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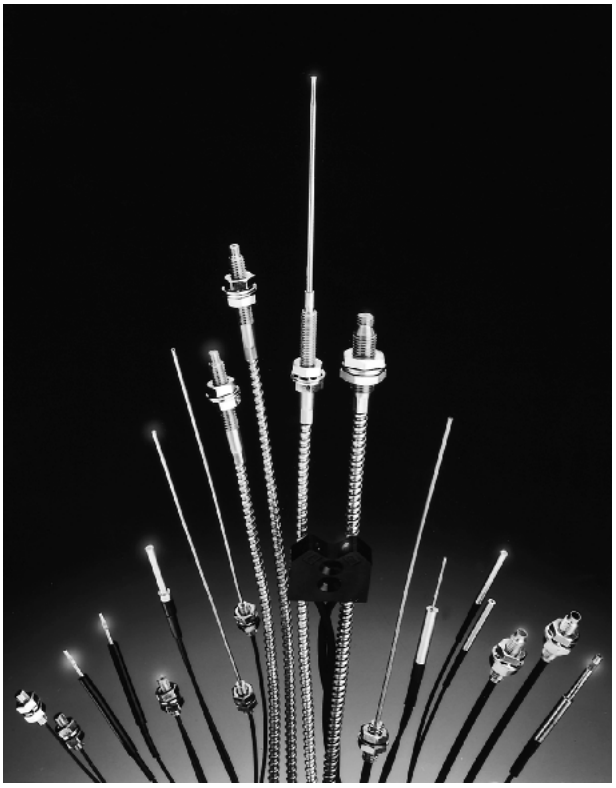
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Fiber-Optic Sensing Heads Offer a Wide Variety of Unique Solutions for Tough Problems

- Fiber-optic sensors detect small, fast-moving objects in space-confined installations and harsh environments
- For a custom fit in the field, most plastic filament cables can be cut to length
- For detection in hard-to-reach places, sensing heads with bendable stainless steel tubing retain complex shapes
- Coiled and ultra-flexible cables are ideal for flexing and reciprocating machinery such as robots
- Side-view sensing heads or accessories save space in right-angle detection
- Convergent beam sensing heads allow accurate positioning and background suppression even for shiny objects
- Narrow detection zone of concentric beam sensing heads helps eliminate background objects and gives consistent sensing, regardless of object direction
- Highly flexible fibers with minimum 1-mm bending radius allows cable to conform to machine contours
- Most fiber cables offer IP67 protection and temperature ratings of –40°C to 70°C (–40°F to 158°F)



■ FIBER-OPTIC CABLE AND AMPLIFIER COMPATIBILITY

Fiber cables	DIN-rail mounting amplifiers							Block style amplifiers			
Part number	E3X-A	E3X-DAN	E3X-F	E3X-H, -NH	E3X-NM	E3X-NT, -NV	E3X-NVG,-VG	E3MC-MY	E3XA-CC4A	E3JU-XR E3JU-X	E3A2-X E3S-X3
Through-beam, General Purpose Type											
E32-T11	OK	OK	OK	OK	OK	OK	OK	--	--	OK (-XR)	--
E32-T11L	OK	OK	OK	OK	OK	OK	OK	OK	--	--	--
E32-T11R	OK	OK	--	OK	OK	OK	--	--	--	--	--
E32-T12L	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-T17L	OK	OK	OK	OK	OK	OK	OK	OK	--	--	--
E32-T21	OK	OK	OK	OK	OK	OK	OK	--	--	OK (-XR)	--
E32-T21L	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-T21R	OK	OK	--	OK	OK	OK	--	--	--	--	--
E32-T22	OK	OK	OK	OK	OK	OK	OK	--	--	OK (-XR)	--
E32-T22L	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-TC50	OK	--	OK	OK (-H)	--	--	OK (-VG)	--	--	--	--
E32-TC200	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK (-XR)	OK
E32-TC200A	OK	OK	OK	OK	OK	OK	OK	--	OK	--	OK
E32-TC200C	OK	--	OK	OK	OK	OK	OK	--	--	--	OK
E32-TC200E	OK	OK	OK	OK	OK	OK	OK	--	OK	-	OK
E32-TC500	OK	--	OK	OK (-H)	--	--	OK (-VG)	--	--	--	--
E32-TC1000	OK	--	OK	OK (-H)	--	--	OK (-VG)	--	--	--	--
Through-beam, Armored Type											
E32-UTAT13F	OK	--	--	--	--	--	--	--	--	OK (-XR)	--
E32-UTAT16F	OK	--	--	--	--	--	--	--	--	OK (-XR)	--
E32-UTBT13F	--	--	--	--	--	--	--	--	--	OK (-X)	--
E32-UTBT16F	--	--	--	--	--	--	--	--	--	OK (-X)	--
Though-beam, Probe Type											
E32-T33-1	OK	--	OK	OK (-H)	--	--	OK (-VG)	--	--	--	--
E32-TC200B	OK	OK	OK	OK	OK	OK	OK	--	OK	--	OK
E32-TC200B4	OK	OK	OK	OK	OK	OK	OK	--	OK	--	--
E32-TC200D	OK	--	OK	OK	--	--	OK (-VG)	--	--	--	OK
E32-TC200D4	OK	--	OK	OK	--	--	OK (-VG)	--	--	--	--
E32-TC200F	OK	OK	OK	OK	OK	OK	OK	--	OK	--	OK
E32-TC200F4	OK	OK	OK	OK	OK	OK	OK	--	OK	--	--
Through-beam, Side Sensing Type											
E32-T14	OK	OK	OK	OK	OK	OK	OK	--	OK	--	--
E32-T14L	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-T16	OK	OK	OK	OK	OK	OK	OK	OK	OK	--	--
E32-T16P	OK	OK	--	OK (-NH)	OK	OK	--	--	OK	--	--
E32-T24	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
Through-beam, High Temperature Type											
E32-T51	OK	OK	OK	OK	OK	OK	OK	--	--	OK (-XR)	--
E32-T61	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
Through-beam, Special Purpose Type											
E32-G14	OK	OK	OK	OK	OK	OK	OK	--	OK	--	--
E32-M21	OK	OK	OK	OK	OK	OK	OK	--	OK	--	--
E32-T12F	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-T22S	--	OK	--	OK	OK	OK	--	--	--	--	--
E32-T24S	--	OK	--	OK	OK	OK	--	--	--	--	--
E32-T84S	--	OK	--	OK (-NH)	OK	OK	--	--	--	--	--

Fiber cables	DIN-rail mounting amplifiers							Block style amplifiers			
Part number	E3X-A	E3X-DAN	E3X-F	E3X-H, -NH	E3X-NM	E3X-NT, -NV	E3X-NVG,-VG	E3MC-MY	E3XA-CC4A	E3JU-XR E3JU-X	E3A2-X E3S-X3
Diffuse, General Purpose Type											
E32-CC200	OK	OK	OK	OK	OK	OK	OK	OK	OK	--	OK
E32-D11	OK	OK	OK	OK	OK	OK	OK	--	--	OK (-XR)	--
E32-D11L	OK	OK	OK	OK	OK	OK	OK	OK	--	--	--
E32-D11R	OK	OK	--	OK (-NH)	OK	OK	OK	--	--	--	--
E32-D21	OK	OK	OK	OK	OK	OK	OK	--	--	OK (-XR)	--
E32-D21L	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-D21R	OK	OK	--	OK (-NH)	OK	OK	--	--	--	--	--
E32-D22L	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-D32	OK	OK	OK	OK	OK	OK	OK	--	--	OK (-XR)	--
E32-D32L	OK	OK	OK	OK	OK	OK	OK	OK	--	--	--
E32-DC50	OK	--	OK	OK (-H)	--	--	OK (-VG)	--	--	--	--
E32-DC200	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK (-XR)	OK
E32-DC200C	OK	--	OK	OK	OK	OK	OK	--	--	--	OK
E32-DC200E	OK	OK	OK	OK	OK	OK	OK	--	OK	--	OK
E32-DC500	OK	--	OK	OK (-H)	--	--	OK (-VG)	--	--	--	--
E32-DC1000	OK	--	OK	OK (-H)	--	--	OK (-VG)	--	--	--	--
Diffuse, Armored Type											
E32-UDAT13F	OK	--	--	--	--	--	--	--	--	OK (-XR)	--
E32-UDAT16F	OK	--	--	--	--	--	--	--	--	OK (-XR)	--
E32-UDBT13F	--	--	--	--	--	--	--	--	--	OK (-X)	--
E32-UDBT16F	--	--	--	--	--	--	--	--	--	OK (-X)	--
Diffuse, Probe Type											
E32-D33	OK	OK	OK	OK	OK	OK	--	--	OK	--	--
E32-DC200B	OK	OK	OK	OK	OK	OK	OK	--	OK	--	OK
E32-DC200B4	OK	OK	OK	OK	OK	OK	OK	--	--	--	OK
E32-DC200D	OK	--	OK	OK	--	--	OK (-VG)	--	--	--	OK
E32-DC200D4	OK	--	OK	OK	--	--	OK (-VG)	--	--	--	--
E32-DC200F	OK	OK	OK	OK	OK	OK	OK	--	OK	--	OK
E32-DC200F4	OK	OK	OK	OK	OK	OK	OK	--	OK	--	OK
E32-DC9G	OK	--	OK	OK	--	--	OK (-VG)	--	OK	--	--
E32-DC9G4	OK	--	OK	OK	--	--	OK (-VG)	--	--	--	--
Diffuse, Side Sensing Type											
E32-D14L	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-D24	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
Diffuse, High Temperature Type											
E32-D51	OK	OK	OK	OK	OK	OK	OK	--	--	OK (-XR)	--
E32-D61	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-D73	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
Diffuse, Convergent and Special Purpose Types											
E32-D12F	OK	OK	OK	OK	OK	OK	OK	--	--	--	--
E32-L24L	OK	OK	OK	OK	OK	OK	--	--	--	--	--
E32-L25	OK	OK	OK	OK	OK	OK	--	--	--	--	--
E32-L25A	OK	OK	OK	OK	OK	OK	--	--	--	--	--
E32-L25L	OK	OK	OK	OK	OK	OK	--	--	--	--	--
Retroreflective Type											
E32-R16	OK	OK	OK	OK	OK	OK	--	--	--	--	--
E32-R21	OK	OK	OK	OK	OK	OK	--	--	OK	--	--

Ordering Information

Omron offers fiber-optic cables in through-beam, diffuse and retroreflective types. Each cable has a different sensing distance depending on the amplifier selected. The ordering information provides the sensing distance and compatibility with two general classes of amplifiers: DIN rail-mounting DC amplifiers and block style amplifiers with different attributes, such as AC/DC supply voltage, analog output and color sensing.

✂ indicates models that customers can cut to length for their application. Models without this mark are pre-cut by the factory to maintain their respective specifications.

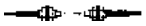
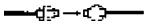
■ E3X-SERIES, DIN RAIL-MOUNTING AMPLIFIERS

The table specifies the sensing characteristics of each fiber when used with the following amplifiers:

Legend:

A . . . . . E3X-A (General purpose amplifier)
DAN-HS E3X-DAN (Digital amplifier- high speed mode)
DAN-LD E3X-DAN (Digital amplifier- long distance mode)
DAN-SM E3X-DAN (Digital amplifier- standard distance mode)
F . . . . . E3X-F (High performance amplifier- high speed)
H . . . . . E3X-H11 (High gain amplifier)
NM . . . . . E3X-NM (4 channel auto-tuning amplifier)
NT . . . . . E3X-NT (Auto-tuning amplifier: general purpose)
NH . . . . . E3X-NH (High-precision, auto-tuning amplifier)
NHB . . . . E3X-NHB (High-precision, blue LED, auto-tuning amp)
NV . . . . . E3X-NV21 (Water-resistant, red light source amplifier)
NVG . . . . E3X-NVG21 (Water-resistant, green light source amp)
VG . . . . . E3X-VG (Mark sensing amplifier)

■ THROUGH-BEAM, GENERAL PURPOSE TYPE

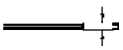
Application	Features	Appearance	Type	Detection distance	Min. detectable object (opaque)	Part number
Flexible, resists breaking	Ideal for mounting on moving sections 4 mm bending radius	 M4 threaded head x 11.7 mm (0.46 in) L 2 m (6.56 ft) length	A	180 (1,000*) mm	0.2 mm dia.	**E32-T11** ✂
			DAN-HS	250 (1,300*) mm	----------	
			DAN-LD	850 (4,000**) mm	----------	
			DAN-SM	680 (3,600*) mm	0.01 mm dia.	
			F	80 (400*) mm	0.2 mm dia.	
			H	360 (2,000*) mm	0.3 mm dia.	
			NH	360 (2,000*) mm	0.04 mm dia.	
			NHB	50 mm	0.04 mm dia.	
			NM	240 (1,300*) mm	0.2 mm dia.	
			NT	260 (1,400*) mm	0.1 mm dia.	
			NV	260 (1,400*) mm	0.1 mm dia.	
			NVG	10 (120*) mm	0.2 mm dia.	
			VG	10 (120*) mm	0.2 mm dia.	
Long distance	Compact M4, head, 1.4 mm ID fiber; 25 mm bending radius	 M4 threaded head x 11 mm (0.43 in) L 2 m (6.56 ft) length	A	350 (1,000*) mm	0.5 mm dia.	**E32-T11L** ✂
			DAN-HS	490 (1,200*) mm	----------	
			DAN-LD	1,660 (4,000**) mm	----------	
			DAN-SM	1,330 (3,200*) mm	0.02 mm dia.	
			F	150 (550*) mm	0.5 mm dia.	
			H	700 (2,000*) mm	0.5 mm dia.	
			NH	700 (2,000*) mm	0.06 mm dia.	
			NHB	90 (250*) mm	0.06 mm dia.	
			NM	500 (1,200 *) mm	0.2 mm dia.	
			NT	540 (1,280*) mm	0.15 mm dia.	
			NV	540 (1,280*) mm	0.15 mm dia.	
			NVG	40 (120*) mm	0.5 mm dia.	
			VG	40 (120*) mm	0.5 mm dia.	

Note: * Value in parentheses represents the sensing distance of the fiber when the E39-F1 lens is attached to its tip.
** Value in parentheses is based on each fiber having a cable length of 2 m.

■ DIFFUSE, GENERAL PURPOSE TYPE (CONT.)

The table specifies the sensing characteristics of each fiber when used with the following amplifiers:

Legend:
A . . . . . E3X-A (General purpose amplifier)
DAN-HS E3X-DAN (Digital amplifier- high speed mode)
DAN-LD E3X-DAN (Digital amplifier- long distance mode)
DAN-SM E3X-DAN (Digital amplifier- standard distance mode)
F . . . . . E3X-F (High performance amplifier- high speed)
H . . . . . E3X-H11 (High gain amplifier)
NM . . . . . E3X-NM (4 channel auto-tuning amplifier)
NT . . . . . E3X-NT (Auto-tuning amplifier: general purpose)
NH . . . . . E3X-NH (High-precision, auto-tuning amplifier)
NHB . . . . E3X-NHB (High-precision, blue LED, auto-tuning amp)
NV . . . . . E3X-NV21 (Water-resistant, red light source amplifier)
NVG . . . . E3X-NVG21 (Water-resistant, green light source amp)
VG . . . . . E3X-VG (Mark sensing amplifier)

Application	Features	Appearance	Type	Detection distance (see note)	Min. detectable object (gold wire)	**Part number**
Flexible (resists breaking)	Easy to mount sensing head with high flexibility cable; 1 mm bending radius	 M3 screw x 11 mm (0.43 in) L 2 m (6.56 ft) length	A	7 mm	0.03 mm dia.	**E32-D21R**
			DAN-HS	10 mm	----------	
			DAN-LD	40 mm	----------	
			DAN-SM	30 mm	0.01 mm dia.	
			F	Contact Omron	Contact Omron	
			H	Contact Omron	Contact Omron	
			NH	14 mm	0.02 mm dia.	
			NHB	NA	NA	
			NM	8 mm	0.02 mm dia.	
			NT	9 mm	0.02 mm dia.	
			NV	9 mm	0.02 mm dia.	
			NVG	NA	NA	
			VG	NA	NA	
Long distance	Small diameter head fits space-confined installations; 25 mm bending radius; 0.5 mm ID fiber	 3 mm (0.12 in) dia. x 15 mm (0.59 in) L 2 m (6.56 ft) length	A	25 mm	0.03 mm dia.	**E32-D22L**
			DAN-HS	45 mm	----------	
			DAN-LD	160 mm	----------	
			DAN-SM	130 mm	0.01 mm dia.	
			F	11 mm	0.26 mm dia.	
			H	50 mm	0.015 mm dia.	
			NH	50 mm	0.012 mm dia.	
			NHB	Contact Omron	Contact Omron	
			NM	35 mm	0.015 mm dia.	
			NT	38 mm	0.012 mm dia.	
			NV	38 mm	0.012 mm dia.	
			NVG	1 mm	1.0 mm dia.	
			VG	1 mm	1.0 mm dia.	

Note: Sensing distance is based on sensing a white paper that has 90% reflectivity.

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