Digital Fiber Sensors
E3X-DA-S

The Next-Generation Platform for a Wide Range of Sensing

- Power tuning function addresses saturation or insufficient light conditions.
- Dual digital display enables simultaneous monitoring of current and preset values.
- 4 element LED and Auto Power Control ensure stable, long term performance.
- Advanced functions include differential operation for minute detection, 2 independent outputs for area detection, remote input function, and counter function.
- Improved mobile console.
- Same ease-of-use as the E3X-DA-N amplifiers.
- Highest speed in the industry.

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Ordering Information

■ Amplifier Units

Stock Note: Shaded models are normally stocked.
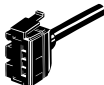
Amplifier Units with Cables
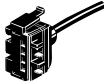
Item		Appearance	Functions	Model	
				NPN output	PNP output
Standard models			---	E3X-DA11-S	E3X-DA41-S
Mark-detecting models	Green LED		---	E3X-DAG11-S	E3X-DAG41-S
	Blue LED		---	E3X-DAB11-S	E3X-DAB41-S
Advanced models	Two-output models		Area output, self-diagnosis, differential operation	E3X-DA11TW-S	E3X-DA41TW-S
	External-input models		Remote setting, counter, differential operation	E3X-DA11RM-S	E3X-DA41RM-S

Amplifier Units with Connectors

Item		Appearance	Functions	Model	
				NPN output	PNP output
Standard models			---	E3X-DA6-S	E3X-DA8-S
Mark-detecting models	Green LED		---	E3X-DAG6-S	E3X-DAG8-S
	Blue LED		---	E3X-DAB6-S	E3X-DAB8-S
Advanced models	Two-output models		Area output, self-diagnosis, differential operation	E3X-DA6TW-S	E3X-DA8TW-S
	External-input models		Remote setting, counter, differential operation	E3X-DA6RM-S	E3X-DA8RM-S

■ Amplifier Unit Connectors (Order Separately)

Stock Note: Shaded models are normally stocked.

Item	Appearance	Cable length	No. of conductors	Model
Master Connector		2 m	3	**E3X-CN11**
			4	**E3X-CN21**
Slave Connector			1	**E3X-CN12**
			2	**E3X-CN22**

Combining Amplifier Units and Connectors

Amplifier Units and Connectors are sold separately. Refer to the following tables when placing an order.

Amplifier Unit				Applicable Connector (Order Separately)	
Model	**NPN output**	**PNP output**		**Master Connector**	**Slave Connector**
Standard models	**E3X-DA6-S**	**E3X-DA8-S**		**E3X-CN11 (3-wire)**	**E3X-CN12 (1-wire)**
Mark-detecting models	**E3X-DAG6-S**	**E3X-DAG8-S**	**+**		
	E3X-DAB6-S	**E3X-DAB8-S**			
Advanced models	**E3X-DA6TW-S**	**E3X-DA8TW-S**		**E3X-CN21 (4-wire)**	**E3X-CN22 (2-wire)**
	E3X-DA6RM-S	**E3X-DA8RM-S**			

Combining Multiple Wire-saving Amplifiers and Connector Cables

When combining wire-saving amplifiers, the amplifiers that are connected together must all have the same part number. Only one master connector is required. The master connector cable distributes power to all the "ganged" wire-saving amplifiers. The rest of the wire-saving amplifiers require slave connector cables; slave connector cables handle output signal transmission only.

Example: Requirements for combining 5 E3X-DA6 amplifiers:

• 1 master connector cable

• 5 slave connector cables

• 6 E3X-DA6 amplifiers

Slave Connector Cable
E3X-CN12

Master Connector Cable
E3X-CN11
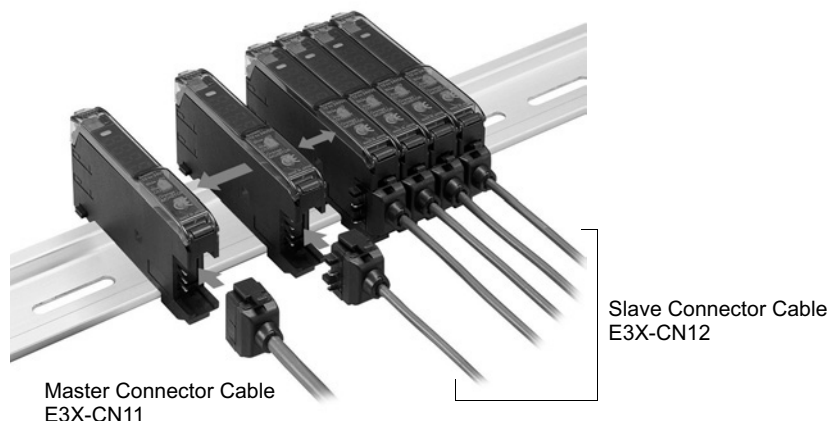
■ Mobile Console (Order Separately)

Stock Note: Shaded models are normally stocked.

Appearance	Model	Remarks
	E3X-MC11-S **(model number of set)**	Mobile Console with Head, Cable, and AC adapter provided as accessories
	E3X-MC11-C1-S	Mobile Console
	E3X-MC11-H1	Head
	E39-Z12-1	Cable (1.5 m)

Note: Use the E3X-MC11-S Mobile Console for the E3X-DA-S-series Amplifier Units. Other Mobile Consoles cannot be used.
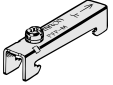
■ Accessories (Order Separately)

Stock Note: Shaded models are normally stocked.

Mounting Bracket

Appearance	Model	Quantity
	E39-L143	1

End Plate

Appearance	Model	Quantity
	PFP-M	1

Specifications

■ Ratings/Characteristics

Amplifier Units

Amplifier Units with Cables

	Type		Standard models	Mark-detecting models		Advanced, two-output models	Advanced, external-input models
	Model	NPN output	E3X-DA11-S	E3X-DAG11-S	E3X-DAB11-S	E3X-DA11TW-S	E3X-DA11RM-S
Item		PNP output	E3X-DA41-S	E3X-DAG41-S	E3X-DAB41-S	E3X-DA41TW-S	E3X-DA41RM-S
Light source (wavelength)			Red LED (650 nm)	Green LED (525 nm)	Blue LED (470 nm)	Red LED (650 nm)	
Supply voltage			12 to 24 VDC ±10%, ripple (p-p) 10% max.				
Power consumption			960 mW max. (current consumption: 40 mA max. at power supply voltage of 24 VDC)			1,080 mW max. (current consumption: 45 mA max. at power supply voltage of 24 VDC)	
Control output			Load power supply voltage: 26.4 VDC; NPN/PNP open collector; load current: 50 mA max.; residual voltage: 1 V max.				
Circuit protection			Reverse polarity for power supply connection, output short-circuit				
Response time	High-speed mode	NPN	48 μs for operation and 50 μs for reset			80 μs for operation and reset respectively	48 μs for operation and 50 μs for reset[*1]
		PNP	53 μs for operation and 55 μs for reset				53 μs for operation and 55 μs for reset[*1]
	Standard mode		1 ms for operation and reset respectively				
	High-resolution mode		4 ms for operation and reset respectively				
Sensitivity setting			Teaching or manual method				
Functions	Power tuning		Light emission power and reception gain, digital control method				
	Differential detection		---			Switchable between single edge and double edge detection mode Single edge: Can be set to 250 μs, 500 μs, 1 ms, 10 ms, or 100 ms. Double edge: Can be set to 500 μs, 1 ms, 2 ms, 20 ms, or 200 ms.	
	Timer function		Select from OFF-delay, ON-delay, or one-shot timer. 1 ms to 5 s (1 to 20 ms set in 1-ms increments, 20 to 200 ms set in 10-ms increments, 200 ms to 1 s set in 100-ms increments, and 1 to 5 s set in 1 s-increments)				
	Automatic power control (APC)		High-speed control method for emission current				
	Zero-reset		Display can be reset to zero when required (negative values can be displayed).				
	Initial reset		Settings can be returned to defaults as required.				
	Mutual interference prevention		Possible for up to 10 Units[*2, *3]				
	Counter		---				Switchable between up counter and down counter. Set count: 0 to 9,999,999
	I/O settings		---			Output setting (Select from channel 2 output, area output, or self-diagnosis.)	External input setting (Select from teaching, power tuning, zero reset, light OFF, or counter reset.)
Display			Operation indicator (orange), Power Tuning indicator (orange)			Operation indicator for channel 1 (orange), Operation indicator for channel 2 (orange)	Operation indicator (orange), Power Tuning indicator (orange)
Digital display			Select from the following: Incident level + threshold, incident level percentage + threshold, incident light peak level + no incident light bottom level, minimum incident light peak level + maximum no incident light bottom level, long bar display, incident level + peak hold, incident level + channel				Select from same displays as given at the left or a counter display.
Display orientation			Normal/reversed program selectable.				

	Type	Standard models	Mark-detecting models		Advanced, two-output models	Advanced, external-input models
Model	NPN output	E3X-DA11-S	E3X-DAG11-S	E3X-DAB11-S	E3X-DA11TW-S	E3X-DA11RM-S
Item	PNP output	E3X-DA41-S	E3X-DAG41-S	E3X-DAB41-S	E3X-DA41TW-S	E3X-DA41RM-S
Ambient illumination (receiver side)		Incandescent lamp:10,000 lux max. Sunlight:20,000 lux max.				
Ambient temperature		Operating: Groups of 1 to 2 Amplifiers: –25°C to 55°C　　　　　　　Groups of 3 to 10 Amplifiers: –25°C to 50°C　　　　　　　Groups of 11 to 16 Amplifiers: –25°C to 45°C　　　　　　　(with no icing or condensation) Storage:　　–30°C to 70°C (with no icing or condensation)				
Ambient humidity		Operating and storage: 35% to 85% (with no condensation)				
Insulation resistance		20 MΩ min. (at 500 VDC)				
Dielectric strength		1,000 VAC at 50/60 Hz for 1 minute				
Vibration resistance (destruction)		10 to 55 Hz with a 1.5-mm double amplitude for 2 hrs each in X, Y and Z directions				
Shock resistance (destruction)		500 m/s^2, for 3 times each in X, Y and Z directions				
Enclosure rating		IEC 60529 IP50 (with Protective Cover attached)				
Connection method		Prewired cable				
Weight (packed state)		Approx. 100 g				
Materials	Case	Polybutylene terephthalate (PBT)				
	Cover	Polycarbonate (PC)				
Accessories		Instruction sheet				

Note: *1. When counter is enabled: 80 μs for operation and reset respectively.

**　　*2.** Communications are disabled if the detection mode is selected during high-speed mode; the communications functions for mutual interference prevention and the Mobile Console will not function.

**　　*3.** Mutual interference prevention can be used for up to 6 Units if power tuning is enabled.

Amplifier Units with Connectors

(Specifications different to those for Amplifier Units with cables)

	Type	Standard models	Mark-detecting models		Advanced, two-output models	Advanced, external-input models
Model	NPN output	E3X-DA6-S	E3X-DAG6-S	E3X-DAB6-S	E3X-DA6TW-S	E3X-DA6RM-S
Item	PNP output	E3X-DA8-S	E3X-DAG8-S	E3X-DAB8-S	E3X-DA8TW-S	E3X-DA8RM-S
Connection method		Standard connector				
Weight (packed state)		Approx. 55 g				

Amplifier Unit Connectors

Item	E3X-CN11/21/22	E3X-CN12
Rated current	2.5 A	
Rated voltage	50 V	
Contact resistance	20 mΩ max. (20 mVDC max., 100 mA max.) (The figure is for connection to the Amplifier Unit and the adjacent Connector. It does not include the conductor resistance of the cable.)	
No. of insertions (destruction)	50 times (The figure for the number of insertions is for connection to the Amplifier Unit and the adjacent Connector.)	
Materials	Housing	Polybutylene terephthalate (PBT)
	Contacts	Phosphor bronze/gold-plated nickel
Weight (packed state)	Approx. 55 g	Approx. 25 g

Mobile Console

Item	E3X-MC11-S
Supply voltage	Charged with AC adapter
Connection method	Connected via adapter
Weight (packed state)	Approx. 580 g (Console only: 120 g)

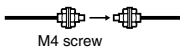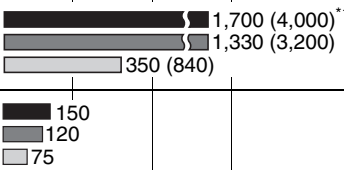**Note:** Refer to *Operation Manual* provided with the Mobile Console for details.
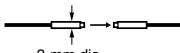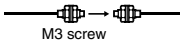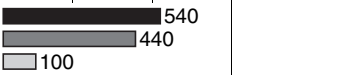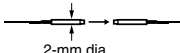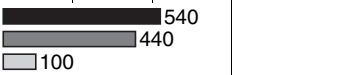
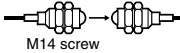# Ordering Information: Fiber Units

■ Through-beam Fiber Units

Note: 1. (Free-cut) Indicates models that allow free cutting. Models without this mark do not allow free cutting.

2. The size of standard sensing object is the same as the fiber core diameter (lens diameter for models with lens).

3. 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.

Long-distance Fiber Units

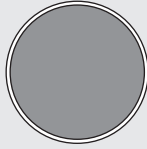■ : High-resolution mode ■ : Standard mode □ : Super-high-speed mode

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
M4 (Free-cut)	M4 screw	E3X-DA□-S	■ 1,700 (4,000)*1 ■ 1,330 (3,200) □ 350 (840)	1.4-mm dia. (0.01-mm dia.)	E32-T11L	25 mm
		E3X-DAG□-S E3X-DAB□-S	■ 150 ■ 120 □ 75			
3-mm dia. (Free-cut)	3-mm dia.	E3X-DA□-S	■ 1,700 ■ 1,330 □ 350		E32-T12L	
M3 (Free-cut)	M3 screw	E3X-DA□-S	■ 540 ■ 440 □ 100	0.9-mm dia. (0.005-mm dia.)	E32-T21L	10 mm
2-mm dia.; small diameter (Free-cut)	2-mm dia.	E3X-DA□-S	■ 540 ■ 440 □ 100		E32-T22L	
M14 with lens; ideal for explosion-proof applications (Free-cut)	M14 screw	E3X-DA□-S	■ 20,000*2 ■ 20,000*2 □ 4,000*2	10-mm dia.	E32-T17L	25 mm

Note: 1. The optical fiber is 2 m long on each side, so the sensing distance is 4,000 mm.

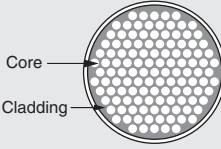**2.** The optical fiber for the E32-T17L is 10 m long on each side, so the value is 20,000 mm

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A Wide Range of Multicore Fibers for Easy Installation without Loss of Light Intensity

Muliticore fiber models are indicated by an "R" at the end of the model number.
Multicore fiber contains multiple cores. These cores are all surrounded by cladding, giving a minimum bending radius of 1 mm.

The fiber can be bent at right angles without affecting the light intensity. Do not use this fiber in applications that have repetitive flexing.
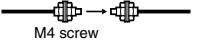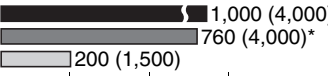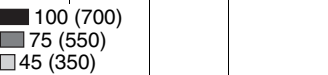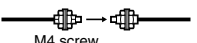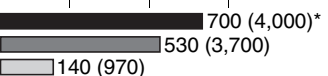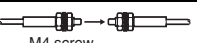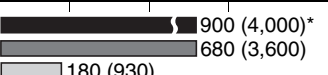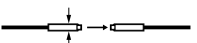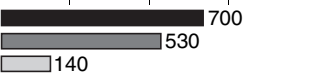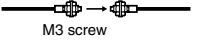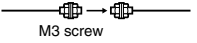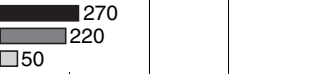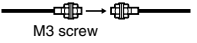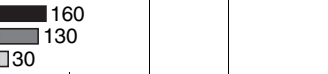
Conventional Fiber
Conventional fiber uses just one core and one cladding section. Bending the fiber may break it or reduce the light intensity.
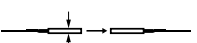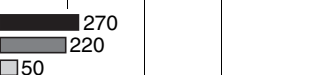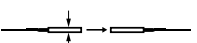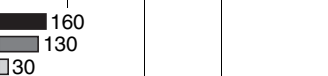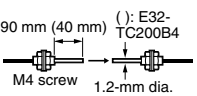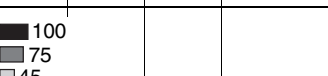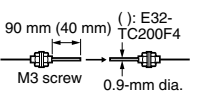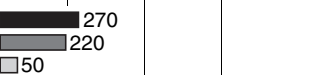
Core
Cladding

Multicore Fiber
Multicore fiber contains multiple independent cores all surrounded by cladding. The fiber can be bent without breaking or reducing the light intensity.

General-purpose Fiber Units
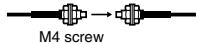
Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
M4 Free-cut	M4 screw	E3X-DA☐-S	■ 1,000 (4,000)* ▨ 760 (4,000)* ▢ 200 (1,500)	1.0-mm dia. (0.005-mm dia.)	E32-TC200	25 mm
		E3X-DAG☐-S E3X-DAB☐-S	■ 100 (700) ▨ 75 (550) ▢ 45 (350)			
M4 Multicore Free-cut	M4 screw	E3X-DA☐-S	■ 700 (4,000)* ▨ 530 (3,700) ▢ 140 (970)		E32-T11R	1 mm
M4 Fiber sheath material : flororesin Free-cut	M4 screw	E3X-DA☐-S	■ 900 (4,000)* ▨ 680 (3,600) ▢ 180 (930)		E32-T11U *NEW*	4 mm
3-mm dia. Mulitcore Free-cut	3-mm dia.	E3X-DA☐-S	■ 700 ▨ 530 ▢ 140		E32-T12R	1 mm
M3 Possible to mount the E39-F5 Reflective Side-view Conversion Attachment Free-cut	M3 screw	E3X-DA☐-S	■ 900 ▨ 680 ▢ 180		E32-TC200A	25 mm
M3; for detecting minute objects Free-cut	M3 screw	E3X-DA☐-S	■ 270 ▨ 220 ▢ 50	0.5-mm dia. (0.005-mm dia.)	E32-TC200E	10 mm
		E3X-DAG☐-S E3X-DAB☐-S	■ 25 ▨ 20 ▢ 12			
M3 Multicore Free-cut	M3 screw	E3X-DA☐-S	■ 160 ▨ 130 ▢ 30		E32-T21R	1 mm

Note: *The optical fiber is 2 m long on each side, so the sensing distance is 4,000 mm.

Fiber Units with Thin Heads
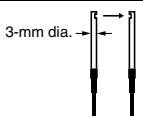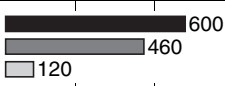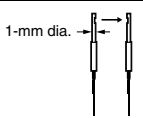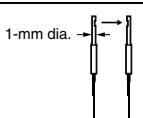
Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
2-mm dia.;for detecting minute objects Free-cut	2-mm dia.	E3X-DA☐-S	■ 270 ▨ 220 ▢ 50	0.5-mm dia. (0.005-mm dia.)	E32-T22	10 mm
2-mm dia.; for detecting minute objects; multicore Free-cut	2-mm dia.	E3X-DA☐-S	■ 160 ▨ 130 ▢ 30		E32-T22R	1 mm
1.2-mm dia.; with sleeve Free-cut	90 mm (40 mm) ( ): E32-TC200B4 M4 screw 1.2-mm dia.	E3X-DA☐-S	■ 1,000 ▨ 760 ▢ 200	1.0-mm dia. (0.005-mm dia.)	E32-TC200B E32-TC200B4	25 mm
		E3X-DAG☐-S E3X-DAB☐-S	■ 100 ▨ 75 ▢ 45			
0.9-mm dia.; with sleeve Free-cut	90 mm (40 mm) ( ): E32-TC200F4 M3 screw 0.9-mm dia.	E3X-DA☐-S	■ 270 ▨ 220 ▢ 50	0.5-mm dia. (0.005-mm dia.)	E32-TC200F E32-TC200F4	10 mm

Flexible Fiber Units (Resists Breaking) (R4)

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
Ideal for mounting on moving sections (R4) Free-cut	M4 screw	E3X-DA□-S	900 (4,000)* / 680 (3,600) / 180 (930)	1.0-mm dia. (0.005-mm dia.)	E32-T11	4 mm
	M3 screw	E3X-DA□-S	240 / 200 / 45	0.5-mm dia. (0.005-mm dia.)	E32-T21	
	1.5-mm dia.	E3X-DA□-S	240 / 200 / 45		E32-T22B	

Note: *The optical fiber is 2 m long on each side, so the sensing distance is 4,000 mm.

Side-view Fiber Units
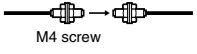
Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
Long distance; space-saving Free-cut	3-mm dia.	E3X-DA□-S	600 / 460 / 120	1.0-mm dia. (0.005-mm dia.)	E32-T14L	25 mm
		E3X-DAG□-S E3X-DAB□-S	50 / 40 / 25			
Space-saving; mulitcore Free-cut	3-mm dia.	E3X-DA□-S	270 / 210 / 50		E32-T14LR	1 mm
Suitable for detecting minute objects; small diameter Free-cut	1-mm dia.	E3X-DA□-S	160 / 130 / 30	0.5-mm dia. (0.005-mm dia.)	E32-T24	10 mm
Suitable for detecting minute objects; small diameter; multicore Free-cut	1-mm dia.	E3X-DA□-S	60 / 50 / 10		E32-T24R	1 mm
Screw-mounting type; long distance Free-cut		E3X-DA□-S	4,500 / 3,400 / 900	4-mm dia. (0.1-mm dia.)	E32-T14	25 mm
		E3X-DAG□-S E3X-DAB□-S	320 / 260 / 160			

Chemical-resistant Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
Teflon-covered*; round head that resists water drops	Free-cut 7.2-mm dia.	E3X-DA□-S	2,500 / 2,000 / 520	4-mm dia. (0.1-mm dia.)	E32-T11F *NEW*	4 mm
Teflon-covered*; withstands chemicals and harsh environments (operating ambient temperature: −30°C to 70°C)	Free-cut 5-mm dia.	E3X-DA□-S	4,000 / 3,000 / 800	4-mm dia. (0.1-mm dia.)	E32-T12F	40 mm
Teflon-covered*; withstands chemicals and harsh environments; side-view (operating ambient temperature: −30°C to 70°C)	Free-cut 5-mm dia.	E3X-DA□-S	500 / 400 / 100	3-mm dia. (0.1-mm dia.)	E32-T14F	
Teflon*; withstands chemicals and harsh environments (operating ambient temperature: −40°C to 200°C)	6-mm dia.	E3X-DA□-S	920 / 700 / 190	1.0-mm dia. (0.005-mm dia.)	E32-T81F-S *NEW*	10 mm

Note: Teflon is a registered trademark of the Dupont Company and the Mitsui Dupont Chemical Company for their fluoride resin.
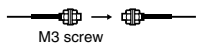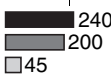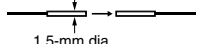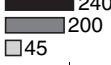
Heat-resistant Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
Resists 150°C[*1]; Free-cut fiber sheath material: fluororesin (operating ambient temperature: −40°C to 150°C)	M4 screw	E3X-DA☐-S	1,000 / 760 / 200	1.5-mm dia. (0.1-mm dia.)	E32-T51	35 mm
Resists 200°C; flexible (R10); fiber sheath material: Teflon[*2] (operating ambient temperature: −40°C to 200°C)	M4 screw	E3X-DA☐-S	360 (2,650) / 280 (2,100) / 70 (520)	1.0-mm dia. (0.005-mm dia.)	E32-T81R-S *NEW*	10 mm
Resists 350°C[*3], with spiral tube; high mechanical strength; fiber sheath material: stainless steel (operating ambient temperature: −60°C to 350°C)	M4 screw	E3X-DA☐-S	600 (4,000)[*4] / 450 (3,400) / 120 (900)		E32-T61-S *NEW*	25 mm
Side-view; Free-cut resists 150°C[*1]; suitable for detecting minute objects; fiber sheath material: fluororesin (operating ambient temperature: −40°C to 150°C)	2-mm dia.	E3X-DA☐-S	300 / 230 / 60		E32-T54	35 mm
Resists 200°C[*3]; L-shaped; fiber sheath material: stainless steel	3-mm dia.	E3X-DA☐-S	1,750 / 1,300 / 350	1.7-mm dia. (0.1-mm dia.)	E32-T84S-S *NEW*	25 mm

Note: *1. For continuous operation, use the products within a temperature range of −40°C to 130°C.

    *2. Teflon is a registered trademark of the Dupont Company and the Mitsui Dupont Chemical Company for their fluoride resin.
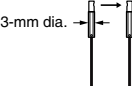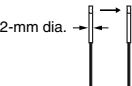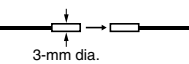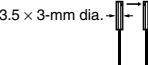
    *3. Indicates the heat-resistant temperature at the fiber tip.

    *4. The optical fiber is 2 m long on each side, so the sensing distance is 4,000 mm.
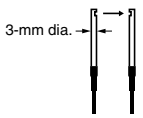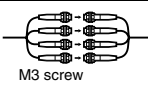
Fiber Unit with Slot Sensor

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
Suitable for film sheet Free-cut detection; no optical axis adjustment required; easy to mount		E3X-DA☐-S	10 / 10 / 10	4-mm dia. (0.1-mm dia.)	E32-G14	25 mm
		E3X-DAG☐-S E3X-DAB☐-S	10 / 10 / 10			

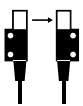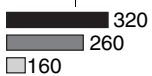## Fiber Units with a Narrow Vision Field

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
Super-narrow vision field; side-view; opening angle: 1.5°; simple adjustment (Free-cut)	3-mm dia.	E3X-DA□-S	1,150 / 890 / 250	2-mm dia. (0.1-mm dia.)	E32-A03	1 mm
Super-narrow vision field; small; side-view; opening angle: 3°; simple adjustment (Free-cut)	2-mm dia.	E3X-DA□-S	460 / 340 / 100	1.2-mm dia. (0.1-mm dia.)	E32-A04	10 mm
Suitable for detecting wafers (Free-cut)	3-mm dia.	E3X-DA□-S	2,500 / 1,900 / 500	1.7-mm dia. (0.1-mm dia.)	E32-T22S	25 mm
Side-view; suitable for detecting wafers (Free-cut)	3.5 × 3-mm dia.	E3X-DA□-S	1,750 / 1,300 / 350	2-mm dia. (0.1-mm dia.)	E32-T24S	10 mm

Area-sensing Fiber Units

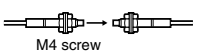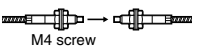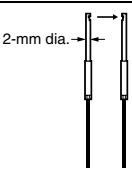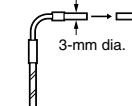| Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm) (Parentheses: With E39-F1 Lens Unit)	Standard object (min. object) (Parentheses: Opaque object)	Model	Permissible bending radius
Multi-point detection (4-head)	M3 screw	E3X-DA□-S	750 / 610 / 140	2-mm dia. (0.1-mm dia.)	E32-M21	25 mm
Detects in a 30-mm area (Free-cut)	30 mm	E3X-DA□-S	2,300 / 1,800 / 450	(0.3-mm dia.)[*1]	E32-T16W	10 mm
	30 mm	E3X-DA□-S	1,700 / 1,300 / 340		E32-T16WR (multicore)	1 mm
Side-view; suitable for applications with limited spatial depth (Free-cut)	11 mm	E3X-DA□-S	1,300 / 1,000 / 260	(0.2-mm dia.)[*1]	E32-T16J	10 mm
	11 mm	E3X-DA□-S	980 / 750 / 190		E32-T16JR (multicore)	1 mm
Suitable for detecting over a 10-mm area; long distance (Free-cut)	10 mm	E3X-DA□-S	3,700 / 2,800 / 740	(0.6-mm dia.)[*2]	E32-T16	25 mm
Stable for detecting minute objects in a wide area (Free-cut)	11 mm	E3X-DA□-S	1,500 / 1,100 / 300	(0.2-mm dia.)[*1]	E32-T16P	10 mm
	11 mm	E3X-DA□-S	1,100 / 840 / 220		E32-T16PR (multicore)	1 mm
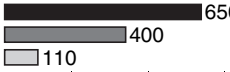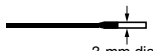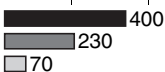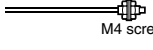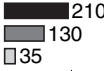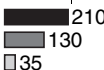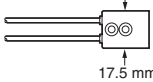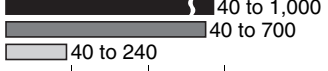
Note: *1. These figures are for a sensing distance of 300 mm. (Figures for the diameter of sensing objects are in the still state.)

***2.** These figures are ones for which detection is possible in each sensing area at a digital incident level of 1,000. (Figures for the diameter of sensing objects are in the still state.)

■ Diffuse Fiber Units
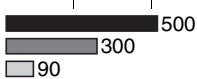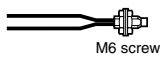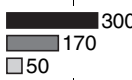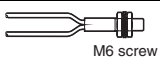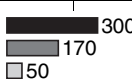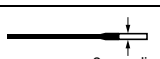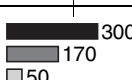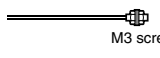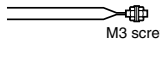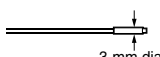
Note: 1. (Free-cut) Indicates models that allow free cutting. Models without this mark do not allow free cutting.

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. When set to the maximum sensitivity setting, internal light reflection may cause the sensor to detect incident light. In such case, adjust the threshold manually or automatically (teaching).

Long-distance Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)*	Standard object (min. object: Gold wire)	Model	Permissible bending radius
M6 (Free-cut)	M6 screw	E3X-DA□-S	650 / 400 / 110	500×500 (0.005-mm dia.)	E32-D11L	25 mm
		E3X-DAG□-S E3X-DAB□-S	44 / 35 / 22	100×100 (0.1-mm dia.)		
3-mm dia.; small diameter (Free-cut)	3-mm dia.	E3X-DA□-S	400 / 230 / 70	300×300 (0.005-mm dia.)	E32-D12	
M4 (Free-cut)	M4 screw	E3X-DA□-S	210 / 130 / 35	200×200 (0.005-mm dia.)	E32-D21L	10 mm
3-mm dia.; small diameter (Free-cut)	3-mm dia.	E3X-DA□-S	210 / 130 / 35		E32-D22L	
Square head, long distance (Free-cut)	17.5 mm	E3X-DA□-S	40 to 1,000 / 40 to 700 / 40 to 240	300×300	E32-D16 *NEW*	4 mm
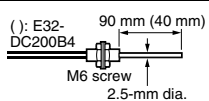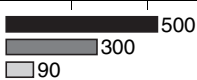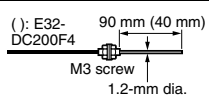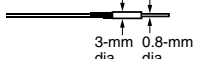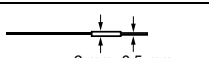
Note: *Values were obtained using a white paper (standard object).

General-purpose Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)*	Standard object (min. object: Gold wire)	Model	Permissible bending radius
M6 (Free-cut)	M6 Screw	E3X-DA☐-S	500 / 300 / 90	400×400 (0.005-mm dia.)	E32-DC200	25 mm
		E3X-DAG☐-S E3X-DAB☐-S	32 / 25 / 16	100×100 (0.1-mm dia.)		
M6 ; multicore (Free-cut)	M6 screw	E3X-DA☐-S	300 / 170 / 50	300×300 (0.005-mm dia.)	E32-D11R	1 mm
M6 Fiber sheath material: fluororesin (Free-cut)	M6 screw	E3X-DA☐-S	300 / 170 / 50		E32-D11U **NEW**	4 mm
3-mm dia.; multicore (Free-cut)	3-mm dia.	E3X-DA☐-S	300 / 170 / 50		E32-D12R	1 mm
M3; small diameter (Free-cut)	M3 screw	E3X-DA☐-S	130 / 80 / 22	100×100 (0.005-mm dia.)	E32-DC200E	10 mm
		E3X-DAG☐-S E3X-DAB☐-S	8 / 6 / 4	25×25 (0.2-mm dia.)		
M3; small diameter; multicore (Free-cut)	M3 screw	E3X-DA☐-S	50 / 30 / 8	50×50 (0.005-mm dia.)	E32-D21R	1 mm
3-mm dia.; small diameter; multicore (Free-cut)	3-mm dia.	E3X-DA☐-S	50 / 30 / 8		E32-D22R	
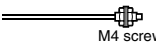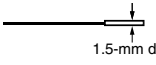
Note: *Values were obtained using a white paper (standard object).

Fiber Units with Thin Heads

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)*	Standard object (min. object: Gold wire)	Model	Permissible bending radius
2.5-mm dia.; with sleeve (Free-cut)	( ): E32-DC200B4 90 mm (40 mm) M6 screw 2.5-mm dia.	E3X-DA☐-S	500 / 300 / 90	400×400 (0.005-mm dia.)	E32-DC200B E32-DC200B4	25 mm
		E3X-DAG☐-S E3X-DAB☐-S	32 / 25 / 16	100×100 (0.1-mm dia.)		
1.2-mm dia.; with sleeve (Free-cut)	( ): E32-DC200F4 90 mm (40 mm) M3 screw 1.2-mm dia.	E3X-DA☐-S	130 / 80 / 22	100×100 (0.005-mm dia.)	E32-DC200F E32-DC200F4	10 mm
0.8-mm dia.; for detecting minute objects (Free-cut)	3-mm dia. 0.8-mm dia.	E3X-DA☐-S	25 / 16 / 4	25×25 (0.005-mm dia.)	E32-D33	4 mm
0.5-mm dia.; for detecting very minute objects	2-mm dia. 0.5-mm dia.	E3X-DA☐-S	5 / 3 / 0.8		E32-D331	
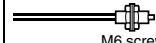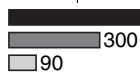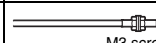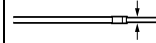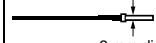
Note: *Values were obtained using a white paper (standard object).

Flexible Fiber Units (Resists Breaking) (R4)

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)*	Standard object (min. object: Gold wire)	Model	Permissible bending radius
Ideal for mounting on moving sections (R4)	Free-cut M6 screw	E3X-DA□-S	300 / 170 / 50	300×300 (0.005-mm dia.)	E32-D11	4 mm
	Free-cut M3 screw	E3X-DA□-S	50 / 30 / 8	50×50 (0.005-mm dia.)	E32-D21	
	Free-cut M4 screw	E3X-DA□-S	110 / 70 / 20	100×100 (0.005-mm dia.)	E32-D21B	
	1.5-mm dia.	E3X-DA□-S	50 / 30 / 8	50×50 (0.005-mm dia.)	E32-D22B	

**Note:** *Values were obtained using a white paper (standard object).

Coaxial Fiber Units
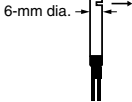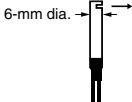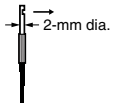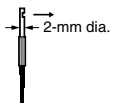
Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)*	Standard object (min. object: Gold wire)	Model	Permissible bending radius
M6 coaxial; high-precision positioning	Free-cut M6 screw	E3X-DA□-S	500 / 300 / 90	500×500 (0.005-mm dia.)	E32-CC200	25 mm
		E3X-DAG□-S E3X-DAB□-S	32 / 25 / 16	100×100 (0.1-mm dia.)		
3-mm dia.; small diameter; coaxial; high-precision positioning	Free-cut 3-mm dia.	E3X-DA□-S	250 / 150 / 45	300×300 (0.005-mm dia.)	E32-D32L	
M3 coaxial; high-precision positioning	Free-cut M3 screw	E3X-DA□-S	120 / 75 / 22 — See "Spot diameter" • 0.5-mm dia. • 4.0-mm dia. max.	100×100 (0.005-mm dia.)	E32-C31	
M3 coaxial; high-precision positioning	M3 screw	E3X-DA□-S	50 / 35 / 8 — See "Spot diameter' • 0.1-mm dia. • 0.2-mm dia. • 4.0-mm dia. max.	50×50 (0.005-mm dia.)	E32-C41	
2-mm dia. coaxial; high-precision positioning	2-mm dia.	E3X-DA□-S	50 / 35 / 8 — See "Spot diameter" • Adjustable in the range 0.1 to 0.6-mm dia.		E32-C42	
2-mm dia. coaxial; high-precision positioning	Free-cut 2-mm dia.	E3X-DA□-S	120 / 75 / 22 — See "Spot diameter" • Adjustable in the range 0.5 to 1-mm dia.	100×100 (0.005-mm dia.)	E32-D32	

Note: *Values were obtained using a white paper (standard object).

Spot Diameter (Order Lens separately)
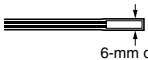
Lens	Appearance	Focusing lens type	Spot diameter values	
E39-F3A		Variable	E32-C42 Spot: 0.1-0.6 mm dia.	E32-D32 Spot: 0.5-1.0 mm dia.
E39-F3A-5		Fixed	E32-C31 Spot: 0.5 mm dia. Focal length: 7 mm	E32-C41 Spot: 0.1 mm dia. Focal length: 7 mm
E39-F3B			E32-C31 Spot: 0.5 mm dia. Focal length: 17 mm	E32-C41 Spot: 0.2 mm dia. Focal length: 17 mm
E39-F3C			E32-C31 Spot: 4.0 mm dia. Focal length: 20 mm	E32-C41 Spot: 4.0 mm dia. Focal length: 20 mm

Side-view Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)*				Standard object (min. object: Gold wire)	Model	Permissible bending radius
6-mm dia.; long distance	Free-cut 6-mm dia.	E3X-DA□-S	■200 ■110 □36				200×200 (0.005-mm dia.)	E32-D14L	25 mm
6-mm dia.; multicore	Free-cut 6-mm dia.	E3X-DA□-S	■80 ■45 □14				100×100 (0.005-mm dia.)	E32-D14LR	1 mm
2-mm dia.; small diameter; space-saving	Free-cut 2-mm dia.	E3X-DA□-S	■50 ■30 □8				50×50 (0.005-mm dia.)	E32-D24	10 mm
	2-mm dia.	E3X-DA□-S	■26 □15 □4					E32-D24R (multicore)	1 mm

Note: *Values were obtained using a white paper (standard object).
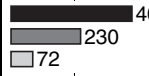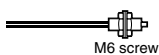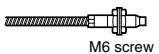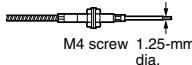
Chemical-resistant Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)[1]				Standard object (min. object: Gold wire)	Model	Permissible bending radius
Teflon-covered[2]; withstands chemicals and harsh environments (operating ambient temperature: −30°C to 70°C	Free-cut 6-mm dia.	E3X-DA□-S	■160 ■95 □30				200×200 (0.005-mm dia.)	E32-D12F	40 mm

Note: 1. *Values were obtained using a white paper (standard object).
2. Teflon is a registered trademark of the Dupont Company and the Mitsui Dupont Chemical Company for their fluoride resin.

Heat-resistant Fiber Units
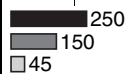
Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)[*1]	Standard object (min. object: Gold wire)	Model	Permissible bending radius
Resists 150°C[*2]; fiber sheath material: fluororesin (operating ambient temperature: −40°C to 150°C) (Free-cut) M6 screw		E3X-DA☐-S	400 / 230 / 72	200×200 (0.005-mm dia.)	E32-D51	35 mm
Resists 200°C[*3]; fiber sheath material: fluororesin (operating ambient temperature: −40°C to 200°C) M6 screw		E3X-DA☐-S	150 / 90 / 27		E32-D81R-S *NEW*	10 mm
Resists 350°C[*3]; fiber sheath material: stainless steel (operating ambient temperature: −60°C to 350°C) M6 screw		E3X-DA☐-S	150 / 90 / 27		E32-D61-S *NEW*	25 mm
Resists 400°C[*3]; fiber sheath material: stainless steel (operating ambient temperature: −40°C to 400°C) M4 screw 1.25-mm dia.		E3X-DA☐-S	100 / 60 / 18	100×100 (0.005-mm dia.)	E32-D73-S *NEW*	

Note: *1. Values were obtained using a white paper (standard object).
** *2.** For continuous operation, use the products within a temperature range of −40°C to 130°C.
** *3.** Indicates the heat-resistant temperature at the fiber tip.
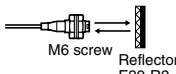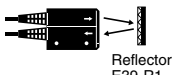
Area-sensing Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)*	Standard object (min. object: Gold wire)	Model	Permissible bending radius
Side-view; detection over wide areas (Free-cut)		E3X-DA☐-S	250 / 150 / 45	300×300 (0.005-mm dia.)	E32-D36P1	25 mm
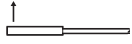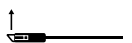
Note: *Values were obtained using a white paper (standard object).

Retroreflective Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)*	Standard object (min. object: Gold wire)	Model	Permissible bending radius
Transparent object detection; Polarized (Free-cut) M6 screw Reflector E39-R3		E3X-DA☐-S	10 to 250 / 10 to 250 / 10 to 250	35-mm dia. (0.1-mm dia.)	E32-R21 + E39-R3 (Attachment)	10 mm
Transparent object detection (operating ambient temperature: −25°C to 55°C); degree of protection: IEC60529 IP66; Polarized (Free-cut) Reflector E39-R1		E3X-DA☐-S	150 to 1,500 / 150 to 1,500 / 150 to 1,500	35-mm dia. (0.2-mm dia.)	E32-R16 + E39-R1 (Attachment)	25 mm
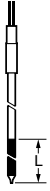
Note: *Values were obtained using a white paper (standard object).

Convergent Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)*			Standard object (min. object: Gold wire)	Model	Permissible bending radius
Suitable for positioning liquid crystal glass (Free-cut)	↑	E3X-DA□-S	▌0 to 15 ▐0 to 15 ▐0 to 15			100×100 Soda glass with reflection factor of 7%	E32-L16 **_NEW_**	25 mm
Suitable for positioning liquid crystal glass (Free-cut)	↑	E3X-DA□-S	▌4 to 12 ▌4 to 12 ▌4 to 12				E32-L56E1 E32-L56E2	35 mm
Suitable for positioning liquid crystal glass (Resists 300°C)	↑	E3X-DA□-S	▌5 to 18 ▌5 to 18 ▐5 to 18				E32-L66 **_NEW_**	25 mm
Liquid crystal glass, mounting detection, small (Free-cut)	↑	E3X-DA□-S	▌0 to 4 ▌0 to 4 ▌0 to 4			25×25 (0.005-mm dia.)	E32-L24S **_NEW_**	10 mm
Detects wafers and small differences in height; (operating ambient temperature: –40°C to 105°C); degree of protection: IEC60529 IP50 (Free-cut)	↑	E3X-DA□-S	▌4±2 ▌4±2 ▌4±2				E32-L24L	10 mm
		E3X-DA□-S	▌7.2±1.8 ▌7.2±1.8 ▐7.2±1.8				E32-L25L	
Detects wafers and small differences in height; degree of protection: IEC60529 IP50 (Free-cut)		E3X-DA□-S	▌3.3 ▌3.3 ▌3.3				E32-L25	25 mm
		E3X-DA□-S	▌3.3 ▌3.3 ▌3.3				E32-L25A	

Note: Values were obtained using a white paper (standard object).

Fluid-level Detection Fiber Units

Features	Appearance	Applicable Amplifier Unit	Sensing distance (mm)	Standard object (min. object: Gold wire)	Model	Permissible bending radius
Fluid contact type: unbendable section L 150 mm, 350 mm (two types); (operating ambient temperature: –40°C to 200°C)		E3X-DA□-S	---	Pure water at 25°C	E32-D82F1 E32-D82F2	40 mm
Tube-mounting type; Light ON when fluid is present; minimal influence from bubbles and water drops [Free-cut]		E3X-DA□-S	Applicable tube: Transparent tube Tube diameter: 3.2, 6.4, or 9.5 mm (Tube must be FEP or material with equivalent transparency; recommended wall thickness: 1 mm)		E32-A01	4 mm
Tube-mounting type; light ON when fluid is present; minimal influence from bubbles and water drops [Free-cut]		E3X-DA□-S	Applicable tube: Transparent tube Tube diameter: 6 to 13 mm (Tube must be FEP or material with equivalent transparency; recommended wall thickness: 1 mm)		E32-A02	
Tube-mounting type; dense mounting to detect level differences of 4 mm [Free-cut]		E3X-DA□-S	Applicable tube: Transparent tube Tube diameter: 8 to 10 mm (Tube must be FEP or material with equivalent transparency; recommended wall thickness: 1 mm)		E32-L25T	10 mm
Tube-mounting type; unlimited tube diameter; minimal influence from bubbles and water drops [Free-cut]		E3X-DA□-S	Applicable tube: Transparent tube Tube diameter: No restriction (Tube must be FEP or material with equivalent transparency)		E32-D36F	4 mm

Output Circuits

NPN Output

Model	Mode selector	Timing chart	State of output transistor	Output circuit
E3X-DA11-S E3X-DA6-S E3X-DAG11-S E3X-DAG6-S E3X-DAB11-S E3X-DAB6-S	LIGHT ON (L/ON)	Incident light / No incident light Operation indicator (orange) ON/OFF Output transistor ON/OFF Load (relay) Operate/Release (Between brown and black)	Light ON	Display — Power tuning indicator (orange) — Operation indicator (orange) — Photo-electric Sensor main circuit — Brown — Black — Load — Control output — Blue — 12 to 24 VDC
	DARK ON (D/ON)	Incident light / No incident light Operation indicator (orange) ON/OFF Output transistor ON/OFF Load (relay) Operate/Release (Between brown and black)	Dark ON	
E3X-DA11TW-S E3X-DA6TW-S	LIGHT ON (L/ON)	CH1/CH2 Incident light / No incident light Operation indicator (orange) ON/OFF Output transistor ON/OFF Load (relay) Operate/Release (Between brown and black)	Light ON	Display — Operation indicator (orange) ch 1 — Operation indicator (orange) ch 2 — Photo-electric Sensor main circuit — Brown — Black — Load — Control output 1 — Orange — Load — Control output 2 — Blue — 12 to 24 VDC
	DARK ON (D/ON)	CH1/CH2 Incident light / No incident light Operation indicator (orange) ON/OFF Output transistor ON/OFF Load (relay) Operate/Release (Between brown and black)	Dark ON	
E3X-DA11RM-S E3X-DA6RM-S	LIGHT ON (L/ON)	Incident light / No incident light Operation indicator (orange) ON/OFF Output transistor ON/OFF Load (relay) Operate/Release (Between brown and black)	Light ON	Display — Power tuning indicator (orange) — Operation indicator (orange) — Photo-electric Sensor main circuit — Brown — Black — Load — Control output — Orange — External input — Blue — 12 to 24 VDC
	DARK ON (D/ON)	Incident light / No incident light Operation indicator (orange) ON/OFF Output transistor ON/OFF Load (relay) Operate/Release (Between brown and black)	Dark ON	

Note: 1. When area setting is used with the E3X-DA□TW-S the ON/OFF regions are as follows:
LIGHT ON:ON when the incident level is between the thresholds for channels 1 and 2.
DARK ON:OFF when the incident level is between the thresholds for channels 1 and 2.

2. Time Charts for Timer Settings (T: Set Time)

ON delay	OFF delay	One-shot
Incident light / No incident light L-ON ON/OFF D-ON ON/OFF	Incident light / No incident light L-ON ON/OFF D-ON ON/OFF	Incident light / No incident light L-ON ON/OFF D-ON ON/OFF

PNP Output

Model	Mode selector	Timing chart	State of output transistor	Output circuit
E3X-DA41-S E3X-DA8-S E3X-DAG41-S E3X-DAG8-S E3X-DAB41-S E3X-DAB8-S	LIGHT ON (L/ON)	Incident light / No incident light; Operation indicator (orange) ON/OFF; Output transistor ON/OFF; Load (relay) Operate/Release (Between blue and black)	Light ON	Display — Power tuning indicator (orange) — Operation indicator (orange) — Photoelectric Sensor main circuit — Brown — Black — Control output — Load — Blue — 12 to 24 VDC
	DARK ON (D/ON)	Incident light / No incident light; Operation indicator (orange) ON/OFF; Output transistor ON/OFF; Load (relay) Operate/Release (Between blue and black)	Dark ON	
E3X-DA41TW-S E3X-DA8TW-S	LIGHT ON (L/ON)	CH1/CH2 Incident light / No incident light; Operation indicator (orange) ON/OFF; Output transistor ON/OFF; Load (relay) Operate/Release (Between blue and black)	Light ON	Display — Operation indicator (orange) ch 1 — Operation indicator (orange) ch 2 — Photoelectric Sensor main circuit — Brown — Control output 1 — Black — Orange Control output 2 — Load — Load — Blue — 12 to 24 VDC
	DARK ON (D/ON)	CH1/CH2 Incident light / No incident light; Operation indicator (orange) ON/OFF; Output transistor ON/OFF; Load (relay) Operate/Release (Between blue and black)	Dark ON	
E3X-DA41RM-S E3X-DA8RM-S	LIGHT ON (L/ON)	Incident light / No incident light; Operation indicator (orange) ON/OFF; Output transistor ON/OFF; Load (relay) Operate/Release (Between blue and black)	Light ON	Display — Power tuning indicator (orange) — Operation indicator (orange) — Photoelectric Sensor main circuit — Brown — Black — External input — Orange Control output — Load — Blue — 12 to 24 VDC
	DARK ON (D/ON)	Incident light / No incident light; Operation indicator (orange) ON/OFF; Output transistor ON/OFF; Load (relay) Operate/Release (Between blue and black)	Dark ON	

Note: 1. When area setting is used with the E3X-DA☐TW-S the ON/OFF regions are as follows:
LIGHT ON: ON when the incident level is between the thresholds for channels 1 and 2.
DARK ON: OFF when the incident level is between the thresholds for channels 1 and 2.

2. Time Charts for Timer Settings (T: Set Time)

ON delay	OFF delay	One-shot
Incident light / No incident light; L-ON ON/OFF; D-ON ON/OFF (T)	Incident light / No incident light; L-ON ON/OFF; D-ON ON/OFF (T)	Incident light / No incident light; L-ON ON/OFF; D-ON ON/OFF (T)

Nomenclature

■ Amplifier Units

E3X-DA□-S
E3X-DA□RM-S

Lock Button
Locks the fiber.

Main Display (Red)
Incident level,
function, etc.

Sub-Display (Green)
Threshold, function
settings, etc.

Operation Keys
Function setting operations

UP
DOWN
MODE

Operation Indicator (orange)
ON when output is ON.
OFF when output is OFF.

Power Tuning Indicator
ON: Power
tuning is set.

Mode Selector
Use to select SET or RUN mode.

Operation Mode Selector
Use to switch between Light
ON and Dark ON modes.

E3X-DA□TW-S

Lock Button
Locks the fiber.

Main Display (Red)
Incident level,
function, etc.

Sub-Display (Green)
Threshold, function
settings, etc.

Operation Keys
Function setting operations

UP
DOWN
MODE

Operation indicator for channel 1 (orange)
ON when output is ON.
OFF when output is OFF.

Operation indicator for channel 2 (orange)
ON when output is ON.
OFF when output is OFF.

Mode Selector
Use to select SET or RUN mode.

Channel Selector
Use to switch between
channels 1 and 2.

Adjustment Methods

1. Setting the Operation Mode

The operation mode is set with the Operation Mode Selector.

Operation mode		Operation
Light ON	L·ON	L ■■□ (Factory-set)
Dark ON	D·ON	□■■ D

- E3X-DA□TW-S: The operation mode is set with the channel selector. Refer to *Section 5. Setting Functions in SET Mode on page 23*.
- E3X-DA□TW-S: Set the Channel Selector to the desired channel before making any adjustments or settings. This is true for all adjustments and settings.

2. Adjusting the Power (RUN Mode)

The current incident light level can be adjusted to near the power tuning target value (default: 2,000).

- Confirm that the MODE key setting is PTUN (power tuning). The default setting is PTUN. Refer to *Section 5. Setting Functions in SET Mode on page 23*

Set the Mode Selector to RUN.
RUN
(Factory-set to RUN)

Light level   Threshold (default)
0 4000 ○ 1234

MODE ○ < 3 s
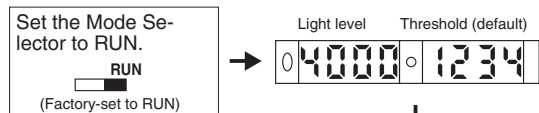
Release the key after the progress bar is displayed.

PTUN   Progress bar
0 PtUn ○   1

Display changes after specific time.

0 2000 ○ |||||
Power tuning target value

Light level   Threshold
0 2000 • 1234
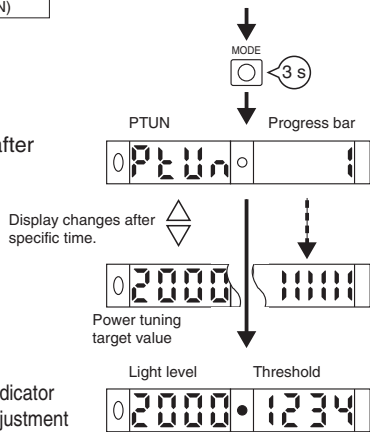
The Power Tuning indicator will light when the adjustment has been completed.

To restore the default power settings:

DOWN ○ + MODE ○ < 3 s
Press together (see note).

"OFF" will flash twice.

PTUN   OFF
0 PtUn • oFF
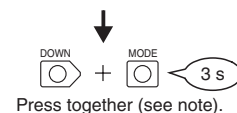
The Power Tuning indicator will go out when the default setting has been restored.

Light level   Threshold
0 4000 ○ 1234
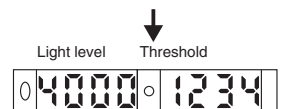
* Setting Errors

An error has occurred if one of the following displays appears after the progress bar is displayed.

Display	Error	Action
Flashes twice 0 PtUn ○ ouEr PTUN OVER	**Over Error** The incident light level is too low for the power tuning target value.	The power will not be tuned. The power can be increased up to approximately 5 times the incident light value.
Flashes twice 0 PtUn ○ botñ PTUN BOTM	**Bottom Error** The incident light level is too high for the power tuning target value.	The power will be turned to the minimum level. The power can be decreased down to approximately 1/25th the incident light value.

Note: Press the DOWN key right after pressing the MODE key.

3. Setting Thresholds Manually (RUN Mode)

A threshold can be set manually. A threshold value can also be fine-tuned using manual setting after teaching.

Set the Mode Selector to RUN.
RUN
(Factory-set to RUN)

Light level   Threshold (default)
0 2000 ○ 1234

UP ○ / DOWN ○
Increases threshold.   Decreases threshold.
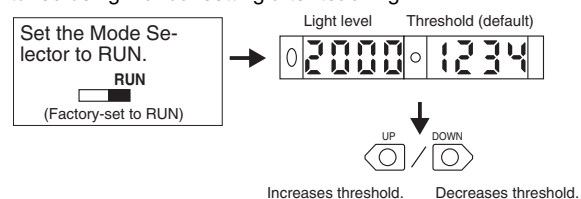
• Even if the display method for display switching is changed, the threshold will appear on the sub-display when the key is pressed.

4. Teaching the Threshold Value (SET Mode)

• There are four methods that can be used for teaching, as described below. Use the method most suitable for the application.
• An error has occurred if OVER, LO, or NEAR is displayed on the sub-display. Repeat the operation from the beginning.

4-1.Setting the Threshold at Maximum Sensitivity

The threshold can be set at the maximum sensitivity. This method is ideal when using a Through-beam Fiber Unit to detect workpieces so that detection is not influenced to any great degree by dust and other environmental factors.

Set the Mode Selector to SET.

SET

Light level   Threshold

0 `2000` ∘ `1234`

○ / ○ Either for 3 s

The threshold value that was set will flash twice.

FULL   Threshold

0 `FULL` ∘ `6`

The previous display will return when the setting has been completed.

Light level   Threshold

0 `2000` ∘ `6`
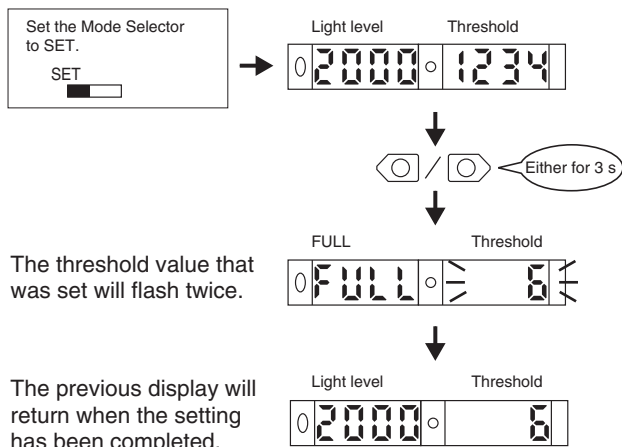
4-2. Teaching a Through-beam Fiber Unit without a Workpiece

A value about 6% less than the incident light level can be set as the threshold value. This method is ideal when detecting very small differences in light level, such as when detecting very fine or transparent objects.

Set the Mode Selector to SET.

SET

Light level   Threshold

0 `2000` ∘ `1234`

With no workpiece:

○ / ○ Either for 1 s

"- - - -" will be displayed.

TECH   - - - -

0 `tEch` ∘ `- - - -`

RUN To RUN

The set threshold value will flash twice.

THRU   Threshold

0 `thrU` ∘ `1880`

The previous display will return when the setting has been completed.

Light level   Threshold

0 `2000` ∘ `1880`
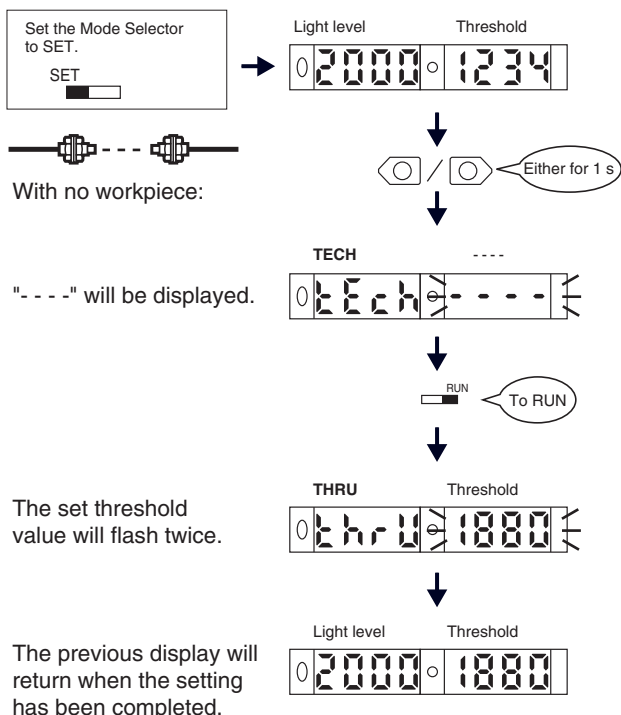
4-3. Teaching a Reflective Fiber Unit without a Workpiece

A value about 6% greater than the incident light level can be set as the threshold value. This method is ideal when using a Reflective Fiber Unit to detect workpieces so that detection is not influenced to any great degree by dust and other environmental factors.

Set the Mode Selector to SET.

SET

Light level   Threshold

0 `2000` ∘ `1234`

With no workpiece:

○ / ○ Either for 1 s

"- - - -" will be displayed.

TECH   - - - -

0 `tEch` ∘ `- - - -`

○ / ○ Either for 3 s

The set threshold value will flash twice.

RFCH   Threshold

0 `rFch` ∘ `2120`

The previous display will return when the setting has been completed.

Light level   Threshold

0 `2000` ∘ `2120`
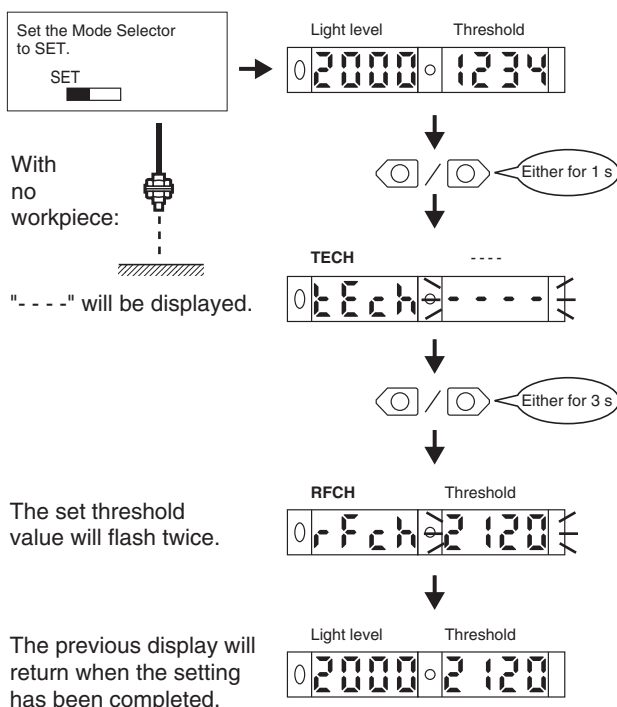
4-4. Teaching With and Without a Workpiece

Teaching can be performed twice, once with and once without a workpiece, and the value between the two measured value can be set as the threshold.

Set the Mode Selector to SET.

SET

Light level   Threshold

0 `2000` ∘ `1234`

With a workpiece:

○ / ○ Either for 1 s

"- - - -" will be displayed.

TECH   - - - -

0 `tEch` ∘ `- - - -`

With no workpiece:

○ / ○ Either for 1 s

The set threshold value will flash twice.

RFCH   Threshold

0 `rFch` ∘ `3000`

The previous display will return when the setting has been completed.

Light level   Threshold

0 `2000` ∘ `3000`
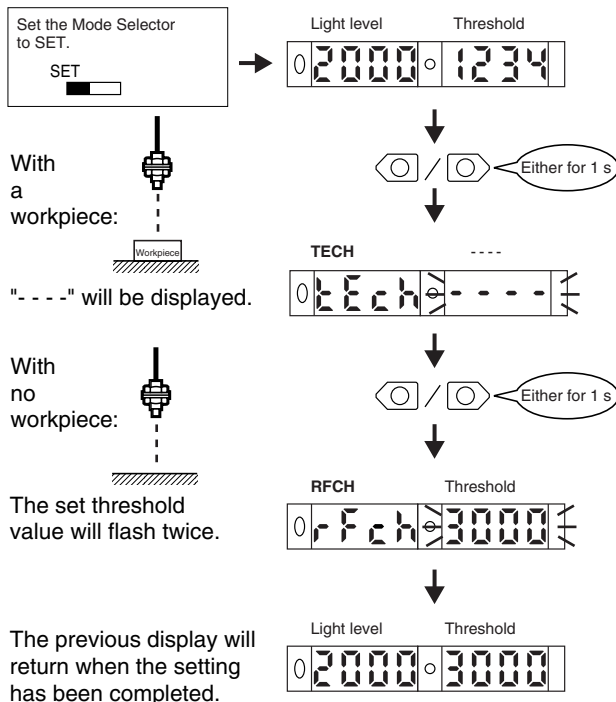
5. Setting Functions in SET Mode

• The default settings are shown in the transition boxes between functions.

For the E3X-DA☐-S

Set the Mode Selector to SET.

SET

Teaching: Refer to *Section 4. Teaching the Threshold Value (SET Mode) on page 22*.

0 | 2000 ∘ 1234

Light Level and Threshold Display

MODE
Switch to desired function.

Detection (To increase detection speed or accuracy)

0 | 1-Fn ∘ Stnd

SHS	High-speed mode
Stnd	Standard mode
HrES	High-resolution mode

MODE Ⓐ UP / DOWN

Changes the setting.

Timer (To use the timer function)

0 | 2-tF ∘ - - - -

- - - -	Timer disabled
oFFd	OFF-delay timer
on-d	ON-delay timer
1Sht	One-shot timer

MODE UP / DOWN

Enables the timer.

Time

tt ∘ 40

Timer disabled.

Setting range: 0 to 5,000 ms

1 to 20 ms	1-ms increments
20 to 200 ms	5-ms increments
200 ms to 1 s	100-ms increments
1 to 5 s	1-s increments

MODE UP / DOWN

Display switch (To change the display method)

0 | 3-dP ∘

MODE UP / DOWN *1 - - - - - - - - - →

*1 The display will be switched as shown below.

0	3112 ∘ 2000 Light level Threshold	The incident light level and the threshold value.
0	P 123 ∘ 2000 % light level Threshold	The incident light level as a percentage of the threshold value and the threshold value.
0	L-PE ∘ d-bt L-PE D-BT	The incident light peak level and no incident light bottom level. (Refreshed when output turns ON or OFF.)
0	L-bt ∘ d-PE L-BT D-PE	The min. incident light peak level and max. incident light bottom level, showing min. width of light level change. (Refreshed when output turns ON or OFF.)
0	∘ IIIIII Detection status	Analog bar display. The current detection status is displayed as an analog bar. The bar will lengthen from the right as ON status is reached. (ON: Red; OFF: Green)
0	3112 ∘ PEAH Light level PEAK ↕ Fixed interval 0	3112 ∘ 3800 Light level Peak light level	The current incident light level and the peak incident light level.
0	3112 ∘ 2ch Light level Channel	The incident light level and the channel.
0	c 112 ∘ 3286 Count	(For the E3X-DA☐RM-S Only) The counter value.

MODE key (To change the function of the MODE key during operation)

0 | 4-md ∘ PtUn

PtUn	Executes power tuning.
0rSt	Executes a zero reset.

MODE UP / DOWN

Power tuning target value

Refer to *2. Adjusting the Power (RUN Mode) on page 19*.

0 | 5-PL ∘ 2000

Setting range: 100 to 3,900 (increments of 100)

FULL	Maximum power

MODE UP / DOWN

Display orientation (To reverse the orientation of the display.)

0 | 6-rw ∘ d 123

d 123	Normal display
E2I P	Up/down reversed display

MODE UP / DOWN

Ⓑ

For the E3X-DA□TW-S

Set the Mode Selector to SET.

SET

Teaching: Refer to *Section 4. Teaching the Threshold Value (SET Mode) on page 22*

`2000` `1234`

Light Level and Threshold Display

MODE ○
Switch to desired function.

Operation mode ▼ (Refer to *1. Setting the Operation Mode*, page 21.)

`0-oP` `Lon`

Lon	Light ON
don	Dark ON

MODE ○   UP ○ / DOWN ○

Changes the setting.

Detection ▼ (To change response speed, detection accuracy/method)

`1-Fn` `Stnd`

SHS	High-speed mode
Stnd	Standard mode
HrES	High-resolution mode
diFF	Differential operation

MODE ○   UP ○ / DOWN ○

Differential operation

Differential edge ▼

`E9` `_r¯`

_r¯	Single edge
_n_	Double edge

MODE ○   UP ○ / DOWN ○

Not differential operation

Differential time ▼

`SP` `3`

MODE ○   UP ○ / DOWN ○

	Single edge	Double edge
1	250 μs	500 μs
2	500 μs	1 ms
3	1 ms	2 ms
4	10 ms	20 ms
5	100 ms	200 ms

Ⓐ

See *For the E3X-DA□-S* on previous page.

Ⓑ

Twin outputs ▼ (To change the output for channel 2)

`7-ot` `2oUt`

2oUt	Output for each channel.
ArEA	Output if level is between the two thresholds.
SELF	Self-diagnosis output

MODE ○   UP ○ / DOWN ○

This setting is disabled if differential operation is set for the detection function. (Alarm outputs are always used for differential operation.)

For the E3X-DA□RM-S

Set the Mode Selector to SET.

SET

Teaching: Refer to *Section 4. Teaching the Threshold Value (SET Mode) on page 22*.

`2000` `1234`

Light Level and Threshold Display

MODE ○
Switch to desired function.

Detection ▼ (To change response speed, detection accuracy/method)

`1-Fn` `Stnd`

SHS	High-speed mode
Stnd	Standard mode
HrES	High-resolution mode
diFF	Differential operation

MODE ○   UP ○ / DOWN ○

Changes the setting.

Differential operation

Differential edge ▼

`E9` `_r¯`

_r¯	Single edge
_n_	Double edge

MODE ○   UP ○ / DOWN ○

Not differential operation

Differential time ▼

`SP` `4`

MODE ○   UP ○ / DOWN ○

	Single edge	Double edge
1	250 μs	500 μs
2	500 μs	1 ms
3	1 ms	2 ms
4	10 ms	20 ms
5	100 ms	200 ms

Ⓐ

See *For the E3X-DA□-S* on previous page.

Ⓑ

External input (To change function controlled by external input.)

`7-rn` `thrU`

thrU THRU	Thru-beam, no-workpiece teaching
rFct RFCT	Diffuse, no-workpiece teaching
2Pnt 2PNT	With/Without-workpiece teaching
AUto AUTO	Automatic teaching
PtUn PTUN	Power tuning
0rSt 0RST	Zero reset
LoFF LOFF	Light OFF
crSt CRST	Counter reset

MODE ○   UP ○ / DOWN ○

External input memory (Refer to instructions provided with the product.)

`8-EP` `on`

on ON	Write results to EEPROM.
oFF OFF	Don't write results.

MODE ○   UP ○ / DOWN ○

Counter (To set the counter function.)

`9-ct` `oFF`

oFF OFF	Counter disabled.
cUP CUP	Count incremented when output turns ON.
cdo CDO	Count decremented when output turns ON.

MODE ○   UP ○ / DOWN ○

Counter enabled

Count ▼ Setting range: 1 to 9,999,999

`c` `0`

Counter disabled

MODE ○   UP ○ / DOWN ○

6. Convenient Functions

6-1. Zeroing the Digital Display

The incident light level on the digital display can be set to 0.

• Change the function to 0RST (zero reset) with the MODE key. The default setting is PTUN. Refer to Section 5. Setting Functions in SET Mode on page 23.

Set the Mode Selector to RUN
RUN
Fastory setting

MODE ○ 3 s

To reset to 0 again:

MODE ○ 3 s
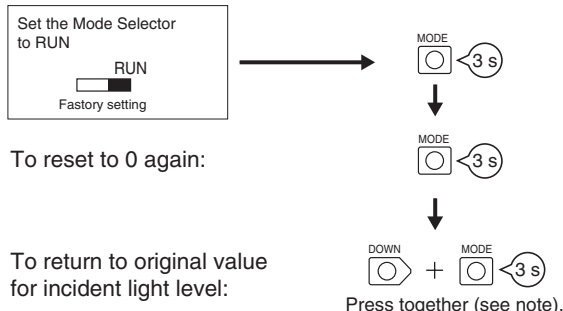
To return to original value for incident light level:

DOWN ○ + MODE ○ 3 s
Press together (see note).

6-2. Locking the Keys

All key operations can be disabled.

Set the Mode Selector to RUN.
RUN
Factory setting

UP ○ + MODE ○ 3 s
Press together (see note).
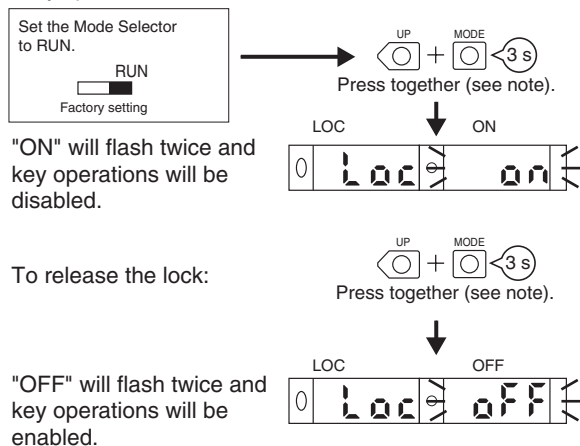
"ON" will flash twice and key operations will be disabled.

LOC   ON
0 | Loc   on |

To release the lock:

UP ○ + MODE ○ 3 s
Press together (see note).

"OFF" will flash twice and key operations will be enabled.

LOC   OFF
0 | Loc   oFF |

* If a key is pressed while key operations are locked, "LOC" will flash twice on the display to indicate that key operations have been disabled.

Loc

Note: Press the DOWN key right after pressing the MODE key.

6-3. Initializing Settings

All settings can be returned to their original default settings.

Set the Mode Selector to SET.
SET

UP ○ + DOWN ○ 3 s
Press together (see note).

INIT   YES?   INIT   NO?
0 | In It ○ YES? | ↔ | 0 | In It ○ noP |

MODE ○   UP ○ / DOWN ○   MODE ○

Settings initialized.   Operation canceled.
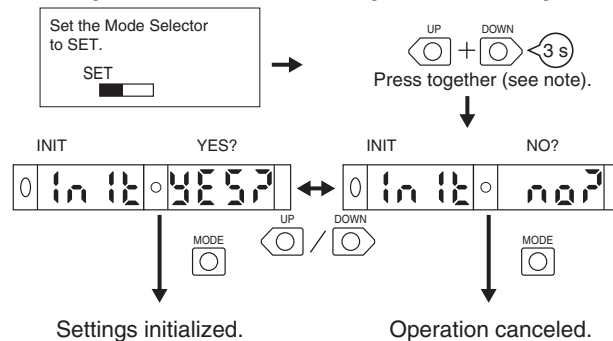
Safety Precautions

Note: In addition to the precautions in this data sheet, please read and observe the common precautions in the instruction sheet accompanying the product.

■ Amplifier Unit

Installation

Operation After Turning Power ON

The Amplifier Unit is ready to operate within 200 ms after the power supply is turned ON. If the Sensor and load are connected to separate power supplies, be sure to turn ON the power supply for the Sensor first.

Mounting

Connecting and Disconnecting Connectors

Mounting Connectors

1. Insert the Master or Slave Connector into the Amplifier Unit until it clicks into place.

Insert
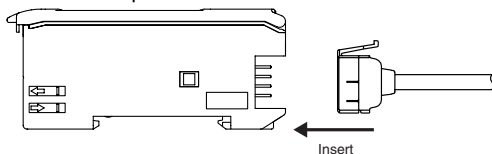
2. Attach the protector seals (provided as accessories) to the sides of master and slave connectors that are not connected.
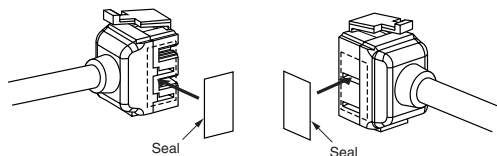
Seal   Seal

Note: Attach the seals to the sides with grooves

Removing Connectors

1. Slide the slave Amplifier Unit(s) for which the Connector is to be removed away from the rest of the group.
2. After the Amplifier Unit(s) has been separated, press down on the lever on the Connector and remove it. (Do not attempt to remove Connectors without separating them from other Amplifier Units first.)

Press down
Lever
Remove
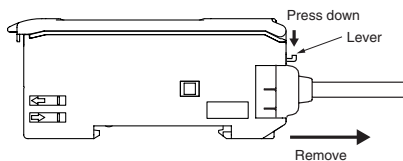
Joining and Removing Amplifier Units

Joining Amplifier Units

1. Mount the Amplifier Units one at a time onto the DIN track.
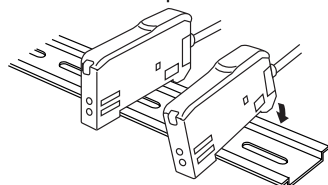
2. Slide the Amplifier Units together, line up the clips, and press the Amplifier Units together until they click into place.

Click into place
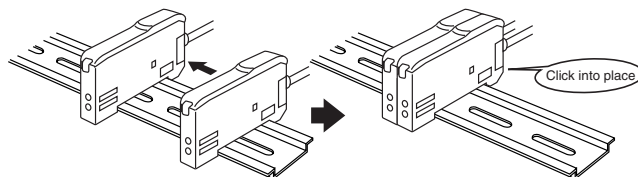
Separating Amplifier Units

Slide Amplifier Units away from each other, and remove from the DIN track one at a time. (Do not attempt to remove Amplifier Units from the DIN track without separating them first.)

Note: 1. The specifications for ambient temperature will vary according to the number of Amplifier Units used together. For details, refer to *Ratings/Characteristics*.

2. Always turn OFF the power supply before joining or separating Amplifier Units.

Mounting the End Plate (PFP-M)

An End Plate should be used if there is a possibility of the Amplifier Unit moving, e.g., due to vibration. If a Mobile Console is going to be mounted, connect the End Plate in the direction shown in the following diagram.

End Plate
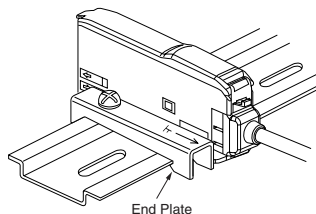
Mounting the Mobile Console Head

Leave a gap of at least 20 mm between the nearest Amplifier Unit and the Mobile Console head.

20 mm
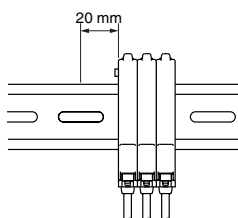
Fiber Connection

The E3X Amplifier Unit has a lock button for easy connection of the Fiber Unit. Connect or disconnect the fibers using the following procedures:

1. Connection

Open the protective cover, insert the fibers according to the fiber insertion marks on the side of the Amplifier Unit, and lower the lock button.
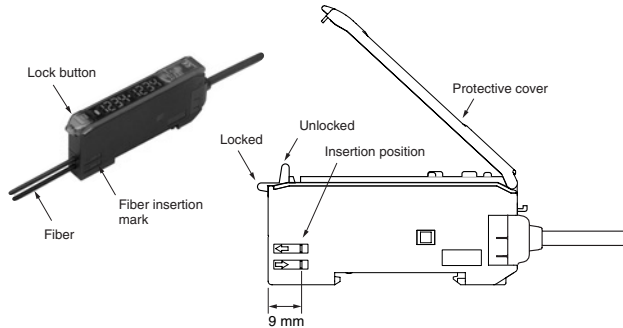
Fibers with E39-F9 Attachment
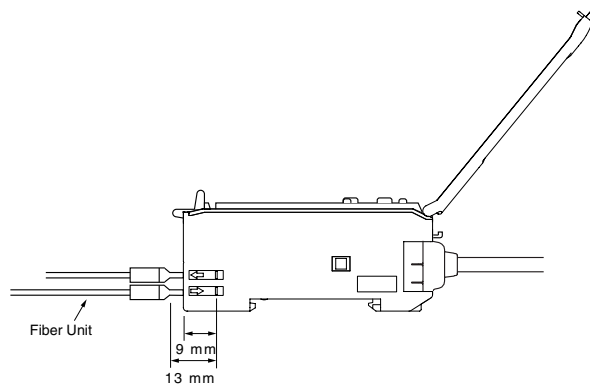
Fibers That Cannot Be Free-Cut (with Sleeves)
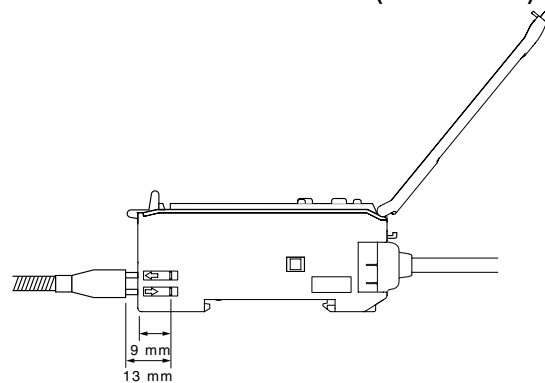
2. Disconnecting Fibers

Remove the protective cover and raise the lock button to pull out the fibers.
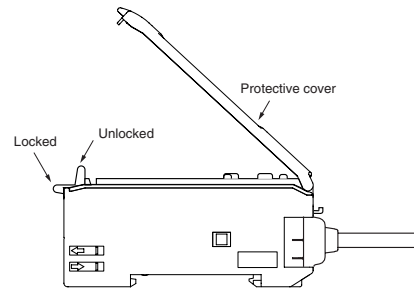
Note: 1. To maintain the fiber properties, confirm that the lock is released before removing the fibers.

2. Be sure to lock or unlock the lock button within an ambient temperature range between –10°C and 40°C.

Adjustments

Mutual Interference Protection Function

There may be some instability in the digital display values due to light from other sensors. If this occurs, decrease the sensitivity (i.e., decrease the power or increase the threshold) to perform stable detection.

EEPROM Writing Error

If the data is not written to the EEPROM correctly due to a power failure or static-electric noise, initialize the settings with the keys on the Amplifier Unit. ERR/EEP will flash on the display when a writing error has occurred.

Optical Communications

Several Amplifier Units can be slid together and used in groups. Do not, however, slide the Amplifier Units or attempt to remove any of the Amplifier Units during operation.

Other Precautions

Protective Cover

Always keep the protective cover in place when using the Amplifier Unit.

Mobile Console

Use the E3X-MC11-S Mobile Console for the E3X-DA-S-series Amplifier Units. Other Mobile Consoles, such as the E3X-MC11, cannot be used.

OMRON

Dimensions

Unit: mm (inch)

■ Amplifier Units

Amplifier Units with Cables

E3X-DA11-S
E3X-DA41-S
E3X-DAG11-S
E3X-DAG41-S
E3X-DAB11-S
E3X-DAB41-S
E3X-DA11RM-S
E3X-DA41RM-S
E3X-DA11TW-S
E3X-DA41TW-S

Operation indicator
Round (O): Power tuning indicator
Oblong (0): Operation indicator for channel 2
Main display
Sub-display
Vinyl-insulated round cable
Standard length: 2 m*
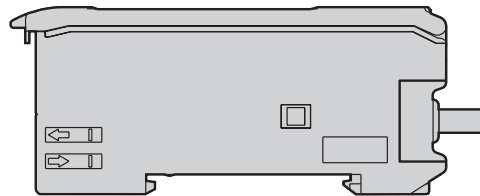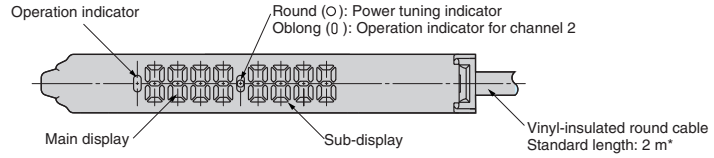
*Cable Specifications

E3X-DA11-S/DA41-S/DAG11-S/DAG41-S/DAB11-S/DAB41-S	A 4-dia., 3-conductor (conductor cross-sectional area: 0.2 mm²; insulation diameter: 1.1 mm)
E3X-DA11TW-S/DA41TW-S/DA11RM-S/DA41RM-S	A 4-dia., 4-conductor (conductor cross-sectional area: 0.2 mm²; insulation diameter: 1.1 mm)

With Mounting Bracket Attached

32.8
29.8
15.1
12.15
3.9×3 =11.7
3.25
3.9×3=11.7

The Mounting Bracket can also be used on this side.

10
(0.39)
Two, 2.4 dia.
4.5
5.65

4.3
70
(2.75)
32
(1.26)
12.5
9.9
3.4

28.1
16
18.7
34.8
44.3

Hole for optical communications
Mounting Bracket (E39-L143)
SUS304 stainless steel
Two, 3.2 dia. holes

Two, M3
16
Mounting Holes

3.4
4.4
28.1
16

---

28   Digital Fiber Sensors **E3X-DA-S**
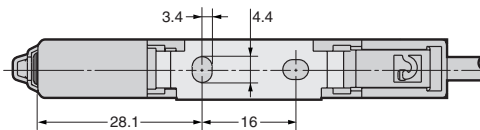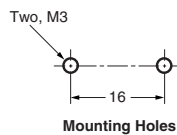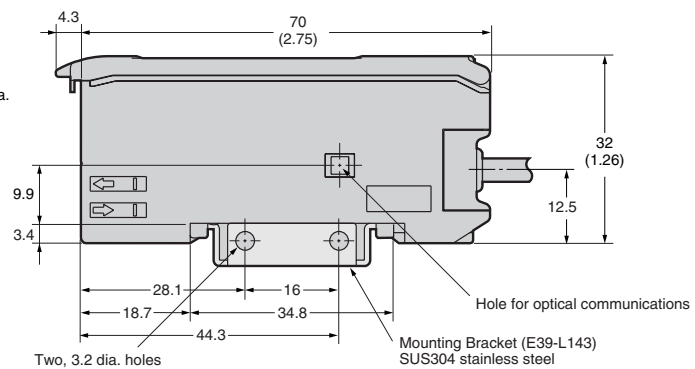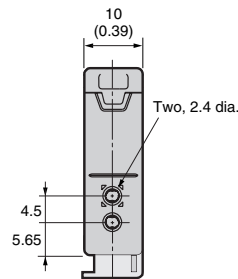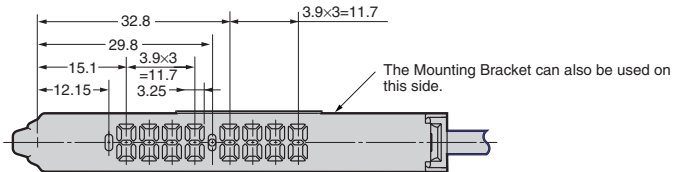
Amplifier Units with Connectors

E3X-DA6-S
E3X-DA8-S
E3X-DAG6-S
E3X-DAG8-S
E3X-DAB6-S
E3X-DAB8-S
E3X-DA6RM-S
E3X-DA8RM-S
E3X-DA6TW-S
E3X-DA8TW-S

Operation indicator

Round (O): Power tuning indicator
Oblong (0): Operation indicator for channel 2

Main display

Sub-display
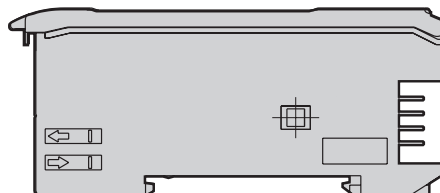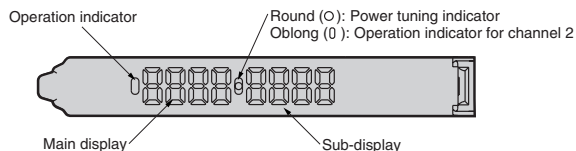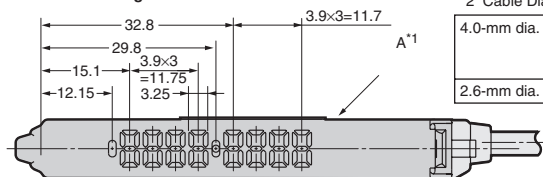
*1 The Mounting Bracket can also be used on this side.
*2 Cable Diameters

4.0-mm dia.	E3X-CN11 (3 conductors)
	E3X-CN21 (4 conductors)
	E3X-CN22 (2 conductors)
2.6-mm dia.	E3X-CN12 (1 conductor)

With Mounting Bracket Attached

32.8
29.8
15.1
12.15
3.9×3=11.7
3.9×3 =11.75
3.25
A*1

10
(0.39)

70
(2.75)
4.3
8.1
Connector

Two, 2.4 dia.

4.5
5.65
9.9
3.4

Dia. A*2
32
(1.26)
12.95

28.1
16
18.7
34.8
44.3

Hole for optical communications

Two, 3.2 dia. holes

Mounting Bracket (E39-L143) SUS304 stainless steel

Two, M3

16

Mounting Holes

3.4
4.4

28.1
16
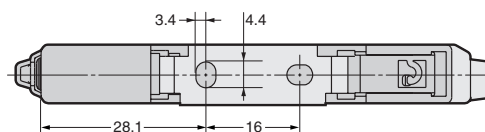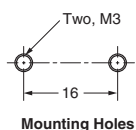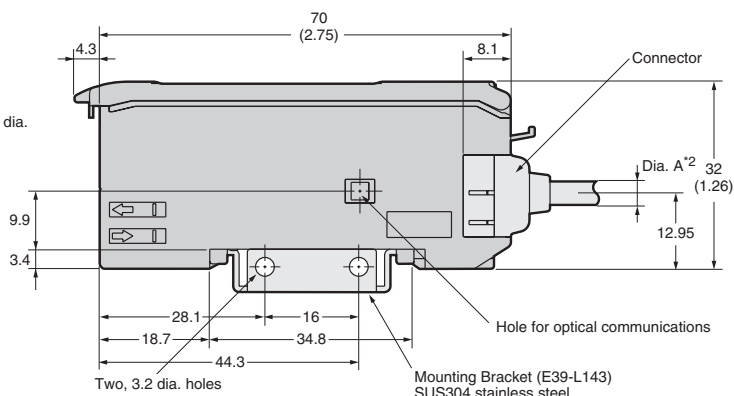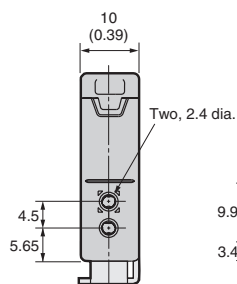
■ Amplifier Unit Connectors

Master Connectors

E3X-CN11
E3X-CN21

10
(0.39)
6
2.9
2.6
14.4
6
0.8

10.7
6.8
4
8.4
15.1

2000 +50/0
(2 M)

4 dia.

*

30±2
10±2
50 +5/0
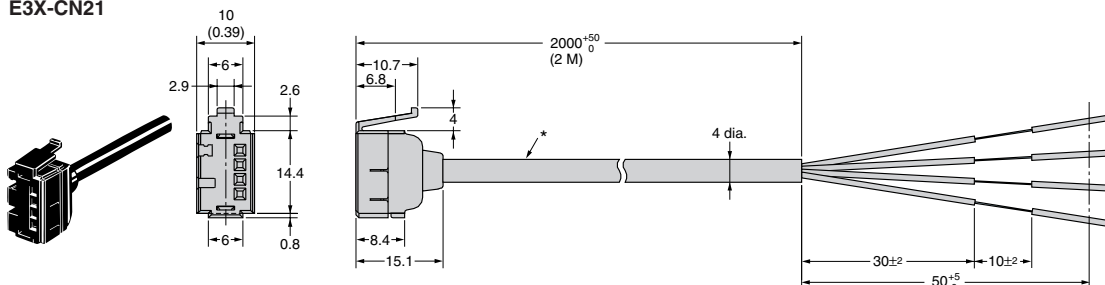
*E3X-CN11: A 4-dia., 3-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.2 mm²; insulation diameter: 1.1 mm) is used.
E3X-CN21: A 4-dia., 4-conductor, vinyl-insulated round cable (conductor cross-

Unit: mm (inch)

Slave Connectors

E3X-CN12
E3X-CN22

10
(0.39)

6

2.9

2.6

14.4

6

0.8

3

10.7

6.8

4

8.4

15.1

2,000 $^{+50}_{0}$
(2 M)

E3X-CN12: 2.6 dia.
E3X-CN22: 4 dia.

*

30±2

10±2

50 $^{+5}_{0}$
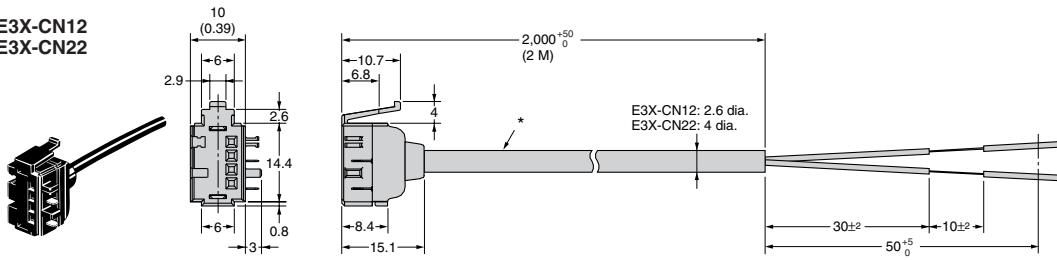
*E3X-CN12: A 2.6-dia., single-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.2 mm^2; insulation diameter: 1.1 mm) is used.

E3X-CN22: A 4-dia., 2-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.2 mm^2; insulation diameter: 1.1 mm) is used.

■ Mobile Console

E3X-MC11-S

Mobile Console

AC adapter jack

Communications jack

Mobile Console Head

22
(0.87)

Menu indicators

52.8
(2.08)

Optical communications
connection indicator

Channel indicator

Sensor
operation
indicator

Main display

Channel
buttons

Sub-display

UP key

136
(5.35)

LEFT
key

RIGHT key

DOWN
key

ESC/PWR
key

ENT key

Operation keys

Battery
indicators

50
(1.97)

Communications jack

10

20
(0.78)

(38.2)

13.1

31.8

16.3

13.2

28.8

30.3
(1.19)

24.3

27.7

9.9

M5 ball plunger

Optical communi-
cations position

31.2

36.7

5.6

51.3
(2.02)

1.2

5.1

12.3

17.3

■ Fiber Optic Cables

Unit: mm (inch)

Through-beam Fiber Units (Sold in Pairs)

(Free-cut) Indicates models that allow free cutting. Models without this mark do not allow free cutting.)

E32-T11L (Free-cut)
Two hexagonal clamping nuts
M2.6 x 0.45
Two toothed washers
Sensing head, M4 x 0.7 (nickel-plated brass)
2.2-dia. optical fiber
1.4 dia. 3.2 3 11 14 7
2 m (6.56 ft.)

E32-T12L (Free-cut)
1.4 dia. 2.4 dia. Sensing head, 3 dia. (nickel-plated brass)
2.2-dia. optical fiber
3 11 14
2 m (6.56 ft.)

E32-T21L (Free-cut)
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M3 x 0.5 (nickel-plated brass)
1-dia. optical fiber
25 10
0.9 dia. 2.5 5.5 1.7 11 1.8
Fiber Attachment (E39-F9)
2 m (6.56 ft.)

E32-T22L (Free-cut)
Sensing head, 2 dia. (stainless steel)
Heat-shrinkable tubing
1-dia. optical fiber
25 10
0.9 dia. 1.8 dia. 2 17 22 12
Fiber Attachment (E39-F9)
2 m (6.56 ft.)

E32-T17L (Free-cut)
Sensing head, M14 x 1 (ABS)
10-mm dia. lens (PMMA)
Two hexagonal clamping nuts
2.2-dia. optical fiber
19 5 23 42
10 m (32.8 ft.)

E32-TC200 (Free-cut)
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M4 x 0.7 (nickel-plated brass)
2.2-dia. optical fiber
1.0 dia. M2.6 x 0.45
3.2 7 3 14 2.4
2 m (6.56 ft.)

E32-T11R (Free-cut)
151, 0.075 dia.
M2.6
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M4 x 0.7 (nickel-plated brass)
2.2-dia. optical fiber
3.2 7 3 14 2.4
2 m (6.56 ft.)

E32-T12R (Free-cut)
151, 0.075 dia. 2.4 dia.
Sensing head, 3 dia. (nickel-plated brass)
2.2-dia. optical fiber
3 11 14
2 m (6.56 ft.)

E32-TC200A (Free-cut)
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M3 x 0.5 (nickel-plated brass)
2.2-dia. optical fiber
1.0 dia. 2.2 dia. 3 dia.
5.5 1.8 1.5 7 1 4
2 m (6.56 ft.)

E32-TC200E (Free-cut)
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M3 x 0.5 (nickel-plated brass)
1-dia. optical fiber
25 10
0.5 dia. 2.5 5.5 1.8 11
Fiber Attachment (E39-F9)
2 m (6.56 ft.)

E32-T21R (Free-cut)
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M3×0.5 (nickel-plated brass)
3 dia.
151, 0.037 dia. 5.5 1.8 9.5 13.5
2.2-dia. optical fiber
2 m (6.56 ft.)

E32-T22 (Free-cut)
Sensing head (SUS303 stainless steel)
Heat-shrinkable tubing
1-dia. optical fiber
25 10
0.5 dia. 2 dia. 1.4 dia. 17 22 12
Fiber Attachment (E39-F9)
2 m (6.56 ft.)

E32-T22R (Free-cut)
Sensing head (SUS303 stainless steel)
Heat-shrinkable tubing
1-dia. optical fiber
25 10
151, 0.037 dia. 2 dia. 1.4 dia. 17 22 12
Fiber Attachment (E39-F9)
2 m (6.56 ft.)

E32-TC200B / E32-TC200B4 (Free-cut)
Stainless tube (SUS304)
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M4 x 0.7 (standard) (nickel-plated brass)
2.2-dia. optical fiber
1.0 dia. 1.2 max. 3.2 7 90 40 (see note) 11 2.4
2 m (6.56 ft.)

Note: The value in the parentheses is for the E32-TC200B4.

OMRON

Unit: mm (inch)

E32-TC200F
E32-TC200F4 ⟨Free-cut⟩

Two hexagon clamping nuts
Two toothed washers
Sensing head, M3 x 0.5 (nickel-plated brass)
1-dia. optical fiber
Stainless tube (SUS304)
0.5 dia.
0.9 dia. max.
2.5
5.5
1.8
90
40 (see note)
11
25
10
Fiber Attachment (E39-F9)
2 m (6.56 ft.)

Note: The value in the parentheses is for the E32-TC200F4.

E32-T11 ⟨Free-cut⟩

Sensing head, M4 x 0.7 (nickel-plated brass)
Two hexagon clamping nuts
Two toothed washers
Sixteen, 0.265 dia.
M2.6 x 0.45
Protective tube
2.2-dia. optical fiber
3.2
7
3.3
14
2.4
15
2 m (6.56 ft.)

E32-T21 ⟨Free-cut⟩

Sensing head, M3 x 0.5 (nickel-plated brass)
Two hexagon clamping nuts
Two toothed washers
Protective tube
Four, 0.25 dia.
2.5
5.5
1.8
11
15
1-dia. optical fiber
25
10
Fiber Attachment (E39-F9)
2 m (6.56 ft.)

E32-T22B ⟨Free-cut⟩

Sensing head (nickel-plated brass)
1-dia. optical fiber
Four, 0.25 dia.
1.5 dia.
10
25
10
Fiber Attachment (E39-F9)
2 m (6.56 ft.)

E32-T14L
E32-T14LR ⟨Free-cut⟩

Sensing head, 3 dia. (SUS304 stainless steel)
2.2-dia. optical fiber
Heat-shrinkable tubing
45°
2.8
3 dia.
1.5
1
1.5
30
35
12
2 m (6.56 ft.)
Sensing surface

E32-T24
E32-T24R ⟨Free-cut⟩

Sensing head, 2 dia. (SUS304 stainless steel)
Fiber Attachment (E39-F9)
Stainless tube, 1 dia.
Heat-shrinkable tubing
1-dia. optical fiber
45°
1
0.5
1.5
15
15
12
35
25
10
2 m (6.56 ft.)
1.4 dia.

E32-T14 ⟨Free-cut⟩

Lens unit (PMMA)
4.4 dia.
8.2
Heat resistive ABS
Nitrile rubber
7
R3.5
Optical axis
Two, 3.2 dia.
2.2-dia. optical fiber
10.5
8
7
2.5
9.2
16
10±0.2
11.2
2 m (6.56 ft.)

E32-T12F ⟨Free-cut⟩

4-mm dia. lens
Sensing head, 5 dia.
Fluoride resin
4 dia.
2.2-dia. optical fiber
20
2 m (6.56 ft.)
100

E32-T14F ⟨Free-cut⟩

Sensing head, 5 dia.
Fluoride resin
4 dia.
2.2-dia. optical fiber
4.5
Optical axis
21
2 m (6.56 ft.)
100

E32-T81F,
E32-T81F-S

6 dia.
(R6)
PFA cover
Protective tube
2 dia.
PFA tube
4 dia.
5 dia.
Sleeve
2.2 dia.
3.7 dia.
0.8
30
70
2 m (6.56 ft.)
5
28
13.2
A
B

Note: Section A resists 200°C and section B resists 110°C.

E32-T81R,
E32-T81R-S

Two hexagonal clamping nuts
Two toothed washers
Sensing head, M4 x 0.7 (SUS303 stainless steel)
Protective tube
Fluorocarbon resin tube
3.6 dia.
2 dia.
4 dia.
5 dia.
Sleeve
2.2 dia.
M2.6 x 0.45
0.7 dia.
7
3
2.4
20
4 dia.
10
(75)
2 m (6.56 ft.)
3
5
20
13
A
B

Note: Section A resists 200°C and section B resists 110°C.

E32-T51 (Free-cut)

1.5 dia.

Two hexagonal clamping nuts
Two toothed washers
Sensing head, M4 x 0.7 (nickel-plated brass)

2.85 dia.
2.4
1
15
17
7

2.2-dia. optical fiber

2 m (6.56 ft.)

Note: Resistant temperature is 150°C.
Resistant temperature is 130°C when used continuously.

E32-T61,
E32T61-S

1.0 dia. M2.6 x 0.45

Two hexagonal clamping nuts
Two toothed washers
Sensing head, M4 x 0.7 (SUS303 stainless steel)

Flexible tube, 2.8-dia. (stainless steel)
Hexagonal clamping screw
4 dia. 5 dia. Sleeve

3
20
2.4
10
4 dia.
2 m (6.56 ft.)
5
28
A
B
7
(See note)
13*

Note: Section A resists 300°C and section B (which is inserted to the Amplifier) resists 110°C.
The operating temperature of the section to be inserted into the Sensor (marked with *) must be within the operating temperature range of the Amplifier.

E32-T54 (Free-cut)
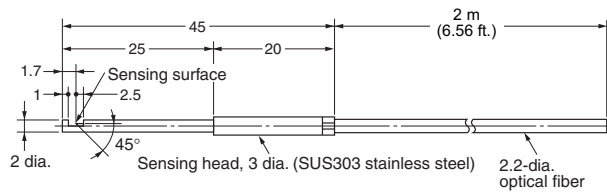
45
25
20
2 m (6.56 ft.)

1.7
1
2.5
Sensing surface
45°
2 dia.

Sensing head, 3 dia. (SUS303 stainless steel)

2.2-dia. optical fiber

Note: Resistant temperature is 150°C.
Resistant temperature is 130°C when used continuously.

E32-T84S,
E32-T84S-S

2 m (6.56 ft.)

A
(14.2)
12
2,000
20
15
13* (see note)
B

R5 3 dia.
4 dia.
Flexible tube, 2.9-dia. (stainless steel)
4 dia. 5 dia. Sleeve

30 max. 6
90°
12
3.5 dia.

Sensing head (SUS303 stainless steel)

3 dia.

Lens (2 dia.)
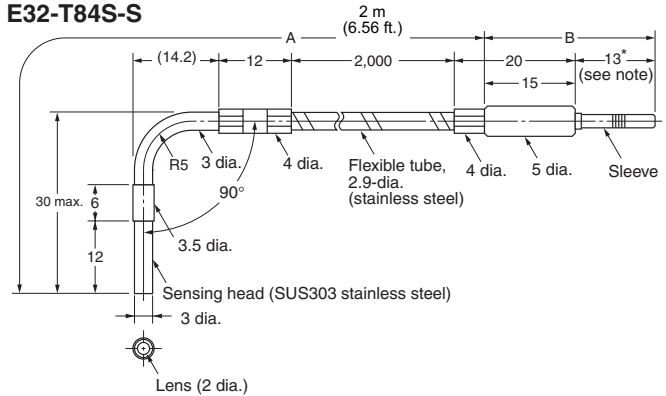
Note: Section A resists 200°C and section B (which is inserted to the Amplifier resists 110°C.
The operating temperature of section to be inserted into the Sensor (marked with *) must be within the operating temperature range of the Amplifier.

E32-G14 (Free-cut)

36.3
25.2
20
9.2
2 m (6.56 ft.)

Sensing head (ABS)
R1.6 R1.6

R3.5
Lens (PMMA)

24 10 Optical axis
3.2 9

4
1.6
1.6 Two, 2.2-dia. optical fiber
23.5
9.4

Mounting Holes

Two, M3

7.4 7
9.4

E32-T22S (Free-cut)

1.7 dia.

Sensing head (nickel-plated brass)
2.2-dia. optical fiber

3 dia.
15
2 m (6.56 ft.)

E32-T24S (Free-cut)

0.4
1.8

Sensing head (nickel-plated brass)
2.2-dia. optical fiber

17.6 3.5 dia. 11 3.2
3
3.2
10
20.5

Mounting bracket (provided)

2 m (6.56 ft.)

2 dia.
2
Sensing surface
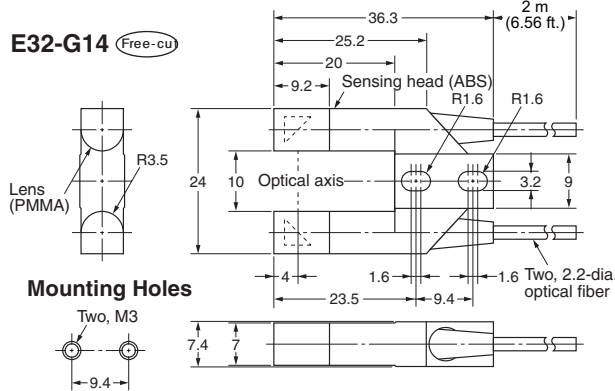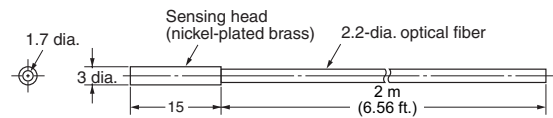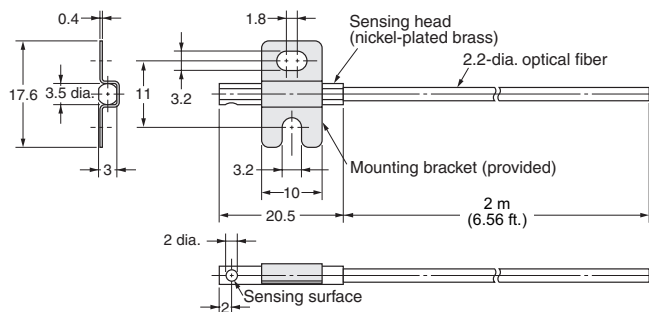
E32-M21
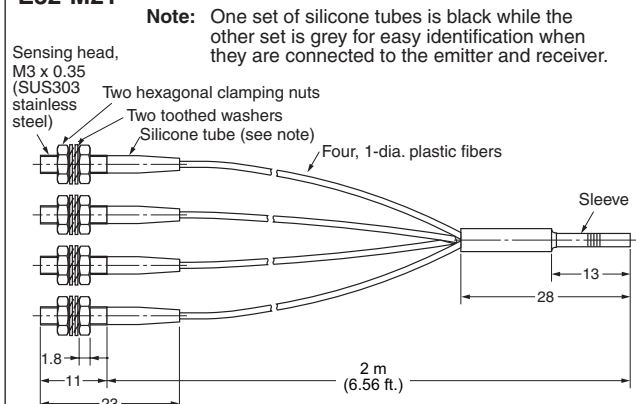
Note: One set of silicone tubes is black while the other set is grey for easy identification when they are connected to the emitter and receiver.

Sensing head, M3 x 0.35 (SUS303 stainless steel)
Two hexagonal clamping nuts
Two toothed washers
Silicone tube (see note)

Four, 1-dia. plastic fibers

Sleeve

13
28

1.8
11
23
2 m (6.56 ft.)

Unit: mm (inch)

E32-T16W
E32-T16WR (Free-cut)

23
(0.91)

18

5
(0.20)

Sensing
surface
(3 x 30)

18.5

Optical
axis

Mounting Holes

12

Two, M3

45

65

69
(2.72)

45±0.2

OMRON

Sensing
head (ABS)

Two, 3.2-dia. mounting holes,
6-dia. countersinking

2.2-dia.
optical fiber

2 m
(6.56 ft.)
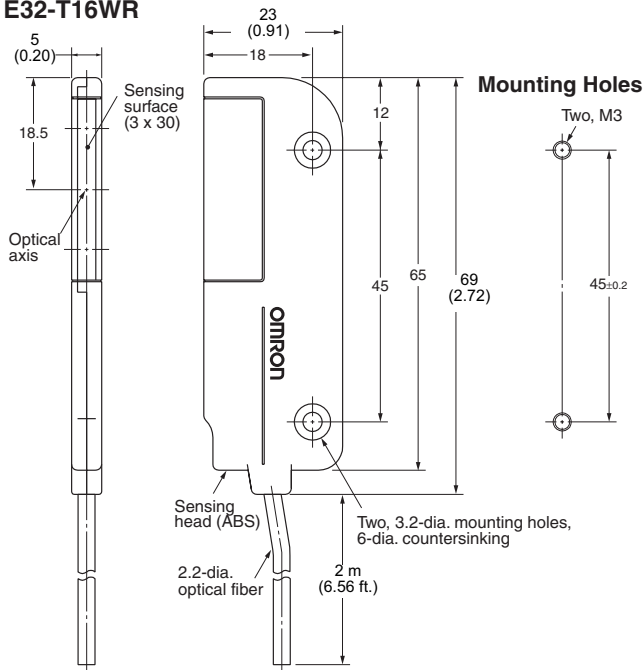
E32-T16J
E32-T16JR (Free-cut)
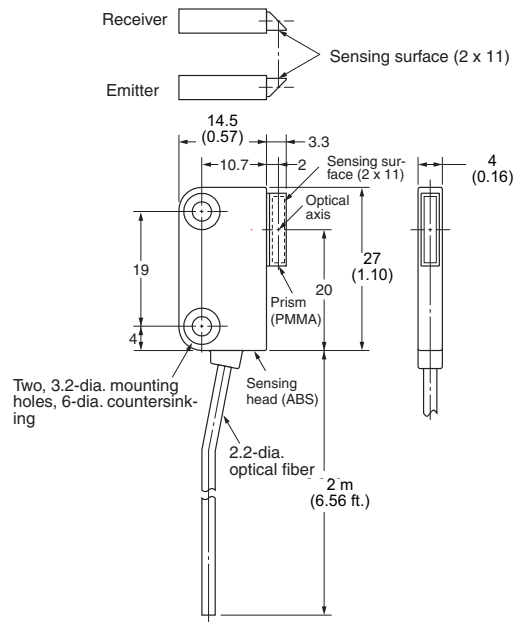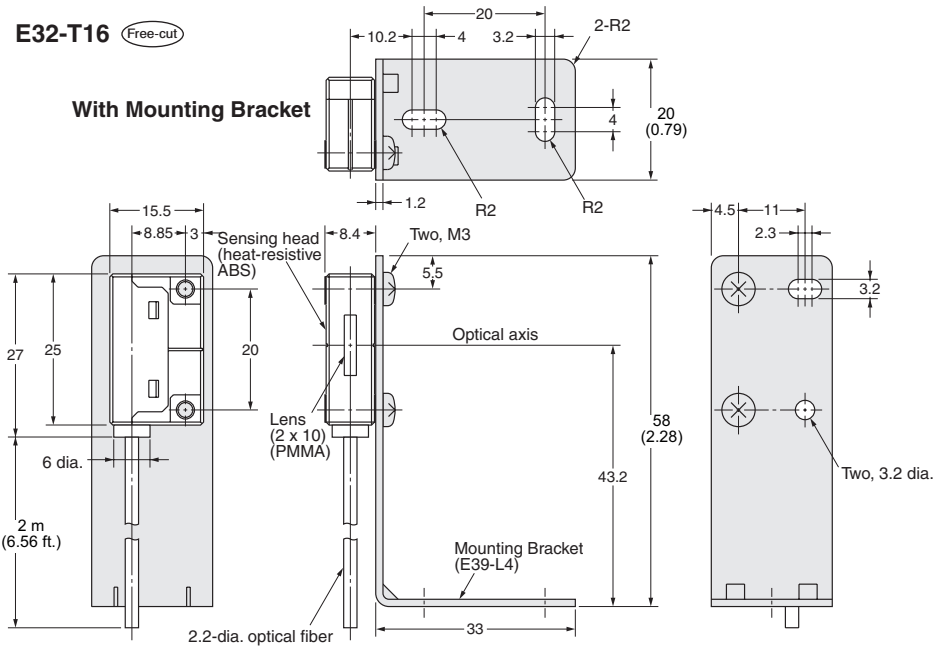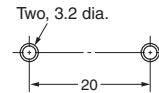
Receiver

Sensing surface (2 x 11)

Emitter

14.5
(0.57)

3.3

10.7

2

Sensing sur-
face (2 x 11)

4
(0.16)

Optical
axis

19

27
(1.10)

20

4

Prism
(PMMA)

Two, 3.2-dia. mounting
holes, 6-dia. countersink-
ing

Sensing
head (ABS)

2.2-dia.
optical fiber

2 m
(6.56 ft.)

E32-T16 (Free-cut)

With Mounting Bracket

20

10.2

4

3.2

2-R2

20
(0.79)

4

1.2

R2

R2

15.5

8.85

3

Sensing head
(heat-resistive
ABS)

8.4

Two, M3

5.5

27

25

20

Optical axis

Lens
(2 x 10)
(PMMA)

6 dia.

2 m
(6.56 ft.)

Mounting Bracket
(E39-L4)

2.2-dia. optical fiber

33

4.5

11

2.3

3.2

58
(2.28)

43.2

Two, 3.2 dia.

Mounting Holes

Two, 3.2 dia.

20

0.5-mm-wide Slit Seal
(Supplied with the Unit in Pairs)

6

0.5

4

15

23

Black

1-mm-wide Slit Seal
(Supplied with the Unit in Pairs)

6

1

4

15

23

Black
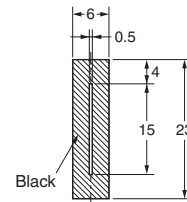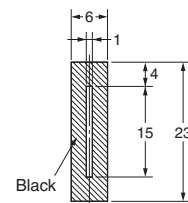
E32-T16P Free-cut
E32-T16PR

14.5
(0.57)
10.7

Two, 3.2 dia.

6-dia. countersinking

Optical axis

19

27
(1.10)

20

4

2 m
(6.56 ft.)

Sensing head
(heat-resistive ABS)

2.2-dia. optical fiber

4
(0.16)

3.4

0.5

Optical axis

Sensing surface
(2 x 11) (PMMA)

**0.5-mm-wide Slit Seal
(Supplied with the Unit
in Pairs)**

3.4

0.5

13.4

26.4

Black

**1-mm-wide Slit Seal
(Supplied with the Unit
in Pairs)**

3.4

1

13.4

26.4

Black

With Mounting Bracket

35
(1.38)

20

2   4   4.8

Two, M3 counter-sunk screw

4

20

12.2   3.2   3.2

Mounting Holes

Two, M3

4

20

Optical axis

52
(2.04)

43.2

E39-L94 Mounting Bracket
(Order Separately)

19

4

23.2

E32-T11F Free-cut

3.7 dia. lens

10

10.7

7.2 dia.

R3.6

Sensing head
(See note 1)

Nut (See note 1)

Optical fiber 2.2 dia
(See note 2)

19.8   3   10

35

2 m
(6.56 ft.)

Note: 1. Material: PFA
2. Flouroresin

E32-T11U Free-cut

M2.6 x 0.45

Sensing head (See note 1)
2 Hexagonal nuts
2 Washers

Protection tube

16-0.265

3.2

7

3.3 2.4

14

15

2 m
(6.56 ft.)

Optical fiber 2.2 mm dia.
(See note 2)

Note: 1. Material: Nickle-plated Brass
2. Sheath: Flouroresin

■ Diffuse Fiber Units

Unit: mm (inch)

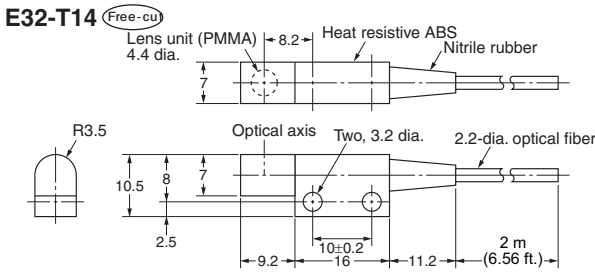(Free-cut) Indicates models that allow free cutting. Models without this mark do not allow free cutting.

E32-D11L (Free-cut)

Two, 1.4 dia.
4 dia.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M6 x 0.75 (nickel-plated brass)
Two, 2.2-dia. optical fibers
5.2
10
3
20
2.4
2 m (6.56 ft.)

E32-D12 (Free-cut)

Two, 3 dia. 1 dia.
2 m (6.56 ft.)
15
135
Sensing head (SUS304 stainless steel)
Heat-shrinkable tubing
Two, 2.2-dia. optical fibers

E32-D21L (Free-cut)

Two, 0.9 dia.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M4 x 0.7 (nickel-plated brass)
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
3.2
7
3
15
2.4
2 m (6.56 ft.)

E32-D22L (Free-cut)

Two, 0.9 dia.
2.7 dia.
Sensing head, 3 dia. (nickel-plated brass)
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
3
15
2 m (6.56 ft.)

E32-DC200 (Free-cut)

Two, 1.0 dia.
4 dia.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M6 x 0.75 (ADC)
Two, 2.2-dia. optical fiber
4.8
10
3
17
2.4
2 m (6.56 ft.)

E32-D11R (Free-cut)

2-151, 0.075 dia.
4 dia.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M6 x 0.75 (ADC)
Two, 2.2-dia. optical fibers
4.8
10
3
17
2.4
2 m (6.56 ft.)

E32-D12R (Free-cut)

2-151, 0.075 dia.
3 dia.
2 m (6.56 ft.)
15
135
Sensing head (SUS304 stainless steel)
Heat-shrinkable tubing
Two, 2.2-dia. optical fiber

E32-DC200E (Free-cut)

Two, 0.5 dia.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M3 x 0.5 (SUS304 stainless steel)
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
2.5
5.5
11
1.8
2 m (6.56 ft.)

E32-D21R (Free-cut)

2-151, 0.037 dia.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M3 x 0.5 (nickel-plated brass)
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
2.5
5.5
1.8
11
2 m (6.56 ft.)

E32-D22R (Free-cut)

2-151, 0.037 dia.
2.7 dia.
Sensing head, 3 dia. (nickel-plated brass)
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
3
15
2 m (6.56 ft.)

E32-DC200B (Free-cut)
E32-DC200B4

Two, 1.0 dia.
Stainless tube (SUS304)
2.5 dia. max.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M6 x 0.75 (fine) (nickel-plated brass)
Two, 2.2-dia. optical fiber
5.2
10
90 (40) (see note)
2.4
17
2 m (6.56 ft.)

Note: The value in the parentheses is for the E32-DC200B4.

E32-DC200F (Free-cut)
E32-DC200F4

Two, 0.5 dia.
Stainless tube (SUS304)
1.2 dia. max.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M3 x 0.5 (SUS304 stainless steel)
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
2.5
5.5
90 (40) (see note)
11
1.8
2 m (6.56 ft.)

Note: The value in the parentheses is for the E32-DC200F4.

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E32-D33 (Free-cut)

Two, 0.25 dia.
0.8-dia. stainless tube
Sensing head, 3 dia. (SUS303 stainless steel)
Heat-shrinkable tubing
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
15
15
12
35
2 m (6.56 ft.)

E32-D331

Two, 0.125 dia.
0.5-dia. stainless tube
Sensing head, 2 dia. (SUS303 stainless steel)
1.2-dia. Irax tubing
3.5-dia. branching connector
Sleeve (not removable)
25
10
15
15
15
100
2 m (6.56 ft.)

E32-D11 (Free-cut)

Sixteen, 0.265 dia.
Sensing head, M6 x 0.75 (nickel-plated brass)
Two hexagonal clamping nuts
Two toothed washers
Protective tube
Two, 2.2-dia. optical fibers
5.2
10
2.4
15
17
2 m (6.56 ft.)

E32-D21 (Free-cut)

Sensing head, M3 x 0.5 (nickel-plated brass)
Four, 0.25 dia.
Two hexagonal clamping nuts
Two toothed washers
Protective tube
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
2.5
5.5
1.8
11
15
2 m (6.56 ft.)

E32-D21B (Free-cut)

2-4, 0.25 dia.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M4 x 0.7 (SUS303 stainless steel)
Two Fiber Attachment (E39-F9)
Two, 1-dia. optical fibers
25
10
7
3.2
3
2.4
15
2 m (6.56 ft.)

E32-D22B

Four, 0.25 dia.
Sensing head, (SUS304 stainless steel)
1-dia. optical fiber
3-dia. branching connector (ABS)
Sleeve (not removable)
25
10
1.5 dia.
15
15
100
2 m (6.56 ft.)

E32-CC200 (Free-cut)

Sixteen, 0.25-dia. light reception fibers
1.0-dia. light emission fiber
2.5 dia.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M6 x 0.75 (nickel-plated brass)
Two, 2.2-dia. optical fibers
5.2
10
3
2.4
23
2 m (6.56 ft.)

Note: The fiber for the emitter is identified by a white line.

E32-D32L (Free-cut)

2 m (6.56 ft.)
1-dia. light emission fiber
Sixteen, 0.265-dia. light reception fibers
Sensing head, 3 dia. (SUS304 stainless steel)
6-dia. branching connector (heat-resistive ABS black resin)
Two, 2.2-dia. optical fibers
15
400
15
1,570

Note: The fiber for the emitter is identified by a yellow dotted line.

E32-C31 (Free-cut)

Sensing head, M3 x 0.5 (nickel-plated brass), 2.44 to 2.49 minor diameter
0.5-dia. light emission fiber
Two hexagonal clamp nuts
Two toothed washers
Heat-shrinkable tubing
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
2.5
Four, 0.25-dia. light reception fibers
20
12
25
2 m (6.56 ft.)

Note: The fiber for the emitter is identified by a white line.

E32-C41

One, 0.175-dia. light emission fiber
Two toothed washers
Two hexagonal clamping nuts
3.5 dia. branching connector (ABS)
2.6-dia. Irax tubing
Two, 1.2-dia. optical fibers
White: Heat-shrinkable tubing for emitter side
Fiber attachment (not removable)
Six, 0.175-dia. light reception fibers
Sensing head, M3 x 0.5 (SUS303 stainless steel)
1.8
17
22
15
100
5
10
25
1 m (3.28 ft.)

Unit: mm (inch)

E32-C42

One, 0.175-dia. light emission fiber

Six, 0.175-dia. light reception fibers

Sensing head, 2 dia. (SUS303 stainless steel)
3 dia.
2.6-dia. Irax tubing
Branching connector (ABS)
Two, 1.2-dia. optical fibers
White: Heat-shrinkable tubing for emitter side
Two fiber attachments (not removable)

15
2
22
15
100
1,000
5
10
25

E32-D32 (Free-cu)

0.5-dia. light emission fiber

Four, 0.25-dia. light reception fibers

Sensing head, 2 dia. (SUS303 stainless steel)
3 dia.
Heat-shrinkable tubing
Two Fiber Attachments (E39-F9)
25
10
15
2
12
22
Two, 1-dia. optical fibers
2,000

Note: The fiber for the emitter is identified by a white line.

E32-D14L E32-D14LR (Free-cu)

5.7
6 dia.
Sensing head (SUS304 stainless steel)
45°
Heat-shrinkable tubing
Two, 2.2-dia. optical fibers
1.5
1
2
30
35
12
2,000

Light baffle
Sensing surface

E32-D24 E32-D24R (Free-cu)

2-dia. stainless tubing
Sensing head, 3 dia. (SUS304 stainless steel)
Heat-shrinkable tubing
Two Fiber Attachments (E39-F9)
25
10
45°
1
0.5
1.5
15
15
12
35
2,000
Two, 1-dia. optical fibers

Light baffle Sensing surface

E32-D12F (Free-cu)

Sensing head, 6 dia.
Fluoride resin
5 dia.
Two, 2.2-dia. optical fibers
16
2,000
100

E32-D51 (Free-cu)

Two, 1.5 dia.
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M6 x 0.75 (nickel-plated brass)
Two, 2.2-dia. optical fibers
4.9
3.1
2.4
10
3
13
17
2,000

Note: Resistant temperature is 150°C.
Resistant temperature is 130°C when used continuously.

E32-D61 E32-D61-S
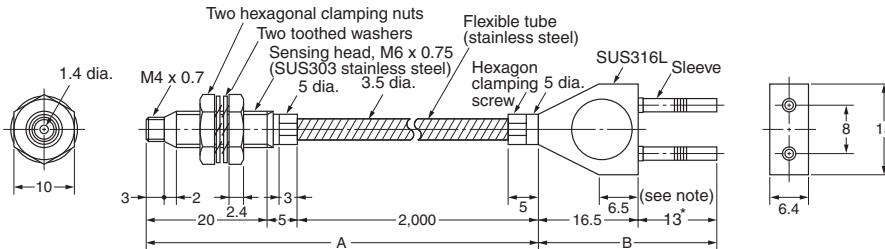
1.4 dia.
M4 x 0.7
Two hexagonal clamping nuts
Two toothed washers
Sensing head, M6 x 0.75 (SUS303 stainless steel)
5 dia.
3.5 dia.
Flexible tube (stainless steel)
Hexagon clamping screw
5 dia.
SUS316L Sleeve
8
15
10
3
2
2.4
3
5
20
2,000
5
16.5
6.5
13*
6.4
A
B

Note: Section A resists 300°C and section B (which is inserted to the Amplifier) resists 110°C. The operating temperature of the section to be inserted into the Sensor (marked with *) must be within the operating temperature range of the Amplifier.

Above diagram for E32-D61. For the E32-D61-S, contact your Omron representative.

E32-D73,
E32-D73-S

1.0 dia.

7

1.25-dia. stainless tubing

1.65 dia. 2.5 dia.

Two hexagonal clamping nuts
Two toothed washers
Sensing head, M4 x 0.7
(SUS303 stainless steel)
4 dia.

2.8 dia.

Hexagon
clamping
screw
5 dia.

SUS316L Sleeve

8 15

6.4

SUS flexible tube

5 5 2.4 5 16.5 6.5 (see note) 13*

60 20 10 2,000

A B C

Note: Section A resists 400°C, section B resists 300°C, and section C (which is inserted to the Amplifier) resists 110°C. The operating tempe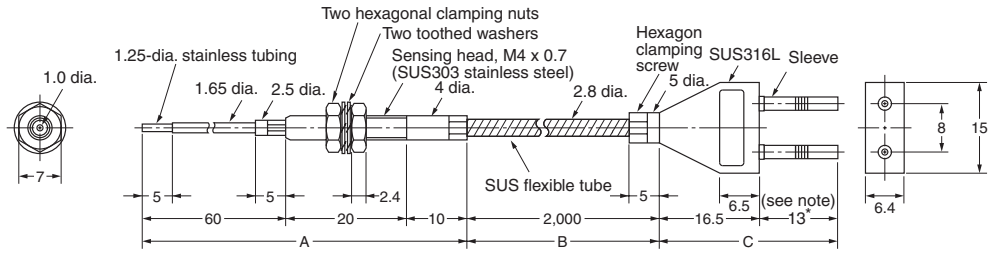rature of the section to be inserted into the Sensor (marked with *) must be within the operating temperature range of the Amplifier.
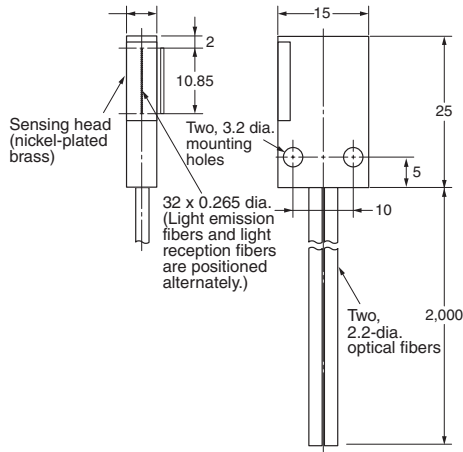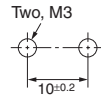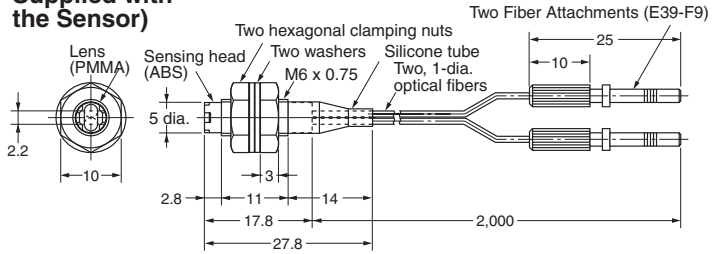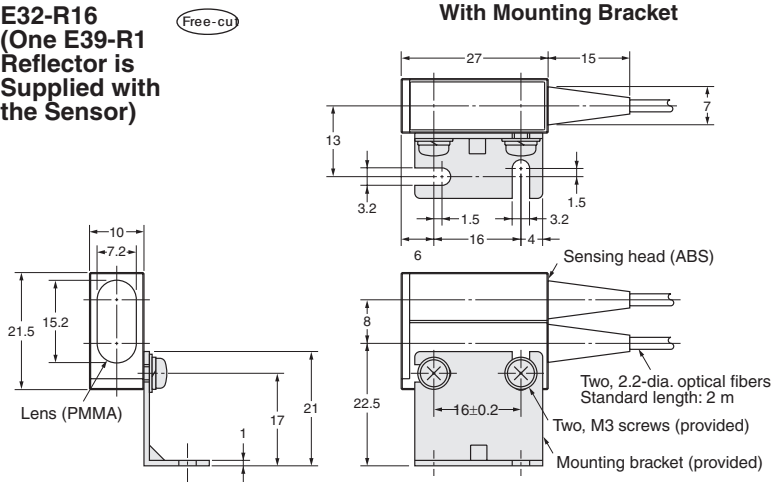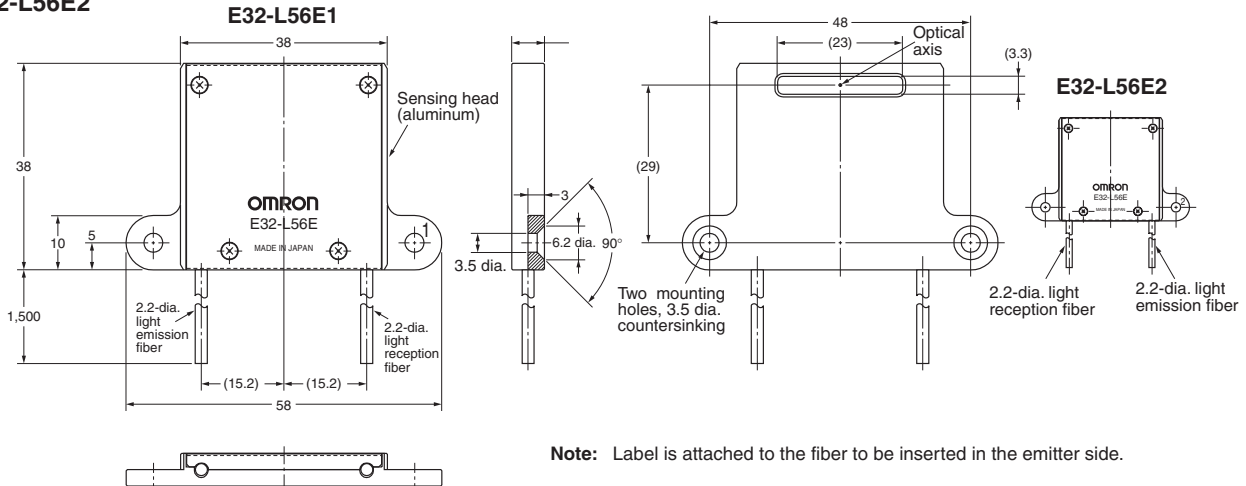
E32-D36P1 (Free-cut)

15
2
10.85
25
5
10

Sensing head
(nickel-plated
brass)

Two, 3.2 dia.
mounting
holes

32 x 0.265 dia.
(Light emission
fibers and light
reception fibers
are positioned
alternately.)

Two, 2,000
2.2-dia.
optical fibers

Mounting Holes

Two, M3

10±0.2

E32-R21
(One E39-R3
Reflector is
Supplied with
the Sensor) (Free-cut)

Two Fiber Attachments (E39-F9)

Lens
(PMMA)

2.2

10

Sensing head
(ABS)

5 dia.

Two washers
M6 x 0.75

Two hexagonal clamping nuts

Silicone tube
Two, 1-dia.
optical fibers

25

10

2.8 11 14 2,000

3

17.8

27.8

E32-R16
(One E39-R1
Reflector is
Supplied with
the Sensor) (Free-cut)

With Mounting Bracket

27 15

7

13

3.2 1.5

1.5 3.2

6 16 4

10
7.2

21.5 15.2

Lens (PMMA)

1 17 21

Sensing head (ABS)

8

22.5 16±0.2

Two, 2.2-dia. optical fibers
Standard length: 2 m

Two, M3 screws (provided)

Mounting bracket (provided)

E32-L56E1 (Free-cut)
E32-L56E2

E32-L56E1

38

38

10
5
1

OMRON
E32-L56E
MADE IN JAPAN

Sensing head
(aluminum)

3
6.2 dia. 90°
3.5 dia.

48

(23)

Optical
axis

(3.3)

(29)

E32-L56E2

OMRON
E32-L56E
MADE IN JAPAN

1,500

2.2-dia.
light
emission
fiber

2.2-dia.
light
reception
fiber

(15.2) (15.2)

58

Two mounting
holes, 3.5 dia.
countersinking

2.2-dia. light
reception fiber

2.2-dia. light
emission fiber

Note: Label is attached to the fiber to be inserted in the emitter side.

Unit: mm (inch)

E32-L24L (Free-cut)

Lens, two, 3.2 dia.
Side view prism (PC)
3.6
3.3   1.5
3.3
18
4
6
6.5
20
Optical axis
Two Fiber Attachments (E39-F9)
25
10
Two, 1-dia. optical fibers
Sensing head (PC)
Two, 3.2 dia.
6-dia. countersinking
2,000

E32-L25L (Free-cut)

Two, 3.2-dia. lens
Sensing distance
18
6
6.5
16
Two, 1-dia. optical fibers
Two Fiber Attachments (E39-F9)
25
10
Sensing head (PC)
Two, 3.2 dia.
6-dia. countersinking
2,000

E32-L25 (Free-cut)

20
10   4
Sensing distance
6.5   4.8
6.5
20
Two, 2.2-dia. optical fibers
Sensing head (heat resistive ABS)
Two, 3.2 dia.
6-dia. countersinking
2,000

Note: The fiber for the emitter is identified by a white line.

E32-L25A (Free-cut)

20
4   10
Sensing distance
4.8   6.5
6.5
20
Sensing head (heat resistive ABS)
Two, 3.2 dia.
6-dia. countersinking
2,000
Two, 2.2-dia. optical fibers
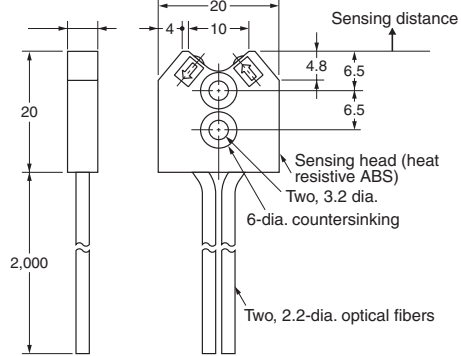
Note: The fiber for the emitter is identified by a white line.

E32-D16 (Free-cut)
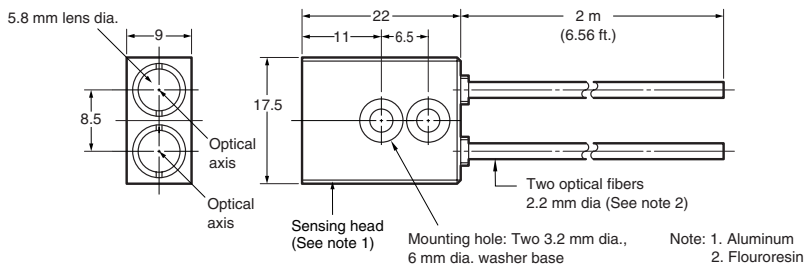
5.8 mm lens dia.
9
22
11   6.5
2 m (6.56 ft.)
8.5
17.5
Optical axis
Optical axis
Sensing head (See note 1)
Mounting hole: Two 3.2 mm dia., 6 mm dia. washer base
Two optical fibers 2.2 mm dia (See note 2)
Note: 1. Aluminum
2. Flouroresin

E32-D11U (Free-cut)

Sensing head M6 x 0.75 (See note 1)
Two hexagonal nuts
Two washers
Optical fiber 2.2 mm dia. (See note 2)
Protection tube
16-φ0.265
5.2
10
2.4   15
17
2 m (6.56 ft.)
Note: 1. Nickle plated brass
2. Flouroresin

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E32-D81R
E32-D81R-S

Two washers (SUS)
Two hexagonal nuts (SUS)
Sensing head M6 x 0.75 (See note 1)
Flexible tube (SUS)
1.2 fiber dia.
M4 x 0.7
2.2 mm dia.
2.2 mm dia.
4.2 mm dia.
5 mm dia.
5 mm dia.
4.5 8.5
8 15
3 2
3
70
5
6.5
5
11.5
10 *2
16.5
13*2
6.4
20
2 m (6.56 ft.)
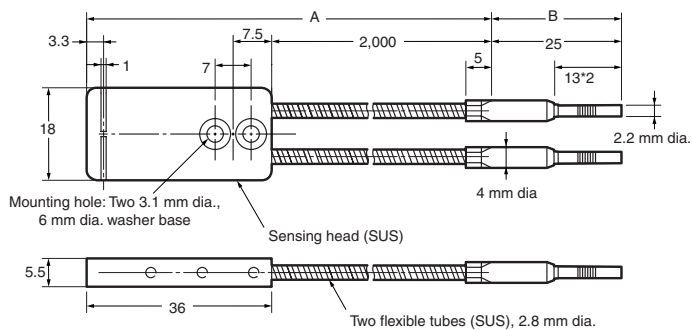15
5
A
B
B
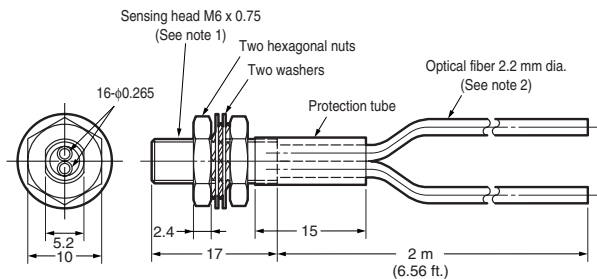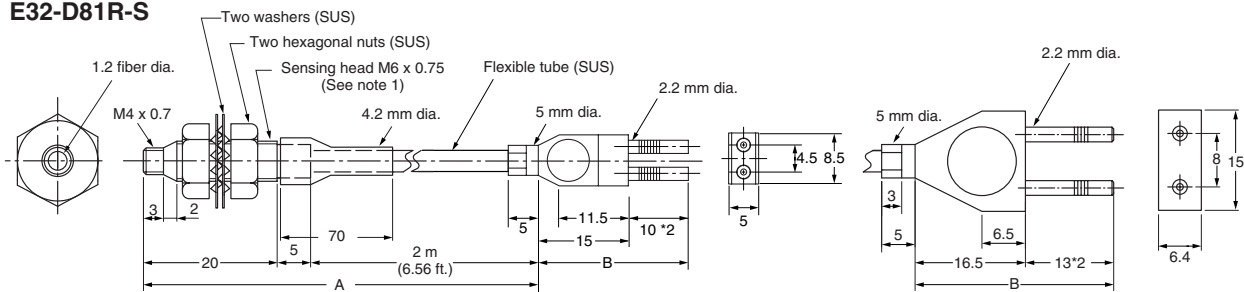
Note: 1. Nickle-plated brass.
2. Section "A" can resist temperatures to 200°C; section "B" can resist temperatures to 110°C.
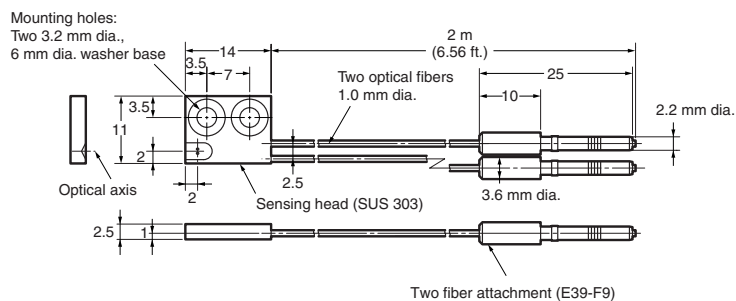
E32-L16 (Free-cut)

22.5
2 m (6.56 ft.)
4.5
11
4
Two optical fibers 2.2 mm dia
17.5
9
12.3
0.75
Optical axis
Mounting hole: Two 8.2 mm dia., 6 mm dia washer base
Sensing head (ABS)
3.8
1.7

E32-L66

A
B
3.3
7.5
2,000
25
1
7
5
13*2
18
2.2 mm dia.
Mounting hole: Two 3.1 mm dia., 6 mm dia. washer base
4 mm dia
Sensing head (SUS)
5.5
36
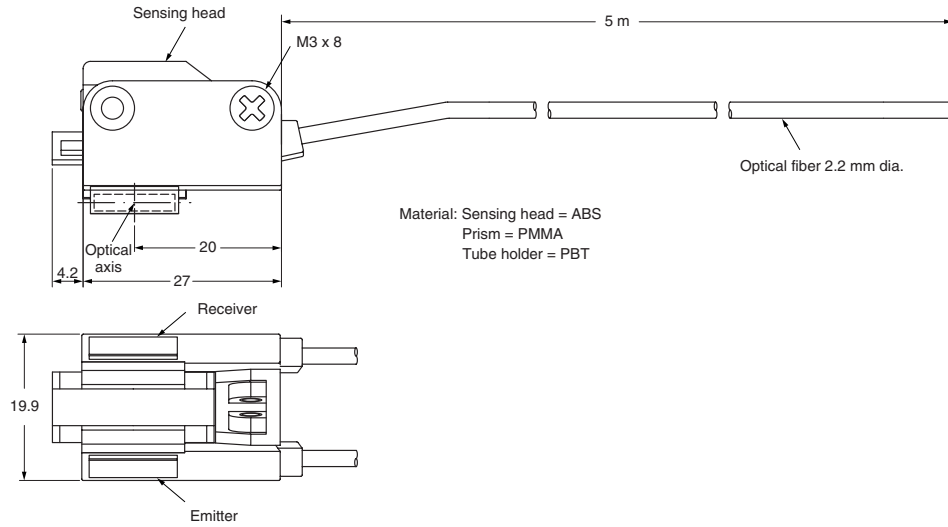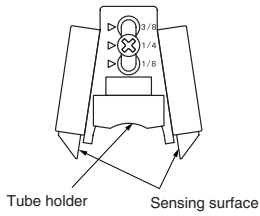Two flexible tubes (SUS), 2.8 mm dia.
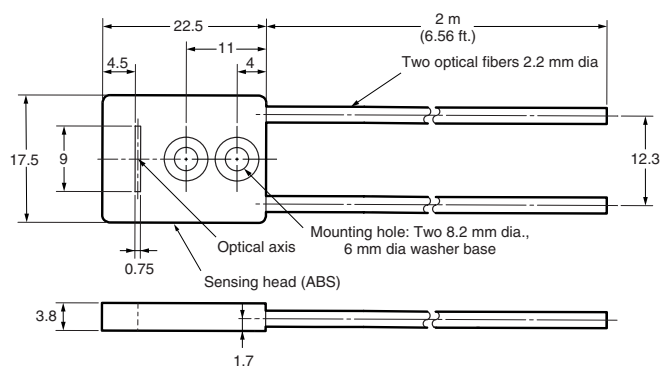
Note: Section "A" resists temperatures to 300°C; section "B" resists temperatures to 110°C

E32-L24S (Free-cut)

Mounting holes:
Two 3.2 mm dia.,
6 mm dia. washer base
14
2 m (6.56 ft.)
3.5
7
25
Two optical fibers 1.0 mm dia.
10
2.2 mm dia.
3.5
11
2
2.5
2
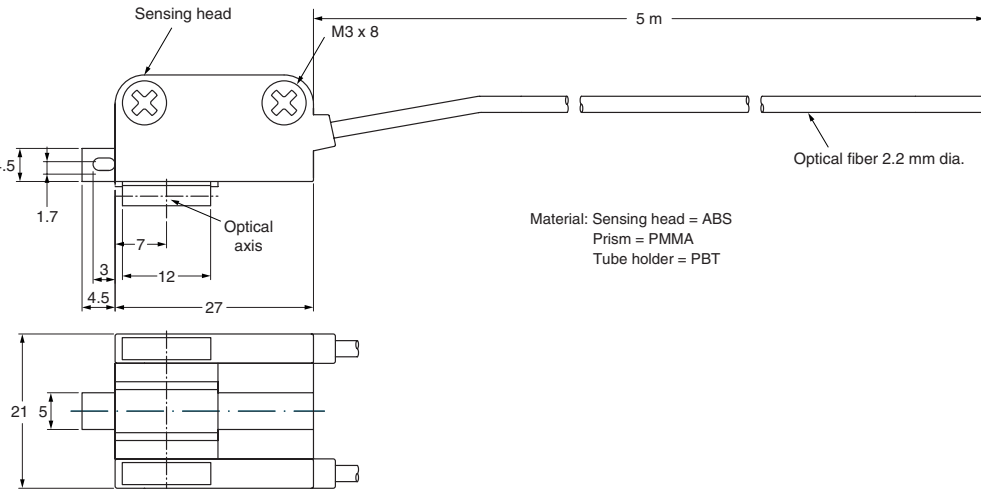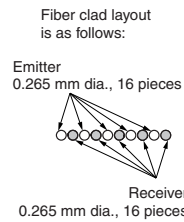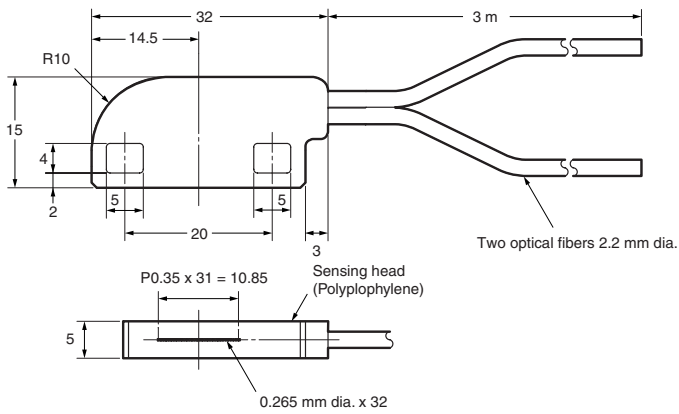Optical axis
Sensing head (SUS 303)
3.6 mm dia.
2.5
1
Two fiber attachment (E39-F9)

Unit:mm (inch)

E32-A01 (Free-cut)

Sensing head

M3 x 8

5 m

Optical fiber 2.2 mm dia.

Tube holder   Sensing surface

Optical axis

20

4.2

27

Material: Sensing head = ABS
Prism = PMMA
Tube holder = PBT

Receiver

19.9

Emitter

E32-A02 (Free-cut)

Sensing head

M3 x 8

5 m

14.5

3.3

4.5

1.7

Optical fiber 2.2 mm dia.

Optical axis

7

3

12

4.5

27

Material: Sensing head = ABS
Prism = PMMA
Tube holder = PBT

Tube holder   Sensing surface

21 5

E32-D36F (Free-cut)

32

3 m

14.5

R10

15

4

2

5

5

20

3

Two optical fibers 2.2 mm dia.

P0.35 x 31 = 10.85

Sensing head
(Polyplophylene)

5

0.265 mm dia. x 32

Fiber clad layout
is as follows:

Emitter
0.265 mm dia., 16 pieces

Receiver
0.265 mm dia., 16 pieces

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E32-A03 (Free-cut)

Sensing head (Nickle plated brass)

20.5

1.8

2-R1.6

3.2

0.4

4.3

17.6 11

R1.6

3.2

10

2 m (6.56 ft.)

25

10

E39-F9 Fiber attachment

3.4

2

2 mm dia.   Sensing surface

E32-A04 (Free-cut)

4-R1.35

20.5

4

2 m (6.56 ft.)

25

10

2

2

2 mm dia.   2 mm dia.   Sensing head (SUS303)

E39-F9 Fiber attachment

2

1.2 mm dia.

Sensing surface

■ Accessories (Order Separately)

Reflectors

Reflector E39-R1

Material:
Reflective surface: acrylic
Back: ABS

Two, 3.5 dia.

40.3 (1.59)

34

7

59.9 (2.36)

52

8

1.6

2.7
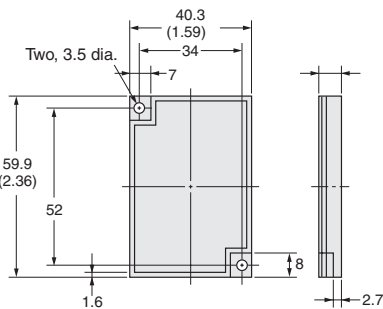
Reflector (Miniature) E39-R3

Material:
Reflective surface: acrylic
Back: ABS

29 (1.14)

4.5   6   3.4

3.4

R20   14°   13.7

7

18.45

22.9

0.2

20

0.2

11   Adhesive tape

22.5 (0.88)

19.3

41.8 (1.65)   25.4

Two, M3

34.8   38

10.1   1.2

2.6

1.2   10°

16   Two, 3.2 dia.

R25.4

3.4

34

SUS304 stainless steel
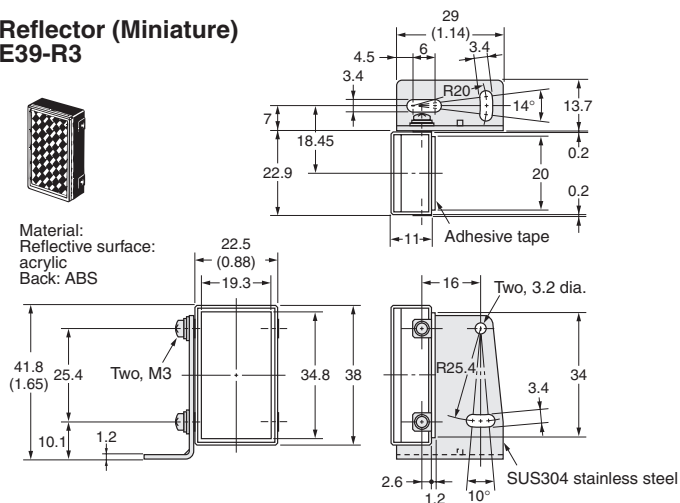
Unit: mm (inch)

E39-L4

Material: iron

Two,
3.2 dia.
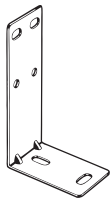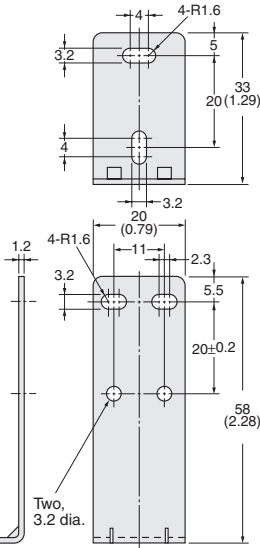
E39-L94

Material: iron

3.2 dia.
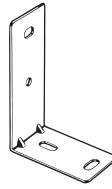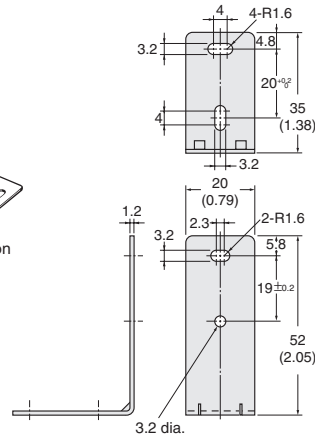
Lens Units

E39-F1
Long Distance Lens Unit

M2.6 x 0.45
Effective depth: 3.8
Countersunk with straight
edge, depth: 0.9

Material:
Tube: Brass
Lense: Optical glass
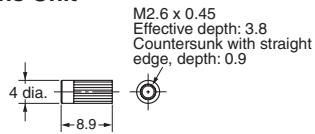
Note: One set includes two units.

E39-F2
Side-view Unit

M2.6
Effective depth: 3.2
Countersunk with straight
edge, depth: 0.9

Material:
Tube: Brass
Lense: Optical glass
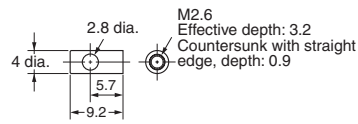
Note: One set includes two units.

E39-F3
Lens-equipped Reflective Unit

M3 toothed
washers

Two, 4 dia.

Two, 3.2 dia.

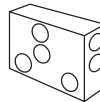Two, M3 x 3 slotted
head machine screws

M3 x 6 angle
fixing screws
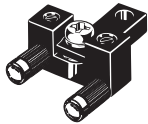
Material:
Tube: Brass
Base: Aluminum
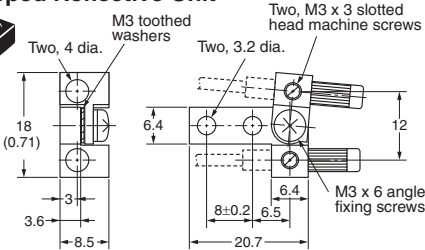
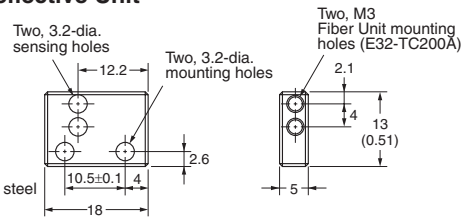**Note:** Fix the fiber head using the slotted head machine screw.
Do not insert the E39-F1 Lens.

E39-F5
Side-view Reflective Unit

Two, 3.2-dia.
sensing holes

Two, 3.2-dia.
mounting holes

Two, M3
Fiber Unit mounting
holes (E32-TC200A)

Material:
Base: Brass
Reflector: Stainless steel

Note: Only E32-TC200A can be mounted. When mounting,
remove all of the accompanying screws first and then
screw the E32-TC200A into the E39-F5 until the stop-
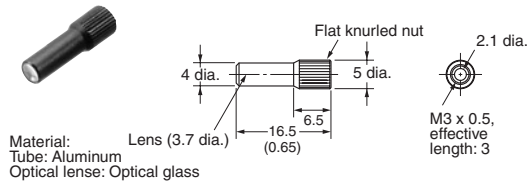per comes into contact.

E39-F3A
Small Spot Lens Unit

M2 x 2 hexagon set screw (for fixing fibers)

6 dia.   4 dia.

Lens (3.7 dia.)

3

23
(0.91)

13

2.1 dia.
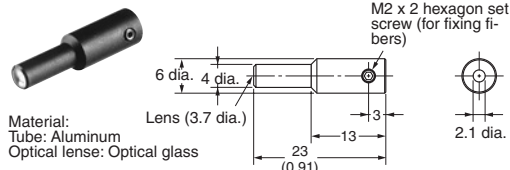
Material:
Tube: Aluminum
Optical lense: Optical glass

Note: E39-F3A is a Lens Unit for the E32-D32 and E32-C42.

E39-F3A-5
Small Spot Lens Unit

Flat knurled nut

2.1 dia.

4 dia.   5 dia.

Lens (3.7 dia.)   16.5
(0.65)

6.5

M3 x 0.5,
effective
length: 3

Material:
Tube: Aluminum
Optical lense: Optical glass

Note: E39-F3A-5 is a Lens Unit for the E32-C31 and E32-C41.

E39-F3B
Small Spot Lens Unit

6 dia.   5.5 dia.

Lens (4.8 dia.)

24.1

25.2
(0.99)

M3 x 0.5,
depth: 4.4
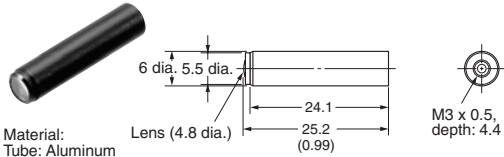
Material:
Tube: Aluminum
Optical lense: Optical glass

Note: E39-F3B is a Lens Unit for the E32-C31 and E32-C41.

E39-F3C
Small Spot Lens Unit

Flat knurled nut

4.3 dia.   5 dia.

5.8

Lens (3.7 dia.)   10.9

M3 x 0.5,
effective
length: 3
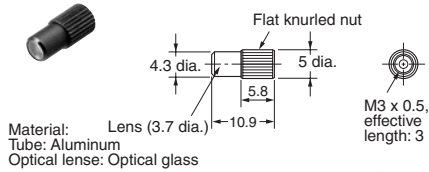
Material:
Tube: Aluminum
Optical lense: Optical glass

Note: E39-F3C is a Lens Unit for the E32-C31 and E32-C41.

E39-F32A, E39-F32A5
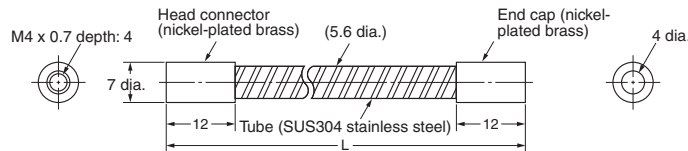### E39-F32B, E39-F32B5

M3 x 0.5 depth: 4

Head connector
(nickel-plated brass)   (4.6 dia.)

End cap (nickel-
plated brass)

3 dia.

6 dia.

12   Tube (SUS304 stainless steel)   12

L
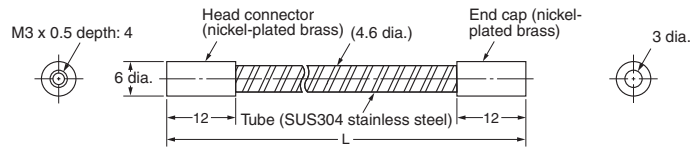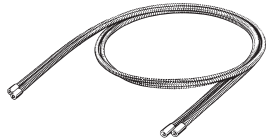
Note: 1.   L is as follows:
E39-F32A and E39-F32B: 1m (3.28 ft)
E39-F32A5, E39-F32B5: .5m (1.64 ft)
2.   A pair of E39-F32A(5)'s is sold as E39-F32B(5).

E39-F32C, E39-F32C5

M4 x 0.7 depth: 4

Head connector
(nickel-plated brass)   (5.6 dia.)

End cap (nickel-
plated brass)

4 dia.

7 dia.

12   Tube (SUS304 stainless steel)   12

L
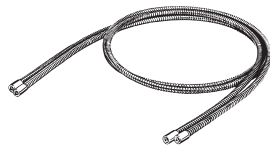
Note: L is as follows:
E39-F32C: 1m (3.28 ft)
E39-F32C5: .5m (1.64 ft)

E39-F32D, E39-F32D5

M6 x 0.75 depth: 4

Head connector
(nickel-plated brass)   (7 dia.)

End cap (nickel-
plated brass)

5 dia.

8.5 dia.

12   Tube (SUS304 stainless steel)   12
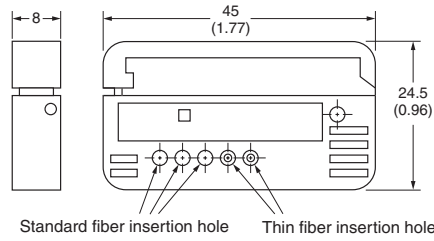
L
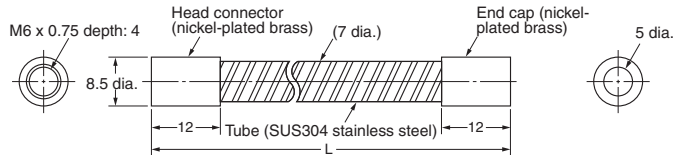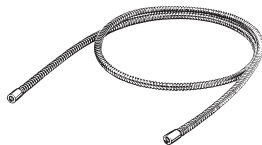
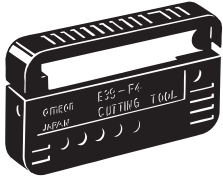**Note:**   L is as follows:
E39-F32D: 1m (3.28 ft)
E39-F32D5: .5m (1.64 ft)

Unit: mm (inch)

Other Accessories

E39-F4 Fiber Cutter

8

45
(1.77)

24.5
(0.96)

Standard fiber insertion hole   Thin fiber insertion hole

E39-F9 Attachment for Thin Fiber

Material: ABS

1.1 dia.

Insertion mark
(for inserting into an amplifier)

(2.2 dia.)

3.6 dia.

10   11.7

25
(0.98)
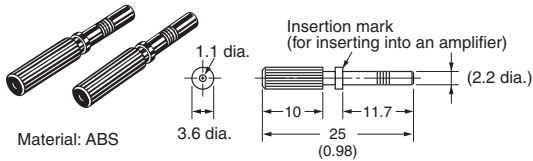
Note: One set includes two units.
Included with Thin Fiber Unit.

E39-F10 Fiber Connector

2.2-dia. fiber   Retention clip
(brass)

Splice
(polyester)

Retention clip
(brass)   2.2-dia. fiber

3.8 dia.

26
(1.02)

3 dia.

12.8

E39-F11 Sleeve Bender

10.8
(0.43)

42.5
(1.67)

10   10

R12.5
R7.5

R5
R10

27
(1.06)
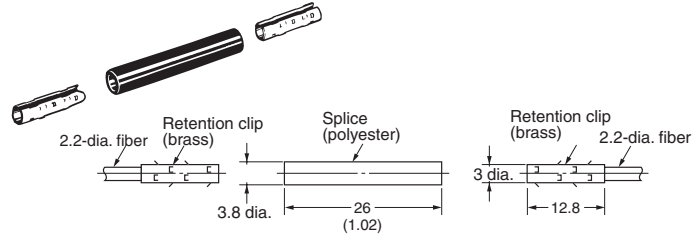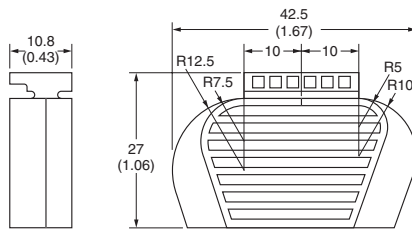
E39-K2 Protective Attachment

Material: ABS

C1

C1

Two, 2.6 dia.

16
(0.63)

8

8
(0.31)

Two,
5.1 dia.

10
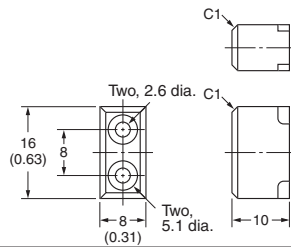
Application Example

E39-K2

E32-T84S
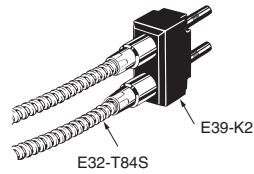
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