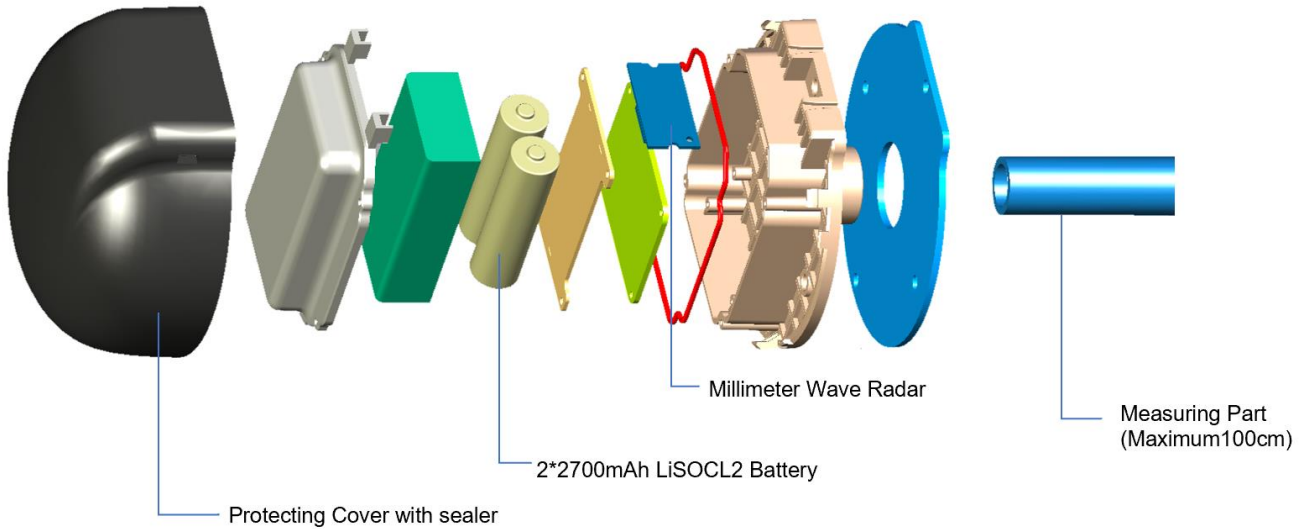


## All-in-one Capacitive Fuel Level Sensor With built-in Bluetooth & Radar

Model: CPM212



## 1. Features

- Wireless installation to prevent from tamper
- Built-in long life battery supports maximum 7 years
- **Built-in Millimeter Wave Radar (optional) to detect human being to prevent fuel theft**
- Built-in temperature and tilt sensor for flexible algorithm
- Easy installation and cuttable capacitive tube
- Support harsh environment from -40°C ~85°C with IP69 waterproof
- Support Gasoline, Diesel, LPG and all non-conductive liquid

## 2. Specification

Specification		
Accuracy	99.5%	
Resolution	0.1mm	
Battery	Life	Maximum 6 years
	Capacity	2*2700mAh, Li-SOCl2 replicable industrial battery
	Working Temperature	-55~ 85°C
Bluetooth	Bluetooth Version	BLE 5.4
	Transmission Mode	iBeacon Broadcasting
	Broadcasting Interval	1s as default, programmable
	Range of wireless connection (direct sight without interference and obstacles)	Maximum 100 meters
	Transmission power	- 96 ~ 4 dBm
Millimeter Wave Radar	Average Current	50 uA
	Working Temperature	-40~ 85°C
	Transmission power (EIRP)	10 dBm
	Detection Range	0.2~5 meters
	Detection Resolution	0.2m
	Horizontal Detection Angle	100 degrees
	Vertical Detection Angle	120 degrees
Tilt Angle Sensor	0~180 degrees	
Temperature Sensor	-40~120 °C	
Working Environment	Working Temperature	-40°C ~85°C
	Storage Temperature	-45°C ~85°C
Capacitive Tube Range	0~1000mm (support cutting at site)	
Dimensions(mm)	98x45x(L), L: length of the measuring tube part, 10~100cm	
Weight	1kg when L=70cm	
Waterproof Class	IP69	
Explosion-proof Class	II 1 G Ex ia IIB T6 Ga	
Application		
Tank Material	Aluminum, Plastic, Metal, Ion, Stainless Steel	
Liquid	Gasoline, Diesel, LPG or other Non-conductive liquid	

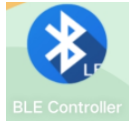
### 3. Quick Installation Guide

Before test the fuel sensor, need to download and install the following APP. The APP is only for Android phones and does not support iOS phones.

Scan the code to download the APP

1) APP to configure fuel tank parameter

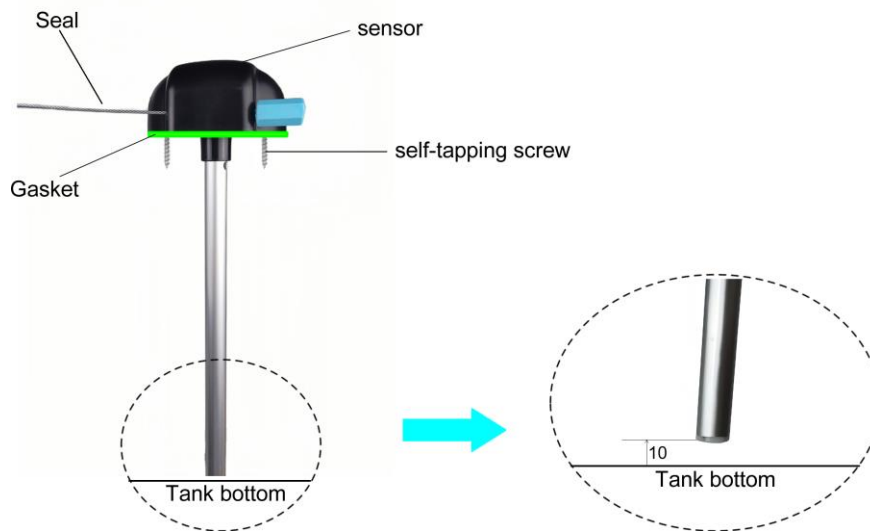
[BleController SW3.0.6](#)



2) APP to read original iBeacon RAW data for diagnostic



3.1 Measure tank depth and cut the tube to fit the tank



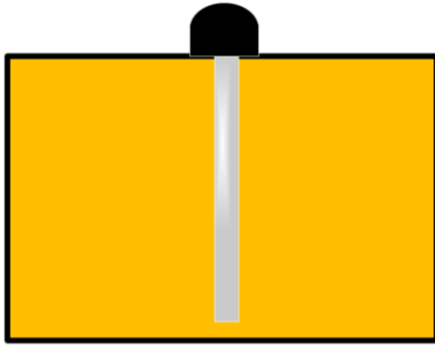
3.2 Configure Full

Option 1: Fill the tube outside the tank (this option can be used once fuel tank is NOT FULL)



Closing the drain holes, rotating the sensor, and filling the tubes with fuel

Option 2: Dip the tube inside the tank directly and read full data when fuel tank is FULL



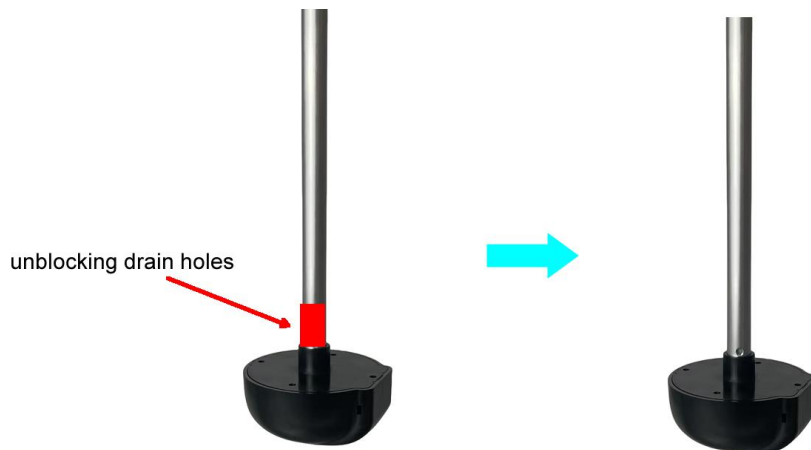
Filling the tubes by immersing the sensor in fuel (drainholes open)

Power on the sensor and place it in fuel. Click the "Full" button on the APP to perform full calibration

**Noted:** The testing liquid must be a non-conductive liquid, which can be lubricating oil, peanut oil, diesel, and water cannot be used for testing



### 3.3 Configure Empty



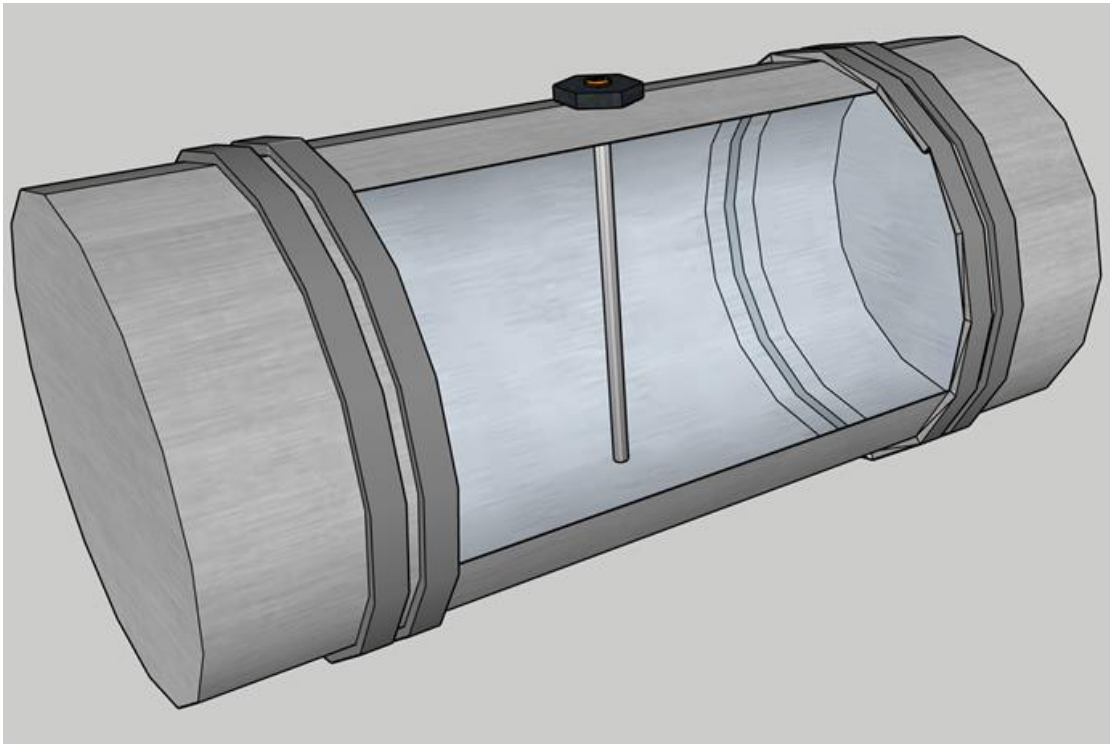
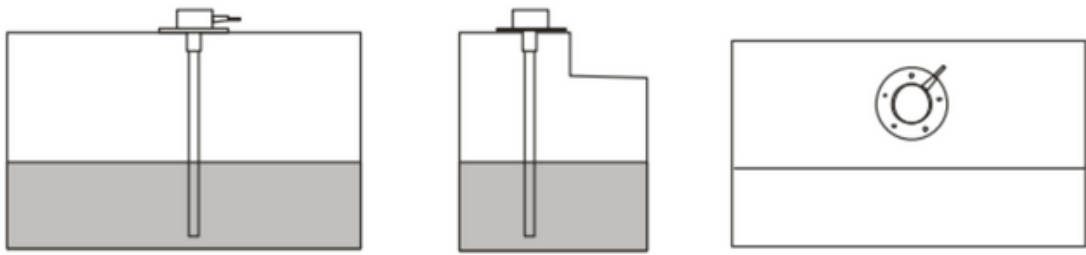
Then, drain the fuel from the tubes, wait 2~3 minutes, allowing the fuel to completely drain and the level to stabilize, and press "Empty"

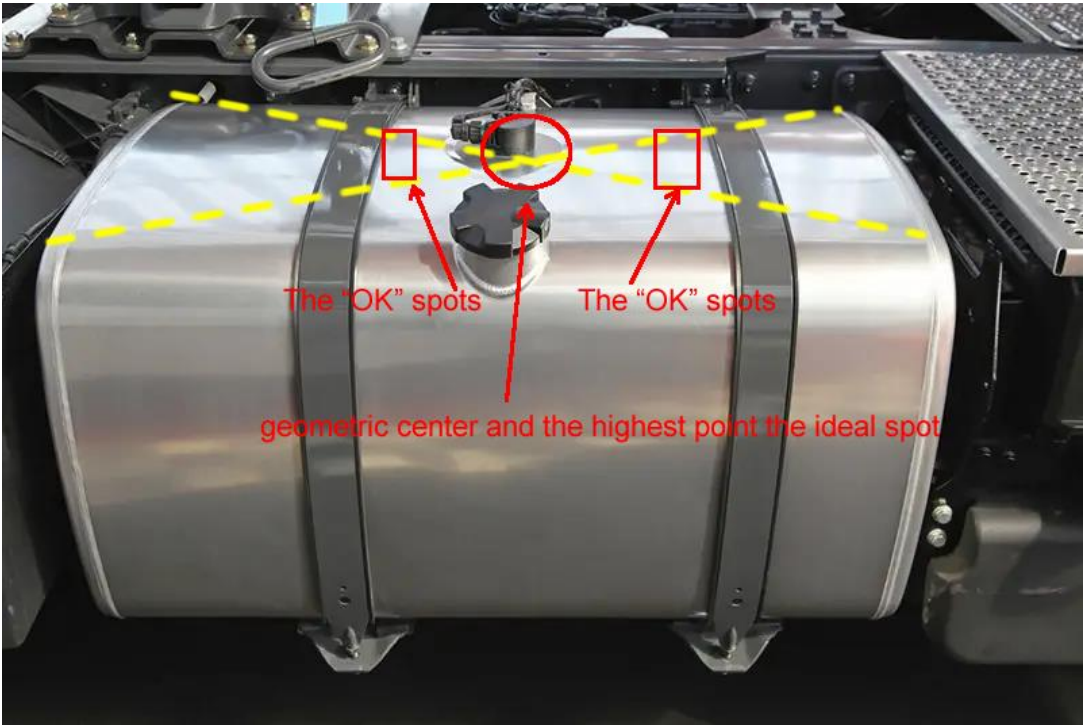
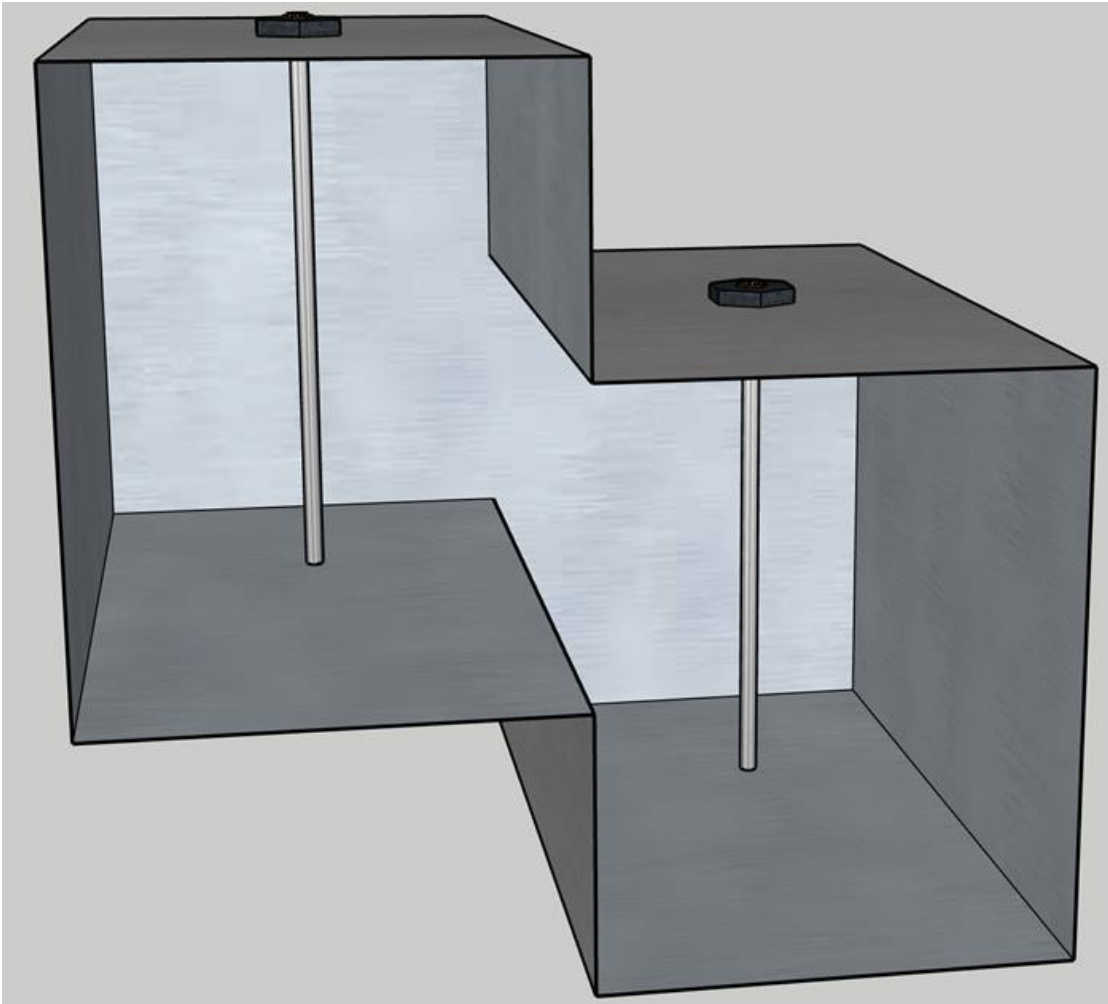
Power on the sensor and place it in the air. Click the "Empty" button on the app to perform empty calibration



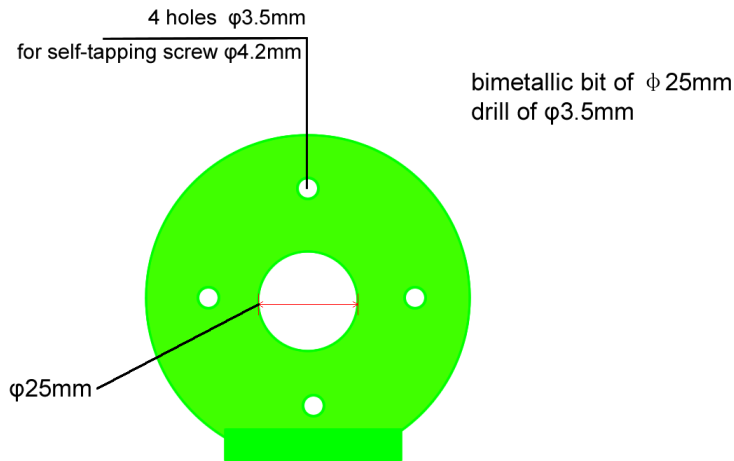
## 3.4 Draw Holes and Fix Sensor

- 1) Find geometric center of the tank and drill a hole





2) Use a screwdriver remove the cut place, avoid the metal shavings falling into the tank

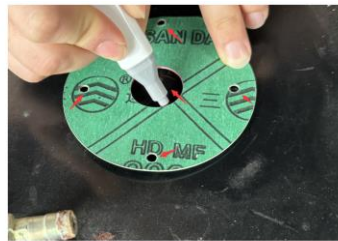


The diameters of the holes are given for self-tapping screws, if necessary, mark places for another fastening according to the centers of specified holes.

3) Mark Location



Clean the installation position of the oil sensor and remove dust and dirt from the surface of the fuel tank

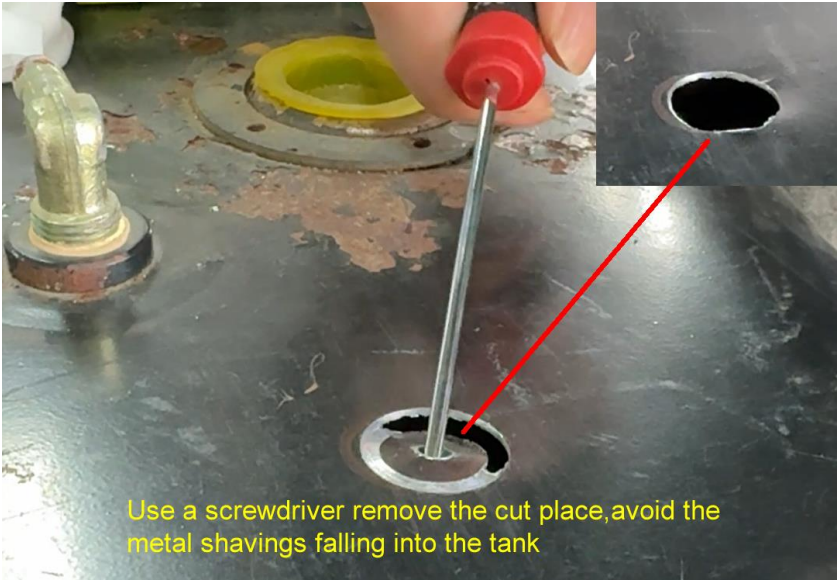
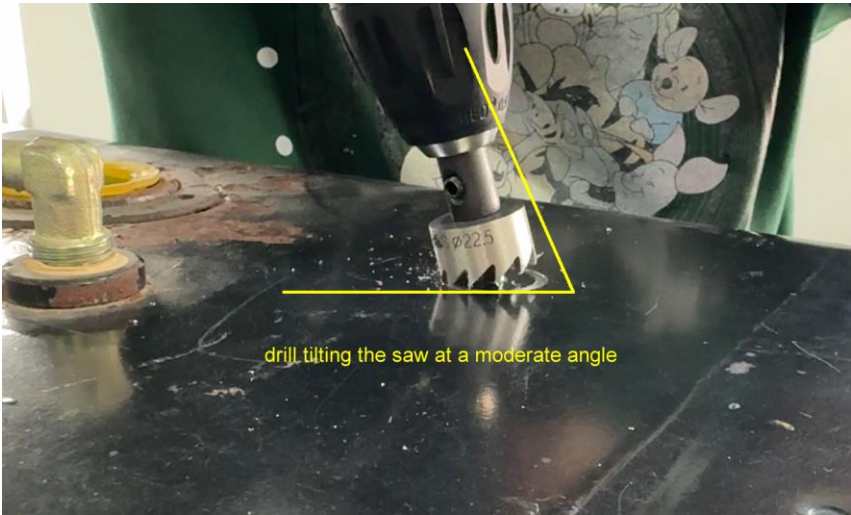


Mark the gasket points with a marker pen

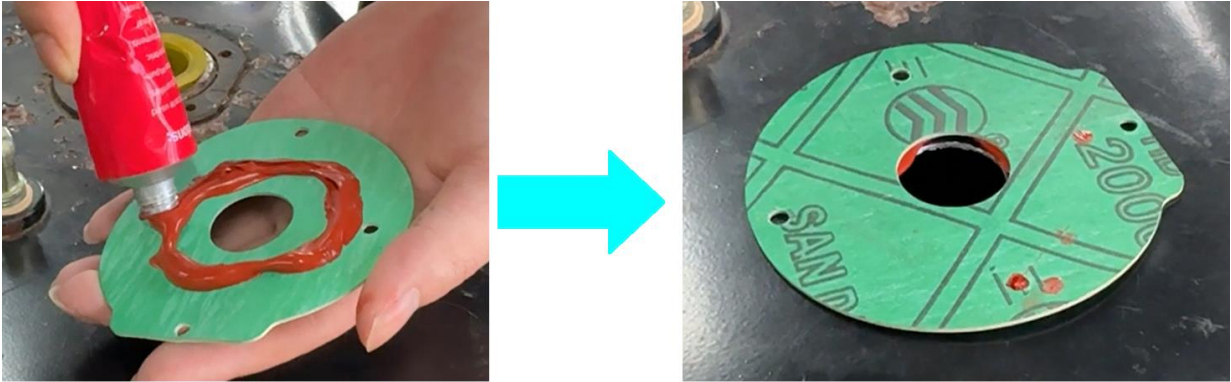


Remove the gasket

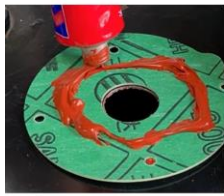




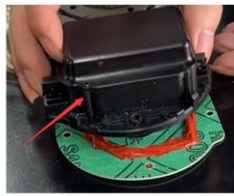
4) Install the gasket



5) Insert the fuel sensor into the tank and secure it in place



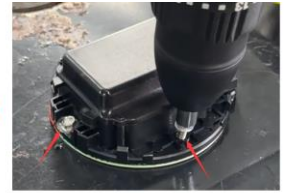
Silicone gasket-free sealant above the gasket



Insert the sensor into the fuel tank and align it with the gasket



Insert completed



Fixed hexagonal dovetail screw  
All four screws need to be fixed

6) Fasten the seal



Cover the outer shell



Insert the seal according to the direction of the arrow



Fasten the seal

### 3.5 Calibrate via mobile APP

1) Enter the total height of the fuel tank, Based on the actual height of the fuel tank

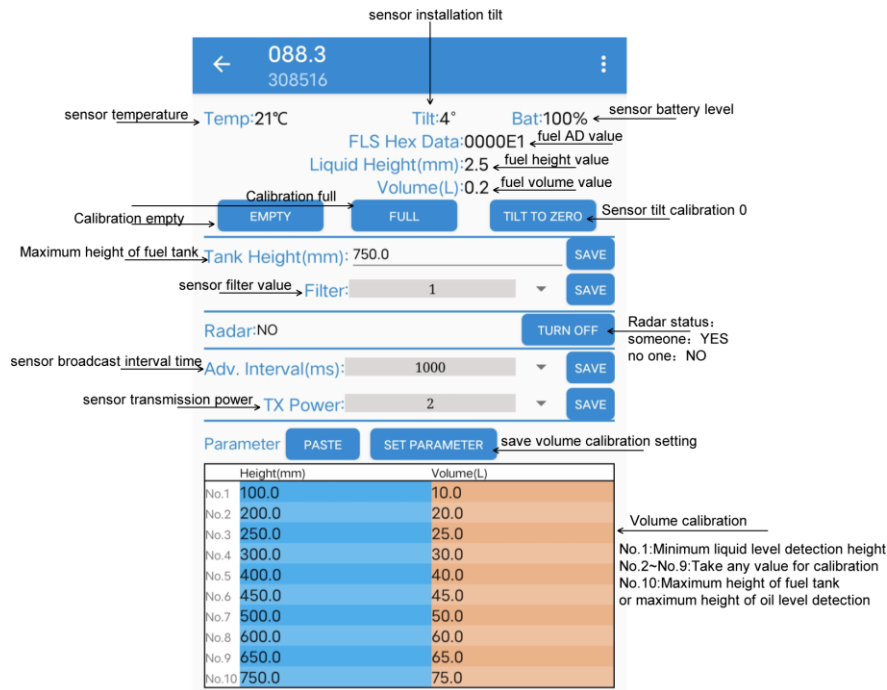
Tank Height(mm):

2) Configure volume parameters:

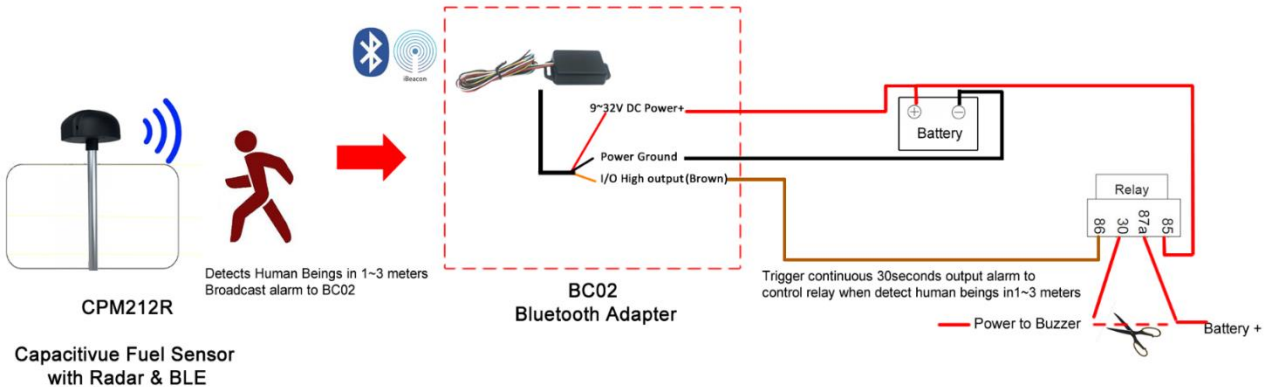
No.1 input minimum volume, No.10 input maximum volume  
Calibrate 10 points arbitrarily according to the actual situation

Parameter	PASTE	SET PARAMETER
No.	Height(mm)	Volume(L)
No.1	10.0	1.0
No.2	20.0	2.0
No.3	30.0	3.0
No.4	40.0	4.0
No.5	50.0	5.0
No.6	60.0	6.0
No.7	70.0	7.0
No.8	80.0	8.0
No.9	90.0	9.0
No.10	150.0	15.0

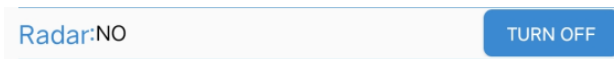
3) Complete APP menu show and describe:



3.6 How does Millimeter Wave Radar function work?  
(support disable/enable the Millimeter Wave Radar function via mobile APP)



1) Turn on rader



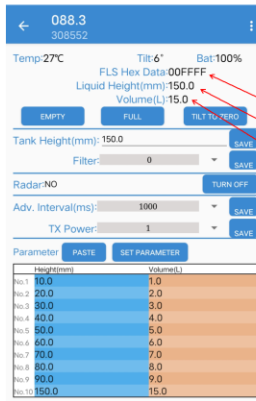
2) People walk close to the front of Dashcam in 1~3 meters.

If the APP status shows "YES" , it indicates that a person has been detected nearby.

If the APP status shows "No", it indicates that no output person has been detected nearby.

3.7 How to check fuel sensor Bluetooth broadcast data?

- 1) Open the APP "nRF connect"
- 2) Search and find the device with Bluetooth broadcast name "088"
- 3) Bluetooth broadcast protocol



Example: 0xFF071B407A4EE0430700FFFF05DC00966400

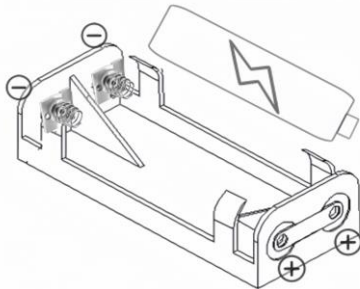
0xFF data	Data Length	Data Definition	unit	Description
071B407A4EE0	6Bety	MAC address, Little Endian		
0x43	1Byte	temperature data	celsius degree	0x43 means 67 in decimal, which equals to 67-40=27°C
0x07	1Byte	tilt angle	degree	range 0-180
0x00FFFF	3Byte	FLS diagnostic data		
0x05DC	2Byte	fuel height	0.1mm	0x05DC converts to decimal is 1500, 1500x0.1mm=150mm
0x0096	2Byte	volume	0.1L	0x0096 converts to decimal is 150, 150x0.1L=15L
0x64	1Byte	battery	1%	0x64 converts to decimal is 100, 100x1%=100%
0x00	1Byte	Radar status		00: No one 01: Someone



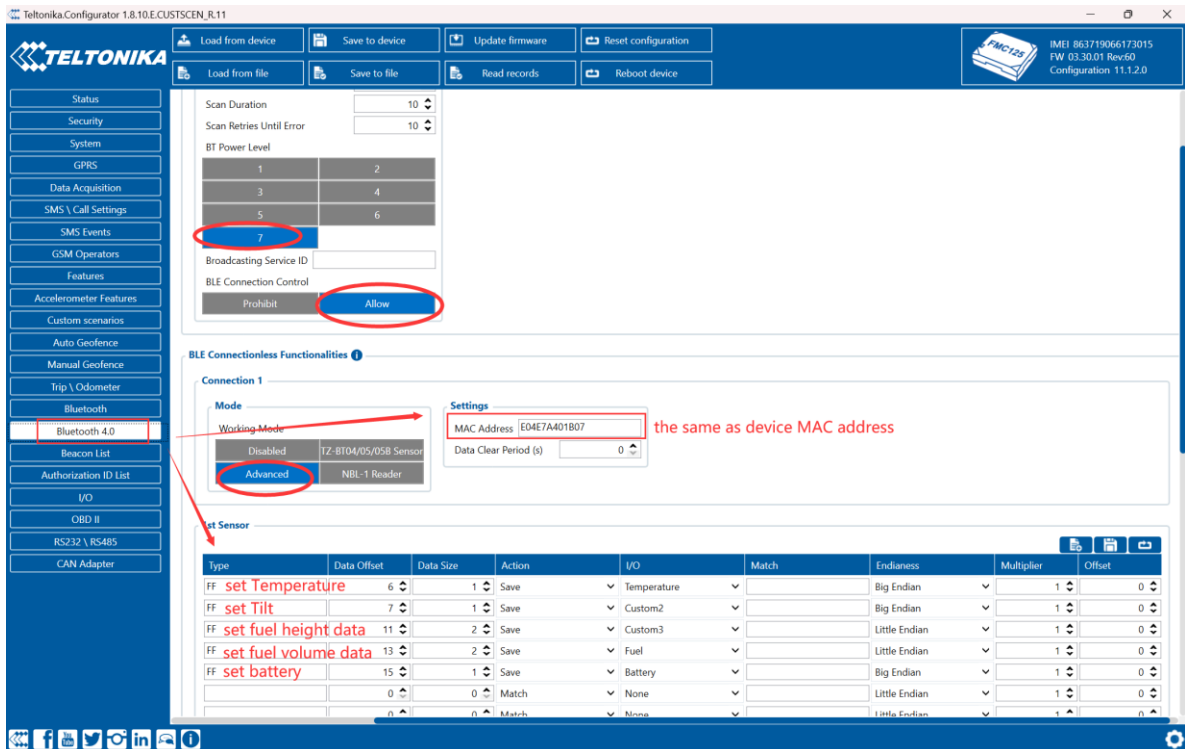
## 4. FAQ:

4.1 If the battery needs to be replaced after being depleted, please refer to the picture below to replace the battery

### Battery Installation Diagram



4.2 How to connect Teltonika device via Bluetooth?



Teltonika.Configurator 1.8.10.E.CUSTSCEN\_R.11

TELTONIKA

IMEI 863719066173015  
FW 03.30.01 Rev60  
Configuration 11.1.2.0

Load from device | Save to device | Update firmware | Reset configuration  
Load from file | Save to file | Read records | Reboot device

Status  
Security  
System  
GPRS  
Data Acquisition  
SMS \ Call Settings  
SMS Events  
GSM Operators  
Features  
Accelerometer Features  
Custom scenarios  
Auto Geofence  
Manual Geofence  
Trip \ Odometer  
Bluetooth  
Bluetooth 4.0  
Beacon List  
Authorization ID List  
I/O  
OBD II  
RS232 \ RS485  
CAN Adapter

**Device Info**

Device Name	Last Start Time	Power Voltage	Ext Storage (Used/Total)	Battery Voltage
FMC125	2004/1/1 8:00:17	12686 mV	7 / 122 MB <a href="#">Format</a>	0 mV
Firmware Version	RTC time (UTC)	Device IMEI	Device Uptime	Internal Battery Status
03.30.01 Rev60	2004/1/1 8:33:33	863719066173015	00:33:16	Not Charging 0%

GNSS Info | GSM Info | **I/O Info** | Maintenance

**I/O Data**

BLE Temperature #1	BLE Temperature #2	BLE Temperature #3
temperature 67 °C	32767 °C	32767 °C
BLE Temperature #4	BLE Humidity #1	BLE Humidity #2
32767 °C	65535 %RH	65535 %RH
BLE Humidity #3	BLE Humidity #4	BLE Battery #1
65535 %RH	65535 %RH	100 %
BLE Battery #2	BLE Battery #3	BLE Battery #4
0 %	0 %	0 %
BLE 1 Custom 1	BLE 1 Custom 2	BLE 1 Custom 3
	7	1500
BLE 1 Custom 4	BLE 1 Custom 5	BLE 2 Custom 1
0	0	0
BLE 2 Custom 2	BLE 2 Custom 3	BLE 2 Custom 4
0	0	0
BLE 2 Custom 5	BLE 3 Custom 1	BLE 3 Custom 2
0	0	0
BLE 3 Custom 3	BLE 3 Custom 4	BLE 3 Custom 5
0	0	0
BLE 4 Custom 1	BLE 4 Custom 2	BLE 4 Custom 3
0	0	0
BLE 4 Custom 4	BLE 4 Custom 5	BLE Illumination #1
0	0	0

battery unit: 1%

fuel height unit: 0.1mm

Teltonika.Configurator 1.8.10.E.CUSTSCEN\_R.11

TELTONIKA

IMEI 863719066173015  
FW 03.30.01 Rev60  
Configuration 11.1.2.0

Load from device | Save to device | Update firmware | Reset configuration  
Load from file | Save to file | Read records | Reboot device

Status  
Security  
System  
GPRS  
Data Acquisition  
SMS \ Call Settings  
SMS Events  
GSM Operators  
Features  
Accelerometer Features  
Custom scenarios  
Auto Geofence  
Manual Geofence  
Trip \ Odometer  
Bluetooth  
Bluetooth 4.0  
Beacon List  
Authorization ID List  
I/O  
OBD II  
RS232 \ RS485  
CAN Adapter

**Device Info**

Device Name	Last Start Time	Power Voltage	Ext Storage (Used/Total)	Battery Voltage
FMC125	2004/1/1 8:00:18	12677 mV	7 / 122 MB <a href="#">Format</a>	0 mV
Firmware Version	RTC time (UTC)	Device IMEI	Device Uptime	Internal Battery Status
03.30.01 Rev60	2004/1/1 8:35:50	863719066173015	00:35:32	Not Charging 0%

GNSS Info | GSM Info | **I/O Info** | Maintenance

**I/O Data**

BLE RFID #4	BLE Button1 State #1	BLE Button1 State #2
0x0000000000000000	0	0
BLE Button1 State #3	BLE Button1 State #4	BLE Button2 State #1
0	0	0
BLE Button2 State #2	BLE Button2 State #3	BLE Button2 State #4
0	0	0
BT Status	User ID	BLE LLS #1
1	0x0000000000000000	150 kvants
BLE LLS #2	BLE LLS #3	BLE LLS #4
0 kvants	0 kvants	0 kvants
BLE LLS Freq #1	BLE LLS Freq #2	BLE LLS Freq #3
0	0	0
BLE LLS Freq #4	LLS 1 Fuel Level	LLS 2 Fuel Level
0	0 kvants or l	0 kvants or l
LLS 3 Fuel Level	LLS 4 Fuel Level	LLS 5 Fuel Level
0 kvants or l	0 kvants or l	0 kvants or l
LLS 6 Fuel Level	LLS 7 Fuel Level	LLS 8 Fuel Level
0 kvants or l	0 kvants or l	0 kvants or l
LLS 9 Fuel Level	LLS 10 Fuel Level	LLS 11 Fuel Level
0 kvants or l	0 kvants or l	0 kvants or l
LLS 12 Fuel Level	LLS 13 Fuel Level	LLS 14 Fuel Level
0 kvants or l	0 kvants or l	0 kvants or l

fuel volume unit: 0.1L