Level Sensors
Optical
Types VP, Modulated, Metal Housing

- **Modulated light**
- **Built-in amplifier**
- **Output: NPN or PNP, 4-wire (NO & NC)**
- **Housing: Stainless steel or nickel plated brass**
- **Tip: Polysulphone or glass**
- **High chemical resistance to most acids and bases**
- **Liquid and electrical circuit completely isolated**
- **Power supply: DC models 10 to 40 VDC**

Product Description

Optical level probe with modulated infrared light for detection of liquids. Self-contained unit has built-in amplifier. Separate transmitting and receiving elements sealed behind the tip. Designed for direct mounting through the wall of a tank. The polysulphone tip is especially resistant to most acids and bases.

Ordering Key

VPB1 M NA-1

- **Type: Refraction principle**
- **Housing material**
- **Tip material**
- **Light source**
- **Output type**
- **Connection**

Type Selection

Housing material	Tip material	Ordering no. NPN, Make & break switching Cable	Ordering no. NPN, Make & break switching M12 Plug	Ordering no. PNP, Make & break switching Cable	Ordering no. PNP, Make & break switching M12 Plug
Stainless steel	Polysulphone	**VPA1MNA**	**VPA1MNA-1**	**VPA1MPA**	**VPA1MPA-1**
Stainless steel	Glass	**VPA2MNA**	**VPA2MNA-1**	**VPA2MPA**	**VPA2MPA-1**
Nickel plated brass	Polysulphone	**VPB1MNA**	**VPB1MNA-1**	**VPB1MPA**	**VPB1MPA-1**
Nickel plated brass	Glass	**VPB2MNA**	**VPB2MNA-1**	**VPB2MPA**	**VPB2MPA-1**

Specifications

Rated operational voltage	10 - 40 VDC
Ripple	≤ 10 V
Output current	
Continuous	≤ 200 mA
No-load supply current	≤ 7 mA
Voltage drop	≤ 2.5 VDC
Protection	Reverse polarity, short circuit, transients
Ambient light	≤ 50.000 lux
Transient voltage	1 kV
Delay after power-on	20 ms
Operating frequency	≤ 30 Hz
Indication for	
Output ON	LED, yellow
	No LED indication on plug types
Sensing accuracy	
Liquid level difference	Horizontal mounting: ± 5 mm
LED indication on plug types	Vertical mounting: ± 2.5 mm

Pressure	≤ 10 bar at +60°C (+ 140°F)
Environment	
Degree of protection	IP 67
Operating temperature	-20° to +80°C (-4° to +176°F)
Storage temperature	-40° to +100°C (-40° to +212°F)
Liquid temperature	+100°C (+212°F) for ≤ 60 s
Housing material	Stainless steel or nickel plated brass
Cable	2 m, 4 x 0.3 mm², grey, Ø 5.2 oil resistant PVC
Resistance	≤ 100 Ω, extension possible
Weight	90 g
Tightening torque	
Stainless steel	30 Nm
Nickel plated brass	30 Nm
External thread	3/8" (ISO 228/1)
CE-marking	Yes

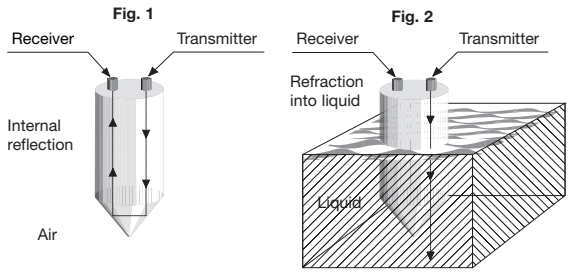
Mode of Operation

The probe contains IR transmitter, receiver and amplifier with open collector NPN or PNP output. The light source is a Ga-As diode emitting modulated, infrared light in short pulses.

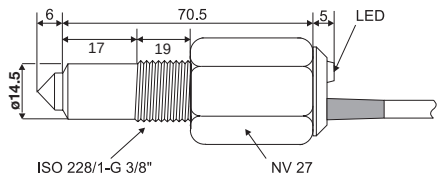
This level probe is thus insensitive to ambient light (up to 50,000 lux) and suitable even for adhesive liquids.

The conical tip of the sensor forms an angle of 90°. 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 (fig. 1), 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 (fig. 2), the beam will be refracted into the liquid.

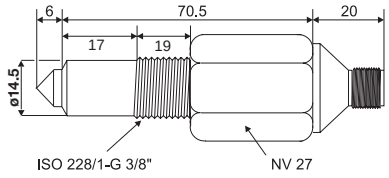
All types of sensors can operate in oil, waste water, aqueous solutions such as beer, wine, alcohol etc. without any kind of accessory.



Dimensions



VP..M.A



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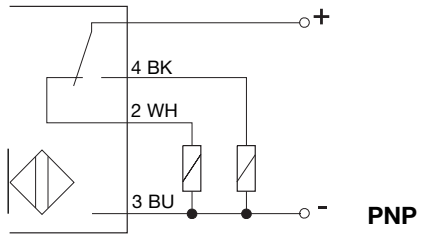
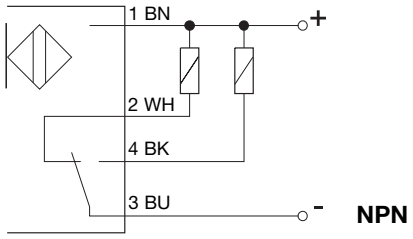
Wiring Diagrams





Accessories

- Plugs: Standard M 12, CONH1A-.. or CONH1O-.. series.