# Photoelectrics
# Level Sensors
# Types VP, Modulated

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- **Sensor for liquid level detection**
- **Built-in amplifier, Ga-As diode**
- **Output: Transistor NPN/PNP, NO or NC switching**
- **High chemical resistance to most acids and bases**
- **VP01/03: Output OFF when sensor in liquid**
- **VP02/04: Output ON when sensor in liquid**
- **No electrical or thermal connection between liquid and electrical circuit**
- **LED-indication for output ON**
- **Power supply 10 to 40 VDC**

CE

## Product Description

Optical level sensor with modulated, infrared light for the detection of liquids. Fitted with built-in amplifier. Transmitter and receiver are completely selfcontained in solid plastic designed for mounting into container wall. VP01/02 are available in a Polysulfone housing resistant to most acids and bases. VP03/04EM are available in a Polyamide 12 housing resistant to various solvents.

## Ordering Key

**VP 0 2 E P M**

- **Type**
- **Housing**
- **Output status**
- **Output type**
- **PNP output**
- **Modulated**

## Type Selection

| Housing material | Connection | Ordering no. Transistor NPN Make switching | Ordering no. Transistor NPN Break switching | Ordering no. Transistor PNP Make switching | Ordering no. Transistor PNP Break switching |
|---|---|---|---|---|---|
| Polysulphone | Cable | **VP 02 EM** | **VP 01 EM** | **VP 02 EPM** | **VP 01 EPM** |
| Polyamide 12 | Cable | **VP 04 EM** | **VP 03 EM** | **VP 04 EPM** | **VP 03 EPM** |

## Specifications

| | |
|---|---|
| **Rated operational voltage** | 10 - 40 VDC |
| **Rated operational current** | |
| Continuous | 200 mA |
| **Voltage drop** | ≤ 1.0 VDC |
| **No-load supply current** | ≤ 7 mA |
| **Sensing accuracy** | |
| Liquid level difference | Horizontal mounting: ± 5 mm<br>Vertical mounting: ± 2.5 mm |
| **Ambient light** | 0 - 50.000 lux |
| **Frequency of operating cycles** (f) | 30 Hz |
| **Environment** | |
| Degree of protection | IP 67 |
| Operating temperature | -20° to +70ºC (-4° to +158ºF) |
| Storage temperature | -40° to +100ºC (-40° to +100ºF) |
| **Indication for output status** | LED, yellow |

| | |
|---|---|
| **Housing material** | |
| VP01/02 | Polysulphone |
| VP03/04 | Polyamide 12 |
| **Tip material** | |
| VP01/02 | Polysulphone |
| VP03/04 | Polyamide 12 |
| **Weight** | 90 g |
| **Connection** | |
| Cable | PVC, 2 m<br>Ø4.1 mm, 3 x 0,25 mm$^2$ |
| **Pressure** | |
| VP0x | 10 bar at + 60ºC |
| **Pipe thread** | 3/8" PT |
| **CE marking** | Yes |

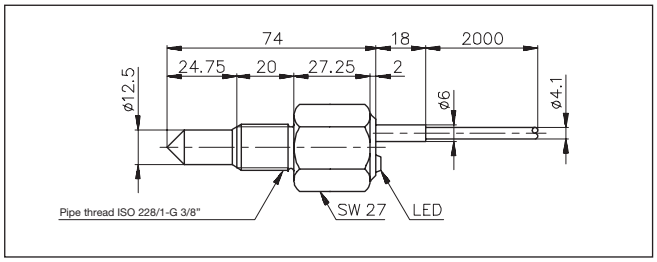


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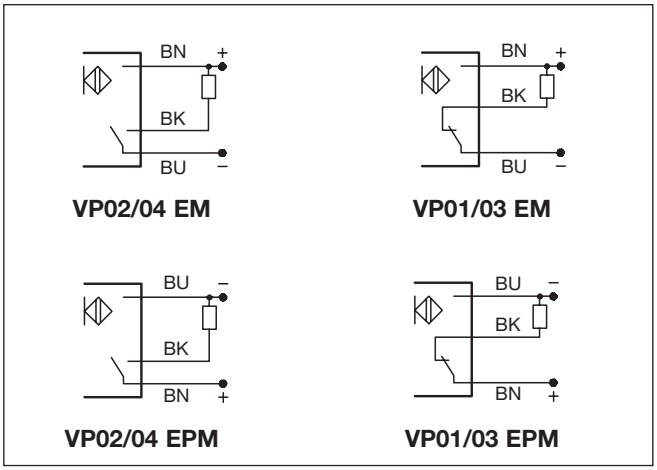
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## Dimensions

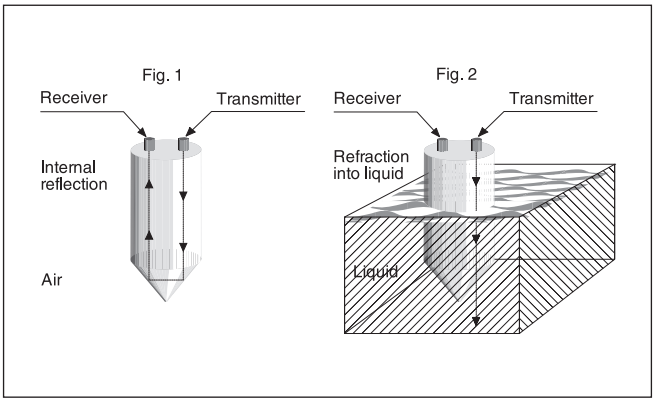



## Wiring Diagrams

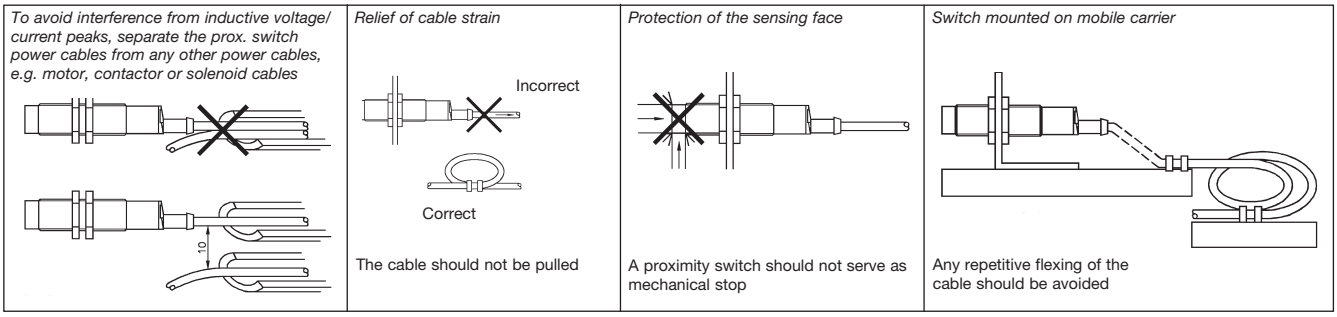



## Mode of Operation

The sensor contains IR transmitter, receiver and amplifier with transistor output. The light source is a Ga-As diode emitting infrared light in short pulses.
The conical tip of the sensor forms an angle of 90ºC. This angle acts as a prism, i.e. the beam, emitted from the Ga-As diode placed in one side of the sensor head, is reflected internally to the phototransistor placed in the other side of the sensor head, provided that the tip of the sensor is situated in free air. If the sensor tip is immersed in a liquid, always having a refractive index different from air, the beam will not be refracted by the prism and the photo transistor will not receive any signal.
The sensor types can operate in oil, waste water, aqueous solutions such as beer, wine, alcohol etc. without any kind of accessory.




## Installation Hints






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