

Diffuse-reflective Type Fiber Optic Units



FD/GD Series

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



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 					
Molded plastic head 	Std.				
Perpendicular head 					
SUS head 	Std.				
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).
- 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.
- 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.

Diffuse-reflective Type: Threaded head

■ Standard

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FD-310-05	R15	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT / Adaptor
FD-320-05	R15	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT / Adaptor
FD-420-05	R15	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT / Adaptor
FD-620-10	R30	-40 to 70 °C	120 mm (BF4)	Ø 0.03 mm		FREE CUT
FD-320-F	R15	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT / Adaptor
FD-320-F1	R30	-40 to 70 °C	60 mm (BF4)	Ø 0.03 mm	<p>• Be sure not to change the cable of the emitter/receiver when mounting to the amplifier. Emitter adaptor (black), receiver adaptor (dark gray)</p>	FREE CUT / Adaptor
FD-620-F2	R30	-40 to 70 °C	120 mm (BF4)	Ø 0.03 mm		FREE CUT

Diffuse-reflective Type: Threaded head

■ Heat-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FD-620-10H	R30	-40 to 105 °C	120 mm (BF4)	Ø 0.03 mm		FREE CUT
FD-620-15H1	R50	-40 to 150 °C	160 mm (BF4)	Ø 0.03 mm		FREE CUT
GD-420-20H2	R50	-40 to 250 °C	100 mm (BF4)	Ø 0.03 mm		—
GD-620-20H2	R50	-40 to 250 °C	100 mm (BF4)	Ø 0.03 mm		—
GD-620-12H3	R25	-60 to 350 °C	270 mm (BF5)	Ø 0.08 mm		—

■ Vacuum-resistant

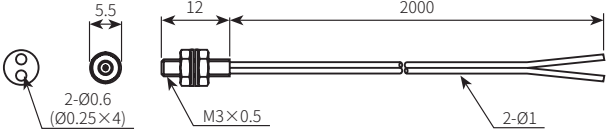
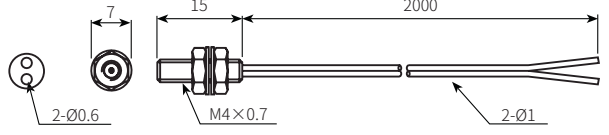
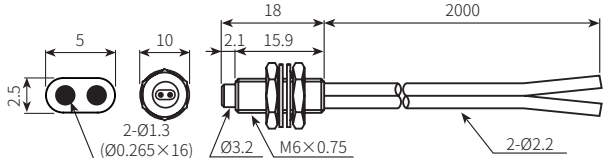
Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
GD-610-12V2	R25	-60 to 250 °C	180 mm ⁰¹⁾ (BF5)	Ø 0.08 mm		—
			120 mm ⁰²⁾ (BF5)	Ø 0.08 mm		

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

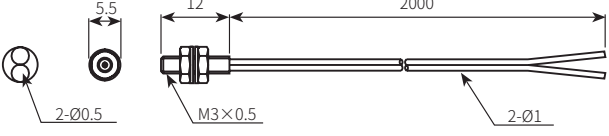

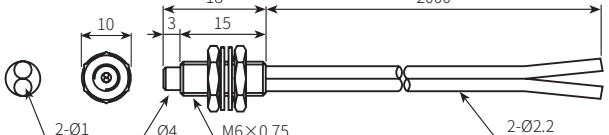
02) Equipped with the atmospheric-side fiber optic unit (FU-VA02)

Diffuse-reflective Type: Threaded head

■ Bending-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FD-320-06B	R5	-40 to 60 °C	35 mm (BF4)	Ø 0.0125 mm		FREE CUT/ Adaptor
FD-420-06B	R5	-40 to 60 °C	35 mm (BF4)	Ø 0.0125 mm		FREE CUT/ Adaptor
FD-620-13B	R5	-40 to 60 °C	100 mm (BF4)	Ø 0.0125 mm		FREE CUT

■ Flexible

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FD-320-05R	R1	-40 to 60 °C	35 mm (BF5)	Ø 0.0125 mm		FREE CUT/ Adaptor
FD-420-05R	R1	-40 to 60 °C	35 mm (BF5)	Ø 0.0125 mm		FREE CUT/ Adaptor
FD-620-10R	R1	-40 to 60 °C	130 mm (BF5)	Ø 0.04 mm		FREE CUT

Diffuse-reflective Type: Cylindrical head

■ Standard

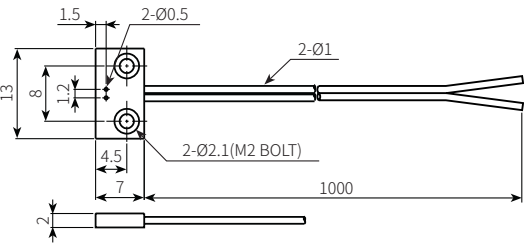
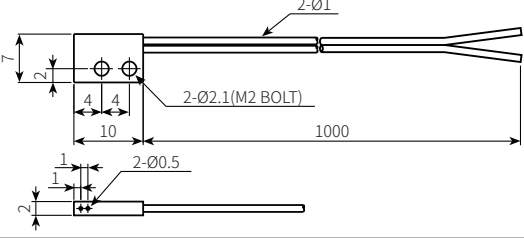
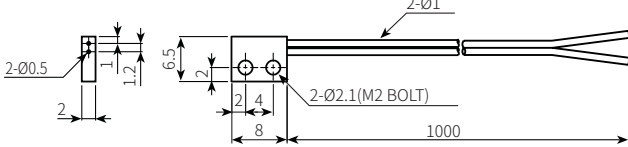
Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FDC-320-05	R15	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT/ Adaptor
FDC-320-F	R15	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT/ Adaptor

■ Bending-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FDC-320-06B	R5	-40 to 60 °C	35 mm (BF4)	Ø 0.0125 mm		FREE CUT/ Adaptor

Diffuse-reflective Type: Flat head

Flexible

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FDF-210-05R	R1	-40 to 60 °C	30 mm (BF5)	Ø 0.0125 mm	<p>• Hood material: SUS303, flat view</p> 	FREE CUT/ Adaptor
FDN-210-05R	R1	-40 to 60 °C	30 mm (BF5)	Ø 0.0125 mm	<p>• Hood material: SUS303, side view</p> 	FREE CUT/ Adaptor
FDFU-210-05R	R1	-40 to 60 °C	35 mm (BF5)	Ø 0.0125 mm	<p>• Hood material: SUS303, top view</p> 	FREE CUT/ Adaptor

Diffuse-reflective Type: L-shaped head

■ Heat-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
GDL-620-12H2	R25	-60 to 250 °C	260 mm (BF5)	Ø 0.08 mm		—
GDL-620-12H3	R25	-60 to 350 °C	260 mm (BF5)	Ø 0.08 mm		—

■ Vacuum-resistant

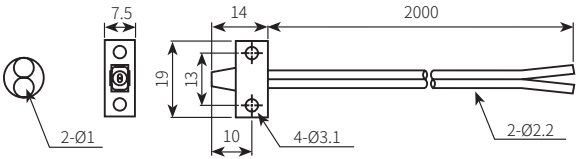
Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
GDL-610-12V2	R25	-60 to 250 °C	180 mm ⁰¹⁾ (BF5) 130 mm ⁰²⁾ (BF5)	Ø 0.08 mm Ø 0.08 mm		—

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

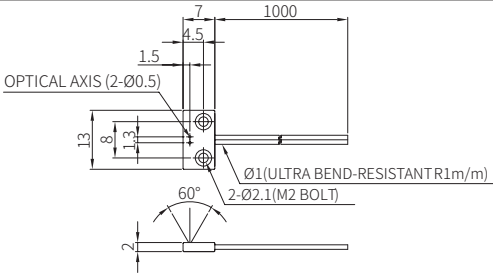
02) Equipped with the atmospheric-side fiber optic unit (FU-VA02)

Diffuse-reflective Type: Molded plastic head

Standard

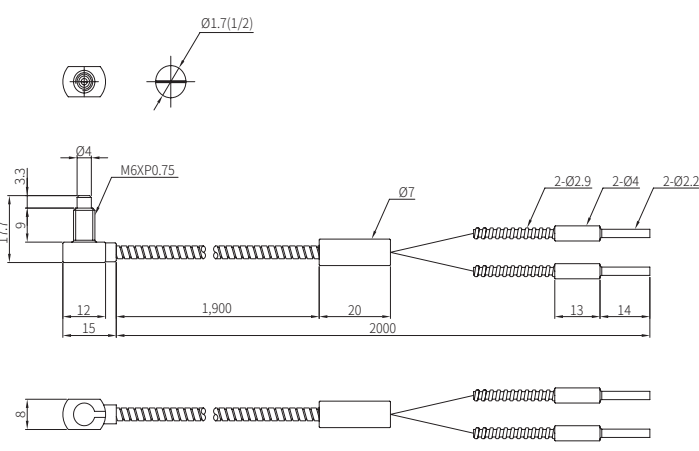
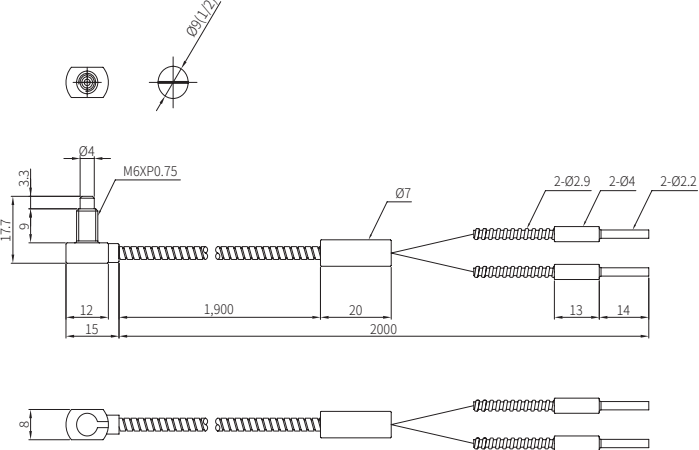
Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FDP-320-10	R30	-40 to 70 °C	120 mm (BF4)	Ø 0.03 mm		FREE CUT

Flexible

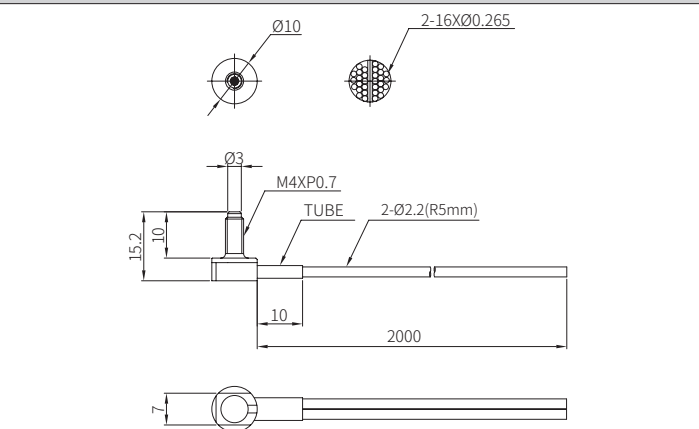
Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FDPF-210-05R	R1	-30 to 70 °C	70 mm (BF5)	Ø 0.08 mm		FREE CUT/ Adaptor

Diffuse-reflective Type: Perpendicular head

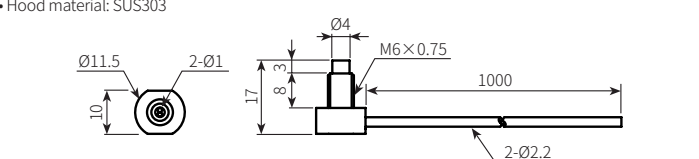
■ Heat-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
GDR-620-17H2	R25	-60 to 250 °C	250 mm (BF5)	Ø 0.08 mm		—
GDR-620-17H3	R25	-60 to 350 °C	260 mm (BF5)	Ø 0.08 mm		—

■ Bending-resistant

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FDRT-420-02B	R5	-30 to 70 °C	230 mm (BF5)	Ø 0.08 mm		FREE CUT

■ Flexible

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FDR-610-10R	R1	-40 to 60 °C	120 mm (BF5)	Ø 0.04 mm	<p>• Hood material: SUS303</p> 	FREE CUT

Diffuse-reflective Type: SUS head

■ Standard

Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FDS-320-05	R15 (SUS part R10)	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT
FDS-420-05	R15 (SUS part R10)	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT / Adaptor
FDS-620-10	R30 (SUS part R10)	-40 to 70 °C	120 mm (BF4)	Ø 0.03 mm		FREE CUT
FDS2-320-05	R15 (SUS part R10)	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT / Adaptor
FDS2-420-05	R15 (SUS part R10)	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT / Adaptor
FDS2-620-10	R30 (SUS part R10)	-40 to 70 °C	120 mm (BF4)	Ø 0.03 mm		FREE CUT
FDCS-320-05	R15 (SUS part R10)	-40 to 70 °C	40 mm (BF4)	Ø 0.03 mm		FREE CUT/ Adaptor
FDCSN-320-05	R15	-40 to 60 °C	30 mm (BF5)	Ø 0.0125 mm	• Side view 	—

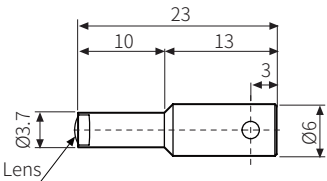
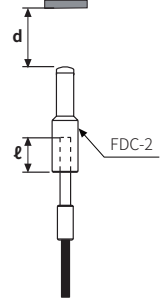
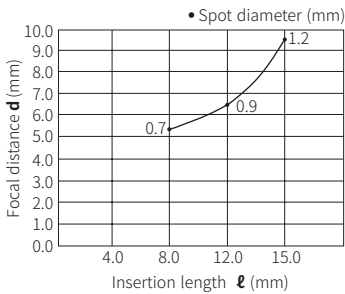
Diffuse-reflective Type: Wide area head

■ Bending-resistant

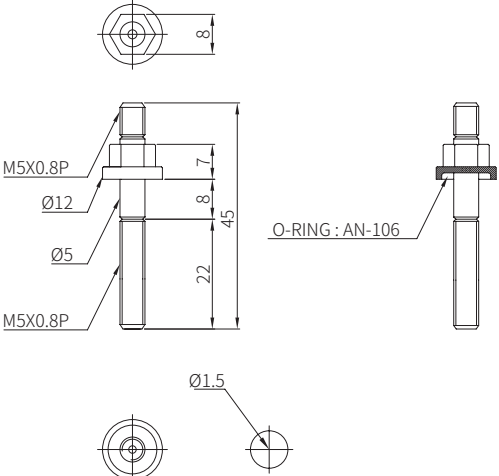
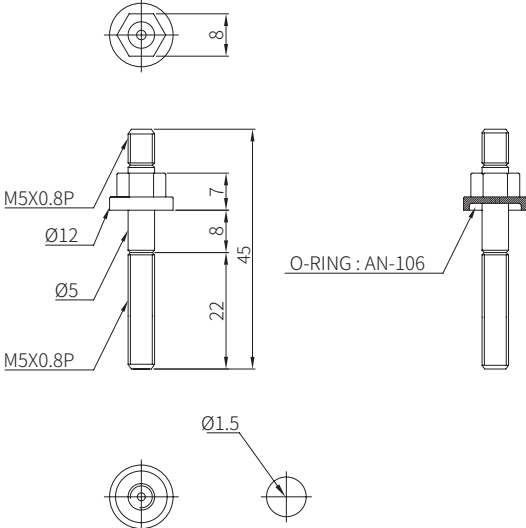
Model	Bend radius	Ambient temperature	Sensing distance (Testing amplifier)	Min. target size	Dimensions (unit: mm)	FREE CUT / Adaptor
FDW10-320-02B	R5	-30 to 70 °C	230 mm (BF5)	Ø 0.08 mm	<p>CORE - OPTICAL AXIS OF EMITTER : 16 x Ø0.265 OPTICAL AXIS OF RECEIVER : 16 x Ø0.265</p>	FREE CUT
FDW10T-320-02B	R5	-30 to 70 °C	230 mm (BF5)	Ø 0.08 mm	<p>CORE - OPTICAL AXIS OF EMITTER : 16 x Ø0.265 OPTICAL AXIS OF RECEIVER : 16 x Ø0.265</p>	FREE CUT

Sold Separately

■ Lens unit for micro spot

Model	Ambient temperature	Dimensions (unit: mm)	Feature data
FDC-2	-40 to 100 °C		<div><div>Measuring method</div></div> <div><div>Beam spot characteristic</div></div>

■ 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	
FDH-605	
FDH-610	