

# Photoelectrics Retro-reflective, Polarized Type EP 1820, DC, PBTP-housing

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- Range: 2.0 m
- Modulated red light, polarized
- Supply voltage: 10 to 40 VDC
- Output: 200 mA NPN or PNP
- Make and break switching functions, LED, indication
- Protection: Reverse polarity, short-circuit, transients
- Improved immunity to reflecting surfaces
- Heavy duty M18 metal housing, IP67
- Cable and plug versions



## Product Description

The EP1830 is a family of general purpose polarized retro-reflective sensors in a short M18 metal housing for heavy duty applications. They are useful for simple applications, where a basic sensor

provides adequate sensing performance. The sensors are easy to adjust with a 270° single turn potentiometer. The output is a 4-wire complementary NO or NC thyristor (SCR) output.

## Ordering Key

**EP 18 20 NPA S-1**

Type \_\_\_\_\_  
 Housing diameter \_\_\_\_\_  
 Range \_\_\_\_\_  
 Output type \_\_\_\_\_  
 Housing material \_\_\_\_\_  
 Connection type \_\_\_\_\_

## Type Selection

| Housing diameter | Rated operating dist. (S <sub>n</sub> ) | Connection | Ordering no. NPN Make & break switching | Ordering no. PNP Make & break switching |
|------------------|---|------------|---|---|
| M18              | 2.0 m                                   | Cable      | EP 1820 NPAS                            | EP 1820 PPAS                            |
| M18              | 2.0 m                                   | Plug       | EP 1820 NPAS-1                          | EP 1820 PPAS-1                          |

## Specifications

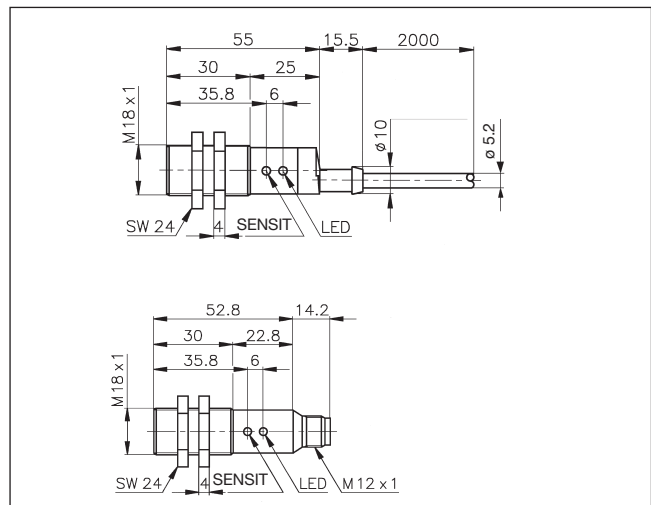
|   |   |  |  |
|---|---|--|--|
| <b>Rated operating dist. (S<sub>n</sub>)</b>                            | Up to 2.0 m<br>Ref. reflector type ER4, Ø 84 mm | <b>Light source</b>  | GaAlAs LED, 660 nm   |
| <b>Sensitivity</b>  | 270° single turn pot.meter                      | <b>Light type</b>  | Red polarized, modulated ± 2°  |
| <b>Temperature drift</b>  | 0.4%/°C   | <b>Optical angle</b>   | 150 mm at 2 m  |
| <b>Hysteresis (H)</b><br>(Differential travel)                          | 3 to 20 %                                       | <b>Light spot size</b>   | Max 5'000 lux  |
| <b>Rated operational volt. (U<sub>B</sub>)</b>                          | 10 to 40 VDC (ripple included)                  | <b>Ambient light</b>   |  |
| <b>Ripple (U<sub>rip</sub>)</b>   | Max. 10%  | <b>Operating frequency (f)</b>   | Max. 100 Hz,<br>light-dark ratio 1.2   |
| <b>Output current</b><br>Continuous (I <sub>a</sub> )<br>Short-time (I) | ≤ 200 mA<br>200 mA<br>max. load capacity 100nF  | <b>Response time</b><br>OFF-ON (t <sub>ON</sub> )<br>ON-OFF (t <sub>OFF</sub> )        | ≤ 3.2 ms<br>≤ 5 ms   |
| <b>No load supply current (I<sub>O</sub>)</b>                           | Max. 20 mA                                      | <b>Indication</b><br>Function  | Dark and light<br>(complementary) switch.<br>LED, yellow                                       |
| <b>Min. operational current (I<sub>m</sub>)</b>                         | 0,5 mA  | Output ON  |  |
| <b>OFF-state current (I<sub>i</sub>)</b>                                | Max. 100 µA                                     | <b>Environment</b><br>Overvoltage category<br>Pollution degree<br>Degree of protection | III (IEC 60664/60664A; 60947-1)<br>3 (IEC 60664/60664A; 60947-1)<br>IP 67 (IEC 60529; 60947-1) |
| <b>Voltage drop (U<sub>d</sub>)</b>                                     | Max. 2.5 VDC @ 200 mA                           | <b>Temperature</b><br>Operating<br>Storage   | -20° to +60°C (-4° to 140°F)<br>-30° to + 70°C (-22° to 158°F)                                 |
| <b>Protection</b>   | Reverse polarity, short-circuit, transients     | <b>Vibration</b>   | 10 to 150 Hz, 0.5 mm/7.5 g<br>(IEC 60068-2-6)  |
| <b>Transient voltage</b>  | 1 kV / 0.5 J                                    | <b>Shock</b>   | 2 x 1 m & 100 x 0.5 m<br>(IEC 60068-2-32)  |
| <b>Power ON delay (t<sub>v</sub>)</b>                                   | Typ. 70 ms                                      |  |  |



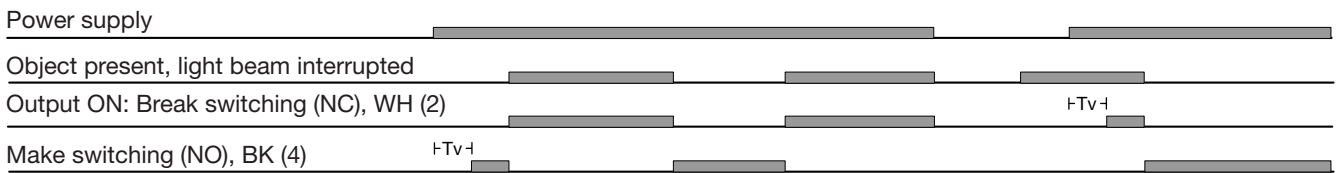
## Specifications (cont.)

|                           |  |
|---------------------------|--|
| <b>Dielectric voltage</b> | 500 V (IEC 60364-4-41)   |
| <b>Housing material</b>   | Nickel plated brass<br>PMMA, red<br>Polyester, black<br>Nickel plated brass          |
| <b>Connection</b>         | Grey, 2 m, 4 x 0.35 mm <sup>2</sup> ,<br>oilproof PVC<br>M12 x 1<br>CON.1A... series |
| <b>Weight</b>             | 175 g<br>90 g  |
| <b>CE-marking</b>         | Yes  |

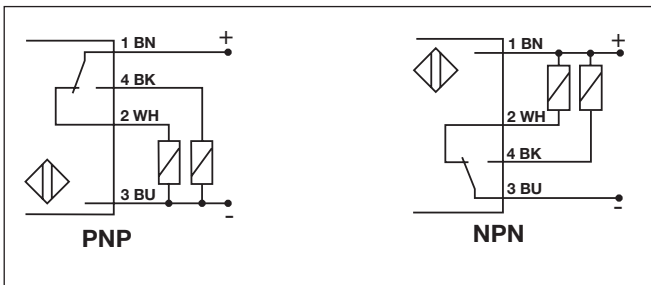
## Dimensions



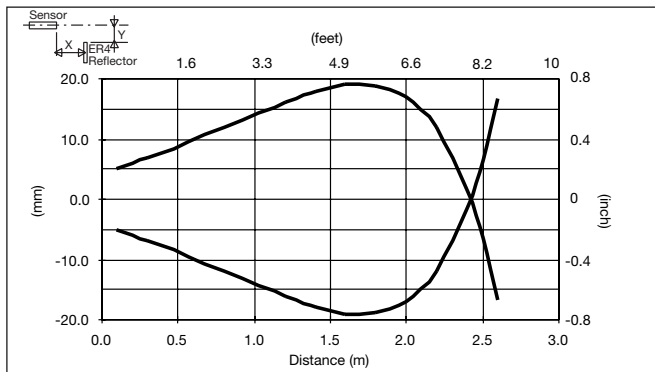
## Operation Diagram



## Wiring Diagrams



## Detection Diagram



## 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>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> |
|---|---|---|--|

## Delivery Contents

- Photoelectric switch ER1820.
- 2 nuts
- **Packaging:** Plastic bag

## Accessories

- Reflectors: ER series
- Connector type CON.1A../CON.14NF.. series
- MB18A
- APA18-RAR

For further information refer to "Accessories".

Specifications are subject to change without notice (08.02.06)

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