# Photoelectrics Level Sensors 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. Selfcontained 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 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 LED indication on plug types	Horizontal mounting: ± 5 mm 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	$+100^{\circ}\text{C} (+212^{\circ}\text{F}) \text{ for } \le 60 \text{ s}$		
Housing material	Stainless steel AISI 303 or nickel plated brass		
Cable	2 m, 4 x 0.3 mm <sup>2</sup> , grey, Ø 5.2 oil resistant PVC		
Resistance	$\leq$ 100 $\Omega$ , 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**

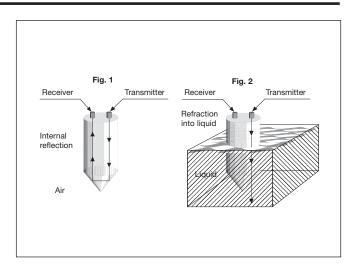
The probe contains IR transmitter, receiver and amplifier with open collector NPN or PNP output. The light source is a Ga-As diode emitting modulated, infrared light in short pulses.

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

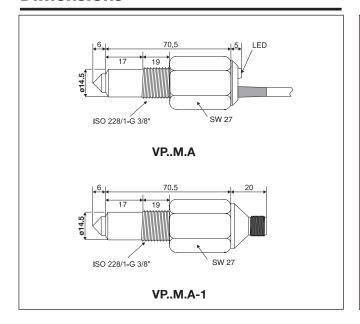
The conical tip of the sensor forms an angle of 90°. This angle acts as a prism, i.e. the beam, emitted from the Ga-As diode placed in one side of

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.

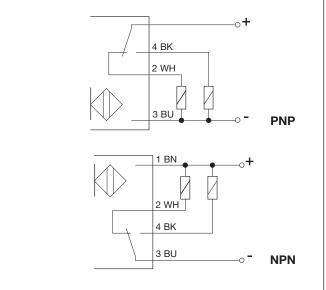
All types of sensors can operate in oil, waste water, aqueous solutions such as beer, wine, alcohol etc. without any kind of accessory.



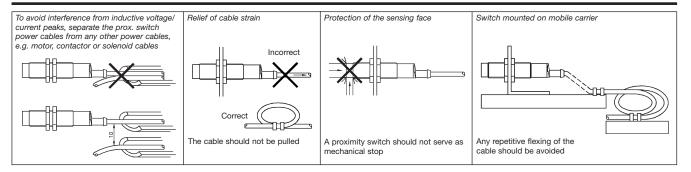
### **Dimensions**



### **Wiring Diagrams**



### **Installation Hints**



### **Accessories**

 Connector type CON.1A-../CON.14NF.. or CON.1O-../CON.13NF series.