

# 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



## Product Description

Optical level sensor with modulated, infrared light for the detection of liquids. Fitted with built-in amplifier. Transmitter and receiver are completely self-contained 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 \_\_\_\_\_

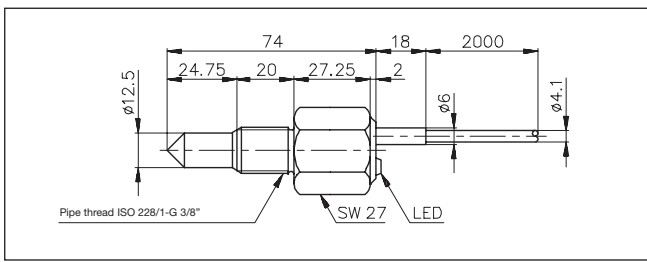
## Type Selection

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

<b>Rated operational voltage</b>	10 - 40 VDC	<b>Housing material</b>	VP01/02 VP03/04	Polysulphone Polyamide 12
<b>Rated operational current</b> Continuous	200 mA	<b>Tip material</b>	VP01/02 VP03/04	Polysulphone Polyamide 12
<b>Voltage drop</b>	≤ 1.0 VDC	<b>Weight</b>	VP0x	90 g
<b>No-load supply current</b>	≤ 7 mA	<b>Connection</b>	Cable	PVC, 2 m Ø4,1 mm, 3 x 0,25 mm <sup>2</sup> M12 x 1 CON.1-... series
<b>Sensing accuracy</b> Liquid level difference	Horizontal mounting: ± 5 mm Vertical mounting: ± 2.5 mm	<b>Pressure</b>	VP0x VP2x	10 bar at + 60°C 10 bar at + 80°C
<b>Ambient light</b>	0 - 50.000 lux	<b>Pipe thread</b>		3/8" PT
<b>Frequency of operating cycles (f)</b>	30 Hz			
<b>Environment</b> Degree of protection Operating temperature Storage temperature	IP 67 -20° to +80°C (-4° to +176°F) -40° to +100°C (-40° to +100°F)			
<b>Indication for output status</b>	LED, yellow			

## Dimensions



## Mode of Operation

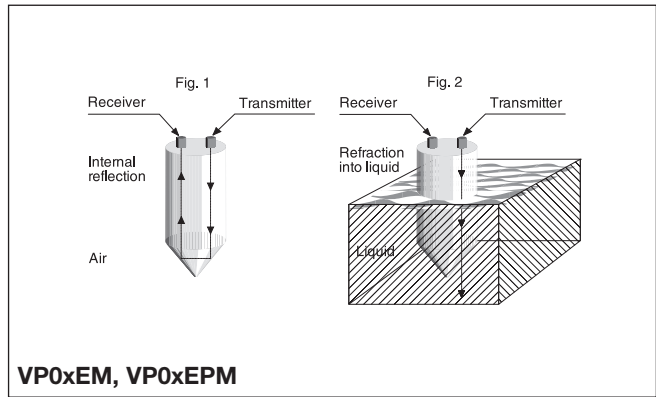
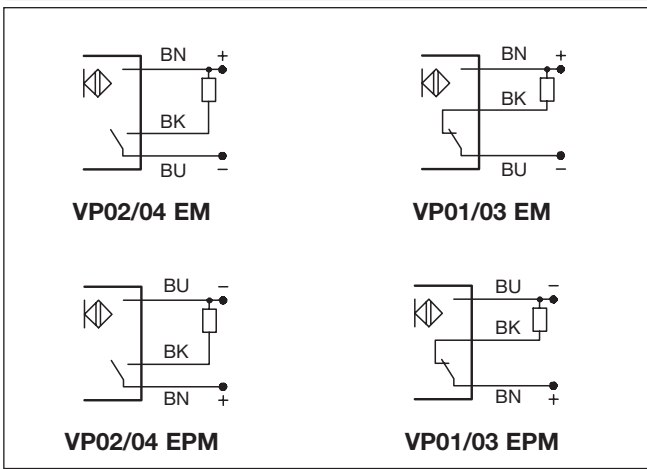
The sensor contains IR transmitter, receiver and amplifier with transistor output. The light source is a Ga-As diode emitting infrared light in short pulses.

The conical tip of the sensor forms an angle of 90°C. 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.

## Wiring Diagrams



## 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>
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