

Oil-resistant Fiber Unit E32-T11NF

CSM_E32-T11NF_DS_E_1_3

Fiber Units for Reliable, Stable Operation in Cutting Oil Environments

- Fluororesin cable and glass lens that withstand cutting oil.
- Mechanical seal structure that eliminates gaps works together with resin filling to block ingress of cutting oil.
- Maintains high-power output for stable workpiece detection even when covered in cutting oil.
- IP68G * degree of protection (JIS C 0920 Annex 1).

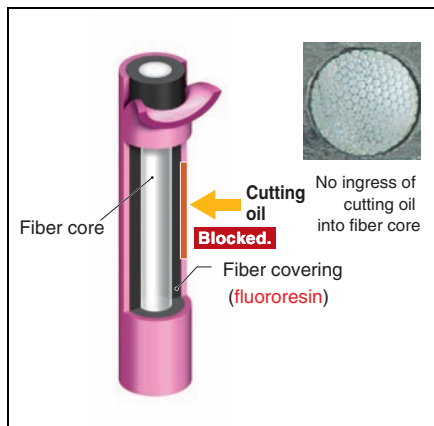
* The IP68G is the degree of protection which is defined according to the JIS (Japanese Industrial Standards). The IP68 indicates the same level of protection as defined by the IEC, and the G indicates that a device has resistance to oil.



Features

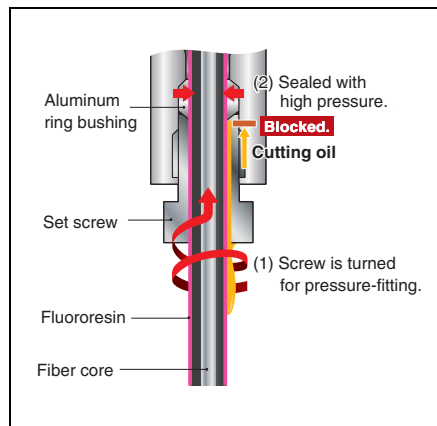
Fluororesin Outer Cable Sheath

The fluororesin that covers the entire surface of the cable sheath (fiber covering) prevents the penetration of cutting oil.

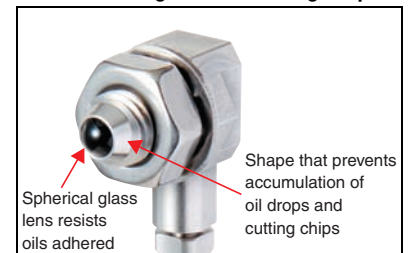


Mechanical Seal Structure

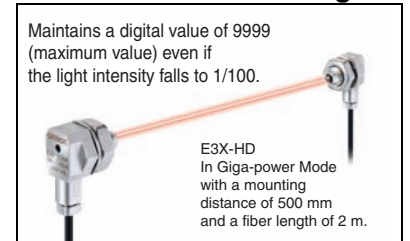
An aluminum ring bushing is compressed and deformed by a set screw to seal the structure by pressing against the fluororesin part of the fiber core. This prevents the ingress of cutting oil from the joined surfaces.



Structure Around Sensing Surface Also Resists Cutting Oil and Cutting Chips

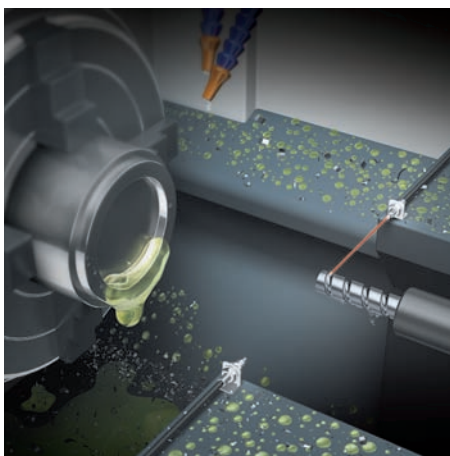


High-power Output Even When Covered in Cutting Oil

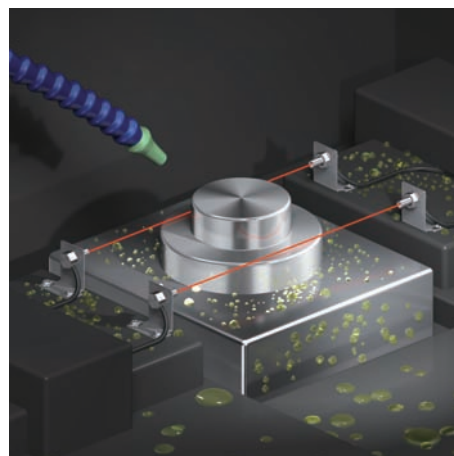


Applications

Detection of Drill Breakage



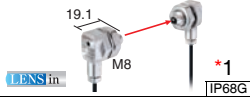
Detection of Cutting Workpieces



Ratings and Specifications

Specifications

Through-beam Fiber Units

| Type | Sensing direction | Appearance (mm) | Bending radius of cable | Sensing distance (mm) | | | | | Optical axis diameter (minimum sensing object) | Model | |
|---------------|-------------------|---|-------------------------|-----------------------|----|-------------------------|----------------------|----|--|-----------------------------|--------------|
| | | | | E3X-HD | | | E3NX-FA | | | | |
| | | | | GIGA | HS | Other modes | GIGA | HS | | | Other modes |
| Oil-resistant | Right-angle |  | Flexible, R1 | 4,000 *2 4,000 *2 | | ST: 4,000 SHS: 2,200 | 4,000 *2 4,000 *2 | | ST: 4,000 SHS: 2,200 | 4 dia. (0.1 dia./0.03 dia.) | E32-T11NF 2M |

- *1. The IP68G is the degree of protection which is defined according to the JIS (Japanese Industrial Standards). The IP68 indicates the same level of protection as defined by the IEC, and the G indicates that a device has resistance to oil. Passed OMRON's Oil-resistant Component Evaluation Standards (OMRON's own durability evaluation standards) (Cutting oil type: specified in JIS K 2241:2000; Temperature: 35 °C max.)
- *2. The optical fiber is 2 m long on each side, so the sensing distance is 4,000 mm.
- Note: 1.** The following mode names and response times apply to the modes given in the Sensing distance column.
 [E3X-HD] GIGA: Giga-power mode (16 ms), HS: High-speed mode (250 μs), ST: Standard mode (1 ms), and SHS: Super-high-speed mode (NPN output: 50 μs, PNP output: 55 μs)
 [E3NX-FA] GIGA: Giga-power mode (16 ms), HS: High-speed mode (250 μs), ST: Standard mode (1 ms), and SHS: Super-high-speed mode (30 μs)
- 2.** The values for the minimum sensing object are reference values that indicate values obtained in standard mode with the sensing distance and sensitivity set to the optimum values. The first value is for the E3X-HD and the second value is for the E3NX-FA.

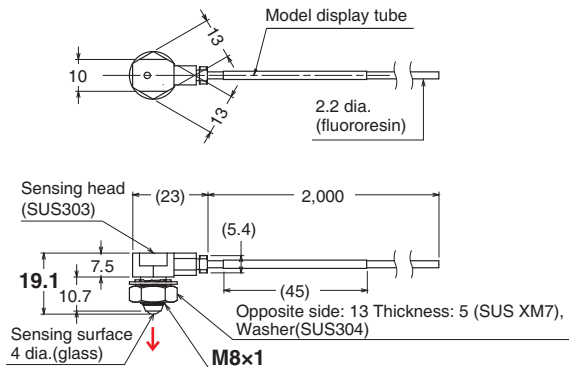
Installation Information

| Models | Installation | | | Cable | | | | | | | Weight (packed state) (g) |
|--------------|---------------------|-------------------|---------------------------------------|----------------|-------------------|------------------|-----------------|---------------|----------------------------------|----|---------------------------|
| | Ambient temperature | Tightening torque | Mounting hole | Bending radius | Unbendable length | Tensile strength | Sheath material | Core material | Emitter/receiver differentiation | | |
| E32-T11NF 2M | -25 to 70 °C | 12 N·m | 8.5 ^{+0.5} ₀ dia. | R1 | 0 | 29.4 N | Fluororesin | Plastic | None | 80 | |



Dimensions

(Unit: mm)
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

E32-T11NF 2M (Free Cutting)



Combined Fiber Amplifier Units

| Item | Series | E3X-HD Series | E3NX-FA Series |
|-----------------|--------|---|---|
| Appearance | |  |  |
| Output | | 1 output | 1 or 2 outputs (depending on the model) |
| External input | | Not supported | Supported or not supported (depending on the model) |
| Response time * | | 50 μs (55 μs)/250 μs/1 ms/16 ms (Default: 250 μs) | 30 μs (32 μs)/250 μs/1 ms/16 ms (Default: 250 μs) |

- Note:** The Fiber Amplifier Units are not oil resistant.
- * These are the response times for super-high-speed mode (SHS), high-speed mode (HS), standard mode (ST), and GIGA-power mode (GIGA). The value in parentheses for the super-high-speed mode is for a model with a PNP output.

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