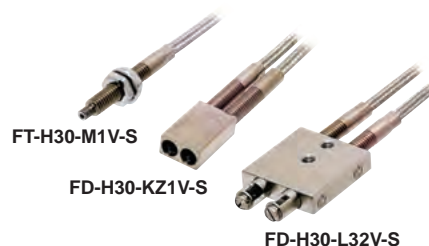
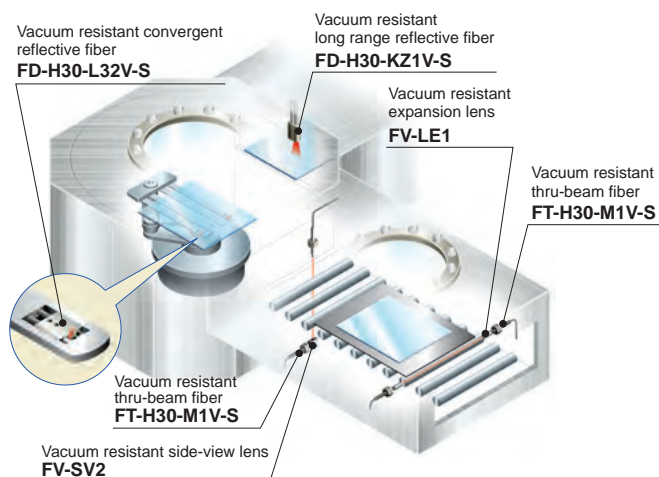


Vacuum-resistant

- Usable in high-temperatures of 300 °C 572 °F vacuum
- The leakage of **FV-BR1** is still less than a very slight $1.33 \times 10^{-10} \text{ Pa} \cdot \text{m}^3/\text{s}$ [He], so that it can be used in vacuums with confidence.

Applications

Detecting an FPD in vacuum chamber



Highly resistant to repeated bending

Because it has a bending durability of over 100,000 times (R20 mm **R0.787 in**), it is highly resistant to repeated bending and is optimal for mounting on moving robot hand.



LIST OF FIBERS

Thru-beam type (one pair set)

| Type | Shape of fiber head (mm) | Model No. | Bending radius (mm) | Fiber cable length | Sensing range (mm in) | | | Beam axis dia. (mm) | Ambient temp. | Dimensions |
|----------------------------|---|---------------------|---------------------|--------------------|-------------------------------------|---|--|---------------------|----------------|------------|
| | | | | | FX-500 series | U-LG LONG FAST H-SP | FX-101 (Upper value) FX-102 (Lower value) | | | |
| Vacuum-resistant Thru-beam | 300 °C Lens mountable (FV-LE1/SV2) M4 W9.5 x H5.2 x D15 | FT-H30-M1V-S (Note) | R18 | 1 m | STD 270 10.630 HYPR 1,000 39.370 | 590 23.228 470 18.504 160 6.299 55 2.165 | 110 4.331 280 11.024 | ø1.2 | -30 to +300 °C | P.50 |

Note: Sold as a set comprising vacuum type fiber + photo-terminal (**FV-BR1**) + fiber at atmospheric side (**FT-J8**).

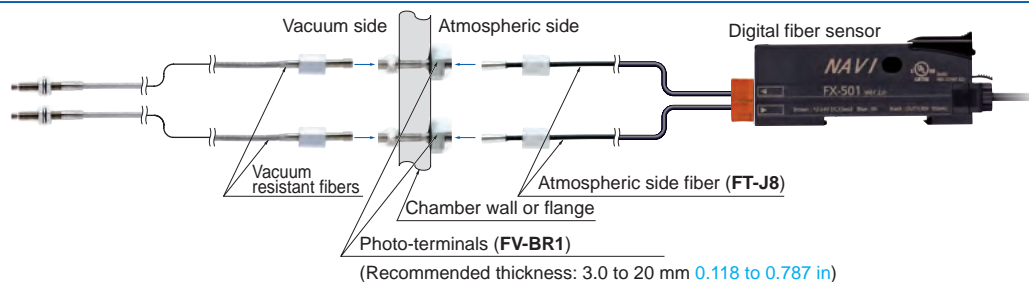
Reflective type

| Type | Shape of fiber head (mm) | Model No. | Bending radius (mm) | Fiber cable length | Sensing range (mm in)(Note 2) | | | Ambient temp. | Dimensions |
|--|---|------------------------|---------------------|--------------------|---|---|---|----------------|------------|
| | | | | | FX-500 series | U-LG LONG FAST H-SP | FX-101 (Upper value) FX-102 (Lower value) | | |
| Vacuum-resistant Reflective | 300 °C, Rectangular head W9.5 x H5.2 x D15 | FD-H30-KZ1V-S (Note 1) | R18 | 1 m | STD 20 to 200 0.787 to 7.874 HYPR 5 to 500 0.197 to 19.685 | 10 to 340 0.394 to 13.386 15 to 270 0.591 to 10.630 20 to 120 0.787 to 4.724 20 to 45 0.787 to 1.772 | 25 to 80 0.984 to 3.150 10 to 220 0.394 to 8.661 | -30 to +300 °C | P.61 |
| Vacuum-resistant Convergent reflective | 300 °C, Glass substrate detection W19 x H5 x D27 | FD-H30-L32V-S (Note 1) | | 3 m | STD 8 0.315 HYPR 18 0.709 | 12 0.472 10 0.394 5.5 0.217 1.5 to 3 0.059 to 0.118 | 2.5 to 6.5 0.098 to 0.256 0 to 11 0 to 0.433 | | |

Notes: 1) Sold as a set comprising vacuum type fiber + photo-terminal (**FV-BR1**) + fiber at atmospheric side (**FT-J8**).

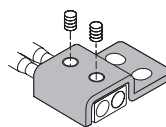
2) The sensing range of reflective type is the value for transparent glass 100 × 100 × t0.7 mm **3.937 × 3.937 × t0.028 in**.

Vacuum-resistant fiber set contents




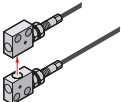
Model No. when ordering individually as spare parts

- Vacuum resistant fiber
FT-H30-M1V (one pair set)
FD-H30-KZ1V
FD-H30-L32V
- Photo-terminal
FV-BR1 (one pair set)
Atmospheric side fiber
FT-J8 (one pair set)
- Mounting bracket for **FD-H30-KZ1V(-S)**
MS-FD-2



FIBER OPTIONS

Lens (For thru-beam fiber)

| Designation | | Model No. | Description | | | | | | | | | | | | | | | | |
|--------------------------|--|-----------|---|--|-------------------------------------|-------------------------------------|-------------------------|------------------------|----------------------|----------------------|----------------------|------------------------|--------|--|--|--|--|--|--|
| For thru-beam type fiber | Vacuum resistant expansion lens (Note 1) | FV-LE1 |  | Increases the sensing range 4 times or more. • Ambient temperature: -60 to +350 °C -76 to +662 °F (Note 3) • Beam axis dia: ø3.6 mm ø0.142 in Sensing range (mm in) [Lens on both sides] (Note 4) | | | | | | | | | | | | | | | |
| | | | | Amplifier | | FX-500 series | | | | | | FX-100 series | | | | | | | |
| | | | | Fiber | Mode | HYP | U-LG | LONG | STD | FAST | H-SP | FX-101 | FX-102 | | | | | | |
| | | | | FT-H30-M1V-S | 3,600 141.732 (Note 2) | 3,600 141.732 (Note 2) | 3,400 133.858 | 1,500 59.055 | 900 35.433 | 370 14.567 | 450 17.717 | 1,600 62.992 | | | | | | | |
| | Vacuum resistant side-view lens (Note 1) | FV-SV2 |  | Beam axis is bent by 90°. • Ambient temperature: -60 to +300 °C -76 to +572 °F (Note 3) • Beam axis dia: ø3.7 mm ø0.146 in Sensing range (mm in) [Lens on both sides] (Note 4) | | | | | | | | | | | | | | | |
| | | | | Amplifier | | FX-500 series | | | | | | FX-100 series | | | | | | | |
| | | | | Fiber | Mode | HYP | U-LG | LONG | STD | FAST | H-SP | FX-101 | FX-102 | | | | | | |
| | | | | FT-H30-M1V-S | 3,600 141.732 (Note 2) | 3,600 141.732 (Note 2) | 3,400 133.858 | 1,500 59.055 | 900 35.433 | 370 14.567 | 450 17.717 | 1,600 62.992 | | | | | | | |

Notes: 1) Be careful when installing the thru-beam type fiber equipped with the lens, as the beam envelope becomes narrow and alignment is difficult.

2) The fiber cable length practically limits the sensing range.

3) Refer to previous page for the ambient temperature of fibers to be used in combination.

4) The fiber cable length for the **FT-H30-M1V-S** is 1 m **3.281 ft**. The sensing ranges in HYPR, U-LG and LONG of **FX-500** series, in **FX-102** take into account the length of the **FT-J8** atmospheric side fiber.