
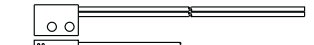



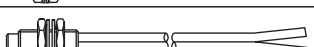

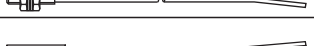
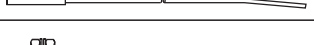

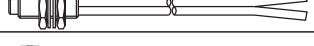








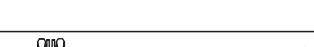
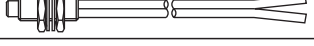



Fiber Optic Cable

■ Specifications(Diffuse reflective)

Type	Dimension	Feature	Model	(Note1) Sensing distance (mm)	(Note2) Min. sensing target	Allowable bend radius	(Note3) Cable length(L)	Temperature		
Flexible type	 LINE-UP	Flat type/ Top view(Up)	FDFU-210-05R	30	φ 0.0125	1R	1m Free cut	-40 to 60℃ (Humidity: 35 to 85% RH)		
	 LINE-UP	Flat type/ Side view	FDFN-210-05R							
	 LINE-UP	Flat type/ Flat view	FDF-210-05R	15	φ 0.04					
	 LINE-UP	M3 Bolt	FD-320-05R	25	φ 0.0125					
	 LINE-UP	M4 Bolt	FD-420-05R							
	 LINE-UP	M6 Bolt	FD-620-10R				80		φ 0.04	
Break-resistant type	 LINE-UP	M3 Bolt	FD-320-06B	35	φ 0.0125	5R	2m Free cut			
	 LINE-UP	φ 3 Cylinder type	FDC-320-06B							
	 LINE-UP	M4 Bolt	FD-420-06B	100	φ 0.0125					
	 LINE-UP	M6 Bolt	FD-620-13B							
Standard type	 LINE-UP	M3 Bolt	FD-320-05	40	φ 0.03	15R			-40 to 70℃ (Humidity: 35 to 85% RH)	
	 LINE-UP	M4 Bolt	FD-420-05							
	 LINE-UP	φ 3 Cylinder type	FDC-320-05			120		φ 0.03		15R (SUS part 10R)
	 LINE-UP	φ 3 Cylinder type SUS type (90mm)	FDCS-320-05							
	 LINE-UP	M3 Bolt SUS type (90mm)	FDS-320-05							30R
	 LINE-UP	M3 Bolt SUS type (45mm)	FDS2-320-05							
	 LINE-UP	M4 Bolt SUS type (90mm)	FDS-420-05							30R (SUS part 10R)
	 LINE-UP	M4 Bolt SUS type (45mm)	FDS2-420-05							
	 LINE-UP	M6 Bolt	FD-620-10				30R (SUS part 10R)			
	 LINE-UP	M6 Bolt SUS type (90mm)	FDS-620-10							
 LINE-UP	M6 Bolt SUS type (45mm)	FDS2-620-10	30R							
 LINE-UP	Plastic type	FDP-320-10								

※ (Note1) The sensing distance is a standard for Red LED of BF4 Series and 10% of Red LED is applied when it is Green LED. It is applied to 40% of sensing distance for BF3RX.

※ (Note2) Min. sensing target is a value measured opaque material in accurate output status and the sensing distance is different with the rated sensing distance(Note1).

※ (Note3) Fiber optic cable out of the rated length can be customizable.

※ **Free cut** The sensing distance can be shortened about max. 20% than the normal according to condition of the cable. [(FC-2) should be used for cutting fiber cable.]

(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/Socket

(H) Temp. controller

(I) SSR/Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/Speed/Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching power supply

(Q) Stepping motor & Driver & Controller

(R) Graphic/Logic panel

(S) Field network device

(T) Production stoppage models & replacement

Fiber Optic Cable

■ Specifications(Diffuse reflective)

Type	Dimension	Feature	Model	(Note1) Sensing distance (mm)	(Note2) Min. sensing target	Allowable bend radius	(Note3) Cable length(L)	Temperature	
Coaxial type		M3 Bolt	FD-320-F	40	∅ 0.03	15R	2m Free cut	-40 to 70℃ (Humidity: 35 to 85% RH)	
		M3 Bolt	FD-320-F1	60					
		M6 Bolt	FD-620-F2	120					
Heat-resistant type		M6 Bolt	FD-620-10H	120		30R	30R		-40 to 105℃
		M6 Bolt	FD-620-15H1	160					
		M4 Bolt Glass type	GD-420-20H2	100		50R	2m	-40 to 250℃	
		M6 Bolt Glass type	GD-620-20H2						

■ Specifications(Through-beam)

Type	Dimension	Feature	Model	(Note1) Sensing distance (mm)	(Note2) Min. sensing target	Allowable bend radius	(Note3) Cable length(L)	Temperature
Flexible type		Flat type/ Top view(Up)	FTFU-210-05R	80	∅ 0.04	1R	1m Free cut	-40 to 60℃ (Humidity: 35 to 85% RH)
		Flat type/ Side view	FTFN-210-05R	75				
		Flat type/ Flat view	FTF-210-05R	30				
		Flat type/ Side view+ top view	FTFB-210-05R	90				
		Integrated bracket (L type)/ Top view(Up)	FTLU-310-10R	250	∅ 0.06			
			FTLU1-310-10R					
			FTLU2-310-10R					
		M3 Bolt	FT-320-05R	85	∅ 0.3			
		∅ 2 Cylinder type	FTC-220-05R					
		M4 Bolt	FT-420-10R	380	∅ 0.5			
Break-resistant type		M3 Bolt	FT-320-06B	110	∅ 0.3	5R	2m Free cut	
		∅ 1.5 Cylinder type	FTC-1520-06B					
		M4 Bolt	FT-420-13B	400	∅ 0.6			

※ (Note1) The sensing distance is a standard for Red LED of BF4 Series and 10% of Red LED is applied when it is Green LED. It is applied to 40% of sensing distance for BF3RX.

※ (Note2) Min. sensing target is a value measured opaque material in accurate output status and the sensing distance is different with the rated sensing distance(Note1).

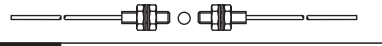

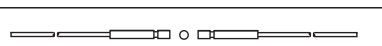
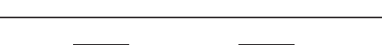






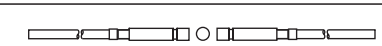



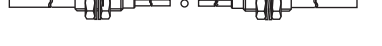
※ (Note3) Fiber optic cable out of the rated length can be customizable.

※ **Free cut** The sensing distance can be shortened about max. 20% than the normal according to condition of the cable. [(FC-2) should be used for cutting fiber cable.]

※ **Glass type** is for BF5R, BF4R Series.

Fiber Optic Cable

■ Specifications(Through-beam)

Type	Dimension	Feature	Model	(Note1) Sensing distance (mm)	(Note2) Min. sensing target	Allowable bend radius	(Note3) Cable length(L)	Temperature	
Standard type		M3 Bolt	FT-320-05	150	φ 0.5	15R	2m Free cut	-40 to 70℃ (Humidity: 35 to 85% RH)	
	LINE-UP 	φ 1.5 Cylinder type	FTC-1520-05						
		φ 2 Cylinder type	FTC-220-05						
		φ 2 Cylinder type (90mm)	FTCS-220-05						
		M3 Bolt SUS type (90mm)	FTS-320-05	500	φ 1	30R 30R (SUS part 10R)			
			M3 Bolt SUS type (35mm)						FTS1-320-05
			M3 Bolt SUS type (45mm)						FTS2-320-05
		M4 Bolt	FT-420-10	300	φ 1	30R			
			φ 3 Cylinder type						FTC-320-10
			Plastic type						FTP-320-10
		M4 Bolt SUS type (90mm)	FTS-420-10						
			M4 Bolt SUS type (45mm)				FTS2-420-10		
Heat-resistant type		M4 Bolt	FT-420-10H	300		30R	-40 to 105℃		
		M4 Bolt	FT-420-15H1	500		50R	-40 to 150℃		
		M4 Bolt Glass type	GT-420-13H2	400		25R	2m -40 to 250℃		

※ (Note1) The sensing distance is a standard for Red LED of BF4 Series and 10% of Red LED is applied when it is Green LED. It is applied to 40% of sensing distance for BF3RX.

※ (Note2) Min. sensing target is a value measured opaque material in accurate output status and the sensing distance is different with the rated sensing distance (Note1).

※ (Note3) Fiber optic cable out of the rated length can be customizable.

※ **Free cut** The sensing distance can be shortened about max. 20% than the normal according to condition of the cable. [(FC-2) should be used for cutting fiber cable.]

※ **Glass type** is for BF5R, BF4R Series.

※ FT-420-13 was discontinued. FT-420-13B is replacement.

(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/Socket

(H) Temp. controller

(I) SSR/Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/Speed/Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching power supply

(Q) Stepping motor & Driver & Controller

(R) Graphic/Logic panel

(S) Field network device

(T) Production stoppage models & replacement

Fiber Optic Cable

Dimensions

(Unit:mm)

Model	Diffuse reflective	Model	Through-beam
FDFU-210-05R M2-D0.5 *Hood material :SUS304 Free cut		FTFU-210-05R M2-D0.5 *Hood material :SUS304 Free cut	
FDFN-210-05R M2-D0.5 *Hood material :SUS304 Free cut		FTFN-210-05R M2-D0.5 *Hood material :SUS304 Free cut	
FD-210-05R M2-D0.5 *Hood material :SUS304 Free cut		FTF-210-05R M2-D0.5 *Hood material :SUS304 Free cut	
FD-320-05(R) M3-D0.5 Free cut Adapter		FTFB-210-05R M2-D0.5 *Hood material :SUS304 Free cut	
FD-320-06B M3-D0.6 Free cut Adapter			
FD-420-05(R) M4-D0.5 Free cut Adapter		FTLU-310-10R M3-D0.5 *Hood material :SUS304 Free cut	
FD-420-06B M4-D0.6 Free cut Adapter		FTLU1-310-10R M3-D0.5 *Hood material :SUS304 Free cut	
FD-620-10(R) M6-D1.0 Free cut		FTLU2-310-10R M3-D0.5 *Hood material :SUS304 Free cut	
FD-620-13B M6-D1.3 Free cut		FT-320-05(R) M3-D0.5 Free cut Adapter	
FDC-320-05 M3-D0.5 Free cut Adapter		FT-320-06B M3-D0.6 Free cut Adapter	
FDC-320-06B M3-D0.6 Free cut Adapter		FT-420-10 M4-D1.0 Free cut	
FDCS-320-05 φ3-D0.5 SUS φ1.5x15mm Free cut Adapter		FT-420-10R M4-D1.0 Free cut	
FDS-320-05 M3-D0.5 SUS φ1.5x90mm Free cut Adapter		FT-420-13B M4-D1.3 Free cut	
		FTC-1520-05 φ2-D0.5 Free cut Adapter	

Fiber Optic Cable

Dimensions

(Unit:mm)

Model	Diffuse reflective	Model	Through-beam
FDS2-320-05 M3-D0.5 SUS $\phi 1.5 \times 45\text{mm}$ Free cut Adapter		FTC-1520-06B $\phi 2-D0.6$ Free cut Adapter	
FDP-320-10 D1.0 x 2 Plastic Free cut		FTC-220-05(R) $\phi 2-D0.5$ Free cut Adapter	
FDS-420-05 M4-D0.5 SUS $\phi 1.5 \times 90\text{mm}$ Free cut Adapter		FTCS-220-05 $\phi 1.0-D0.5$ SUS $\phi 1 \times 15\text{mm}$ Free cut Adapter	
FDS2-420-05 M4-D0.5 SUS $\phi 1.5 \times 45\text{mm}$ Free cut Adapter		FTC-320-10 $\phi 3-D1.0$ Free cut	
FDS-620-10 M6-D1.0 SUS $\phi 2.5 \times 90\text{mm}$ Free cut		FTS-320-05 M3-D0.5 SUS $\phi 1.0 \times 90\text{mm}$ Free cut Adapter	
FDS2-620-10 M6-D1.0 SUS $\phi 2.5 \times 45\text{mm}$ Free cut		FTS1-320-05 M3-D0.5 SUS $\phi 1.0 \times 35\text{mm}$ Free cut Adapter	
FD-320-F Co-axial M3 $\phi 0.5, \phi 0.25 \times 4$ Free cut Adapter		FTS2-320-05 M3-D0.5 SUS $\phi 1.0 \times 45\text{mm}$ Free cut Adapter	
FD-320-F1 Co-axial M3 $\phi 0.5, \phi 0.25 \times 9$ Free cut Adapter		FTP-320-10 D1.0 Plastic Free cut	
FD-620-F2 Co-axial M6 $\phi 1.0 \phi 0.265 \times 16$ Free cut		FTS-420-10 M4-D1.0 SUS $\phi 1.5 \times 90\text{mm}$ Free cut	
FD-620-10H M6-D1.0 Heat Resistant 105°C Free cut		FTS2-420-10 M4-D1.0 SUS $\phi 1.5 \times 45\text{mm}$ Free cut	
FD-620-15H1 M6-D1.5 Heat Resistant 150°C Free cut		FT-420-10H M4-D1.0 Heat RESISTANT 105°C Free cut	
GD-420-20H2 M4-D0.05 x 1000 Heat Resistant 250°C		FT-420-15H1 M4-D1.0 Heat Resistant 150°C Free cut	
GD-620-20H2 M6-D0.05 x 1000 Heat Resistant 250°C		GT-420-13H2 M4-D1.3 Heat Resistant Max.250°C Glass Free cut	

- (A) Photo electric sensor
- (B) Fiber optic sensor
- (C) Door/Area sensor
- (D) Proximity sensor
- (E) Pressure sensor
- (F) Rotary encoder
- (G) Connector/Socket
- (H) Temp. controller
- (I) SSR/Power controller
- (J) Counter
- (K) Timer
- (L) Panel meter
- (M) Tacho/Speed/Pulse meter
- (N) Display unit
- (O) Sensor controller
- (P) Switching power supply
- (Q) Stepping motor & Driver & Controller
- (R) Graphic/Logic panel
- (S) Field network device
- (T) Production stoppage models & replacement

Fiber Optic Cable

■ Lens unit for long distance detection(Sold separately)

○Model : **FTL-M26**



<Lens unit>

<Mounting at cable>

○Mounting of lens

Mount the lens unit on the 3mm projecting point of the front hood

○Ambient temperature range of lens unit

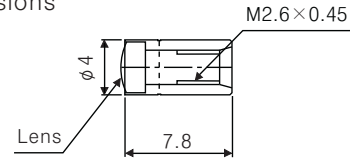
Able to use within -40 to 100°C .
(Disable to use over 100°C .)

○Applicable fiber optic cable and max. mounting distance

FT-420-10 : 2500mm

FT-420-10H : 1500mm

○Dimensions



(Unit:mm)

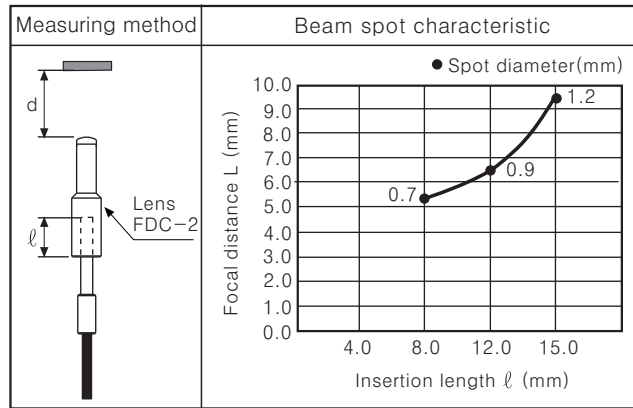
■ Micro spot fiber optic cable and lens unit(Sold separately)

○Model

Fiber optic cable : **FDC-320-F**

Micro spot lens : **FDC-2**

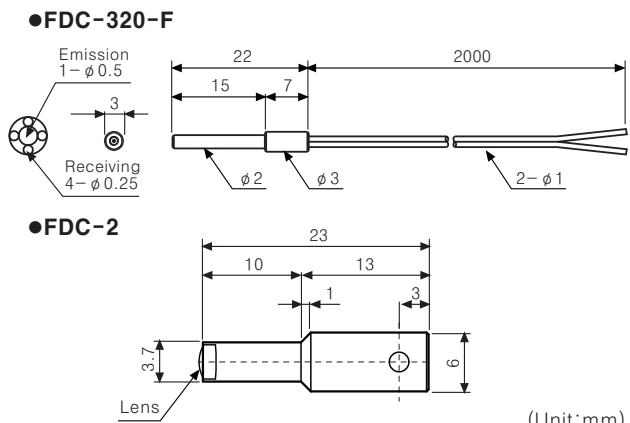
○Feature data



○Ambient temperature range of lens unit

It should be used within -40 to 100°C .
(It cannot be used over 100°C .)

○Dimensions



(Unit:mm)

■ Protection tube for fiber optic cable (Sold separately)

○Usage : Protect cable from impact or cutting

(Unit:mm)

Model	Dimension
FTH-310	
FTH-410	
FDH-610	

※500mm tube can be customized.

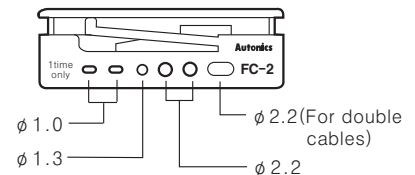
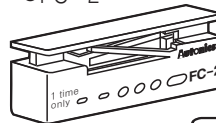
※Additional 8mm is for tube coupling.

■ Accessory

○Fiber cutter

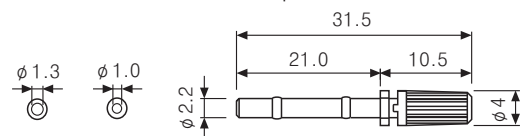
Usage : Cutting fiber optic cable, free cut type

●FC-2



○Adapter

Adapter : Adapter marked fiber optic cable should be used with adapter .



(Unit:mm)

※The inside diameter $\phi 1.0$ (Standard and black)
The inside diameter $\phi 1.3$ (Only applied to the receiver of FD-320-F1 and dark gray.)