

# Photoelectrics Retro-reflective, Polarized Type PA3P

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- Range: 3 m
- Polarized modulated, visible red light
- Adjustable sensitivity
- Rated operational voltage: 10 to 30 VDC
- Output: 200 mA, NPN or PNP
- Make and break switching funct., with LED indication
- Protection: Reverse polarity, short circuit, overload
- Operating frequency: 1 kHz
- High immunity to ambient light
- 18 x 36 x 63 mm metal housing, IP 67
- Quick mounting system



## Product Description

Polarized, retro-reflective photoelectric switch. Range 3 m. Reliable detection through narrow beam. Quick mounting in 4 positions with includ-

ed mounting rail. Sturdy metal housing. IP 67. 2 m PVC cable connection or standard M12 plug.

## Ordering Key

**PA3P NPA-1**

Type \_\_\_\_\_  
 Function \_\_\_\_\_  
 Output type \_\_\_\_\_  
 Connection type \_\_\_\_\_

## Type Selection

| Housing<br>W x H x D<br>Rated<br>operating<br>dist. (S <sub>n</sub> ) | Ordering no.<br>NPN/cable<br>Make & break swit. | Ordering no.<br>NPN/plug<br>Make & break swit. | Ordering no.<br>PNP/cable<br>Make & break swit. | Ordering no.<br>PNP/plug<br>Make & break swit. |
|---|---|--|---|--|
| 18 x 36 x 63<br>3 m   | PA 3P NPA                                       | PA 3P NPA-1                                    | PA 3P PPA                                       | PA 3P PPA-1                                    |

**Note:** Plugs and reflectors to be ordered separately.

## Specifications

|  |   |                                       |   |
|--|---|---------------------------------------|---|
| <b>Rated operating dist. (S<sub>n</sub>)</b>   | 3 m, with reflector type ER 22, ref. target             | <b>Light spot size Ambient light</b>  | 65 mm at 2m<br>Max. 10,000 lux                          |
| <b>Temperature drift</b>                       | 0.4%/K  | <b>Operating frequency (f)</b>        | 1000 Hz, light/dark ratio 1:2                           |
| <b>Rated operational volt. (U<sub>B</sub>)</b> | 10 to 40 VDC (ripple incl.)                             | <b>Response time</b>                  | OFF-ON (t <sub>ON</sub> )<br>ON-OFF (t <sub>OFF</sub> ) |
| <b>Ripple (U<sub>rpp</sub>)</b>                | 10%   |                                       | ≤ 660 μs<br>≤ 330 μs                                    |
| <b>Output current</b>                          |   | <b>Power ON delay (t<sub>v</sub>)</b> | Typ. 100 ms   |
| Continuous (I <sub>c</sub> )                   | ≤ 200 mA  | <b>Indication</b>                     | Output ON   |
| Short-time (I)                                 | 200 mA,<br>Max. load capacity 100 nF                    |                                       | LED, yellow   |
| <b>No load supply current (I<sub>o</sub>)</b>  | ≤ 40 mA   | <b>Environment</b>                    |   |
| <b>OFF-state current (I<sub>r</sub>)</b>       | Max. 100 μA   | Overvoltage category                  | III (IEC 60664/60664A;<br>60947-1)                      |
| <b>Voltage drop (U<sub>d</sub>)</b>            | ≤ 2.5 VDC   | Pollution degree                      | 3 (IEC 60664/60664A;<br>60947-1)                        |
| <b>Protection</b>                              | Reverse polarity, overload<br>short-circuit, transients | Degree of protection                  | IP 67 (IEC 60529; 60947-1)                              |
| <b>Transient voltage</b>                       | ≤ 1 kV/0.5 J  | <b>Temperature</b>                    |   |
| <b>Sensitivity</b>                             | Adjustable, 20 turn pot                                 | Operating                             | -20° to +60°C (-4° to 140°F)                            |
| <b>Light source</b>                            | GaAlAs LED 660 nm                                       | Storage                               | -30° to +70°C (-22° to 158°F)                           |
| <b>Light type</b>                              | visible red polarized,<br>modulated, synchronized       |                                       |   |
| <b>Optical angle</b>                           | ±1°   |                                       |   |



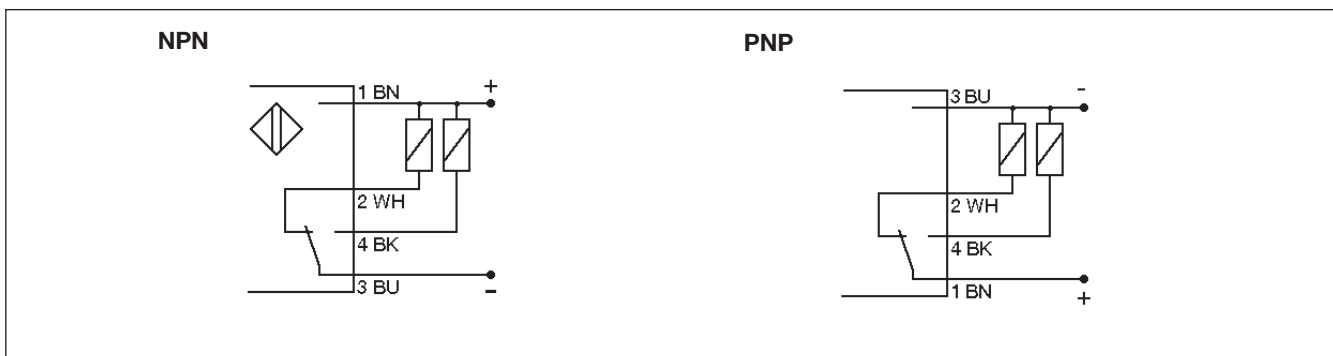
## Specifications (cont.)

|                           |  |
|---------------------------|--|
| <b>Vibration</b>          | 10 to 150 Hz, 0.5 mm/7.5 g<br>(IEC 60068-2-6)  |
| <b>Shock</b>              | 2 x 1 m & 100 x 0.5 m<br>(IEC 60068-2-32)  |
| <b>Dielectric voltage</b> | 500 VAC (rms)  |
| <b>Housing material</b>   | Aluminium, anodized  |
| Body                      | Polycarb., glass-reinforced  |
| Front                     | Polycarbonate, black   |
| Back                      | Acrylic  |
| Lenses                    | Aluminium, anodized  |
| Mounting rail APA-3       | Iron, black  |
| Mounting bracket APA-2    |  |
| <b>Connection</b>         |  |
| Cable                     | 2 m, 4 x 0.35 mm <sup>2</sup> ,<br>Ø 5.2 mm, oilproof PVC,<br><b>Note:</b> Other lengths on<br>request |
| Plug                      | CONH1A-..  |
| <b>Weight</b>             | 175 g cable version<br>85 g plug version   |
| <b>CE-marking</b>         | Yes  |

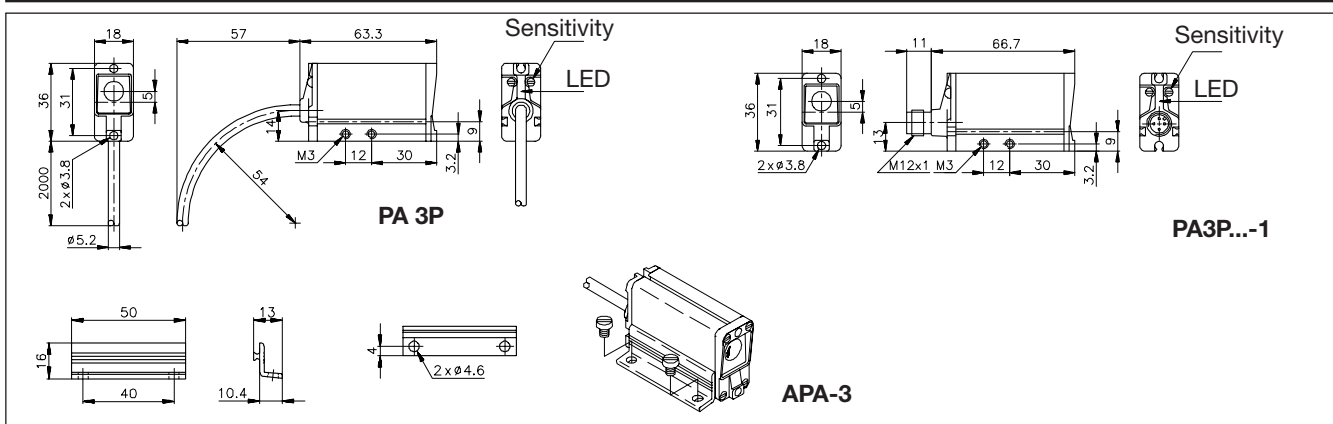
## Truth Table

|                | Make switching |        | Break switching |            |
|----------------|----------------|--------|-----------------|------------|
|                | Yes            | No     | Yes             | No         |
| Object present | Yes            | No     | Yes             | No         |
| LED            | OFF            | ON     | OFF             | ON         |
| Load           | Non-active     | Active | Active          | Non-active |
| Output NPN     | High           | Low    | Low             | High       |
| Output PNP     | Low            | High   | High            | Low        |

## Wiring Diagrams



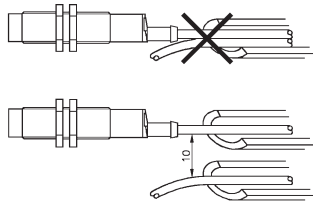
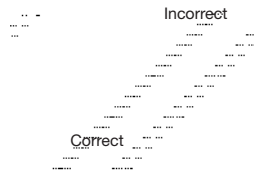
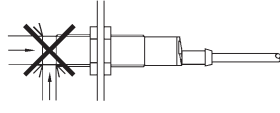
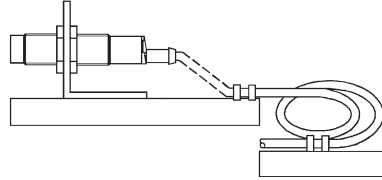
## Dimensions



## Operation Diagram



## Installation Hints

|  |  |   |   |
|--|--|---|---|
| <p><i>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</i></p>  | <p><i>Relief of cable strain</i></p>  <p>The cable should not be pulled</p> | <p><i>Protection of the sensing face</i></p>  <p>A proximity switch should not serve as mechanical stop</p> | <p><i>Switch mounted on mobile carrier</i></p>  <p>Any repetitive flexing of the cable should be avoided</p> |
|--|--|---|---|

## Accessories

- Reflectors: ER series.
- Adjustable mounting bracket APA-2 with two M3 x 10 mm screws, washers and M 3 nuts
- Connector type CONH1A-.. serie.

## Delivery Contents

- Photoelectric switch: PA3P.
- Rail mounting bracket APA-3
- Screwdriver for adjustments, 77-000
- Installation instruction
- **Packaging:** Carton box