Ultracompact, Ultrathin Photoelectric Sensors with Built-in Amplifiers

E3T Series

The Improved E3T Series

Makes Mounting and Installation Simpler and Smoother

Suitable for Applications in the Rechargeable Battery Industry

Small Cylindrical Sensors

Top-view Sensors

Side-view Sensors

M3-mounting Sensors

Flat Sensors

Side-view Sensors

1. This model number of the Emitter is expressed by adding an “L” to the set model number in the table. Example: E3T-ST11-L 2M

2. This model number of the Receiver is expressed by adding “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.)

3. Values in parentheses indicate the minimum required distance between the Sensor and Reflector.


Note: The mounting holes in M2-mounting Sensors are SUS301 stainless steel.

OMRON Corporation
Industrial Automation Company
Tokyo, JAPAN

Contact: www.ia.omron.com

Regional Headquarters
OMRON EUROPE B.V.
Sensor Business Unit
Carl-Bosch Str. 4, D-74754 Nufringen, Germany
Tel: (49) 7032-811-0/Fax: (49) 7032-811-199

OMRON ELECTRONICS LLC
One Commodore Drive Schaumburg,
IL 60173-5032 U.S.A.
Tel: (1) 847-843-7907/Fax: (1) 847-843-7797

OMRON ASIA PACIFIC PTE. LTD.
No. 46A Alexandra Road #03-05/06 (Alexia) 21,
Alexandra Technopark,
Singapore 119967
Tel: (65) 6835-3011/Fax: (65) 6835-2711

OMRON ELECTRONICS (China) Co., Ltd.
Room 2211, Bank of China Tower,
200 Yi Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-5037-2222/Fax: (86) 21-5037-2200

Authorized Distributor:

© OMRON Corporation 2011. All Rights Reserved.
In the interest of product improvement, specifications are subject to change without notice.

Cat. No. E408-E1-01
Printed in Japan (0211)
Simple, Low-cost Installation, Setup, and Operation

New Small Cylindrical Sensors

With Square Sensors:
- Time is required to tighten screws.
- Mounting brackets are sometimes required.

But with Small Cylindrical Sensors:

Less Drilling and Tightening Work.
Work is reduced because holes do not need to be threaded and there is only one place to tighten.

AND

Mounting without Brackets.
For Through-beam Sensors, both Top-view and Side-view Models are available. Select the shape according to installation conditions to mount directly to the system without brackets.

Sure Installation without Stress
Side-view and Flat Sensor Models for M3 Mounting

With Previous M3-mounting Sensors:
- Sensor heads were large.

With Previous M2-mounting Sensors:
- The small screws were hard to handle.

With M3-mounting Sensors:

Compact M3 Mounting.
Essentially the Same Size as M2-mounting Sensors.
The width and depth are essentially the same as previous M2-mounting sensors. Easier application without increasing space requirements.

AND

Secure Tightening and Mounting.
Stainless-steel Mounting Plates or Sleeves
Side-view Sensors mount with SUS304 sleeves, while Flat Sensors mount with SUS304 plates. The reliable strength provide sure tightening that will not come loose. Damage from overtightening is also prevented for sure mounting.
With Fiber Sensors:
- Space is required for the Amplifier.
- Setup and installation are troublesome.
- Initial and electrical costs are high.

But with Small Cylindrical Sensors:

Essentially the Same Size as the Fiber Head. But No Amplifier Is Required.

Mounting is possible in narrow spaces where only fiber sensors could previously be used. The built-in amplifier and teach-free operation reduce wiring and setup work. And initial costs and electrical costs are also reduced.

Overall Features
Many Compact Shapes for Various Applications

- Side-view Sensors
- Flat Sensors
- Small Cylindrical Sensors

Detecting passing ICs
Detecting components when conveying boards
Detecting passing capacitors

Ideal for Rechargeable Battery Manufacturing Lines
All Metal Parts Are Stainless Steel. No Worries About Conductive Copper Intrusion.

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. Harmful copper, zinc, and nickel plating are not used, enabling reliable application in rechargeable battery manufacturing lines. Stainless-steel screws are also available, for immediate application for rechargeable batteries.
Side-view Through-beam Sensors

- **2.4-dia. vinyl-insulated round cable with 2 or 3 conductors (Conductor cross section: 0.1 mm² (AWG27), Insulator diameter: 0.7 mm), Standard length: 2 m**

- **1.** The dotted line indicates the Receiver.

**Recommended Mounting Hole:** M5 Through-beam Sensors: 5.5, M6 Diffuse-reflective Sensors: 6.5 +0.5

---

Small Cylindrical Sensors

**Dimensions (Unit: mm)**

- **Top-view Through-beam Sensors**
  - E3T-CT1
  - 10-dia.
  - 6.5-dia.
  - Two, 3 conductors (Insulator diameter: 0.85 mm)
  - 2.7-dia., 3 conductors (Insulator diameter: 0.85 mm)
  - Lens is different.
  - *1 The Receiver is as follows: (See figure on the right.)
  - *2 There is an indicator on the Receiver.

- **Side-view Through-beam Sensors**
  - E3T-CT2
  - 10-dia.
  - 6.5-dia.
  - Two, 3 conductors (Insulator diameter: 0.85 mm)

- **Top-view Diffuse-reflective Sensors**
  - E3T-CD1
  - M5-mounting Sensors
  - Convergent-reflective
  - E3T-CD2

**Ordering Information**

- **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
- **2.** Infra-red models are also available. For details, refer to your OMRON website.
- **3.** Orders for individual Emitters and Receivers are accepted. (Modifications are required for some models.)
- **4.** There is an indicator on the Receiver.

---

M3-mounting Sensors

**Dimensions (Unit: mm)**

- **Through-beam**
  - Sensing method: Through-beam
  - Connection method: Pre-wired (2 m)
  - Sensing distance: 1 m
  - Operation mode: Dark-ON
  - Model: E3T-CT12 2M, E3T-CT14 2M

- **Diffuse-reflective**
  - Sensing method: Diffuse-reflective
  - Connection method: Pre-wired (2 m)
  - Sensing distance: 300 mm
  - Operation mode: Light-ON
  - Model: E3T-CD11 2M, E3T-CD13 2M

**Sensing method**

- **Through-beam**
- **Diffuse-reflective**
- **Convergent-reflective**

**Connection method**

- **Pre-wired (2 m)**

**Sensing distance**

- **1 m**
- **300 mm**
- **5 to 30 mm**

**Operation mode**

- **Dark-ON**
- **Light-ON**

**Model**

- **E3T-CT12 2M**
- **E3T-CT14 2M**
- **E3T-CD11 2M**
- **E3T-CD13 2M**

**Notes:**

- **1.** The shape of the Receiver lens is different. (See figure on the right.)
- **2.** The Receiver is as follows: 2.7-dia., 3 conductors (Insulator diameter: 0.85 mm)
- **3.** There is an indicator on the Receiver.

---

Side-view Through-beam Sensors

**Sensing method**

- **Through-beam**

**Connection method**

- **Pre-wired (2 m)**

**Sensing distance**

- **5 to 30 mm**

**Operation mode**

- **Light-ON**

**Model**

- **E3T-ST11 2M**
- **E3T-ST13 2M**
- **E3T-ST14 2M**
- **E3T-ST21 2M**
- **E3T-ST23 2M**
- **E3T-ST24 2M**

**Notes:**

- **1.** The dotted line indicates the Receiver.
- **2.** 4-dia. vinyl-insulated round cable with 2 or 3 conductors (Conductor cross section: 0.1 mm² (AWG27), Insulator diameter: 0.7 mm), Standard length: 2 m

For Through-beam Sensors, the Emitter has two conductors and the Receiver has three conductors. Diffuse-reflective Sensors and Convergent-reflective Sensors have three conductors.
## Accessories

These accessories are not included with the Sensor. Order them separately if required.

### Materials

- **Screws**
  - **M2 SUS304 Screw Set**
  - **M3 SUS304 Screw Set**
  - **M3 Back-mounting Spacer**
  - **M3 Mounting Bracket**
  - **M3 Mounting Bracket**

### Accessories

- **Instruction manual**
  - E39-L171
  - E39-L171
  - E39-L172
  - E39-L173
  - E39-L174
  - E39-L175

### Ratings and Specifications

<table>
<thead>
<tr>
<th>Name</th>
<th>Applicable Sensor</th>
<th>Model</th>
<th>Quantity</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slits for Through-beam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Side-view Sensors</td>
<td></td>
<td>E3T-ST11M</td>
<td>One each</td>
<td></td>
</tr>
<tr>
<td>M3 Mounting Bracket for</td>
<td></td>
<td>E3T-ST12M</td>
<td>1</td>
<td>Nut plate provided</td>
</tr>
<tr>
<td>Side-view Sensors</td>
<td></td>
<td>E3T-ST13M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M3 Mounting Bracket for Flat</td>
<td></td>
<td>E3T-ST14M</td>
<td>1</td>
<td>Use this Spacing when mounting</td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST15M</td>
<td></td>
<td>a Sensor from the back.</td>
</tr>
<tr>
<td>M3 Back-mounting Spacer for</td>
<td></td>
<td>E3T-ST16M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flat Sensors</td>
<td></td>
<td>E3T-ST17M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M3 SUS304 Screw Set for Flat</td>
<td></td>
<td>E3T-ST18M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST19M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M3 SUS304 Screw Set for Side-view</td>
<td></td>
<td>E3T-ST20M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST21M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 SUS304 Screw Set for Flat</td>
<td></td>
<td>E3T-ST22M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST23M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 SUS304 Screw Set for Side-view</td>
<td></td>
<td>E3T-ST24M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST25M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 SUS304 Screw Set for Side-view</td>
<td></td>
<td>E3T-ST26M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST27M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 SUS304 Screw Set for Side-view</td>
<td></td>
<td>E3T-ST28M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST29M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 SUS304 Screw Set for Side-view</td>
<td></td>
<td>E3T-ST30M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST31M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 SUS304 Screw Set for Side-view</td>
<td></td>
<td>E3T-ST32M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST33M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 SUS304 Screw Set for Side-view</td>
<td></td>
<td>E3T-ST34M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST35M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 SUS304 Screw Set for Side-view</td>
<td></td>
<td>E3T-ST36M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensors</td>
<td></td>
<td>E3T-ST37M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2 SUS304 Screw Set for Side-view</td>
<td></td>
<td>E3T-ST38M</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*1 For a Through-beam Sensor, order one Bracket or Screw Set for the Emitter and one for the Receiver.

### Notes

- *1 Order the E39-L171 Screw Set separately if required.
- *2 Order the E39-L170 Screw Set separately if required.
- *3 A E39 M5 SUS Nut Set is included with the Sensor, but it can also be ordered separately.
- *4 A E39 M6 SUS Nut Set is included with the Sensor, but it can also be ordered separately.
- *5 A E39-G17 Adjustment Driver is included with the Sensor, but it can also be ordered separately.
## Ordering Information

### E3T-series Sensors, M2-mounting Sensors

<table>
<thead>
<tr>
<th>Sensing method</th>
<th>Appearance</th>
<th>Connection method</th>
<th>Sensing distance</th>
<th>Operation mode</th>
<th>Sensing method</th>
<th>Sensing distance</th>
<th>Operation mode</th>
<th>Model</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through-beam</td>
<td>![Image]</td>
<td></td>
<td>1 m</td>
<td>Light-ON</td>
<td>E3T-ST11</td>
<td>2M</td>
<td>Light-ON</td>
<td>E3T-ST11</td>
<td>E3T-ST13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PNP output</td>
<td>E3T-ST12</td>
<td>2M</td>
<td>PNP output</td>
<td>E3T-ST14</td>
<td>E3T-ST16</td>
</tr>
<tr>
<td>Retro-reflective</td>
<td>![Image]</td>
<td></td>
<td>300 mm</td>
<td>Dark-ON</td>
<td>E3T-ST21</td>
<td>2M</td>
<td>Dark-ON</td>
<td>E3T-ST22</td>
<td>E3T-ST24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>E3T-ST23</td>
<td>2M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diffuse-reflective</td>
<td>![Image]</td>
<td></td>
<td>5 to 30 mm</td>
<td>Light-ON</td>
<td>E3T-ST11</td>
<td>2M</td>
<td>Light-ON</td>
<td>E3T-ST12</td>
<td>E3T-ST14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PNP output</td>
<td>E3T-ST13</td>
<td>2M</td>
<td>PNP output</td>
<td>E3T-ST14</td>
<td>E3T-ST16</td>
</tr>
<tr>
<td>Convergent-reflective</td>
<td>![Image]</td>
<td></td>
<td>5 to 15 mm</td>
<td>Dark-ON</td>
<td>E3T-ST12</td>
<td>2M</td>
<td>Dark-ON</td>
<td>E3T-ST12</td>
<td>E3T-ST14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>E3T-ST13</td>
<td>2M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retro-reflective</td>
<td>![Image]</td>
<td></td>
<td>300 mm</td>
<td>Light-ON</td>
<td>E3T-ST11</td>
<td>2M</td>
<td>Light-ON</td>
<td>E3T-ST12</td>
<td>E3T-ST14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PNP output</td>
<td>E3T-ST13</td>
<td>2M</td>
<td>PNP output</td>
<td>E3T-ST14</td>
<td>E3T-ST16</td>
</tr>
<tr>
<td>BGS-reflective</td>
<td>![Image]</td>
<td></td>
<td>5 to 30 mm</td>
<td>Light-ON</td>
<td>E3T-ST11</td>
<td>2M</td>
<td>Light-ON</td>
<td>E3T-ST12</td>
<td>E3T-ST14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PNP output</td>
<td>E3T-ST13</td>
<td>2M</td>
<td>PNP output</td>
<td>E3T-ST14</td>
<td>E3T-ST16</td>
</tr>
</tbody>
</table>

Note: The mounting holes on M2-mounting Sensors are SUS301 stainless steel.

*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
*2. 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
*3. Values in parentheses indicate the minimum required distance between the Sensor and Reflector.
*4. Models are available either with or without the E39-R37-CA Reflector included.
*5. Models with robot (bending-resistant) cable are also available with “R” in the model number. (Example: E3T-ST11R 2M)