

MFS-310B

1、 Product Features

- Wireless installation
- Built-in replaceable battery
- Built-in millimetre-wave radar
- Capacitor tubes that are easy to install and can be cut to size
- Waterproof rating IP69
- Explosion-proof rating II 1 G Ex ia IIB T6 Ga

2、 Product photographs



3、Product Specifications

Project		Parameters
Bluetooth		BLE5.4 Supports a maximum distance of 100 metres (in the absence of interference and obstacles)
Millimetre-wave radar	Detection range	0.2~5m
	Horizontal detection angle	100°
	Vertical detection angle	120°
	Operating temperature	-40~85℃
Battery	Working life	seven years
	Capacity	2*2700mAh
	Operating temperature	-55~85℃
Detection accuracy		99.5%
Working environment	Operating temperature	-40~85℃
	Storage temperature	-45~85℃
Waterproof rating		IP69
Explosion-proof rating		II 1 G Ex ia IIB T6 Ga
Dimensions		98x45x (L) ,L: Measure the length of the pipe section,10~100cm, (Supports cutting)
Weight		1kg when L=70cm
Supported tank materials		Aluminium, plastic, metal, ions, stainless steel
Liquid level		Petrol, diesel, liquefied petroleum gas or other non-conductive liquids

4、MFS-310B and BC02 Configuration

Note: The Bluetooth oil sensor must be paired with the BC02 before connecting to the host device for use.

a. APPDownload, install and configure the fuel tank and radar parameters application

BleController SW3.1.9



b. Download and install the diagnostic application

nRF connect



c. Open the app, enable Bluetooth on your mobile device, and locate the Bluetooth broadcast names 'S060B' and '088' on the home screen.

Device List		STOP
088 296001	→ Bluetooth Oil Sensing	82 db
BlueZ 5.63 E0:75:26:BB:66:DF		-61 db
S060B 303780	→ Bluetooth Gateway	-62 db
tcl_RF_t*ap_R315T1-D B8:12:DA:B2:DB:27		-76 db
Printer_1793_BLE DC:0D:30:8A:17:93		-75 db
NZTdu6gqtmnYeoy0a9Lff wrok 4F:EB:ED:8E:9B:5D		-81 db
NPYA79ZDWp4g4Ya3jlvjF tvJQ 56:27:64:65:6C:96		-80 db
086 310819		-85 db
DL01 4C:C6:4C:45:F3:E2		-71 db
PB706-25115 EF:3F:68:B1:0B:C3		-95 db

d. Open the 'BLE Controller', locate the Bluetooth broadcast name 'S060B' and select it to enter.

Recommended range for COM output cycle (milliseconds): 1000–10000

The COM port baud rate is set to 9600

Leave the remaining settings at their defaults

←

S060B
303780

⋮

ADD

APPLY

Sensors Update frequency: 10

Scan Duration(ms): 1000

Scan retries until error: 10

COM output period(ms): 1000

COM baudrate: 9600 ▾

- BC02 Configuration of Bluetooth Oil Sensor Volume Parameters and Radar Status

←

S060B
303780

⋮

ADD

APPLY

Sensors Update frequency: 10

Scan Duration(ms): 1000

Scan retries until error: 10

COM output period(ms): 1000

COM baudrate: 9600 ▾

- Add radar status

Device: ▼

▼

▼

Data: Type Offset Size

Value: ☐ connect

- Add oil level volume parameters

Device: ▼

▼

▼

Data: Type Offset Size

Value: ☐ connect

- Add MAC address

Device: ▼

▼

▼

Data: Type Offset Size

Value: ☐ connect

- After completing the configuration additions, click 'APPLY' to save the settings.

←

S060B
303780

⋮

ADD

APPLY

Sensors Update frequency: 10

Scan Duration(ms): 1000

Scan retries until error: 10

COM output period(ms): 1000

COM baudrate: 9600 ▼

1 E0:4E:7A:64:84:72

io off

type:ff offset:104 size: 16 output on oil1 advertise

2 E0:4E:7A:64:84:72

type:ff offset:128 size: 8 = 1 io on

type:ff offset:128 size: 8 output on oil2 advertise

3 E0:4E:7A:64:86:49

io off

type:ff offset:104 size: 16 output on temp1 advertise

4 E0:4E:7A:64:86:49

type:ff offset:128 size: 8 = 1 io on

type:ff offset:128 size: 8 output on temp2 advertise

5.Oil-based configuration and radar activation

- pen the"BLE controller",find the Bluetooth broadcast name "088"and select to enter.Set the tank height (please enter the height of the oil level in the tank; for example: if the tank height is 150mm, set the tank height to 150)

←

088.4

⋮

296001

Temp:23°C

Tilt:123°

Bat:100%

FLS Hex Data:002CFA

Liquid Height(mm):4.6

Volume(L):0.4

EMPTY

FULL

TILT TO ZERO

Tank Height(mm): 150.0

SAVE

Filter:

1

▼

SAVE

b. Activate radar (once activated, Radar displays NO, TURN OFF). Radar detection range: 1–3 metres.

←

088.4

⋮

296001

Temp:23°C

Tilt:123°

Bat:100%

FLS Hex Data:002CFA

Liquid Height(mm):4.6

Volume(L):0.4

EMPTY

FULL

TILT TO ZERO

Tank Height(mm): 150.0

SAVE

Filter:

1

▼

SAVE

Radar:NO

TURN OFF

Upon detecting human presence, Radar changes from NO to YES.

Radar:NO

→ YES

TURN OFF

6、Dashcam & MDVR Host Configuration

After completing the wiring, power on the main unit and accessories. Connect your mobile phone to the main unit's Wi-Fi network, then use the configuration app (MCTool) to set the parameters. The specific configuration is as follows:

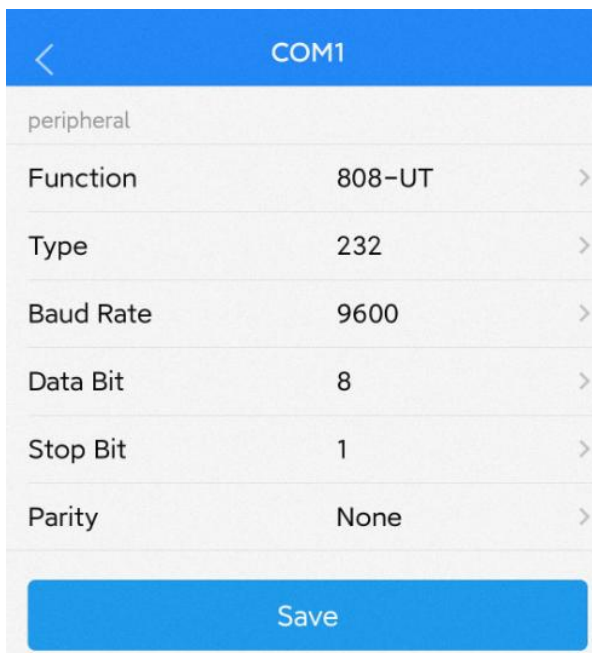
a. MCTool > Setting > Peripheral > COM1

Function: Select 808-UT

Type: Select 232

Baud Rate: Select 9600

Leave all other settings at their default values



COM1		
peripheral		
Function	808-UT	>
Type	232	>
Baud Rate	9600	>
Data Bit	8	>
Stop Bit	1	>
Parity	None	>
Save		

b. MCTool > Setting > Serial Information

Check whether the Status of COM1 is normal

Serial Information	
Name	COM1
Function	808-UT
Status	normal
Remarks	

c. MCTool > Setting > IO > IN1
 Enable is selected as Custom
 Level is selected as High

IN 1	
Enable	Custom >
Level	High >
Delay(s)	3
Wait(s)	0
Record	☐
Preview Mode	Mode 1 >
Record Lock Chn	选择了0项 >
Record Upload Chn	选择了0项 >
Alarm Output	选择了0项 >
Snap Chn	选择了0项 >
Preview Chn	选择了0项 >

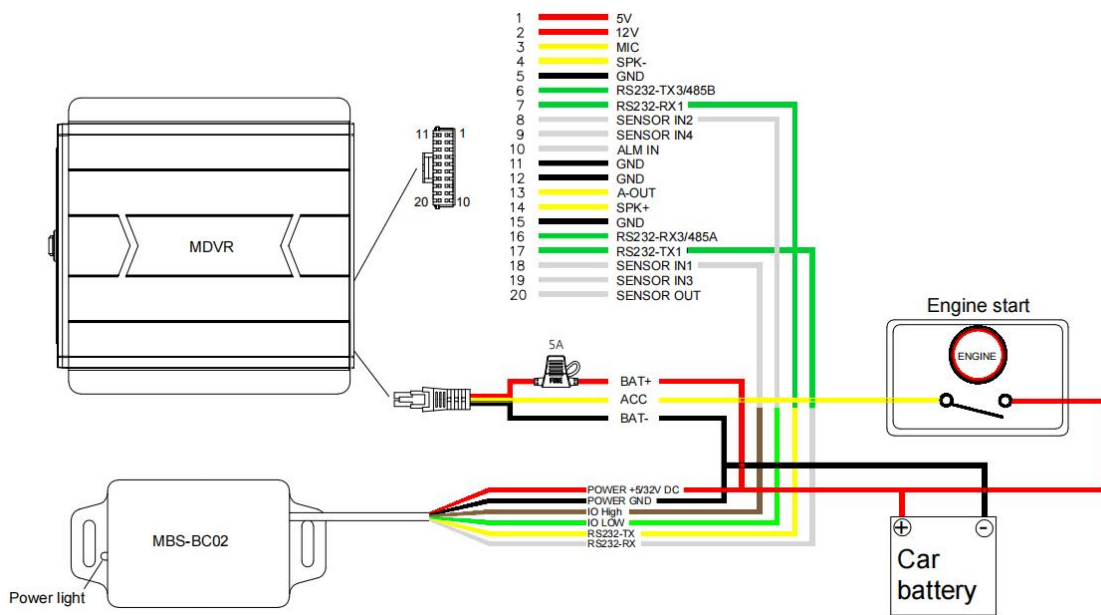
Live
 Playback
 Setting
 Calibration

d. MCTool > Setting > IO > IN2
 Enable is selected as Custom
 Level is selected as LOW



7、MBS-BC02 Wiring to Dashcam & MDVR

The TX of MBS-BC02 is connected to the RX of the host, the RX of MBS-BC02 is connected to the TX of the host, the IO High of MBS-BC02 is connected to the IO IN1 of the host, and the IO Low of MBS-BC02 is connected to the IO IN2 of the host.



8、 Dashcam & MDVR Host Configuration

After completing the wiring, power on the main unit and accessories. Connect your phone to the main unit's Wi-Fi, then use the configuration app (MCTool) to set the parameters. The specific configuration is as follows:

1) MCTool > Settings > Peripheral > COM1

Function selected as 808-UT

Type is set to 232

Baud Rate is set to 9600

Other settings remain at their default values

<

COM1

peripheral

Function	808-UT	>
Type	232	>
Baud Rate	9600	>
Data Bit	8	>
Stop Bit	1	>
Parity	None	>

Save

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2) MCTool > Setting > Serial Information
Check whether the status of COM1 is normal.

Serial Information	
Name	COM1
Function	808-UT
Status	normal
Remarks	

9、MettaXIOT Platform configuration

1) Monitor

Please first ensure that the device has been deployed on the MettaXIOT platform and has valid location information.

2) Devices > IMEI > Search > Edit

Locate the device requiring configuration within the platform and proceed to edit it.

Dashboard
Customers
Users
Devices
Monitor
Video
Reports
17:00:49(UTC+08:00)
🔔
🔄
📄
🔔
liawer

Devices

IMEI

Model Select

Device Name

Label Select

Activation Time Start date End date

Device status Select

Phone

☐ Include sub-customer data

🔍 Search

🔄 Reset

Sell Devices
Export
Batch Commands
Batch Update
Add
Add Devices in Bulk
License Binding
Tag Management

No.	Device Name	IMEI	Model	Activation Time	Expiration Time	ICCID	Assigned customer	Operation
1	MC202-75679	940077775679	MC202	2024-11-26 19:35:08	2035-01-25	-	DevTest	Edit Command

3) Sensor Configuration > Add Sensors

Add a new Sensor

MC202-75679(940077775679)

Basic Information
Calculation Rules
Sensor Configuration
License
Data
Daylight Saving Time

Add Sensors

Sensor No defaults to 1

Sensor Name can be customized as needed

Sensor Type can be selected as required (using Bluetooth fuel sensor as an example in this document), choose Bluetooth

Sensor Model select MBS-BC02

First Bluetooth fuel sensor NO.1 select Fuel Volume (if two sensors, enter NO.2 for second sensor)

Sensor Configuration

Get Sensor Value



* Sensor Type

Bluetooth



* Sensor Model

MBS-BC02



Basic Information

* Sensor No.

1

* Sensor Name

Bluetooth Oil Sensing

Sensor Configuration

No. 1

Fuel Volume



No. 2



Sensor Information

 The system provides a default display name for each field, which you can modify according to your preference.

Save

Set up the first Bluetooth fuel sensor (NO.1)

Alias Name: Enter as needed

MAC: Enter the MAC address of the Bluetooth fuel sensor

Fuel Tank Level (multiple entries possible): Enter as needed

Fuel Quantity (multiple entries possible): Enter as needed

Sensor Configuration

Get Sensor Value ×

Sensor Information

 The system provides a default display name for each field, which you can modify according to your preference.

No. 1

Item Name

Proximity Detection(1-YES 0-NO)

* Alias Name

Proximity Detection(1-YES 0-NO)

Item Name

Fuel Tank Level (mm)

* Alias Name

Fuel Tank Level (mm) 

Item Name

Fuel Quantity(L)

* Alias Name

Fuel Quantity(L)

Item Name

MAC

* Alias Name

MAC

Save

Edit the added sensors

MC401X-33197(221083633197) ×

Basic Information Calculation Rules **Sensor Configuration** License Data Daylight Saving Time IO

Add

No.	Sensor No.	Sensor Name	Sensor Type	Sensor Model	Operation
1	-	Fuel level	Fuel Level	Omnicom LLS 4	Edit Delete Sync

4) Standard Vacancy

Before refueling, the fuel gauge and fuel level are at “0”

No. 1 - Calibration Rules

* Fuel Tank Level

0

* Fuel Quantity(L)

0

+ Add

5) Fill to the brim

We recommend refueling multiple times (the more times you do this, the more accurate the result will be)

Enter the actual amount of fuel added each time (for example: if you add 10 liters, enter 10 liters)

Enter the fuel tank level based on the data read by the platform

Sensor Configuration

Get Sensor Value

The system provides a default display name for each field, which you can modify according to your preference.

Item Name

Fuel Tank Level

* Alias Name

Fuel Tank Level

Item Name

Fuel Quantity(L)

* Alias Name

Fuel Quantity(L)

Calibration Rules

Set up the relationship between tank level and remaining fuel. At least one calibration point is required.

No. 1 - Calibration Rules

* Fuel Tank Level

0

* Fuel Quantity(L)

0



Save

Sensor Configuration

[Close](#)[Get Sensor Value](#)

tion point is required.

No. 1 - Calibration Rules

* Fuel Tank Level

* Fuel Quantity(L)



No. 2 - Calibration Rules

* Fuel Tank Level

* Fuel Quantity(L)



No. 3 - Calibration Rules

* Fuel Tank Level

* Fuel Quantity(L)

[Save](#)

Fuel level Omnicomm LLS 4



Fuel Tank Level 133 4/16 23:56

Fuel Quantity(L) 0 4/16 23:56

Sensor Configuration

[Close](#)[Get Sensor Value](#)

No. 1 - Calibration Rules

* Fuel Tank Level

* Fuel Quantity(L)



No. 2 - Calibration Rules

* Fuel Tank Level

* Fuel Quantity(L)



No. 3 - Calibration Rules

* Fuel Tank Level

* Fuel Quantity(L)

[+ Add](#)

Fuel Alarm Configuration

[Save](#)

Fuel level Omnicomm LLS 4



Fuel Tank Level 265 4/16 23:59

Fuel Quantity(L) 0 4/16 23:59

Sensor Configuration

Close Get Sensor Value



0	0	✖
No. 2 - Calibration Rules		
* Fuel Tank Level	* Fuel Quantity(L)	
133	10	✖
No. 3 - Calibration Rules		
* Fuel Tank Level	* Fuel Quantity(L)	
265	20	✖
No. 4 - Calibration Rules		
* Fuel Tank Level	* Fuel Quantity(L)	
439	35	✖
+ Add		

Fuel level Omnicomm LLS 4

Fuel Tank Level	439	4/17 00:01
Fuel Quantity(L)	0	4/17 00:01

Save

Fuel Change Mode:Capacity Gap(L)

Min: ≥ 3

Max: ≤ 100 (Enter the actual fuel tank capacity)

Sensor Configuration

Get Sensor Value ✕

* Fuel Tank Level

* Fuel Quantity(L)



+ Add

Fuel Alarm Configuration

Setting Recommendations:
Calculation rule: A fuel change is triggered when $\text{Min} \leq \text{calculation factor } X \leq \text{Max}$. Based on the change between the new and old values, the system distinguishes between fuel addition and fuel reduction.

- Percentage mode: calculation factor $X = \frac{[\text{new value} - \text{old value}]}{\text{old value}}$. Recommended $\text{Min} \geq 3$, $\text{Max} \leq 100$.
- Capacity mode: calculation factor $X = [\text{new value} - \text{old value}]$. Recommended $\text{Min} \geq 5$, $\text{Max} \leq \text{maximum tank capacity}$.
- Flow rate mode: calculation factor $X = \frac{[\text{new value} - \text{old value}]}{[\text{latest report time} - \text{original report time}]}$. Recommended $\text{Min} \geq 10$, $\text{Max} \leq 50$.

Setting too low (e.g., 0.1%) may cause frequent false alarms due to driving vibrations

Fuel Change Mode

Capacity Gap(L) ▼

* Min

* Max

Save