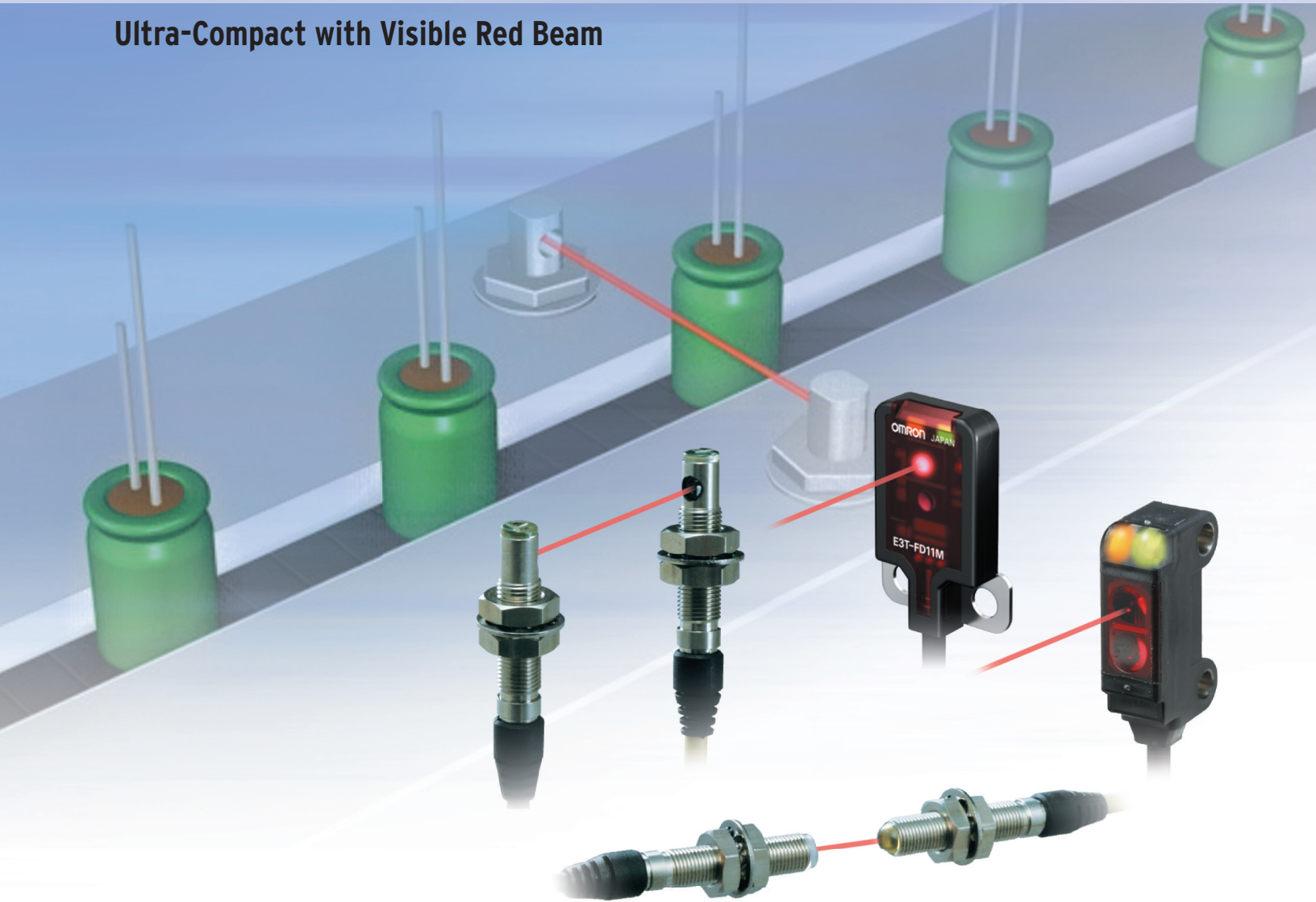**OMRON**
AUTOMATION & SAFETY

E3T Miniature Photoelectric Sensors

Ultra-Compact with Visible Red Beam

E3T-FD11M

» Ultra slim to fit and perform where others won't

» Visible red beam for simple set-up

» Five different sensing methods

E3T Miniature Photoelectric Sensors...
The Ideal Detecting Solution for High Power with Limited Space

E3T-Series Features

Compact size
• Side view model dimensions:
   18.5H x 7W x 9.5D mm
• Flat model dimensions:
   15.8H x 12W x 3.5D mm (M2 mount)
   23.4H x 12.6W x 4D mm (M3 mount)
• Cylindrical model dimensions:
   27 mm L x M5 (Through Beam)
   30 mm L x M6 (Diffuse)

Visible red beam simplifies alignment for installation and servicing

Background suppression E3T-FL sensors for ignoring shiny backgrounds

Highly visible indicators for ease of operation

Capable of detecting extremely small targets with 0.8 mm diameter pinpoint beam with the convergent beam E3T-SL

Coaxial retro-reflective model uses Omron's unique Free Angle Optics to detect 2 mm objects at 100 mm
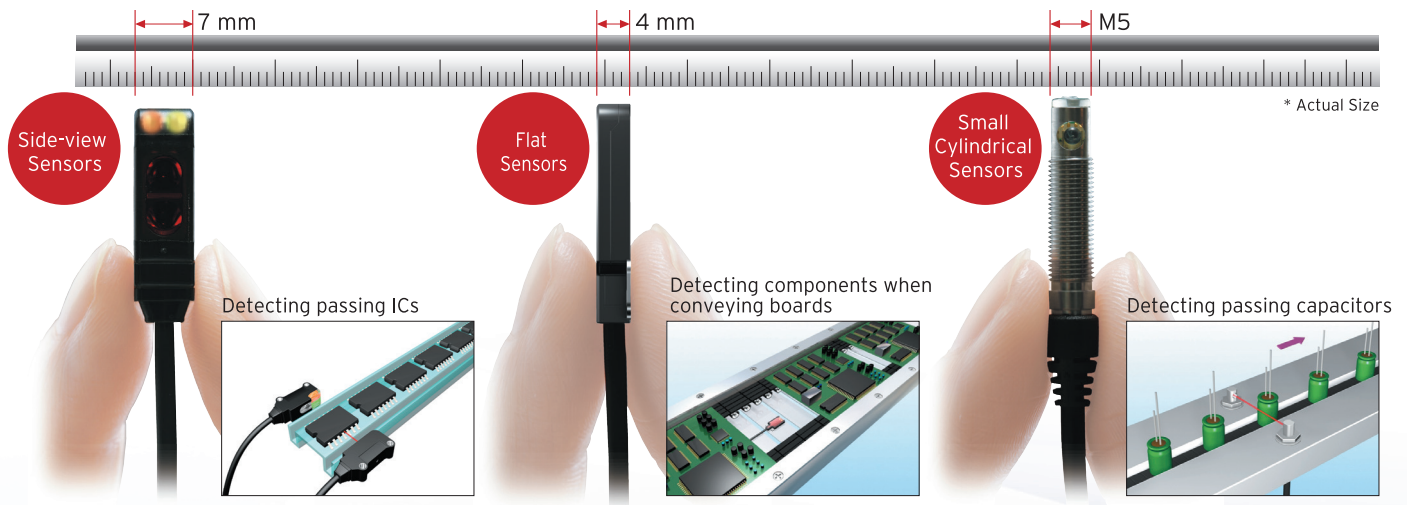
IP67 enclosure rating for water resistance

Separate Light-ON or Dark-ON operation models available

All models pre-wired with 2 m cable

Robotic cable versions available

Ecological design with complete RoHS compliancy

7 mm   4 mm   M5

* Actual Size

Side-view Sensors

Flat Sensors

Small Cylindrical Sensors

Detecting passing ICs

Detecting components when conveying boards

Detecting passing capacitors

Durable Design

The case, nuts, and washers of the Cylindrical Sensors are all stainless steel, as are the mounting plates and sleeves of the M3-mounting Sensors. Stainless steel screws are also available.

E3T-FD11M

SUS303   SUS304

2
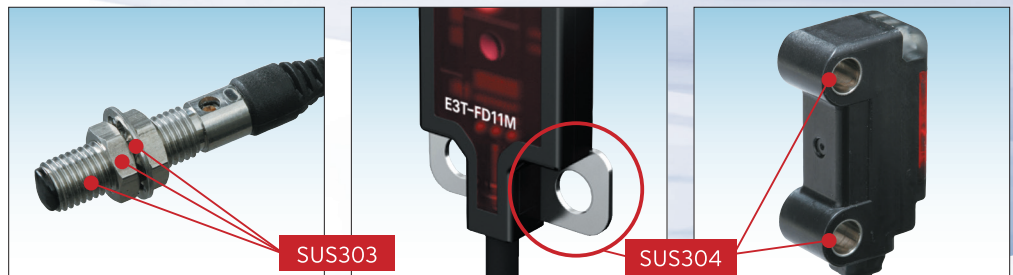
E3T-Series Line-up

Through-beam Models (Side View E3T-ST/Flat E3T-FT)

- Long-distance detection, Side-view Models: 1m, Flat Models: 500 mm.
- 300 mm Side-view and Flat models are also available to prevent mutual interference.
- Minimum detection object: 0.5 mm diameter (with slit attached).
- Optical axis accuracy of ±2° for installation reliability.
- Easily distinguish between color-coded emitter and receiver lenses.
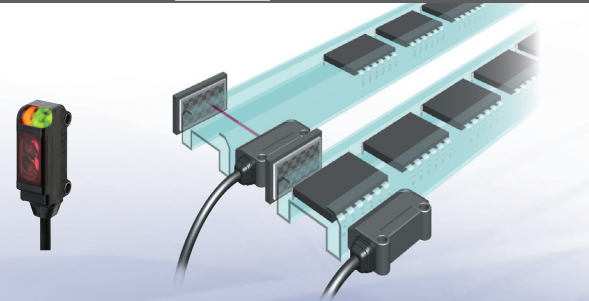- Available with M2 or M3 mounting.
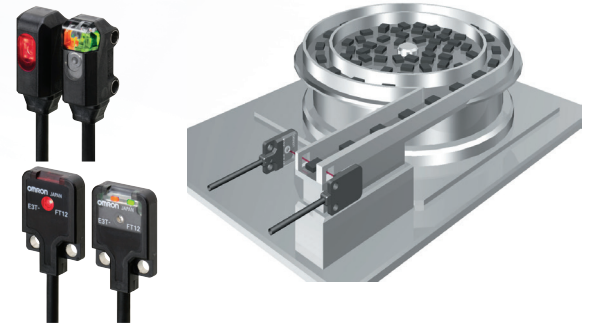
Convergent-reflective Models (Side-view E3T-SL)

- Minimum detection object: 0.15 mm diameter.
- Resistant to background and surrounding metal.
- Available with M2 or M3 mounting.
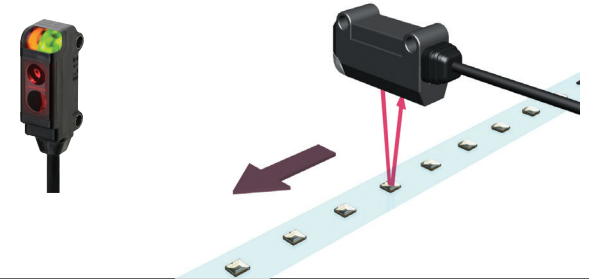
Retro-reflective Models (Side-view E3T-SR)

- Two models for optimized sensing characteristics with their reflectors.
- E3T-SR2□ : Sensing distance: 200 mm with E39-R4.
- E3T-SR3□ : Sensing distance: 100 mm with E39-R37.
- Available with M2 or M3 mounting.

Diffuse-reflective Models (Flat E3T-FD)

- Minimum detection object: 0.15 mm dia.
- Only 3.5 mm wide for installation in small gaps.
- Available with M2 or M3 mounting.
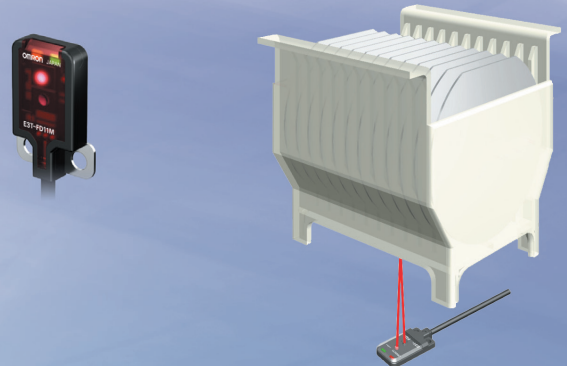
Background suppression reflective Models (Flat E3T-FL)

- Ignore background objects such as shiny metal.
- Ultra slim at 3.5 mm for compact installation.
- Hysteresis of 0.5 mm max for detecting small variations.

20 mm
Not detected

15 mm
Rated sensing distance

12 mm
Detected

3.5 mm

F3T-FL1□
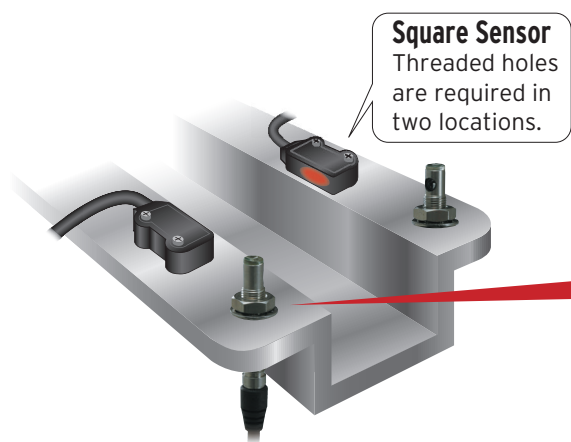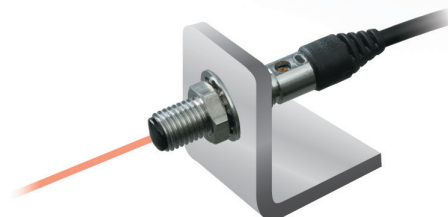
Black object

White background

3
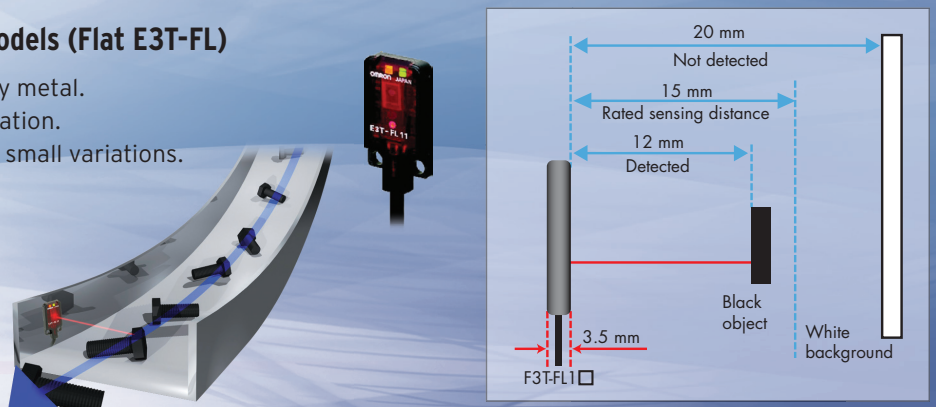
Cylindrical Through-beam Models (Top View E3T-CT1) (Side-view E3T-CT2)

- Achieve 1 meter distance with extremely small M5 sensors.
- Compact cylindrical style mounting without the need for a separate amplifier.
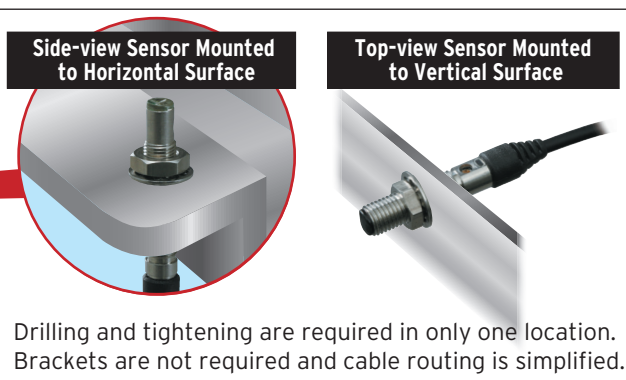- No mounting bracket necessary.
- All stainless-steel housing.
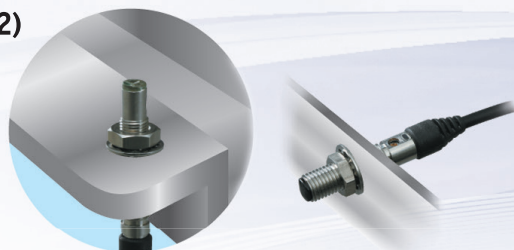
Cylindrical Diffuse-reflective Models (Top View E3T-CD)

- Small M6 cylindrical sensor achieves 50mm range.
- Provides same size benefit as a fiber head without the need for a separate amplifier.
- All stainless-steel housing.

Square Sensor
Threaded holes are required in two locations.

Side-view Sensor Mounted to Horizontal Surface	Top-view Sensor Mounted to Vertical Surface

Drilling and tightening are required in only one location. Brackets are not required and cable routing is simplified.

Ordering Information

Small Cylindrical Sensors
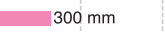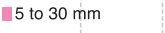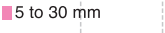
Red light　　Infrared light

Sensing method	Appearance	Connection method	Sensing distance	Operation mode	Model	
					NPN output	PNP output
Through-beam		Pre-wired (2 m)	1 m Dark-ON	Dark-ON	E3T-CT12 2M	E3T-CT14 2M
			500 mm	Dark-ON	E3T-CT22S 2M	E3T-CT24S 2M
Diffuse-reflective (with adjuster)			3 to 50 mm	Light-ON	E3T-CD11 2M	E3T-CD13 2M

Ordering Information

M3-mounting Sensors
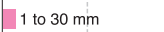
Sensing method	Appearance	Connection method	Sensing distance	Operation mode	Model	
					NPN output	PNP output
Through-beam *1		Pre-wired (2 m)	1 m — Light-ON	Light-ON	E3T-ST11M 2M	E3T-ST13M 2M
			1 m — Dark-ON	Dark-ON	E3T-ST12M 2M	E3T-ST14M 2M
			300 mm — Light-ON	Light-ON	E3T-ST21M 2M	E3T-ST23M 2M
			300 mm — Dark-ON	Dark-ON	E3T-ST22M 2M	E3T-ST24M 2M
Diffuse-reflective			5 to 30 mm	Light-ON	E3T-FD11M 2M	E3T-FD13M 2M
				Dark-ON	E3T-FD12M 2M	E3T-FD14M 2M
Convergent-reflective			5 to 15 mm	Light-ON	E3T-SL11M 2M	E3T-SL13M 2M
				Dark-ON	E3T-SL12M 2M	E3T-SL14M 2M
			5 to 30 mm	Light-ON	E3T-SL21M 2M	E3T-SL23M 2M
				Dark-ON	E3T-SL22M 2M	E3T-SL24M 2M

*1. The model number of the Emitter is expressed by adding an "L" to the set model number in the table. Example: E3T-ST11-L 2M
The model number of the Receiver is expressed by adding a "D" to the set model number in the table. Example: E3T-ST11-D 2M
Orders for individual Emitters and Receivers are accepted. (Modifications are required for some models.)

Note: Please reference data sheet for infrared emitter options for through-beam type E3T sensors.

M2-mounting Sensors

Sensing method	Appearance	Connection method	Sensing distance	Operation mode	Model	
					NPN output	PNP output
Through-beam (Emitter + Receiver) *1		Pre-wired (2 m)	1 m (Sensitivity Adjustment Unit can be used.)	Light-ON	E3T-ST11 2M	E3T-ST13 2M
				Dark-ON	E3T-ST12 2M	E3T-ST14 2M
			300 mm	Light-ON	E3T-ST21 2M	E3T-ST23 2M
				Dark-ON	E3T-ST22 2M	E3T-ST24 2M
			500 mm	Light-ON	E3T-FT11 2M	E3T-FT13 2M
				Dark-ON	E3T-FT12 2M	E3T-FT14 2M
			300 mm	Light-ON	E3T-FT21 2M	E3T-FT23 2M
				Dark-ON	E3T-FT22 2M	E3T-FT24 2M
Retro-reflective			Using the E39-R4 Reflector provided 200 mm [30 mm] *2	Light-ON	E3T-SR41 2M *3	E3T-SR43 2M *3
			Using the E39-R37-CA 100 mm [10 mm] *2	Dark-ON	E3T-SR42 2M *3	E3T-SR44 2M *3
Diffuse-reflective			5 to 30 mm	Light-ON	E3T-FD11 2M	E3T-FD13 2M
				Dark-ON	E3T-FD12 2M	E3T-FD14 2M
Convergent-reflective			5 to 15 mm	Light-ON	E3T-SL11 2M	E3T-SL13 2M
				Dark-ON	E3T-SL12 2M	E3T-SL14 2M
			5 to 30 mm	Light-ON	E3T-SL21 2M	E3T-SL23 2M
				Dark-ON	E3T-SL22 2M	E3T-SL24 2M
BGS-reflective			1 to 15 mm	Light-ON	E3T-FL11 2M	E3T-FL13 2M
				Dark-ON	E3T-FL12 2M	E3T-FL14 2M
			1 to 30 mm	Light-ON	E3T-FL21 2M	E3T-FL23 2M
				Dark-ON	E3T-FL22 2M	E3T-FL24 2M

*1. The model number of the Emitter is expressed by adding an "L" to the set model number in the table. Example: E3T-ST11-L 2M. The model number of the Receiver is expressed by adding a "D" to the set model number in the table. Example: E3T-ST11-D 2M. Orders for individual Emitters and Receivers are accepted. (Modifications are required for some models.)
*2. Values in parentheses indicate the minimum required distance between the Sensor and Reflector. *3. Models are available either with or without the E39-R37-CA Reflector included. Models with E39-R37-CA Reflector. E3T-SR4□-S Models without Reflector. E3T-SR4□-C   Note: The mounting holes on M2-mounting Sensors are SUS301 stainless steel.

Note: Please reference data sheet for infrared emitter options for through-beam type E3T sensors.

Accessories (Order separately)

Accessories for All Sensors

Name	Applicable Sensor	Model	Quantity	Remarks
Small Reflectors (for Retro-reflective Sensors)	**E3T-SR4☐**	E39-R4	1	Sensing distance 200 mm [30 mm] [1] Minimum detectable object 2-mm dia. Provided with the E3T-SR4☐
	E3T-SR4☐-S	E39-R37-CA [2]		Sensing distance 100 mm [10 mm] [1] Minimum detectable object 2-mm dia. Provided with the E3T-SR4☐-S
Tape Reflectors (for Retro-reflective Sensors)	**E3T-SR4☐-C**	E39-RS1-CA [2]		Sensing distance 100 mm [10 mm] [1] Minimum detectable object 2-mm dia. Use Tape Reflectors in combination with the E3T-SR4☐-C, which does not come with a Reflector.
		E39-RS2-CA [2]		
		E39-RS3-CA [2]		

[1]. Values in parentheses indicate the minimum required distance between the Sensor and Reflector.
[2]. The E3T-SR4☐ cannot be used with the E39-R37 or E39-RS1/2/3 (without CA) Tape Reflectors.
    The E39-☐-CA Reflector is for use only with the E3T-SR4☐. It cannot be used with other Sensors.

Accessories for Small Cylindrical Sensors

Name	Applicable Sensor	Model	Quantity	Remarks
SUS Nut Set for Through-beam Sensors [1]	**E3T-CT☐☐** **E3T-CT☐☐S**	E39-M5	4 (Hexagonal nuts), 2 (Toothed washers)	Material: SUS (Same type as provided with the Sensor.)
SUS Nut Set for Diffuse-reflective Sensors	**E3T-CD☐☐**	E39-M6	2 (Hexagonal nuts), 1 (Toothed washers)	
Adjustment Driver for Diffuse-reflective Sensors		E39-G17	1	This Driver is used to turn the sensitivity adjuster. Provided with E3T-CD☐☐

[1]. This Nut Set is for the Emitter/Receiver. This is the Nut Set for mounting the Sensor. Order this Set if you lose the screws.

Accessories for M3-mounting Sensors

Name		Applicable Sensor	Model	Quantity	Remarks
Slits for Through-beam Side-view Sensors	0.5 dia.	**E3T-ST1☐M**	E39-S76A	2 (One each for Emitter and Receiver)	Sensing distance 100 mm, Minimum detectable object (typical) 0.5-mm dia.
		E3T-ST2☐M			Sensing distance 30 mm, Minimum detectable object (typical) 0.5-mm dia.
	1 dia.	**E3T-ST1☐M**	E39-S76B		Sensing distance 300 mm, Minimum detectable object (typical) 1-mm dia.
		E3T-ST2☐M			Sensing distance 100 mm, Minimum detectable object (typical) 1-mm dia.
Mounting Bracket for Side-view Sensors [1]		**E3T-S☐☐☐M**	E39-L166	1	Nut plate provided
Mounting Bracket for Flat Sensors		**E3T-FD☐☐M**	E39-L167		---
Back-mounting Spacer for Flat Sensors			E39-L168		Use this Spacer when mounting a Flat Sensor (E3T-FD☐☐M) from the back.
SUS Screw Set for Flat Sensors [2]		**E3T-FD☐☐M**	E39-L170	2	Material: SUS Contents: Bolt with hexagonal hole (M3×6)
SUS Screw Set for Side-view Sensors [1][2]		**E3T-S☐☐☐M**	E39-L171	2 for each	Material: SUS Contents: Bolt with hexagonal hole (M3×15), Hexagonal nuts, Spring washers, Flat washers

[1]. When using Through-beam Sensors (E3T-ST☐☐M), order one bracket for the Emitter and one for the Receiver.
[2]. This is the Screw Set for mounting the Sensor to the Mounting Bracket. Order this Set if you lose the screws. Do not use this Screw Set to mount the Mounting Bracket to the equipment.

Accessories (Order separately)

Accessories for M2-mounting Sensors

Name	Applicable Sensor	Model	Quantity	Remarks
Mutual Interference Prevention Filter for Through-beam Side-view Sensors [1]	E3T-ST3☐	E39-E14	4 (Two each for Emitter and Receiver)	Sensing distance 1 m
	E3T-ST1☐			Sensing distance 0.5 m
Slit for Through-beam Side-view Sensors	E3T-ST3☐ (0.5 dia.)	E39-S63	2 (One each for Emitter and Receiver; common with Slit widths of 1 dia. and 0.5 dia.)	Sensing distance 200 mm, Minimum detectable object (typical) 0.5-mm dia.
	E3T-ST1☐ (0.5 dia.)			Sensing distance 100 mm, Minimum detectable object (typical) 0.5-mm dia.
	E3T-ST2☐ (0.5 dia.)			Sensing distance 30 mm, Minimum detectable object (typical) 0.5-mm dia.
	E3T-ST3☐ (1 dia.)			Sensing distance 600 mm, Minimum detectable object (typical) 1-mm dia.
	E3T-ST1☐ (1 dia.)			Sensing distance 300 mm, Minimum detectable object (typical) 1-mm dia.
	E3T-ST2☐ (1 dia.)			Sensing distance 100 mm, Minimum detectable object (typical) 1-mm dia.
Slit for Through-beam Flat Sensors	E3T-FT1☐ (0.5 dia.)	E39-S64		Sensing distance 50 mm, Minimum detectable object (typical) 0.5-mm dia.
	E3T-FT2☐ (0.5 dia.)			Sensing distance 30 mm, Minimum detectable object (typical) 0.5-mm dia.
	E3T-FT1☐ (1 dia.)			Sensing distance 100 mm, Minimum detectable object (typical) 1-mm dia.
	E3T-FT2☐ (1 dia.)			Sensing distance 50 mm, Minimum detectable object (typical) 1-mm dia.
Sensitivity Adjustment Unit for Through-beam Side-view Sensors	E3T-ST3☐	E39-E10	1	Sensing distance (typical) 1,200 to 1,800 mm
	E3T-ST1☐			Sensing distance (typical) 300 to 800 mm
Mounting Brackets for Side-view Sensors [2]	E3T-S☐☐☐	E39-L116	1	Nut plate provided
		E39-L117		
		E39-L118		
Mounting Brackets for Flat Sensors [2]	E3T-F☐☐☐	E39-L119		---
		E39-L120		
Screw Set for Side-view Sensors [3][4]	E3T-S☐☐☐	E39-L164	2 for each	Material: Iron (Same type as provided with the Sensor.) Contents: Phillips screws (M2×14), Hexagonal nuts, Spring washers, Flat washers
Screw Set for Flat Sensors [3][4]	E3T-F☐☐☐	E39-L165		Material: Iron (Same type as provided with the Sensor.) Contents: Phillips screws (M2×8), Hexagonal nuts, Spring washers, Flat washers
SUS Screw Set for Flat Sensors [3]	E3T-F☐☐☐	E39-L172	2	Material: SUS Contents: Bolt with hexagonal hole (M2×6)
SUS Screw Set for Side-view Sensors [3]	E3T-S☐☐☐	E39-L173	2 for each	Material: SUS Contents: Bolt with hexagonal hole (M2×12), Hexagonal nuts, Spring washers, Flat washers

*1. An arrow indicates the polarization direction. Mutual interference can be prevented by using different polarization directions for adjacent Emitters/Receivers.
*2. When using Through-beam Sensors (E3T-ST☐☐, E3T-FT☐☐), order one bracket for the Emitter and one for the Receiver.
*3. Order two Sets, one for the Emitter and one for the Receiver, for Through-beam Sensors (E3T-ST☐☐or E3T-FT☐☐).
    This is the Screw Set for mounting the Sensor to the Mounting Bracket. Order this Set if you lose the screws. Do not use this Screw Set to mount the Mounting Bracket to the equipment.
*4. This is included with the Sensor.

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