

MEITRACK T622 Series User Guide



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2 Product Introduction

2.1 Product Overview

The T622 series includes 3 device models: T622, T622G, T622E, distinguishing 2G, 3G, LTE CAT M1 & CAT NB1 network versions. With CANBUS function that supports FMS (Fleet Management System) protocol, and can support accessories such as: iButton, Garmin navigation screen and LLS fuel sensor. It is a brand new high-end vehicle GPS tracker with market-proven quality and precise positioning. And it supports various peripherals and can be installed into taxis, freight cars, and buses.

2.2 Product Functions

2.2.1 Position Tracking

- GPS + LBS positioning
- Real-time location query
- Track by time interval
- Track by distance
- Cornering report
- Track by mobile phone
- GPS data filtering

2.2.2 Anti-Theft

- SOS alarm
- GPS antenna cut-off alarm
- External power supply cut-off alarm
- GPS blind spot alarm
- Remote vehicle fuel/power cut-off
- Engine or vehicle door status alarm
- Towing alarm
- Polygonal geo-fence alarm

2.2.3 Monitoring

- Harsh acceleration and braking detection
- Idling detection
- Fatigue driving reminder and monitoring
- Speeding reminder and monitoring
- Driver authorization detection
- Fuel level monitoring
- Temperature monitoring
- Vehicle CANBUS data monitoring

2.2.4 Other Functions

- SMS/GPRS (TCP/UDP) communication (Meitrack protocol)
- Built-in 8 MB buffer for recording driving routes (storing 256 SMS cache records. The quantity of GPRS cache and GPS logs can be set and their sum is a fix value.)
- Mileage report
- Low power alarm for internal battery
- Roaming mode
- Over-the-Air (OTA) update
- Activate output by event
- Stop Moving and Start Moving alarms
- MS03 Online Parameter Editor

2.2.5 Functions of Optional Accessories

Optional Accessories		Function
A53 resistive fuel level sensor		Check the fuel level.
A52 digital temperature sensor + A61 sensor box		Check temperature.
iButton		Identify the driver ID and grant permission to start the vehicle. Monitor driver attendance by RFID report.
2 RS232 ports	Garmin navigator	Used for vehicle navigation and tracking
	A83 Camera (Used with a Micro SD card)	Take photos.
	Liquid level sensor (LLS) sensor	Check the fuel level and detect a fuel theft alarm.
	A76 ultrasonic fuel level sensor	Check the fuel level and detect a fuel theft alarm.
	RFID reader	Identify the driver ID and grant permission to start the vehicle. Monitor driver attendance by RFID report.

2.3 Product Features

2.3.1 Garmin Navigator

After the device is connected to a Garmin navigator, the GPS navigation, information dispatching, and location query functions become available. The device can connect to the Garmin navigator which supports FMI protocol V2.5 or later, and you must

purchase the Garmin data cable.

For details about the Garmin navigator, please visit the website:

<http://www8.garmin.com/solutions/mobile-resource-management/supported-devices/>.

For details about how to install and use the Garmin navigator, see the *Garmin Navigator User Guide*.

2.3.2 Harsh Acceleration/Braking Alarm

You can detect the harsh acceleration/braking alarm by setting the limit value.

Cautions on device installation:

1. The device should be installed into the vehicle according to the following direction.
2. The device installation angle cannot exceed 15 degrees.



The default harsh acceleration and braking alarm values are 200 mG and -250 mG respectively.

Accelerate and decelerate alarm

Accelerate alarm value	<input type="text" value="200"/>	mG
Decelerate alarm value	<input type="text" value="-250"/>	mG

Note: The alarm results vary according to the device installation, vehicle model, vehicle weight, and driving behaviors. After the device has been installed properly, you can use the Meitrack Manager software to adjust the harsh acceleration and braking alarm values by every 10 mG. You can also use the D78 command to set the values.

2.3.3 Roaming Mode

On the Meitrack Manager page, device parameters in roaming mode differ from that in non-roaming mode. When the device detects that it is in roaming mode, it will be operated according to roaming parameters. This helps to save network traffic and learn about device working status.

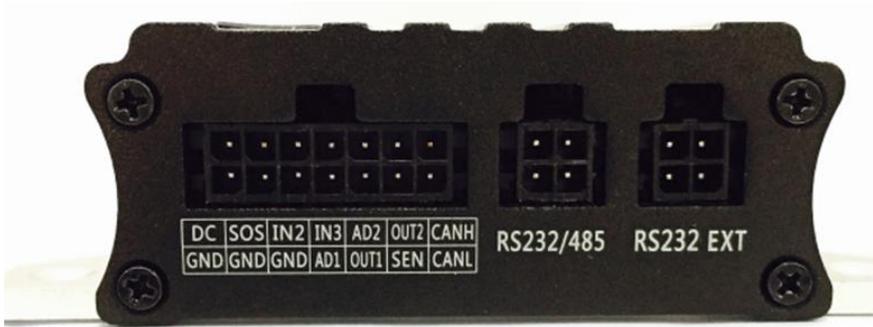
2.3.4 CAN Bus Interface

The device can read CAN bus data of a vehicle that supports the FMS protocol.

The following data can be read: vehicle speed, vehicle control status, accelerator pedal position (%), total fuel consumption, engine rotational speed, total engine run time, total mileage, engine coolant temperature, fuel level, engine torque, ambient temperature, torque at current speed, fuel consumption rate, axle weight, service distance, and instantaneous fuel consumption.

Caution:

1. To obtain the preceding data, the vehicle must support the FMS protocol.
2. Install the device based on vehicle types. Connect vehicle's CANH and CANL wires to tracker's CANH and CANL connectors respectively.



2.3.5 GPS Data Filtering

The GPS data filtering function can ensure GPS data accuracy and eliminate static drift.

You can set the following parameters by Meitrack Manager: **GPS speed range**, **GPS positioning accuracy**, and **Number of GPS satellites**. When the GPS data filtering function is enabled, if all conditions are met, GPS data will be updated. Otherwise, GPS data will be invalid.

GPS data filtering

Enable GPS data filtering (If all conditions below are met, GPS data will be updated.)

GPS speed range To km/h

GPS positioning accuracy < *10

Number of GPS satellites >

Note: This function can be enabled by Meitrack Manager.

2.3.6 Activating Output by Event

You can activate output by event.

For example:

1. When speeding is detected, the device can control buzzer sounds.
2. When unauthorized ignition or GPS antenna cut-off is detected, the engine will not be able to start.
3. When RFID triggering is detected, the device can control the vehicle door.
4. When input or output status is detected, the output will be active or inactive.

Event	SMS Header	Value	<input type="text" value="13431042850"/>	<input type="text"/>	<input type="text"/>	GPRS	Photo	Output
			<input type="checkbox"/> SMS <input type="checkbox"/> Call	<input type="checkbox"/> SMS <input type="checkbox"/> Call	<input type="checkbox"/> SMS <input type="checkbox"/> Call	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2
SOS Pressed	<input type="text" value="SOS"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Input 2 Active	<input type="text" value="Door Open"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 3 Active	<input type="text" value="Ignition On"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 1 Inactive	<input type="text" value="In1 Inactive"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 2 Inactive	<input type="text" value="Door Close"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 3 Inactive	<input type="text" value="Ignition Off"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Output port

Trigger time	<input type="text" value="100"/> *10ms	Duty cycle	<input type="text" value="50"/> %
Trigger mode	<input type="text" value="Low level"/>	PWM period	<input type="text" value="5000"/> us

Output 2

Trigger time	<input type="text" value="200"/> *10ms	Duty cycle	<input type="text" value="80"/> %
Trigger mode	<input type="text" value="Low level"/>	PWM period	<input type="text" value="6000"/> us

2.4 Specifications

Item	Specifications
Dimension	105 mm x 65 mm x 26 mm
Weight	190g
Power supply	DC 11.4–36 V/1.5 A
Backup battery	400 mAh/3.7 V
Power consumption	Current in sleep mode: 11 mA
Operating temperature	-10°C to 55°C
Operating humidity	5% to 95%
Working hour	45 hours in power-saving mode 4 hours in normal mode
LED indicator	Green indicator showing the GSM signal Blue indicator showing the GPS signal
Button/Switch	1 power button
Memory	8 MB buffer
Sensor	3-axis accelerometer (used to wake the device up by vibration and detect towing alarms)
Frequency band	T622 GSM/GPRS: 850/900/1800/1900 MHz T622G UMTS/HSDPA: 800/850/900/1900/2100 MHz GSM/GPRS: 850/900/1800/1900 MHz T622E Cat M1 & Cat NB1: LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 LTE TDD: B39(for Cat M1 only) EGPRS: 850/900/1800/1900
GNSS	GPS
GPS sensitivity	-161 dB
Positioning accuracy	2.5m
I/O port	3 digital inputs (1 negative trigger, 1 positive trigger, and 1 positive/negative selectable trigger) 2 analog detection inputs 2 outputs 1 RS232 EXT port 1 RS232/485 port 1 USB port 1 digital sensor port 1 CAN bus interface

2.5 Tracker and Accessories

T622/T622G/T622E and standard accessories:

- T622/T622G/T622E tracker
- External GSM antenna
- External GPS antenna
- I/O cable(without SOS button) 1 meter
- CD download card
- Micro serial USB cable

Optional accessories:

- SOS button
- iButton
- Relay (12 V/24 V)
- A53 fuel level sensor (voltage sensor)
- A52 digital temperature sensor + A61 sensor box
- RFID reader
- Garmin navigator
- Camera
- A76 ultrasonic fuel level sensor
- Liquid level sensor (LLS) sensor

2.6 About the T622 device

2.6.1 Appearance



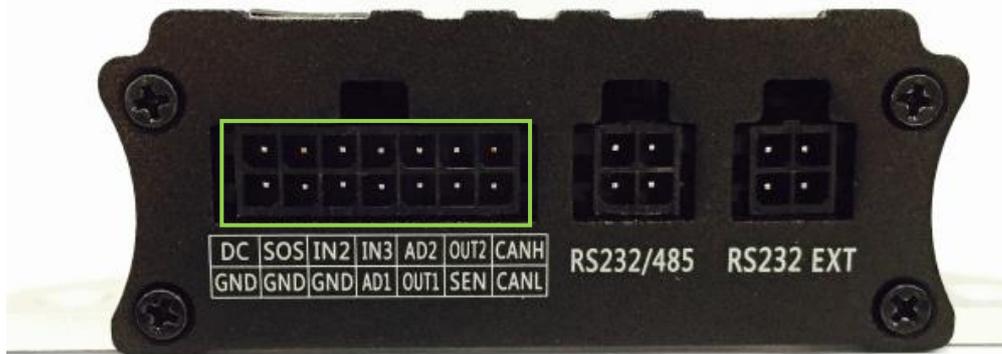
2.6.2 LED Indicator

Press and hold down the power button for 3–5 seconds to start the device.

GPS Indicator (Blue)	
Steady on	A button or an input is triggered.
Blink (every 0.1 seconds)	The device is being initialized or the battery power is low.
Blink (0.1 seconds on and 2.9 seconds off)	A GPS signal is received.
Blink (1 second on and 2 seconds off)	No GPS signal is received.
GSM Indicator (Green)	
Steady on	A call is coming in or a call is being made.
Blink (every 0.1 seconds)	The device is being initialized.
Blink (0.1 seconds on and 2.9 seconds off)	A base station signal is received.
Blink (1 second on and 2 seconds off)	No base station signal is received.

2.6.3 I/O Cable

The I/O cable is a 14-pin cable, including the power, analog input, digital temperature sensor input, negative/positive input and output, and CAN bus interfaces.



1 Power (+)	3 Input 1	5 Input 2	7 Input 3	9 Fuel level sensor	11 Output 2	13 CANH
2 GND (-)	4 GND (-)	6 GND (-)	8 AD input 1	10 Output 1	12 Digital sensor/iButton	14 CANL

Pin Number	Color	Description
1 (Power +)	Red	Positive charge of the power input, connected to the positive charge of the vehicle battery. Input voltage: 11–36 V. 12 V is recommended.
2 (GND)	Black	Ground wire, connected to the negative charge of the vehicle battery or to the negative terminal.
3 (Input 1)	White	Digital input 1, negative trigger (SOS button by default)
4 (GND)	Black	Ground wire, connected to input 1 (SOS button)
5 (Input 2)	White	Digital input 2. Positive trigger by default. You can switch to negative trigger.

		Connect to a door trigger signal cable to detect vehicle door status.
6 (GND)	Black	Ground wire It can be used as a ground wire connected to an analog sensor.
7 (Input 3)	White	Digital input 3 (positive trigger) Voltage range: 3~60V Connect to the vehicle ACC cable by default to detect the vehicle ACC status.
8 (AD Input 1)	Blue	Analog input 1 with 12-bit resolution and valid voltage 0–6.6 V Connect to an external sensor, such as the fuel level sensor.
9 (Fuel level sensor input)	Blue	Analog input 2 with 12-bit resolution and valid voltage 0–6.6 V The AD cable is equipped with a white plug. It is connected to the A53 fuel level sensor by default.
10 (Output 1)	Yellow	Output 1 Default: low level (0 V) Invalid: open collector Maximum voltage for output open collector (invalid): 40 V Maximum current: 400 mA High level triggering mode and PWM triggering mode are allowed to set. Connect to an external relay to remotely cut off the vehicle fuel cable or engine power supply.
11 (Output 2)	Yellow	Output 2 Valid: low level (0 V) Invalid: open collector Maximum voltage for output open collector (invalid): 40 V Maximum current: 400 mA High level triggering mode and PWM triggering mode are allowed to set. Connect to an external relay to remotely cut off the vehicle fuel cable or engine power supply.
12 (Digital sensor input port/iButton)	Green	TTL3.3V level Connect to the A52 digital temperature sensor by default by using the A61 sensor box. It also can be connected to iButton. Note: The DC or AC voltage that is greater than 3.3 V is not allowed. Otherwise, the device may be damaged.
13 (CANH)	Orange and white	Used to connect a CAN bus peripheral.
14 (CANL)	Orange	Used to connect a CAN bus peripheral.

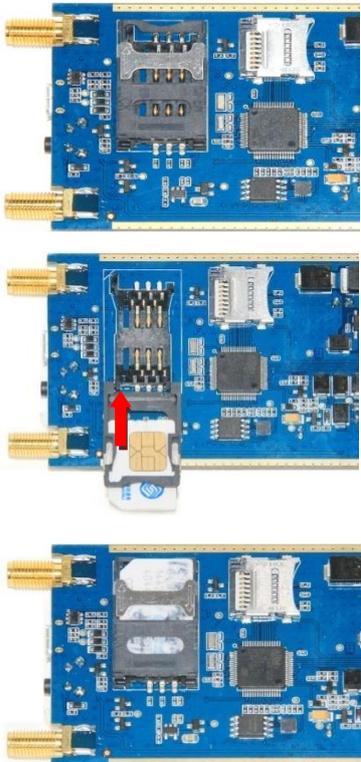
3 First Use

3.1 Installing the SIM Card

1. Loosen the screws, and remove the front cover of the device.
2. Insert the SIM card into the card slot with its gold-plated contacts facing towards the Printed Circuit Board (PCB).
3. Close the cover, and tighten the screws.

Note:

- Power off the device before installing the SIM card.
- Ensure that the SIM card has sufficient balance.
- Ensure that the phone card PIN lock has been closed properly.
- Ensure that the SIM card in the device has subscribed the caller ID service if you want to use your authorized phone number to call the device.



3.2 Charging the Device

When you use the device for the first time, connect the device GND (-Black) and Power (+Red) wires to 12 V or 24 V external power supply for charging. Ensure that the device is charged at least two hours. Eight hours are recommended.

The device can be installed on a vehicle only after it is configured and tested.

3.3 Configuring Device Parameters by Meitrack Manager

This section describes how to use Meitrack Manager to configure the device on a computer.

Procedure:

1. Install the USB-to-serial cable driver and Meitrack Manager.
2. Connect the device to a computer by using the USB-to-serial cable.
3. Run Meitrack Manager, then the following dialog box will appear:



4. Turn on the device, then Meitrack Manager will detect the device model automatically and the parameter page will appear accordingly.

For details about MEITRACK Manager, see the *MEITRACK Manager User Guide*.

3.4 Installing GPS and GSM Antennas

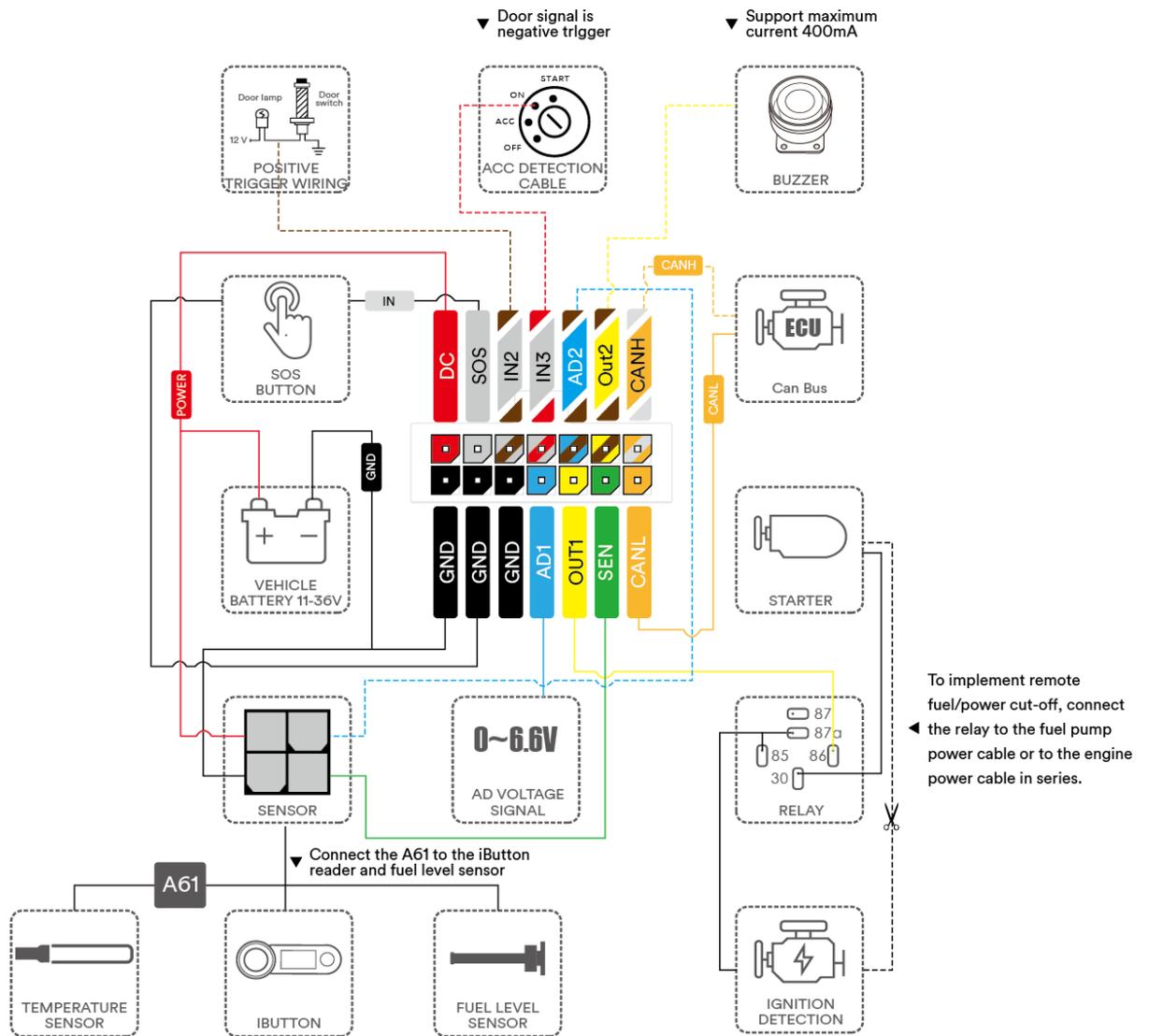


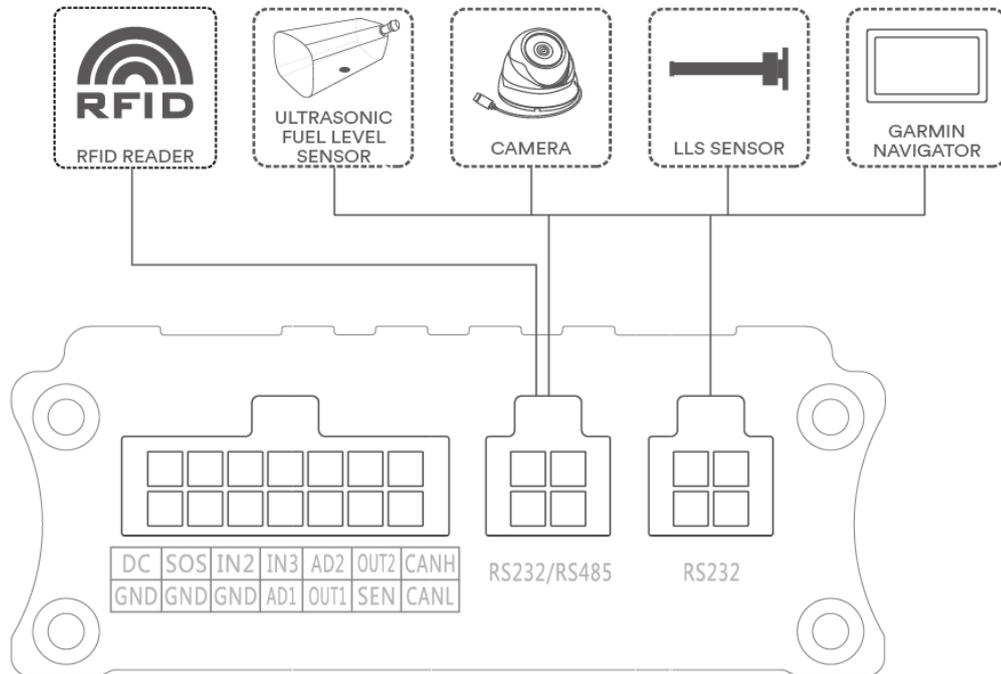
Connect the GSM antenna to the connector which is labeled "GSM". The GSM antenna is non-directional, so you can hide it in any place of a vehicle.

Connect the GPS antenna to the connector which is labeled "GPS". It is recommended that the antenna is facing up to the sky and the antenna side with words is downwards. Secure the antenna by using double sided tapes.

Note: Do not install the GPS antenna at a metal covered place.

3.5 Device Connection Diagram





3.6 Mounting the Tracker

Tighten the four screws shown in the following figure.



3.7 Tracking by Mobile Phone

Call or send the **0000,A00** command by SMS to the device's SIM card number. The device will reply to an SMS with a map link. Click the SMS link. The device's location will be displayed on Google Maps on your mobile phone.

Note: Ensure that the device's SIM card number has subscribed the caller ID service. Otherwise, the tracking function by mobile phone will be unavailable.



SMS example:

Now,061314 10:36,V,26,0Km/h,96%,http://maps.meigps.com/?lat=22.513781&lng=114.057183

The following table describes the SMS format:

Parameter	Description	Remarks
Now	Indicates the current location.	SMS header: indicates the current location or the alarm type.
061314 10:36	Indicates the date and time in MMDDYY hh:mm format.	None
V	The GPS is invalid.	A = Valid V = Invalid
26	Indicates the GSM signal strength.	Value: 1–32 The larger the value is, the stronger the signal is. If the value is greater than 12, GPRS reaches the normal level.
0Km/h	Indicates the speed.	Unit: km/h
96%	Indicates the remaining battery power.	None
http://maps.meigps.com/?lat=22.513781&lng=114.057183	Indicates the map link. Latitude: 22.513781 Longitude: 114.057183	None



3.8 Common SMS Commands

3.8.1 Setting Authorized Phone Numbers – A71

SMS sending: 0000,A71,Phone number 1,Phone number 2,Phone number 3

SMS reply: IMEI,A71,OK

Description:

Phone number: A phone number has a maximum of 16 bytes. If no phone numbers are set, leave them blank. Phone numbers are empty by default.

Phone number 1/2/3: SOS phone numbers. When you call the tracker by using these phone numbers, you will receive SMS notification about the location, geo-fence alarm and low power alarm.

If you need to delete all authorized phone numbers, send **0000,A71**.

When the SOS button is pressed, the tracker will dial phone numbers 1, 2, and 3 in sequence. The tracker will stop dialing when a phone number responds.

Example:

Sending: 0000,A71,13811111111,13822222222,13833333333

Reply: 353358017784062,A71,OK

3.8.2 Setting the Smart Sleep Mode – A73

SMS sending: 0000,A73,Sleep level

SMS reply: IMEI,A73,OK

Description:

When the sleep level is **0**, the sleep mode is disabled (default).

When the sleep level is **1**, the tracker enters the normal sleep mode. The GSM module always works, and the GPS module occasionally enters the sleep mode. The tracker works 25% longer in the normal sleep mode than that in the normal working mode. This mode is not recommended for short interval tracking; this will affect the route precision.

When the sleep level is **2**, the tracker enters the deep sleep mode. If no event (SOS, button changes, incoming calls, SMSs, or vibration) is triggered after five minutes, the GPS module will stop working, and the GSM module will enter sleep mode. Once an event is triggered, the GPS and GSM modules will be woken up.

Note: In any condition, you can use an SMS command to disable the sleep mode, and then the tracker exits the sleep mode and returns back to the normal working mode.

Example:

Sending: 0000,A73,2

Reply: 353358017784062,A73,OK

3.8.3 Setting GPS Data Filtering – D71

SMS sending: 0000,D71,X,Y1,Y2,Y3,Y4

SMS reply: IMEI,D71,OK

Description:

X: Whether to enable the GPS data filtering function. **1:** Enable the function. **0:** Disable the function (default).

Y1: indicates the minimum value of the driving speed. Value range: 0–999 km/h. When the driving speed is greater than **Y1**, GPS data will be updated.

Y2: indicates the maximum value of the driving speed. Value range: 0–999 km/h. When the driving speed is less than **Y2**, GPS data will be updated.

Y3: indicates the number of satellites. Value range: 0–99. When the number of satellites is greater than **Y3**, GPS data will be updated.

Y4: indicates the positioning accuracy. Unit: x10. Value range: 0–999. When the positioning accuracy value is less than **Y4**, GPS data will be updated.

When the GPS data filtering function is enabled, if all conditions of Y1, Y2, Y3 and Y4 are met, GPS data will be updated.

The GPS data filtering function can eliminate static drift, but it will affect the route precision.

Example:

Sending: 0000,D71,1,5,225,8,9

Reply: 353358017784062,D71,OK

3.8.4 Setting Output Triggering – D72

SMS sending: 0000,D72,X,Y1,Y2,Y3,Y4

SMS reply: IMEI,D72,OK

Description:

X: Select an output port. **1:** OUT1. **2:** OUT2.

Y1: indicates the output time when an event is triggered. Unit: 10 ms. Value range: 0–4294967295.

Y2: Value: 0, 1, and 2.

- **0:** Output high level.
- **1:** Output low level (default).
- **2:** Output PWM wave.

Y3: indicates the PWM duty cycle. Value range: 0–100.

Y4: indicates the PWM period. Unit: μ s. Value range: 2000–50000000.

Configure output triggering according to your requirements. The low level is output by default. The PWM duty cycle and period are available for PWM wave output only.

Example:

Sending: 0000,D72,1,0,0

Reply: 353358017784062,D72,OK

3.8.5 Allocating GPRS Cache and GPS Log Storage Space – D73

SMS sending: 0000,D73,X,Y

SMS reply: IMEI,D73,OK

Description:

X: Set the storage percentage of GPRS cache. Decimal in percentage.

Y: Set the storage percentage of GPS logs. Decimal in percentage.

The sum of X and Y must be 100.

If data is stored in internal memory which has 8 MB capacity, GPRS cache and GPS logs occupy 50% of the total capacity respectively by default (that is, 8,190 GPRS cache records and 65,536 GPS logs).

At most 16,384 GPRS cache records and 131,072 GPS logs are allowed.

Example:

Sending: 0000,D73,70,30

Reply: 353358017784062,D73,OK

For details about SMS commands, see the *MEITRACK SMS Protocol*.

Note:

1. The default SMS command password is **0000**. You can change the password by using Meitrack Manager and SMS command.
2. The device can be configured by SMS commands with a correct password. After an authorized phone number is set, only the authorized phone number can receive the preset SMS event report.

4 Logging In to MS03 Tracking System

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

For more information about how to add a tracker, see the *MEITRACK GPS Tracking System MS03 User Guide* (chapter 4 "Getting Started").

The MS03 supports the following functions:

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

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

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