

ASUF103 & ASUF104 Bluetooth Ultrasonic Fuel Level Sensor User Guide



Change History

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1 Copyright and Disclaimer

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2 Product Introduction

The new generation of the Bluetooth all-in-one ultrasonic fuel level sensor uses the ultrasonic reflection feature to detect the fuel level without drilling holes. With a plastic outer case, the device is resistant to strong acids, corrosion, shock, and high temperatures (300°C to 400°C). It is equipped with an internal low-power Bluetooth module, a RS232 serial port, and an analog port to output the fuel level.

2.1 Product Functions

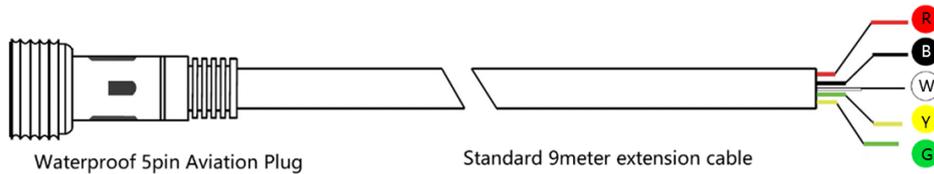
- ✓ Measure the fuel level of a vehicle.
- ✓ Detect a high fuel level alert.
- ✓ Detect a low fuel level alert.
- ✓ Detect a fuel filling alert and a fuel theft alert.

2.2 Product Specifications

Item	Specifications
Operating voltage	9–36 V DC
Power consumption	80 mA/12 V DC
Dimension	39 mm x 19.5 mm (Diameter x Height)
Operating temperature	-40°C to 80°C
Storage temperature	-40°C to 80°C
Operating humidity	0%–95%
Measuring range	ASUF103: 3–100 cm ASUF104: 3–250 cm
Maximum tank thickness	12 mm
Fuel tank supported	Regular or irregular metal, steel, aluminum alloy, and plastic fuel tank
Measuring accuracy	±0.5%
Measuring resolution	0.1 mm
Water resistance rating	IP68
Interface	RS232 serial port

Bluetooth	Bluetooth 5.0. Users can log in to the FuelGuard app to configure fuel tank parameters and check the status of the fuel level sensor.
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2.3 Cable Definition



Cable Color	Definition	Description
Red	Positive charge of the power (9–36 V DC)	If it is connected to the vehicle battery, a fuse is required.
Black	Power GND or RS232 GND	It is connected to some servers.
Yellow	RS232-Tx: signal output	It is connected to RS232-Rx of a vehicle tracker or a MDVR.
White	RS232-Rx: signal receiving	It is connected to RS232-Tx of a vehicle tracker or a MDVR.
Green	Analog output (0–5 V)	It is connected to the fuel level sensor interface of a vehicle tracker or a MDVR.

2.4 LED Indicator



LED Indicator Status	
LED Indicator Color	Description
Red (Blink)	No fuel level signal is detected, or the signal strength is weak.
Green (Steady on)	A fuel level signal is stable, and this place can be used to install the sensor.
Yellow (Steady on)	The firmware is being upgraded.

3 Product Materials

Standard Accessory	Quantity	Picture	Description
Probe (integrated type)	1		Probe diameter: 39 mm Probe height: 19.5 mm Outer case material: engineering plastics Connector: water-resistant 5-pin gold-plated aviation plug

9-meter extension cable	1		Extension cable
Sandpaper	2		Used to clean the bottom of the fuel tank.
304 stainless steel cable tie	1		Used to fasten the probe.
Rubber pad	5		Used to stick on to the probe.
connect cable	1		4pin RS232 cable, Connect device cables through the RS232 port.
Cable tie hoop	1		Adjust the stainless steel cable tie.
Thin cable tie	10		Used to fasten the extension cable.

Optional accessories: Please purchase it by yourself because we cannot deliver it to you.

Optional Accessory	Picture	Description
Silicone grease		It is applied on the surface of the probe to exclude air.(coupling agent or butter grease can be used instead)
AB glue		Used to fix the probe on to the fuel tank. (Recommended brand Aradite, curing time 5 minutes)

4 Installation

Users can perform the following operations to install the sensor:

1. Select a proper place to install the sensor.
2. Install the sensor.
3. Connect the sensor to a vehicle tracker or a MDVR.

For details about how to install the sensor, see the following instructions.

4.1 Installing the Sensor

4.1.1 Downloading the FuelGuard App

On the FuelGuard app, users can check parameters of the sensor before it is installed, so as to select a proper place to install the probe. The app supports the Android system only. Users can download the app by scanning the following QR code:



4.1.2 Checking the Fuel Level of the Fuel Tank

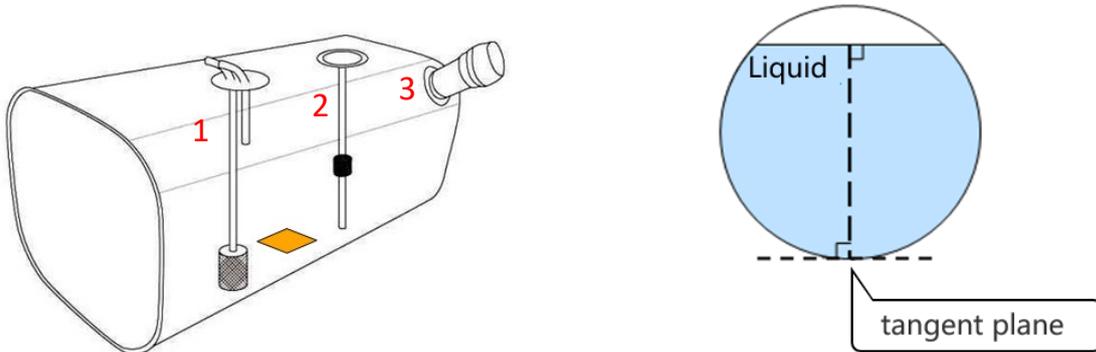
Prior to the installation, keep the fuel tank at least half full and park the vehicle on level ground. Knock the fuel tank to determine the fuel level.

When there is fuel in the fuel tank, you can hear a muffled sound. When there is no fuel in the fuel tank, it sounds clear. At the meantime, you can open the fuel tank and check the fuel level. You can use any of the preceding ways to determine whether the fuel tank is half full and estimate the fuel level.



4.1.3 Confirming the Installation Location of the Probe

When sticking the probe, keep it away from the fuel inlet and float. As shown in the following figure on the left, the yellow area is suitable to install the probe. If the fuel tank is cylindrical, choose the area that is closest to the ground such as the section shown in the following figure on the right. Clean up the dirt and oil stain in the probe installation area, and keep the area dry.



Connect the probe to the extension cable, arrange the extension cable in the cab, and connect the red wire of the extension cable to vehicle battery's anode (9–36 V) and the black wire of the extension cable to its cathode (that is, GND wire). After the power is supplied, the LED indicator becomes red, as shown in the following figure.



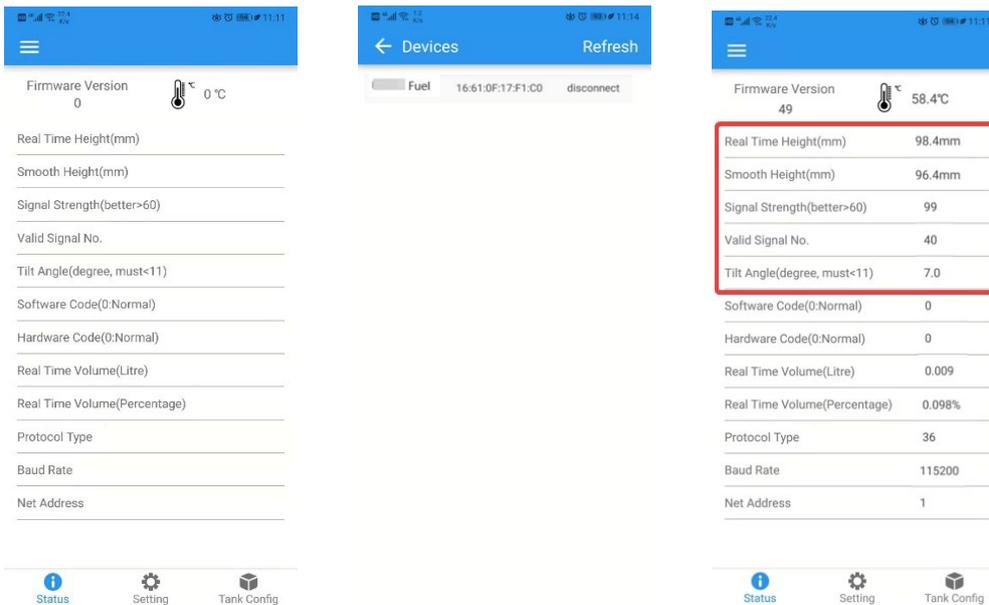
Clean up the silicone grease on the fuel tank and probe, and keep the probe installation location dry. If the bottom of the fuel tank is covered with paint, use the putty knife or screwdriver to scrape paint. Then use the sandpaper to polish the installation location until the tank metal is exposed. Apply the silicone grease to the probe surface and test the installation location again. After that, keep the installation location clean and dry. As shown in the following figure, the diameter of the polished area is 3.5 cm.





After the power is supplied, the red LED indicator of the probe blinks. Enable the Bluetooth and app "UL212 Fuel" on your phone, and search and connect related device. Place the probe on to the clean area and check the status in real time on the app. If you want to select a proper installation location, meet the following conditions:

- (1) The LED indicator of the device is green.
- (2) On the app, the real-time fuel level and smooth fuel level are stable.
- (3) On the app, the signal strength is greater than 30
- (4) On the app, the number of available signals is stable. (Greater than 30..)
- (5) On the app, the inclination angle is less than 11 degrees. (Preferred value: 1–5 degrees)



4.1.4 Fastening the Sensor

- (1) Clean and wipe the probe and installation location to keep them clean and dry.
- (2) Apply a proper amount of AB glue to the probe, evenly stir it for 20–30 seconds, and stick the probe on the marked location.

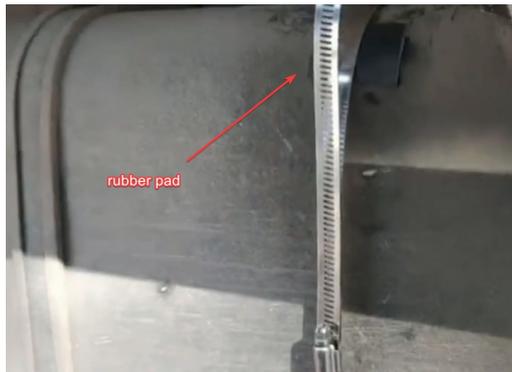
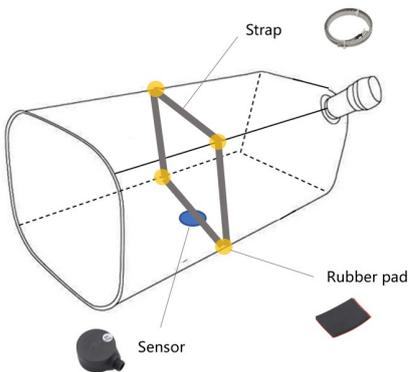


- (3) Check whether the data on the app is stable. When the data is stable, use the 304 stainless steel cable tie to fasten the probe.

Firmware Version	49	58.4°C
Real Time Height(mm)	98.4mm	
Smooth Height(mm)	96.4mm	
Signal Strength(better>60)	99	
Valid Signal No.	40	
Tilt Angle(degree, must<11)	7.0	
Software Code(0:Normal)	0	
Hardware Code(0:Normal)	0	
Real Time Volume(Litre)	0.009	
Real Time Volume(Percentage)	0.098%	
Protocol Type	36	
Baud Rate	115200	
Net Address	1	



- (4) When the cable tie is about to tighten, stick the rubber pad on to a corner of the fuel tank to prevent the fuel tank from damaging. Then fasten the cable tie by using the cable tie hoop.



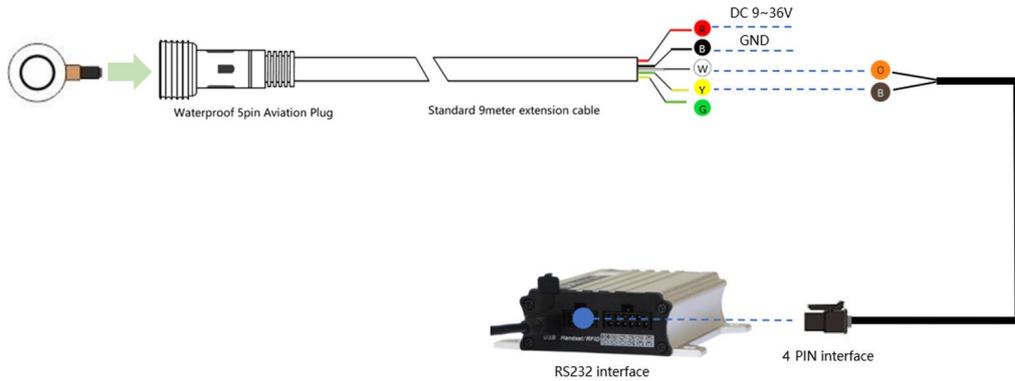
4.2 Device Connection

4.2.1 Connecting a Sensor to a Device

The ultrasonic fuel level sensor can read fuel parameters through the RS232 port or analog port. You can select one as required.

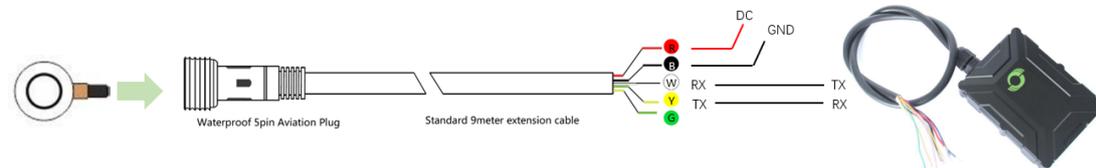
1. Connect the sensor to a device through the RS232 port and then read the fuel level.

(1) If the RS232 port of the device is a jack, you can connect the sensor to the device as follows:



Definition of the 4-Pin to 8-Pin Cable		
No.	Cable Color	Description
1	Red	Power output Output voltage: 5 V
2	Black	Ground wire
3	Brown	Rx, connected to the Rx interface of the device.
4	Orange	Tx, connected to the Tx interface of the device.

(2) If the RS232 port of the device includes cables (such as the T366 tracker), connect the sensor to the device as follows:

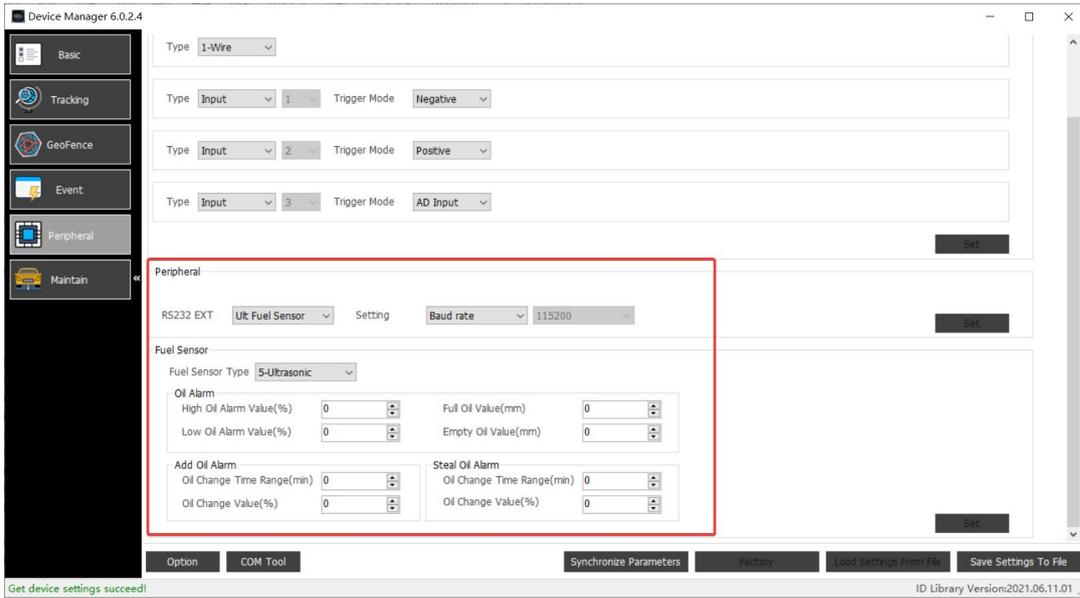


4.2.2 Configuring the Sensor

After the device is connected to the sensor, you can use any of the following ways to configure parameters of the sensor.

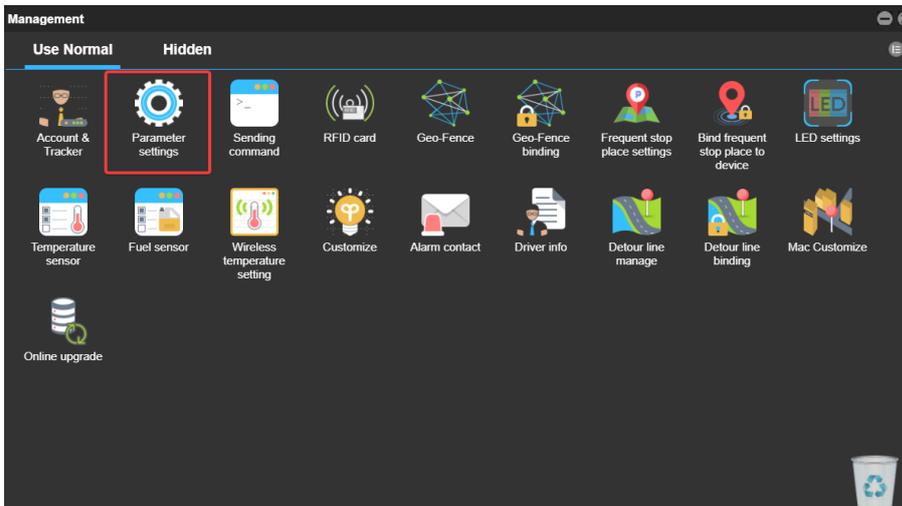
(1) Configure the sensor by Meitrack Manager.

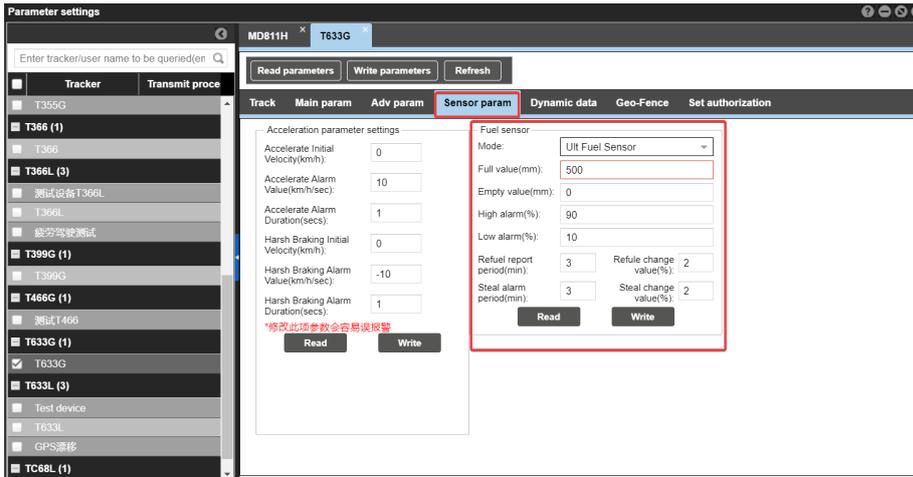
Turn on a vehicle tracker or a MDVR, connect it to a computer, and run Meitrack Manager. As shown in the following figure, set **Fuel Sensor Type** to **5-Ultrasonic**, and set other parameters as required. Click **Set** to save the configurations.



(2) Configure the sensor by the MS03 tracking system.

Please ensure that the device is online. On the MS03, choose **Management**. On the **Management** window, select **Parameter settings** from **Use Normal**. On the page that is displayed, select a device in the left navigation pane, click **Sensor param**, and then set related parameters.





5 Using the MS03 Tracking Platform

5.1 Querying Reports

On the MS03 platform, you can choose **Reports** to check the fuel data.

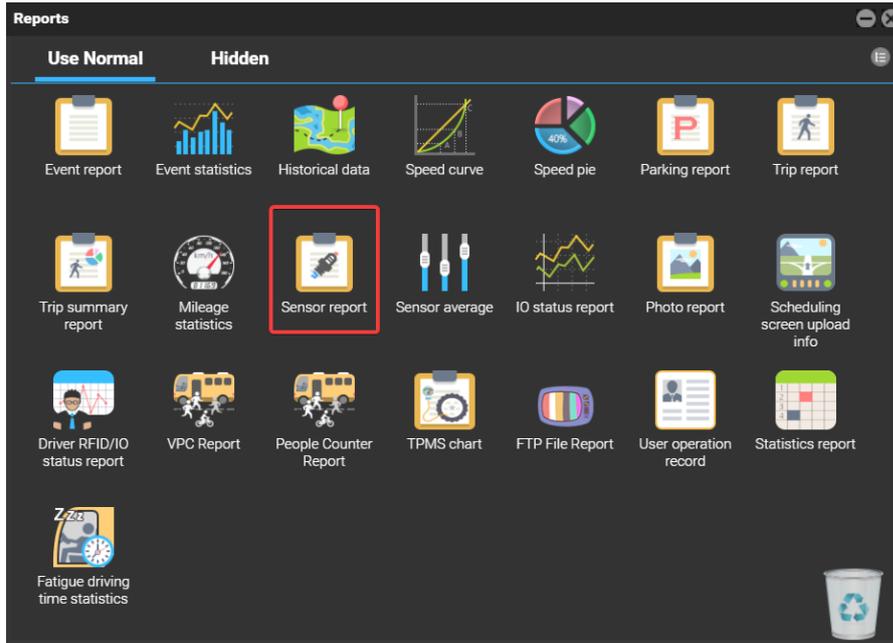
5.1.1 Querying Historical Data

1. On the MS03, choose **Reports**.
2. On the **Reports** window, select **Historical data** from **Use Normal**. The **Historical data** window is displayed.
3. Select a device, set the query time, and click . The results will be displayed, as shown in the following figure.

Mileage	Running time	BaseStationID	HDOP	Tracker battery	Car battery	Engine state	Fuel percentage
39.1	1Day05:39:31	46002792...	9.0	3.77	0.00	normal	88.55%
39.1	1Day05:39:41	46002792...	2.1	3.77	0.00	normal	88.68%
39.1	1Day05:39:51	46002792...	4.4	3.77	0.00	normal	88.84%
39.1	1Day05:40:01	46002792...	1.3	3.77	0.00	normal	88.97%
39.1	1Day05:40:11	46002792...	3.8	3.77	0.00	normal	88.97%
39.1	1Day05:40:21	46002792...	1.3	3.77	0.00	normal	88.94%
39.2	1Day05:40:31	46002792...	1.9	3.77	0.00	normal	88.88%
39.2	1Day05:40:41	46002792...	3.8	3.77	0.00	normal	88.81%
39.2	1Day05:40:51	46002792...	1.4	3.77	0.00	normal	88.84%
39.2	1Day05:41:01	46002792...	4.8	3.77	0.00	normal	88.84%
39.2	1Day05:41:11	46002792...	4.4	3.77	0.00	normal	88.91%
39.2	1Day05:41:21	46002792...	4.4	3.77	0.00	normal	88.91%
39.2	1Day05:41:31	46002792...	4.6	3.77	0.00	normal	88.84%
39.2	1Day05:41:41	46002792...	3.8	3.77	0.00	normal	88.81%
39.2	1Day05:41:51	46002792...	3.8	3.77	0.00	normal	88.81%

5.1.2 Querying Sensor Reports

On the **Reports** window, choose **Sensor report** from **Use Normal**.



If you have any questions, do not hesitate to email us at info@meitrack.com.