

Ultrasonic Fuel Sensor

1 Introduction

1.1 Specifications

Working voltage	9-36V
Max no-load current	3 mA
Maximum power consumption	0.8W/12V DC
Working temperature	-45 + 80 °C
Working humidity	5%~90%
Interface	V-out: 0.08-5.0V, Digital: RS232
Measure range	5mm thick steel, 5--100CM
Sensor head IP	IP66
Control box IP	IP61
Liquid measurement accuracy	±0.5%
Pressure scope	≤0.8kg or 0.8MPa
Device output	RS232, Analog voltage, RS485
Communication port parameters	Baud rate default as 9600. No check bit, 8-digit data, 1-digit stop bit and no fluid control. Data transmission at every 10 secs after smoothing process.

1.2 Descriptions

Ultrasonic fuel sensor is used to monitor fuel level height, mainly including

Control box 1pcs

Sensor head 1pcs

Extension ire (9M) 1pcs

Power/ interface/ signal wires 1pcs



Control Box



Extension wire and sensor



Interface wire

1.3 Features

1.High accuracy. The measurement resolution of oil level is 0.1mm, and it will automatically adjust temperature from -40 °C and 85 °C to ensure stable performance in both high and low

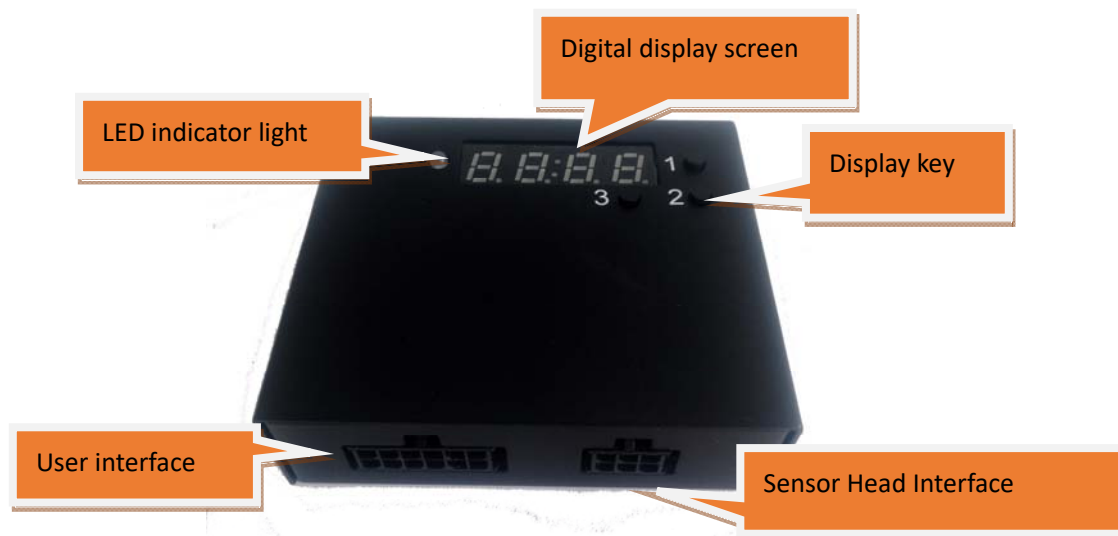
temperature environment.

2.High stability. Ultrasonic non-contact measurement avoids sensor corrosion, which is a shortcoming for normal float, pressure type sensor.

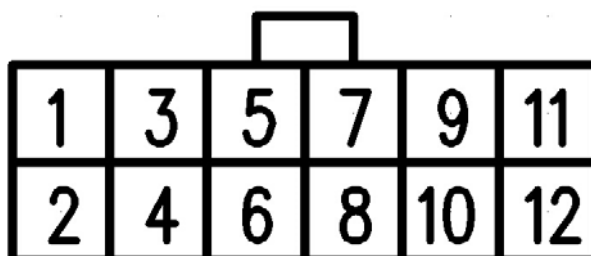
3.Easy installation. Ultrasonic sensor is installed below tank, no need to change or drill, and avoid fuel leaking.

4.Strong reliability. Moisture proof, acid proofing, antiriot, anti-flaming, quake-proof

1.4 Wires and interfaces



User Interface Definition



Pin position	Function	Color	Description
1	Positive	Red	9~36VDC (Long wire)
2	Negative	Black	Long wire
3	TX		RS232 transmitting terminal
4	RX		RS232 receiving terminal
5	B		RS232 transmitting terminal RS485 B
6	A		RS485 A
7	NC		Reserved
8	NC		Reserved
9	AOUT	Green	Analog voltage output
10	GND		Reference ground
11	NC		Reserved
12	NC		Reserved

LED Light Definition

Green On	Ok
Red On	Abnormal, sensor is not connected or drops off.

Key Definition



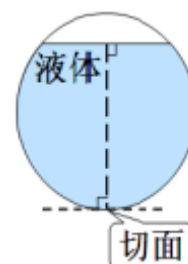
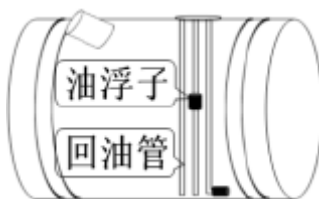
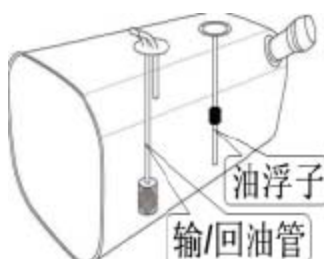
Above shows current fuel level height is 285.2mm

2 Actual oil quantity and installation environment contraction

1. Oil level prediction: Judge the approximate oil level height of the fuel tank by checking oil meter of the vehicle or use long and thin wire after opening the tank cover, take a record (for example, the prediction is about 300mm).
2. Before installing on the vehicle, ensure that the vehicle stops at horizontal ground and the oil tank is placed on frame horizontally (with the help of gradienter).

3 Seek installation area

1. The installation area of probe should avoid the oil filler, oil outlet, oil return pipe, oil float and baffle, etc. Select the flat part at oil tank bottom or close to the central area as possible (see the following figure for the internal structure of the oil tank).
2. For circular oil tank, in addition to avoiding the barrier, the tangent plane closest to the ground should be selected.



4 Confirm Installation Position

1. Connect the main body of the sensor with user interface line, extension line, probe connection line properly and power on. The liquid level is displayed 000.0 at the moment.
2. Clean the area where the oil tank is installed.
3. Apply coupling agent on probe surface. Press the probe at the selected installation position.

The display of the main body displays the currently measured liquid level (shown in the figure below).



4. Hold down “key 1” in the figure below for more than 8 seconds and release it to enter input state of total oil tank height. F060 in the figure below means that total height of the oil tank is 60cm. Press “key 2” to increase and press “key 3” to decrease. Hold down “key 1” for 8 second to confirm the parameters.



5. After total height of the oil tank is put properly, it enters the input state for current liquid level of the oil tank. E030 in the figure below means that current liquid level height is 30cm. Press “key 2” to increase and press “key 3” to decrease. (When it is difficult to determine the current liquid level in the oil tank, it may not input. Hold down “key 1” more than 8 seconds to skip).



6. After the current liquid level of the oil tank is put properly, press “key 1” more than 8 seconds to enter the automatic adjustment state of oil tank signal strength. At the moment, you may observe whether the displayed height on the display screen is consistent with actual oil level (for example, the predicted level is about 300mm and displayed 285.2mm). If the display screen displays 000.0 or the displayed height is quite different from the actual condition, the probe may be moved slightly or grind the oil tank wall more. In addition, the buzzer in the equipment sounds continuously (if the buzzer sounds on and off or does not sound, it needs to seek the installation point or grind the oil tank wall more until **the buzzer make continuous sound**). At the moment, hold down “key 1” in the right figure more than 8 seconds to complete search and test of installation point.



5 Fix sensor head

1. If the location where the probe is pasted at the oil tank bottom still has paint, it is necessary to grind the paint away with sandpaper at the pasting position. Wipe away the oil stain and water to keep the surface dry and clean.
2. Use glue to paste: Use a screwdriver to squeeze component A and component B glue of a graduation and drop them on the probe center. Stir even quickly. The higher the temperature is, the faster the curing speed is. If the temperature is lower than 8°C, it is necessary to preheat the probe surface before glue is dropped. Paste the probe at the installation location along the direction of vehicle frame. After

confirming that the displayed height is correct compared with the actual liquid level and stable (if it is not correct, take off the probe immediately. Wipe dry the glue on oil tank bottom and probe. Select another position beside to paste until the stable pasting position with correct height is found). Press the probe continuously for more than 5 minutes to make the glue cure initially. Use long ribbon to bind the probe and fix it well with proper tightness.

After the probe is fixed, please make confirmation again whether height of the display screen is consistent with the oil level of the residual oil.



6 Wiring

1. Arrange the extension line into the cab. Wiring should follow the crossbeam of the vehicle at the time of wiring. It should not affect the original self unloading hopper, head repair, etc and other original functions.
2. The extension line should be away from the vehicle's motor to avoid producing electromagnetic interference produced by the motor.
3. The terminal of the probe line and extension line should be convolved properly to prevent falling off.
4. The extension line should be at least 20cm distance to the heating parts of the vehicle. Fixing ribbon is used to fix the extension line every 50cm. Arrange the wire at the installation position of the vehicle reasonably.

7 Connect sensor to GPS Tracker

1. Disconnect with the power supply and fix the main body at the position close to GPS (where water leakage will not occur) and fix it properly;

2. The red and black wire of interface wires is connected to the public power supply of the vehicle with red wire connecting the positive role and black wire connecting the negative pole.

Connect Ultrasonic fuel sensor to GPS Tracker UT04

Find the **green wire of sensor** and **purple wire of tracker**, connect them together, other useless wires, insulate them.