Sensor Co.,LTD

PRODUCT OVERVIEW

LEVEL MEASUREMENT

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LC22 Series Capacitance Fuel Tank Level Sensors/Probes

(Cut off probe by customers is available!)

Characters:

☆Accuracy: ≤±0.5%F.S.
☆ High stability and reliability
☆High resolution up to 1 mm
☆Precise linear and temperature compensation
☆ ZERO and RANGE self- calibration
☆Adjustable damp output time
☆ Strong interference & shock resistance
☆Surge, over-current and polarity resistant design
☆Applicable for various non-conductive liquids

Applications:

★ Diesel Tank Level Measurement
★ Gasoline level measurement
★ Kerosene level measurement
★ Biodiesel level measurement
★ Industry Process Level Measurement
★ Auto, truck fuel tank level measurement
★ Rooter, railway engine, tanker oil and fuel level measurement
★ Other non-conductive liquid level measurement

Ⅰ. Profiles:

LC22 capacitance liquid-level sensor is the customized sensor meter for precise measuring of the oil level of automobile oil tanks, tankers, locomotives and oil depots, etc.

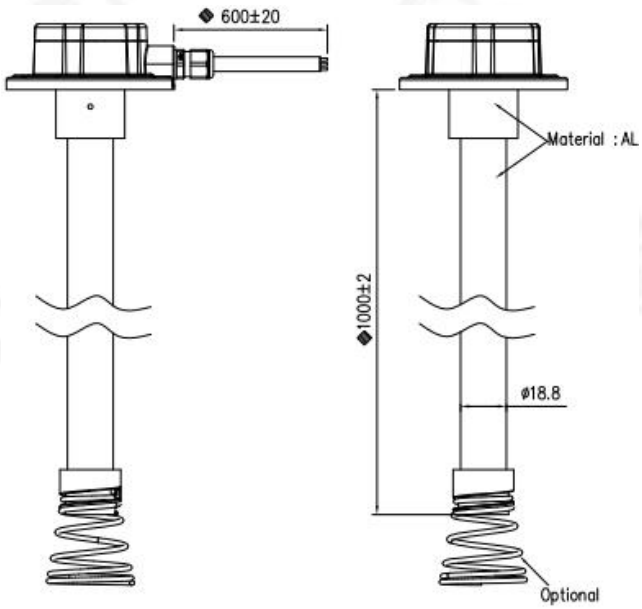
The whole sensor is free of any mobile or elastic part and is featured with the good impact resistance, convenient installation, high reliability, high precision, and stable performance. It can not only be installed on various occasions requiring precise level measuring of gasoline, diesel and hydraulic oil, etc, but also be Application for measuring of various non-conductive liquids.

In addition, it can be cut off probe length according customers requirements and calibrator will renew calibration sensor well for signal output.

Ⅱ. Specifications:

Item	LC22 Series			
Pressure Range	0-200 mm~1500 (mm) optional			
Resolution	1 mm (standard) or 0.1mm by customized			
Blind zone	10 mm			
Probe Diameter	Φ 18.8 mm			
Overload	Atmosphere pressure or Max 6 Bar			
Accuracy (Linearity; Hysteresis; Repeatability)	±2.0%F.S standard			
Stability	Standard: 0.1%F.S/1 year, Max: 0.15%F.S/year			
Working Temp	-40°C to +85°C			
Storage Temp	-40°C to +85°C			
Medium compatible	Diesel, gasoline and others fuels compatible with the aluminum alloy			
Output	4-20mA	0-5V	0-10V	RS485
Power Supply	10-32 V DC	10-32 V DC	15-28 V DC	5 V DC/12V DC optional
Zero Temperature Drift	0.05%/20°C			
Max working current	<15 mA			
Electronic connection	Cable-out			
Process connect port	5 holes SAE flanges			
Certificate approve	CE Certificate			
Response time	First time starting time≈2s; working status≤200 ms			

Ⅲ. Calibrator introduction



Calibrator must couple with the sensor, and it has 12V/ 23A battery inside.
Red light is the power light. If the light isn't on when switch on, battery replacement is needed;
Green light is the calibration light. Full/ Empty button is showed in above picture.

Note: Calibration is necessary before using the sensor due to different fuel types. Calibrator battery power could only used for roughly 15 times. Please change the battery when the red light becomes dark, indicating low battery

Ⅳ. Electronic Connections

1. Adjustment of sensor length

Aluminum tube at the bottom can be shorten according to different requirements from customers. Steps are as follows:

1.1 Customer specifies the sensor length according to the needs;
1.2 Cut the unwanted part with steel saw;
1.3 Remove the burrs and the debris at the cutting area with knife file to avoid short circuit;
1.4 Remove the plug, and assemble the rubber plug in the aluminum tube, then assemble the plastic bottom plug.

2. Calibration of the fuel level sensor

Calibration of the fuel sensor is calibration of the full level and empty level. The fundamental principle is to record a full value and empty value in the fuel sensor when tank is full and empty; The purpose is to define the position level of the fuel when it is full and empty in the tank. The electrical signal changes as the fuel level changes, calculating the height of the fuel level.

Note: When the fuel sensor is shortened, it needs to be calibrated. Calibration to empty level and full level is related to the medium and the liquid level, instead of volume of the tank; this operation can be operated in room (make a container, simulate a full fuel tank by filling the container full). First, calibrate full level, then the empty level, or else the sensor could not enter the setting mode.

2.1 Calibration of full level

Fill the tank to desired full level, put sensor into the tank, wait for about 30 seconds until the aluminum tube of the sensor is filled with fuel, then press and hold on to the "F" button on the calibrator for 5 seconds till the green LED light slowly flickers.

This indicates that calibration for full level is in progress. Release the "F" button at this moment. The green LED light will turn off in about 10 seconds,indicating that the calibration of the full level is complete.

2.2 Calibration of the empty level

Remove sensor from the container/tank. Place on the side. After liquid fully drains from the sensor, press and hold on to the “E" button for about 5 seconds until the green LED light starts to flicker fast. This indicates that calibration for empty level is in progress. Release the "E" button at this moment. The green LED light will turn off after about 10 seconds, indicating that calibration of the empty level is complete.

2.3 Calibration completion

Disconnect the calibrator after calibration is done. Connect red cable and black cable with power, calibration becomes effective when sensor is power on.

Note:

1. If press the wrong button during operation, you can switch off the calibrator and exit the mode and readjust.
2. Please ensure the calibrator is turned on at all times during calibration.

Re-calibrate the sensor if power off/switch off.

2.4 Inspection

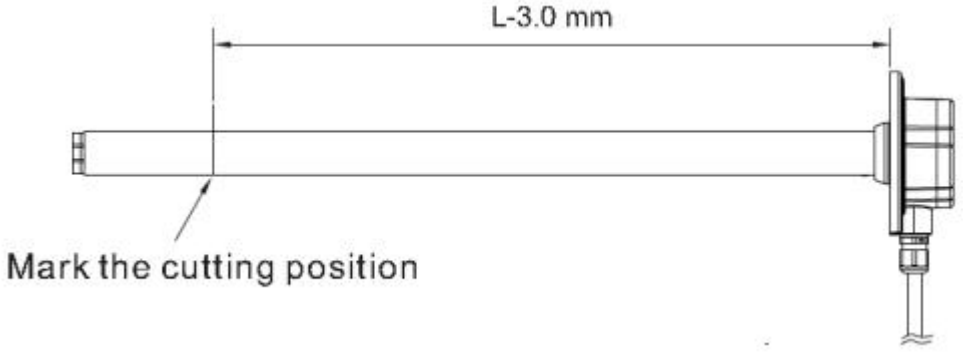
When calibration of the full level and empty level is done, inspect the output signal of the sensor:
(RS232/RS485 output needs special equipment or connect with GPS tracker to inspect the signal output.)

If the output signal meets the values listed above, it means calibration is OK and normal operation of the sensor. Otherwise, please check the mode of connection and re-calibrate it.

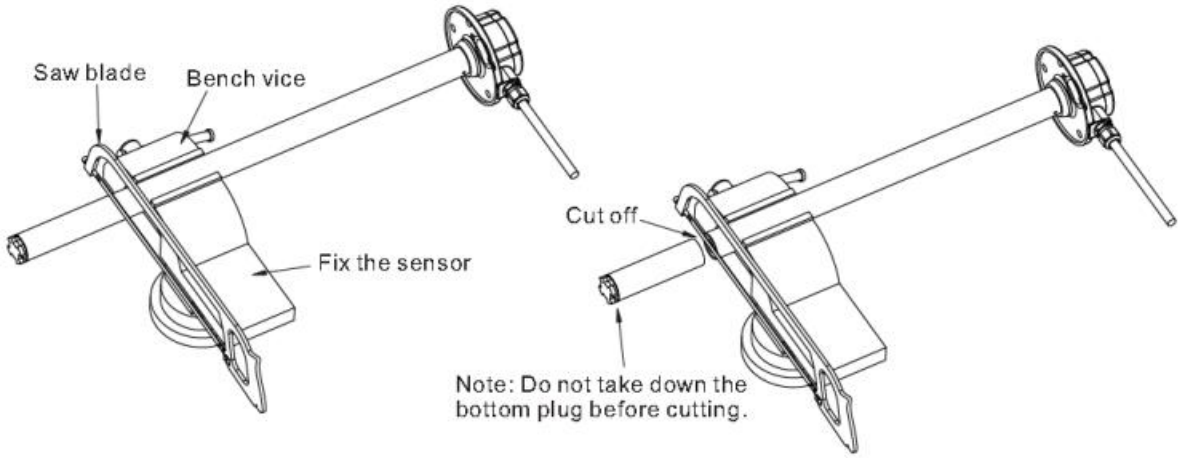
V out	Full	1/2 Level	Empty
0~5V	5V	2. 5V	0V
0.5~4.5V	4.5V	2. 5V	0.5V
0~3.3V	3.3V	1. 65V	0V

Schematic diagram of sensor cutting

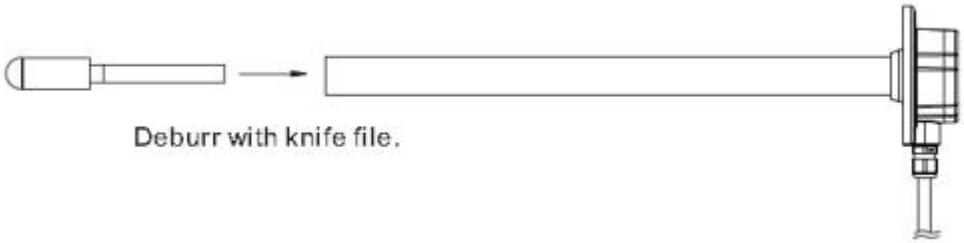
1. For example, if you want to cut the sensor length to L, then dimension of the cutting position is L-3.0 mm.



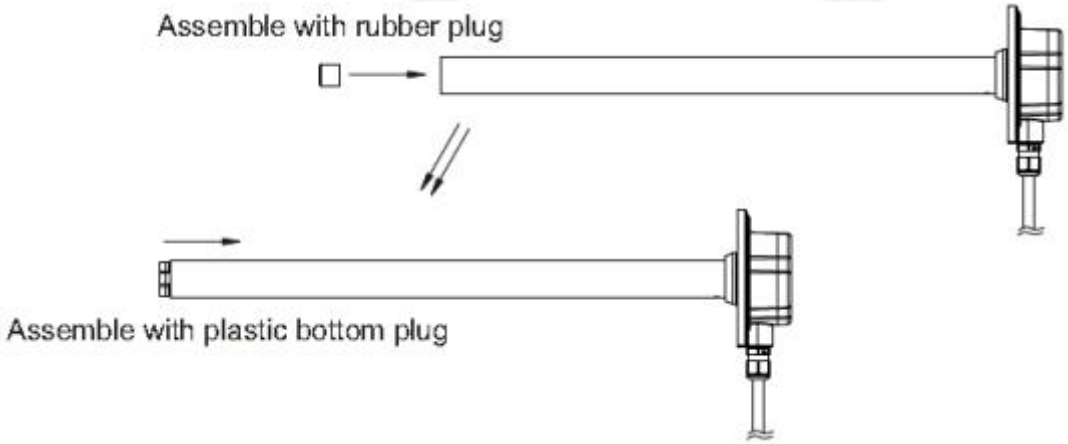
2. Fix the sensor with proper force, too big force will cause deformation of the casing tube.



3. Note: Inside of the tube should keep clean, burrs dropped into the tube must be cleaned, or else, there is a risk of blocking
the oil drainage hole.



4. Note: When reassemble the bottom plug, ensure the rubber cover in the plug is not damaged. Assemble the rubber cover before assembling the bottom plug



V. Part Number Selection Table:

	001	0-100mm	009	0-900mm	
	002	0-200mm	010	0-1000mm	
	003	0-300mm	011	0-1100mm	
	004	0-400mm	012	0-1200mm	
	005	0-500mm	013	0-1300mm	
	006	0-600m	014	0-1400mm	
	007	0-700mm	015	0-1500mm	
	008	0-800mm	X	By customized	

VI. Order Information

Selection / P/N	LC22	E5	4	015	2	D	S39	000	0
Signal Output	E5=4-20 mA(2 wires) E6=0-5 V(3 wires) E7=0-10 V (3 wire) E11= RS485 MODBUS RTU E12=RS232 MODBUS RTU								
Process connection	4=5 holes SAE flanges X=Customized								
Level Range	Pls select from the Part Number Selection Table								
Measured Medium	1=Water 2=Gasoline 3=Diesel 4=other liquids by customized								
Probe Diameter	D=18.8mm (standard type)								
Power Supply	S5=12V DC(for E11/E12) S6=5V DC (for E11/E12) S39=10-32 V DC (for E5/E6) S30=15-28V DC (for E5/E6/E7)								
Cable Length	000=Non-Cable	001= Cable 0.6m	X= By Customized						
Working Pressure	0=Atmosphere Pressure	X=Max 6 bar							