

## LVCSi FP Flameproof Continuous Level Sensor

The LVCSi FP is an analogue vertical liquid level sensor with an integrated display meter and output driver specifically designed for continuous, in-situ monitoring of your tank while in a potentially explosive atmosphere. With optional temperature sensing and MODBUS communications protocols, the LVCSi-FP is an all-in-one ATEX/ IECEx solution for liquid level monitoring.



II 1/2G 2D

Ex db IIC T5/T4/T3 Ga/Gb

-40°C ≤ Ta ≤ +85°C

Ex tb IIIC T100°C / T135°C / T200°C Db

-40°C ≤ Ta ≤ +85°C

IP68



II 2GD

Ex db IIC T5/T4/T3 Gb

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Ex tb IIIC T100°C / T135°C / T200°C Db

-40°C ≤ Ta ≤ +85°C

IP68

Environment and process temperatures

T5 / T100°C for process temperatures ≤ +85°C and ≥ -55°C

T4 / T135°C for process temperatures ≤ +120°C and ≥ -55°C

T3 / T200°C for process temperatures ≤ +180°C and ≥ -55°C

ATEX Certificate: ExVeritas 17ATEX0301X

IECEx Certificate: IECEx EXV17.0030X

Refer to certificate for clarification of directive code and equipment protection level.

The LVCSi-FP features include:

- ATEX and IECEx approved
- Suitable for gas and dust environments
- Stainless steel 316L wetted components
- A display for direct read-out of level and temperature
- Temperature sense range up to +120C
- Two pairs of analogue outputs (4-20mA and 0-10V)
- Two set point digital outputs
- An RS485 communications port
- Reed switch or Hall Effect sensing technology.
- IP Rating of IP68
- Stem Lengths up to 6m
- Custom mounting options available.
- Optional Modbus
- Can be specified for process temperatures down to -55°C
- Optional custom name plate



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Type	Specification	
Head dimensions	110mm x 100mm x 81mm (Excluding sensor stem and cable glands/port fixings)	
Stem length	Standard sizes are from 250mm to 2000mm in 250mm increments. Custom sizes available on request.	
Level sensing resolution	5mm (reed) or 15mm (Hall-effect)	
Temperature sensing range	-40°C to +120°C	
Temperature sensing resolution	0.1°C	
Max. temperature error	< ±1.0°C over the full sensing range (subject to correct calibration)	
Current-loop output range	4-20mA (with 0mA fault indication)	Note 3
Voltage output ranges	0-10V, 0-5V, 0-2V	
Max. analogue output error	-0.3% to +1.0% full-scale (subject to correct calibration)	
Transistor output	NPN open-collector Maximum pull-up voltage of 36Vdc. Current-limited to 50mA	
Head operating temperature	-40°C to +85°C	
Stem operating temperature		
Reed LVCSi	-20°C to +120°C (standard) -55°C to +180°C (full range)	
Hall-effect LVCSi	-20°C to +80°C	
Power supply	15 – 30Vdc at 100mA	
Fuse	500mA anti-surge Omni-Blok® cartridge	
Mounting Options	½" BSP Custom options available	
Float Diameter: Specific gravity	53mm : 0.65	Other floats available
Operating Pressure	Stem and float 10 Bar standard. Up to 60bar on request	
IP rating with suitable cable gland	IP68	
Sensor tube and wetted materials	Stainless steel 316L	
Connection head material	Stainless steel 316L and glass	
Approximate weight	1.2Kg+process connector + 0.5Kg/Metre	
Maximum liquid temperature	-55°C to +85°C for T5 rated hazardous environment -55°C to +120°C for T4 rated hazardous environment -55°C to +180°C for T3 rated hazardous environment	Note 1
Maximum head temperature	-40 to +80°C	Note 2
Thread connection-Wiring port	Two M20X1.5 ports or Two ½" NPT ports, cable glands not included	

Note 1: LVCSi FP for liquids with maximum temperature above 120°C or minimum temperatures below -20°C are available – please call the sales office for assistance.

Note 2: When this equipment is intended to be used in a liquid with a process temperature above +85°C or below -40°C it is an essential requirement that the sensor head temperature is measured to determine if the ambient air temperature is sufficient to keep the head temperature between -40°C and +80°C. See installation manual for detail.

Note 3: Maximum load resistance is determined by the formula:

$$R_{load(max)} = (\text{supply Voltage} - 2V) / 20mA.$$

At maximum specified voltage and temperature, the minimum load resistance increases to approximately 500Ω

An approximate formula is:

$$R_{load(min)} = (\text{Supply voltage}) / 20mA - (150C - (\text{Ambient temperature})) / 0.04C/\Omega$$

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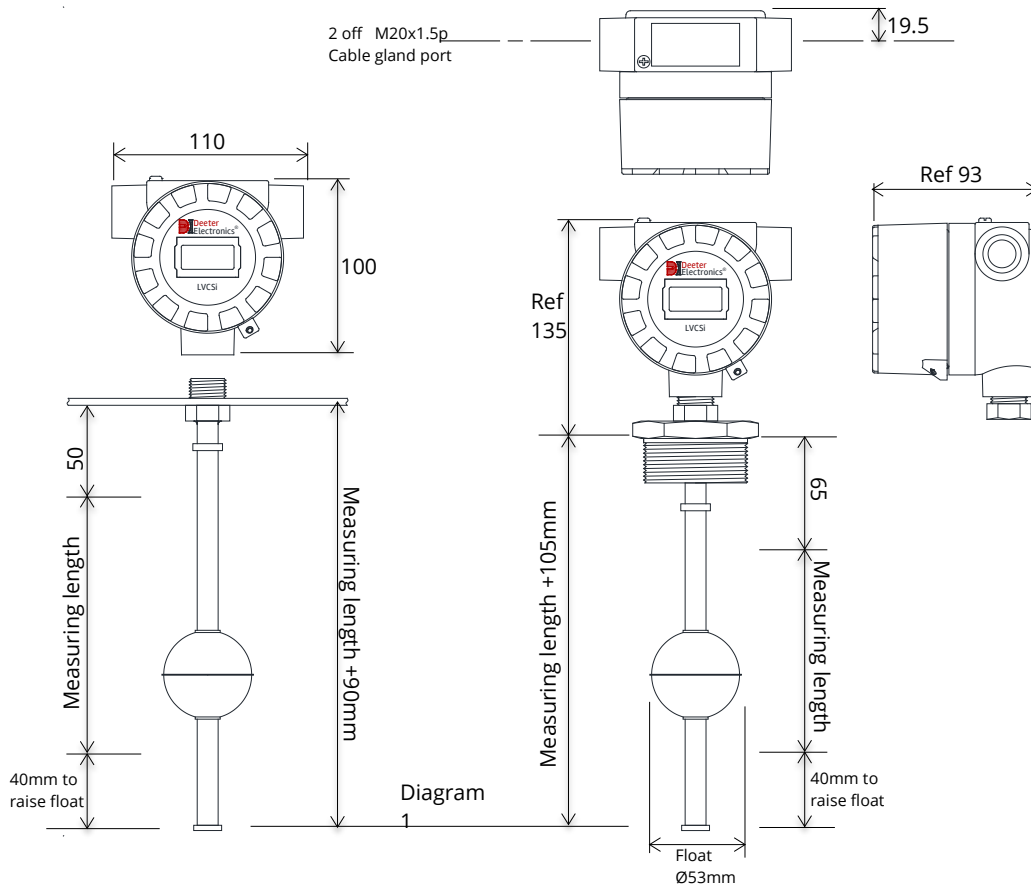
The LVCS FP and LVCSi FP range of analogue level sensors feature a magnetic float moving along a stem to provide a continuous analogue output that indicates liquid level. Sensors in the stem detects small step-changes in level and the output gives a continuous analogue signal.

The following range of user-selectable analogue outputs are supplied as standard: 0-2V, 0-5V, 0-10V and the industrial standard 4-20mA current loop. Level outputs can be inverted, ideal for level sensors mounted from the bottom of a tank.

The standard LVCSi FP is designed to fit a 21mm hole in the top of a tank, secured by its stainless steel head, and has a ½ inch NPT thread. Sensing resolution is 5mm with measuring lengths of 250mm, 500mm, 750mm and 1000mm or 15mm resolution with 1250mm, 1500mm, 1750mm and 2000mm Hall-effect sensing technology. It is housed in a robust stainless steel instrument enclosure that screws to the top of a sensor stem and has a tempered glass viewing window.

All fittings to the stem are made from 316L stainless steel and are welded to make a tough and durable sensor. The LVCSi FP is therefore ideally suited for use in food and petrochemical applications, and for use in harsh environments. It also has an IP rating of IP68.

The optional Modbus protocols allow for full remote monitoring and setup. The LVCSi FP conforms to the Modbus RTU and Modbus ASCII command and response framing standards as a slave device – please see the manual for details.

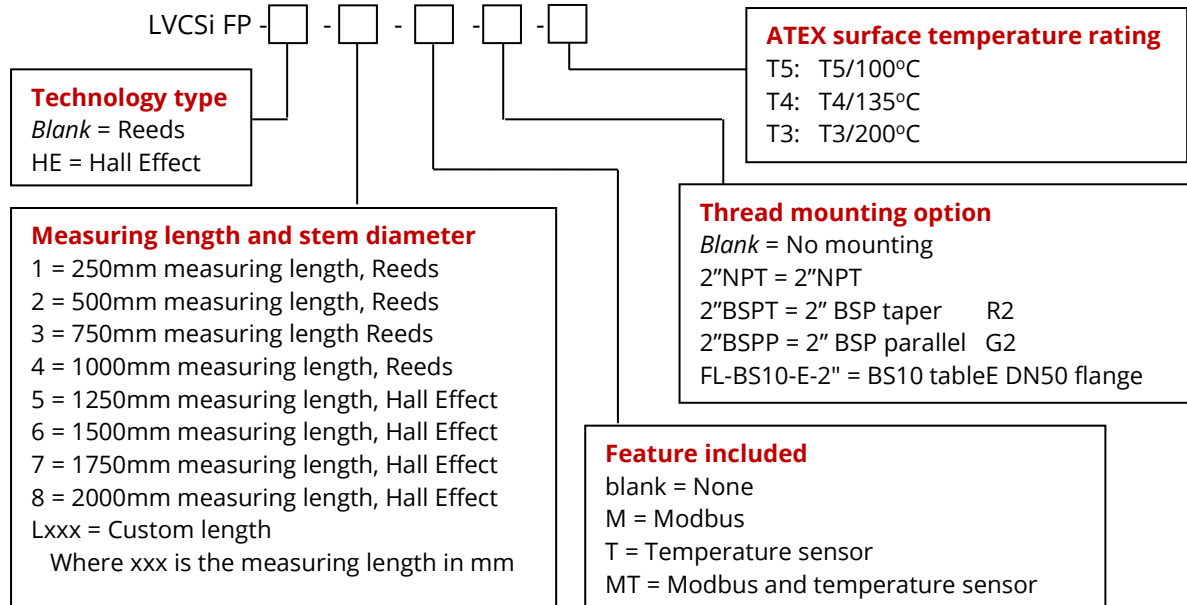


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### Ordering information

Due to the various options available please call our sales office to discuss your requirements or order from the standard part No. options below.

Options include: Probe length, Threaded mounting/seal options, Reed/Hall Effect technology, ATEX 'T' rating, non-standard float size, Output voltage, No temperature sensing, Mod bus, Custom name plate / Logo.



Upon receipt of the above information a drawing and Deeter part No. will be issued to identify the options selected. This part No. will be required when making your order.

Note: Tank depth must be at least 90mm longer than the measuring length.

Example: LVCSi FP HE-L1635-T-2"BSPT-T5 is a Flame proof liquid level sensor using Hall Effect technology. Measuring length =1635mm, Overall sensor length =1740mm, Temperature sensor included. A 2"BSP taper pipe fitting welded to the top of the stem for mounting the sensor into a tank of liquid. T5 temperature rating for liquid process temperatures between -20°C and +85°C

**All electrical equipment should be installed by a qualified/certified electrician.**

Deeter Electronics Ltd follows a policy of continual development of its products and reserves the right to change specifications and/or features without notice.

All electrical equipment should be installed by a qualified/certified person. Reed Switches are easily damaged by inductive loads. Please ensure adequate electrical protection is in place before use.