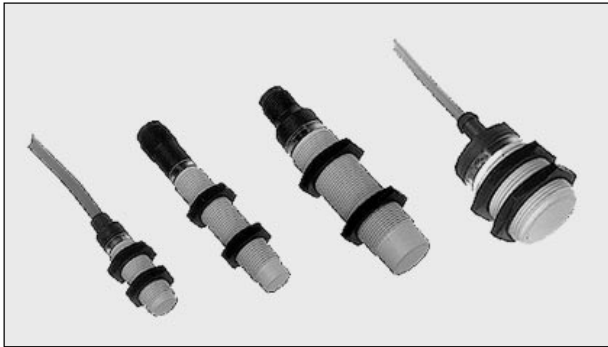


# Proximity Sensors Inductive Thermoplastic Polyester Housing Types EI, DC, M 12, M 18, M 30



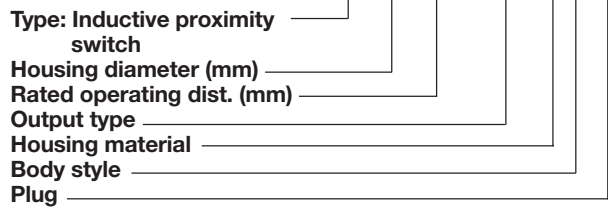
- Euronorm thermoplastic polyester housing, cylindrical
- Diameter: M 12, M 18, M 30.
- Sensing distance: 2 to 15 mm
- Power supply: 10 to 40 VDC  
20 to 250 VAC
- Output: Transistor NPN/PNP, make or break switching  
SPDT relay, make & break switching
- Protection: Short-circuit, reverse polarity and overload
- LED-indication for output ON
- 2 m cable or M12 plug

## Product Description

Proximity switch in M 12, M18 and M 30 polyester housings. Made in accordance with euronorms EN 50 008 and EN 50 036. For metal versions refer to type. EI ...S.

## Ordering Key

**EI 1202 NPOPS-1**



## Type Selection DC Types, Cable and M 12 Plug

| Housing diameter | Body style | Connection | Rated operating dist. (S <sub>n</sub> ) | Ordering no. Transistor NPN Make switching | Ordering no. Transistor NPN Break switching | Ordering no. Transistor PNP Make switching | Ordering no. Transistor PNP Break switching |
|------------------|------------|------------|---|--|---|--|---|
| M 12             | Short      | Cable      | 2 mm <sup>1)</sup>                      | EI 1202 NPOPS                              | EI 1202 NPCPS                               | EI 1202 PPOPS                              | EI 1202 PPCPS                               |
| M 12             | Short      | Plug       | 2 mm <sup>1)</sup>                      | EI 1202 NPOPS-1                            | EI 1202 NPCPS-1                             | EI 1202 PPOPS-1                            | EI 1202 PPCPS-1                             |
| M 12             | Long       | Cable      | 2 mm <sup>1)</sup>                      | EI 1202 NPOPL                              | EI 1202 NPCPL                               | EI 1202 PPOPL                              | EI 1202 PPCPL                               |
| M 12             | Long       | Plug       | 2 mm <sup>1)</sup>                      | EI 1202 NPOPL-1                            | EI 1202 NPCPL-1                             | EI 1202 PPOPL-1                            | EI 1202 PPCPL-1                             |
| M 12             | Short      | Cable      | 4 mm <sup>2)</sup>                      | EI 1204 NPOPS                              | EI 1204 NPCPS                               | EI 1204 PPOPS                              | EI 1204 PPCPS                               |
| M 12             | Short      | Plug       | 4 mm <sup>2)</sup>                      | EI 1204 NPOPS-1                            | EI 1204 NPCPS-1                             | EI 1204 PPOPS-1                            | EI 1204 PPCPS-1                             |
| M 12             | Long       | Cable      | 4 mm <sup>2)</sup>                      | EI 1204 NPOPL                              | EI 1204 NPCPL                               | EI 1204 PPOPL                              | EI 1204 PPCPL                               |
| M 12             | Long       | Plug       | 4 mm <sup>2)</sup>                      | EI 1204 NPOPL-1                            | EI 1204 NPCPL-1                             | EI 1204 PPOPL-1                            | EI 1204 PPCPL-1                             |
| M 18             | Short      | Cable      | 5 mm <sup>1)</sup>                      | EI 1805 NPOPS                              | EI 1805 NPCPS                               | EI 1805 PPOPS                              | EI 1805 PPCPS                               |
| M 18             | Short      | Plug       | 5 mm <sup>1)</sup>                      | EI 1805 NPOPS-1                            | EI 1805 NPCPS-1                             | EI 1805 PPOPS-1                            | EI 1805 PPCPS-1                             |
| M 18             | Long       | Cable      | 5 mm <sup>1)</sup>                      | EI 1805 NPOPL                              | EI 1805 NPCPL                               | EI 1805 PPOPL                              | EI 1805 PPCPL                               |
| M 18             | Long       | Plug       | 5 mm <sup>1)</sup>                      | EI 1805 NPOPL-1                            | EI 1805 NPCPL-1                             | EI 1805 PPOPL-1                            | EI 1805 PPCPL-1                             |
| M 18             | Short      | Cable      | 8 mm <sup>2)</sup>                      | EI 1808 NPOPS                              | EI 1808 NPCPS                               | EI 1808 PPOPS                              | EI 1808 PPCPS                               |
| M 18             | Short      | Plug       | 8 mm <sup>2)</sup>                      | EI 1808 NPOPS-1                            | EI 1808 NPCPS-1                             | EI 1808 PPOPS-1                            | EI 1808 PPCPS-1                             |
| M 18             | Long       | Cable      | 8 mm <sup>2)</sup>                      | EI 1808 NPOPL                              | EI 1808 NPCPL                               | EI 1808 PPOPL                              | EI 1808 PPCPL                               |
| M 18             | Long       | Plug       | 8 mm <sup>2)</sup>                      | EI 1808 NPOPL-1                            | EI 1808 NPCPL-1                             | EI 1808 PPOPL-1                            | EI 1808 PPCPL-1                             |
| M 30             | Short      | Cable      | 10 mm <sup>1)</sup>                     | EI 3010 NPOPS                              | EI 3010 NPCPS                               | EI 3010 PPOPS                              | EI 3010 PPCPS                               |
| M 30             | Short      | Plug       | 10 mm <sup>1)</sup>                     | EI 3010 NPOPS-1                            | EI 3010 NPCPS-1                             | EI 3010 PPOPS-1                            | EI 3010 PPCPS-1                             |
| M 30             | Long       | Cable      | 10 mm <sup>1)</sup>                     | EI 3010 NPOPL                              | EI 3010 NPCPL                               | EI 3010 PPOPL                              | EI 3010 PPCPL                               |
| M 30             | Long       | Plug       | 10 mm <sup>1)</sup>                     | EI 3010 NPOPL-1                            | EI 3010 NPCPL-1                             | EI 3010 PPOPL-1                            | EI 3010 PPCPL-1                             |
| M 30             | Short      | Cable      | 15 mm <sup>2)</sup>                     | EI 3015 NPOPS                              | EI 3015 NPCPS                               | EI 3015 PPOPS                              | EI 3015 PPCPS                               |
| M 30             | Short      | Plug       | 15 mm <sup>2)</sup>                     | EI 3015 NPOPS-1                            | EI 3015 NPCPS-1                             | EI 3015 PPOPS-1                            | EI 3015 PPCPS-1                             |
| M 30             | Long       | Cable      | 15 mm <sup>2)</sup>                     | EI 3015 NPOPL                              | EI 3015 NPCPL                               | EI 3015 PPOPL                              | EI 3015 PPCPL                               |
| M 30             | Long       | Plug       | 15 mm <sup>2)</sup>                     | EI 3015 NPOPL-1                            | EI 3015 NPCPL-1                             | EI 3015 PPOPL-1                            | EI 3015 PPCPL-1                             |

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

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

Make switching = Normally Open (NO)  
Break switching = Normally Closed (NC)



## Type Selection Relay Output

| Housing diameter | Rated operating dist. (S <sub>n</sub> ) | Ordering no. Make & break swit. 12 VAC/DC | Ordering no. Make & break swit. 24 VAC/DC | Ordering no. Make & break swit. 115 VAC | Ordering no. Make & break swit. 230 VAC |
|------------------|---|---|---|---|---|
| 30 mm            | 10 mm <sup>1)</sup>                     | EI 3010 RNAP 912                          | EI 3010 RNAP 924                          | EI 3010 RNAP 115                        | EI 3010 RNAP 230                        |
| 30 mm            | 15 mm <sup>2)</sup>                     | EI 3015 RNAP 912                          | EI 3015 RNAP 924                          | EI 3015 RNAP 115                        | EI 3015 RNAP 230                        |

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

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

Make switching = Normally Open (NO)

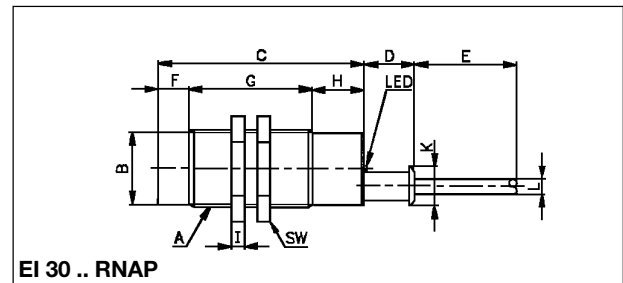
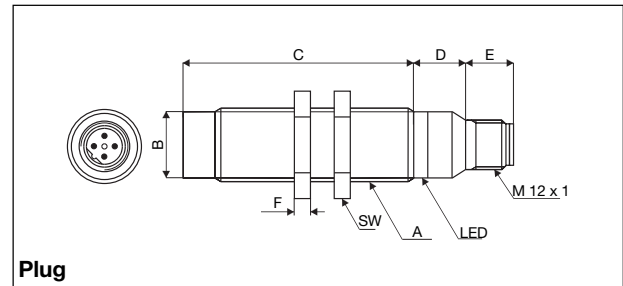
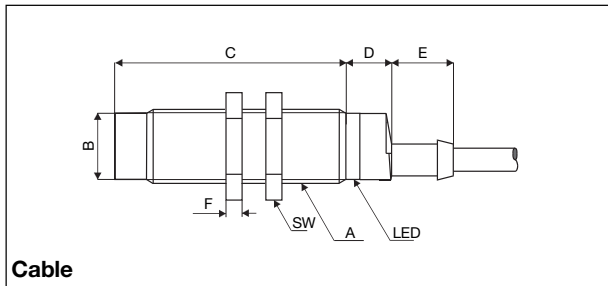
Break switching = Normally Closed (NC)

## Specifications

|  | Transistor NPN/PNP  | SPDT relay  |
|--|---|---|
| <b>Rated operational volt.</b> (U <sub>e</sub> )<br>(U <sub>B</sub> )          | 12 to 36 VDC<br>10 to 40 VDC (ripple incl.)   | 912: 10.8 to 13.2 VAC/DC, 50 to 60 Hz<br>924: 21.6 to 26.2 VAC/DC, 50 to 60 Hz<br>115: 97 to 135 VAC, 50 to 60 Hz<br>230: 207 to 250 VAC, 50 to 60 Hz |
| <b>Ripple</b>  | ≤ 10%   | -   |
| <b>Rated operational current</b> (I <sub>e</sub> )<br>Continuous<br>Short-time | ≤ 200 mA  | ≤ 2 A<br>≤ 10 A, max. 25 ms   |
| <b>Max. power</b>  |   | AC: 760 VA DC: 150 W  |
| <b>No-load supply current</b> (I <sub>o</sub> )                                | Output ON: < 6.5 mA<br>Output OFF: < 2.7 mA   | 12 VAC/DC: 65/35 mA<br>24 VAC/DC: 34/13 mA<br>115 VAC: 16 mA<br>230 VAC: 16 mA  |
| <b>Voltage drop</b> (U <sub>d</sub> )  | ≤ 2 VDC at max. load  | -   |
| <b>Protection</b>  | Reverse polarity, short-circuit, transients   | None  |
| <b>Transient voltage</b>   | ≤ 700 V/0.5 J   | ≤ 1 kV/0.5 J (prepared)   |
| <b>EMC</b>   | Approved acc. to EN 50 080, EN 50 081   | -   |
| <b>Power ON delay</b>  | < 10 ms   | ≤ 60 ms   |
| <b>Frequency of operating cycles</b> (f)                                       | EI 1202 800 Hz EI 1808 400 Hz<br>EI 1204 500 Hz EI 3010 300 Hz<br>EI 1805 500 Hz EI 3015 100 Hz | 10 Hz   |
| <b>Indication for output ON</b>  | LED, yellow   | LED, yellow   |
| <b>Assured operating dist.</b> (S <sub>a</sub> )                               | 0 ≤ S <sub>a</sub> ≤ 0.81 S <sub>n</sub>  | 0 ≤ S <sub>a</sub> ≤ 0.81 S <sub>n</sub>  |
| <b>Repeat accuracy</b> (R)   | ≤ 5%  | ≤ 5%  |
| <b>Hysteresis</b> (H) (Differential travel)                                    | 1 to 15% of sensing distance  | 3 to 20% of sensing distance  |
| <b>Effective operating dist.</b> (S <sub>r</sub> )                             | 0.9 × S <sub>n</sub> ≤ S <sub>r</sub> ≤ 1.1 × S <sub>n</sub>                                    | 0.9 × S <sub>n</sub> ≤ S <sub>r</sub> ≤ 1.1 × S <sub>n</sub>  |
| <b>Usable operating dist.</b> (S)  | 0.9 × S <sub>r</sub> ≤ S <sub>u</sub> ≤ 1.1 × S <sub>r</sub>                                    | 0.9 × S <sub>r</sub> ≤ S <sub>u</sub> ≤ 1.1 × S <sub>r</sub>  |
| <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)                                | -25° to +70°C (-13° to +158°F)<br>-30° to +80°C (-22° to +176°F)  |
| <b>Degree of protection</b>  | IP 67 (Nema 1, 3, 4, 6, 13)   | IP 67 (Nema 1, 3, 4, 6, 13)   |
| <b>Housing material</b><br>Body<br>Back  | Grey thermoplastic polyester<br>Black polyester   | Blue thermoplastic polyester<br>Blue thermoplastic polyester  |
| <b>Connection</b><br>Cable<br>Plug<br>Cables for plug (-1)                     | 2 m, 3 × 0.3 mm <sup>2</sup> , grey PVC, oil proof<br>M 12 x 1<br>CONH1A serie                  | 2 m, 5 × 0.50 mm <sup>2</sup> , grey PVC, oil proof   |
| <b>Weight</b> (cable excluded)   | EI 12 10 g EI 3010 50 g<br>EI 1805 18 g EI 3015 70 g<br>EI 1808 20 g                            | 180 g   |
| <b>Tightening torque</b>   | EI 12 1.8 Nm EI 30 7.5 Nm<br>EI 18 2.6 Nm   | 7.5 Nm  |

## Dimensions

| Type            | A               | B<br>Ø mm | C<br>mm | D<br>mm | E<br>mm | F<br>mm | G<br>mm | H<br>mm | I<br>mm | SW<br>mm | K<br>Ø mm | L<br>Ø mm |
|-----------------|-----------------|-----------|---------|---------|---------|---------|---------|---------|---------|----------|-----------|-----------|
| EI 1202 XPXPS   | M 12 x 1 x 30   | 10.7      | 30      | 11      | 5.0     | 4       |         |         |         | 17       |           |           |
| EI 1202 XPXPL   | M 12 x 1 x 50   | 10.7      | 50      | 11      | 5.0     | 4       |         |         |         | 17       |           |           |
| EI 1202 XPXPS-1 | M 12 x 1 x 30   | 10.7      | 30      | 12.6    | 11.9    | 4       |         |         |         | 17       |           |           |
| EI 1202 XPXPL-1 | M 12 x 1 x 50   | 10.7      | 50      | 12.6    | 11.9    | 4       |         |         |         | 17       |           |           |
| EI 1204 XPXPS   | M 12 x 1 x 30   | 10.7      | 34      | 11      | 5.0     | 4       |         |         |         | 17       |           |           |
| EI 1204 XPXPL   | M 12 x 1 x 50   | 10.7      | 54      | 11      | 5.0     | 4       |         |         |         | 17       |           |           |
| EI 1204 XPXPS-1 | M 12 x 1 x 30   | 10.7      | 34      | 12.6    | 11.9    | 4       |         |         |         | 17       |           |           |
| EI 1204 XPXPL-1 | M 12 x 1 x 50   | 10.7      | 54      | 12.6    | 11.9    | 4       |         |         |         | 17       |           |           |
| EI 1805 XPXPS   | M 18 x 1 x 30   | 16.7      | 30      | 11.6    | 15.4    | 4       |         |         |         | 24       |           |           |
| EI 1805 XPXPL   | M 18 x 1 x 50   | 16.7      | 50      | 11.6    | 15.4    | 4       |         |         |         | 24       |           |           |
| EI 1805 XPXPS-1 | M 18 x 1 x 30   | 16.7      | 30      | 13.1    | 11.9    | 4       |         |         |         | 24       |           |           |
| EI 1805 XPXPL-1 | M 18 x 1 x 50   | 16.7      | 50      | 13.1    | 11.9    | 4       |         |         |         | 24       |           |           |
| EI 1808 XPXPS   | M 18 x 1 x 30   | 16.7      | 38      | 11.6    | 15.4    | 4       |         |         |         | 24       |           |           |
| EI 1808 XPXPL   | M 18 x 1 x 50   | 16.7      | 58      | 11.6    | 15.4    | 4       |         |         |         | 24       |           |           |
| EI 1808 XPXPS-1 | M 18 x 1 x 30   | 16.7      | 38      | 13.1    | 11.9    | 4       |         |         |         | 24       |           |           |
| EI 1808 XPXPL-1 | M 18 x 1 x 50   | 16.7      | 58      | 13.1    | 11.9    | 4       |         |         |         | 24       |           |           |
| EI 3010 XPXPS   | M 30 x 1.5 x 30 | 28        | 30      | 13.6    | 15.4    | 5       |         |         |         | 36       |           |           |
| EI 3010 XPXPL   | M 30 x 1.5 x 50 | 28        | 50      | 13.6    | 15.4    | 5       |         |         |         | 36       |           |           |
| EI 3010 XPXPS-1 | M 30 x 1.5 x 30 | 28        | 30      | 13.6    | 11.9    | 5       |         |         |         | 36       |           |           |
| EI 3010 XPXPL-1 | M 30 x 1.5 x 50 | 28        | 50      | 13.6    | 11.9    | 5       |         |         |         | 36       |           |           |
| EI 3015 XPXPS   | M 30 x 1.5 x 30 | 28        | 42      | 13.6    | 15.4    | 5       |         |         |         | 36       |           |           |
| EI 3015 XPXPL   | M 30 x 1.5 x 50 | 28        | 62      | 13.6    | 15.4    | 5       |         |         |         | 36       |           |           |
| EI 3015 XPXPS-1 | M 30 x 1.5 x 30 | 28        | 42      | 13.6    | 11.9    | 5       |         |         |         | 36       |           |           |
| EI 3015 XPXPL-1 | M 30 x 1.5 x 50 | 28        | 62      | 13.6    | 11.9    | 5       |         |         |         | 36       |           |           |
| <b>RNAP</b>     |                 |           |         |         |         |         |         |         |         |          |           |           |
| EI 3010         | M 30 x 1.5      | 28.16     | 80      | 19.5    | 2000    | 1       | 59      | 20      | 5       | 36       | 15        | 6.7       |
| EI 3015         | M 30 x 1.5      | 28.16     | 80      | 19.5    | 2000    | 12      | 48      | 20      | 5       | 36       | 15        | 6.7       |



## Wiring Diagrams

Refer to "Wiring Diagrams",  
Technical information.

## Installation Hints

Refer to "Installation Hints",  
Technical information.

## Power Supplies

Power supplies VAC: > SS 110.  
Power supplies VDC: > SS 130/140.  
Power supplies with amplifier relays: > SV 190.