	-	1965	1880	

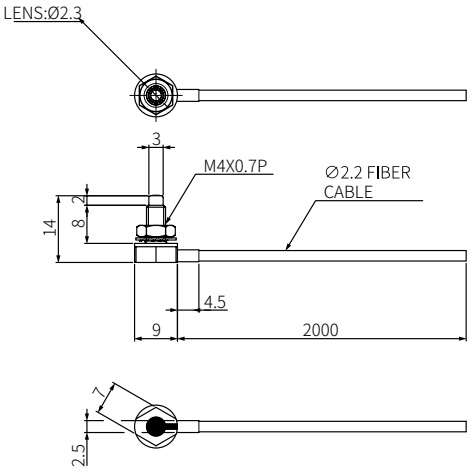
■ Dimensions

- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

- **FTR-410-10R**
  Hood material: Stainless steel 303



- **FTR-420-10RLN**



Stainless Steel Head: Standard Type

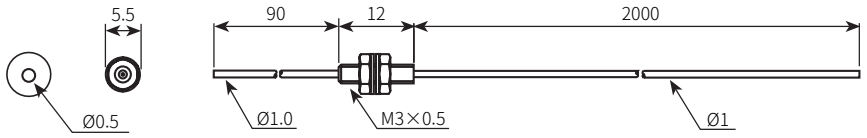
Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTS-320-05	2 m (FREE CUT)	R10 (stainless steel part R10)	-40 to 70 °C	Ø 0.5 mm	MFST	-	120	-	-	-	-	●
						UFST	90	195	45	60	-	-	
						FST	175	415	65	95	-	-	
						STD	280	735	120	200	-	-	
						LONG	-	1080	255	355	-	-	
						ULOG	-	2110	400	520	-	-	
						MLOG / MAX	-	>3600	-	-	150	20	
	FTS1-320-05	2 m (FREE CUT)	R10 (stainless steel part R10)	-40 to 70 °C	Ø 0.5 mm	MFST	-	110	-	-	-	-	●
						UFST	95	195	40	55	-	-	
						FST	180	395	65	95	-	-	
						STD	295	715	120	190	-	-	
						LONG	-	1070	245	345	-	-	
						ULOG	-	1925	380	515	-	-	
						MLOG / MAX	-	>3600	-	-	150	25	
	FTS2-320-05	2 m (FREE CUT)	R10 (stainless steel part R10)	-40 to 70 °C	Ø 0.5 mm	MFST	-	100	-	-	-	-	●
						UFST	80	165	45	50	-	-	
						FST	140	360	70	80	-	-	
						STD	220	640	120	175	-	-	
						LONG	-	965	255	310	-	-	
						ULOG	-	1950	420	465	-	-	
						MLOG / MAX	-	>3600	-	-	150	20	
	FTS-420-10	2 m (FREE CUT)	R30 (stainless steel part R10)	-40 to 70 °C	Ø 1.0 mm	MFST	-	475	-	-	-	-	-
						UFST	340	790	185	230	-	-	
						FST	655	1570	280	380	-	-	
						STD	1060	>3600	470	755	-	-	
						LONG	-	>3600	1015	1545	-	-	
						ULOG	-	>3600	1480	2140	-	-	
						MLOG / MAX	-	>3600	-	-	500	415	
	FTS2-420-10	2 m (FREE CUT)	R30 (stainless steel part R10)	-40 to 70 °C	Ø 1.0 mm	MFST	-	405	-	-	-	-	-
						UFST	380	665	160	195	-	-	
						FST	790	1340	230	320	-	-	
						STD	1205	>3600	385	645	-	-	
						LONG	-	>3600	840	1220	-	-	
						ULOG	-	>3600	1390	1820	-	-	
						MLOG / MAX	-	>3600	-	-	500	365	
	FTCS-220-05	2 m (FREE CUT)	R10 (stainless steel part R10)	-40 to 70 °C	Ø 0.5 mm	MFST	-	100	-	-	-	-	●
						UFST	80	175	40	50	-	-	
						FST	135	370	60	85	-	-	
						STD	205	705	100	180	-	-	
						LONG	-	1040	220	340	-	-	
						ULOG	-	2135	305	500	-	-	
						MLOG / MAX	-	>3600	-	-	150	25	
	FTCSN-2520-05	2 m	R15	-40 to 60 °C	Ø 0.0125 mm	MFST	-	30	-	-	-	-	○ 01)
						UFST	25	50	35	15	-	-	
						FST	40	245	50	25	-	-	
						STD	65	310	95	120	-	-	
						LONG	-	570	180	150	-	-	
						ULOG	-	1285	230	275	-	-	
						MLOG / MAX	-	1975	-	-	120	5	

01) The adapter for this model is not compatible with separately sold adapters and cannot be purchased separately. Please take care not to lose it.

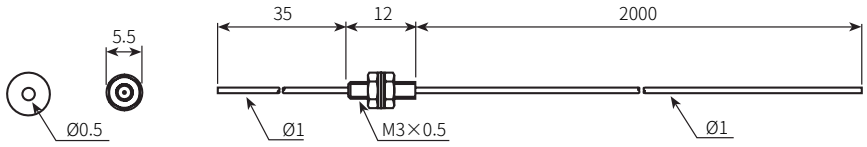
■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

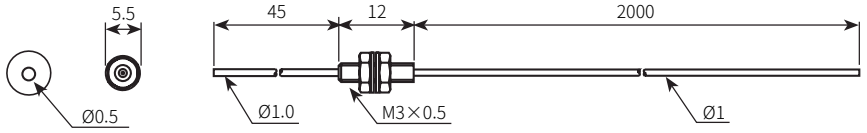
• FTS-320-05



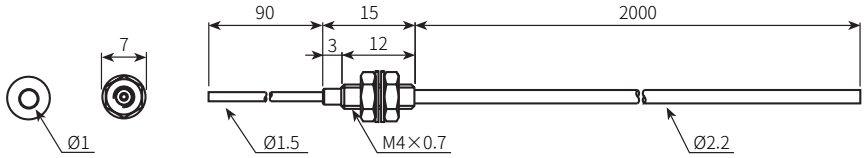
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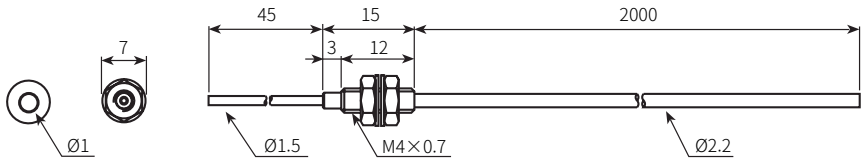
• FTS2-320-05



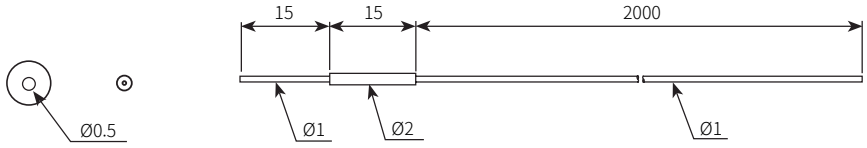
• FTS-420-10



• FTS2-420-10

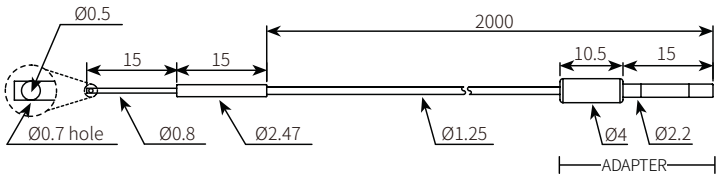


• FTCS-220-05



• FTCSN-2520-05

Side view



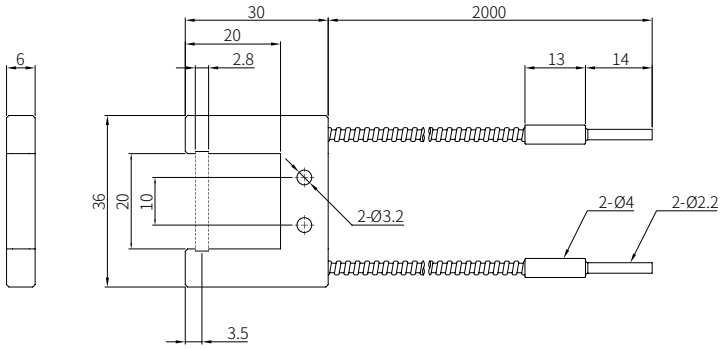
U-Shaped Head: Heat-Resistant Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	GTU20-320-H2	2 m	R25	-60 to 250 °C	Ø 2.5 mm	MFST	-	20	-	-	-	-	-
						UFST	20	20	20	20	-	-	
						FST	20	20	20	20	-	-	
						STD	20	20	20	20	-	-	
						LONG	-	20	20	20	-	-	
						ULOG	-	20	20	20	-	-	
						MLOG / MAX	-	20	-	-	20	20	
	GTU6-310-12H2	1 m	R25	-60 to 250 °C	Ø 4 mm	MFST	-	6	-	-	-	-	-
						UFST	6	6	6	6	-	-	
						FST	6	6	6	6	-	-	
						STD	6	6	6	6	-	-	
						LONG	-	6	6	6	-	-	
						ULOG	-	6	6	6	-	-	
						MLOG / MAX	-	6	-	-	6	6	
	GTU6-310-12H3	1 m	R25	-60 to 350 °C	Ø 4.2 mm	MFST	-	6	-	-	-	-	-
						UFST	6	6	6	6	-	-	
						FST	6	6	6	6	-	-	
						STD	6	6	6	6	-	-	
						LONG	-	6	6	6	-	-	
						ULOG	-	6	6	6	-	-	
						MLOG / MAX	-	6	-	-	6	6	
	GTU10-310-12H2	1 m	R25	-60 to 250 °C	Ø 3.4 mm	MFST	-	10	-	-	-	-	-
						UFST	10	10	10	10	-	-	
						FST	10	10	10	10	-	-	
						STD	10	10	10	10	-	-	
						LONG	-	10	10	10	-	-	
						ULOG	-	10	10	10	-	-	
						MLOG / MAX	-	10	-	-	10	10	
	GTU10-310-12H3	1 m	R25	-60 to 350 °C	Ø 3.2 mm	MFST	-	10	-	-	-	-	-
						UFST	10	10	10	10	-	-	
						FST	10	10	10	10	-	-	
						STD	10	10	10	10	-	-	
						LONG	-	10	10	10	-	-	
						ULOG	-	10	10	10	-	-	
						MLOG / MAX	-	10	-	-	10	10	

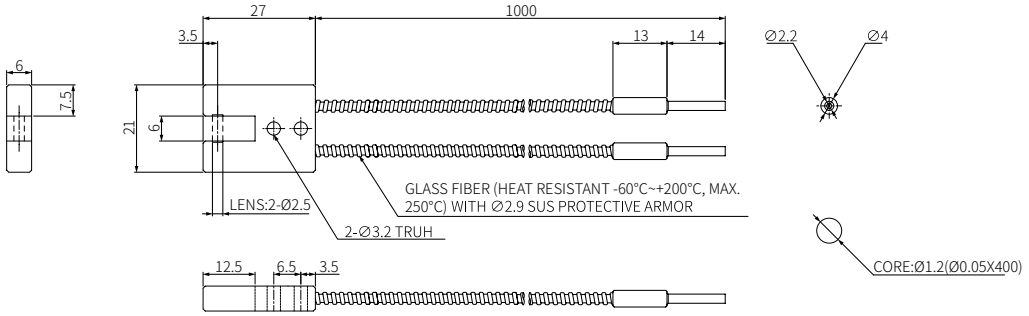
■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

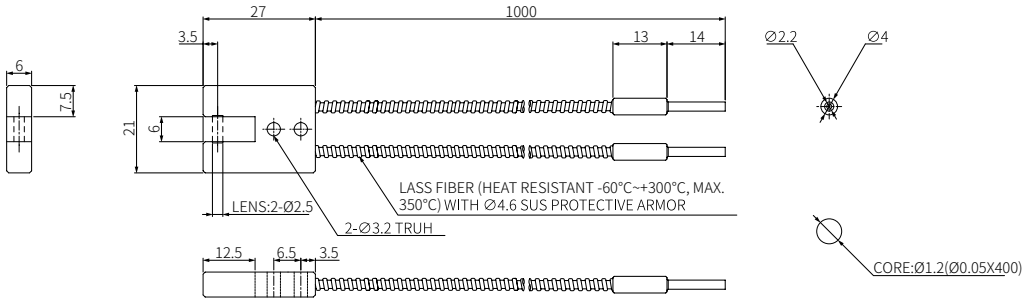
• GTU20-320-H2



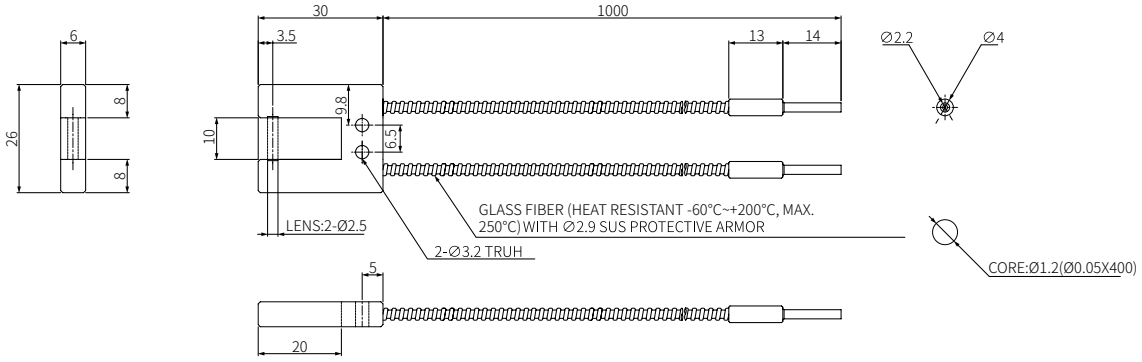
• GTU6-310-12H2



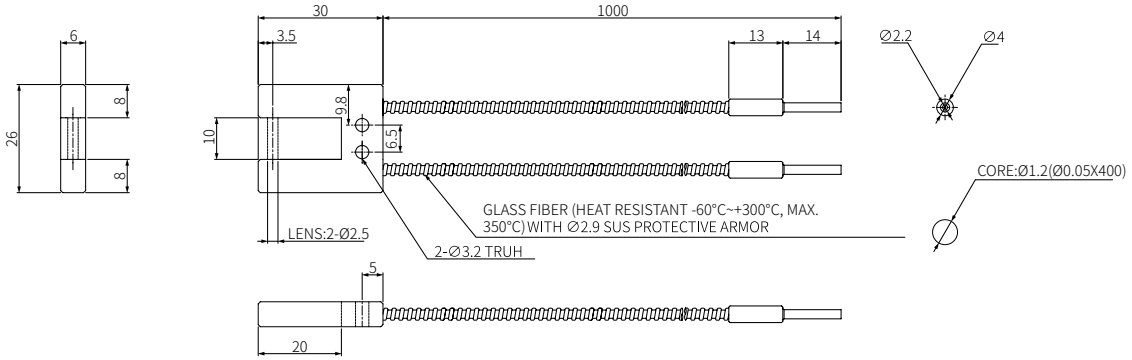
• GTU6-310-12H3



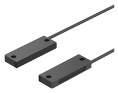
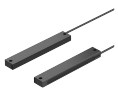
• GTU10-310-12H2



• GTU10-310-12H3



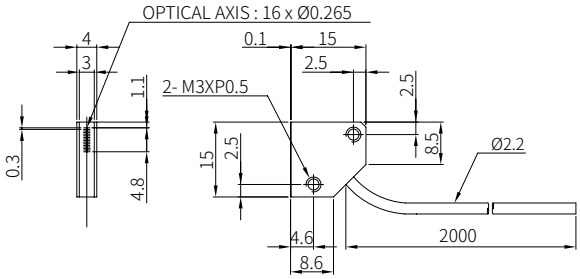
Wide Area Head: Bend-Resistant Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTW5-320-02B	2 m (FREE CUT)	R5	-30 to 70 °C	Ø 0.8 mm	MFST	-	455	-	-	-	-	-
						UFST	160	725	140	220	-	-	
						FST	350	1515	215	350	-	-	
						STD	560	>3600	360	730	-	-	
						LONG	-	>3600	765	1520	-	-	
						ULOG	-	>3600	1165	2600	-	-	
						MLOG / MAX	-	>3600	-	-	380	200	
	FTW20-320-02B	2 m	R4	-30 to 70 °C	20 × 0.25 mm (Optical axis diameter)	MFST	-	1080	-	-	-	-	-
						UFST	365	1965	325	360	-	-	
						FST	580	>3600	790	820	-	-	
						STD	1060	>3600	1575	1735	-	-	
						LONG	-	>3600	2460	2645	-	-	
						ULOG	-	>3600	>3600	>3600	-	-	
						MLOG / MAX	-	>3600			300	30	
	FTW40-320-02B	2 m	R5	-30 to 70 °C	40 × 0.25 mm (Optical axis diameter)	MFST	-	965	-	-	-	-	-
						UFST	400	1845	400	415	-	-	
						FST	735	>3600	965	1005	-	-	
						STD	1055	>3600	1885	1975	-	-	
						LONG	-	>3600	2820	>3600	-	-	
						ULOG	-	>3600	>3600	>3600	-	-	
						MLOG / MAX	-	>3600	-	-	300	40	
	FTW60-320-02B	2 m	R4	-30 to 70 °C	60 × 0.25 mm (Optical axis diameter)	MFST	-	765	-	-	-	-	-
						UFST	260	1580	320	325	-	-	
						FST	480	>3600	815	880	-	-	
						STD	735	>3600	1645	1740	-	-	
						LONG	-	>3600	2480	2685	-	-	
						ULOG	-	>3600	>3600	>3600	-	-	
						MLOG / MAX	-	>3600	-	-	300	N/A	

■ Dimensions

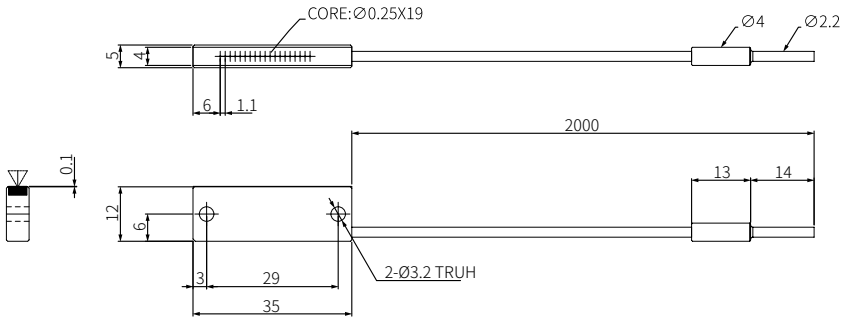
• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FTW5-320-02B



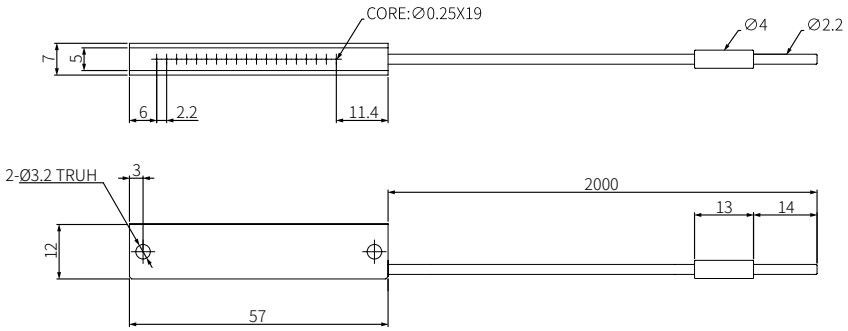
• FTW20-320-02B

Sensing side material: black Acetal



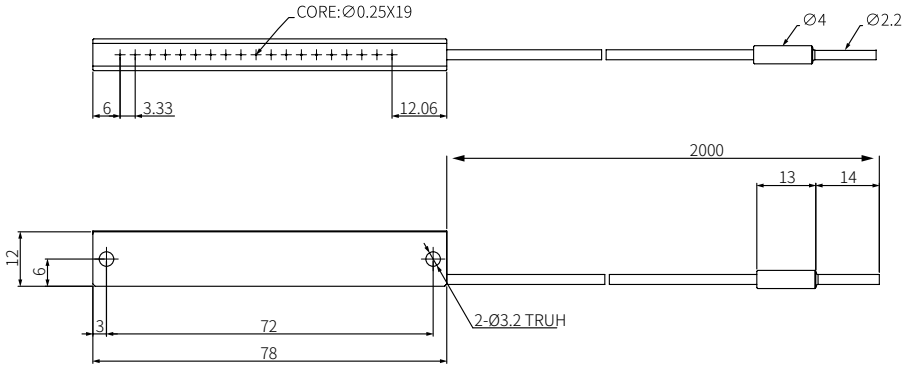
• FTW40-320-02B

Sensing side material: black Acetal



• FTW60-320-02B

Sensing side material: black Acetal



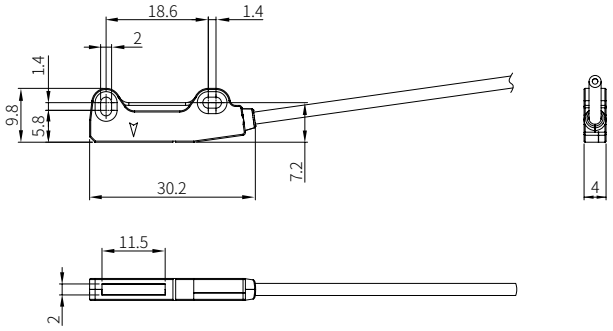
Wide Area Head: Flexible Type

Appearance	Model	Cable		Ambient temperature	Min. size of target object	Sensing distance (Typical, unit: mm)							Adapter
		Length	Bend radius			Mode \ Amp.	BFN	BFN-D	BFX	BF5	BF4	BF3	
	FTW11-210-10R	1 m (FREE CUT)	R2	-40 to 60 °C	Ø 0.07 mm	MFST	-	1245	-	-	-	-	-
						UFST	540	1870	495	600	-	-	
						FST	965	>3600	680	900	-	-	
						STD	1040	>3600	860	1400	-	-	
						LONG	-	>3600	1060	1400	-	-	
						ULOG	-	>3600	1095	1600	-	-	
						MLOG / MAX	-	>3600	-	-	975	855	
	FTW100-420-02R	2 m	R2	-30 to 70 °C	100 × 0.25 mm (Optical axis diameter)	MFST	-	215	-	-	-	-	-
						UFST	30	400	40	45	-	-	
						FST	125	790	150	165	-	-	
						STD	230	1160	590	615	-	-	
						LONG	-	>3600	1440	1485	-	-	
						ULOG	-	>3600	1910	2005	-	-	
						MLOG / MAX	-	>3600	-	-	200	N/A	

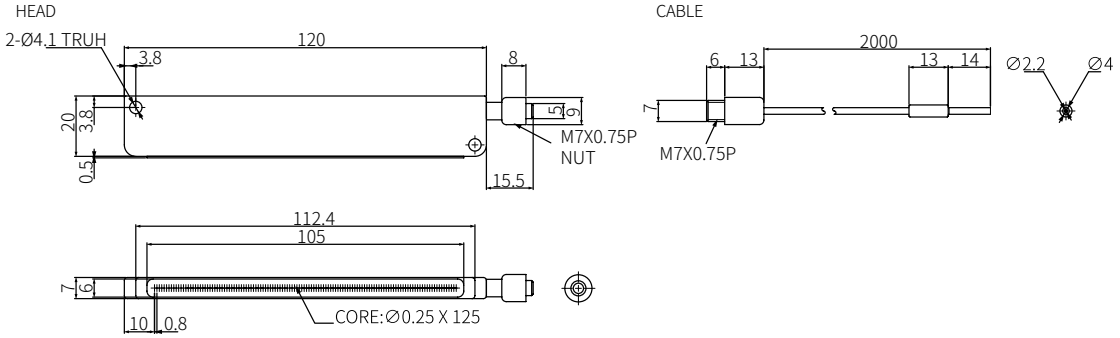
■ Dimensions

• Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FTW11-210-10R



• FTW100-420-02R



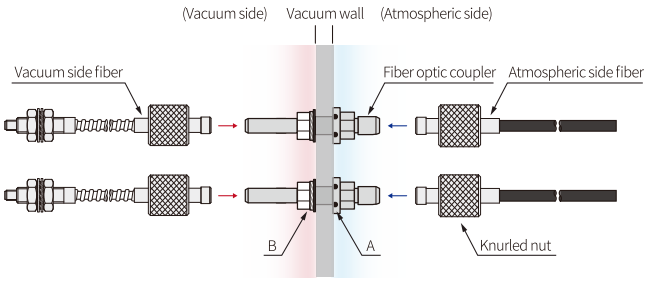
Sold Separately: Fiber Optic Coupler, Atmospheric Fiber Optic Units

■ Cautions During Installation

- When using vacuum-resistant type fiber units, be sure to use it in combination with fiber optic couplers and atmospheric fiber optic units.
- The fiber optic coupler is a device that transmits light while sealing the vacuum side from the atmospheric side. It is equipped with an O-ring. Take care when welding the vacuum chamber wall, as this may cause the internal glass rod to become cloudy.
- Consider the following conditions when installing fiber optic couplers.
  - Applicable chamber wall thickness: 8 to 10 mm
  - Mounting hole diameter: Ø 5.0 + 0.1, - 0.1 mm
  - O-ring contact surface roughness: 1.6 Ry
- Install the fiber optic coupler and fiber optic units to the connection points below. Failure to do so may result in product damage.
  - Vacuum-resistant fiber optic unit → Long end of the fiber optic coupler
  - Atmospheric fiber optic unit → Short end of the fiber optic coupler

■ Example Configuration

01. Insert the fiber optic coupler in the installation hole of the vacuum chamber wall.
02. From the long side of the fiber optic coupler towards the vacuum wall, place the flat washer, spring washer in order, then tighten the nut to secure the coupler.
03. Connect the vacuum-side and atmosphere-side fiber optic units to the coupler by turning the knurled nuts.



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

■ Fiber Optic Coupler

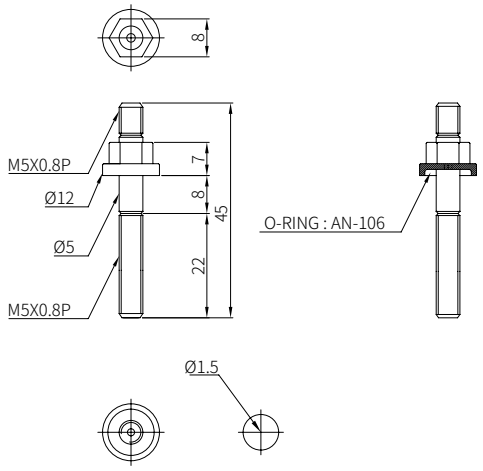
Appearance	Ambient temperature	Compatible cable types	Model
	-60 to 200 °C	Vaccum-resistant, Atmospheric	FU-VC01
	-60 to 300 °C	Vaccum-resistant, Atmospheric	FU-VC02

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

■ Dimensions

Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FU-VC01, FU-VC02



■ Atmospheric Fiber Optic Units

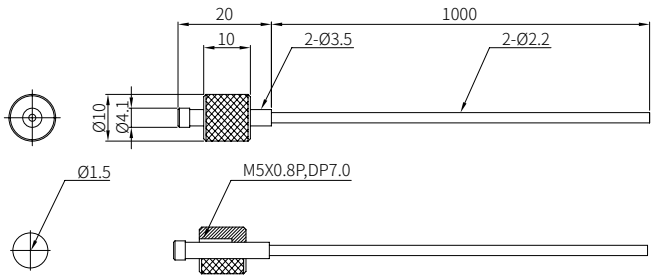
Appearance	Bend radius	Ambient temperature	FREE CUT	Model
	R30	-30 to 70 °C	FREE CUT	FU-VA01
	R20	-30 to 70 °C	FREE CUT	FU-VA02

- Product components: Atmospheric fiber optic units × 2, cable cutter (FC-3) × 1

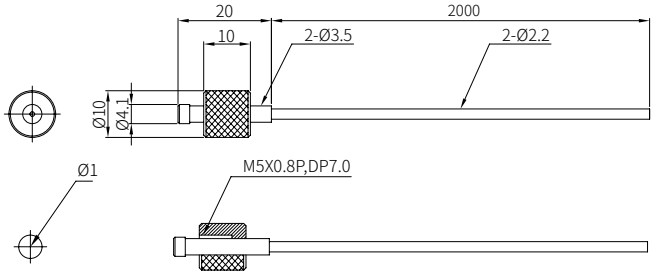
■ Dimensions

Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

• FU-VA01



• FU-VA02



Sold Separately: Distance Extender Lens

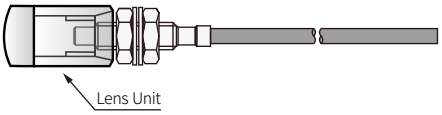
The sensing distance of the fiber optic unit can be extended with the extender lens.

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

01) The sensing distance may vary depending on detection conditions and detection modes.
For optimal performance, be sure to test the unit under actual detection conditions.

■ Example of Mounting Distance Extender Lens

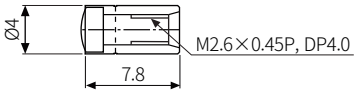
Mount the lens unit onto the protrusion at the front of the hood. Please refer to the product dimensions.



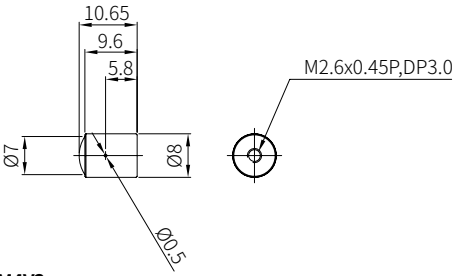
■ Dimensions

Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

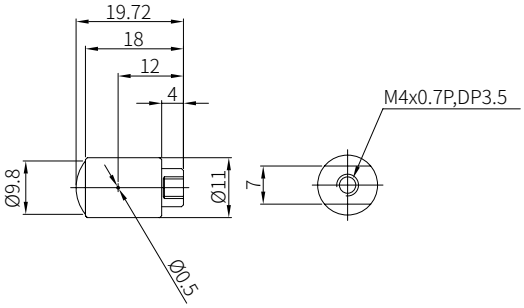
• FTL-M26



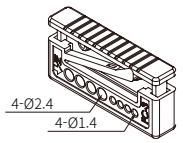
• FTL-M26V3



• FTL-M4V3



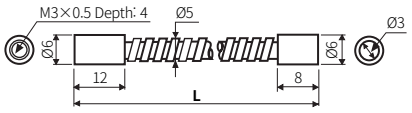
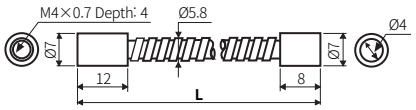
Sold Separately: Cable Cutter

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

Sold Separately: Cable Protection Tube

Select the appropriate cable protection tube considering the diameter of the fiber optic unit.

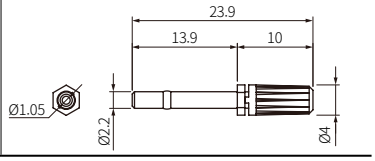
• Cable diameter size: Cable protection tube > Fiber optic unit

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

For adapter-compatible models (●), the adapter is supported only with the BFN, BFX, BF5, and BF4 Series fiber optic amplifiers.
The adapter can be purchased separately through our authorized distributors.
For the BF3 series, the adapter needs to be purchased separately.

■ Adapter compatible with BFN, BFX, BF5, and BF4 Series

Model	Features	Qty	Dimensions (unit: mm)
BFN-ADAPTER-10	Inner diameter: Ø1 Color: Black	2	

■ Adapter compatible with BF3 Series

Model	Features	Dimensions (unit: mm)
H1750000134	Inner diameter: Ø1 Color: Black	