



Features and Benefits

- Suitable for a wide range of media
- Easy in-stu range adjustment
- Unaffected by pressure or vacuum

Technical Overview

The LS-CAP-1 and LS-CAP-2 are capacitance based level sensors designed for level measurement in tanks or sumps providing a 4-20mA output relating to the level of fluid in the tank.

The LS-CAP-1 is suitable for conducting liquids such as water whilst the LS-CAP-2 is designed for use with clean, low viscosity non-conducting liquids such as oil.

Product Codes

Sensors for conducting liquids

LS-CAP-1-0.5	0.5m sensor probe
LS-CAP-1-1.0	1.0m sensor probe
LS-CAP-1-1.5	1.5 sensor probe
LS-CAP-1-2.0	2.0m sensor probe
LS-CAP-1-2.5	2.5m sensor probe
LS-CAP-1-3.0	3.0m sensor probe

Sensors for non-conducting liquids

LS-CAP-2-0.5	0.5m sensor probe
LS-CAP-2-1.0	1.0m sensor probe
LS-CAP-2-1.5	1.5m sensor probe
LS-CAP-2-2.0	2.0msensor probe
LS-CAP-2-2.5	2.5m sensor probe
LS-CAP-2-3.0	3.0m sensor probe

Specification

Output	4-20mA
Supply	20Vdc – 38Vdc
Accuracy	±1.5% fs
Insertion Length	0.5 to 3m
Process Connection	1" BSP
Process Temperature	100°C Max.
Ambient Temperature	-20 to +60°C
Max. Pressure	20bar @ 20°C
Electrode Insulation	Polypropylene
Termination Housing	ABS
Electrical Connections	Screw terminals
Protection	IP65
Country of Origin	UK
Conformity	EMC, CE & UKCA Marked

WEEE Directive:



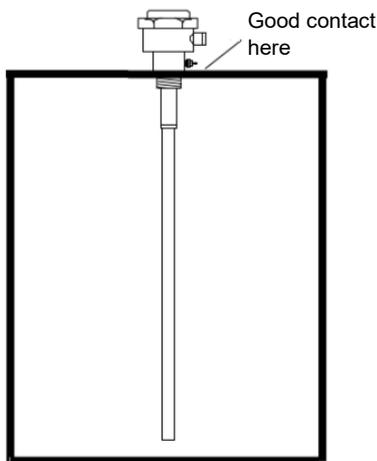
At the end of the products useful life please dispose as per the local regulations. Do not dispose of with normal household waste. Do not burn.



Installation Notes

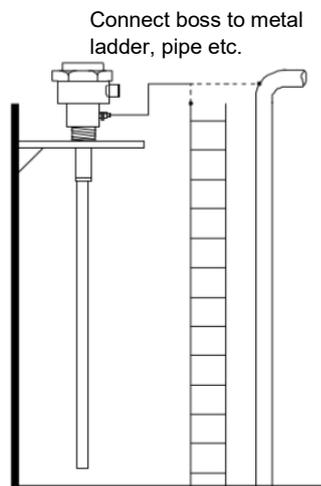
- Electrodes are supplied to specified lengths, under no circumstances they must not be cut
- Electrodes should be mounted vertically in the vessel. Where the mounting point is metal, there must be good electrical connection with electrode mounting boss.
- Where the vessel contents are Electrical Non-Conducting such as fuel or lubricating oils, hydrocarbons etc. A concentric is supplied. This type of electrode can be mounted anywhere in the vessel avoiding incoming flow and excessive turbulence. The concentric electrode can be used in either metal or non-metal vessels.
- Where the vessel contents are Electrically Conducting such as most water based liquids the electro should be mounted clear of the vessel side and away from any incoming flow. The electrode mounting boss must have good electrical contact with the contents of the vessel in order to provide the 'earthy' reference necessary for capacitance operated systems. This can be achieved using one of the following methods:
 - Mounting the electrode directly to a metal vessel (see fig 1 below).
 - Connecting the 'earth stud' of the mounting boss to existing metal in the vessel providing this extends down below the tip of the electrode. This may be a pipe or metal ladder etc. (see fig 2 below).
 - The concentric Electrode having an insulated inner electrode has an outer sleeve extending from the boss and is therefore complete in itself (see fig 3 below).
 - For turbulent conditions it may be necessary to mount the electrode within a stilling pipe. If the pipe is metal it must be connected to the electrode mounting boss. If the pipe is plastic an earthing wire must be used down the length of the pipe and connected to the mounting boss.

FIG 1.



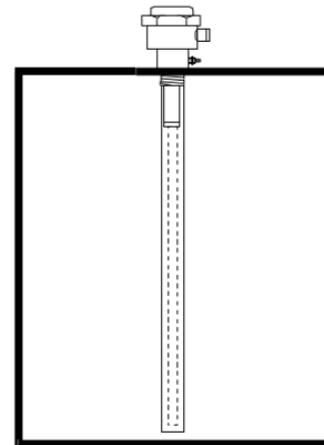
Metal tank

FIG 2.



Concrete sump

FIG 3.



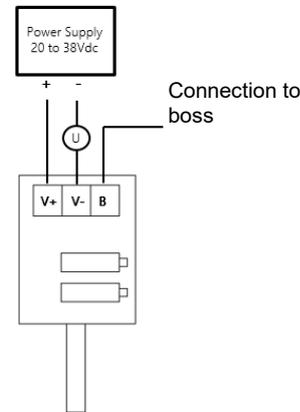
Plastic tank

Installation

1. Fit a 1" BSP boss to the tank, when selecting the probe length consideration should be taken that the base of the probe is more than 25mm from the bottom of the tank.
2. Unscrew and remove the cover then pass the power/signal cable through the cable gland and make the electrical connections as required.
3. Taking care to observe polarity, as incorrect connection will damage the level sensor.
4. With some slack inside the housing, fully tighten the cable gland to ensure IP integrity.

- A multi-meter suitable for measuring a 4-20mA signal should be connected in series with the V- terminal at the electrode terminating head.

Note that zero and span potentiometers require 15 turns for full travel of the wiper. Due to a slipping clutch, end of travel can only be confirmed by observing the position of the Red wiper through the transparent side of the housing. The Red wiper is at the top when full clockwise.



- With the vessel empty the SPAN adjustment should be turned fully clockwise. The ZERO adjustment should then be adjusted to obtain a reading of 4.00mA Turn the ZERO anti-clockwise to decrease the reading - clockwise to increase.

Note the zero can be set with the electrode withdrawn from a full vessel after allowing the electrode to drain.

- Fill the vessel to full level and turn the SPAN adjustment anticlockwise until a reading of 20.0mA is obtain - clockwise rotation to increase.

Note that due to the range of adjustment available and a 'current clamp' circuit at approximately 25mA, it can take many turns to bring the reading into the 4-20mA range.

- Replace the sensor cover.

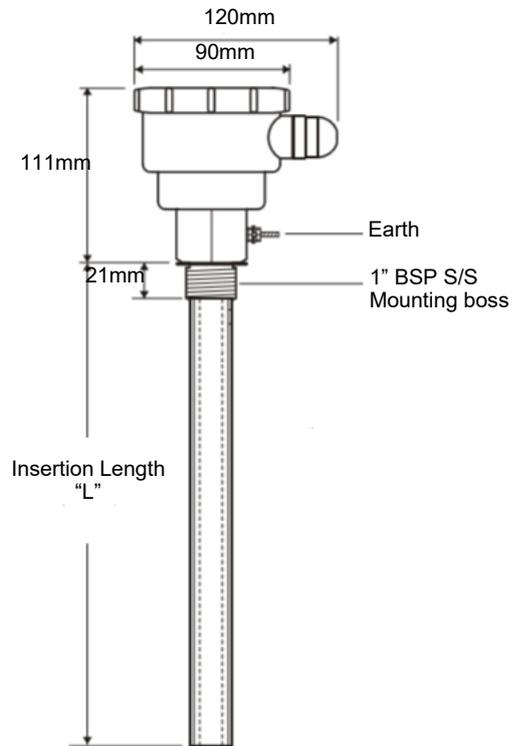
Maintenance & Fault Finding:

- Having no moving parts, LS-CAP systems are generally trouble free. Routine maintenance is limited to an occasional check that the electrode is not fouled. Malfunction can often be traced to:
 - Material clinging to the electrode rod
 - Moisture in the terminating head due to poor cable seal or cap not being secure
 - Damage to the plastic sheath of the insulated electrodes

First line fault finding

- Check voltage across V+V-. This should be in excess of 15 Volts when current output is 20mA.
- Check the mounting boss has good electrical connection with the vessel contents
- Unplug the LS-CAP module and check there is no leakage path between the electrode rod and the mounting boss/earth. Readings below 5 meg ohms should be investigated

Dimensions:



Whilst every effort has been made to ensure the accuracy of this specification, Sontay cannot accept responsibility for damage, injury, loss or expense resulting from errors or omissions. In the interest of technical improvement, this specification may be altered without notice.

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