

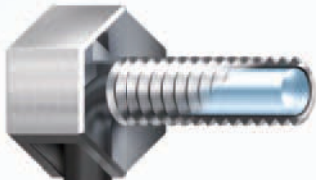
**NEW**

Hex-shaped Fiber Unit

Build-in **Lens** Series

E32-LT11N/E32-LD11N/E32-LR11NP

**OMRON**



\* Image

NEW STANDARD FOR THE FUTURE

# Introducing Hex-shaped Models with Build-in Lenses

### New Hex-shaped Models!

**M3**

Coaxial Reflective Model  
E32-C21N



**M4**

Diffuse-reflective Model  
E32-D21N



**N-Smart**  
Smart Fiber Amplifier Unit  
E3NX-FA

realizing

# Fiber Units with Build-in Lenses provide more stable detection and simpler, more reliable installation.

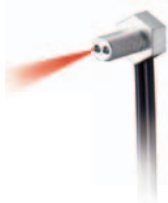
Hex-shaped models are now available with high-power built-in lenses for stable detection.

Achieve stable detection and easy onsite application.

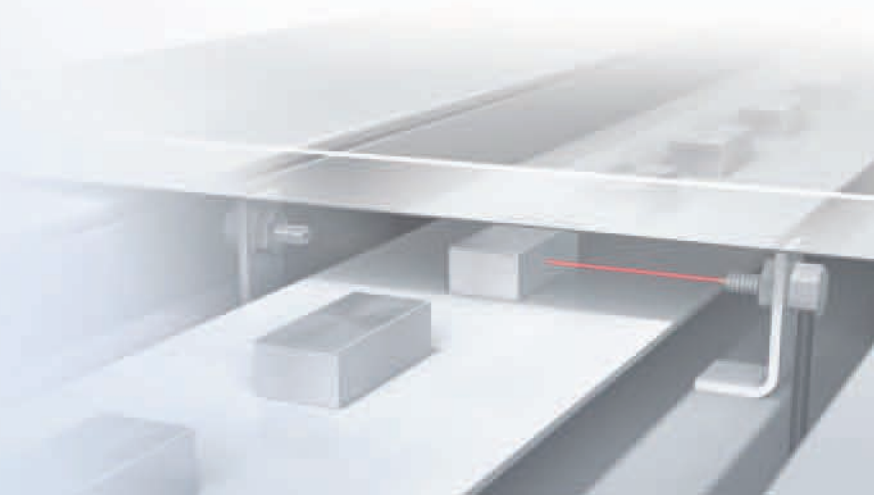
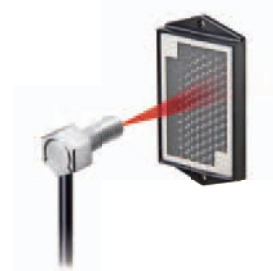
**M4** Through-beam Model  
E32-LT11N



**M6** Reflective Model  
E32-LD11N



**M6** Retro-reflective Model for transparent object detection  
E32-LR11NP



# Hex Shape

## Tool-friendly Construction for Reliable Installation

### Wrench Does Not Contact Cable

OMRON's original tool-friendly construction allows the wrench to fit all the way onto the nut without coming into contact with the cable. The Fiber Unit is not accidentally damaged.



With conventional models, it was possible for the wrench to hit the cable and damage the optical fiber, preventing stable detection.

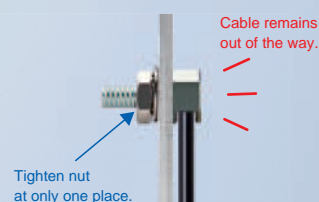
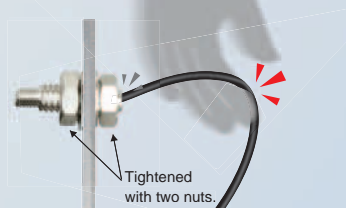


### Easy Cable Routing

The cable opening is wide, so the cable can be routed easily.

## Hex shape Provides Simplicity and Reliability

Top-view Type...	Hex Shape!
It is possible to snag the cable.	Reduces problems with snagging.
Nuts must be tightened at two places.	Install the Unit simply by holding the head with a wrench, and tightening one nut.



## Full lineup of Hex-shaped Units! (Models without Lenses)

**M3**

Coaxial Reflective Model  
E32-C21N

### There are nine receiver fibers.\*

Low-reflective objects or loose/inconsistently oriented objects can be detected more reliably.

\* The conventional E32-C31N Fiber Unit has four receiver fibers.

A small spot lens can be attached.



**M4**

Diffuse-reflective Model  
E32-D21N

### Improved Lineup

General-purpose M4 Hex-Shaped Models.



PAT.P

# Build-in Lens

## Stable Detection

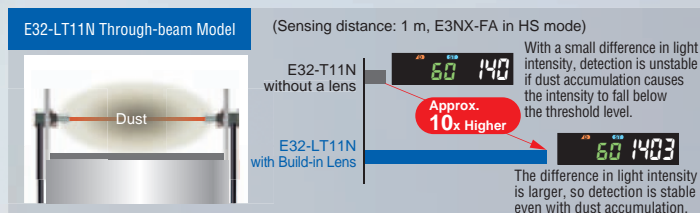
### Due to High Power and Narrow Field of View



#### Long-term Stable Detection Even in Dusty Environments

The E32-LT11N's incident light level is approx. 10 times higher than that of the conventional Fiber Units.\*1 High power means stable detection even in dusty and dirty environments.

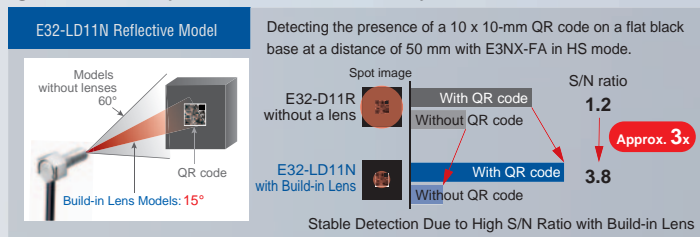
\*1 OMRON Test Results.



#### Stable Detection of Target Area Changes

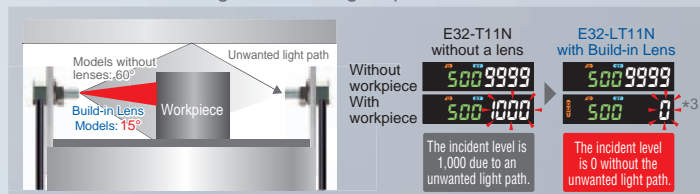
The E32-LD11N's signal change (S/N ratio) is approx. 3 times higher than that of the conventional Fiber Units.\*2 Because the target area is viewed with the narrow field of a 15° aperture angle, there is a greater difference in incident light levels and objects can be detected reliably.

\*2 OMRON Test Results.



#### Reduce False Detection Caused by Scattered Light

False Detection is greatly reduced because the 15° aperture angle eliminates scattered light, even in tight spaces.



\*3 The incident light levels are for illustration only.

## Build-in Lens Provides Simplicity and Reliability

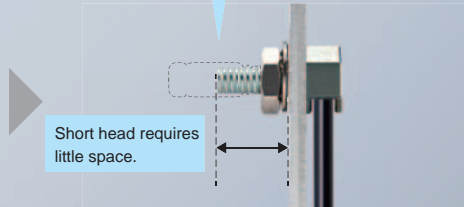
### If a Lens Is Attached ...

- It is possible for the lens to fall off and be lost.
- The torque must be checked during installation.
- The lens must be secured with tape or adhesive to prevent lens loss.

### The Lens is Built-in!


- The lens cannot fall off and be lost.
- There is no need to check torque during installation.
- There is no need to secure the lens with tape or adhesive.

Reduce Maintenance Time



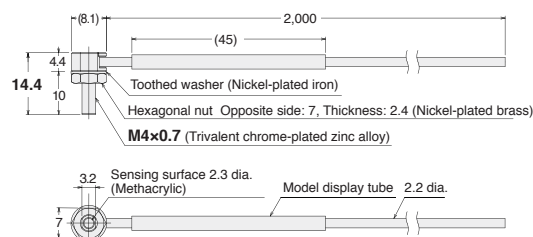
# Through-beam Fiber Units

## Specifications

Type		Appearance (mm)	Bending radius of cable (mm)	Sensing distance (mm)*1				Optical axis diameter (minimum sensing object) (mm)*3	Models
Size	Aperture angle			E3X-HD		E3NX-FA			
				GIGA HS	Other modes	GIGA HS	Other modes		
M4	Approx. 15°		Flexible, R2	4,000*2 2,300	ST : 3,500 SHS: 920	4,000*2 3,450	ST : 4,000*2 SHS: 920	2.3 dia. (0.1 dia./0.03 dia.)	E32-LT11N 2M



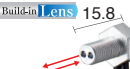
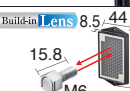
Dimensions (mm) Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

### E32-LT11N 2M (Free Cutting)



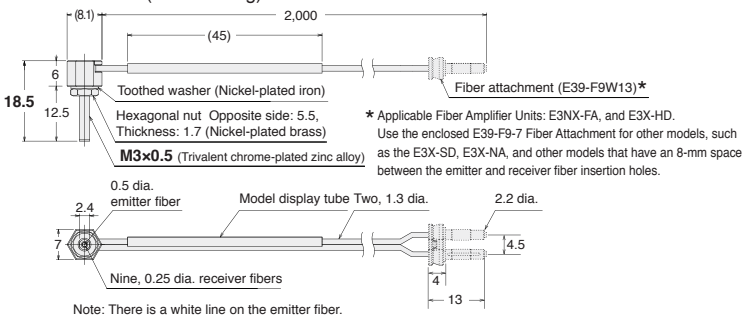
# Reflective Fiber Units/ Retro-reflective Fiber Units

## Specifications

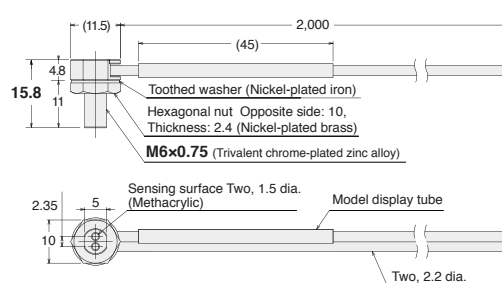
Type			Appearance (mm)	Bending radius of cable (mm)	Sensing distance (mm) *1,4				Optical axis diameter (minimum sensing object) (mm)*3	Models
Sensing method	Size	Aperture angle			E3X-HD		E3NX-FA			
					GIGA HS	Other modes	GIGA HS	Other modes		
Reflective	M3	Approx. 60°		Flexible, R2	290 90	ST : 130 SHS : 39	440 130	ST : 190 SHS : 39	(5 μm dia./ 2 μm dia.)	E32-C21N 2M
	M4				840 240	ST : 350 SHS : 100	1,260 360	ST : 520 SHS : 100		
	M6	Approx. 15°			840 240	ST : 350 SHS : 100	1,260 360	ST : 520 SHS : 100	(0.1 dia./ 0.03 dia.)	E32-LD11N 2M
Retro-reflective for transparent object detection	M6	Approx. 15°		Flexible, R2	1,350 1,000	ST : 1,200 SHS : 550	2,020 1,500	ST : 1,800 SHS : 550	—	E32-LR11NP 2M + E39-RP1 (Optional reflector)

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

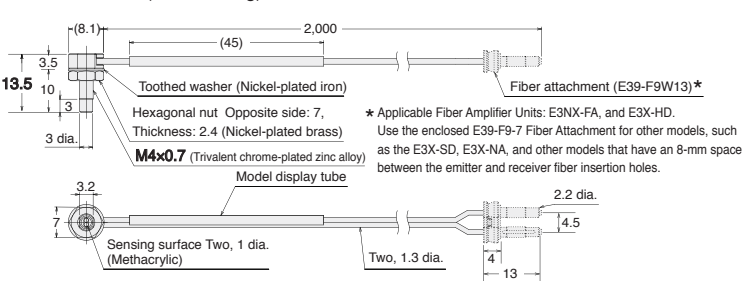
### E32-C21N 2M (Free Cutting)



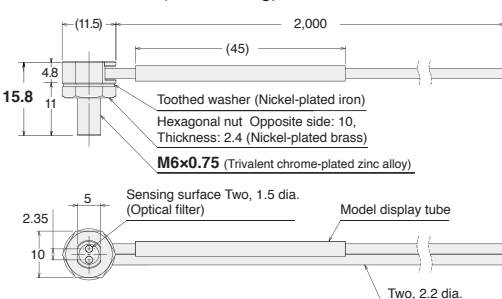
### E32-LD11N 2M (Free Cutting)



### E32-D21N 2M (Free Cutting)



### E32-LR11NP 2M (Free Cutting)



- \* 1. The following model 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 optical fiber is 2 m long on each side, so the sensing distance is 4,000 mm.
- \* 3. 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.
- \* 4. The sensing distances for Reflective Fiber Units are for white paper. The sensing distances for the E32-LD11N 2M are for glossy white paper.  
Note. Objects with a high reflection factor may cause the Retro-reflective Fiber Sensor to detect reflected light as incident light.  
Detection may be unstable depending on the type of transparent object. Check suitability beforehand.

Threaded  
Cylindrical  
Flat  
Sleeved  
Small Spot  
High Power  
Narrow view  
BGS  
Retro-reflective  
Limited-reflective  
Chemical-resistant  
Oil-resistant  
Bending  
Heat-resistant  
Area Detection  
Liquid-level  
Vacuum  
FPD, Semi, Solar

Standard Insulation  
Saving Space  
Beam Improvements  
Transparent Objects  
Environmental Immunity  
Applications

## Installation Information

### Through-beam Fiber Units


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-LT11N 2M	-40 to 70°C	0.78 N·m	4.2 $^{+0.5}_0$ dia.	R2	0	29.4 N	Polyethylene	Plastic	None	Approx. 40 g

### Reflective Fiber Units/ Retro-reflective Fiber Units

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-C21N 2M	-40 to 70°C	0.29 N·m	3.2 $^{+0.5}_0$ dia.	R2	0	9.8 N	Polyethylene	Plastic	White line on emitter cable	Approx. 30 g
E32-D21N 2M	-40 to 70°C	0.78 N·m	4.2 $^{+0.5}_0$ dia.		0	9.8 N	Polyethylene	Plastic	None	Approx. 30 g
E32-LD11N 2M	-40 to 70°C	0.98 N·m	6.2 $^{+0.5}_0$ dia.		0	29.4 N	Polyethylene	Plastic	None	Approx. 40 g
E32-LR11NP 2M	-40 to 70°C*	0.98 N·m	6.2 $^{+0.5}_0$ dia.		0	29.4 N	Polyethylene	Plastic	None	Approx. 40 g

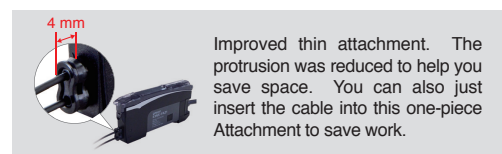
\* Ambient operating temperature of the recommended reflector (E39-RP1) is -40 to 60°C.

### Accessories

Appearance	Models	Quantity	Remarks
	E39-F9W13	1	1.3-dia. Attachment Provided with applicable Fiber Units. Order this accessory separately if you lose or damage it.

Applicable Fiber Units: E32-C21N, E32-D21N

Applicable Fiber Amplifier Units: E3NX-FA, E3X-HD, E3X-DA-S series



### Related Fiber Units

**Build-in Lens Series (Straight type)**

**E32-LT / LD**  
High Power and Aperture  
Angle of 15°  
GIGA Beam for Stable Detection

M4 Through-beam Fiber Units

M6 Reflective Fiber Units

E425-E1

**Oil-resistant Series** Equivalent to IP68g\*

**E32-T11NF**  
The Ultimate Fiber Unit for an Oily Environment  
\*Equivalent to IP68g of JIS C0920 Annex 1.

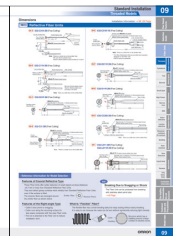
M8 Through-beam Fiber Units

E414-E1

## Introduction to Fiber Sensors

OMRON also provides many other types of Fiber Sensors.

Refer to Fiber Sensor Best Selection Catalog (E418).



### Fiber Amplifier Units

		E3X-HD Series	E3NX-FA Series	
Fiber Amplifier Unit specifications	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)	
	Sensing distance (Giga-power mode)	E32-LT11N	4,000 mm	4,000 mm
		E32-LD11N	840 mm	1,260 mm
	Minimum sensing object	E32-LT11N	0.1 mm dia.	0.03 mm dia.

\* These are the response times for super-high-speed mode (SHS), high-speed mode (HS), standard mode (Std), 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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