

Retroreflective Type Fiber Optic Units








FD/GD Series






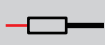

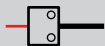




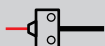





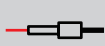


For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Icon Overview

-  **Std.** Standard:
Fiber optic units for general purpose
-  **Heat-resistant:**
Fiber optic units for the high-temperature environment (-60 to 350°C)
-  **Vacuum-resistant:**
Fiber optic units for the high-temperature (-60 to 250°C) and vacuum environment
-  **Bending-resistant (R5):**
Fiber optic units for withstanding repeated bending
-  **Flexible (R1, R2):**
Fiber optic units for withstanding repeated flexing

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.

Retroreflective 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 |

Retroreflective 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) 120 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)

Retroreflective 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 |

Retroreflective 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 |

Retroreflective 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 |
| FDfN-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 |

Retroreflective 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)

Retroreflective 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 |

Retroreflective 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 |

Retroreflective 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 | <p>• Side view</p> | — |

Retroreflective 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 | | <table border="1"> <thead> <tr> <th>Measuring method</th> <th>Beam spot characteristic</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table> | Measuring method | Beam spot characteristic | | |
| Measuring method | Beam spot characteristic | | | | | | |
| | | | | | | | |

■ **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 | |

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