

Mobrey 003 Switch

Ultrasonic liquid level switch

Data sheet
IP117

003 Ultrasonic switch

- Self contained liquid level alarm
- No moving parts
- European Directive compliance

Features

- Relay or solid-state output
- Corrosion resistant PPS construction
- 1" or 3/4" threaded mounting
- Small in-tank dimensions
- 24V ac or dc powered
- Lightweight

Description

Manufactured in Polyphenylene Sulphide (PPS) for corrosion resistance in most liquids, the 003 range of sensors can be mounted in any position in a tank using either a 1" or 3/4" thread available in BSPP, BSPT and NPT thread forms. A thread is

provided on each side of a hexagonal boss to allow either external or internal / pole mounting of the sensor. Comprising a one piece moulded body with an integral pcb, the 003 switch is factory sealed and supplied with a 3m flying lead for customer connection.

The Solartron Mobrey 003 switch is designed for high or low level alarm duties to give a voltage free contact or solid state transistor output for alarm signalling or as part of a pump control system.

Operation

The moulded body contains two piezo-electric crystals, one each side of a gap at the tip of the sensor. An ultrasonic signal is transmitted from one crystal into the gap, but if there is air or gas in the sensor gap then the signal is not received by the other crystal. However, if there is a liquid present, the signal will be transmitted across the gap and the integral electronics will switch the output circuitry to signal the presence of a liquid.

Typical Applications

- Low level alarms in header tanks
- Pump control duty in feeder tanks
- High and low alarms in storage tanks
- Level and pump control in storage tanks
- Small or thin wall tanks

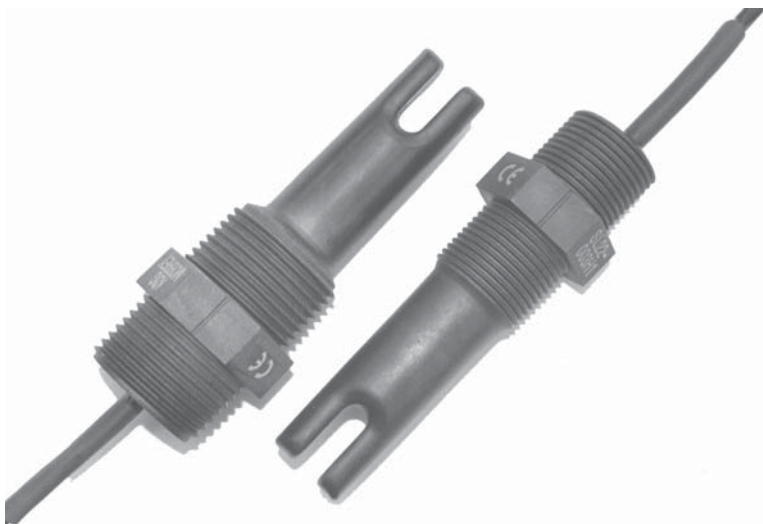
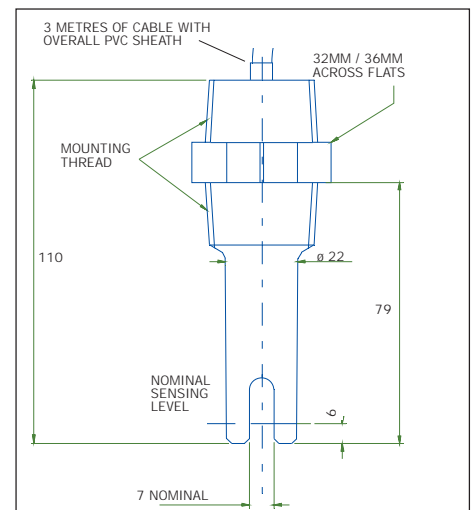
Installation

The 003 sensor may be mounted at any angle in the vessel, although care should be taken to ensure that the liquid is free to drain out of the sensor gap. Position the sensor away from entry or exit points to avoid areas of excessive turbulence or aeration, and avoid installation in the direct flow of liquid.

Ensure a clearance of at least 25mm from all sensor surfaces to vessel wall to avoid forming air pockets or sludge traps.

A threaded boss is recommended for pressurised applications. Refer to Installation leaflet for full details.

Dimensional drawing



Technical specification

	003S* models	003H* models
Operating pressure	20 bar	20 bar
Operating temperature	-20°C to +70°C	-40°C to + 105°C
Ambient temperature	As operating temp.	As operating temp.
Minimum S. G.	0.50	0.50
Max. viscosity	5000cSt. at 20°C	5000cSt. at 20°C
Switching response	50ms dry-wet 0.5s wet-dry	50ms dry-wet 0.5s wet-dry
Hysteresis	< 4mm	< 4mm
Repeatability	+/- 2mm	+/- 2mm
Overall length	110mm	110mm
Length into tank	79mm (External mount)	79mm (External mount)
Body diameter	22mm	22mm
Switching function	SPCO relay(energised wet)	2 x FET open drain (short circuit protected)
Maximum switched current	1A at 30v res. 0.25A at 30v ind.	100mA max.
Maximum switched voltage	30v	30v
Power supply	18-30v dc or ac	18-30v dc
Dry current drawn	10mA nom.	8mA nom. (4mA min.)
Wet current drawn	25mA max.	16mA nom (20mA max.)
Cable length	3m: 5 core 7/0.2mm	3m: 4 core 7/0.2mm
Cable sheathing	PVC	PVC
IP rating of sensor	IP66/IP68 (3m)	IP66/IP68 (3m)

Not suitable for use in intrinsically safe circuits. Not suitable for the direct starting of large motors.

Meets the requirements of EMC European directive 89/336/EEC

Light industrial EN50081-1 & EN50082-1/Industrial EN 50081-2 & EN50082-2

Relay output models

Code	Description		
003	Integral ultrasonic level sensor, polyphenylene sulphide construction		
Code	Output type		
S	Integral SPCO relay, energised when sensor wet		
Code	Mounting thread	Max pressure	
		20°C	70°C
0	¾" BSPT dual	20 bar	20 bar
2	1" BSPT dual	20 bar	20 bar
5	1" NPT dual	20 bar	20 bar

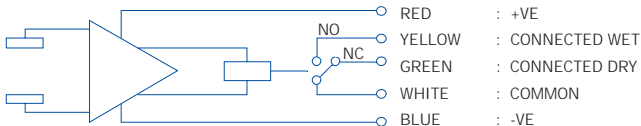
003 S 2 Typical model number

Solid state transistor output models

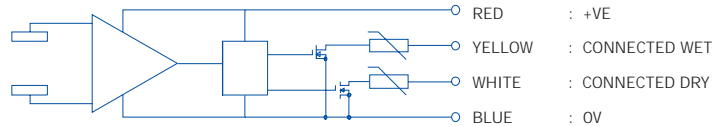
Code	Description		
003	Integral ultrasonic level sensor, polyphenylene sulphide construction		
Code	Output type		
H	Two open drain FET transistors, one conducting when sensor wet, one conducting when sensor dry.		
Code	Mounting thread	Max pressure	
		20°C	105°C
0	¾" BSPT dual	20 bar	20 bar
2	1" BSPT dual	20 bar	20 bar
5	1" NPT dual	20 bar	20 bar

003 H 2 Typical model number

Schematic: 003S* models



Schematic: 003H* models



Solartron Mobrey Limited

Authorised distributor: **Ward Industries Limited**

Tel: +44 (0) 1933 624963

Fax: +44 (0) 1933 625458

E-mail: sales@wardindustries.co.uk

Web: www.wardindustries.co.uk

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