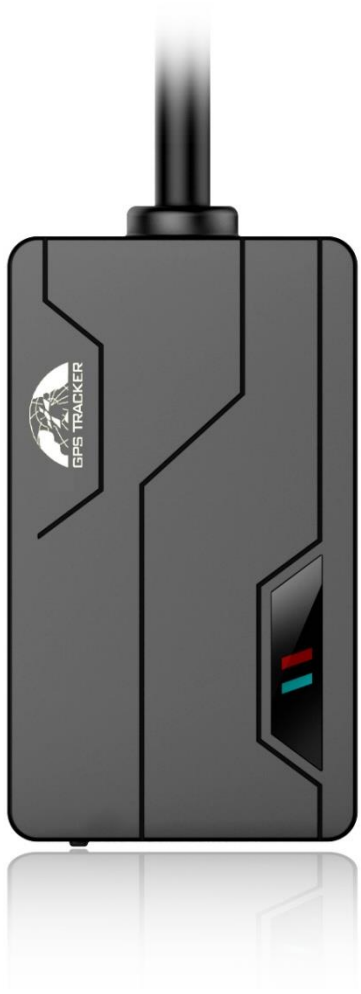
GSM/GPRS/GPS Tracker User Manual



In order to protect the environment and provide timely up-to-date information about your tracker, we have made electronic user manual.
To download your electronic user manual, please visit our website:www.baanooliot.com

311ABC-V3.3

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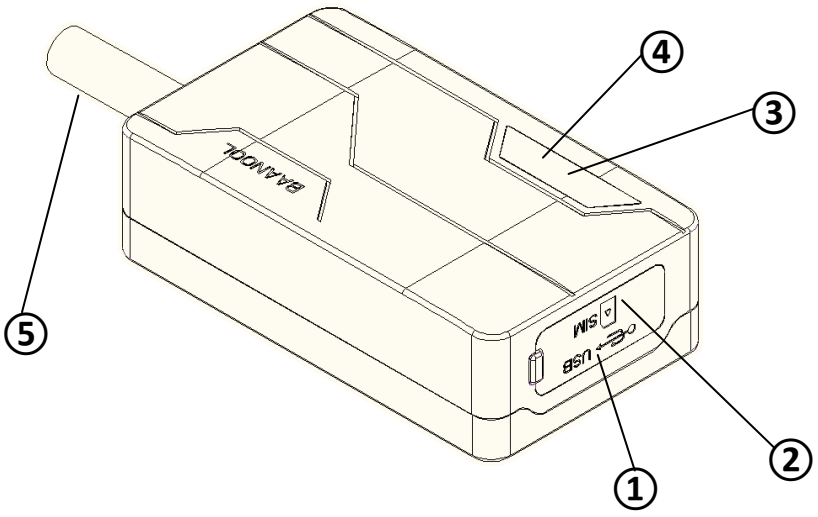
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1. Specifications

Product name	Wireless data terminal
Model	311
DIM.	6.0×3.5×1.8cm
Weight	50g
Network	GSM/GPRS
Band	850/900/1800/1900Mhz
GPS sensitivity	-165dBm
GPS accuracy	5m
Time To First Fix	Cold status 45s Warm status 35s Hot status 1s
Voltage of power	12V-24V
Battery	Chargeable 3.7V 180mAh Li-ion battery
Storage Temp.	-40℃ to +85℃
Operation Temp.	-20℃ to +65℃
Humidity	5%--95% non-condensing
Waterprof Level	IP67

2. Hardware Description



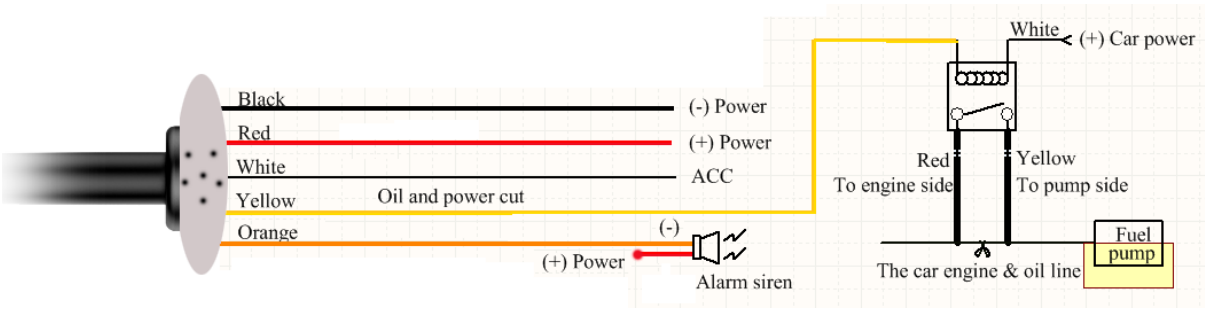
① USB port ②SIM card slot ③GSM indicator ④GPS indicator ⑤ Harnness

Difference / Model	Basic tracking	Engine stop	Remote control 
A	●		
B	●	●	
C	●	●	●

Comparison Table for Model A, B and C
Note: Model C supports an optional siren.

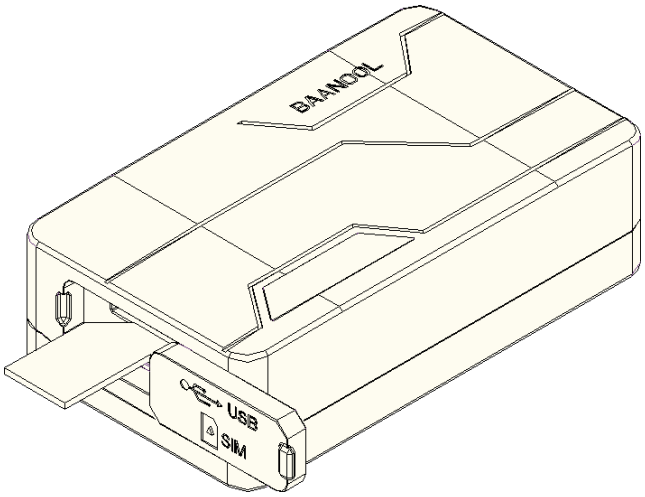
3. Terminal Installation

1. Please ask a qualified engineer to install it.
2. The installation environment should ensure that the GSM and GPS signals are good
3. Please do not install it in a dusty and humid environment.
4. Find the wiring harness provided with the product, insert it into the corresponding wiring hole of the product, and connect to the original car circuit as shown in the following Wiring Diagram:



5. The orange wire can be connected to the original car horn; it can also be connected to the siren bought with the tracker (For Model C).
6. Model A doesn't have Yellow wire and orange wire, Model B doesn't have orange wire.
7. **SIM card installation**

Please be sure to confirm that the SIM card network frequency band is the network frequency band supported by the device. Caller ID must be turned on and the PIN code must be turned off. The call forwarding function cannot be turned on.



①Open sealed buckle

②Insert the SIM card, the device will turn on automatically.
③Put sealed buckle back.

8. After inserting the SIM card, take the device at outdoor, the device will find GSM and GPS signal and work normally after 10-40 seconds.

4. Device Status Light

Green light: Flashes every 1 second when GSM network signal normally, flashes every 3 seconds when works in GPRS mode; always on when no GSM network.

Blue light: Flashes every 1 second when GPS signal is normal; flashes 3 times per second when GPS signal is very good (at least 4 satellites with a signal-to-noise ratio of more than 38), and turns off if lost fix to satellites.

5. Mobile APP

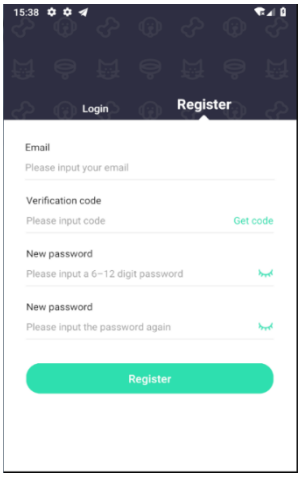
Scan the QR code to download APP

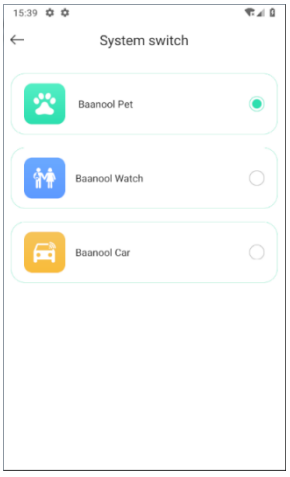


Google Play、App Store、Baidu App Store search “BAANOOL IOT” to download it

Register

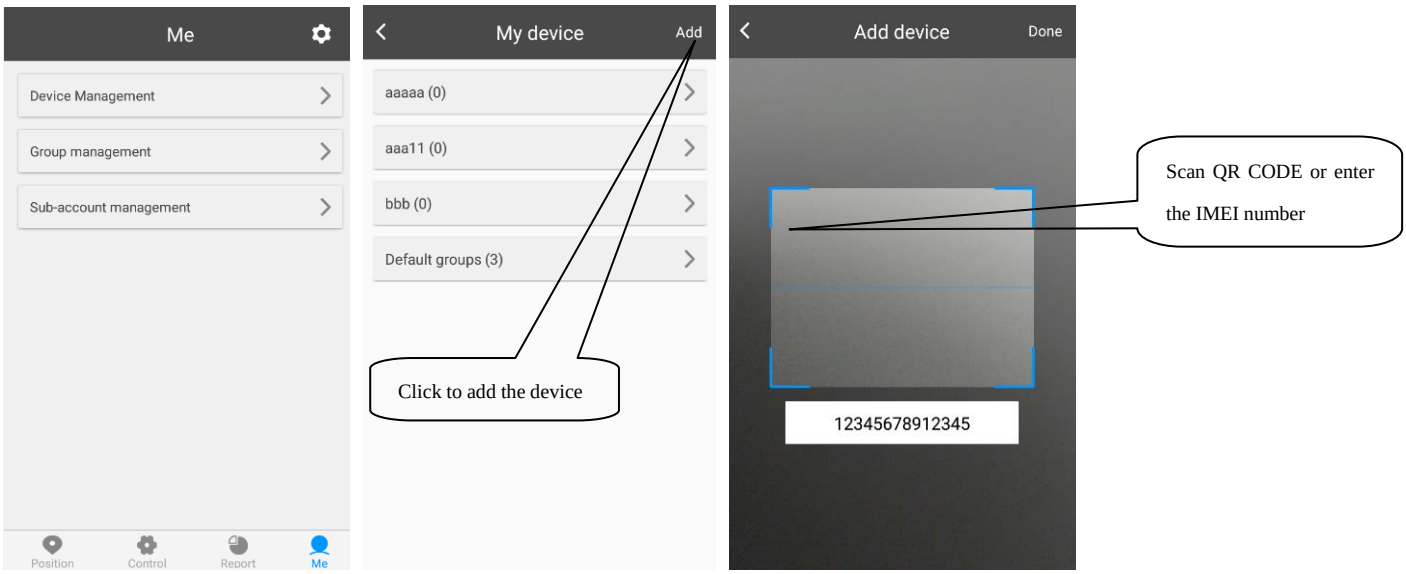
Open BAANOOL IOT, register a new account and login, Choose “BAANOOL car “to enter it.





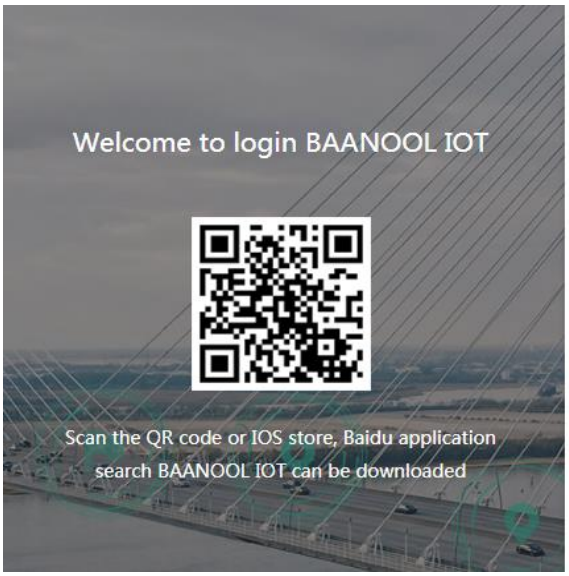
Bind Device

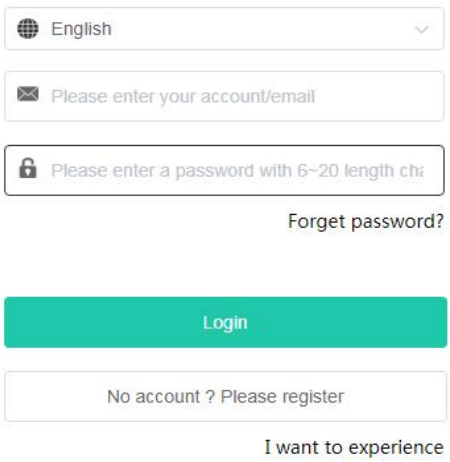
Click “Me” “Device Management” “Add”, scan the QR CODE on the device or enter the IMEI manually to bind the device



6. BAANOOL IOT’s Web Version

Open www.baanooliot.com , The login account name and password are the same as phone app’s





Attention:

When reading this user manual, you will notice that we have used "+" and "space" between some words;"+" between two words means they should be written together as one word and "space" between two words means you should leave one character space between two words.

7. GPRS configuration for live real-time tracking

Set APN, Account user name and password to login web platform

Usually, the device can automatically recognize and select the APN, user name and password of GPRS settings. If the device cannot connect to the web platform, then you need to use the mobile phone text message to configure the settings according to following steps.

7.1 APN Setting

APN is an abbreviation for Access Point Name and changes depending on which mobile network you are using. For more information about your local APN, please check with your local wireless carrier.
SMS command: **APN+password+space+local APN**
Tracker response: **APN OK**
Example: **APN123456 CMNET**
Note: 123456 is the default password, please change password on APP or refers to 8.1.

7.2 Configure user name and password of GPRS

In the most countries, the user name and password of GPRS are not necessary; therefore, you can ignore this step if it is not necessary for your local network. For those countries requiring user name and password, please configure as following:
SMS command: **up+password+space+user+space+password**
Tracker response: **user, password ok!**
Example: **up123456 Jonnes 666666**
Note: 123456 means the password of the device, Jonnes means the user name ofgprs, and 666666 means password of gprs

7.3 Configure domain name and port

Tracker connects to tracker.baanooliot.com 8090 by default. If you need to connect to another domain name, please configure it.
SMS command: dns+password+space+DNS domain name+space+port
Tracker response: dns success!
Example : dns123456 tracker.baanooliot.com 8090
Note:
If you want to configure IP instead of DNS, then please send SMS command: “adminip+password+space+IP+space+port”

7.4 GPRS mode

SMS command: GPRS+password
Tracker response: GPRS OK! (It means it has been switched to GPRS mode.)

8. Function Details

The following setting functions can be set through the APP or web version

8.1 Changing Password

8.1.1 SMS command: password+oldpassword+space+new password
Tracker response: password OK

8.1.2 Be sure to keep the new password in mind, you have to flash the firmware to restore the initialized setting in case of losing the new password

8.1.3 Attention: Make sure the new password is in 6 digits Arabic numbers, otherwise the tracker cannot recognize it

8.2 Authorization

Up to 5 numbers can be authorized.

8.2.1 call the tracker 10 times in succession, the number will be authorize automatically as the first number and tracker response “add master ok”

8.2.2 SMS command: admin+password+space+mobile phone number ,
Tracker response: admin ok。

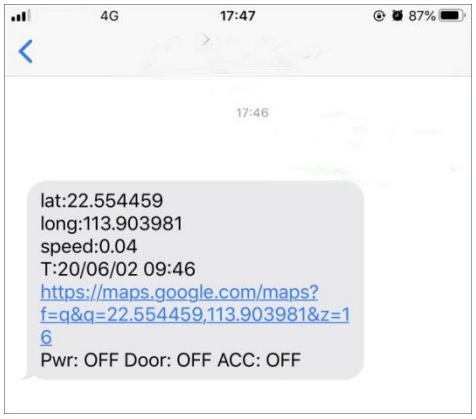
8.2.3 SMS command: noadmin+password+space+authorized number
Tracker response: noadmin ok

8.2.4 If you want to receive these kinds of notification alerts when the trackers moved to another country, you must put the country code before the phone number to authorize it in international format, If there is a “0” before your phone number, please remove the “0”, for example, admin123456 008613322221111, then 13322221111 had been configure to authorization number。

8.3 Single Tracking

8.3.1 If there aren't any authorized numbers set-up, it will reply all calls with a location report; if there are authorized numbers set-up, then it will not respond when an unauthorized number calls it。

8.3.2 If you call it from authorized phone number, it will hang up and report a real-time location as below：



When it lost fix to satellites, the message will include the last known GPS position and a LAC code of the updated position as well。

8.3.3 SMS Command：position+password，The function is the same as 8.3.2

8.4 Sleep tracking strategy

8.4.1 Sleep off timing tracking strategy

SMS Command：Sleep+password+space+off+space+030s+030m +005n
The above command means: no sleep mode (GPRS is always online), It will update a position every 30s interval when moving，and update a position at 30 minutes interval when motionless, and only 5 times are updated, 005n means 5 times, ***n means unlimited times.
Sleep off is the default mode, but not default tracking strategy.
Note: The time must be represented by 3 Arabic numerals, and the time interval should be set to a minimum of 10 seconds (s: seconds, m: minutes, h: hours)

8.4.2 Sleep off timing and distance tracking strategy

SMS command：Sleep+password+space+off+space+030m +0200d +005n
The above command means: no sleep mode (GPRS is always online), It will update a position at 30min interval when moving, and update a position at 200 meters interval when motionless, and only 5 times are updated, 005n means 5 times, ***n means unlimited times.
Note: The time must be represented by 3 Arabic numerals, and the moving distance must be

represented by 4 Arabic numerals. d represents the distance, the distance unit is meters, and the time interval is set to a minimum of 10 seconds (s: seconds, m: minutes, h: hours)

8.4.3 Sleep on timing tracking strategy

SMS Command：Sleep+password+space+on+space+030s+001h+005n
The above command means: sleep mode (GPRS offline when the device is stop, motion or any alarm trigger get online), the device is reported 30 seconds interval when the device is moving, and every 1 hour when it is stop , and only report 5 times, 005n means limited to 5 times of positioning, * **n means Unlimited times.
Note: The time must be represented by 3 Arabic numerals, the movement interval is at least 10 seconds, and the stop interval is at least 30 minutes (s: seconds, m: minutes, h: hours)

8.4.4 Sleep on timing and distance tracking strategy

SMS command：Sleep+password+space+on+space+001h+0200d +005n
command means：Sleep mode (GPRS offline when the device stop, motion or any alarm trigger get online)，Report 1 hour interval when the device stop，When the device move, the moving distance reaches 200 meters, it will reported, and only report 5 times.005n is means limited to 5 times of positioning, * **n means Unlimited times.
Note: The time must be represented by 3 Arabic numerals, the distance must be represented by 4 Arabic numerals, d represents the distance, the distance unit is meters, and the minimum static interval is set to 30 minutes (s: seconds, m: minutes, h: hours)

8.4.5 Cancel tracking strategy

SMS command：nofix+password，Tracker response: nofix ok

8.5 Smart angle updating

8.5.1 It will update positions automatically to web platform when the vehicle changes driving direction over a preset angle value to make its trace following the actual road and seem better on the map. This function is only available in GPRS mode.

8.5.2 SMS command: angle+password+space+angle value，Tracker response: angle ok

8.5.3 Note: The angle value must be 3 Arabic digits, and the default value is 30 degree.

8.6 Location based service (LBS) / Cell-ID tracking

If the tracker cannot establish a solid GPS Fix, it will calculate its location using Cell-ID GSM locating. In SMS mode, location reports will include the GPS coordinates of the last known positions as well as a LAC code which is the current latest position. If in GPRS mode, tracker will automatically switch to tracking by LBS. and locate directly on the platform map

with LBS positioning prompts. The base station positioning information has an error with the actual position, and the error range is related to the strength of the GSM signal.

Note: This function can be used normally in most areas according to GSM signal conditions, but may not be available in some areas.

8.7 Forwarding incoming SMS messages

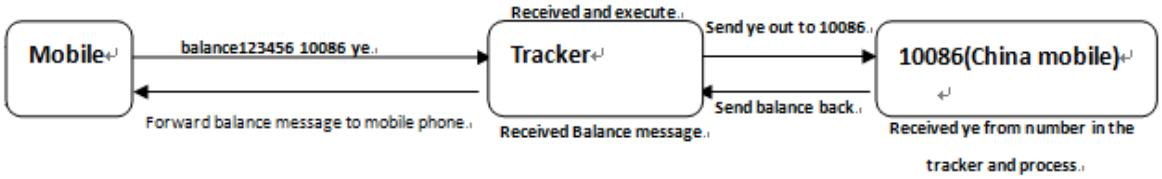
8.7.1 SMS command： forward+password+space+third party phone number， Tracker response: forward ok

The carrier's number which used to sending notification messages is recommended to set up, tracker will forward the notification message to authorized numbers when carrier send message to remind you to top up your SIM card.

8.7.2 Cancel：noforward+password

8.8 SIM Card Balance Enquiry

SMS command: balance+password+space+phonenumber+space+code
Tracker response: It will forward the code to the specified phone number and return the content from that number.
This function assumes that your GSM network provider has the option where you can check your SIM card's balance by sending a SMS message to a specified number, which is 10086 in this example of China Mobile.



8.9 ACC ON/OFF Alert

8.9.1 This function is OFF by default.

SMS command to activate：ACC+password，Tracker Response：ACC ok

If tracker detect "ignition on" signal from ACC wire (white wire), tracker will send "ACC on+latitude& longitude" to authorize number to tell you the vehicle has been started. When

detect “ignition off” signal, it will send “ACC off+ latitude & longitude” to tell you the vehicle has been stopped.

8.9.2 SMS command to deactivate：noACC+password，Tracker response：noACC ok

8.9.3 It can only activate or deactivate the notification by SMS message to authorized phone numbers, the notification to web platform cannot be deactivated and will always send automatically.

8.10 Remote immobilizing (For BC model)

8.10.1 Immediate execution way

SMS command: quickstop+password
Tracker response: quickstop OK
Example: quickstop123456
Tracker will immobilize the vehicle immediately.

8.10.2 Remote immobilizing

SMS command: stop+password, Tracker response: Stop engine succeed
Example: stop123456
When receiving STOP command, tracker will check speed and reply"it will be executed after speed less than 20KM/H". If speed is higher than 20KM/H, and delay executing this command until the speed is less than 20KM/H.

8.10.3 Remote fuel resume

SMS command: resume+password, Tracker response: Resume engine Succeed
Example: resume123456
This means tracker will now resume the fuel & power supply.

8.11 Configure times of alarm

The times of sos, power, oil, ACC alarm sending can be set.
Send once by default.
SMS command: xtime+password+times value
Tracker response: xtime ok!
Example: xtime123456 005 (It means to send alarm 5 times.)
Note: The times value must be 3 digits

8.12 Alarms

8.12.1 Low battery alarm

This feature is activated by default, when the battery voltage is close to 3.55V, tracker will send message “low battery + latitude & longitude” to authorized numbers for 2 times at 15 minutes interval.
SMS command to deactivate: lowbattery+password+space+off
Tracker response: lowbattery off ok
Example: lowbattery123456 off
SMS command to activate: lowbattery+password+space+on
Tracker response: lowbattery on ok
Example: lowbattery123456 on

8.12.2 Power disconnection alarm

This feature activate by default. Tracker will send “Power alarm+latitude& longitude” to authorized numbers when external power disconnected. You can receive alarm notifications on the app at the same time.
SMS command to deactivate: extpower +password+space+off
Tracker response: extpower off ok
Example: expower123456 off
SMS command to activate: extpower +password+space+on
Tracker response: extpower on ok
Example: expower123456 on

8.12.3 Blind area alarm

This feature is deactivated by default, tracker will send SMS notification “No gps+latitude& longitude of the last know position.” to authorized numbers if lost fix to GPS satellites.
SMS command to activate: gpssignal +password+space+on
Tracker response: gpssignal on ok
Example: gpssignal123456 on
SMS command to deactivate: gpssignal +password+space+off
Tracker response: gpssignal off ok
Example: gpssignal123456 off

8.12.4 SOS alarm (For C model)

Press  key on the remote control, tracker will send SMS notification "Help me+latitude& longitude" to all the authorized numbers.

8.12.5 Geo-fence

The Geo-fence feature creates a virtual fence. When the tracker moves out of this virtual fence, SMS notification "stockade!+latitude &longitude"will be sent to the authorized numbers when SMS mode. Geo-fence alarm will be sent to Web when gprs mode.
command to activate: stockade+password+space+latitude, longitude; latitude, longitude
Tracker response: stockade ok!
Example: stockade123456 22.554459, 113.903981; 22.553002, 113.909378
Note: The first latitude & longitude is coordinate of the top left corner of the Geo-fence, and the second latitude & longitude is the coordinate of the bottom right corner.
Command to deactivate: nostockade+password

Example: nostockade123456

8.12.6 Movement alarm

When the device stays in one place for 3-10 minutes and confirms that there is a GPS signal, you can send the SMS command "move+password+space+0200" to the device (assuming a range of 200 meters, maximum support four digits, unit: meters), the device Will reply "move ok!". Once the device is out of range, the device will reply the message "move + latitude and longitude" to the authorized number. (The default distance of the device is 200 meters,)
Cancel the setting: Send SMS "nomove+password" to cancel this function setting.

8.12.7 Over speed alarm

Send SMS command "speed+password+space+080" to the device (assuming the speed is 80km/h), then the device will reply "speed ok!". When the device runs over 80km/h, the device will send the message " speed+080!+latitude and longitude" to the authorization number. Over speed alarm SMS mode only sends a text message once within 3 minutes, GPRS mode only send once within 3 seconds; the siren sounds for one second when speeding.
Cancel the setting: Send SMS "nospeed+password" to cancel this function setting.
Note: The recommended speed should not be less than 30km/h.If the speed is set lower than this you may get a false alarm due to GPS inaccuracy.

8.13 Remote controller（For C model）

Key	Function	Descriptions
	Arming	Press for 0.5 second, siren beep one time
	Disarming	Press for 0.5 second, siren beep 2 times
	Silent arming	Press for 0.5 second when it is in disarm state, siren beep one time. In silent mode, the siren will not sound even if an alarm is triggered. DISARM will quit from silent mode.
	SOS	Press for 3 seconds, Tracker will send SOS alert to authorized phone numbers. Siren won’t sound.
	Deterrence/ Car locate	Press for 0.5 second when it is in arm state, siren will beep 10 seconds, press disarm key  to stop.

8.14 Arming

8.14.1 Arming by SMS

Command：arm+password

Response：Tracker is activated, the vehicle terminal enters the armed state. If the vehicle is in the ignition state(Represents ths key not pulled),itcannotenterthe armedstate,and then reply “set up fail! pls turn off ACC”.

8.14.2 Arming with remote controller (For C model)

Press key for 0.5 seconds, the car enters into arming state and the siren will beep one time, does not send SMS.If vehicle is in the ignition state (Represents ths key not pulled), it cannot enter the armed state, and the siren doesn't sound.

8.15 Silent Arming

8.15.1 Silent arming by SMS

SMS Command：silent+password

Respond：silent ok!, the terminal enters the silent arming state. After the alarm is triggered, the siren does not sound, but an alarm text message will be sent to the authorized number.

8.15.2 Silent arming with remote controller(For C model)

Press key for 0.5 second in disarm state,the siren will beep one time, the vehicle enters the silent arming state. After the alarm is triggered, the siren does not operate, but an alarm text message will be sent to the authorized number.

To exit, press the disarm key.

8.16 Disarming

8.16.1 Disarming by SMS

SMS command: disarm+password

Tracker response: Tracker is deactivated

Example: disarm123456

After disarming, the door, shock sensor and ACC alarm will be deactivated, and these alarms won't be triggered any more.

8.16.2 Disarming with remote controller (For C model)

Press for 0.5 second, tracker will enter into disarming state, siren beeps two times.

8.17 Alarm function in arming state

8.17.1 ACC Alarm

Tracker will send "ACC alarm + latitude / longitude" to authorized numbers if the ignition of the vehicle has been switched "ON" (Key is rotated to "ACC ON" position when tracker works in arming state. The siren will beep for 20 seconds, and if the ignition is still on, then the siren will beep for another 20 seconds with 20 seconds pause, disarming to quite the

alarm.
At the same time app receive alarm message.

8.17.2 Acceleration Sensor Alarm

8.17.2.1 There is a built-in three axis acceleration sensor in the tracker to detect the movement, tilt and shock when in arming state and tracker will send “Sensor alarm + latitude / longitude” to authorized numbers, and only send once in 3 minutes. Siren will beep for 5 seconds for the first trigger and second trigger, and then beep 10 seconds for another trigger, at the same time app receive alarm message ,disarming to quit the alarm

8.17.2.2 Sensor’s sensitivity configuration

There are three different levels:

First level: Alarm will be triggered by slight vibration.
SMS command: **sensitivity+password+space+1**
Tracker response: **sensitivity ok**
Example: **sensitivity123456 1**

Second level: Alarm will be triggered by medium vibration.
SMS command: **sensitivity+password+space+2**
Tracker response: **sensitivity ok**
Example: **sensitivity123456 2**

Third level: Alarm will be triggered by severe vibration.
SMS command: **sensitivity+password+space+3**
Tracker response: **sensitivity ok**
Example: **sensitivity123456 3**

8.18 Check Status

SMS command: check+password
Reply: Power, Battery, GPS signal, ACC, GSM signal, GPRS, APN, UP, IP, Port etc
Example: check123456
Tracker response:
Power: ON/OFF
Battery: 100%
GPRS: ON/OFF
GPS: OK/NO GPS
ACC: OFF/ON
GSM Signal: 1-32 (The higher, the better)
APN: cmnet
IP: 104.250.138.146
PORT: 9000
Arm: OFF/ON

8.19 Check IMEI

SMS command: imei+password
Tracker response: xxxxxxxxxxxxxxx (A 15 digits IMEI of your device)
Example: imei123456

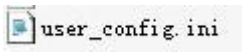
8.20 Local time setting

Tracker works in the local time zone by default. If you find that the time zone is incorrect, you can configure the time zone
SMS command: time+space+zone+password+space+time zone value
Tracker responds: time ok
Example: time zone123456 8

8.21 Reset Hardware

SMS Command: reset+password
Tracker Response: reset ok
Example: reset123456

8.22 Configure parameters by USB

Using the optional USB cable to connect the tracker to a computer and open the configuration file 

with notepad, and then manually change the parameters and settings according to the tips.
Note: You must enter the correct password of the tracker in the old password field every time when changing the settings; otherwise, the changes won't be successful.

8.23 TCP / UDP switch

SMS command to switch to TCP mode: GPRS+password,0,0 (TCP mode is the default one)
SMS command to switch to UDP mode: GPRS+password,1,1
Tracker response: GPRS OK!
Example: GPRS123456,0,0
GPRS123456,1,1

8.24 SMS mode

Switch to SMS mode will disconnect the GPRS connection for live tracking.

SMS command: SMS+password

Tracker response: SMS OK! (It means it has been switched to SMS mode.)

Example: SMS123456

8.25 Configure SMS monitoring center number

SMS command: centernum+password+space+phone number

Tracker response: centernum ok

After the SMS monitoring center number is successfully set, the SMS reported by the positioning strategy will be sent to this number.

If the monitoring center number needs to receive the alarm notification message, please set this number as an authorized number too.

Cancel SMS monitoring center number

SMS command: nocenternum+password

Tracker response: nocenternum ok

Example: nocenternum123456

8.26 Configure GPRS heartbeat package interval

The default heartbeat interval to keep GPRS connection alive is 100 seconds; you can change it if necessary, but please be kindly informed that if the time interval is too long, it may cause GPRS disconnection.

SMS command: **heartbeat+password+space+time interval**

Tracker response: **heartbeat ok**

Example: **heartbeat123456 120**

Note: (123456 means tracker's password, 120 means the interval.)

The minimum interval is 60 seconds, and tracker will continue to send heartbeat every 60 seconds if you configure it less than 60 seconds.

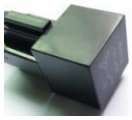
8.27 Initialization

If the tracker cannot work properly, you can send command to initialize it to return to default factory settings.

SMS command: **begin+password**

Tracker response: **begin ok**
Example: **begin123456**

9. Package contents

Picture	Name	Specs	Applicable model
	Harness	3PIN	Standard for model A
	Harness	5PIN	Standard for model B/C
	Relay	12V/40A or 24V/40A	Standard for model B,C
	Siren	24V/48V	Optional for model C
	Remote control	433MHz	Optional for model C

10. Cautions

Please be sure to follow when using:
1. Keep the tracker used in a dry environment. The humid environment can easily damage internal circuits.
2. Please do not put it in a dusty environment.
3. Do not put the tracker in overheated or overcooled places.
4. Handle carefully. Don’t vibrate or shake it violently.
5. Please clean with a dry cloth, do not use chemicals and detergents.
6. Please do not paint the device; this may lead to internal circuit failure.
7. Do not disassemble the device.
8. Please read the user manual carefully before installation and operation, and understand voltage range. Otherwise, it won’t work properly or damage the tracker.

11. Troubleshooting

Faults	Solution
Fail to turn on	1. Please check if the power wiring is correct? 2. Please check if the power voltage is correct?
No GSM signal	1. Check whether the SIM card is put in place. 2. Whether the SIM card is a GSM network SIM card. 3. Don't turn on the PIN code. 4. Call forwarding cannot be opened.
No GPS signal	The device needs to be in an unobstructed position to ensure that it can receive GPS signals normally.
No response for SMS command	1. No credit on SIM card. 2. The password is incorrect or the format of the SMS command is incorrect.
No response for a call/No alarm notification message	1. Did you have set up the authorized phone number? 2. If authorized number exists, did you make the call from an authorized phone number? 3. The format of the phone number is incorrect.
Fail to stop engine	1. Please check whether the engine stop wiring connected correctly? 2. Please check whether the speed is higher than the speed to execute the stop command when using Delay execution way?
Remote control cannot be used	Turn off tracker, and turn it on to program the remote control again.