UL212/UL212-E

Bluetooth(BLE5.0) All-in-one Ultrasonic Fuel Level Sensor

User Manual

V1.3

1. Introduction

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1.2. Contact Information

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1.3. Document Changelog

Version	Date	Modification
1.0	2020-3-21	Updated: User Manual structure and re-edit
1.1	2020-6-30	Updated: Connectivity, Android/IOS APP
1.3	2020-7-28	Added: update protocol 114, 116

1.4. Safety Information

⚠ Do not use unknow power supply to connect the device to avoid burning or damage.

⚠ Do not disassemble the device. If the enclosure of the device is damaged, or the insulation of the wires is damaged, disconnect the power supply cables from the power supply source first.

⚠ Do not connect UL212/UL212-E with vehicle battery directly before adding fuse

⚠ **The device can be installed or dismounted only by qualified personnel!**

⚠ Do not connect Green Cable to Power +, which will damage the device

This crossed-out wheelie bin symbol means that waste equipment should not be disposed of with your other household waste. The product must be taken to separate collection points at the product's end-of-life.

1.5. Notations

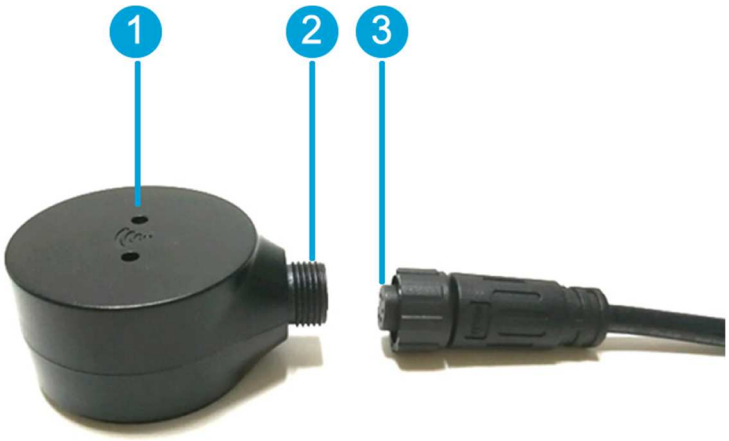
LED: Light Emitting Diode
BLE: Bluetooth Low
DC: Direct Current

2. Product Information

2.1 About UL212/UL212-E

- New Edge Bluetooth BLE All-in-One Ultrasonic Fuel Level sensor will use non-contact technology to detect fuel level without drilling holes. With the ultrasonic reflection feature when cross liquid to air, it can read accurate fuel level height.
- PPS(Phenylenesulfide) Plastic Housing, Anti-Corrosion/Strong Acid, Anti-Fire, and support Max300~400 300~400℃
- Built-in BLE Bluetooth Module, Sync with RS232/RS485 & Analog output.

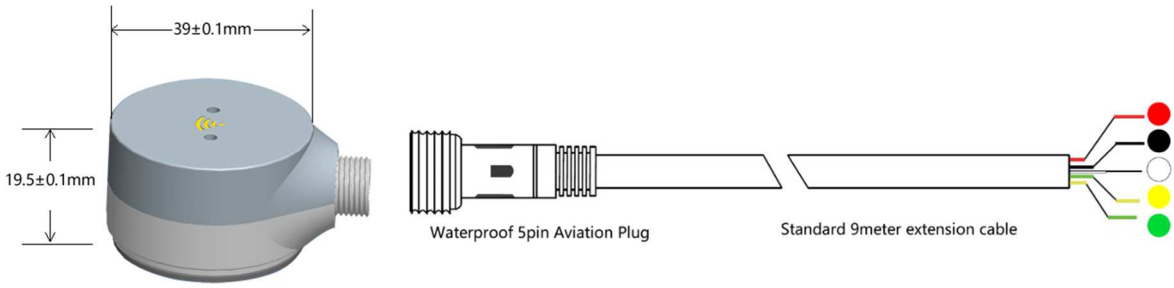
2.2 Device Overview



1 Indication LED 2 5pin Male Plug 3 5pin Waterproof Female Plug

4 Extension Cable 5 Bracket Holder 6 Silicone Ring 7 Probe Back Support

2.3 Size Information

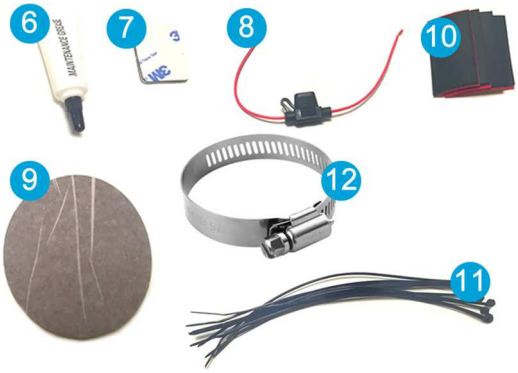


2.4 Key Features

1) No Drilling Holes in Tank, Easy Installation
2) Support Any Liquid: Diesel, Gasoline, Water, etc.
3) Support Any Material Tank: Metal/Aluminum/Stainless Steel /Fiber/Plastic
4) **Resolution:** 0.1mm
5) **Accuracy**: 99.5%
6) **Maximum Measuring Range:** 250cm
7) **Lowest Detection Hight(Blind Area):** 3cm
8) **Maximum Tank Thickness:** 8~12mm
9) **Output Interface:** BLE Bluetooth 5.0 +RS232(Default)/RS485+Analog(0~5V)
10) **Mobile App configuration &Calibration**
11) **Built-in AI Algorithm to filter abnormal signal**
12) IP68 waterproof

2.5 Package Contents

1. UL212/UL212 All-in-one Probe x1
2. Extension cable x1
3. Bracket Holder x1
4. Probe Back Support x1
5. Silicone Ring x1
6. Silicone Gel x2
7. Adhesive Sticker x2
8. Fuse x1
9. Sand Paper x2
10. Rubber Pad(used to protect some tank if needed) x4
11. Plastic Strap kits x1
12. 304L Stainless Steel Strap x2

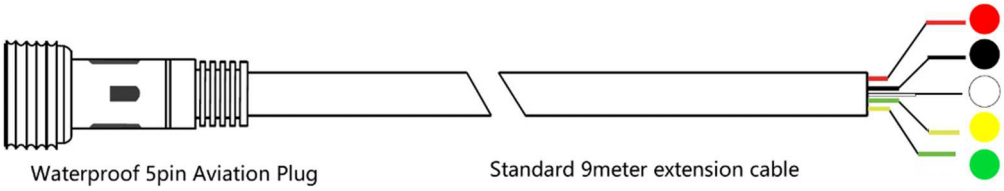


3. Technical Information

3.1 Indication LED Patterns

Pattern	Description
Red Flash	Detect no liquid or signal weak
Green Light On	Stable signal, best choice for installation
Yellow Light on	Upgrading/Configuring status

3.2 Cable Definition



Cable	Definition	Remarks
Red	Power Supply 9~36V DC+	Fuse must be used if connected to Power Battery
Black	Power GND, RS232/RS485 GND	
Yellow	RS232 TX (Default), or RS485B	Connect GPS/DVR RS232_RX
White	RS232 RX (Default), or RS485A	Connect GPS/DVR RS232_TX
Green	Analog Output 0~5V	Support in all protocols except Protocol 08 (In protocol 08, Green cable will keep output 0V when working normally, but will output 5V high level trigger for 30 seconds when fuel theft alarm triggered)

3.3 Physical Characteristics

Size	Diameter: 39mm Height: 19.5mm
Net Weight	0.6KG
Gross Weight	1KG
Material	PPS (Phenylenesulfide)
Plug	5pin Gold-Coated Waterproof Plug

3.4 Technical Characteristics

3.4.1 Environmental Specifications

Temperature	Operating: -40~ 80 ℃ Storage: -40~ 80 ℃
Relative Humidity	0% ~95% Non-condensing

3.4.2 Electrical Specifications

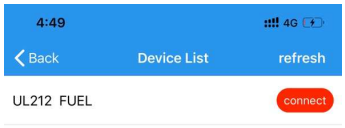
Power Supply	9~36V DC
Max Voltage	42V DC
Power Consumption	60mA @12V DC

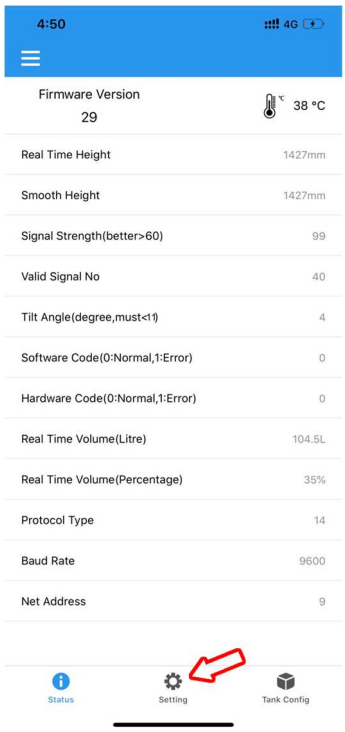
4. Installation Prepare:

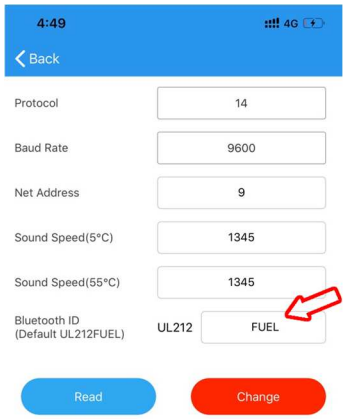
4.1. Mobile APP Introduction

1) Download Link（Android）
   https://www.pgyer.com/TankOffline

2) Open APP and search Bluetooth ID: **UL212 FUEL**
3) Change Device ID(with fixed head UL212, password: **52381**)







5. Indoor Test

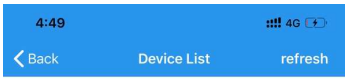
5.1. Indoor Test Prepare

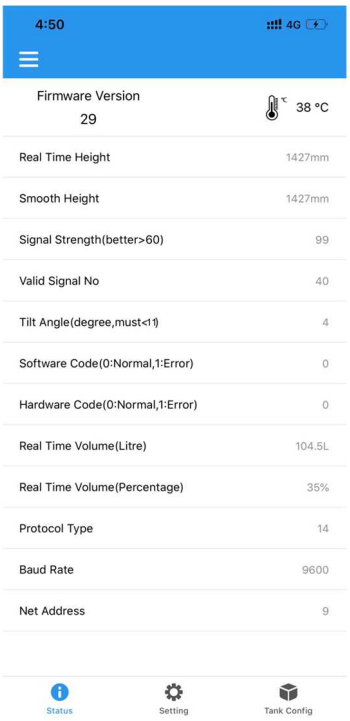
1) Mineral Water Bottle (flat cap)
2) UL212/UL212-E
3) Android or iOS Phone
4) 12/24V Power Bank/Jump Starter/Power Supply

5.2. Indoor Test Steps

1) Power On UL212/UL212-E, RED LED flashes, and connect the UL212 Mobile APP via Bluetooth

2) Search Bluetooth Device ID in APP and connect "**UL212 Fuel**"





3) Paste 1mm thickness Silicone Gel on top of the probe

4) Make sure water bottle has more than 3cm height water inside, and put on the probe

5) Check Real Time Mobile APP data in Smart Phone.

6. Outdoor Installation

6.1 Outdoor Installation Prepare

1) Make sure fuel tank has at least 1/2 fuel inside
2) Make sure there is flat zone on the bottom of tank to fix probe
3) UL212/UL212-E
4) Android or iOS Phone
5) 12/24V Power Bank/Jump Starter or Portable Battery

or

6) Slot Type Screw Driver

6.2 Key Steps for Outdoor Fuel Tank Installation

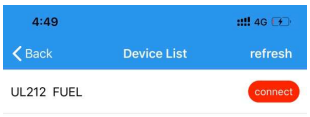
Clear the middle zone of tank bottom → Find Installation Position → Fix Probe & Bracket

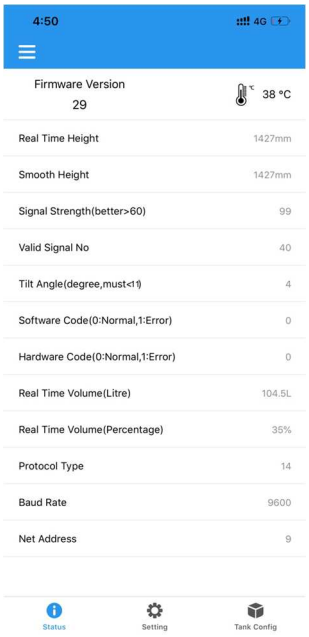
6.3 Quick Guide for Outdoor Fuel Tank Installation

6.3.1 Connect Mobile APP "**UL212 FUEL**"

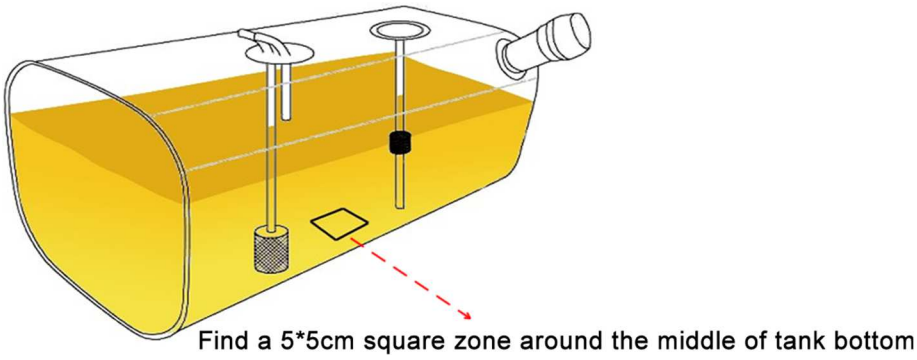
1) Power On UL212/UL212-E, RED LED flashes, and connect the UL212 Mobile APP via Bluetooth

2) Search Bluetooth Device ID in APP and connect "**UL212 FUEL**"

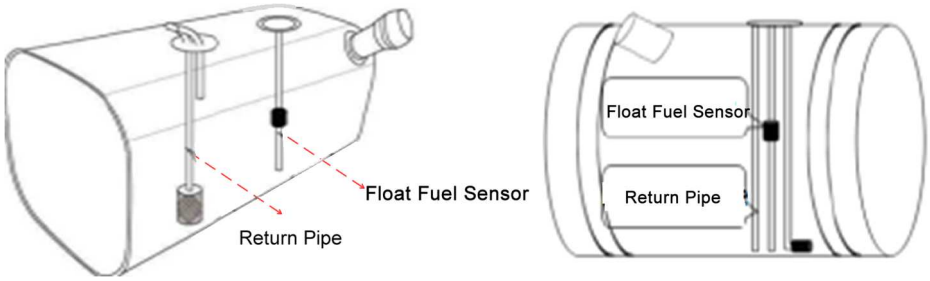




6.3.2 Clean the target zone around the middle of tank bottom



1) Find a 5*5cm zone around the middle of tank bottom
2) Please make sure get rid of the original tank float sensor and return pipe



3) Metal Tank with painting needs sand paper to polish before fix probe
4) Aluminum, Stainless Steel or Fiber tank will not need sand paper

6.3.3 Find Target Installation Position:

1) Paste 2~3mm thickness Silicone Gel on top of the probe.

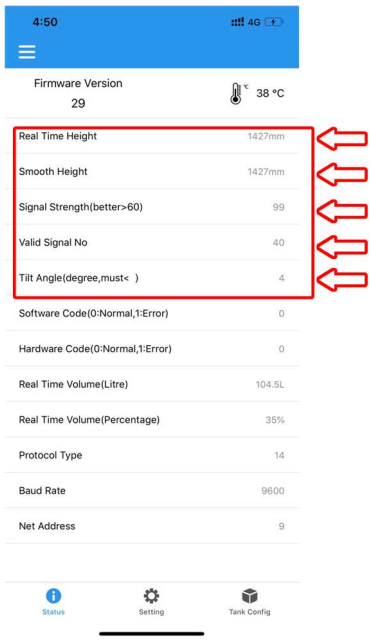
2) Put the probe to the target zone of tank bottom in step 6.3.2 and check the real time Mobile APP reading, and make sure these conditions below are approved to confirm the installation position:

   A. Real Time & Smooth Value are similar

   B. Signal Strength more than 60 or stable

   C. Valid Signal Quantity is stable

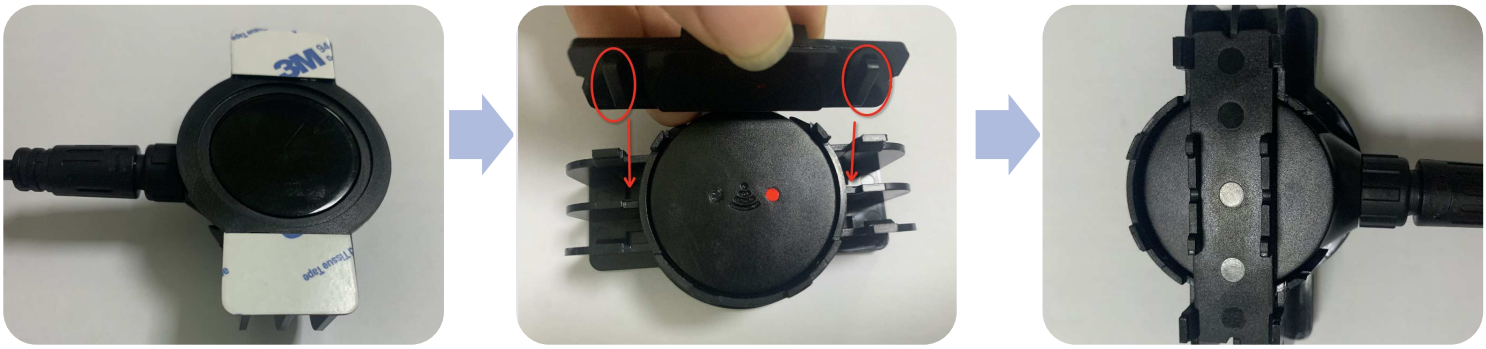
   D. Tilt Angle is less than 11 Degrees



3) Mark the position to be target installation position after approve the Mobile APP data show

6.3.4 Fix the probe to the bottom of tank

1) Remove the probe in step 6.3.3, and clean the installation zone again to be **AS DRY AS POSSIBLE.**
2) Put the probe inside the Bracket Holder and use Back Support to fix the probe**(Aim at the Bayonet)**



3) Stick the Silicone Ring exactly on top of the probe. Inject the Silicone Gel inside the ring and Overflow a little bit to make sure it's full

4) Stick the Bracket Holder on the target installation position and use Twon Stainless Steel Strap to fix the Bracket & Probe

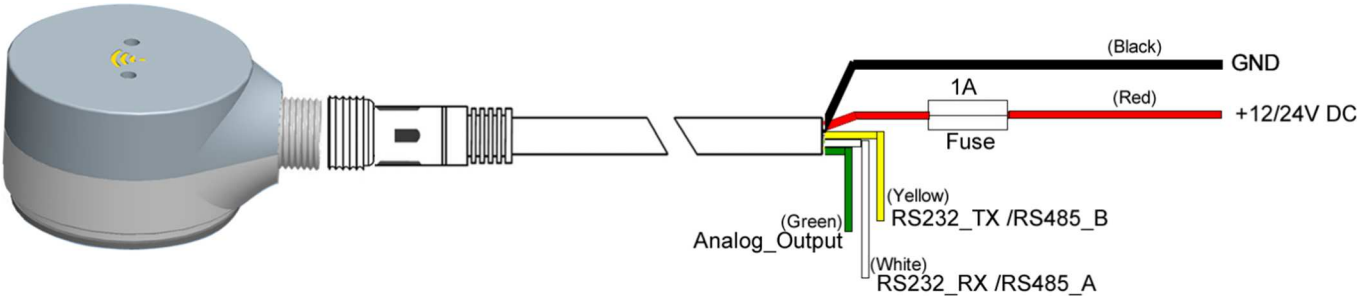
5) Verify the installation
After fixing the screw, use Mobile APP to check again the data to be sure the same or similar in step 6.3.3 to complete the installation.

7. Wiring Diagram

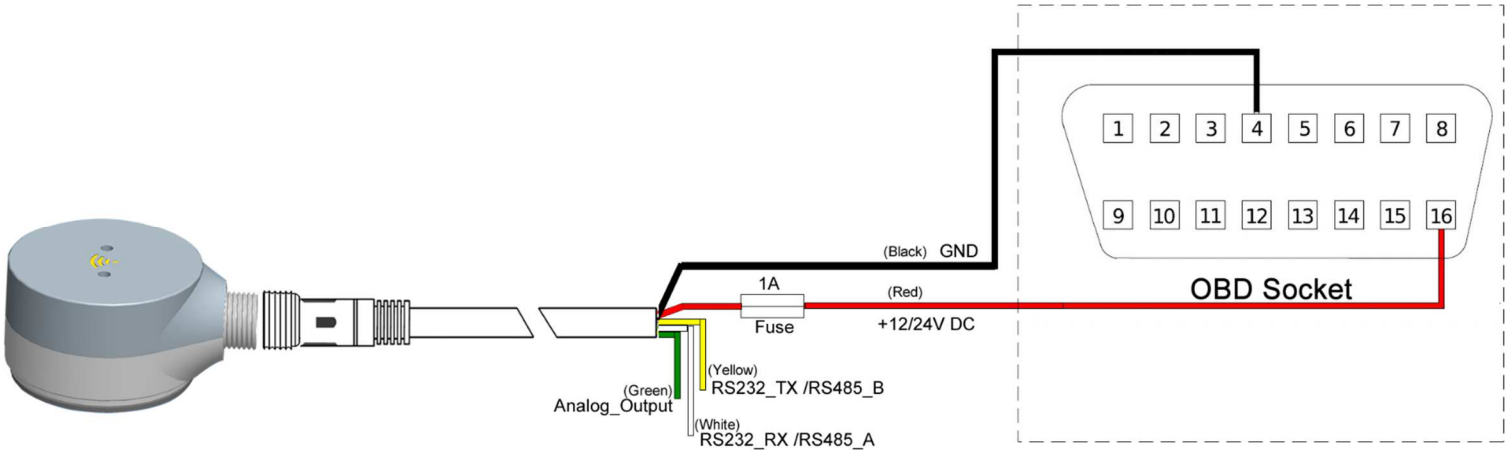
Power Input: 9~36V DC

It is Mandatory to use an external Automotive 1 A Fuse

- **Recommended**



- **Optional for LCV Vehicles**



FCC Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The device has been evaluated to meet general RF exposure requirement. Th e device can be used in portable exposure condition without restriction.