

# 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)



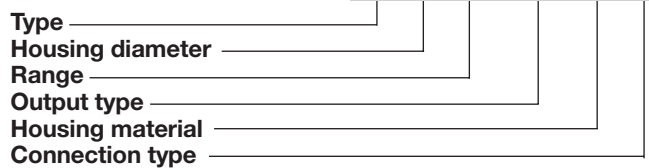
## Product Description

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 <sub>n</sub> )	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

<b>Rated operating dist. (S<sub>n</sub>)</b>	Fiber dependent
<b>Temperature drift</b>	0.4%/K
<b>Hysteresis (H)</b> (Differential travel)	3 to 20%
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 40 VDC (ripple included)
<b>Ripple (U<sub>rpp</sub>)</b>	≤10%
<b>Output current</b> Continuous (I <sub>a</sub> ) Short-time (I)	≤ 200 mA 200 mA, max. load capacity 100 nF
<b>No load supply current (I<sub>o</sub>)</b>	≤ 20 mA,
<b>Min. load current (I<sub>m</sub>)</b>	0.5 mA
<b>OFF-state current (I<sub>r</sub>)</b>	≤ 100 μA
<b>Voltage drop (U<sub>d</sub>)</b>	≤ 2.5 V
<b>Protection</b>	Reverse polarity, short circuit, transients
<b>Transient voltage</b>	Max. 1 kV/0.5 J
<b>Sensitivity</b>	Adjustable, 270° turn potentiometer,
<b>Light source</b>	660 nm
<b>Light type</b>	Red, modulated, synchronized

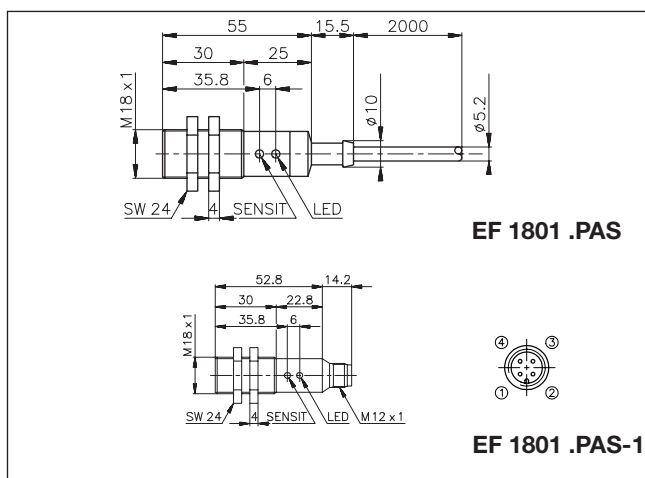
<b>Operating frequency (f)</b>	120 Hz, light/dark ratio 1:2
<b>Response time</b> OFF-ON (t <sub>ON</sub> ) ON-OFF (t <sub>OFF</sub> )	≤ 3.2 ms ≤ 5 ms
<b>Power ON delay (t<sub>v</sub>)</b>	Typ. 100 ms
<b>Indication</b> Output ON	LED, yellow
<b>Environment</b> Overvoltage category Pollution degree Degree of protection	III (IEC 60664/664A; 60947-1) 3 (IEC 60664/664A; 60947-1) IP 67 (IEC 60529; 60947-1)
<b>Temperature</b> Operating Storage	-20° to +60°C (-4° to 140°F) -30° to +70°C (-22° to 158°F)
<b>Vibration</b>	10 to 150 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)
<b>Shock</b>	2 x 1 m & 100 x 0.5 m (IEC 60068-2-32)
<b>Dielectric voltage</b>	500 VAC (rms)
<b>Housing material</b> Body Front Cable end Nuts	Nickel-plated brass TPE/POM, black Polyester, black Nickel-plated brass



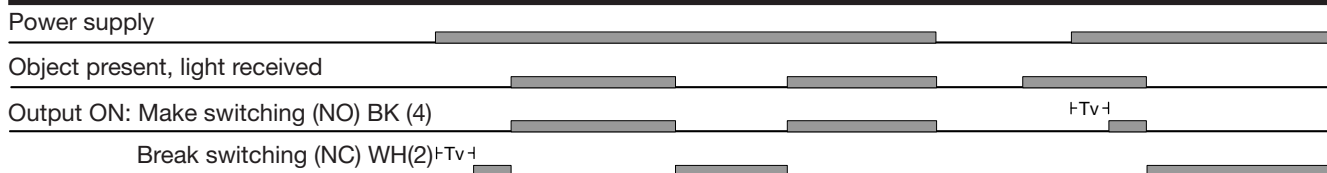
## Specifications (cont.)

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

## Dimensions



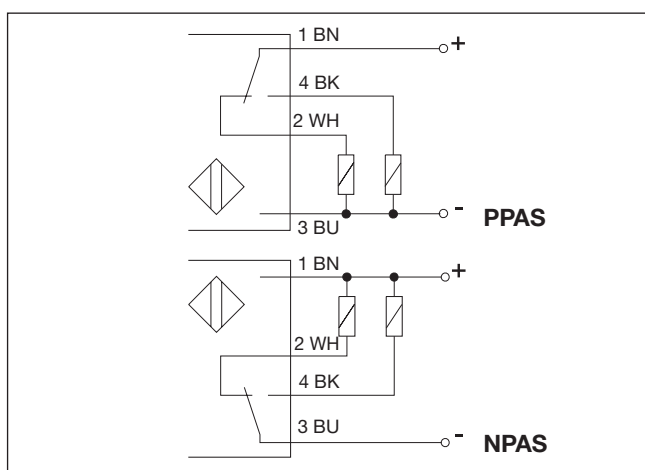
## Operation Diagram



## 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

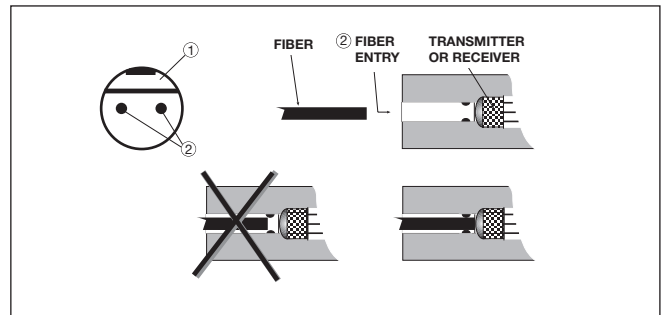
### When you insert the fibers:

- 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-

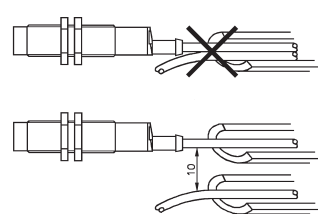
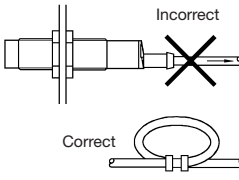
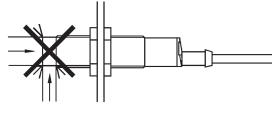
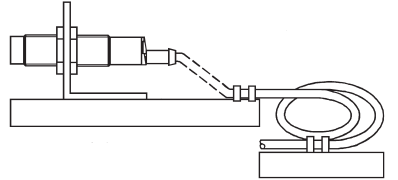
tom of the hole. The constriction seals the junction (between fiber and photo element) against dust.

**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

<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><b>Incorrect</b></p> <p><b>Correct</b></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>
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