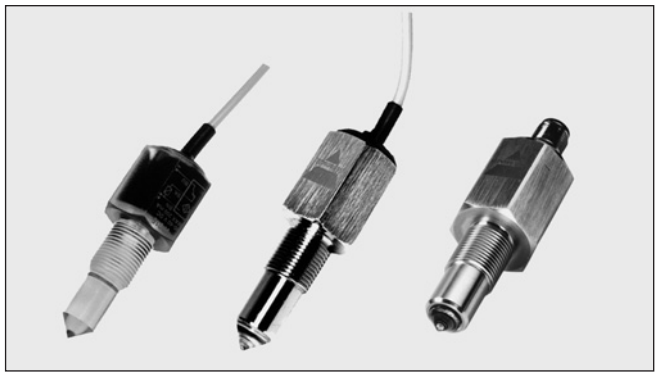
Photoelectrics
Level Sensors
Types VP, Modulated

CARLO GAVAZZI



- 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
- VP01/03/23: Output OFF when sensor in liquid
- VP02/04/24: 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. VP23/24 are available in a stainless steel housing.

Ordering Key

VP 2 2 E P M -1

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

Type Selection

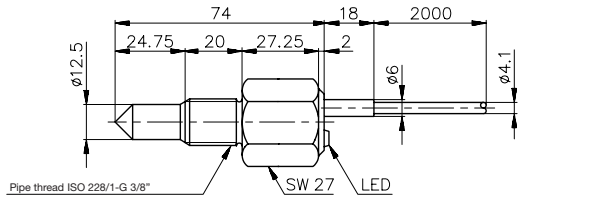
Housing material	Connection	Ordering no. Transistor NPN Make switching	Ordering no. Transistor NPN Break switching	Ordering no. Transistor PNP Make switching	Ordering no. Transistor PNP Break switching
Polysulphone	Cable	**VP 02 EM**	**VP 01 EM**	**VP 02 EPM**	**VP 01 EPM**
Polyamide 12	Cable	**VP 04 EM**	**VP 03 EM**	**VP 04 EPM**	**VP 03 EPM**
Nickel-plated brass	Cable			**VP 22 EPM**	
Nickel-plated brass	Plug			**VP 22 EPM-1**	
Stainless steel	Cable	**VP 24 EM**	**VP 23 EM**	**VP 24 EPM**	**VP 23 EPM**

Specifications

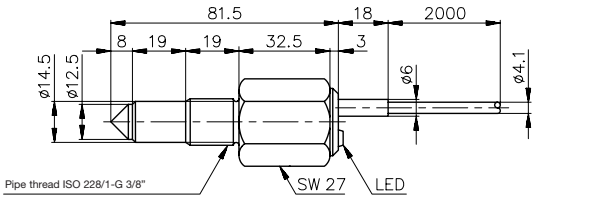
Rated operational voltage	10 - 40 VDC
Rated operational current	
Continuous	200 mA
Voltage drop	≤ 1.0 VDC
No-load supply current	≤ 7 mA
Sensing accuracy	
Liquid level difference	Horizontal mounting: ± 5 mm Vertical mounting: ± 2.5 mm
Ambient light	0 - 50.000 lux
Frequency of operating cycles (f)	30 Hz
Environment	
Degree of protection	IP 67
Operating temperature	-20° to +80°C (-4° to +176°F)
Storage temperature	-40° to +100°C (-40° to +100°F)
Indication for output status	LED, yellow
Housing material	
VP01/02	Polysulphone
VP03/04	Polyamide 12
VP23/24	Stainless steel (AISI 304)
VP22	Nickel-plated brass

Tip material	
VP01/02/22	Polysulphone
VP03/04/23/24	Polyamide 12
Weight	
VP0x	90 g
VP2x	190 g
Connection	
Cable	PVC, 2 m Ø4,1 mm, 3 x 0,25 mm2
Plug (-1)	M12 x 1
Cable for plug (-1)	CON.1-... series
Pressure	
VP0x	10 bar at + 60°C
VP2x	10 bar at + 80°C
Pipe thread	3/8" PT

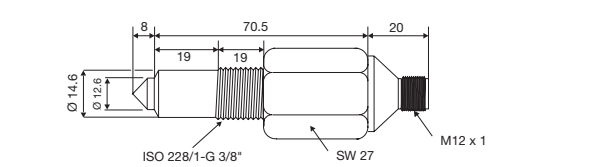
Dimensions



VP0xEM, VP0xEPM



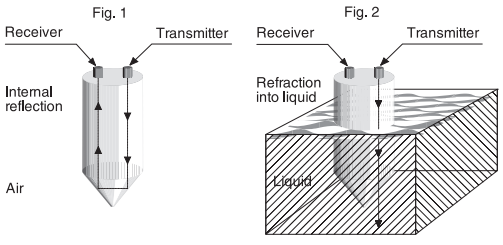
VP23/24EM, VP22/23/24EPM



VP22EPM-1

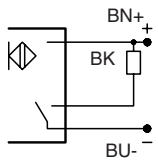
Mode of Operation

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.

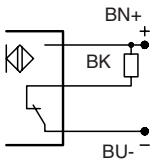


VP0xEM, VP0xEPM

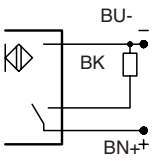
Wiring Diagrams



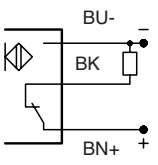
VP02/04/24 EM



VP01/03/23 EM



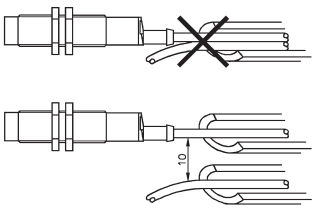
VP02/04/22/24 EPM



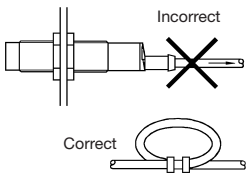
VP01/03/23 EPM

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

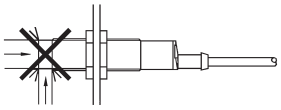


Relief of cable strain



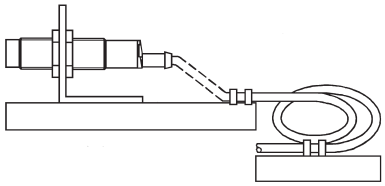
The cable should not be pulled

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