

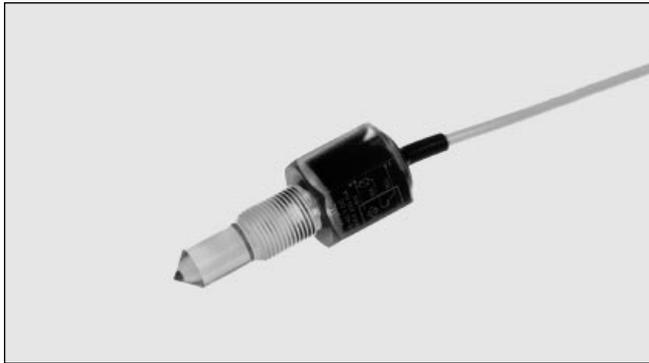
Level Sensors

Optical

Type VP, Unmodulated



CARLO GAVAZZI



- Unmodulated infrared sensor for liquid level detection
- Approved for Ex-applications (DC-types)
- Built-in amplifier, Ga-As diode
- Output: Transistor NPN/PNP or SCR, make or break 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: DC types: 10 to 40 VDC
AC types: 110 or 230 VAC

Product Description

Optical level sensor with unmodulated, infrared light for the detection of liquids. Fitted with built-in amplifier. Transmitter and receiver are completely self-contained in solid plastic housing designed for mounting into container

wall. VP01/02 are available in a Polysulphone housing resistant to most acids and bases. VP03/04 are available in a Polyamide 12 housing resistant to various solvents.

Ordering Key

VP 0 3 E P

Type _____
 Housing _____
 Output status _____
 Output type _____
 PNP output _____

Type Selection - DC Types (Ex-approved)

| Housing material | 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 | VP 02 E | VP 01 E | VP 02 EP | VP 01 EP |
| Polyamide 12 | VP 04 E | VP 03 E | VP 04 EP | VP 03 EP |

Type Selection - AC Types

| Housing material | Ordering no. Make switching 110 VAC | Ordering no. Break switching 110 VAC | Ordering no. Make switching 230 VAC | Ordering no. Break switching 230 VAC |
|------------------|---|--|---|--|
| Polysulphone | VP 02-110TB | VP 01-110TB | VP 02-230TB | VP 01-230TB |

Specifications

| | Transistor NPN/PNP | SCR output AC types |
|--|--|--|
| Rated operational voltage | 10 - 40 VDC | 110 VAC: 100 - 121 VAC, 45 - 60 Hz 230 VAC: 195 - 265 VAC, 45 - 60 Hz |
| Rated operational current Continuous | 200 mA | 10 - 100 mA |
| Voltage drop | ≤ 1.0 VDC | ≤ 9.0 VAC |
| No-load supply current | ≤ 12 mA | ≤ 7 mA |
| Sensing accuracy Liquid level difference | Horizontal mounting: ± 5 mm Vertical mounting: ± 2.5 mm | Horizontal mounting: ± 5 mm Vertical mounting: ± 2.5 mm |
| Ambient light | 0 - 100 lux | 0 - 100 lux |
| Frequency of operating cycles (f) | 30 Hz | 5 Hz |

VP, unmodulated



Specifications (cont.)

| | Transistor NPN/PNP | SCR output AC types |
|-------------------------------------|--|--------------------------------|
| Environment | | |
| Degree of protection | IP 67 | IP 67 |
| Operating temperature | -20 to +80°C (-4 to +176°F) | -20 to +80°C (-4 to +176°F) |
| Storage temperature | -40 to +100°C (-40 to + 100°F) | -40 to +100°C (-40 to + 100°F) |
| Indication for output status | LED, yellow | LED, yellow |
| Housing and tip material | | |
| VP01/02 | Polysulphone | Polysulphone |
| VP03/04 | Polyamide 12 | |
| Weight | 90 g | 90 g |
| Connection | Cable (PVC), 2 m | Cable (PVC), 2 m |
| Pressure | 10 bar at + 60°C | 10 bar at + 60°C |
| Pipe thread | 3/8" PT | 3/8" PT |
| Ex-approval | DEMKO certificate of conformity no. 92C.103973X | |

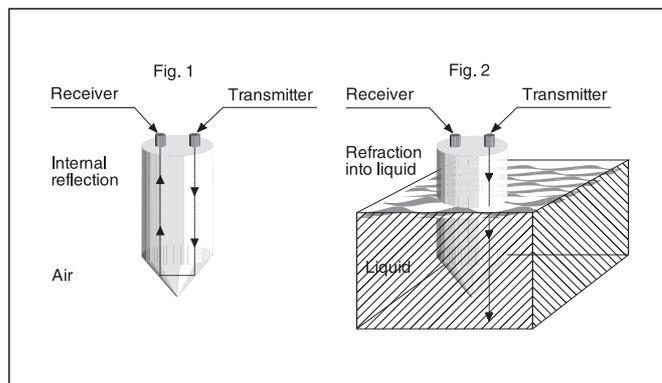
Mode of Operation

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

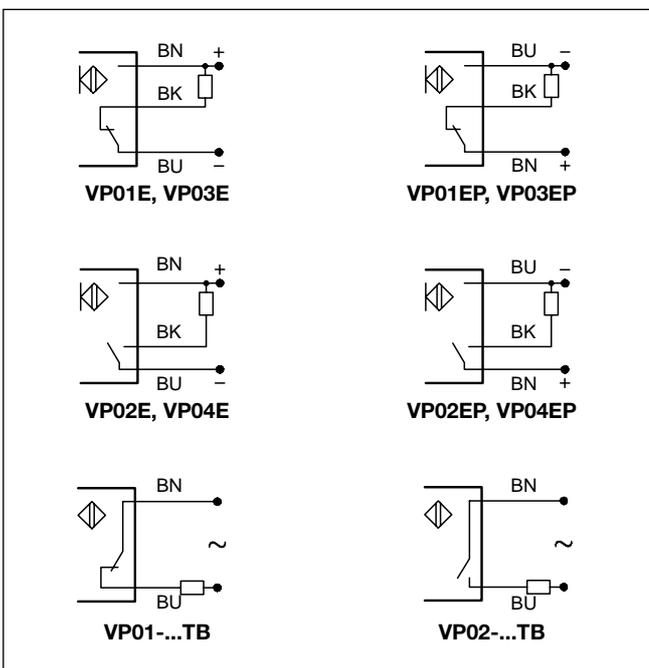
The conical tip of the sensor forms an angle of 90°C. This angle acts as a prism, i.e. the beam, emitted from the Ga-As diode placed in one side of the sensor head, is reflected internally to the phototransistor placed in the other side of the sensor head, provided

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



Dimensions

