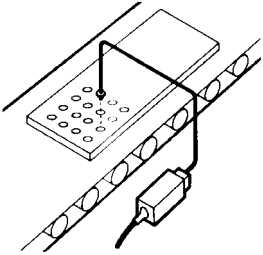
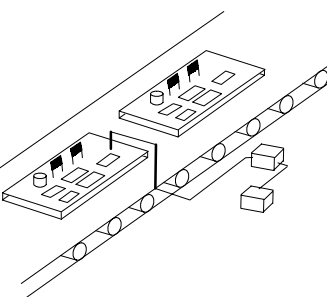
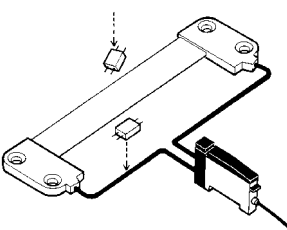
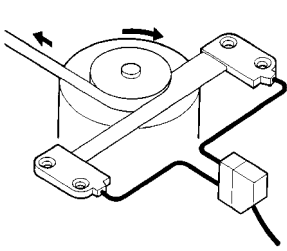


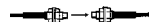
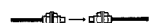
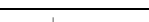
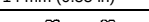
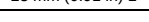
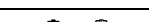
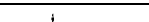
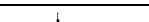
Application Examples

Detect small holes in machine parts	Detecting presence of printed circuit board components	Detects metal or non-metal chips within a sensing area as large as 2 x 11-mm	Detects when tape roll has reached selected diameter
		 Chips need not be in a straight line. Sensor, used vertically, will detect object as tiny as 1.3 mm.	 Outputs a signal when selected diameter is reached.

Ordering Information

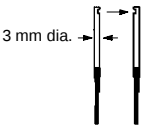
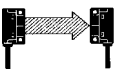
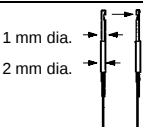
■ THROUGH-BEAM TYPE

General Purpose

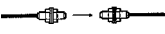
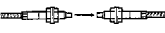
Part Number	Appearance	Cable Length	Sensing Distance	Minimum Object Size	Fiber Material		Remarks		
					Core	Sheath			
E32-T11	 M4 threaded head x 11.7 mm (0.46 in) L	2 m	18 cm (7 in) 1 m (3.28 ft) with E39-F1	0.5 mm (0.02 in) dia.	PMMA	PE	1.5 mm ID fiber Ultra flexible cable		
E32-T11L	 M4 threaded head x 11.7 mm (0.46 in) L		35 cm (13.8 in) 1 m (3.28 ft) with E39-F1 lens kit				1.4 mm ID fiber		
E32-T12L	 3 mm dia. (0.12 in) x 14 mm (0.55 in)		35 cm (13.8 in)				1 mm ID fiber		
E32-T17L	 M4 threaded head x 23 mm (0.91 in) L	10 m	7 m (23 ft)	1 mm ID fiber Long distance					
E32-T21	 M3 threaded head x 11 mm (0.43 in) L	2 m	5 cm (1.97 in)	0.2 mm (0.01 in) dia.	Plastic extra flexible	PE	0.5 mm ID fiber Ultra flexible cable		
E32-T21L	 M3 threaded head x 9 mm (0.35 in) L		10 cm (3.94 in)				0.5 mm ID fiber		
E32-T22	 2 mm dia. (0.8 in) x 22 mm (0.87 in)		5 cm (2 in)				0.5 mm ID fiber Easy to align		
E32-T22L	 2 mm dia. (0.8 in) x 22 mm (0.87 in)		10 cm (3.94 in)				0.5 mm ID fiber		
E32-TC50	 M4 threaded head x 14 mm (0.55 in) L	50 cm (19 in)	20 cm (7.88 in)	1 m (3.28 ft) with E39-F1 lens kit			1 mm ID fiber Low cost, general purpose		
E32-TC200		2 m (6.4 ft)							
E32-TC500		5 m (16.4 ft)							
E32-TC1000		10 m (32.8 ft)							

THROUGH-BEAM TYPE, CONTINUED

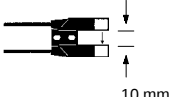
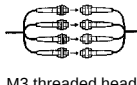
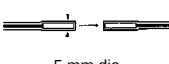
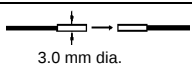
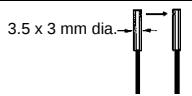
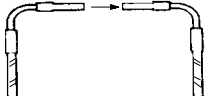
Side Beam Type

Part Number	Appearance	Cable Length	Sensing Distance	Minimum Object Size	Fiber Material		Remarks
					Core	Sheath	
E32-T14		2 m	90 cm (3 ft)	0.1 mm (0.004 in) dia.	PMMA	PE	1 mm ID fiber Built-in lens offers long sensing distance
E32-T14L	 3 mm dia.		12 cm (4.7 in)				1 mm ID fiber
E32-T16			75 cm (29 in)	—			1 mm ID fiber includes 0.5 mm and 1.0 mm slit masks
E32-T16P			20 cm (8 in)	—			
E32-T24	 1 mm dia. 2 mm dia.		4.5 cm (1.8 in)	0.1 mm (0.004 in) dia.			0.5 mm ID fiber

High Temperature Type

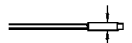
Part Number	Appearance	Maximum Temperature	Sensing Distance	Minimum Object Size	Fiber Material		Remarks
					Core	Sheath	
E32-T51	 M3 threaded head	150°C (302°F)	15 cm (5.9 in)	1 mm (0.04 in) dia.	PMMA	PE	1.5 mm ID fiber
E32-T61	 M4 threaded head	300°C (572°F)	15 cm (5.9 in) 1.5 m (4.9 ft) with E39-F1 lens	0.2 mm (0.01 in) dia.	Glass	SUS 304	1 mm ID fiber

Special Purpose Type

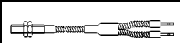
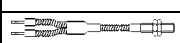
Part Number	Appearance	Cable Length	Sensing Distance	Minimum Object Size	Fiber Material		Remarks	
					Core	Sheath		
E32-G14	 10 mm	2 m	10 mm (0.39 in)	0.5 mm (0.02 in) dia.	PMMA	PE	1 mm ID fiber Ideal for mark sensing or belt alignment	
E32-M21	 M3 threaded head		15 cm (6 in)	0.3 mm (0.01 in) dia.			0.5 mm ID fiber Use with E3XA-CC4A for shape recognition	
E32-T12F	 5 mm dia.		60 cm (23.6 in)	0.9 mm (0.04 in) dia.		Teflon®	1 mm ID fiber Ideal for harsh chemical environments	
E32-T22S	 3.0 mm dia.		500 mm	0.5 mm (0.02 in) dia.		PVC	Ideal for sensing silicon wafers Ultra-narrow beam	
E32-T24S	 3.5 x 3 mm dia.		350 mm				Side-view Ideal for sensing silicon wafers Ultra-narrow beam	
E32-T84S				450-480 mm	0.3 mm	Glass	SUS 304	Angled head ideal for sensing silicon wafers

■ DIFFUSE TYPE

General Purpose

Part Number	Appearance	Cable Length	Sensing Distance	Minimum Object Size	Fiber Material		Remarks		
					Core	Sheath			
E32-CC200	 M6 threaded head x 20 mm (0.79 in) L	2 m	7.5 cm (3 in)	0.03 mm (0.001 in) dia.	PMMA	PE	1 mm ID fiber Concentric beam		
E32-D11	 M6 threaded head x 17 mm (0.67 in) L		4.5 cm (1.8 in)				0.25 mm ID fiber Ultra-flexible cable		
E32-D11L	 M6 threaded head x 17 mm (0.67 in) L		10 cm (4 in)	0.015 mm (0.0006 in) dia.			1 mm ID fiber Long distance		
E32-D21	 M3 threaded head x 11 mm (0.43 in) L		0.7 cm (0.28 in)	0.03 mm (0.001 in) dia.			0.25 mm ID fiber Ultra-flexible cable		
E32-D21L	 M4 threaded head x 12 mm (0.47 in) L		2.5 cm (1 in)				0.5 mm ID fiber		
E32-D22L	 3 mm (0.12 in) dia. x 15 mm (0.59 in) L								
E32-D32	 2 mm dia.		2 cm (0.79 in)				0.25 mm ID fiber Concentric beam		
E32-D32L	 3 mm dia.		4 cm (1.57 in)	0.04 mm (0.002 in) dia.			Long distance Concentric beam		
E32-DC50	 M6 threaded head x 12 mm (0.47 in) L	0.5 m (19 in)	7.5 cm (3 in)	0.015 mm (0.0006 in) dia.			1 mm ID fiber Low cost, general purpose		
E32-DC200		2 m (6.4 ft)							
E32-DC500		5 m (16.4 ft)							
E32-DC1000		10 m (32.8 ft)							
E32-DC200C	 M6 threaded head x 17 mm (0.67 in) L	0.64 m 2.49 m when extended	7.5 cm (3 in)	0.03 mm (0.001 in) dia.			1 mm ID fiber		
E32-DC200E	 M3 threaded head x 11 mm (0.43 in) L	2 m	1.8 cm (0.71 in)				0.5 mm ID fiber		

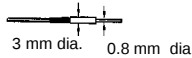
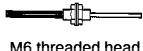
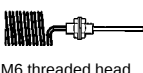
Armored Type

Part Number	Appearance	Cable Length	Sensing Distance	Minimum Object Size	Fiber Material		Remarks
					Core	Sheath	
E32-UDAT1-3F		0.91 m (3 ft)	8 cm (3.1 in)	0.03 mm (0.001 in) dia.	Glass	Stainless steel	General purpose Can withstand temperatures to 150°C (302°F)
E32-UDAT1-6F	5/16 – 24 thread x 38.1 mm (1.5 in) L	1.83 m (6 ft)	6.5 cm (2.6 in)				
E32-UDBT1-3F*		0.91 m (3 ft)	9 cm (3.5 in)	0.05 mm. (0.002 in) dia			General purpose Can withstand temperatures to 200°C (392°F)
E32-UDBT1-6F*	5/16 – 24 thread x 38.1 mm (1.5 in) L	1.83 m (6 ft)	8 cm (3.1 in)				

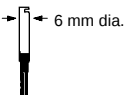
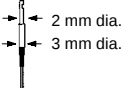
*For use with E3JU-X only

■ DIFFUSE TYPE, CONTINUED

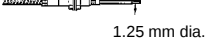
Probe Type

Part Number	Appearance	Cable Length	Sensing Distance	Minimum Object Size	Fiber Material		Remarks	
					Core	Sheath		
E32-D33	 3 mm dia. 0.8 mm dia.	2 m	5 mm (0.2 in)	0.015 mm (0.0006 in) dia.	PMMA	PE	0.25 mm ID fiber Ultra small sensing	
E32-DC200B	 M6 threaded head		7.5 cm (3 in)				0.03 mm (0.001 in) dia.	1 mm ID fiber Probe = 90 mm
E32-DC200B4								Probe = 40 mm
E32-DC200D	 M6 threaded head	0.64 m (2.49 when extended)	2.2 cm (0.87 in)				1 mm ID fiber Probe = 90 mm	
E32-DC200D4								Probe = 40 mm
E32-DC200F	 M3 threaded head	2 m	1.8 cm (0.71 in)				0.5 mm ID fiber Probe = 90 mm	
E32-DC200F4							Probe = 40 mm	
E32-DC9G	 1.2 mm dia.	No cable	3 cm (1.2 in)					
E32-DC9G4				Probe = 40 mm				

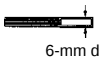
Side Beam Type

Part Number	Appearance	Cable Length	Sensing Distance	Minimum Object Size	Fiber Material		Remarks
					Core	Sheath	
E32-D14L	 6 mm dia.	2 m	4 cm (1.6 in)	0.03 mm (0.001 in) dia.	PMMA	PE	1 mm ID fiber
E32-D24	 2 mm dia. 3 mm dia.		1.5 cm (0.6 in)				0.5 mm ID fiber

High Temperature Type

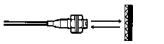
Part Number	Appearance	Maximum Temperature	Sensing Distance	Minimum Object Size	Fiber Material		Remarks
					Core	Sheath	
E32-D51	 M6 threaded head	150°C (302°F)	6 cm (2.4 in)	0.03 mm (0.001 in) dia.	PMMA	PE	1.5 mm ID fiber
E32-D61	 M6 threaded head	300°C (572°F)	4.5 cm (1.8 in)		Glass	SUS 304	1.4 mm ID fiber
E32-D73	 1.25 mm dia. M4 threaded head	400°C (752°F)	3 cm (1.2 in)				1 mm ID fiber

Convergent Type and Special Purpose

Part Number	Appearance	Cable Length	Sensing Distance	Minimum Object Size	Fiber Material		Remarks
					Core	Sheath	
E32-D12F	 6-mm dia.	2 m	5 cm (2 in)	0.03 mm (0.01 in) dia.	PMMA	Teflon®	1 mm ID fiber Ideal for harsh chemical environments
E32-L24L			4 ±2 mm (0.16 ±0.07 in)	0.15 mm (0.006 in) dia.		PE	Side view Convergent beam Ideal for sensing silicon wafers
E32-L25			3.3 mm (0.13 in)	0.25 mm (0.01 in) dia.			Convergent beam Ideal for sensing silicon wafers
E32-L25A							
E32-L25L			7.2 ±1.8 mm (0.28 ±0.07 in)	0.15 mm (0.006 in) dia.			

■ RETROREFLECTIVE TYPE

Special Purpose

Part Number	Appearance	Cable Length	Sensing Distance	Minimum Object Size	Fiber Material		Remarks
					Core	Sheath	
E32-R16	 Reflector E39-R1	2 m	15 to 150 cm (5.91 to 59.05 in) with E39-R1 reflector	0.03 mm (0.001 in) dia.	PMMA	PE	For detection of shiny transparent or opaque objects E39-R1 included
E32-R21	 M6 threaded head Reflector E39-R3		1 to 25 cm (0.39 to 9.84 in) with E39-R3 reflector				For detection of shiny transparent or opaque objects E39-R3 included

Specifications

■ FIBER UNIT

Through-beam (Separate) Sensors

Part Number	Operating Ambient Temperature	Operating Ambient Humidity	Permissible Bending Radius	Sheath Material	Enclosure Rating
E32-M21	-40°C to 70°C (-40°F to 158°F) with no icing	35% to 85%	25 mm min.	Black polyethylene	IEC IP67
E32-T11			4 mm min.	Vinyl chloride	
E32-T11L			25 mm min.	Black polyethylene	
E32-T12F	40 mm min.		Teflon-covered black polyethylene		
E32-T12L	-40°C to 70°C (-40°F to 158°F) with no icing		25 mm min.	Black polyethylene	
E32-T14					
E32-T14L					
E32-T16					
E32-T16P					10 mm min.
E32-T17L			25 mm min.	Black polyethylene	IEC IP67
E32-T21			4 mm min.	Vinyl chloride	
E32-T21L			25 mm min.	Black polyethylene	
E32-T22					
E32-T22L					
E32-T24					
E32-T51	-40°C to 150°C* (-40°F to 302°F) with no icing	35 mm min.	Fluoride resin		
E32-T61	-40°C to 300°C (-40°F to 572°F) with no icing	25 mm min.	SUS		
E32-TC200	-40°C to 70°C (-40°F to 158°F) with no icing		Black polyethylene		
E32-TC200A					
E32-TC200B					
E32-TC200B4					
E32-TC200C					
E32-TC200D					
E32-TC200D4					
E32-TC200E					
E32-TC200F					
E32-TC200F4					

*When used continuously between -40°C and 130°C (-40°F and 266°F)

Reflective Sensors

Part Number	Differential Travel	Operating Ambient Temperature	Operating Ambient Humidity	Permissible Bending Radius	Material	Enclosure Rating	
E32-CC200	20% of max. detection sensing distance (Adjustable in a range of 0% to 20% when the E3X-H11 is used.)	−40°C to 70°C (−40°F to 158°F) with no icing	35% to 85%	25 mm min.	Black polyethylene	IEC IP67	
E32-D11				4 mm min.	Vinyl chloride		
E32-D11L				25 mm min.	Black polyethylene		
E32-D12F		−30°C to 70°C (−22°F to 158°F) with no icing		40 mm min.	Teflon-covered black polyethylene*		
E32-D14L				25 mm min.	Black polyethylene		
E32-D21		−40°C to 70°C (−40°F to 158°F) with no icing		4 mm min.	Vinyl chloride		
E32-D21L				25 mm min.	Black polyethylene		
E32-D22L							
E32-D24							
E32-D32							
E32-D32L							
E32-D33							
E32-D51		−40°C to 150°C (−40°F to 302°F) with no icing**		35 mm min.	Fluoride resin		
E32-D61		−40°C to 300°C (−40°F to 572°F) with no icing		25 mm min.	SUS		
E32-D73		−40°C to 400°C (−40°F to 752°F) with no icing					
E32-DC200							
E32-DC200B E32-DC200B4							
E32-DC200C							
E32-DC200D E32-DC200D4							
E32-DC200E							
E32-DC200F E32-DC200F4							
E32-DC9G E32-DC9G4		−40°C to 70°C (−40°F to 158°F) with no icing					Black polyethylene
E32-L24L***		−40°C to 105°C (−40°F to 221°F) with no icing					10 mm min. (average at 10% decrease of sensing distance)

*Teflon is a registered trademark of the Dupont Company and the Mitsui Dupont Chemical Company for their fluoride resin.

**When used continuously between -40°C and 130°C (-40°F and 266°F)

***Beam size: 2 mm dia.

Part Number	Differential Travel	Operating Ambient Temperature	Operating Ambient Humidity	Permissible Bending Radius	Material	Enclosure Rating
E32-L25	20% of max. detection sensing distance (Adjustable in a range of 0% to 20% when the E3X-H11 is used.)	−40°C to 70°C (−40°F to 158°F) with no icing	35% to 85%	25 mm min.	Black polyethylene	IEC IP50
E32-L25A						
E32-L25L***		−40°C to 105°C (−40°F to 221°F) with no icing		10 mm min. (average at 10% decrease of sensing distance)	Reinforced polyethylene	
E32-R16 E39-R1		−25°C to 55°C (−13°F to 131°F) with no icing		25 mm min.	Black polyethylene	IEC IP66
E32-R21 E39-R3		−40°C to 70°C (−40°F to 158°F) with no icing				IEC IP67

*Teflon is a registered trademark of the Dupont Company and the Mitsui Dupont Chemical Company for their fluoride resin

**When used continuously between -40°C and 130°C (-40°F and 266°F)

***Beam size: 2 mm dia.

Fine Through-beam Sensors

Part Number	Beam Size	Differential Travel	Horizontal Positioning Accuracy	Operating Ambient Temperature	Operating Ambient Humidity	Permissible Bending Radius*	Material	Enclosure Rating	
E32-T22S	13 mm dia. (at a distance of 200 mm)	---	---	-40°C to 70°C (-40°F to 158°F) with no icing	35% to 85%	10 mm min.	Reinforced laminated vinyl chloride	IEC IP67	
E32-T24S				-40°C to 200°C (-40°F to 392°F) with no icing					
E32-T84S						25 mm min.	SUS		

*Average at 30% of sensing distance

Slot Sensors

Part Number	Operating Ambient Temperature	Operating Ambient Humidity	Permissible Bending Radius	Material	Enclosure Rating
E32-G14	-40°C to 70°C (-40°F to 158°F) with no icing	35% to 85%	25 mm min.	Black polyethylene	IEC IP67