GXUS 2500 Ultrasonic Fuel Level Sensor User manual

1. Product Overview

Products adopt is imported from overseas non-contact measurement ultrasonic transducer technology, widely used in detecting displacement, thickness, distance, fuel level, material level, and transparency, suitable for measuring of liquid level, gaseous media and volume.

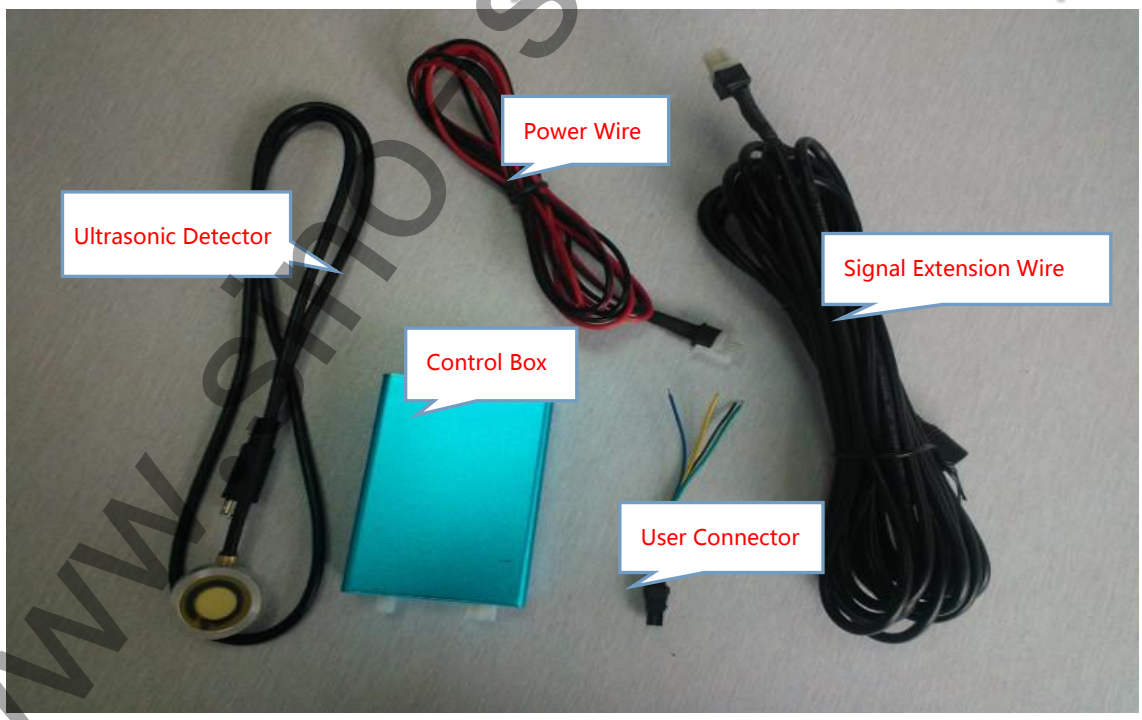
2. Product Introduction

2.1, Product Component

Ultrasonic sensor detector and signal control box two parts (See picture1 and picture2)

Picture 1: Ultrasonic sensor detector

Picture 2: Signal control box



2.2, Technical Parameters

Working Voltage:	5-36V 50mA
Working Temperature	-40℃ - 80℃
Measurement Range	2cm-99cm(customize MAX 2.5M)
Pressure Range	-0.1MPa~32MPa

Level Height Accuracy	3mm
Level Measurement Accuracy	Technical 0.1L/Practical 0.8L
Working Environment	Moisture-proof(detector), acid-proof(detector), anti-interference, anti-explosion(detector), flame retardant(detector), anti-seismic(detector)
Anti-explosion Rate	Intrinsic Safety Exia Ⅱ CT6; flameproof Exd Ⅱ CT5
Protection Rate	IP66(detector) IP61 (detector)
Device interface	This device provides a voltage analogue output port, RS232 data port.
Voltage sampling port	Output voltage range: 0.10-6.0V. Computational formula for actual liquid level and voltage output: 1311.3*Vx+176(unit 0.1mm).
RS232 port	The default baud rate 19,200, each 10S interval sensors measured fluid level in real time (unit 0.1mm), temperature (unit 0.1℃). Baud rate according to user needs to modify, and transmit data time interval.
Connection	Yellow wire: connect RS232 output port of GPS tracker; Blue wire: connect RS232 input port of GPS tracker; Green wire: connect analog wire of GPS tracker; Black wire: connect earth

2.3，Product Feature

1. High accuracy: the resolution of the measurement of oil level height is 0.2 mm, Level Height Accuracy is 3 mm, at the same time temperature correction between -40℃ and 80℃, ensure that the equipment under the external environment of high temperature and cold, can guarantee higher accuracy;

2. Good long-term stability: fuel sensor adopt the method of ultrasonic measurement, a non-contact measurement, different from the current widely used direct contact of the float type, pressure type, magnetic sliding method, so as to avoid corrosion and pollution by fuel, and keep the long-term stability of the measurement;

3. Easy installation and maintenance: only need to install the sensor below the external tank, don’ t need change the original tank measuring system, don't need to make hole and change oil tank, and make sure the normal operation of the original car oil gauge;

4. Environmental protection no pollution, little energy consumption, non-contact measurement, don't need to make hole or tank modification cause to oil dirt and contamination.

5. Strong reliability: still work normally under the harsh environment, moistureproof, acid proof, flame retardant, anti-interference, and intelligent. This product can be used separately through data screen view directly, also be used with GPS devices, through the GPS device to transmit data to the server for data statistics, analysis and query statements.

2.4, Application Range

The product is geared to all kinds of vehicles, such as (logistics cars, taxis, buses, commuter trains, etc.), to digital records vehicle refueling, the fuel situation, prevent the oil theft, avoid the waste of resources, improve operating efficiency, and traffic safety, strengthen the operation management of high-tech products.

2.5, Advantage Compare

1. Capacitance: Easily affected by the oil produce error; Do not produce electric spark; Punching installation.

2. Resistance-type: Mechanical measurement, error and lag, easy to corrosion, pollution because of long-term contact with oil , affect the accuracy of measurement, installation must be punched the tank.

3. Flowmeter type: Need to truncate the oil tube, inability to measure the amount of fuel charge, can only measure the usage amount, inconvenient calculation and management.

4. Reed pipe type: Low output accuracy; big effect by the measurement media and power voltage fluctuation of temperature; Components easy to magnetization; Measurement data are greatly influenced by fluctuations in the oil level and oil pollution, can' t not make field fabrication installation according to the height of the fuel tank .

5. Float type: the fuel can only be used for fuzzy instructions, cannot be used for oil metering, level of oil pollution of thin film resistance, power supply voltage, the mechanical structure, lubricity, etc., the reason of product itself, make larger influence on the long-term stability of the output value.

6. Ultrasonic type: using the non-contact ultrasonic measuring technology, high measuring accuracy, resistant to corrosion, anti-pollution, anti-explosion, easy installation, high stability, wide application.

3. Production Installation

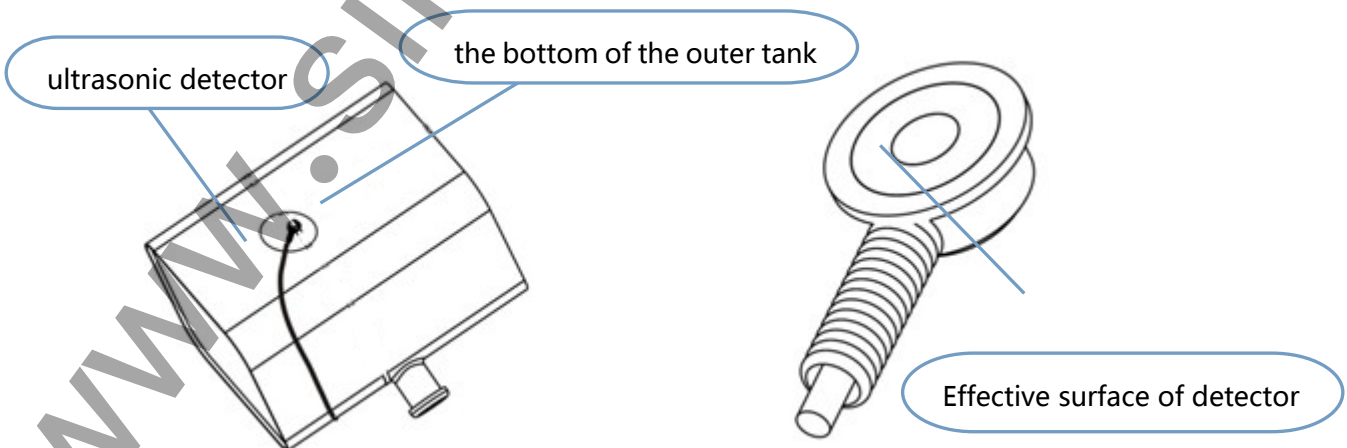
3.1, Part List

1. Signal control box: one pc
2. Ultrasonic detector: one pc
3. Power wire: one pc
4. Signal Extension Wire: one pc
5. User Connector: one set

3.2, Installation Tools Preparation

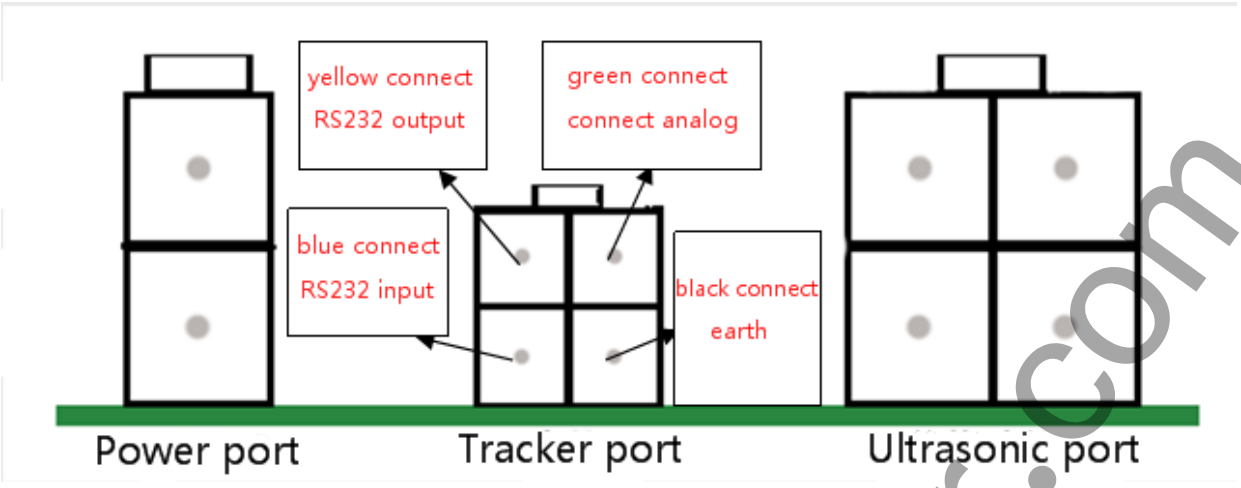
Complete set device, glue, cable tie, fine abrasive paper (500, 1000, 2000 size each one) , rags, a pail of water, ultrasonic complants, the multimeter, vehicle screw remove and installation tool and so on

3.3, Installation Diagram



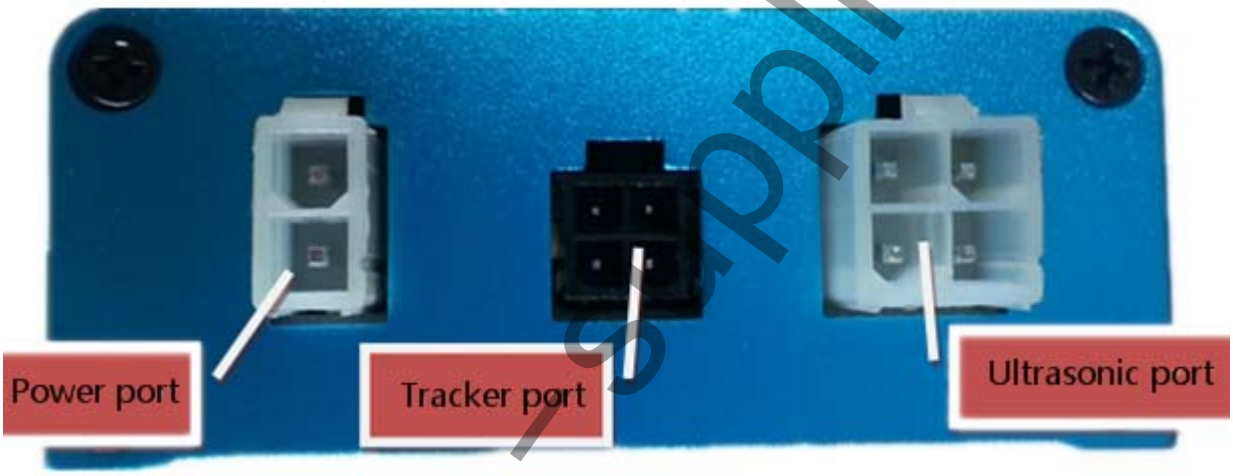
Picture 3

Installation Diagram of Detector



Picture 4

Installation Diagram of Signal Control Box



3.4, Installation Instructions

1, The related vehicle for the ultrasonic sensor installation should be packed on the flat ground, in one stationary situation. Just to ensure the fuel tank is vertical and parallel to the ground. During the installation, the rest fuel in the tank should not be less than 1/4 of the full capacity. In order to make the measurement more accurate by the ultrasonic sensor, there should be one flat place at the bottom of the fuel tank.

2, Choose one flat position for the contact surface between sensor and tank from the center of the tank bottom, and clean the dirt, sand on it to ensure the contact surface be smooth and flat. For the steel fuel tank, the surface paint on the position for the sensor should be removed by the sand paper(Ensure the smooth surface after rubbing by the sand paper). Above the chosen position, there should be no separated parts and other accessories, so the position near to the fuel plug hole is generally selected.

3, Spreading the couplant over the sensor effective surface, ensuring that it doesn’ t contain any bubbles, then make it closely integrated with the chosen position on the fuel tank. After it, connecting the data processing box with the electricity, using the DC level on the multimeter to test the Voltage analog line on the processing box to see whether there is the stable voltage output, and the voltage range is from 0.1V to 6.0V, and the higher fuel level that the bigger voltage is. If there is no voltage value or the value is not normal, then please back to the 2nd step to choose the new position

4, Clean the couplant on the sensor effective surface and tank metal contact surface, and spread one layer of glue over the effective surface sensor, also cannot contain bubbles. After it, press the sensor probe

into the tank bottom (not too strong), which is tightly closed to the contact surface. Use a multimeter to measure whether the voltage signal is normal or not. if the signal is not normal, separate the sensor with the tank sooner. If the Signal is normal, keep pressing for 6-10 minutes until the glue preliminary curing

5, After the Glue solidification, re-measured voltage from the analog line voltage should be between 0.1 - 6.0V

6, The processing box should be installed in one friendly position to the driver. The power supply is connected with the vehicle battery, seriport or analog line, GND line is connected to the external device like GSM, GPS device, refer to the pic. 4

7. After the installation, please restart the whole set.

3.5, Attention

1, Signal extension line should be wrapped in one layer of protective sleeve, such as heat shrinkable tube, casing.. The wiring should be along the vehicle frame or the original wiring position. The extension line should have at least 20cm distance with the vehicle heating part. The extension line should be bound every 50cm

2, If necessary, it is allowed to lengthen the extension line, but the total length of the extension line should be no more than 15 meters

3, Red line connect positive of car battery, black line connect negative

4. Guarantee

1, One year warranty: repair, replacement and refund; free repair during warranty period, Lifelong maintenance.

2, During the warranty period, repair cause to freight cost paid by the sender.