

Photoelectrics

Type EF 1801

Fiber Optic Sensor

CARLO GAVAZZI



- Range: Fiber dependent, typ. 100 mm
- Adjustable sensitivity
- Modulated, red light
- Rated operational voltage: 10 to 40 VDC
- Output: DC 200 mA NPN or PNP
- Make and break switching function, LED indication
- Heavy duty M18 metal housing, IP 67
- Cable and plug versions
- For 2.2 mm fiber cable with 1 mm core
- MB 18 A for DIN-rail mounting (see Accessories)



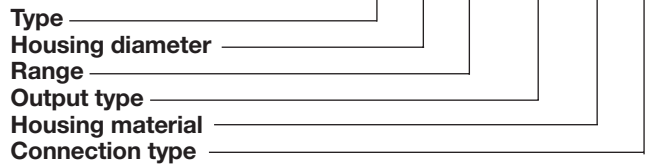
Product Description

Used in through-beam, retro-reflective or diffuse-reflective applications depending upon how the additional fibers are mounted. Easily adjustable sensitivity with 270° potentiometer. LED indication for out-

put ON. Short M18 metal housing for heavy duty applications. The fiber allows positioning and mounting in tight spaces with the photoelectric sensor itself mounted in a more convenient location.

Ordering Key

EF 18 01 PPA S - 1



Type Selection

| Housing diameter | Rated operating dist. (S _n) | Ordering no. NPN/cable Make & break swit. | Ordering no. NPN/plug Make & break swit. | Ordering no. PNP/cable Make & break swit. | Ordering no. PNP/plug Make & break swit. |
|------------------|---|---|--|---|--|
| M18 | Fiber depend. | EF 1801 NPAS | EF 1801 NPAS-1 | EF 1801 PPAS | EF 1801 PPAS-1 |

Specifications

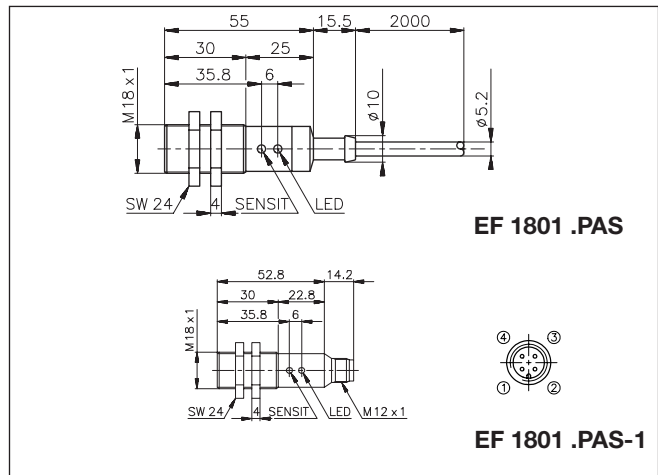
| | | | |
|--|--|---------------------------------------|---|
| Rated operating dist. (S_n) | Fiber dependent | Operating frequency (f) | 120 Hz, light/dark ratio 1:2 |
| Temperature drift | 0.4%/K | Response time | |
| Hysteresis (H) (Differential travel) | 3 to 20% | OFF-ON (t _{ON}) | ≤ 3.2 ms |
| Rated operational volt. (U_B) | 10 to 40 VDC (ripple included) | ON-OFF (t _{OFF}) | ≤ 5 ms |
| Ripple (U_{rpp}) | ≤ 10% | Power ON delay (t_v) | Typ. 100 ms |
| Output current | | Indication | Output ON |
| Continuous (I _a) | ≤ 200 mA | Environment | LED, yellow |
| Short-time (I) | 200 mA, max. load capacity 100 nF | Overvoltage category | III (IEC 60664/664A; 60947-1) |
| No load supply current (I_o) | ≤ 20 mA, | Pollution degree | 3 (IEC 60664/664A; 60947-1) |
| Min. load current (I_m) | 0.5 mA | Degree of protection | IP 67 (IEC 60529; 60947-1) |
| OFF-state current (I_r) | ≤ 100 μA | Temperature | |
| Voltage drop (U_d) | ≤ 2.5 V | Operating | -20° to +60°C (-4° to 140°F) |
| Protection | Reverse polarity, short circuit, transients | Storage | -30° to +70°C (-22° to 158°F) |
| Transient voltage | Max. 1 kV/0.5 J | Vibration | 10 to 150 Hz, 0.5 mm/7.5 g (IEC 60068-2-6) |
| Sensitivity | Adjustable, 270° turn potentiometer, | Shock | 2 x 1 m & 100 x 0.5 m (IEC 60068-2-32) |
| Light source | 660 nm | Dielectric voltage | 500 VAC (rms) |
| Light type | Red, modulated, synchronized | Housing material | |
| | | Body | Nickel-plated brass |
| | | Front | TPE/POM, black |
| | | Cable end | Polyester, black |
| | | Nuts | Nickel-plated brass |



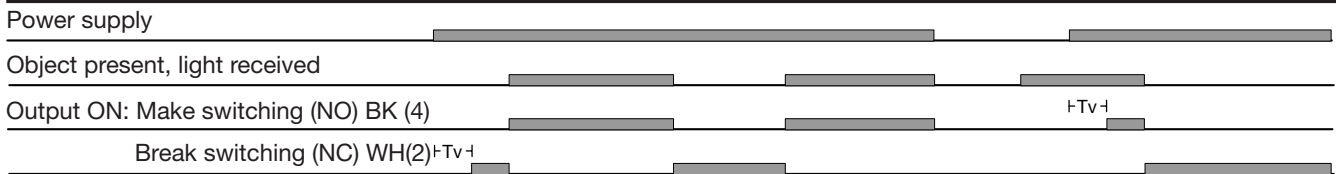
Specifications (cont.)

| | |
|--|--|
| Connection Cable | Grey, 2 m, oilproof PVC, 4 x 0.35 mm ² Note: Other cable lengths on request |
| Plug (-1) Cables for plug (-1) | M12 CONH1A-. serie |
| Weight Cable version Plug version | 115 g 40 g |
| CE-marking | Yes |

Dimensions



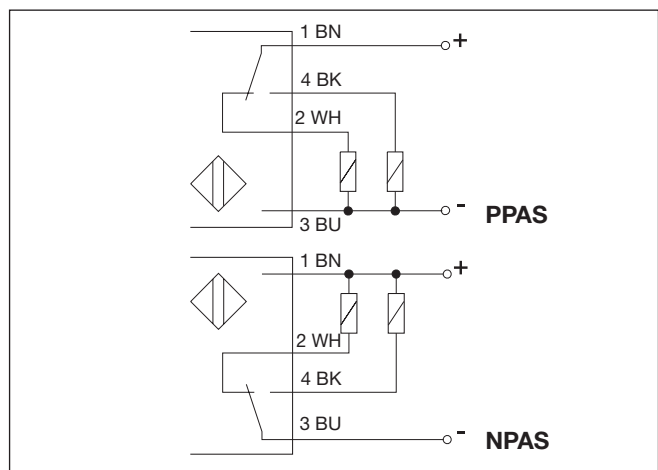
Operation Diagram



Truth Table

| | Make switching | | Break switching | |
|----------------|----------------|--------|-----------------|------------|
| | No | Yes | No | Yes |
| Object present | No | Yes | No | Yes |
| DC types | | | | |
| 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



Accessories

- Fiber optics - call for further information
- Connector type CON.1A../CON.14NF.. serie

Please refer to "Accessories"

Delivery Contents

- Photoelectric switch: EF 1801....
- 2 nuts
- M18 mounting bracket MB 18A for direct surface or DIN-rail mounting
- Screw driver
- Fiber cutter
- **Packaging:** cardboard box

Installation Hints

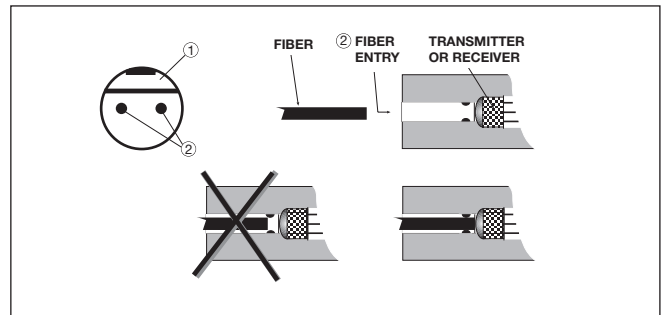
When you insert the fibers:

- Push the spring-loaded clamp (1) with the enclosed screw driver towards the fiber entries (2). The fiber entries are now open for putting in the fibers.
- Put in the fibers. Be sure that the fibers pass the constriction near the bot-

tom of the hole. The constriction seals the junction (between fiber and photo element) against dust.

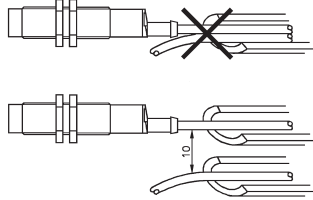
The sensing distance will be reduced if there is an air gap between the fiber and the photo element.

- Release the clamp to fix the fibers.

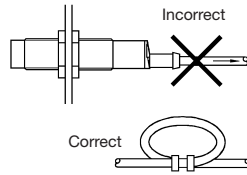


Installation Hints

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

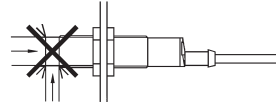


Relief of cable strain



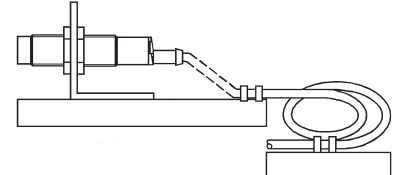
The cable should not be pulled

Protection of the sensing face



A proximity switch should not serve as mechanical stop

Switch mounted on mobile carrier



Any repetitive flexing of the cable should be avoided

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