# Features/Applications

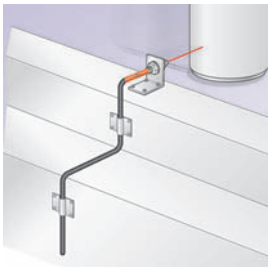
## Standard Models

### Flexible (New Standard)

R

- Perform wiring without worrying about the bending radius.
- Choose the model to suit the installation space from a variety of shapes.

Flexible fiber | Conventional fiber



Fewer problems ◀ Light intensity affected by bends in fiber
Fiber broken by getting caught on surrounding objects

#### ■ Feature: Multicore (Flexible) Fibers


A large number of ultrafine cores are all surrounded by cladding. As a result, the fiber is flexible and can be bent without significantly reducing the light intensity. This helps solve problems, such as fiber being broken by getting caught on other objects.

#### ■ Ratings/Characteristics

| | |
|---|---|
| Min. sensing object | 0.005-mm dia. |
| Min. bending radius | 1 mm |
| Ambient temperature range | –40°C to 70°C (no icing or condensation) |
| Fiber material | Plastic (Free-cut) |

### Standard

- Choose the model to suit the installation space from a variety of shapes.
- New flat models allow space savings and simple installation.

Screw-shaped | Cylindrical | Flat | Equipped with sleeve

#### ■ Feature: Flat Models

Flat models, which allow simple attachment and wiring, have been added to the lineup. Choose the model to suit the installation space from 3 sensing directions and 2 sizes, standard and small.

#### ■ Ratings/Characteristics

| | |
|---|---|
| Min. sensing object | 0.005-mm dia. |
| Min. bending radius | 10 or 25 mm* |
| Ambient temperature range | –40°C to 70°C (no icing or condensation) |
| Fiber material | Plastic (Free-cut) |

*Depends on the fiber diameter.

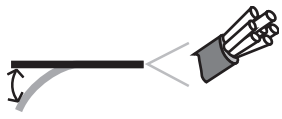
### Break-resistant

B

- Bundle-fiber models can be used for moving parts.
- Capable of withstanding at least one million repeated bends (in typical applications).

#### ■ Feature: Bundle Fibers

The Fiber Units contain a large number of independent fine fibers, ensuring a high degree of flexibility.



#### ■ Ratings/Characteristics

| | |
|---|---|
| Min. sensing object | 0.005-mm dia. |
| Min. bending radius | 4 mm (withstands repeated bending) |
| Ambient temperature range | –40°C to 70°C (no icing or condensation) |
| Fiber material | Plastic (Free-cut) |

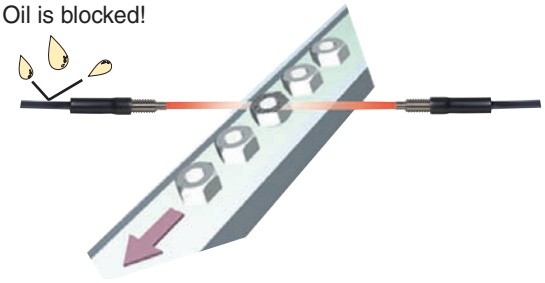
## Standard Models

### Fluorine Coating

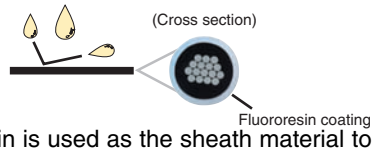
U

- Fiber degradation due to oil is prevented using a fluororesin coating.
- Free cutting is possible with cutter provided.

Oil is blocked!



### ■ Feature: Fluorine Coating




Fluororesin is used as the sheath material to prevent fiber degradation resulting from oil adhesion.
Note: The tip of the head is not chemical-resistant.

### ■ Ratings/Characteristics

| | |
|---|---|
| Min. sensing object | 0.005-mm dia. |
| Min. bending radius | 4 mm |
| Ambient temperature range | –40°C to 70°C (with no icing or condensation) |
| Fiber material | Plastic (Free-cut) |

### Fiber Customization Service (Fiber Length, Sleeve Length, and Bends)

This customization/delivery service applies to standard models. It is aimed at reducing industrial waste and simplifying the installation procedure.

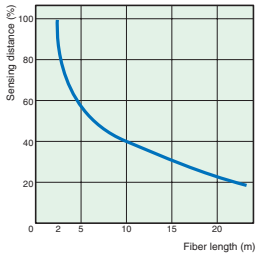
#### Fiber Length

■Aplicable Models
Standard models

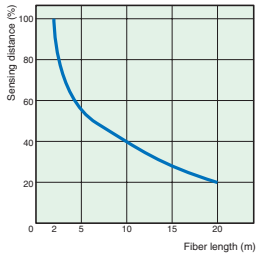
■Model Number Used for Ordering
Standard model number + Fiber length
Fiber length: 0.3 m, 0.5 m, or any length from 1 to 20 m (in 1-m units)

■ Fiber Length vs. Sensing Distance

Through-beam Fiber Units (Fiber length of 2 m corresponds to 100%.)




Fiber Units with Reflective Sensors (Fiber length of 2 m corresponds to 100%.)



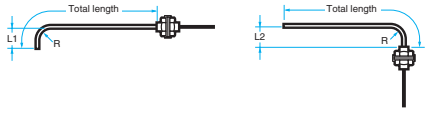

#### Sleeve Length and Bends

■Applicable Models
E32-TC200B/E32-TC200F
E32-DC200B/E32-DC200F
The E32-DC200B cannot be bent.

■ Model Number Used When Changing Only the Sleeve Length


Model: E32-*1C200*2-S*3

■ Model Number Used When Changing the Sleeve Length and Bends




Model Numbers Incorporating the Bending Radius, R, and Dimensions L1 and L2

Specifying L1 Only (Units: mm)

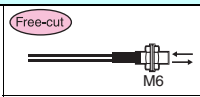
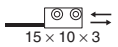
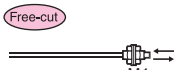
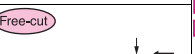
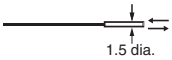
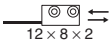
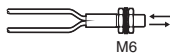
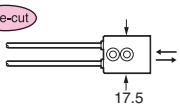
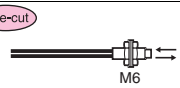
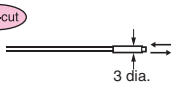
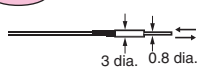
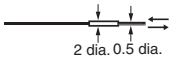
| Bending radius | L1 (±1) | Model number |
|---|---|---|
| R5 | 10 | E32-*1C200*2-S*3A1 |
| | 15 | E32-*1C200*2-S*3A2 |
| R7.5 | 12.5 | E32-*1C200*2-S*3B1 |
| | 17.5 | E32-*1C200*2-S*3B2 |
| R10 | 15 | E32-*1C200*2-S*3C1 |
| | 20 | E32-*1C200*2-S*3C2 |
| R12.5 | 17.5 | E32-*1C200*2-S*3D1 |
| | 22.5 | E32-*1C200*2-S*3D2 |

Specifying L2 Only (Units: mm)

| Bending radius | L2 (±1) | Model number |
|---|---|---|
| R5 | 5 | E32-*1C200*2-S*3A3 |
| | 10 | E32-*1C200*2-S*3A4 |
| R7.5 | 7.5 | E32-*1C200*2-S*3B3 |
| | 17.5 | E32-*1C200*2-S*3B4 |
| R10 | 10 | E32-*1C200*2-S*3C3 |
| | 20 | E32-*1C200*2-S*3C4 |
| R12.5 | 12.5 | E32-*1C200*2-S*3D3 |
| | 22.5 | E32-*1C200*2-S*3D4 |

*1: Insert "T" for Through-beam Fiber Units and "D" for Fiber Units with Reflective Sensors.
*2: Insert the "B" or "F" that appears at the end of the original model number.
*3: Insert "50" if the total length is 50 mm. The total length must not exceed 120 mm.

## Fiber Units with Reflective Sensors

| Type | | Appearance (mm) *3 | Sensing distance (mm) *1 | (Min. sensing object) (mm) *2 | Min. bending radius (mm) | Features | Model number |
|---|---|---|---|---|---|---|---|
| Standard models | Break-resistant | Standard size | Free-cut   | 300<br>170<br>120 (50) | (0.005 dia.) | B<br>R4 | M6 screw | E32-D11 |
| | | | Free-cut   | | | | Flat shape | E32-D15XB |
| | | Small size | Free-cut   | 110<br>70<br>45 (20) | | | M4 screw (small) | E32-D21B |
| | | | Free-cut   | | | | 3-dia. cylinder (small) | E32-D221B |
| | | | Free-cut   | 50<br>30<br>20 (8) | | | M3 screw (small) | E32-D21 |
| | | |   | | | | 1.5-dia. cylinder (small) | E32-D22B |
| | | | Free-cut   | 85<br>50<br>30 (15) | | | Flat shape (small) | E32-D25XB |
| | Coating | | Free-cut   | 300<br>170<br>120 (50) | (0.005 dia.) | U<br>R4 | M6 screw, fluorine coating | E32-D11U |
| Special-beam models | Long-distance, high-power | | Free-cut   | 40 to 1,000<br>40 to 700<br>40 to 450 (40 to 240) | --- | B<br>R4 | Large built-in lens, screw mounting | E32-D16 |
| | | | Free-cut   | 650<br>400<br>260 (110) | (0.005 dia.) | R25 | M6 screw | E32-D11L |
| | | | Free-cut   | 210<br>130<br>80 (35) | | R10 | M4 screw | E32-D21L |
| | | | Free-cut   | | | | 3-dia. cylinder | E32-D22L |
| | Ultracompact, thin-sleeve | | Free-cut   Sleeve cannot be bent. | 25<br>16<br>10 (4) | | R4 | 0.8-dia. sleeve | E32-D33 |
| | | |   Sleeve cannot be bent. | 5<br>3<br>2 (0.8) | | | 0.5-dia. sleeve | E32-D331 |

*1. The sensing distances are for white paper.
*2. The values for the minimum sensing object are representative values that indicate values obtained in standard mode with the sensing distance and sensitivity set to optimum values.
*3. Free-cut Indicates models that allow free cutting.

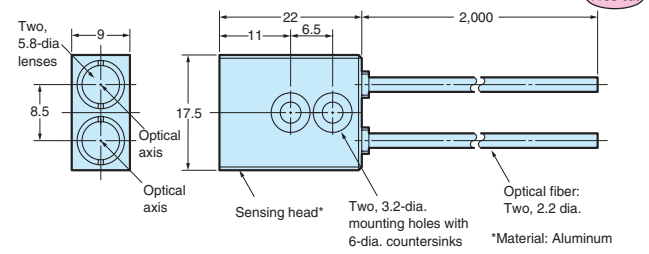
# Fiber Units with Reflective Sensors

## Long-distance/High-power Models

Free-cut Indicates models that allow free cutting.

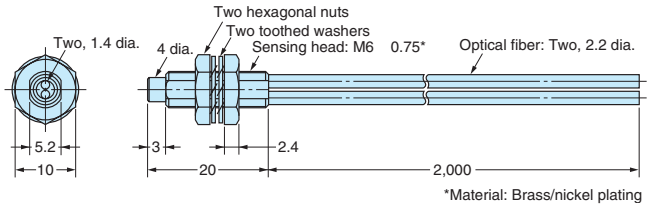
### E32-D16

Free-cut



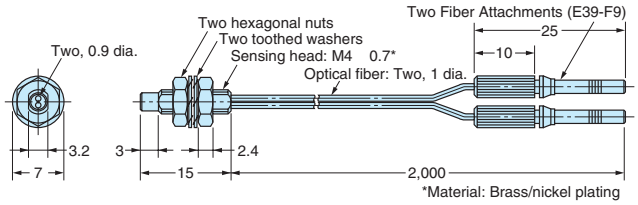

### E32-D11L

Free-cut



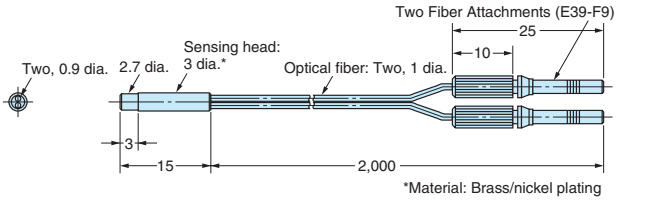

### E32-D21L

Free-cut




### E32-D22L

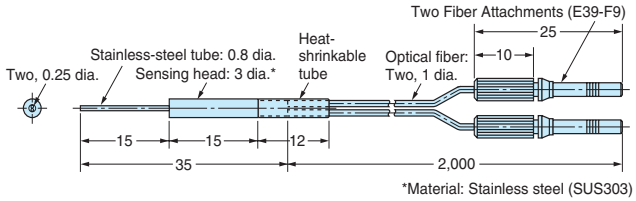
Free-cut



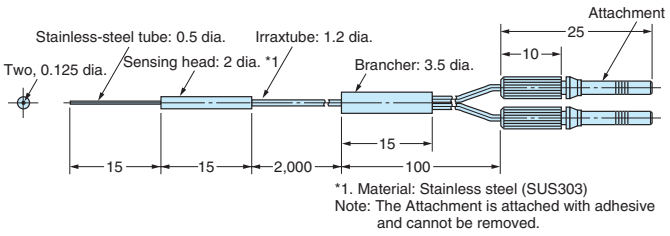

## Ultracompact/Thin-sleeve Models

### E32-D33

Free-cut



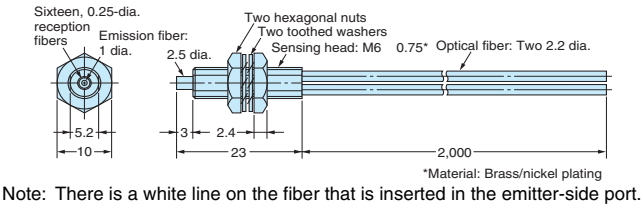

### E32-D331




## Coaxial/Small-spot Models

### E32-CC200
### E32-CC200R

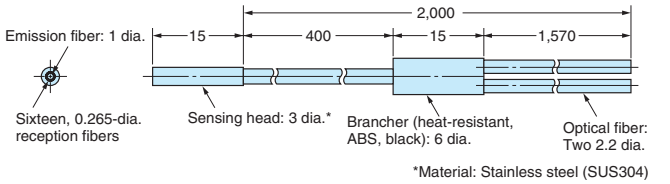
Free-cut




Note: There is a white line on the fiber that is inserted in the emitter-side port.

### E32-D32L

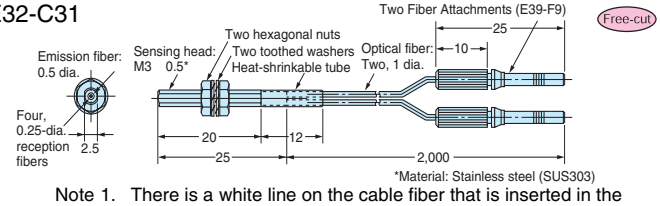
Free-cut




Note: There is a yellow dotted line on the fiber that is inserted in the emitter-side port.

### E32-C31

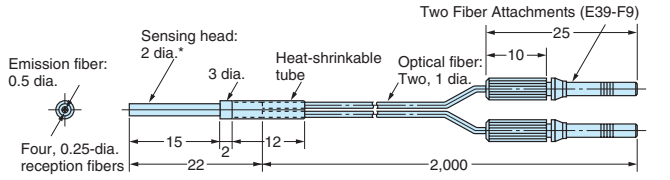
Free-cut




Note 1. There is a white line on the cable fiber that is inserted in the emitter-side port.
2. The core diameter of the sensing head is assumed to lie in the range 2.44 to 2.49 mm.

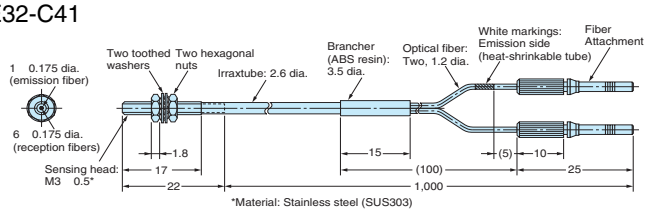
### E32-D32

Free-cut



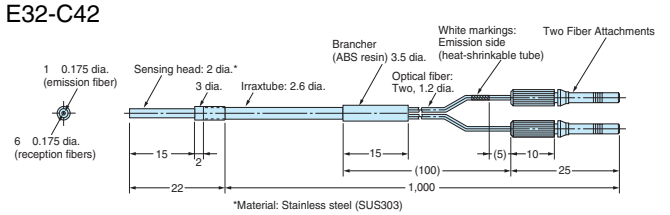

Note: There is a white line on the cable fiber that is inserted in the emitter-side port.

### E32-C41




Note: The Fiber Attachment is attached with adhesive and cannot be removed.

### E32-C42




Note: The Fiber Attachment is attached with adhesive and cannot be removed.