Oil-resistant Fiber Unit

E32-T11NF

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).

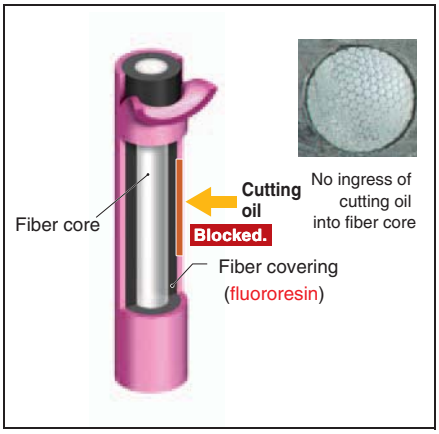
* The IP68G is the degree of protection which is defined according to the JIS (Japanese Industrial Standards).
The IP68 indicates the same level of protection as defined by the IEC, and the G indicates that a device has resistance to oil.

Features

Fluororesin Outer Cable Sheath

Fluororesin Sheath

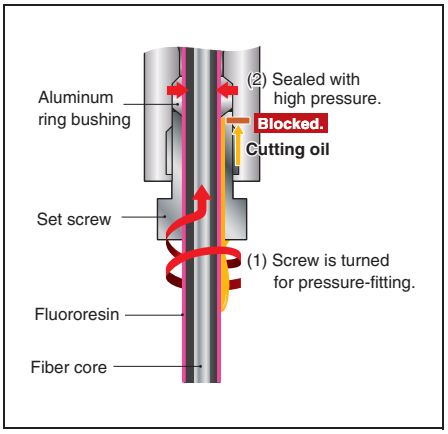
The fluororesin that covers the entire surface of the cable sheath (fiber covering) prevents the penetration of cutting oil.



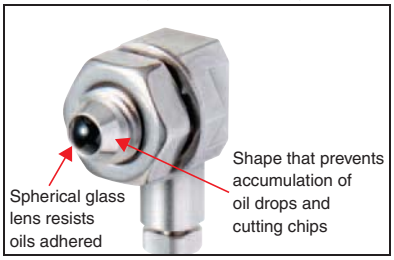
Mechanical Seal Structure

Mechanical Seal

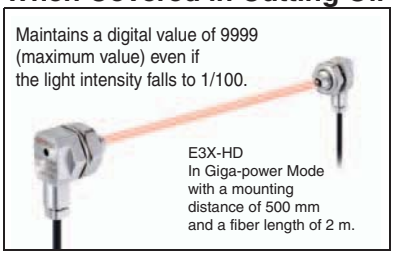
An aluminum ring bushing is compressed and deformed by a set screw to seal the structure by pressing against the fluororesin part of the fiber core. This prevents the ingress of cutting oil from the joined surfaces.



Structure Around Sensing Surface Also Resists Cutting Oil and Cutting Chips

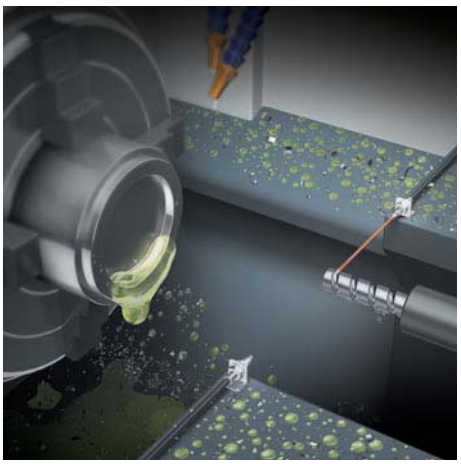


High-power Output Even When Covered in Cutting Oil

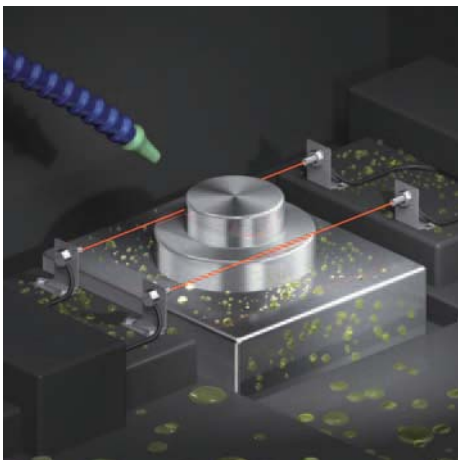


Applications

Detection of Drill Breakage



Detection of Cutting Workpieces

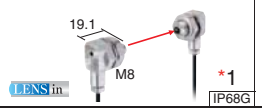


E32-T11NF

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	*2 ST: 4,000 SHS: 2,200	4,000 *2 4,000 *2	*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.

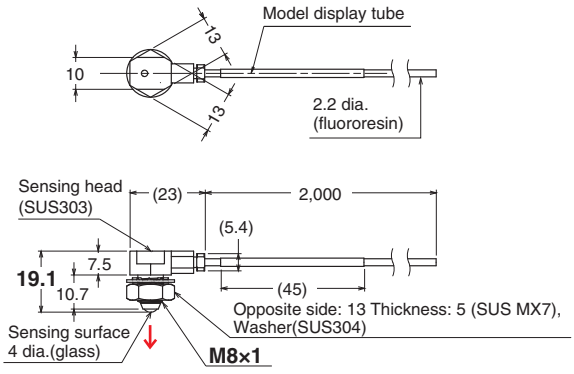
Installation Information

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.