

## Clarification of fiber optic cable model by type

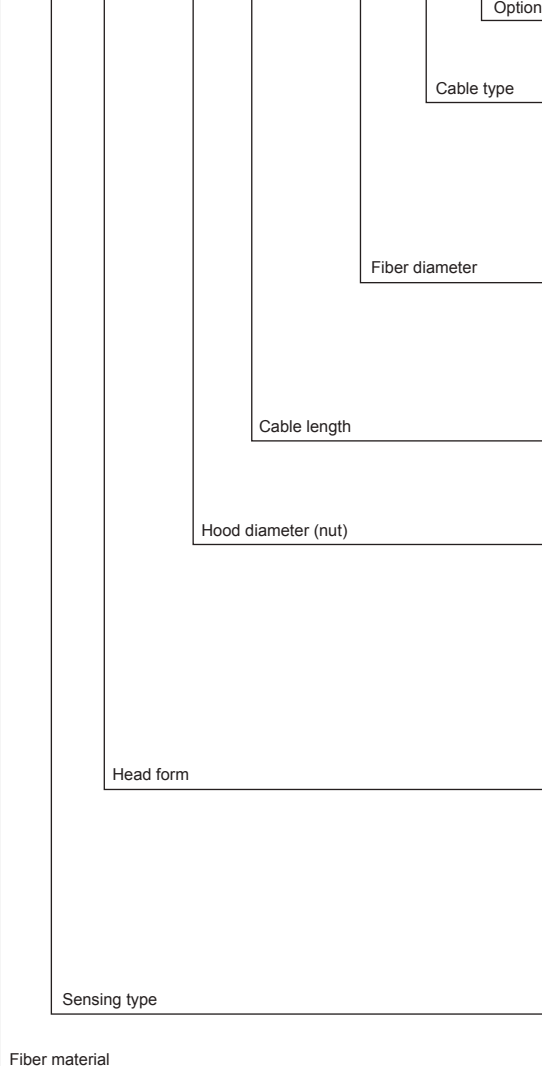
## ■ Features

## ■ Six cable head types available

- Area Detection Type
  - Area detection sensors with wide detection area
  - Detection of vibrating or falling objects
  - 11mm beam width and 750mm maximum detection distance
- Perpendicular Type
  - Easy installation with a single nut
- Flat Type
  - Compact flat heads for installation in tight spaces
  - Various sensing directions (top view, flat view, L-type view, top+side view)
  - Integrated bracket types with simple installation
- Cylindrical Type (thread end, cylindrical end)
  - : standard cylindrical fiber optic sensors for bracket mounting
- Injection molded plastic type

## ■ Ordering Information

**F** **T**  - **4** **20** - **10**  **S**



## ■ Various Fiber cable types

- Standard type: standard fiber optic cables with efficient signal transmission
- Flexible type: Ideal to install in the environments of curves, minimized light intensity changing from bending of the cable, and proper for the tidy installation
- Break-resistant type: withstand frequent bending without breaking
- Coaxial type: excellent signal transmission at close proximity
- Heat-resistant type: withstand extreme temperature conditions from -40°C to 250°C



|         |                                        |
|---------|----------------------------------------|
| S       | Small hood                             |
| No mark | Standard type (-40 to 70°C)            |
| H       | Heat-resistance (-40 to 105°C)         |
| H1      | Heat-resistance (-40 to 150°C)         |
| H2      | Heat-resistance (-40 to 250°C)         |
| R       | Flexible type (R1, R2)                 |
| B       | Break-resistant type (R5)              |
| 05      | Ø0.5mm                                 |
| 06      | Ø0.6mm                                 |
| 10      | Ø1.0mm                                 |
| 13      | Ø1.3mm                                 |
| 14      | Ø1.4mm                                 |
| 15      | Ø1.5mm                                 |
| 20      | Ø2.0mm                                 |
| F       | Ø0.5mm, Ø0.25mm×4 (coaxial type)       |
| F1      | Ø0.5mm, Ø0.25mm×9 (coaxial type)       |
| F2      | Ø1.0mm, Ø0.265mm×16 (coaxial type)     |
| 05      | 0.5m                                   |
| 10      | 1m                                     |
| 20      | 2m                                     |
| 10M     | 10m                                    |
| 15      | Ø1.5mm                                 |
| 2       | Ø2mm (M2)                              |
| 3       | Ø3mm (M3)                              |
| 4       | Ø4mm (M4)                              |
| 6       | Ø6mm (M6)                              |
| No mark | Standard type (bolt type)              |
| W11     | Area type (sensing height 11mm)        |
| P       | Plastic injection molding type         |
| S       | SUS type (SUS length 90mm)             |
| S1      | SUS type (SUS length 35mm)             |
| S2      | SUS type (SUS length 45mm)             |
| C       | Cylinder type                          |
| CS      | Cylinder+SUS type (SUS length 15mm)    |
| H       | Fire cable protection tube             |
| LU      | L type/Top view (height 12.2mm)        |
| LU1     | L type/Top view (height 17.2mm)        |
| LU2     | L type/Top view (height 22.2mm)        |
| F       | Flat type/Flat view                    |
| FN      | Flat type/Side view                    |
| FU      | Flat type/Top view (up)                |
| FB      | Flat type/Side view+Top view (bending) |
| R       | Right-angle                            |
| T       | Through-beam type                      |
| D       | Diffuse reflective type                |
| L       | Convergent reflective type             |
| F       | Plastic Fiber cable                    |
| G       | Glass Fiber cable                      |

※It might cause wrong model selection not existing in the above ordering information.

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/ Connector Cables/ Sensor Distribution Boxes/ Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

(Q) Stepper Motors &amp; Drivers &amp; Controllers

(R) Graphic/ Logic Panels

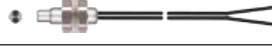
(S) Field Network Devices

(T) Software

# FD/FT/GD/GT Series

## ■ Diffuse Reflective Type

(based on Non-glossy white paper)

| Type      | Appearance                         | Feature                                                                                               | Sensing distance (mm) | Min. Sensing Target <sup>※3</sup> | Allowable Bend Radius | Cable length (L) | Ambient Temperature | Model       |
|-----------|------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------|-----------------------|------------------|---------------------|-------------|
| Bolt type | Standard type                      |  M3                  | 40 <sup>※2</sup>      | Ø0.03                             | R15                   | 1m (Free cut)    | -40 to 70°C         | FD-310-05   |
|           |                                    |  M3                  | 40 <sup>※2</sup>      | Ø0.03                             | R15                   | 2m (Free cut)    | -40 to 70°C         | FD-320-05   |
|           |                                    |  M4                  | 40 <sup>※2</sup>      | Ø0.03                             | R15                   | 2m (Free cut)    | -40 to 70°C         | FD-420-05   |
|           |                                    |  M3 (SUS type, 90mm) | 40 <sup>※2</sup>      | Ø0.03                             | R15 (SUS part R10)    | 2m (Free cut)    | -40 to 70°C         | FDS-320-05  |
|           |                                    |  M3 (SUS type, 45mm) |                       |                                   |                       |                  |                     | FDS2-320-05 |
|           |                                    |  M4 (SUS type, 90mm) |                       |                                   |                       |                  |                     | FDS-420-05  |
|           |                                    |  M4 (SUS type, 45mm) |                       |                                   |                       |                  |                     | FDS2-420-05 |
|           |                                    |  M6                  | 120 <sup>※2</sup>     | Ø0.03                             | R30                   | 2m (Free cut)    | -40 to 70°C         | FD-620-10   |
|           |                                    |  M6 (SUS type, 90mm) | 120 <sup>※2</sup>     | Ø0.03                             | R30 (SUS part R10)    | 2m (Free cut)    | -40 to 70°C         | FDS-620-10  |
|           |                                    |  M6 (SUS type, 45mm) |                       |                                   |                       |                  |                     | FDS2-620-10 |
|           | Heat-resistant type                |  M6                  | 120 <sup>※2</sup>     | Ø0.03                             | R30                   | 2m (Free cut)    | -40 to 105°C        | FD-620-10H  |
|           |                                    |  M6                 | 160 <sup>※2</sup>     | Ø0.03                             | R50                   | 2m (Free cut)    | -40 to 150°C        | FD-620-15H1 |
|           |                                    |  M4 (Glass type)   | 100 <sup>※2</sup>     | Ø0.03                             | R50                   | 2m               | -40 to 250°C        | GD-420-20H2 |
|           |                                    |  M6 (Glass type)   |                       |                                   |                       |                  |                     | GD-620-20H2 |
|           | Flexible type <sup>※4</sup>        |  M3                | 35 <sup>※1</sup>      | Ø0.0125                           | R1                    | 2m (Free cut)    | -40 to 60°C         | FD-320-05R  |
|           |                                    |  M4                |                       |                                   |                       |                  |                     | FD-420-05R  |
|           |                                    |  M6                | 130 <sup>※1</sup>     | Ø0.04                             | R1                    | 2m (Free cut)    | -40 to 60°C         | FD-620-10R  |
|           | Break-resistant type <sup>※4</sup> |  M3                | 35 <sup>※2</sup>      | Ø0.0125                           | R5                    | 2m (Free cut)    | -40 to 60°C         | FD-320-06B  |
|           |                                    |  M4                |                       |                                   |                       |                  |                     | FD-420-06B  |
|           |                                    |  M6                | 100 <sup>※2</sup>     | Ø0.0125                           | R5                    | 2m (Free cut)    | -40 to 60°C         | FD-620-13B  |

※1: The sensing distance is a standard for BF5 Series.

※2: 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.

※3: Min. sensing target is a value measured opaque material in accurate output status and the sensing distance is different with the rated sensing distance ※2.

※4: • **Flexible optical fiber (Multi core):** A large number of ultra-fine cores are all surrounded by cladding. Easy to install it in the many places as the change of the intensity of radiation by bending is small.

• **Break-resistant optical fiber:** The fiber units contain a large number of independent fine fibers, by ensuring a high degree of flexibility. It can be used for moving parts (robot hand) and it is not easily broken.

※Free cut type's sensing distance can be shortened about max. 20% than the normal according to condition of the cable.

[(FC-3) should be used for cutting fiber cable.]

※Glass type is for BF5, BF4 Series.

## ■ Diffuse Reflective Type

(based on Non-glossy white paper)

| Type          | Appearance                         | Feature                                                                                                          | Sensing distance (mm) | Min. Sensing Target <sup>※3</sup> | Allowable Bend Radius | Cable length (L) | Ambient Temperature | Model        |
|---------------|------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------|-----------------------|------------------|---------------------|--------------|
| Bolt type     | Coaxial type                       |  M3                             | 40 <sup>※2</sup>      | Ø0.03                             | R15                   | 2m (Free cut)    | -40 to 70°C         | FD-320-F     |
|               |                                    |  M3                             | 60 <sup>※2</sup>      | Ø0.03                             | R30                   | 2m (Free cut)    | -40 to 70°C         | FD-320-F1    |
|               |                                    |  M6                             | 120 <sup>※2</sup>     | Ø0.03                             | R30                   | 2m (Free cut)    | -40 to 70°C         | FD-620-F2    |
| Cylinder type | Standard type                      |  Ø3mm                           | 40 <sup>※2</sup>      | Ø0.03                             | R15                   | 2m (Free cut)    | -40 to 70°C         | FDC-320-05   |
|               |                                    |  Ø3mm (SUS type, 15mm)          | 40 <sup>※2</sup>      | Ø0.03                             | R15 (SUS part R10)    | 2m (Free cut)    | -40 to 70°C         | FDCS-320-05  |
|               | Break-resistant type <sup>※4</sup> |  Ø3mm                           | 35 <sup>※2</sup>      | Ø0.0125                           | R5                    | 2m (Free cut)    | -40 to 60°C         | FDC-320-06B  |
|               | Standard type                      |  Ø3mm Side view                 | 30 <sup>※1</sup>      | Ø0.0125                           | R15                   | 2m               | -40 to 60°C         | FDCSN-320-05 |
| Flat type     | Flexible type                      |  Top view                       | 35 <sup>※1</sup>      | Ø0.0125                           | R1                    | 1m (Free cut)    | -40 to 60°C         | FDFU-210-05R |
|               |                                    |  Side view                      | 30 <sup>※1</sup>      | Ø0.0125                           | R1                    | 1m (Free cut)    | -40 to 60°C         | FDFN-210-05R |
|               |                                    |  Flat view                      | 30 <sup>※1</sup>      | Ø0.0125                           | R1                    | 1m (Free cut)    | -40 to 60°C         | FDF-210-05R  |
| Right angle   | Flexible type                      |  M6                             | 120 <sup>※1</sup>     | Ø0.04                             | R1                    | 1m (Free cut)    | -40 to 60°C         | FDR-610-10R  |
| Plastic       | Standard type                      |  Plastic injection molding type | 120 <sup>※2</sup>     | Ø0.03                             | R30                   | 2m (Free cut)    | -40 to 70°C         | FDP-320-10   |

## ■ Convergent Reflective Type

(based on Non-glossy white paper)

| Type      | Appearance    | Feature                                                                                                        | Sensing distance (mm) | Min. Sensing Target <sup>※3</sup> | Allowable Bend Radius | Cable length (L) | Ambient Temperature | Model      |
|-----------|---------------|----------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------|-----------------------|------------------|---------------------|------------|
| Flat type | Standard type |  Convergent reflective type | 8 <sup>※1</sup>       | Ø0.0125                           | R25                   | 2m               | -40 to 60°C         | FLF-320-10 |

※1: The sensing distance is a standard for BF5 Series.

※2: 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.

※3: Min. sensing target is a value measured opaque material in accurate output status and the sensing distance is different with the rated sensing distance ※2.

※4: **Break-resistant optical fiber:** The fiber units contain a large number of independent fine fibers, by ensuring a high degree of flexibility. It can be used for moving parts (robot hand) and it is not easily broken.

※Free cut type's sensing distance can be shortened about max. 20% than the normal according to condition of the cable.

[(FC-3) should be used for cutting fiber cable.]

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# FD/FT/GD/GT Series

## ■ Through-Beam Type

(based on Non-glossy white paper)

| Type          | Appearance                         | Feature                                                                                                   | Sensing distance (mm) | Min. Sensing Target <sup>※3</sup> | Allowable Bend Radius | Cable length (L) | Ambient Temperature | Model              |
|---------------|------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------|-----------------------|------------------|---------------------|--------------------|
| Bolt type     | Standard type                      |  M3                      | 150 <sup>※2</sup>     | Ø0.5                              | R15                   | 1m (Free cut)    | -40 to 70°C         | <b>FT-310-05</b>   |
|               |                                    |  M3                      | 150 <sup>※2</sup>     | Ø0.5                              | R15                   | 2m (Free cut)    | -40 to 70°C         | <b>FT-320-05</b>   |
|               |                                    |  M3 (SUS type, 90mm)     | 150 <sup>※2</sup>     | Ø0.5                              | R15 (SUS part R10)    | 2m (Free cut)    | -40 to 70°C         | <b>FTS-320-05</b>  |
|               |                                    |  M3 (SUS type, 45mm)     |                       |                                   |                       |                  |                     | <b>FTS1-320-05</b> |
|               |                                    |  M3 (SUS type, 45mm)     |                       |                                   |                       |                  |                     | <b>FTS2-320-05</b> |
|               |                                    |  M4                      | 500 <sup>※2</sup>     | Ø1                                | R30                   | 2m (Free cut)    | -40 to 70°C         | <b>FT-420-10</b>   |
|               | Heat-resistant type                |  M4 (SUS type, 90mm)     | 500 <sup>※2</sup>     | Ø1                                | R30 (SUS part 10)     | 2m (Free cut)    | -40 to 70°C         | <b>FTS-420-10</b>  |
|               |                                    |  M4 (SUS type, 45mm)     | 500 <sup>※2</sup>     | Ø1                                | R30 (SUS part 10R)    | 2m (Free cut)    | -40 to 70°C         | <b>FTS2-420-10</b> |
|               |                                    |  M4                      | 300 <sup>※2</sup>     | Ø1                                | R30                   | 2m (Free cut)    | -40 to 105°C        | <b>FT-420-10H</b>  |
|               |                                    |  M4                      | 500 <sup>※2</sup>     | Ø1                                | R50                   | 2m (Free cut)    | -40 to 150°C        | <b>FT-420-15H1</b> |
|               |                                    |  M4 (Glass type)         | 400 <sup>※2</sup>     | Ø1                                | R25                   | 2m               | -40 to 250°C        | <b>GT-420-13H2</b> |
|               |                                    |  M4 (Glass type)         | 400 <sup>※2</sup>     | Ø1                                | R25                   | 2m               | -40 to 250°C        | <b>GT-420-13H2</b> |
|               | Flexible type <sup>※4</sup>        |  M3                    | 110 <sup>※1</sup>     | Ø0.3                              | R1                    | 2m (Free cut)    | -40 to 60°C         | <b>FT-320-05R</b>  |
|               |                                    |  M4                    | 500 <sup>※1</sup>     | Ø0.5                              | R1                    | 2m (Free cut)    | -40 to 60°C         | <b>FT-420-10R</b>  |
|               | Break-resistant type <sup>※4</sup> |  M3                    | 110 <sup>※1</sup>     | Ø0.3                              | R5                    | 2m (Free cut)    | -40 to 60°C         | <b>FT-320-06B</b>  |
|               |                                    |  M4                    | 400 <sup>※1</sup>     | Ø0.6                              | R5                    | 2m (Free cut)    | -40 to 60°C         | <b>FT-420-13B</b>  |
| Cylinder type | Standard type                      |  Ø1.5mm                | 150 <sup>※2</sup>     | Ø0.5                              | R15                   | 2m (Free cut)    | -40 to 70°C         | <b>FTC-1520-05</b> |
|               |                                    |  Ø2mm                  | 150 <sup>※2</sup>     | Ø0.5                              | R15                   | 2m (Free cut)    | -40 to 70°C         | <b>FTC-220-05</b>  |
|               |                                    |  Ø2mm (SUS type, 15mm) | 150 <sup>※2</sup>     | Ø0.5                              | R15 (SUS part 10R)    | 2m (Free cut)    | -40 to 70°C         | <b>FTCS-220-05</b> |
|               |                                    |  Ø3mm                  | 150 <sup>※2</sup>     | Ø1                                | R30                   | 2m (Free cut)    | -40 to 70°C         | <b>FTC-320-10</b>  |

※1: The sensing distance is a standard for BF5 Series.

※2: 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.

※3: Min. sensing target is a value measured opaque material in accurate output status and the sensing distance is different with the rated sensing distance ※2.

※4: • **Flexible optical fiber (Multi core):** A large number of ultra-fine cores are all surrounded by cladding. Easy to install it in the many places as the change of the intensity of radiation by bending is small.

• **Break-resistant optical fiber:** The fiber units contain a large number of independent fine fibers, by ensuring a high degree of flexibility. It can be used for moving parts (robot hand) and it is not easily broken.

※Free cut type's sensing distance can be shortened about max. 20% than the normal according to condition of the cable.

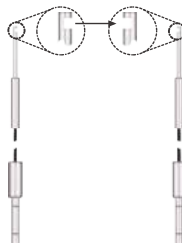
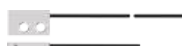
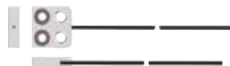
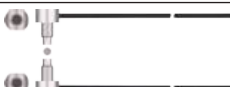
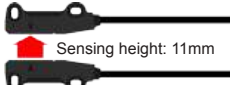
[(FC-3) should be used for cutting fiber cable.]

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

※Glass type is for BF5R, BF4R Series.

## ■ Through-Beam Type

(based on Non-glossy white paper)

| Type          |                                    | Appearance                                                                                                  | Feature                             | Sensing distance (mm) | Min. Sensing Target <sup>※3</sup> | Allowable Bend Radius | Cable length (L) | Ambient Temperature | Model         |
|---------------|------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|-----------------------------------|-----------------------|------------------|---------------------|---------------|
| Cylinder type | Flexible type <sup>※4</sup>        |                            | Ø3mm                                | 110 <sup>※1</sup>     | Ø0.3                              | R1                    | 2m (Free cut)    | -40 to 60℃          | FTC-220-05R   |
|               | Break-resistant type <sup>※4</sup> |                            | Ø3mm                                | 110 <sup>※2</sup>     | Ø0.3                              | R5                    | 2m (Free cut)    | -40 to 60℃          | FTC-1520-06B  |
|               | Standard type                      |                            | Ø2.47mm<br>Side view                | 120 <sup>※1</sup>     | Ø0.0125                           | R15                   | 2m               | -40 to 60℃          | FTCSN-2520-05 |
| Flat type     | Flexible type                      |                            | Top view                            | 110 <sup>※1</sup>     | Ø0.04                             | R1                    | 1m (Free cut)    | -40 to 60℃          | FTFU-210-05R  |
|               |                                    |                            | Side view                           | 110 <sup>※1</sup>     | Ø0.04                             | R1                    | 1m (Free cut)    | -40 to 60℃          | FTFN-210-05R  |
|               |                                    |                            | Flat view                           | 100 <sup>※1</sup>     | Ø0.04                             | R1                    | 1m (Free cut)    | -40 to 60℃          | FTF-210-05R   |
|               |                                    |                           | Side view+<br>Top view<br>(Bending) | 110 <sup>※1</sup>     | Ø0.04                             | R1                    | 1m (Free cut)    | -40 to 60℃          | FTFB-210-05R  |
|               |                                    |                          | L type Top view<br>height 12.2mm    | 500 <sup>※1</sup>     | Ø0.06                             | R1                    | 1m (Free cut)    | -40 to 60℃          | FTLU-310-10R  |
|               | L type Top view<br>height 17.2mm   |                                                                                                             | FTLU1-310-10R                       |                       |                                   |                       |                  |                     |               |
|               | L type Top view<br>height 22.2mm   |                                                                                                             | FTLU2-310-10R                       |                       |                                   |                       |                  |                     |               |
| Right angle   | Flexible type                      |                          | M4                                  | 460 <sup>※1</sup>     | Ø0.5                              | R1                    | 1m (Free cut)    | -40 to 60℃          | FTR-410-10R   |
| Area type     | Flexible type                      | <br>Sensing height: 11mm | Ø1mm                                | 750 <sup>※5</sup>     | Ø0.07                             | R2                    | 1m (Free cut)    | -40 to 60℃          | FTW11-210-10R |
| Plastic       | Standard type                      |                          | Plastic injection molding type      | 500 <sup>※2</sup>     | Ø1                                | R30                   | 2m (Free cut)    | -40 to 70℃          | FTP-320-10    |

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It is applied to 40% of sensing distance for BF3RX.

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• **Break-resistant optical fiber:** The fiber units contain a large number of independent fine fibers, by ensuring a high degree of flexibility. It can be used for moving parts (robot hand) and it is not easily broken.

※5: The sensing distance is a standard for BF5 Series, and it is varied by operation mode.

(Ultra fast mode: 450mm / Fast mode: 750mm / Standard mode: 1400mm / Long distance mode, Ultra long distance mode: 1800mm)

※Free cut type's sensing distance can be shortened about max. 20% than the normal according to condition of the cable.

[(FC-3) should be used for cutting fiber cable.]

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(Q) Stepper Motors & Drivers & Controllers

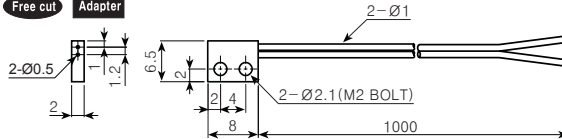
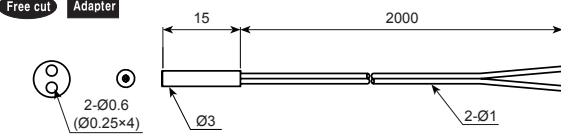
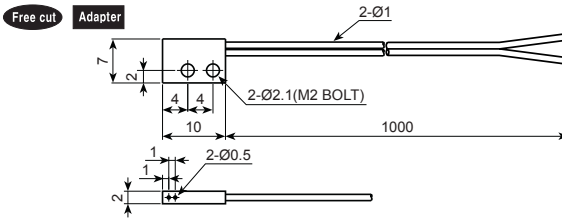
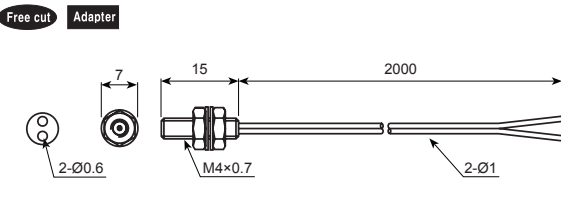
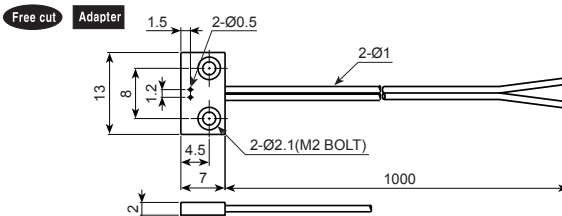
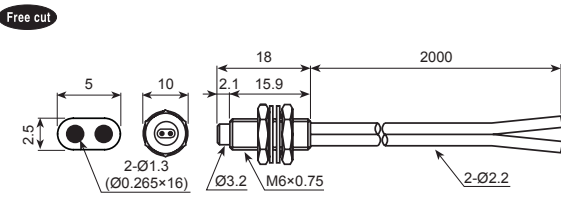
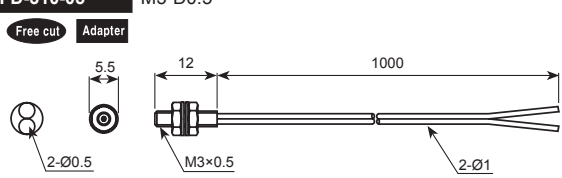
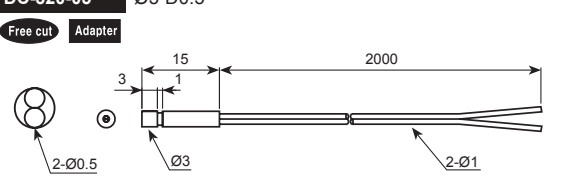
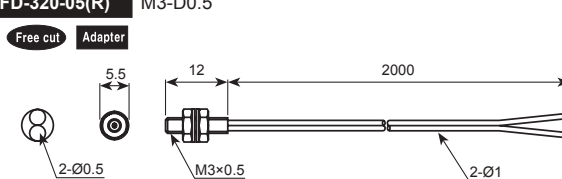
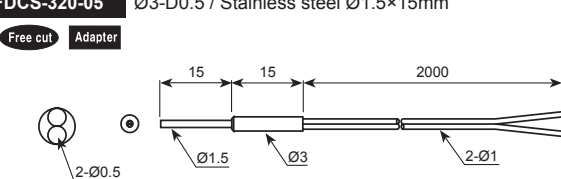
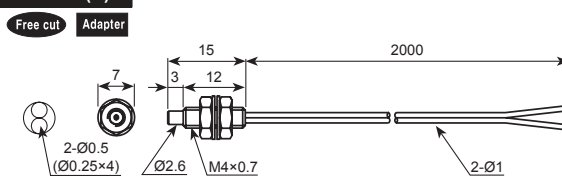
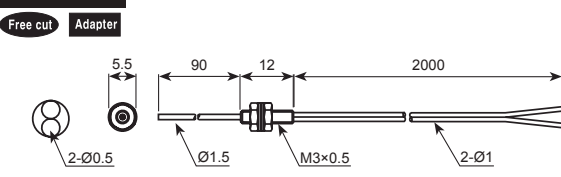
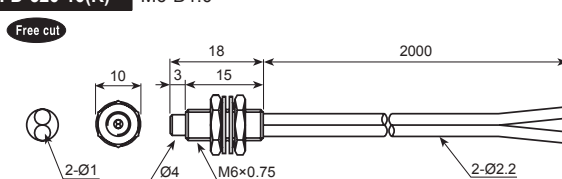
(R) Graphic/ Logic Panels

(S) Field Network Devices

(T) Software

# FD/FT/GD/GT Series

## ■ Dimensions

| Model                                   | Diffuse reflective type                                                                                                                 | Model                                  | Diffuse reflective type                                                                                                     |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>FDUF-210-05R</b><br>Free cut Adapter | M2-D0.5 / ※Hood material: Stainless steel type 303<br> | <b>FDC-320-06B</b><br>Free cut Adapter | M3-D0.6<br>                               |
| <b>FDFN-210-05R</b><br>Free cut Adapter | M2-D0.5 / ※Hood material: Stainless steel type 303<br> | <b>FD-420-06B</b><br>Free cut Adapter  | M4-D0.6<br>                               |
| <b>FDF-210-05R</b><br>Free cut Adapter  | M2-D0.5 / ※Hood material: Stainless steel type 303<br> | <b>FD-620-13B</b><br>Free cut          | M6-D1.3<br>                               |
| <b>FD-310-05</b><br>Free cut Adapter    | M3-D0.5<br>                                           | <b>FDC-320-05</b><br>Free cut Adapter  | Ø3-D0.5<br>                              |
| <b>FD-320-05(R)</b><br>Free cut Adapter | M3-D0.5<br>                                          | <b>FDCS-320-05</b><br>Free cut Adapter | Ø3-D0.5 / Stainless steel Ø1.5×15mm<br> |
| <b>FD-420-05(R)</b><br>Free cut Adapter | M4-D0.5<br>                                          | <b>FDS-320-05</b><br>Free cut Adapter  | M3-D0.5 / Stainless steel Ø1.5×90mm<br> |
| <b>FD-620-10(R)</b><br>Free cut         | M6-D1.0<br>                                          |                                        |                                                                                                                             |

## ■ Dimensions

| Model                                  | Diffuse reflective type                                | Model                                  | Diffuse reflective type                          |
|----------------------------------------|--------------------------------------------------------|----------------------------------------|--------------------------------------------------|
| <b>FD-320-06B</b><br>Free cut Adapter  | M3-D0.6<br>                                            | <b>FDS2-320-05</b><br>Free cut Adapter | M3-D0.5 / Stainless steel Ø1.5x45mm<br>          |
| <b>FDS-420-05</b><br>Free cut Adapter  | M4-D0.5 / Stainless steel Ø1.5x90mm<br>                | <b>FD-320-F1</b><br>Free cut Adapter   | Co-axial M3 / Ø0.5, Ø0.25x9<br>                  |
| <b>FDS2-420-05</b><br>Free cut Adapter | M4-D0.5 / SUS Ø1.5x45mm<br>                            | <b>FD-620-F2</b><br>Free cut           | Co-axial M6 / Ø1.0, Ø0.265x16<br>                |
| <b>FDS-620-10</b><br>Free cut          | M6-D1.0 / SUS Ø2.5x90mm<br>                            | <b>FD-620-10H</b><br>Free cut          | M6-D1.0 / Heat-resistant 105°C<br>               |
| <b>FDS2-620-10</b><br>Free cut         | M6-D1.0 / SUS Ø2.5x45mm<br>                            | <b>FD-620-15H1</b><br>Free cut         | M6-D1.5 / Heat-resistant 150°C<br>               |
| <b>FDP-320-10</b><br>Free cut          | D1.0x2 / Plastic<br>                                   | <b>GD-420-20H2</b><br>Free cut         | M4-D0.05x1000 / Heat-resistant 250°C / Glass<br> |
| <b>FD-320-F</b><br>Free cut Adapter    | Co-axial M3 / Ø0.5, Ø0.25x4<br>                        | <b>GD-620-20H2</b><br>Free cut         | M6-D0.05x1000 / Heat-resistant 250°C<br>         |
| <b>FDR-610-10R</b><br>Free cut         | M6-D1.0 / ※Hood material: Stainless steel type 303<br> | <b>FDCSN-320-05</b><br>Free cut        | Ø3 / Stainless steel Ø1.47x20 / Side view<br>    |

- (A) Photoelectric Sensors
- (B) Fiber Optic Sensors
- (C) Door/Area Sensors
- (D) Proximity Sensors
- (E) Pressure Sensors
- (F) Rotary Encoders
- (G) Connectors/ Connector Cables/ Sensor Distribution Boxes/ Sockets
- (H) Temperature Controllers
- (I) SSRs / Power Controllers
- (J) Counters
- (K) Timers
- (L) Panel Meters
- (M) Tacho / Speed / Pulse Meters
- (N) Display Units
- (O) Sensor Controllers
- (P) Switching Mode Power Supplies
- (Q) Stepper Motors & Drivers & Controllers
- (R) Graphic/ Logic Panels
- (S) Field Network Devices
- (T) Software

# FD/FT/GD/GT Series

## ■ Dimensions

| Model             | Convergent reflective type           |
|-------------------|--------------------------------------|
| <b>FLF-320-10</b> | M3-D1.0 / convergent reflective type |

| Model                | Through-beam type                                  | Model                | Through-beam type |
|----------------------|----------------------------------------------------|----------------------|-------------------|
| <b>FTFU-210-05R</b>  | M2-D0.5 / ※Hood material: Stainless steel type 303 | <b>FT-310-05</b>     | M3-D0.5           |
| <b>FTFN-210-05R</b>  | M2-D0.5 / ※Hood material: Stainless steel type 303 | <b>FT-320-05(R)</b>  | M3-D0.5           |
| <b>FTF-210-05R</b>   | M2-D0.5 / ※Hood material: Stainless steel type 303 | <b>FTC-220-05(R)</b> | Ø2-D0.5           |
| <b>FTFB-210-05R</b>  | M2-D0.5 / ※Hood material: Aluminum                 | <b>FT-420-10R</b>    | M4-D1.0           |
| <b>FTLU-310-10R</b>  | M2-D0.5 / ※Hood material: Aluminum                 | <b>FT-320-06B</b>    | M3-D0.6           |
| <b>FTLU1-310-10R</b> |                                                    | <b>FTC-1520-06B</b>  | Ø1.5-D0.6         |
| <b>FTLU2-310-10R</b> |                                                    | <b>FT-420-13B</b>    | M4-D1.3           |

| Model         | L1   | L2 |
|---------------|------|----|
| FTLU-310-10R  | 12.2 | 10 |
| FTLU1-310-10R | 17.2 | 15 |
| FTLU2-310-10R | 22.2 | 20 |

## ■ Dimensions

| Model                                  | Through-beam type                                      | Model                                              | Through-beam type                                    |
|----------------------------------------|--------------------------------------------------------|----------------------------------------------------|------------------------------------------------------|
| <b>FTC-1520-05</b><br>Free cut Adapter | Ø1.5-D0.5<br>                                          | <b>FTP-320-10</b><br>Free cut                      | D1.0 / Plastic<br>                                   |
| <b>FTCS-220-05</b><br>Free cut Adapter | Ø2-D0.5 / SUS Ø1.0×15mm<br>                            | <b>FTS-420-10</b><br>Free cut                      | M4-D1.0 / Stainless steel Ø1.5×90m<br>               |
| <b>FTS-320-05</b><br>Free cut Adapter  | M3-D0.5 / SUS Ø1.0×90mm<br>                            | <b>FTS2-420-10</b><br>Free cut                     | M4-D1.0 / Stainless steel Ø1.5×45m<br>               |
| <b>FTS1-320-05</b><br>Free cut Adapter | M3-D0.5 / SUS Ø1.0×35mm<br>                            | <b>FT-420-10H</b><br>Free cut                      | M4-D1.0 / Heat-resistant 105°C<br>                   |
| <b>FTS2-320-05</b><br>Free cut Adapter | M3-D0.5 / SUS Ø1.0×45mm<br>                            | <b>FT-420-15H1</b><br>Free cut                     | M4-D1.5 / Heat-resistant 150°C<br>                   |
| <b>FT-420-10</b><br>Free cut           | M4-D1.0<br>                                            | <b>GT-420-13H2</b><br>Free cut                     | M4-D1.3 / Heat-resistant Max. 250°C / Glass<br>      |
| <b>FTC-320-10</b><br>Free cut          | Ø3-D1.0<br>                                            | <b>Glass fiber with Ø2.9 sus protective armor.</b> |                                                      |
| <b>FTW11-210-10R</b><br>Free cut       | M2-D1.0<br>                                            | <b>FTR-410-10R</b><br>Free cut                     | M4-D1.0 ※Hood material: Stainless steel type 303<br> |
| <b>FTCSN-2520-05</b>                   | Ø2.47-D0.5 / Stainless steel Ø0.8×15mm / Side view<br> |                                                    |                                                      |

|                                                                      |
|----------------------------------------------------------------------|
| (A) Photoelectric Sensors                                            |
| (B) Fiber Optic Sensors                                              |
| (C) Door/Area Sensors                                                |
| (D) Proximity Sensors                                                |
| (E) Pressure Sensors                                                 |
| (F) Rotary Encoders                                                  |
| (G) Connectors/ Connector Cables/ Sensor Distribution Boxes/ Sockets |
| (H) Temperature Controllers                                          |
| (I) SSRs / Power Controllers                                         |
| (J) Counters                                                         |
| (K) Timers                                                           |
| (L) Panel Meters                                                     |
| (M) Tacho / Speed / Pulse Meters                                     |
| (N) Display Units                                                    |
| (O) Sensor Controllers                                               |
| (P) Switching Mode Power Supplies                                    |
| (Q) Stepper Motors & Drivers & Controllers                           |
| (R) Graphic/ Logic Panels                                            |
| (S) Field Network Devices                                            |
| (T) Software                                                         |

# FD/FT/GD/GT Series

## ■ Lens Unit For Long Distance Detection (sold separately)

### ◎ Model : FTL-M26



### ◎ Mounting of lens

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

### ◎ Ambient temperature range of lens unit

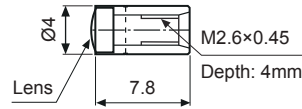
It should be used within -40 to 100°C. (not over 100°C.)

### ◎ Applicable fiber optic cable and max. mounting distance

- FT-420-10 : 2500mm
- FT-420-10H : 1500mm

### ◎ Dimensions

(unit: mm)

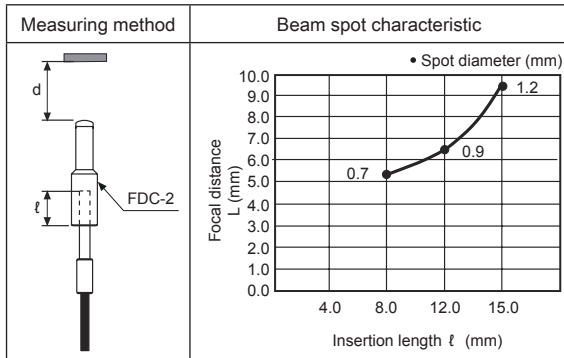


## ■ Micro Spot Fiber Optic Cable And Lens Unit (sold separately)

### ◎ Model

- Fiber optic cable: **FDC-320-F**
- Micro spot lens: **FDC-2**

### ◎ Feature data



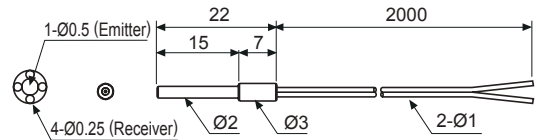
### ◎ Ambient temperature range of lens unit

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

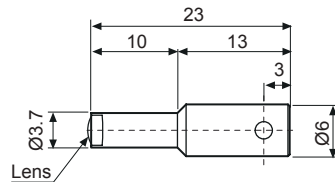
### ◎ Dimensions

(unit: mm)

#### • FDC-320-F



#### • FDC-2



## ■ Protection Tube For Fiber Optic Cable (sold separately)

### ◎ Application

: Protect cable from impact or cutting (unit: mm)

| Model   | Appearance and Dimension | L    |
|---------|--------------------------|------|
| FTH-305 |                          | 500  |
| FTH-310 |                          | 1000 |
| FTH-405 |                          | 500  |
| FTH-410 |                          | 1000 |
| FDH-605 |                          | 500  |
| FDH-610 |                          | 1000 |

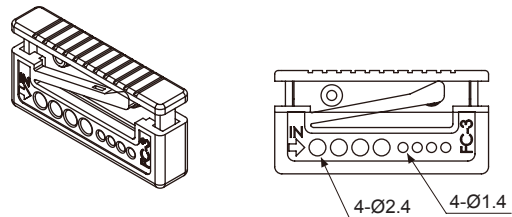
※Additional 8mm is for tube coupling.

## ■ Accessory

### ◎ Fiber cutter

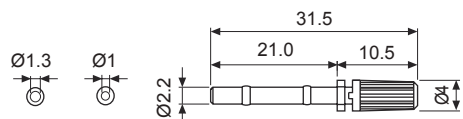
Applications: Cutting fiber optic cable, free cut type

#### • FC-3



### ◎ Adapter

Adapter: Adapter marked fiber optic cable should be used with adapter (unit: mm)



※The inside diameter  $\varnothing 1$  (standard and black)

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