Version Number	Modified by	Change Content Type	Date
V1.0	Catherine	CREATE	13.04.15
V1.1	Catherine	UPDATE	13.09.29
V1.2	Amy	UPDATE	14.05.09
V1.3	Amy	UPDATE	14.08.11

Waterproof MINI Tracker

MINI

User Manual

V1.3

Version Number	Modified by	Change Content Type	Date
V1.0	Catherine	CREATE	13.04.15
V1.1	Catherine	UPDATE	13.09.29
V1.2	Amy	UPDATE	14.05.09
V1.3	Amy	UPDATE	14.08.11

Waterproof Mini Tracker

Contents

1. Waterproof notices and disclaimers

Do not let the tracker stay in the water too long, taken out the tracker in time if it falls into the water, and then siphoning off the water with a towel or paper towel.
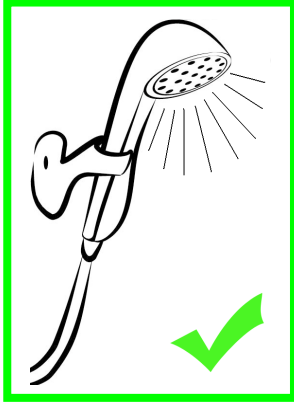
Can be showered

Can't be flooded

The structural design of the our products fully comply with the requirements of waterproof rating, in no event shall our company be liable for direct, indirect, special, incidental, or consequential damages (including but not limited to economic loss, personal injury, and loss of asset and property) arising out of use or inability or illegality to use the product or documentation.

2. Products overview

Thanks for purchasing our product！

It is an industry waterproof, small, light tracker.

It is easy to take and specially designed for field staff, security guard, old man, Business personnel and pet.

Build in U-blox GPS module, GPRS module and low power ARM processor.

Through GPS (Global Positioning System), tracker can get its position and send the position data to your smart phone via map (Google Earth or Google Map). At the same time, it will send the position data to the internet server by GPRS, so you can track the tracker's position.
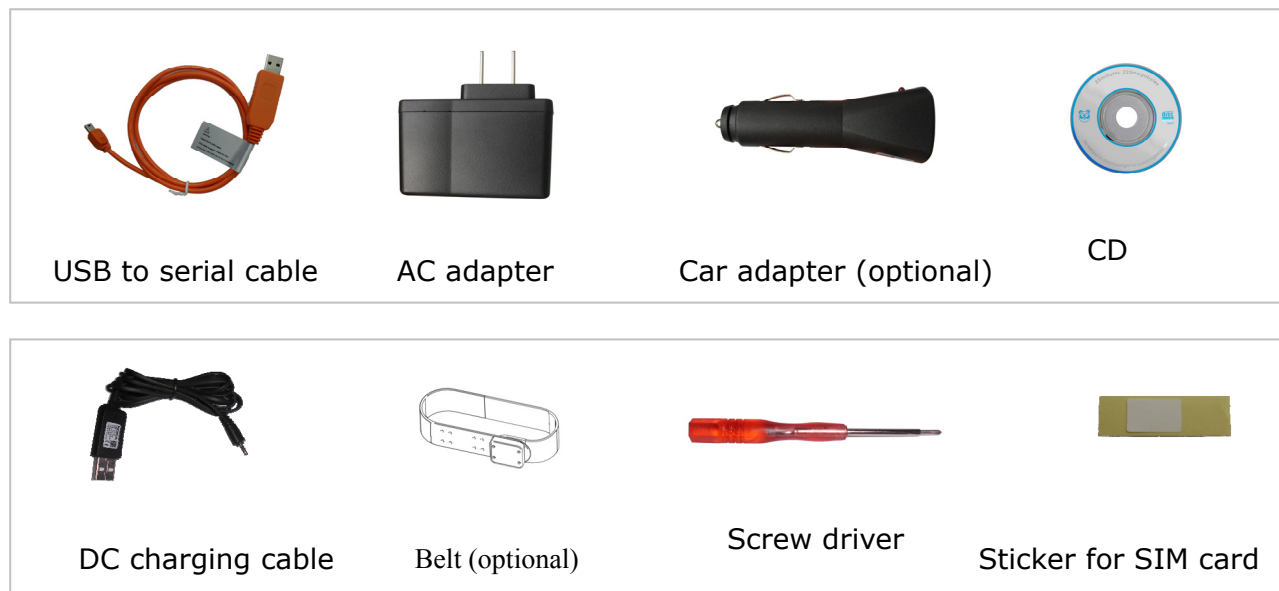
Tracker has the following features and functions:

◆ Waterproof (waterproofing grade: IP67)

◆ AGPS position assisted

◆ Two-way communication

◆ Monitoring mode

◆ Pet mode

◆ Long standby time mode

◆ SMS and GPRS (TCP/UDP) communication

◆ Support up to 5 authorized cell phone numbers

◆ Real time tracking

◆ SOS emergency calling

◆ Geo-fence alarm

◆ Over speed alarm

◆ Low battery alarm

◆ Vibration alarm

◆ Data Logger in no GSM signal area using Micro SD card (Max: 2GB)

◆ Belt-off alarm

3. Specifications

Items	Specification
Charging Voltage	DC 4.8-5.5V/500mA
Battery	Rechargeable，lithium-polymer battery 750mAh battery 3.7V
Dimension	61mmx49mmx22mm
Weight	173.0g
Operating Temperature	-25°C to 60°C
GSM Module	Quad Band GSM 850/900/1800/1900MHz
GPS Chipset	Ublox-6M
	Telit−SL869(Glonass+GPS)
Memory	Micro SD card (Max: 2GB)

4. Overview

4.1. What is in the package

USB to serial cable	AC adapter	Car adapter (optional)	CD

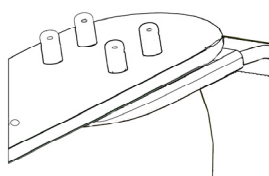|			
DC charging cable	Belt (optional)	Screw driver	Sticker for SIM card

4.2. How to use the belt

——insert and fixed the belt
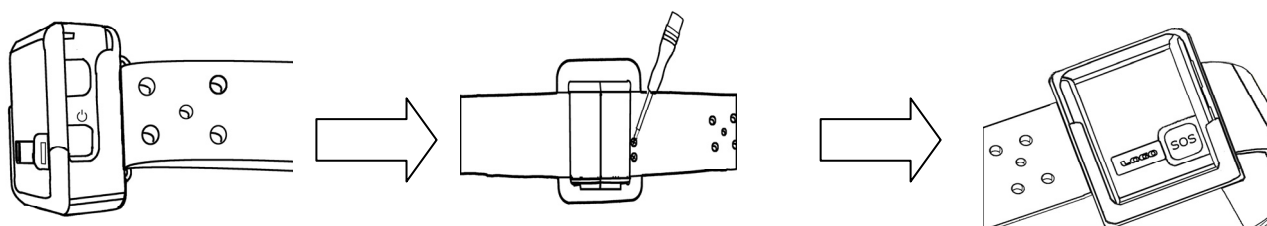
——adjust the size according to need and buckle the belt

——locked the belt

——unlocked the belt

Along this edge

Push to this side then pull up
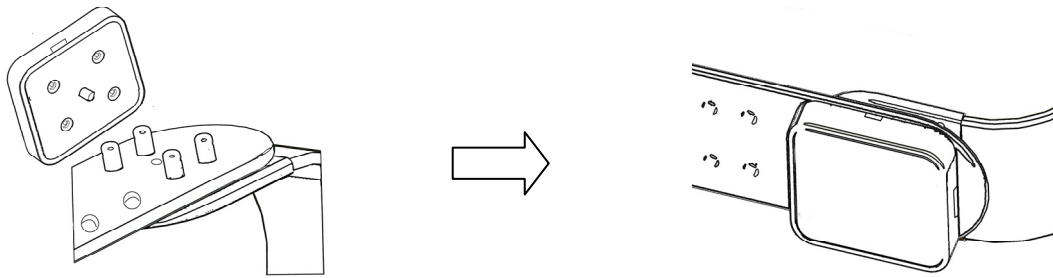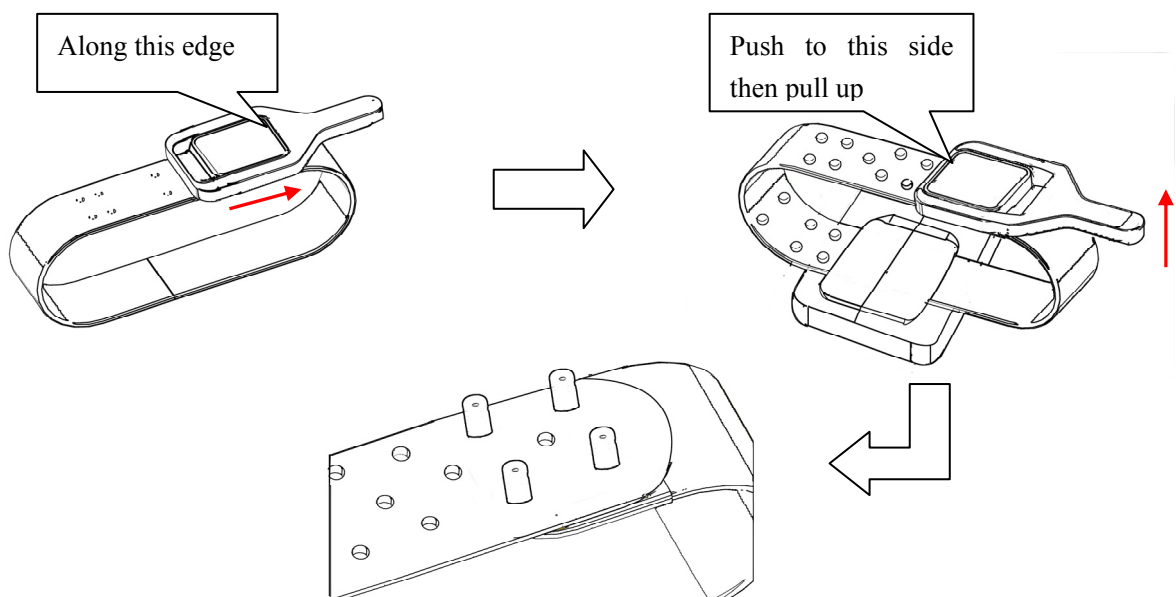
——belt specifications:

Unit (mm)
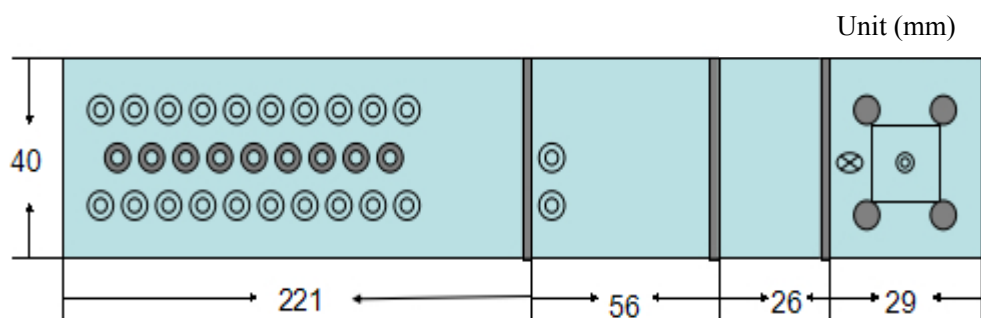
【Warranty Statement of Device Belt 】

Under normal usage, the warranty time is 12 months from the date of purchasing.

Please note the device belt belongs to consumable item. Any extreme usage, externality damage and other causes may result in material aging and cracking, thereby decrease working lifetime. In view of this, the warranty does not cover the following:

1) Any damages by externality.

2) Any breakdown by extreme usage.

3) Any broken by inappropriate physical environment.

4.3. View

Front View   Side View   Back View

4.4. LED status, ports and buttons description
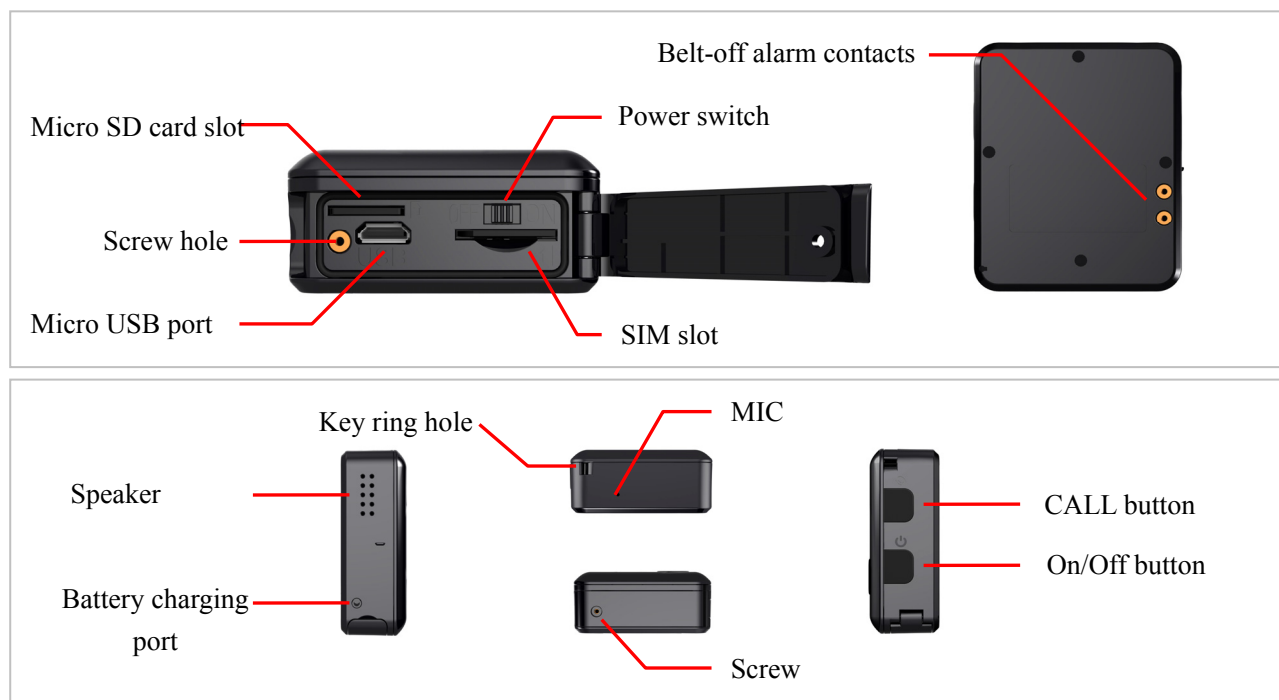
Blue LED — GSM LED	
Blue LED flashing 0.5s on & 0.5s off	Initializing
Blue LED flashing 1s on & 3s off	Registered to GSM network
Red /Yellow LED — Power LED	
The red LED is always on	Charging
The red LED turn Yellow	Fully charged
Green LED — GPS LED	
Green LED flashing 1s on & 3s off	Positioning success
Green LED flashing 1s on & 1s off	Searching for satellite signal
Button	
On/Off button	Press for 3s to turn tracker on/off
CALL button	Press for 1s to pick up a call，press for 3s to call to an authorized number (vibration touch for calling)
SOS button	Press it for 3s to send an alarm SMS with coordinates
Other ports	
Main power switch	Slide switch to ON position to power on tracker
SIM card and micro SD card slots	Insert SIM and micro SD card
Micro USB port	For setup the parameter and firmware upgrade

4.5. Getting started

Please read this manual before using tracker and check if all parts are in the box.

4.5.1 Ensure that your tracker has a working SIM card.

- Please make sure SIM card has enough credit.
- Please make sure that the SIM is not locked and do not require a password to operate.
- Please make sure the SIM card is supporting caller ID display.

4.5.2 Insert SIM/micro SD card and switch on the main power switch

- Twist off the screws and then open the cover

-- Attach supplied sticker onto the back of the SIM card, as follow:
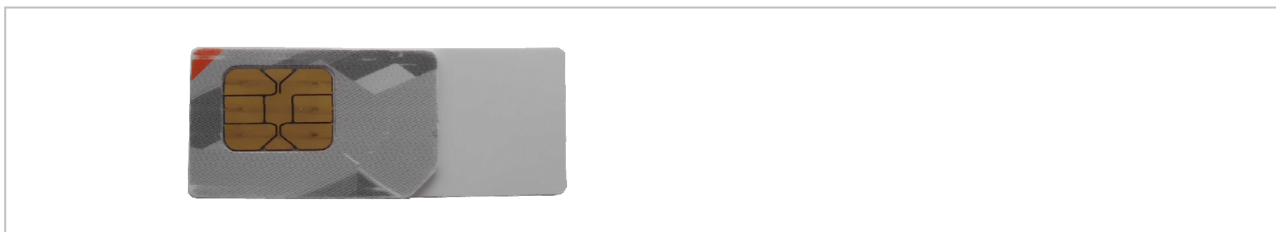
- Insert a SIM card, and micro SD card (optional), and switch on the main power switch, as follow:

- Close the cover and seal it up with the screw

4.5.3 When using tracker for the first time please charge the battery for at least for 3 hours with the main power switched off. There are three ways to charge: using supplied AC adapter, car adapter, and connecting USB charging cable to USB port of any computer. (Note: Please turn off the tracker when charging!)

Computer

AC adapter   Car adapter   USB port
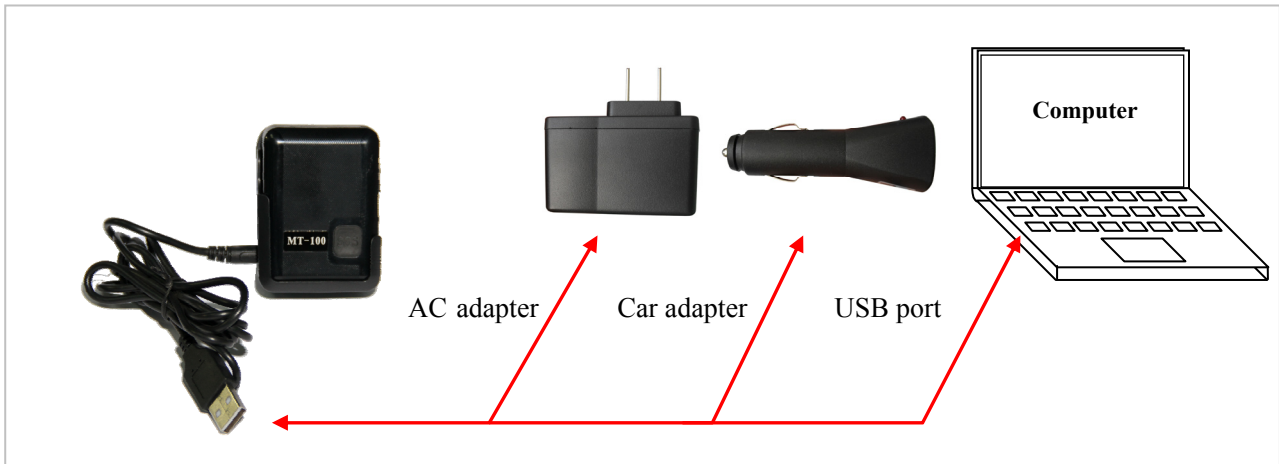
4.5.4 Following these steps to wear the special belt
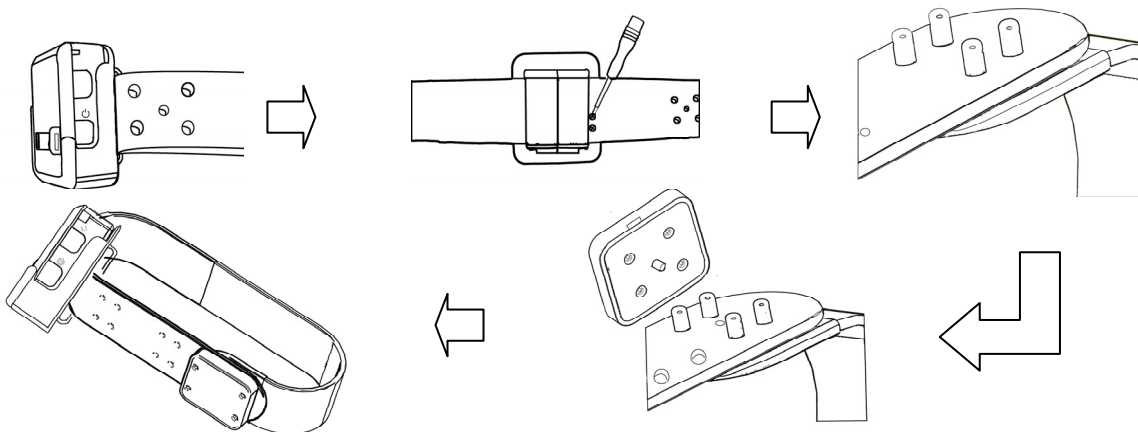
Make sure that tracker front side is up to the open sky when the main power switched on.

-- If the tracker operates normally and positioning successfully, the blue LED flashes 1s on & 3s off; the green LED flashes 1s on & 3s off**.**

5. Instruction and function applications

There are three ways to set up the tracker: SMS command, GPRS command and setup by

computer.

Notice:

1. All changes to setup require a password. Make sure that you are using correct password otherwise changes will be rejected.

2. All commands are not case sensitive.

5.1   Change password

For example:
Command: FACID,123456,PASSWORD,V=888888
You receive SMS reply: FACID password ok!
123456 is the factory default password, 888888 is the new one.

Password must be six digits!

5.2   Authorized number

Tracker supports up to 5 authorized telephone numbers, which you can set at your choice. To receive alarms and calls from tracker you have to set at least one authorized telephone number. If there are no any authorized number has been set the tracker cannot send out any alarm SMS (but you still can receive alarms through GPRS, if set) and cannot call out.

Advice: set the authorized number first when you first use!

Command:
FACID,123456,AUTHORIZE,1=13145826121,2=13145826122,3=13145826123,4=13145826124,5=13145826125
SMS reply: FACID authorize ok!

It means that set tracker success.

This command also can set 1 or 2 authorized number only, just don't fill in behind.

Cancel this command:

FACID,123456,AUTHORIZE

SMS reply: FACID authorize ok!

5.3   Working mode

Tracking mode:

Default mode is tracking mode, if the tracker is in operation you can get SMS with its current location by dialing from an authorized telephone to the tracker.

If you already set the other working mode and then wanted to go back to tracking mode can use this command to set.

For example:

FACID,123456,MODE,Tracker

SMS reply: FACID mode ok!

CALL mode:

Command:

FACID,123456,MODE,CALL

SMS reply: FACID,123456,MODE,CALL

At this working mode, if there is a phone call, you will hear a bell; press the CALL button for 1s to answer the phone. If you want to make a phone call by tracker, press the CALL button for 3s to calling the first authorized phone number, if the first authorized phone number can not get through, it will call the second authorized phone number…At the end, if there is no authorized phone number answer the incoming call, tracker will call all the authorized phone number in turn.

Monitoring mode

Command:

FACID,123456,MODE,MONITOR

SMS reply: FACID mode ok!

When in this mode the tracker will answer incoming call from an authorized number automatically without vibration or sound signal and you can monitor surroundings.

The   speaker   is   mute   automatically   in

surveillance mode.

Long time standby mode

Tracker do not set up any work tasks; turn the GPS system power supply off via command, so tracker can be low standby power consumption.

   For example:

FACID,123456,config,gpsautosearch=610000（0—9999999 seconds）

SMS reply: FACID config ok!

Advice: GPS interval must be set 610000s or longer to activate this mode.

Cancel this command:

FACID,123456,config,gpsautosearch=600（600s is the factory standard parameters）

SMS reply: FACID config ok!

> *At this function, you can get its current position by calling to it from an authorized number.*

Pet mode（set its working time）

This function is according to set the tracker's working time.

For example:

FACID,123456,config,poweron1=10:30,poweroff1=11:00,poweron2=18:30,poweroff2=19:00,poweren=1

SMS reply: FACID config ok!

Poweren =1 Start the timing switch machine function. Poweren =0 Close the timing switch machine function

poweron1=10:30 turn on time

poweroff1=11:00 turn off time

poweron2=18:30 turn on time

poweroff2=19:00 turn off time

5.4   Tracking by calling

> *This function is only effective in tracking mode.*

Operation：

Tracker will hand up the phone when authorized number call and it will send a SMS with real time GPS location data. "CUR" means that GPS data by the real time.

1. If there is not the real time GPS data, tracker will send a last effective location data at first and began to search the satellite.
2. It will send a new effective GPS data or the last effective location data after search the satellite.

The last effective location data SMS:

lat:22.636975N long:114.032996E,SP:0.47,18/04/14 10:19,BAT=100%,SGL:LAST,,GNS:0GPS:04,92.9,460,00,262C,1073

```
Real time GPS location data SMS:
lat:22.636975N long:114.032996E,SP:0.47,18/04/14 10:19,BAT=100%,SGL:CUR,,GNS:0
GPS:04,92.9,460,00,262C,1073
```

5.5 Real time tracking

Function: send the command: FACID,123456,SMS,FAST and get the location by real time. You can get the location immediately when you send this command.

Then you will receive two reply SMS after send the command.
 The first one is: FACID sms ok!
 The second one is location data.

5.6 Uploaded regularly via GPRS

Function: Set an interval for the tracker to continuously send its location to server.
The first step: set GPRS parameter
 Send command to tracker (for example):
FACID,123456,GPRS,ADDR=219.133.34.184,PORT=8000,NAME=,PASS=,APN=CMNET,ID=,MODE=0,HBE=0,HBN=HI,HBI=50,HBT=100,HBR=1
Reply: FACID gprs ok!
 ADDR: it is your server's IP.
 PORT: your server's port.
 NAME: access Point's user name.
 PASS: access point's password.
 APN: network service access point.
 ID: device number.
 MODE: communication mode, 0 means that TCP, 1 means that UDP.
 HBE: 1 or 0 enable/disable heartbeat function.
 HBN: text message of heartbeat.
 HBI: heartbeat transmission time interval.
 HBT: The number of heartbeat packets sent (when server receives the number of times is full, and it didn't feedback, device will restart.)
 HBR: When the tracker can't get the server response, whether to restart (reset switch)
ADDR,PORT,NAME,PASS,APN,ID,MODE,HBE,HBN,HBI,HBT,HBR (those are according to fill in yourself).
 Cancel this command:
 FACID,123456,GPRS
Reply: FACID gprs ok!
The second step: set the upload time interval.

Send the command via SMS to tracker: FACID,123456,LOC,I=60,T=20,L=45

Reply: FACID loc ok!

LOC means that command's name,

I=60 means that the upload time interval is 60s, range of: 10-65535.

T=20 means that the upload times is only 20 times, if T=999 means that unlimited upload times.

L=45 means that the distance is less than 45 meters compared to the last position (max: 65535), the tracker will not send the GPS location data to server or authorized number, L=0 means that unlimited

Cancel this command: FACID,123456,LOC

Reply: FACID loc ok!

5.7   Reset remote

For example:

FACID,123456,RESTART

This command can make the tracker to restart but not reply SMS.

5.8   Restore default

For example:

FACID,123456,DEFAULT

Reply: FACID default ok!

Restore default successfully.

Tracker has been successfully restored.

5.9   Tracking regularly via SMS

Function: tracker will send the SMS to authorized number by timing.

Set the upload regularly and the upload number of times.

FACID,123456,LOC,I=60,T=20,L=45

Reply: FACID loc ok!

LOC: means that the command name with positioning regularly.

I=60: means that the location regularly is 60s, range of: 10-65535.

T=20: means that the upload number of times is 20, if T=999 means that unlimited times to upload.

L=45: means compared to latest position, the distance is closer than 45m and the tracker will not send the GPS position to authorized number via SMS; L=0 means that

unlimited distance to upload data.
Cancel this command:
FACID,123456,LOC
Replay: FACID loc ok!

When you use this function, the server's parameter configuration must be cancel; otherwise it will not send the upload data to authorized number!

5.10 SMS format

The tracker has two kinds of SMS formats to reply:
1. Ordinary SMS, including longitude and latitude, location state, battery level and satellites act
Command: FACID,123456,SMS,text
Reply: FACID sms ok!
For example:
lat:22.636975N long:114.032996E,SP:0.47,18/04/14 10:19,BAT=100%,SGL:CUR,,GNS:0GPS:04,92.9,460,00,262C,1073
2.Google Link SMS, a data format with can link to Google map.
Command: FACID,123456,SMS,link
Reply: FACID sms ok!
For example:
http://maps.google.com/maps?f=q&hl=en&q=loc:22.637118,114.032055&SP:1.55 21/03/14 17:35 BAT=100% SGL:LAST GNS:0GPS:5

5.11 Set the time zone

Function: default is *GMT+8,* set the time zone of your place so SMS time consistent with

local time.
For example:
FACID,123456,TIME ZONE,V=+9
Reply: FACID time zone ok!

（ -12,-11,-10,-9,-8,-7,-6,-5,-4.5,-4,-3.5,-3,-2,-1,0,+1,+2,+3,+3.5,+4,+4.5,+5,+5.5,+
6.5,+6,+7,+8,+9,+9.5,+10,+11,+12,+13）

5.12 SD card test

> *If the tracker insert SD card and it can not receive the GSM signal, the GPRS location data will be save to the SD card. After receive the GSM signal, the data will be packaged to upload!*

Send the command:
FACID,123456,SDCARD,TEST
Insert SD card, and use this command to test whether the SD card is work or not
Reply: FACID sdcard ok!   Or   FACID sdcard fail!
If receive FACID sdcard fail! , please to check the SD card is work or not again.

5.13 Over speed alarm

Function: both of that will send an alarm when the moving speed is bigger or less than preset value if you set this function.
For example:
FACID,123456,OV,L=50
Reply: FACID ov ok!
L=50: 65535 is the maximum value, unit is: KM/H
Cancel this function:
FACID,123456,OV
Replay: FACID ov ok !

> *Advice: it is suggested to set it higher than 50 KM/H in order to improve the tracker's accuracy.*

5.14 Geo-fence alarm

Function: if already set a Geo-fence, when the tracker is get into or out of the Geo-fence area, it will send an alarm message.
For example:
FACID,123456,GEOFENCE,A1=113.000000e/22.400000n,A2=114.800000e/22.600000n,
B1=113.000000e/22.400000n,B2=114.800000e/22.600000n,C1=113.000000e/22.4000
00n,C2=114.800000e/22.600000n,D1=113.000000e/22.400000n,D2=114.800000e/22.
600000n,E1=113.000000e/22.400000n,E2=114.800000e/22.600000n
Reply: FACID geofence ok!
　　Note: A1, B1, C1, D1, E1 for the preset range of the longitude and latitude in the upper

left corner, and A2, B2, C2, D2, E2 is preset in the low right corner of the latitude and longitude
Cancel this function:
FACID,123456,GEOFENCE
Reply: FACID geofence ok!

5.15 Moving alarm

Function: if already set this function, when the tracker gets into or out of the moving area, it will send an alarm message.
FACID,123456,MOVE,L=200
Reply: FACID move ok!
L=200(max: 65535), unit: meters，L: radius.
Send this command and the tracer will search for the first time location of the GPS signals as the center, the tracker will report alarm when it is move in or out of the radius is 200 meters circle.
Cancel this function:
FACID,123456,MOVE
Reply: FACID move ok!

5.16 Vibration alarm

Function: Set the vibration alarm. When the tracker detects enough strength of vibration, it will send an alarm message.
For example:
FACID,123456,VIB,L=5
Reply: FACID vib ok!
Sensitivity level: 1-10 (max: 10)
Cancel this function:
FACID,123456,VIB
Reply: FACID vib ok!
Also can set 3G sensor with this function:
FACID,123456,GSensor,L=40
Reply: FACID gsensor ok!
3G sensor's sensitivity level: 0~50 (max: 50).
Cancel this function:
FACID,123456,GSensor
Replay: FACID gsensor ok!

5.17 Low battery alarm

Function: **When the battery level is lower than 30%,** the tracker will send a low battery alarm message to remind users to charge in time.

5.18 SOS emergency calling

Function: in an emergency, press the SOS button for 3 seconds *(keep pressed and the LED will extinguish and tracker will vibrate when it is active)*, tracker will send an alarm SMS

3. If there is not the real time GPS data, tracker will send a last effective location data at first and began to search the satellite.
4. It will send a new effective GPS data or the last effective location data after search the satellite.

The last effective location data SMS:

lat:22. 636975N long:114. 032996E, SP:0. 47, 18/04/14 10:19, BAT=100%, SGL:LAST, SOS, GNS:0GPS:04, 92. 9, 460, 00, 262C, 1073

Real time GPS location data SMS:

lat:22. 636975N long:114. 032996E, SP:0. 47, 18/04/14 10:19, BAT=100%, SGL:CUR, SOS, GNS:0GPS:04, 92. 9, 460, 00, 262C, 1073

5.19 Belt-off alarm

◆You will receive a "Belt Off" warning message if the belt lock is unconnected.

1. If there is not the real time GPS data, tracker will send a last effective location data at first and began to search the satellite.
2. It will send a new effective GPS data or the last effective location data after search the satellite.

The last effective location data SMS:

lat:22. 636975N long:114. 032996E, SP:0. 47, 18/04/14 10:19, BAT=100%, SGL:LAST, Belt Off, GNS:0GPS:04, 92. 9, 460, 00, 262C, 1073

Real time GPS location data SMS:

lat:22. 636975N long:114. 032996E, SP:0. 47, 18/04/14 10:19, BAT=100%, SGL:CUR, Belt Off, GNS:0GPS:04, 92. 9, 460, 00, 262C, 1073

◆You will receive a "Belt Up" warning message if the belt lock is connected.

1. If there is not the real time GPS data, tracker will send a last effective location data at first and began to search the satellite.
2. It will send a new effective GPS data or the last effective location data after search the satellite.

```
The last effective location data SMS:
lat:22.636975N long:114.032996E, SP:0.47, 18/04/14 10:19, BAT=100%, SGL:LAST, Belt
Up, GNS:0GPS:04, 92.9, 460, 00, 262C, 1073


Real time GPS location data SMS:
lat:22.636975N long:114.032996E, SP:0.47, 18/04/14 10:19, BAT=100%, SGL:CUR, Belt
Up, GNS:0GPS:04, 92.9, 460, 00, 262C, 1073
```

6. Problems & solutions

Problem: Tracker will not turn on	
Possible cause	**Resolution**
The power button is not pressed long enough	Press and hold the ON/OFF button for 3 second or more
Battery needs charging	Recharge battery for 3 hours
Problem: Tracker will not reply with SMS	
Possible cause	**Resolution**
Can not registered to the GSM network (LED flash 0.5 second on and 0.5 second off)	Make sure the GSM signal is good Check the SIM card, Inspect SIM card again If re-inserting does not help, try another one
GSM network is slow	Some GSM networks slow down during peak time or when they have equipment problems.
The SIM card has run out of credit	Replace or top up the SIM card
Problem: LED flash 1 second on and 1 second off	
Possible cause	**Resolution**
Tracker does not have clear view of the sky	Move the tracker to a location where the sky is visible. Tall buildings, trees, heavy rain, can cause problems with the GPS reception.
Bad GPS reception	Place the front side of tracker towards sky
Problem: Fails to Connect to Server via GPRS	
Possible cause	**Resolution**

SIM card does not support GPRS function	Enable SIM card GPRS function
GPRS function of tracker is turned off	Turn on GPRS function
Incorrect IP address or port	Set the right IP address and port, then reset
GSM signal is weak	Move the tracker to a location with good GSM reception

Attachment 1：SMS data format

The cell phone (authorized number) will get the position information via tracker SMS.

There are two kinds of SMS data formats: Latitude and longitude format and Google link format.

Latitude and longitude format:

lat:22.636975N long:114.032996E,SP:0.47,18/04/14 10:19,BAT=100%,SGL: CUR,LowBattery,GNS:0GPS:04,92.9,460,00,262C,1073

Data analysis:

For example	Explain	
lat:22.636975N	Latitude	
long:114.032996E	Longitude	
SP: 0.47	Real time speed is 0.47 Km/h	
18/04/14 10:19	Date/time	
BAT=100%	State Of Charge	
SGL:CUR	SGL:CUR	Real time positioning success

	SGL:LAST	Last valid data
LowBattery	Alarm information, as follow:	

Alarm type	Explain
Move in	Tracker gets into preset warning area.
Move out	Tracker out of the preset warning area.
Geo in(A,B,C,D,E)	Tracker gets into the preset Geo-fence area.
Geo out(A,B,C,D,E)	Tracker out of the preset Geo-fence area
OverSpeed	The moving speed is higher than preset value
LowSpeed	The moving speed is lower than preset value
Help	The SOS button is pressed for 3 seconds or more than 3 seconds
VIB	Tracker detects enough strength of vibration
LowBattery	Battery level is lower than 30%

GNS:0	The number of available GLONASS satellites
GPS:8	The number of available GPS satellites
92.9	Altitude (unit：meter)
460	MCC (mobile country code)
00	MNC (mobile network code)
262C	LAC (location area code)
1073	Cell identification code

Google link format:

For example:

http://maps.google.com/maps?f=q&hl=en&q=loc:22.637118,114.032055&SP:1.55 21/0
3/14 17:35 BAT=100% SGL:LAST LowBattery GNS:0GPS:5

Data analysis:

For example	Explain
http://maps.google.com/maps? f=q&hl=en&q=loc:22.637118,1	Google link

<u>14.032055&SP:1.55</u>	
21/03/14 17:35	Date
BAT=100%	State Of Charge

SGL:LAST	SGL:CUR	Real time positioning success
	SGL:LAST	Last valid data

LowBattery	Alarm information, as follow:

Alarm type	Explain
Move in	Tracker gets into preset warning area
Move out	Tracker out of the preset warning area
Geo in（A,B,C,D,E）	Tracker gets into the preset Geo-fence area
Geo out(A,B,C,D,E)	Tracker out of the preset Geo-fence area
OverSpeed	The moving speed is higher than preset value
LowSpeed	The moving speed is lower than preset value
Help	The SOS button is pressed for 3 seconds or more than 3 seconds
VIB	Tracker detects enough strength of vibration
LowBattery	Battery level is lower than 30%

GNS:0	The number of available GLONASS satellites
GPS:5	The number of available GPS satellites