MEITRACK TA255 series
Solar Asset Tracker
User Guide

Change History

File Name	MEITRACK TA255 series Solar Asset Tracker User Guide	Creation Date	2023-03-22
Project	TA255 series trackers	Modification Date	2024-01-15
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Document Changelog

Version	Date	Modification
1.0	2023-03-22	Initial draft.
1.1	2023-04-04	1. Add MT Manager+ IOS APP download link. 2. Modify the boot mode and 1-wire interface parameters.
1.2	2024-01-15	1. Remove STA mode.

Contents

1 Product Introduction

The TA255 series of products is a new solar asset tracker developed in 2022 by Meitrack. It is mainly used to track goods, valuables, equipment, and other assets. You can attach the tracker to a shelf or the body of a truck with magnets. If the tracker drops, a drop alert is generated. The model features unique attachable shell design and batteries of up to 22,400 mAh, and is water resistant, dustproof, and shockproof.

2 Product Specifications

Physical specification	
Dimensions of the tracker (excluding the charging cover)	71 mm × 95 mm × 27 mm (L × W × H)
Outer case material	ABS

Power	
Operating voltage	3.7V
Minimum current in sleep mode	0.29mA
Built-in battery (optional)	3200 mAh/3.7V
Charging voltage	Magnetic charging: 5.5 V/2 A Charging by using a battery box (I/O cable): 11.4–60 V
Solar charging current	Charge the tracker by using a solar panel: MAX 70 mA Charge a battery box by using a solar panel: MAX 100 mA

Frequency band	
TA255E	EGPRS: 850/900/1800/1900Mhz Cat M1/Cat NB2: LTE-FDD:B1/B2/B3/B4/B5/B8/B12/B13/B14（Cat M1 only）/B18/B19/B20/B25/B26/B27（Cat M1 only）/B28/ B66/B71（Cat NB2 only）/B85
TA255L-E	GSM:850/900/1800/1900MHz LTE-FDD:B1/B3/B5/B7/B8/B20/ B28
TA255L-AU	GSM:850/900/1800/1900MHz LTE-FDD:B2/B3/B4/B5/B7/B8/B28/ B66

GNSS	
GPS mode	Supports GPS,BD, and Glonass； supports dual-mode combination configuration. Support LBS+WIFI assisted positioning.
Positioning accuracy	2.5M
Tracking sensitivity	-162dBm
GSM/GPS antenna	GSM(Internal FPC antenna) ,GPS(Internal ceramic antenna).
Bluetooth	
Specification	Compliant with Bluetooth 5.0/4.2 specification.
WiFi	
Specification	802.11 b/g/n. Frequency: 2.4 GHz.
Interface	
LED indicator	Green LED indicator showing the GSM signal. Blue LED indicator showing the GPS signal. Red LED indicator showing the charging status.
Dual sim card	Dual card single waiting, Nano-sim and E-sim(Reserved)
USB	Micro-USB
Memory	8 MB flash
Operating environment	
Operating temperature（built-in battery）	-20℃~60℃
Storage temperature（exclude Battery）	-40℃-80℃
Water resistance rating	IP67
Function	
Sensor	3-axis accelerometer (used to determine whether the tracker vibrates, is moving, or stops moving). Drop detection sensor.
Scenarios	Installation alert or drop alert. solar charger. Attachable battery box. Round or polygonal geo-fence alert. Low power alert for a battery box. Cornering report. Speeding alert. Heartbeat report. Impact detection.

	Harsh cornering detection. Harsh acceleration and braking detection. Real-time location query, tracking by time interval, or tracking by distance
.Time Synchronization	GNSS , NITZ
firmware update	FOTA, USB upgraded
Configuration	Meitrack Manager (USB), MT Manager+ APP(Bluetooth),MS03 Platform, FOTA, SMS

Certification
CE certification

Protocol
Meitrack CCE Protocol

3 Main Device and Accessories

3.1 Standard Product Kit

3.1.1 Product Kit 1

Product Kit 1
TA255L tracker (excluding batteries)
Magnetic charging cable
Magnetic suction charging cover
Power adapter (USB port; 5.5 V; 2 A)
L wrench
8 hexagon screws
2 set screws at the sides of the tracke
CD download card

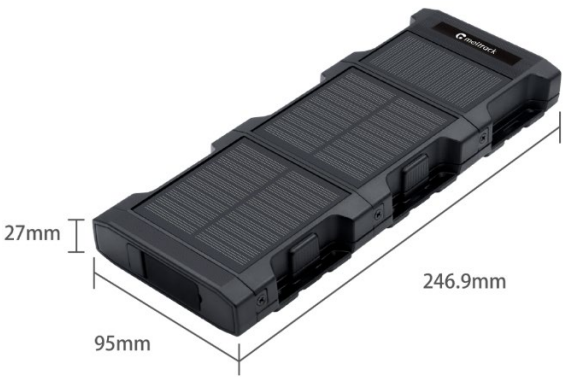
Specifications
Tracker + Magnetic suction charging cover (3,200 mAh)
83.1 mm × 95 mm × 27 mm (L × W × H)
156.25g（weight）

3.1.2 Product Kit 2

Product Kit 2
TA255L tracker (excluding batteries)
Magnetic charging cable
Magnetic suction charging cover
Power adapter (USB port; 5.5 V; 2 A)
Battery box 1
L wrench
16 hexagon screws
4 set screws at the sides of the tracke
CD download card

Specifications
Tracker + Battery box 1+ Magnetic suction charging cover (3,200 mAh x 4 = 12,800 mAh)
165.1 mm × 95 mm × 27 mm (L × W × H)
269g（weight）

3.1.3 Product Kit 3



Product Kit 3
TA255L tracker (excluding batteries)
Magnetic charging cable
Magnetic suction charging cover
Power adapter (USB port; 5.5 V; 2 A)
Battery box 2
L wrench
24 hexagon screws
6 set screws at the sides of the tracke
CD download card

Specifications
Tracker + Battery box 2+ Magnetic suction charging cover (3,200 mAh x 7= 22,400 mAh)
246.9 mm × 95 mm × 27 mm (L × W × H)
381.75g（weight）

3.1.4 Product Kit 4

Product Kit 4
TA255L tracker (excluding batteries)
I/O cable 0.5 meters power cover
L wrench
8 hexagon screws
2 set screws at the sides of the tracke
CD download card

Specifications
Tracker + power cover (3200 mAh)
88.2 mm × 95 mm × 27 mm (L × W × H)
190.35g（weight）

3.1.5 Product Kit 5

Product Kit 5
TA255L tracker (excluding batteries)
I/O cable 0.5 meters power cover
Battery box 1
L wrench
8 hexagon screws
2 set screws at the sides of the tracke
CD download card

Specifications
Tracker + Battery box 1 + power cover (3,200 mAh x 4 = 12,800 mAh)
170.2 mm × 95 mm × 27 mm (L × W × H)
303.1g（weight）

3.2 Optional Accessory

Product Kit Optional Accessory	
Battery box 1. Batteries are excluded. 2. Up to three 18650 batteries can be installed into a battery box. 3. One tracker can be connected to up to two battery boxes. 4. Dimensions of a battery box: 82 mm × 95 mm × 27 mm	Battery LG MHI-18650-3,200 mAh battery. One end of the battery is pointed. Dimensions: 18 × 67 mm. One battery is installed into the tracker, while three batteries are installed into a battery box.

TA255 magnet kit

Screws are included. A TA255 magnet kit includes four magnets, four screws, four nuts, and a piece of EVA foam.

TA255 magnet installation kit

Magnets are excluded. A TA255 magnet installation kit includes four screws, four nuts, and a piece of EVA foam.

Optional Bluetooth accessories（Applicable to Product Kit 1/2/3/4/5）

Bluetooth temperature and humidity sensor (AST101)	Bluetooth temperature and humidity sensor （ELA）	Bluetooth beacon （AB401）	Bluetooth beacon （AB402）
			

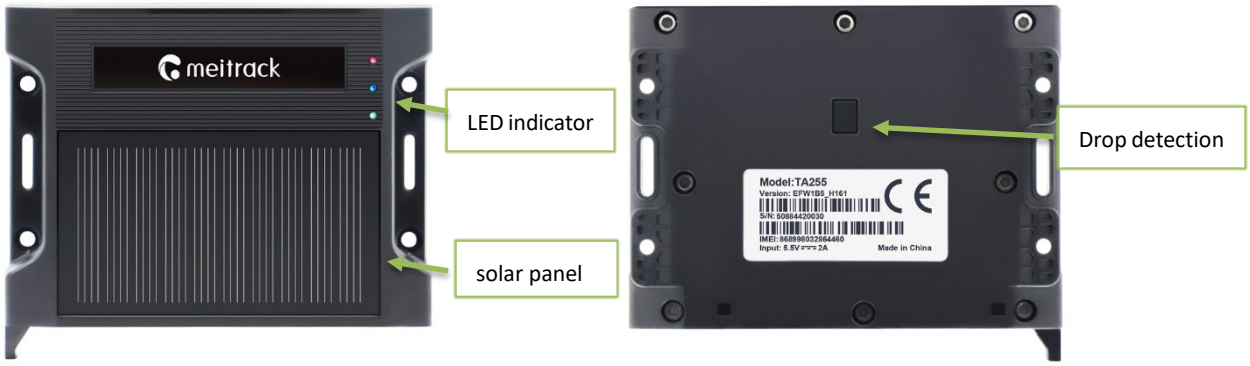
Optional other external accessories（Applicable to Product Kit 4/5）

fuel level sensor (analog input voltage) （A53）	digital temperature sensor (A52)	Relay(12/24V)	iButton reader
			

Bluetooth ultrasonic fuel sensor(range 100cm) (ASUF103)	Bluetooth ultrasonic fuel sensor(range 250cm) (ASUF104)	Ultrasonic fuel level sensor (range 400cm) (ASUF105)	Ultrasonic fuel level sensor (range 400cm, None AD analog output) (A76)
			

RFID reader

4 Product Panel



（(Front of the tracker)）　　(Rear of the tracker)）

(Rear of the battery box)

5 Charging mode and charging time

Magnetic suction charging cover	power cover
Connect the tracker to the 5.5 V charger by using the magnetic charging cable.	plug the red I/O cable into the positive terminal of the power supply (11–60 V) and connect the black cable to the GND wire.

charging time
Charging time of the tracker: 6–7 hours Charging time of the tracker and battery box 1: 13–15 hours Charging time of the tracker and battery box 2: 13–15 hours

Note: If the battery power is low, it may affect positioning and data transmission of the tracker. So you need to charge the battery before using.

6 Charging mode and charging time LED Indicator

6.1 Charging LED Indicator

Power LED indicator (red)	Description
Steady off	The battery is low, the tracker is in sleep mode, or the tracker stops charging.
Steady on	The tracker is charging. (When the tracker is supplied power with an external power supply or with the solar panel, the red LED indicator is on.)

LED Indicator(blue)	Description
0.5 seconds on and 0.5 seconds off (one cycle every 1 second)	The tracker is charging, and the battery power is in the range of 0 to 50%. When the battery power reaches 70%, the LED indicator stops blinking.
1 second on and 1 second off	The tracker is charging, and the battery power is in the range of 51% to 60%. When the battery power reaches 70%, the LED indicator stops blinking.
2 seconds on and 1 second off	The tracker is charging, and the battery power is in the range of 61% to 70%. When the battery power reaches 70%, the LED indicator stops blinking.
Steady on	When the battery power is greater than or equal to 70%, the LED indicator is steady on.

LED Indicator(green)	Description
0.5 seconds on and 0.5 seconds off (one cycle every 1 second)	The tracker is charging, and the battery power is in the range of 71% to 80%. When the battery power reaches 98%, the LED indicator stops blinking.
1 second on and 1 second off	The tracker is charging, and the battery power is in the range of 81% to 90%. When the battery power reaches 98%, the LED indicator stops blinking.
2 seconds on and 1 second off	The tracker is charging, and the battery power is in the range of 91% to 98%. When the battery power reaches 98%, the LED indicator stops blinking.
Steady on	When the battery power is greater than or equal to 98%, the LED indicator is steady on.

Note: The three LED indicators are steady on. The battery power is full.

6.2 Device Status LED Indicator

GPS LED indicator (blue)	Description
Blink fast (once every 0.1 seconds)	The tracker is being initialized.

Blink slowly (1 second on and 2 seconds off)	The GPS is invalid.
Blink fast (0.1 seconds on and 2.9 seconds off)	A GPS signal is received.

Network status LED indicator (green)	Description
Blink fast (once every 0.1 seconds)	The tracker is being initialized.
Blink slowly (1 second on and 2 seconds off)	No signal is received from a base station.
Blink fast (0.1 seconds on and 2.9 seconds off)	A signal is received from a base station.

Notes:

1. Charging box kit (magnetic connection): When the tracker is charging, the charging LED indicator functions. After the charging cable is plugged out and the tracker stops charging, the device status LED indicator functions. In this case, the GPS LED indicator shows the positioning status, while the GSM LED indicator shows the network status. (In the section " 6.1 Charging LED Indicator", the average value of the battery power is used.)
2. Battery box kit (I/O cable connection): When the ACC is on, the device status LED indicator functions. If the tracker is supplied power only with an external power supply and the ACC is off, the charging LED indicator functions.
3. If the tracker is supplied power only with the solar panel, the red LED indicator is on, and the device status LED indicator (blue and green LED indicators) functions.
4. When the tracker is charging in sleep mode, only the red LED indicator is on. When the tracker is fully charged, the red LED indicator is steady off. (When the tracker is charging or is not charging in sleep mode, the blue LED indicator and green LED indicator are steady off.)

7 First Use

7.1 Insert a SIM card

Gently put the SIM card into the card slot with the gold-plated contacts facing down. Close the back cover of the tracker and tighten the hexagon screws. (SIM card hot-swapping is supported.)

7.2 Installing Product Kit

In this section, the product kit "Tracker + Battery box 1 + Magnetic suction charging cover " is used as an example.

Fasten the battery box to the tracker

1.Align the battery box with the tracker and fasten the battery box to the tracker.

2.Push the battery box and tracker towards the middle until they snap into place.

3.Tighten the screws on both sides.

Install magnets.

1. Align magnets with the battery box, as shown in the figure on the right.
2. Align screws with nuts and fasten the screws, as shown in the figure on the right.
3. Repeat the preceding steps to install magnets to the tracker. The magnet installation method of the battery box is the same as that of the tracker.

Install EVA foam.

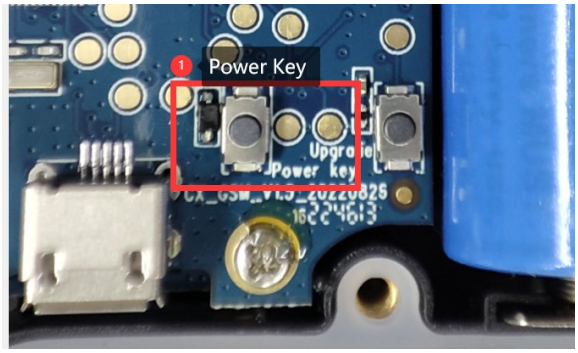
Remove the round foam from the center of the EVA foam, tear the sticker, and then attach the EVA foam to the drop detection position on the rear of the tracker, as shown in the figure on the right. Do not cover the lens.

7.3 Turning on TA255L

There are two ways to start up.

The first way

After the battery is installed, the device will start up automatically.



Hold down the power button for 3 seconds and the device will shut down.

The second way

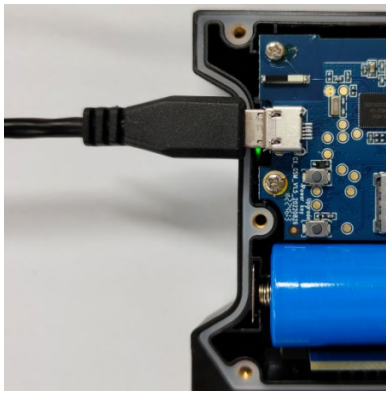
Connect the tracker to an external power supply by using the magnetic charging cable or the I/O power cable. Then the tracker is turned on automatically.

7.4 Configuring Device Parameters

7.4.1 Configuring Device Parameters by Using Meitrack Manager

1.After the device is powered on, there are two ways to connect it to the computer via USB cable.

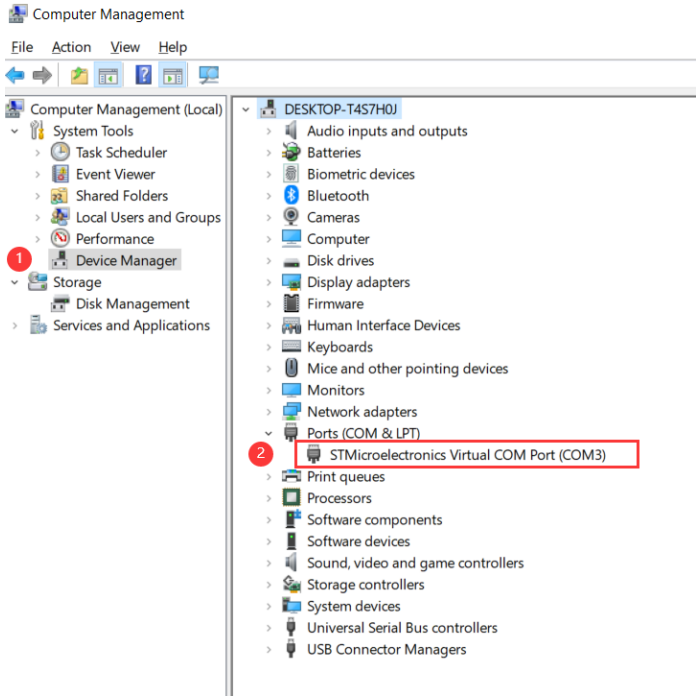
Method 1: USB port of the tracker	Method 2: Standard product kit 1/2/3
Connect the USB port of the tracker to your computer by using a standard Android USB cable.	For customers purchasing standard product kit 1/2/3, connect the tracker to your computer by using the USB cable provided by Meitrack.



2.Installing the USB Driver

Before you use Meitrack Manager, install the USB driver and Meitrack Manager first. (If the operating system of your computer is Windows 10/11, the USB driver maybe already exists.)

Right-click My Computer, select Manage, and view Device Manager. If STMicroelectronice Virtual COM Port (COM3) is displayed as follows, the data communication is successful.



If the serial port is not displayed, visit the following website to install the USB driver:

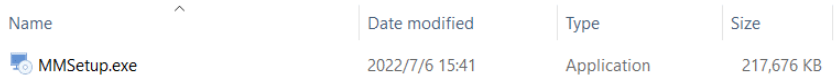
https://www.meitrack.com/cd-download/Aided_Software/STM32_USB_Driver.rar

3.Installing Meitrack Manager

a) Download the Meitrack Manager software.

Visit https://www.meitrack.com/cd-download/Aided_Software/MMPlusSetup.rar and download the Meitrack Manager installation package.

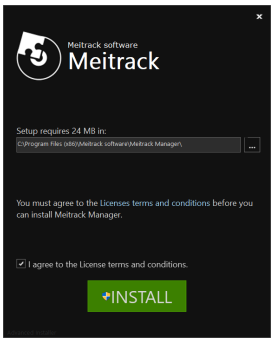
b) Unzip the downloaded installation package and double-click the MMSetup.exe file to install Meitrack Manager.

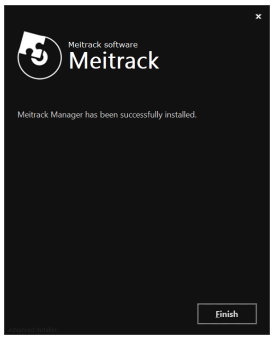


c) Install Meitrack Manager as prompted.

Select an installation directory and choose I agree to the License terms and conditions. The default installation directory is in C drive. Then click Next.

On the page that is displayed, click Finish. The software installation is finished.



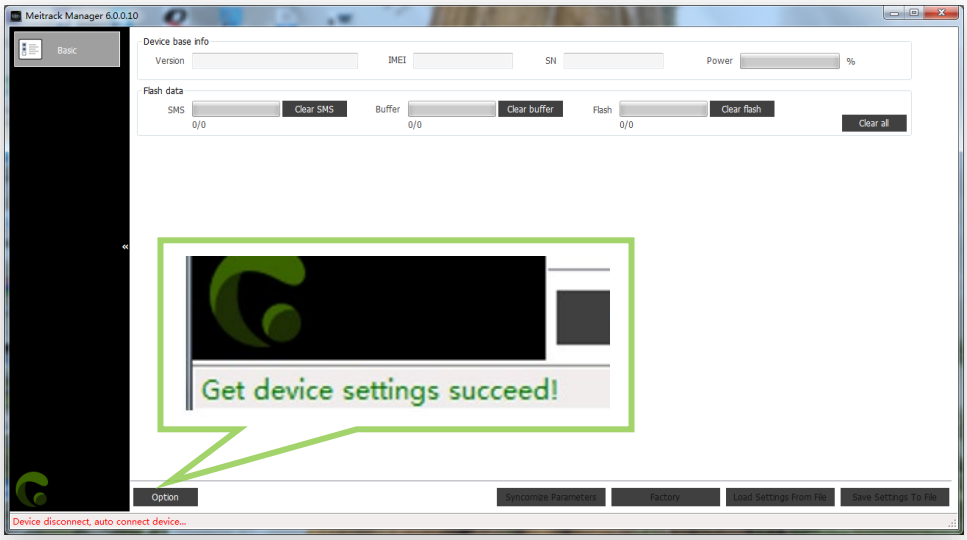


4.Running Meitrack Manager

a) Start Meitrack Manager on your computer. Then Device disconnected, auto connect device... is displayed in the lower left corner of the window.

b) Turn on the device, and connect it to the computer by using the USB cable.

c) If Get device setting succeed! is displayed in the lower left corner of the window, Meitrack Manager is run successfully.



Note: If the connection fails, check whether the USB driver is installed.

5.Configuring GPRS Parameters

Please follow the following steps to set:

① Click "Tracking" to open GPRS Tracking setting parameters.

② GPRS: Select TCP.

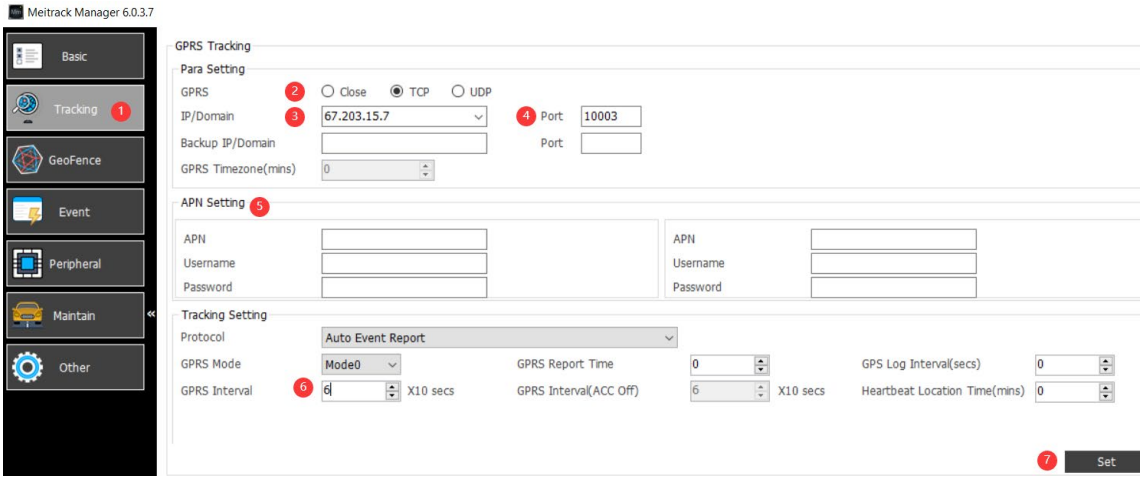
③ IP/Domain: Select (U.S.A): 67.203.15.7.

④ The Meitrack server port is 10003.

⑤ Set the APN based on the operator of SIM cards, APN user name, and password. If no user name and password are required, leave them blank. If left blank, the device will choose the APN automatically.

⑥ Set the interval for regularly reporting GPRS data.

⑦ After the GPRS parameters are configured, click Set to save the settings.



7.4.2 Configuring by Bluetooth Configuration Tool-MT Manager+

1. Scan the QR code to download the MT Manager+ APP and install on the phone

https://www.meitrack.com/cd-download/Aided_Software/MT_Manager+.apk

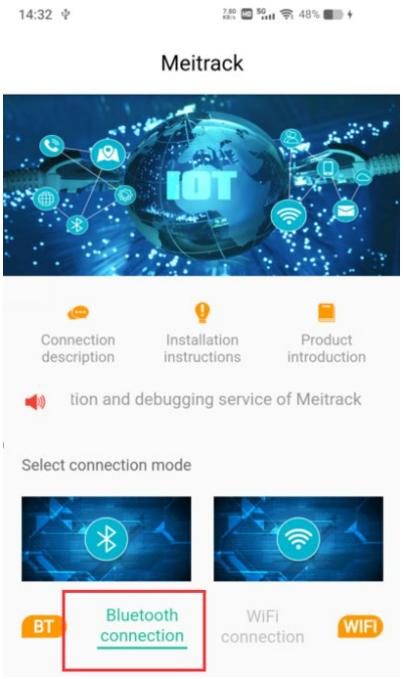
https://apps.apple.com/cn/app/mt-manager/id1640858688

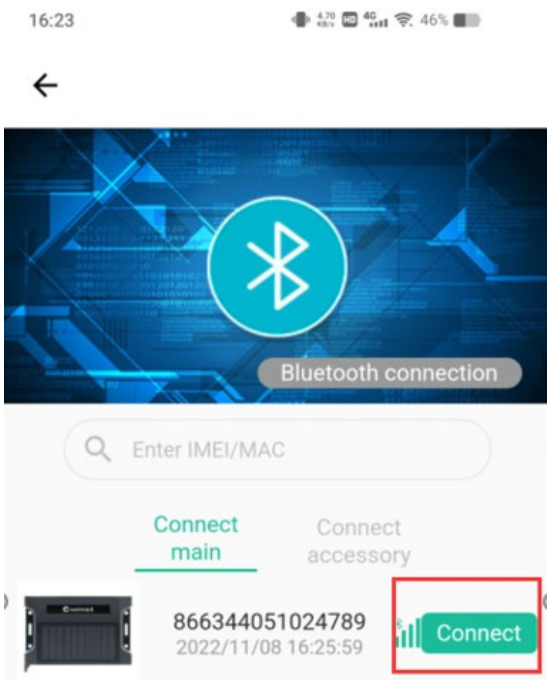
2. Open MT Manager+.

a）Turn on the Bluetooth function of the phone and start the TA255L,then open the MT Manager+ APP, you could see the page as

b）Choose the device you want to configure and press the “Connect”.

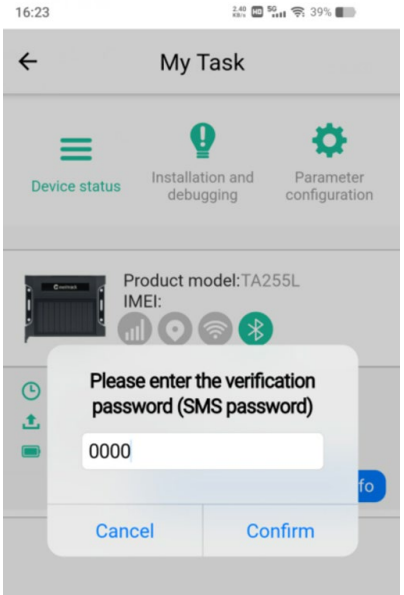
below, click the “Bluetooth connection” to enter device list.

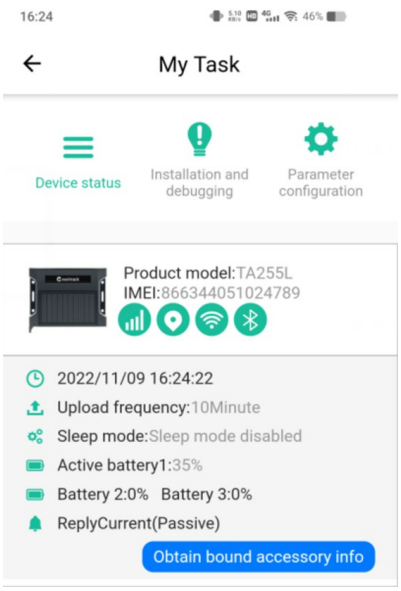




Note: If TA255L cannot be found through search, please make sure that the device is powered on and broadcasting mode is set.

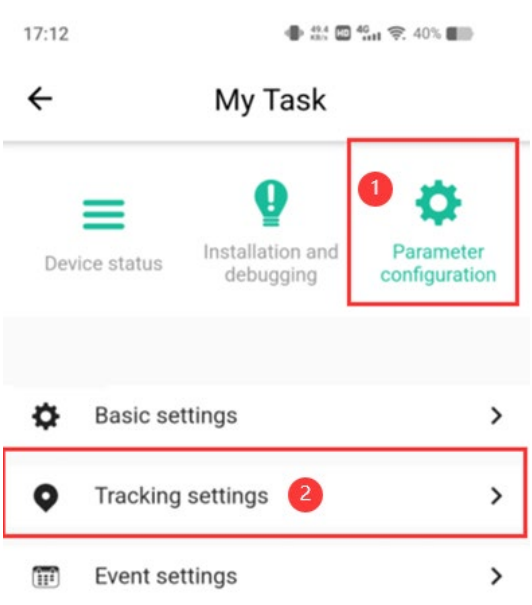
3. After entering the password, the connection will be established, and you can view the device information and parameters once the connection is completed. (The default password is the SMS password, please change it in time for information security.)

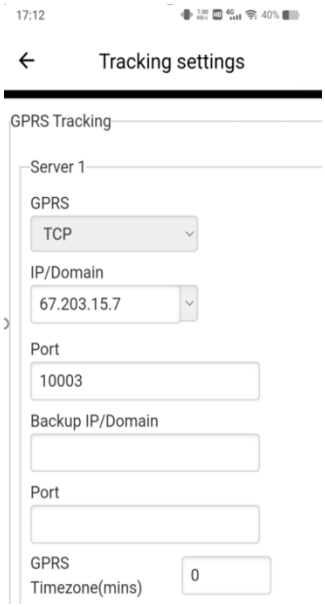




4.Configuring GPRS Parameters

Choose the “Parameter configuration” icon then into the “Tracking settings”. configure GPRS Parameters.

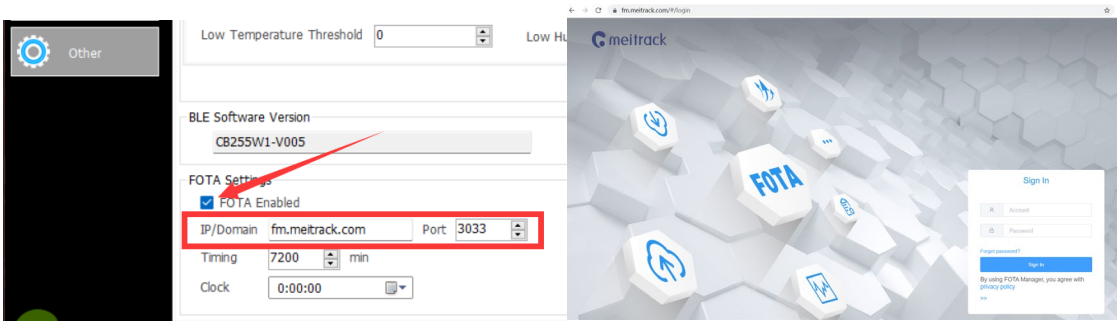




7.4.3 Configuring Device Parameters by Using SMS

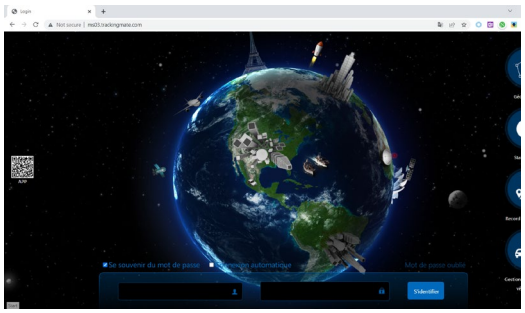
1. Set the GPRS parameter SMS command: **0000,A21,Connection mode,IP address,Port,APN,APN user name,APN password**
Description Connection mode = 0: function disabled. Connection mode = 1: function enabled; use the TCP/IP reporting mode. Connection mode = 2: function enabled; use the UDP reporting mode. IP address: IP address or domain name. A maximum of 32 bytes are supported. Port: a maximum of 5 digits. APN/APN user name/APN password: a maximum of 32 bytes respectively. If no user name and password are required, leave them blank.
Example：0000,A21,1,67.203.15.7,10003,,,

7.4.4 Configuring Device Parameters by Using FOTA Manager Platform

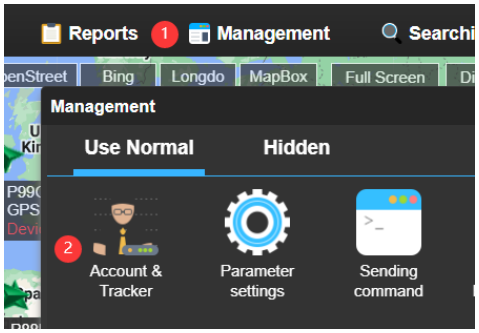
Before using the FOTA Manager platform to configure devcie parameters in batches, you must enable FOTA. By default, FOTA is enabled. (You can use your MS03 account to log in to the FOTA Manager platform, or you apply to Meitrack for a login account.)

For more information about the FOTA Manager platform, see the MEITRACK FOTA Manager User Guide.

8 MS03 Platform

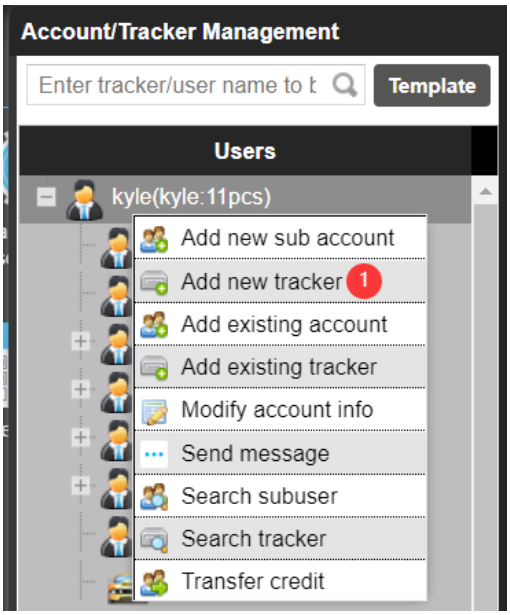
1.Visit http://ms03.trackingmate.com , enter the user name and password, and log in to the MS03. (Purchase the login account from your provider.)



2.On the main interface, choose **Management**. Select **Account & Tracker** from Use Normal.



3.On the **Account/Device Management** window, right-click a user, and select **Add new tracker**.



4.On the Add new tracker window, set the following parameters, and click Submit.

① IMEI：Identifies the tracker's IMEI number. (Query the number by SMS command: 0000,E91.)

② Tracker password：default is 0000;

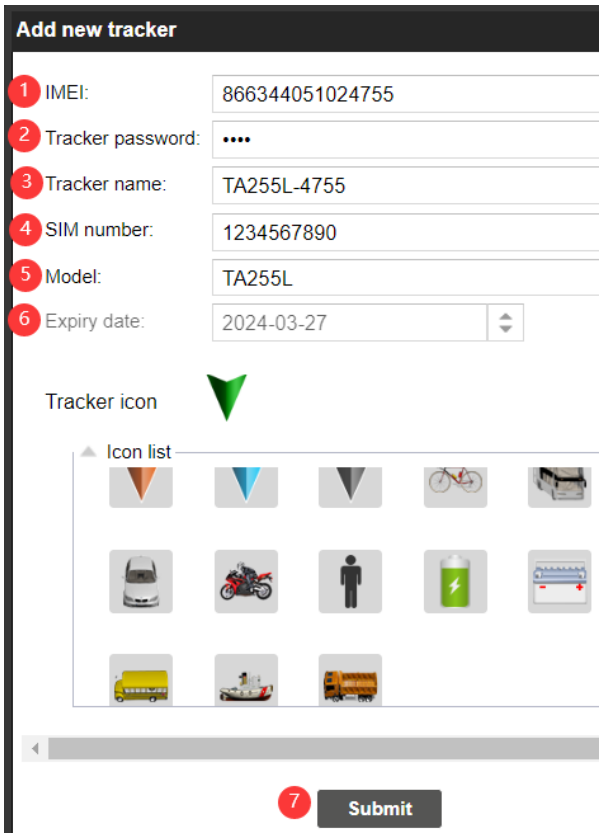
③ Tracker name: You can customize a name, such as the car license plate number, driver name, and company name.

④ SIM number: indicates the phone number of your SIM card used in the tracker.

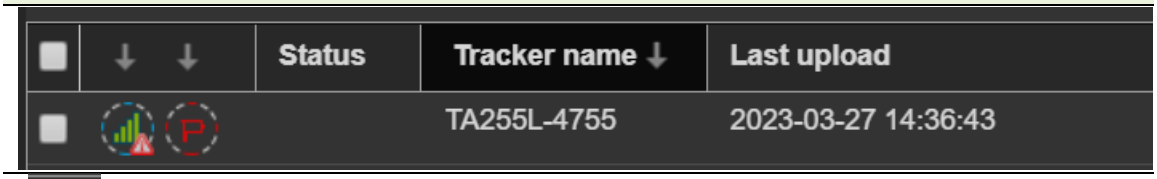
⑤ Model: Select the tracker model.

⑥ Expiry date: Select a valid date.

⑦ Click Submit and the Settings are complete.



5.Check the device online



The icon turns green. TA255 is online successfully.

Note: The MS03 platform supports the following functions.

- Track by time interval or distance.
- Query historical trips.
- Set polygonal geo-fences.
- Bind driver and vehicle information.
- View different types of reports.
- Send commands in batches.
- Support OTA updates.

For details, see the *MEITRACK MS03 GPS Tracking System User Guide*.

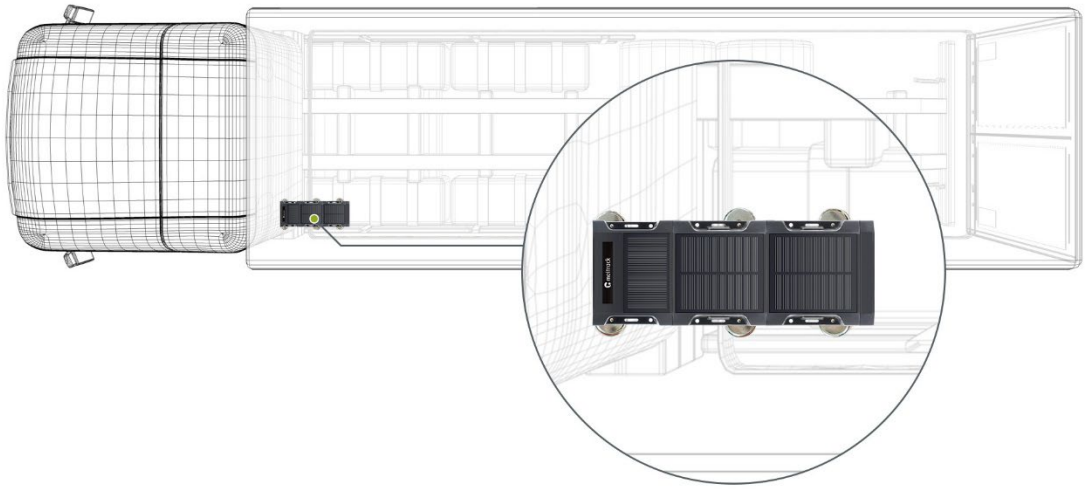
9 Installing the Tracker

9.1 Magnetic Installation

Magnets have strong magnetic forces. To prevent your fingers from being pinched, do not place your fingers between the tracker and the installation location during installation. Hold the upper and lower sides of the tracker with your

fingers, as shown in the following figure.

The following figure shows how to install the tracker onto a truck:



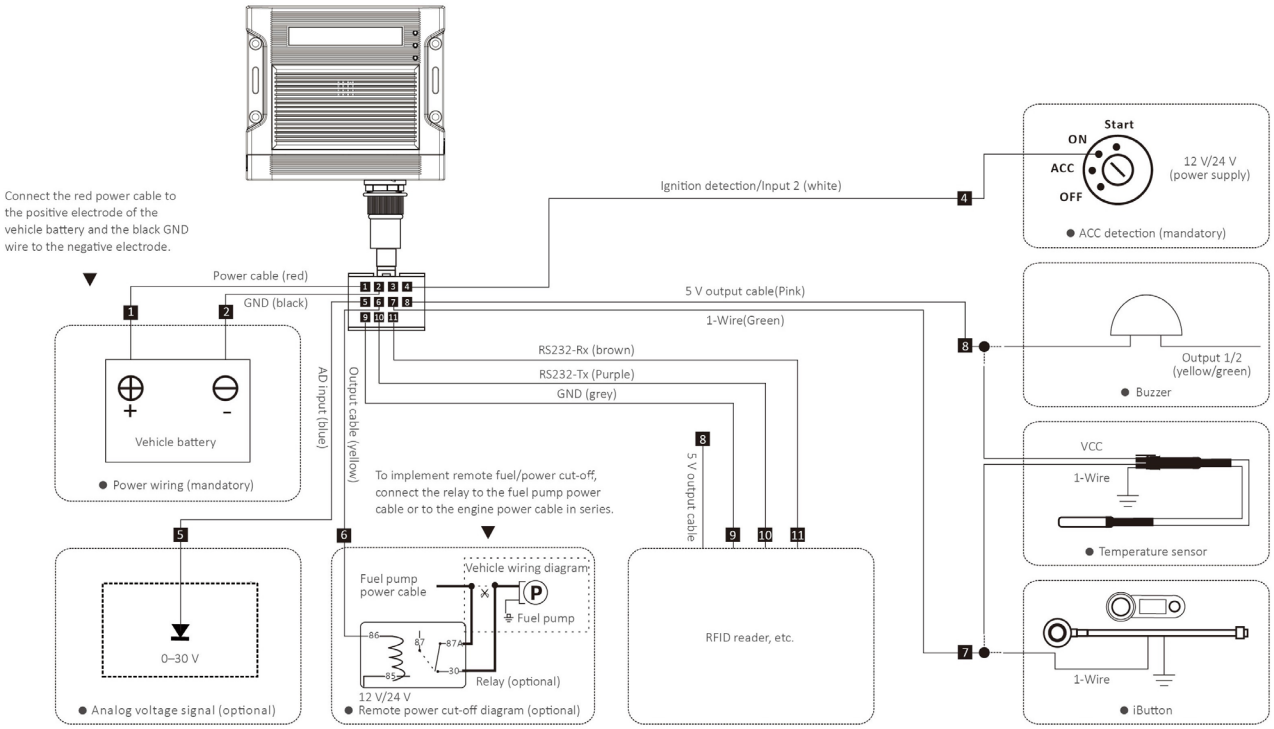
9.2 I/O Cable Installation(Only applicable to Product Kit 4/5)

1	2	3	4	5	6	7	8	9	10	11
Power (+)	GND (-)	Input 1 (+)	Output 1	Analog input 1	1-Wire port	RS232-TX	RS232-RX	5 V output	GND	GND

Pin Number	Cable Color	Description

1 (Power +)	Red	Positive charge of the power input. Connect to the positive charge of the vehicle battery. Input voltage: 11.4–60 V. 12 V or 24 V is recommended.
2 (GND)	Black (thick)	Ground wire. Connect to the negative charge of the vehicle battery or to the negative terminal.
3 (Input 1)	White	Digital input (positive trigger). The port can be configured as the negative trigger. Connect to the vehicle's ACC cable by default to detect the vehicle's ACC status.
4 (Output 1)	Yellow	Open collector output. The port can be configured as the PWM output. The output power cannot be greater than 500 mA.
5 (Analog input 1)	Blue	Valid voltage of analog input 1: 0–30 V.
6 (1-Wire port)	Green	Connect to the iButton reader or temperature sensor.
7 (RS232-TX)	Purple	RS232-TX
8 (RS232-RX)	Brown	RS232-RX
9 (5 V output)	Pink	5 V output. Connect to a peripheral. The output power cannot be greater than 500 mA.
10 (GND)	Black (thin)	Ground wire. Connect to a peripheral.
11 (GND)	Grey	Ground wire. Connect to a peripheral.

9.2.1 Wiring



10 Safety and Usage Instructions

Only Meitrack-approved accessories can be used.

Incompatible accessories may result in equipment damage or personal injury.

Operate and handle the battery and charger carefully.

- Only batteries and chargers specified by Meitrack can be used. Incompatible batteries and chargers may result in equipment damage or severe personal injury.

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