

# Proximity Sensors Inductive Stainless Steel Housing Types EI, AC, M12, M18, M30

CARLO GAVAZZI



- Stainless steel housing, cylindrical
- Diameter: M12, M18, M30
- Sensing distance: 2 to 15 mm
- Power supply: 20 to 250 VAC
- Output: SCR, make or break switching
- Protection: Overvoltage
- LED-indication for output ON
- Long or short housing
- 2 m cable or plug M12 (double keyed)

## Product Description

AC proximity switches constructed in stainless steel (1.4301) housings. Sizes available are M12, M18 and M30. Length of housing is selectable with 30 mm thread or 50

mm thread. Bright LED ring utilizing a yellow LED clearly gives indication of output status. Protection rating IP 67 ensures environmental compatibility.

## Ordering Key

**EI 1202 TBOSL-6**

Type \_\_\_\_\_  
Housing diameter (mm) \_\_\_\_\_  
Rated operating dist. (mm) \_\_\_\_\_  
Output type \_\_\_\_\_  
Housing material \_\_\_\_\_  
Body style \_\_\_\_\_  
Plug \_\_\_\_\_

## Type Selection AC Types, Cable and M12 Plug

| Housing diameter | Body style | Connec-<br>tion | Rated<br>operating<br>dist. (S <sub>n</sub> ) | Ordering no.<br>SCR<br>Make switching | Ordering no.<br>SCR<br>Break switching |
|------------------|------------|-----------------|-----------------------------------------------|---------------------------------------|----------------------------------------|
| M12              | Long       | Cable           | 2 mm <sup>1)</sup>                            | EI 1202 TBOSL                         | EI 1202 TBCSL                          |
| M12              | Long       | Plug            | 2 mm <sup>1)</sup>                            | EI 1202 TBOSL-6                       | EI 1202 TBCSL-6                        |
| M12              | Long       | Cable           | 4 mm <sup>2)</sup>                            | EI 1204 TBOSL                         | EI 1204 TBCSL                          |
| M12              | Long       | Plug            | 4 mm <sup>2)</sup>                            | EI 1204 TBOSL-6                       | EI 1204 TBCSL-6                        |
| M18              | Short      | Cable           | 5 mm <sup>1)</sup>                            | EI 1805 TBOSS                         | EI 1805 TBCSS                          |
| M18              | Short      | Plug            | 5 mm <sup>1)</sup>                            | EI 1805 TBOSS-6                       | EI 1805 TBCSS-6                        |
| M18              | Long       | Cable           | 5 mm <sup>1)</sup>                            | EI 1805 TBOSL                         | EI 1805 TBCSL                          |
| M18              | Long       | Plug            | 5 mm <sup>1)</sup>                            | EI 1805 TBOSL-6                       | EI 1805 TBCSL-6                        |
| M18              | Short      | Cable           | 8 mm <sup>2)</sup>                            | EI 1808 TBOSS                         | EI 1808 TBCSS                          |
| M18              | Short      | Plug            | 8 mm <sup>2)</sup>                            | EI 1808 TBOSS-6                       | EI 1808 TBCSS-6                        |
| M18              | Long       | Cable           | 8 mm <sup>2)</sup>                            | EI 1808 TBOSL                         | EI 1808 TBCSL                          |
| M18              | Long       | Plug            | 8 mm <sup>2)</sup>                            | EI 1808 TBOSL-6                       | EI 1808 TBCSL-6                        |
| M30              | Short      | Cable           | 10 mm <sup>1)</sup>                           | EI 3010 TBOSS                         | EI 3010 TBCSS                          |
| M30              | Short      | Plug            | 10 mm <sup>1)</sup>                           | EI 3010 TBOSS-6                       | EI 3010 TBCSS-6                        |
| M30              | Long       | Cable           | 10 mm <sup>1)</sup>                           | EI 3010 TBOSL                         | EI 3010 TBCSL                          |
| M30              | Long       | Plug            | 10 mm <sup>1)</sup>                           | EI 3010 TBOSL-6                       | EI 3010 TBCSL-6                        |
| M30              | Short      | Cable           | 15 mm <sup>2)</sup>                           | EI 3015 TBOSS                         | EI 3015 TBCSS                          |
| M30              | Short      | Plug            | 15 mm <sup>2)</sup>                           | EI 3015 TBOSS-6                       | EI 3015 TBCSS-6                        |
| M30              | Long       | Cable           | 15 mm <sup>2)</sup>                           | EI 3015 TBOSL                         | EI 3015 TBCSL                          |
| M30              | Long       | Plug            | 15 mm <sup>2)</sup>                           | EI 3015 TBOSL-6                       | EI 3015 TBCSL-6                        |

Short = 30 mm thread

Long = 50 mm thread

Make switching = Normally Open (NO)

Break switching = Normally Closed (NC)

<sup>1)</sup> For flush mounting in metal

<sup>2)</sup> For non-flush mounting in metal

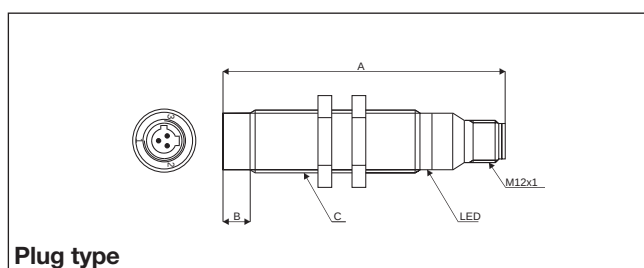
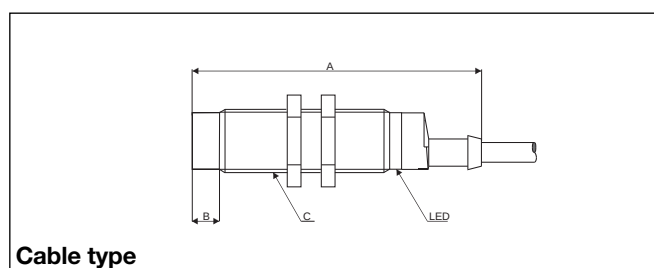
## Specifications

|                                                                        |                                                                              |                                                                |                                                                                               |
|------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>Rated operational volt.</b> ( $U_e$ )<br>( $U_B$ )                  | 24 to 240 VAC,<br>20 to 265 VAC, 50 to 60 Hz                                 | <b>Usable operating dist. (S)</b>                              | $0.9 \times S_r \leq S_u \leq 1.1 \times S_r$                                                 |
| <b>Rated operational current</b> ( $I_e$ )<br>Continuous<br>Short-time | 10 - 500 mA<br>$\leq 2.5$ A, max. 20 ms                                      | <b>Ambient temperature</b><br>Operating<br>Storage             | -25° to +70°C (-13° to +158°F)<br>-30° to +80°C (-22° to +176°F)                              |
| <b>Minimum load current</b>                                            | 10 mA                                                                        | <b>Degree of protection</b>                                    | IP 67 (Nema 1, 3, 4, 6, 13)                                                                   |
| <b>OFF-state current</b> ( $I_r$ )                                     | $\leq 2$ mA                                                                  | <b>Housing material</b><br>Body<br>Front<br>Back               | Stainless steel (1.4301)<br>Grey thermoplastic polyester<br>Black thermoplastic polyester     |
| <b>Voltage drop</b> ( $U_d$ )                                          | $\leq 8$ VAC at max. load                                                    | <b>Connection</b><br>Cable<br><br>Plug<br>Cables for plug (-6) | 2 m, 2 x 0.50 mm <sup>2</sup> ,<br>grey PVC, oil proof<br>M12 x 1 (double keyed)<br>CONH6A-xx |
| <b>Protection</b>                                                      | Transients                                                                   | <b>Weight</b> (cable excluded)                                 | <b>EI 12</b> 80 g<br><b>EI 18</b> 130 g<br><b>EI 30</b> 200 g                                 |
| <b>Transient voltage</b>                                               | Level 3, 2.5 kV,<br>acc. to IEC 60255-5<br>(500 $\Omega$ , 0.5 J) (prepared) | <b>Tightening torque</b>                                       | <b>EI 12</b> 7.5 Nm (x)<br>17.5 Nm (y)<br><b>EI 18</b> 27.5 Nm<br><b>EI 30</b> 100.0 Nm       |
| <b>Power ON delay</b>                                                  | $\leq 100$ ms                                                                | <b>Approvals</b>                                               | UL, CSA                                                                                       |
| <b>Frequency of operating cycles</b> (f)                               | 25 Hz                                                                        | <b>CE-marking</b>                                              | Yes                                                                                           |
| <b>Indication for output ON</b>                                        | LED, yellow                                                                  |                                                                |                                                                                               |
| <b>Assured operating dist.</b> ( $S_a$ )                               | $0 \leq S_a \leq 0.81 S_n$                                                   |                                                                |                                                                                               |
| <b>Repeat accuracy</b> (R)                                             | $\leq 5\%$                                                                   |                                                                |                                                                                               |
| <b>Hysteresis</b> (H) (Differential travel)                            | 3 to 20% of sensing distance                                                 |                                                                |                                                                                               |
| <b>Effective operating dist.</b> ( $S_r$ )                             | $0.9 \times S_n \leq S_r \leq 1.1 \times S_n$                                |                                                                |                                                                                               |

## Dimensions

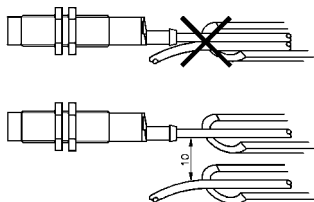
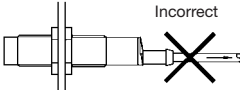
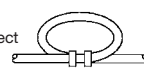
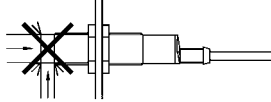
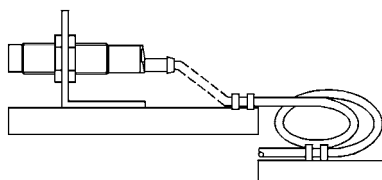
| Type                   | A    | B<br>mm | C<br>mm       |
|------------------------|------|---------|---------------|
| <b>EI 1202 TB..L</b>   | 66   | 0       | M 12 x 1 x 50 |
| <b>EI 1202 TB..L-6</b> | 74.5 | 0       | M 12 x 1 x 50 |
| <b>EI 1204 TB..L</b>   | 70   | 4       | M 12 x 1 x 50 |
| <b>EI 1204 TB..L-6</b> | 78.5 | 4       | M 12 x 1 x 50 |
| <b>EI 1805 TB..S</b>   | 57   | 0       | M 18 x 1 x 30 |
| <b>EI 1805 TB..S-6</b> | 55   | 0       | M 18 x 1 x 30 |
| <b>EI 1805 TB..L</b>   | 77   | 0       | M 18 x 1 x 50 |
| <b>EI 1805 TB..L-6</b> | 75   | 0       | M 18 x 1 x 50 |
| <b>EI 1808 TB..S</b>   | 65   | 8       | M 18 x 1 x 30 |
| <b>EI 1808 TB..S-6</b> | 63   | 8       | M 18 x 1 x 30 |
| <b>EI 1808 TB..L</b>   | 85   | 8       | M 18 x 1 x 50 |
| <b>EI 1808 TB..L-6</b> | 83   | 8       | M 18 x 1 x 50 |

| Type                   | A    | B<br>mm | C<br>mm         |
|------------------------|------|---------|-----------------|
| <b>EI 3010 TB..S</b>   | 59   | 0       | M 30 x 1.5 x 30 |
| <b>EI 3010 TB..S-6</b> | 55.5 | 0       | M 30 x 1.5 x 30 |
| <b>EI 3010 TB..L</b>   | 79   | 0       | M 30 x 1.5 x 50 |
| <b>EI 3010 TB..L-6</b> | 75.5 | 0       | M 30 x 1.5 x 50 |
| <b>EI 3015 TB..S</b>   | 87.5 | 12      | M 30 x 1.5 x 30 |
| <b>EI 3015 TB..S-6</b> | 67.5 | 12      | M 30 x 1.5 x 30 |
| <b>EI 3015 TB..L</b>   | 91   | 12      | M 30 x 1.5 x 50 |
| <b>EI 3015 TB..L-6</b> | 71   | 12      | M 30 x 1.5 x 50 |

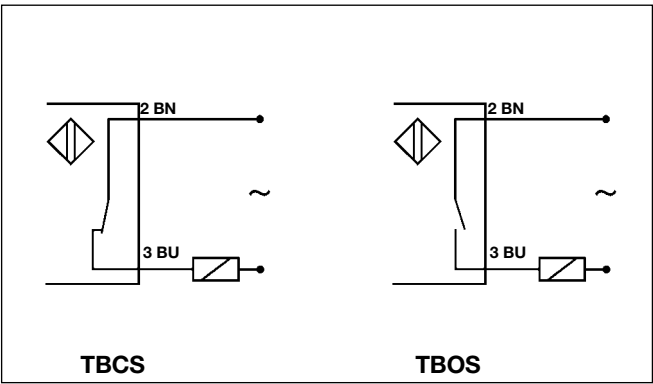




Installation Hints

|                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                         |                                                                                                                                                                                        |                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>To avoid interference from inductive voltage/ current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables</p>  | <p>Relief of cable strain</p> <p>Incorrect</p>  <p>Correct</p>  <p>The cable should not be pulled</p> | <p>Protection of the sensing face</p>  <p>A proximity switch should not serve as mechanical stop</p> | <p>Switch mounted on mobile carrier</p>  <p>Any repetitive flexing of the cable should be avoided</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Wiring Diagrams



Power Supplies

Power supplies VAC: > SS 110