Mini Tracker MT-800

USER MANUAL

2F., No.136, Ziqiang S. Rd., Zhubei City, Hsinchu County 30264, Taiwan (R.O.C.)
TEL：886-3-6578491 FAX：886-3-6578492

MADE IN TAIWAN

Content

1. Introduction

The MT-800 is a portable compact tracking device for personal safety and asset monitoring. It combines high sensitivity GPS and quad band GSM/GPRS to perform the powerful security application.
The MT-800 can, based on quad band GSM/GPRS network and GPS satellite positioning system, track far-way objects conveniently by Short Message or internet. It can be used for child protection, anti-kidnapping, vehicle tracking, pets go out tracking, panic assistant for the aged, and much more.

In this guide, it indicates each interface of the MT-800 PCBA. From these interface, the user will know how to install the tracker. The guide also introduces the configuration of the device and the installation and setup of the server. This will make the user easier to use the device.

If Customers need to build server by themselves, please refer to the UniTraQ's Communication API user manual.

2. Electrical Specifications

2.1 General Specification

Parameter	**specification**
Operating Voltage	3.7V
Operating Temperature	-20 ℃ ~ +55 ℃
Storage Temperature	-40 ℃ ~ +85 ℃
Power Consumption	Full power 150 mA
	Idle mode 30 mA
Battery	Li-ion, 1000 mAh
Battery Voltage	Min:3.6V, Typ:3.7V, Max:4.2V
SIM card type	1.8V, 3V
LED Status Indicator	Power/ GPRS/GPS
Dimension	65 x 46 x 11 mm
Weight	27 g

2.2 GSM/GPRS Specification

Parameter	specification
Frequency	Quad band 850MHz/900MHz/1800MHz/1900MHz
Output power	Class 4(2W) for EGSM 850 and 900 Class 1(1W) for GSM 1800 and 1900
Protocol support	TCP/UDP/PPP
GPRS Multi-slot	Class 10 / 8
GPRS Mobile station	Class B
Coding scheme	CS1,CS2,CS3,CS4
Downlink/ Uplink max. Operating temperature	85.6Kbps/42.8 kbps -20 ℃~ +55 ℃
Storage temperature	-40 ℃~+85 ℃
Current consumption	Idle mode: 23 mA GPRS (1Tx,1Rx power level 10): 125 mA for 850/900 MHz, 83 mA for 1800/1900 MHz

2.3 GPS Specification

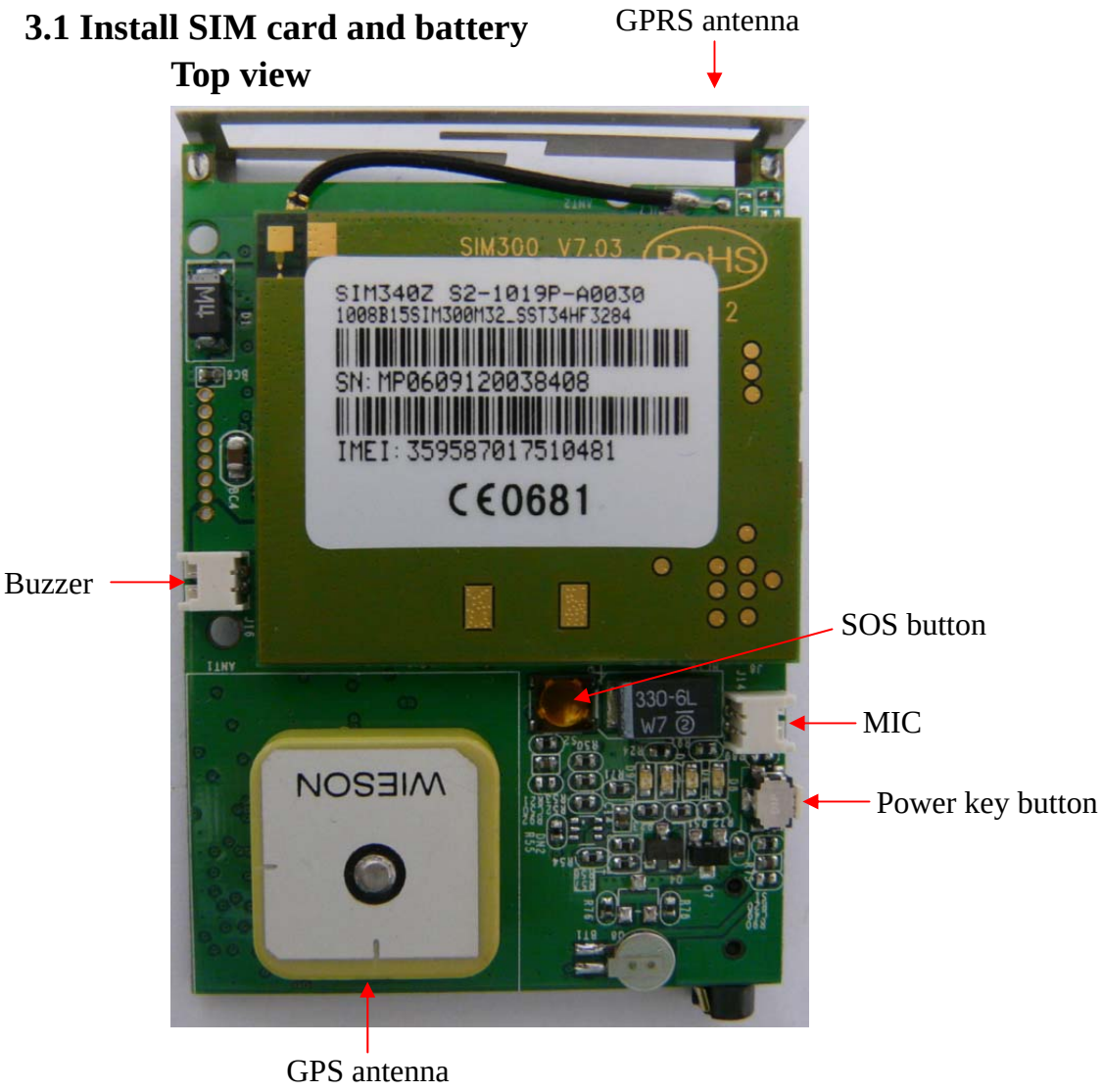
Parameter	specification
Chipset	SiRF star III
Frequency	L1, 1575.42MHz
Channels	20 channel all in view
Acquisition sensitivity	-142dBm
Tracking sensitivity	-159dBm
TTFF hot start warm start cold start	< 1 sec < 35 sec < 45 sec
Signal Reacquisition	<1s
Update Rate	1Hz (standard)

Acquisition current Tracking current Standby current	22.7 mA 21.6 mA 1.5 mA
Operating temperature	-40℃ ~ +85℃
Datum	WGS-84(Default)
Protocol	NMEA-0183 V3.01
Dynamics	4G (39.2m/sec2)

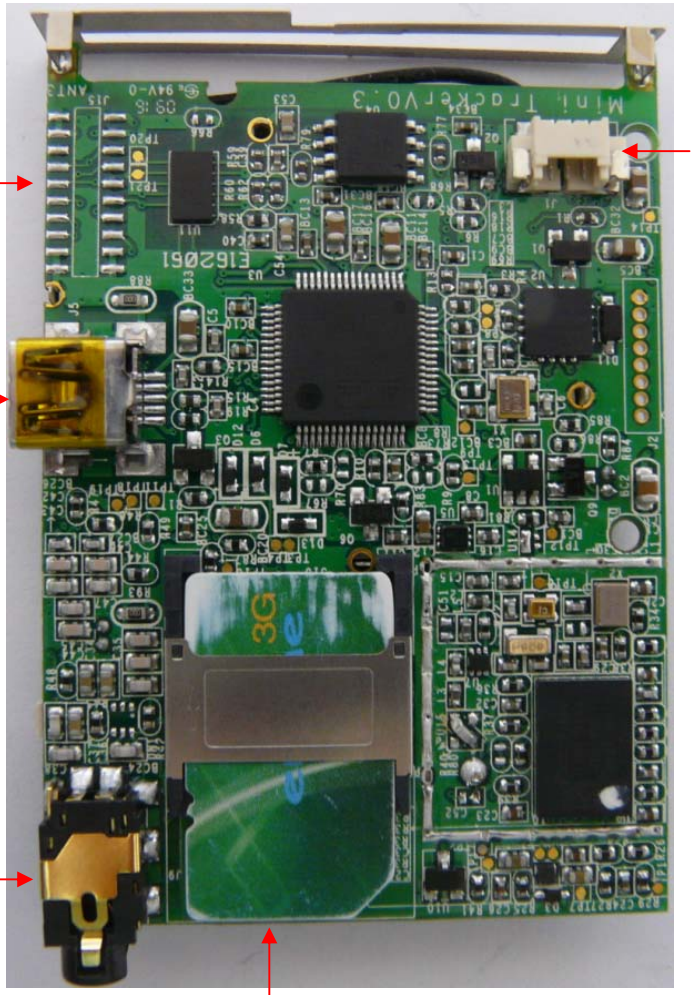
3. Device Overview

3.1 Install SIM card and battery

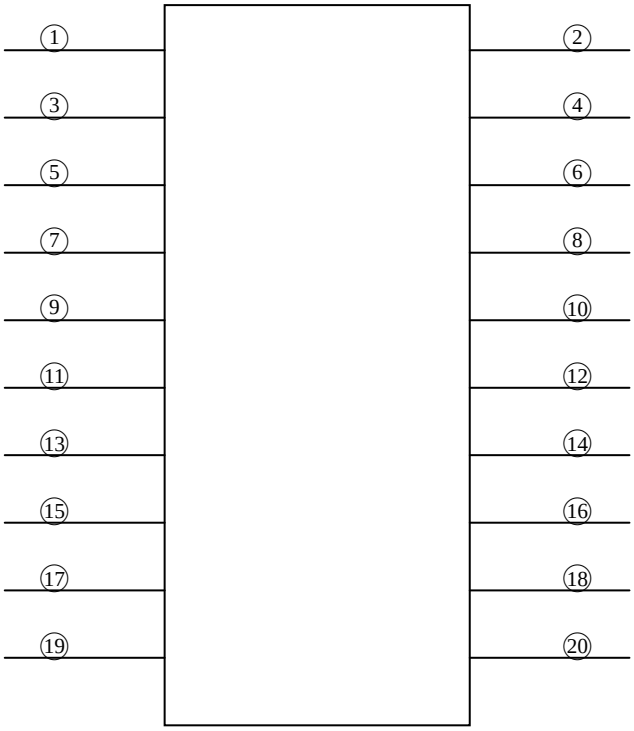
Top view



Bottom view


I/O Connector
(Pin definition, please refer to EXT. I/O3)
Battery Connector
USB Connector
Ear phone / MIC
SIM card

EXT. I/O3



①3V OUTPUT
②3V OUTPUT
③3V OUTPUT
④3V OUTPUT
⑤N/A
⑥IO1 (I2C data)
⑦N/A
⑧IO2 (I2C clock)
⑨N/A
⑩IO3 / SPI CS
⑪N/A
⑫SPI MISO
⑬N/A
⑭SPI MOSI
⑮UART (NMEA OUTPUT)
⑯SPI CLOCK
⑰GND
⑱GND
⑲GND
⑳GND

3.2 Button Indication

1) Power Key:
   Press and hold the Power key for 3 seconds to activate the device, the Power LED will light up and perform the initialization, after that the device will perform the general function. During normal state, if press and hold the **PWR** key for 3 seconds, it will go into the idle mode.
2) SOS Key:
   Press and hold the **SOS** key for 3 seconds to perform the emergency notification.

3.3 LED Indication

1) **Power ON/OFF status**:
   When power ON, the GPS and GSM s' LED will light up. When power OFF, the LED will put out.

2) **GPS Status:**
   For the GPS status indicator through **GPS** LED, detailed information is shown in the following table:

LED mode	**Operation status**
1 sec On /1 sec Off	Searching satellite
1.5 sec On /0.5 sec Off	Positioning

3) GSM: Red Led flash indicates the following status.
   For the GPRS/GSM status indicator through **GSM** LED, detailed information is shown in the following table:

LED mode	**Operation status**
Off	GSM/GPRS is not running
64 ms On / 3000 ms Off	Logged to network (monitoring control channels and user interactions). No call in progress.
64 ms On / 300 ms Off	Indicates GPRS data transfer:

64 ms On / 800 ms Off	GPRS does not find the network

3.4 USB Interface

1) **Battery Charging**

1. Charging by a computer USB port:
   Connect the supplied USB cable between the computer USB port and the mini USB connector of the MT-800 device.

2) **Parameters Setting**

Connect the supplied USB cable between the computer USB port and the mini USB connector of the MT-800 device.
The USB interface is also a command and data interface which allows users to download the firmware and set configurations.

3.5 Extension interface

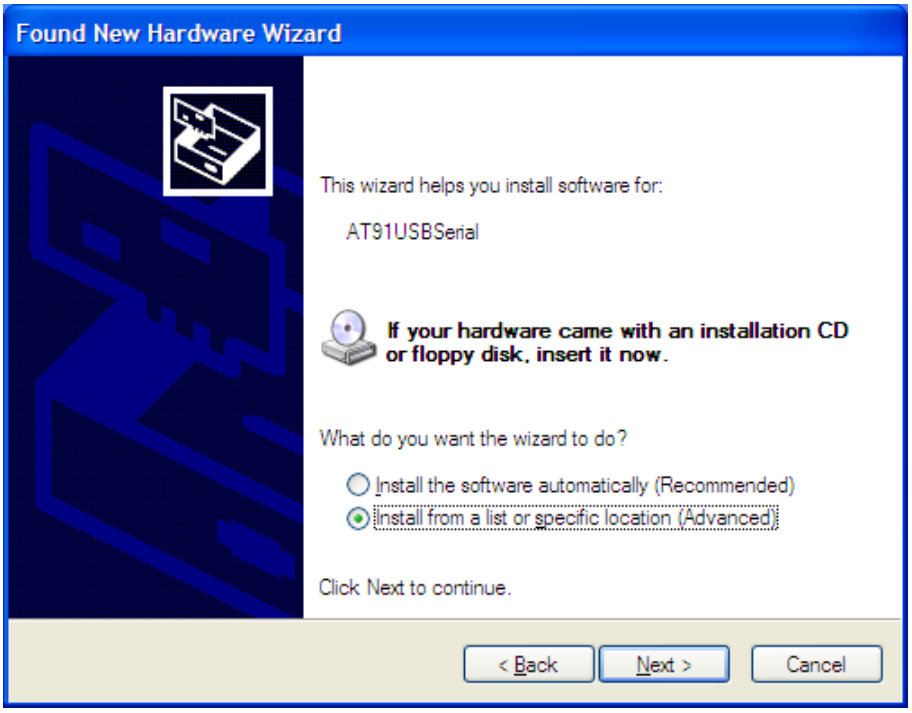
MT-800 includes SPI and I2C interface(the detail please refer to EXT. I/O3 in page 7)

4. Device Configuration

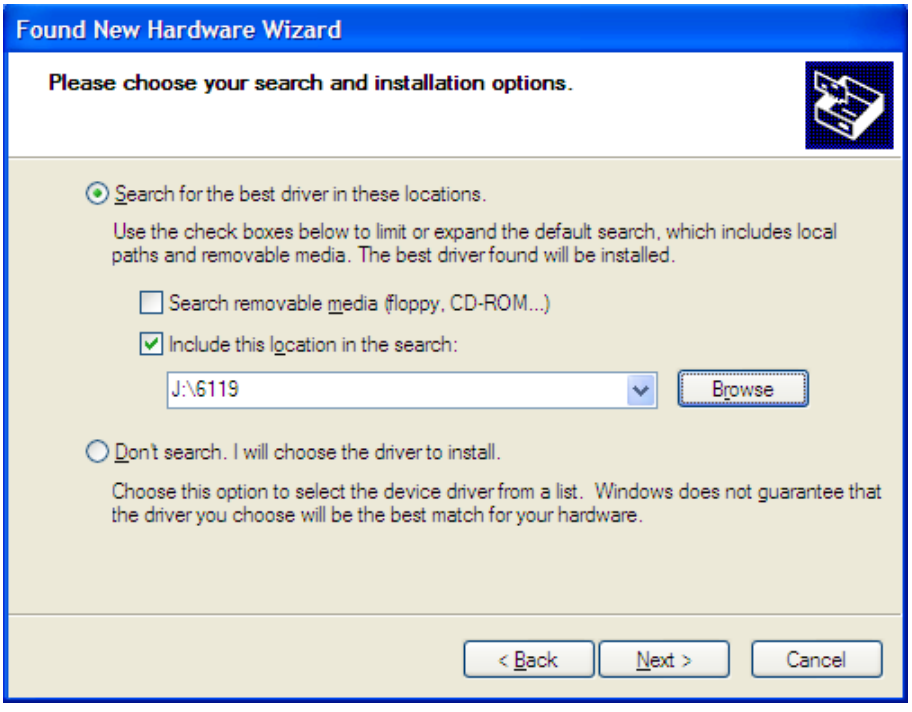
4.1 USB driver installation procedure

1) Connect MT-800 device to PC, choose “No, not this time” then click Next button

3) Choose “install from a list or specific location(Advanced)”, then click Next button



4) Click the Browser button to search the installation file, then click Next button to install USB driver

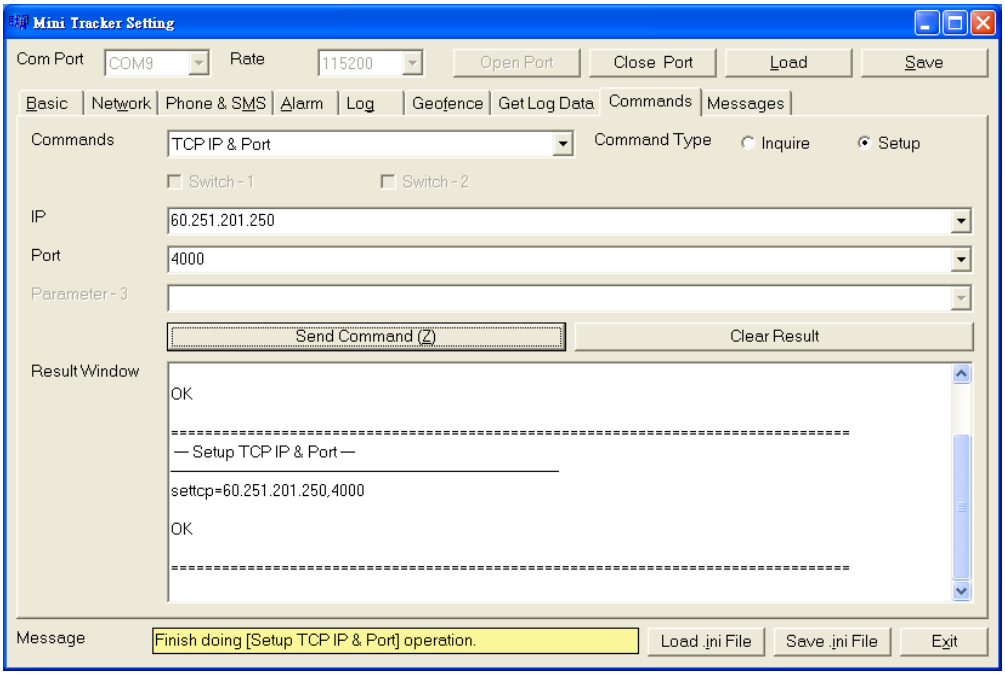


5) Click Finish button to complet

4.2 Min Tracker Setting description

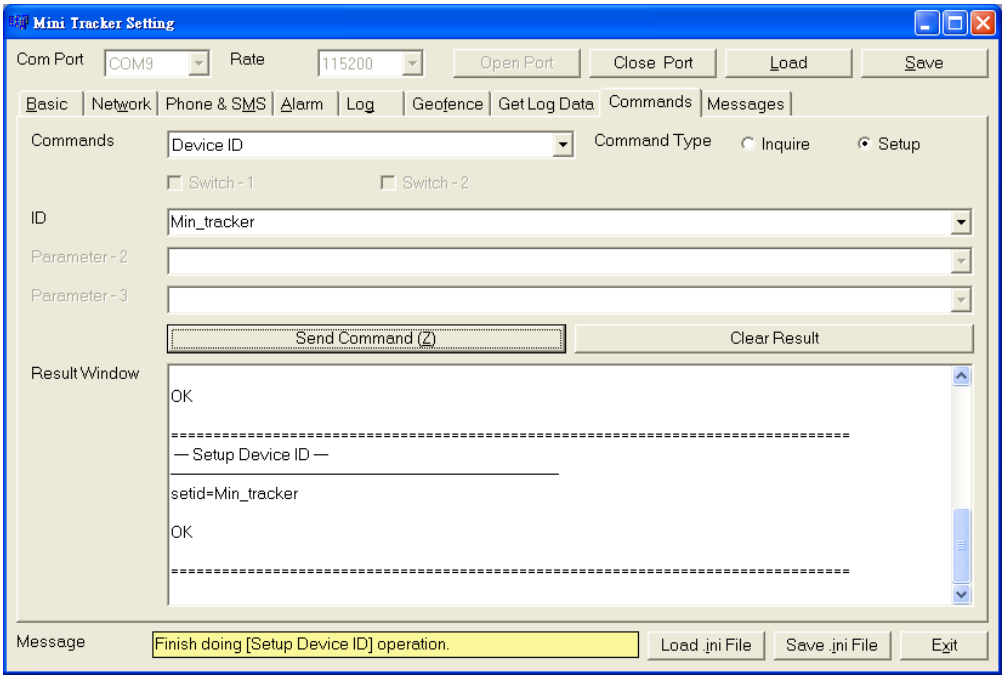
1) Set TCP IP & Port:

Run Mini Tracker Setting tool software, then it will show the setting environment. Choose TCP IP & Port Set in commands column. Follow the below picture setting, then click the “Send command” button, then you will see OK in Result Window.



3) Set Device ID:

Choose Device ID in Commands column. Follow the below picture setting, then click the “Send command” button, then you will see OK in Result Window



4.3 Parameters Setting

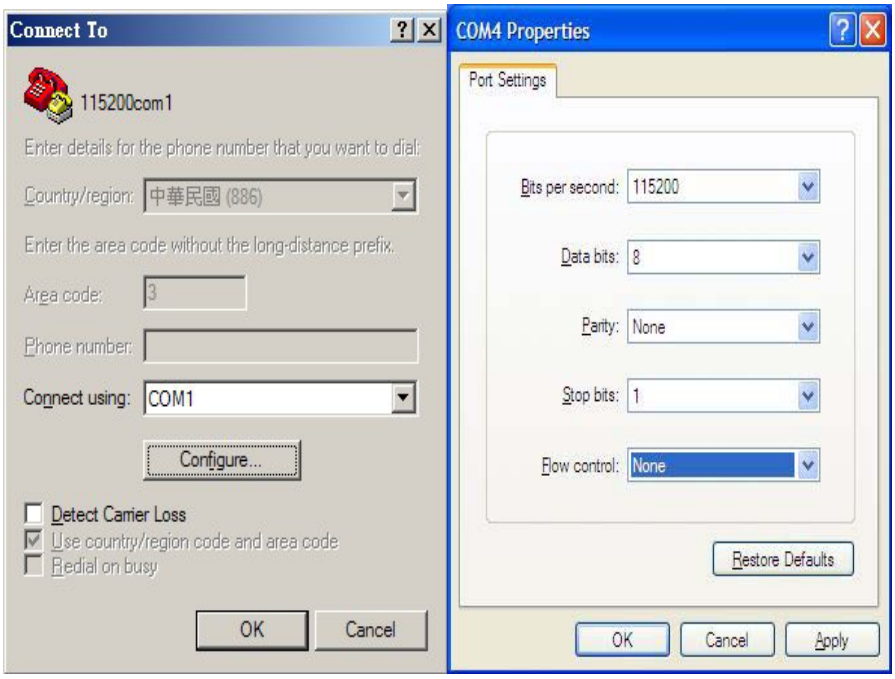
Currently the device embedded with the following parameters:

Item	Default
Device ID	MINI_T01
Password	123456
APN	internet.access.nl
APN name	username
APN password	password
TCP IP	212.187.40.146
Port	7002
GPS interval	20 seconds
Geofence radius	300 feet
Battery low voltage	3.500 v
Speed	60 kilometers
Phone RX SMS warning	+31633576457

4.4 Upgrade Firmware

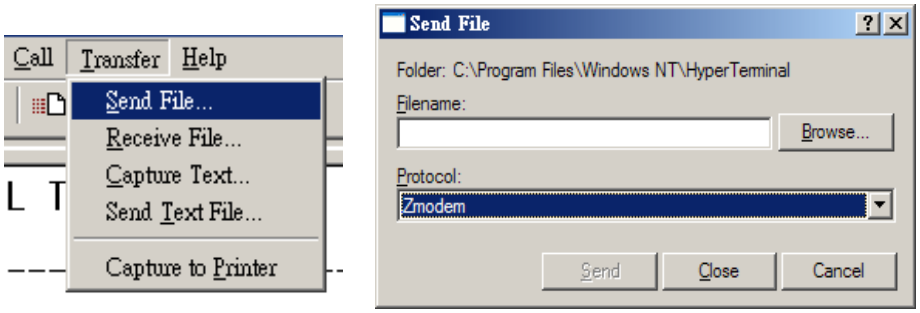
1) Power on the device. Using USB cable connects the device with PC.
2) Check if the device access to the PC's COM port.
   My Computer>Properties>Hardware>Device >Manager>Ports (COM&LPT)

3) Open the Hyper Terminal, and select the corresponding COM.
   The baud rate is 115200, 8 data bits, none parity check, 1 stop bit, none flow control.



4) Input “updmtfm” and Enter in HyperTerminal.

5) Select the file which to be downloaded via “**Transfer**” -> “**Send File**” of the HyperTerminal as the figure.



After all, press the “**Send”** button to download file from PC. And then you will see the download progress.

6) After the firmware is downloaded, input “iqufmver” and Enter to check the latest version.

7) Preliminary configuration:
Set APN, User, Password:”setapn=apn,user,password”
Ex.:setapn=internet,,

Set IP and Port:"settcp=xxx.xxx.xxx.xxx,port"
Ex.:settcp=192.168.1.1,2003

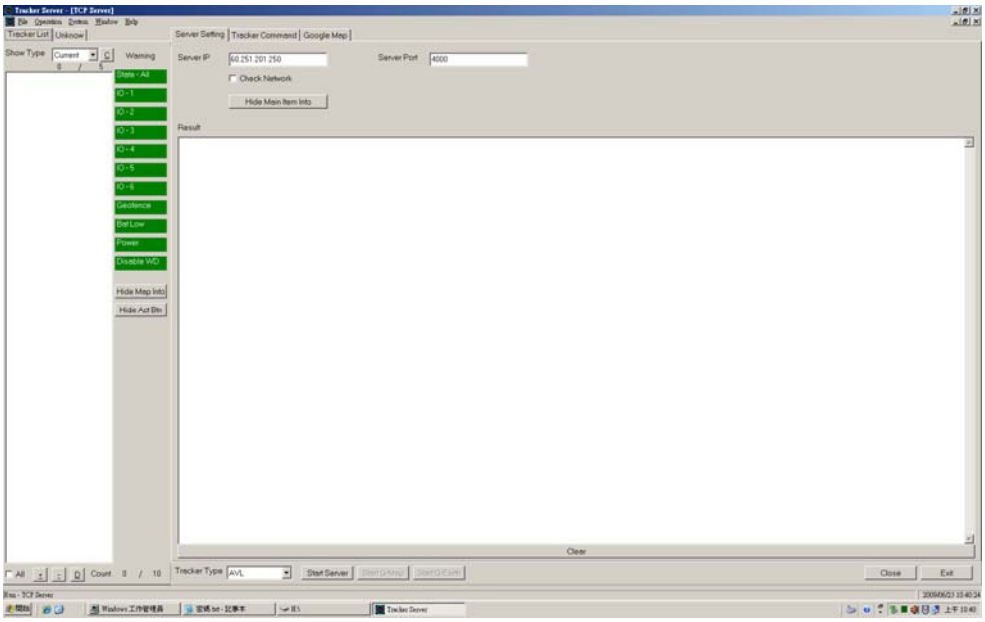
5. Getting Started

1) Charging the battery by using the USB cable connects to a PC or power adapter if you would like to use it by battery embedded.
2) Please prepare a valid GSM/GPRS SIM card.
3) Insert the SIM card properly as the above description.
4) Place the device upward and been with a clear sky vision.
5) Switch the power on. (connect the battery)
6) The green led blinks, and latter the blue led blinks.
7) The device can link to the preset server.

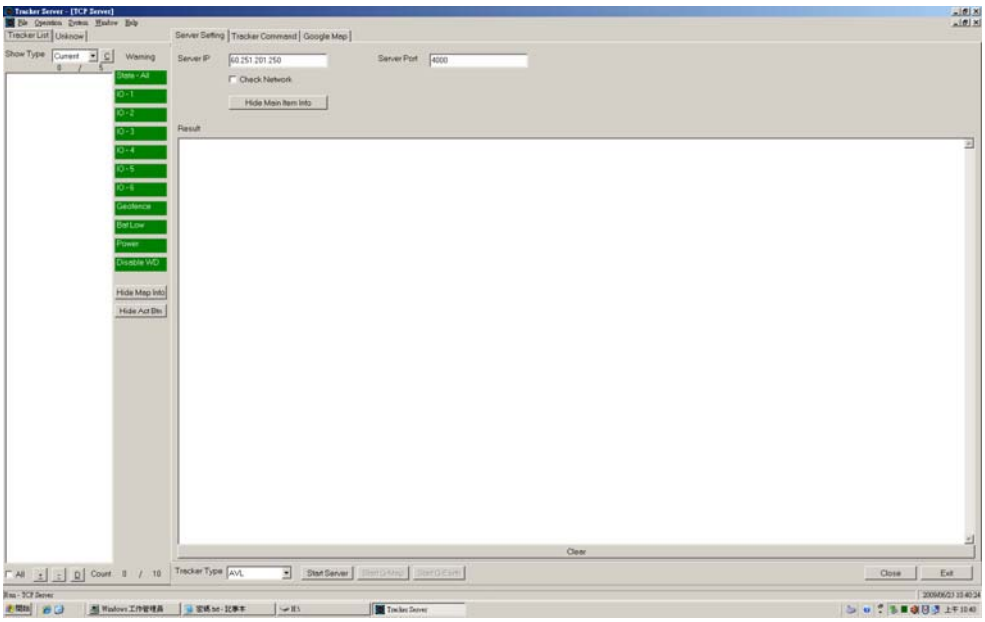
6. Service Center Introduction

6.1 Server Setup and device Connecting

1) Run the Tracker Server application software to login the server



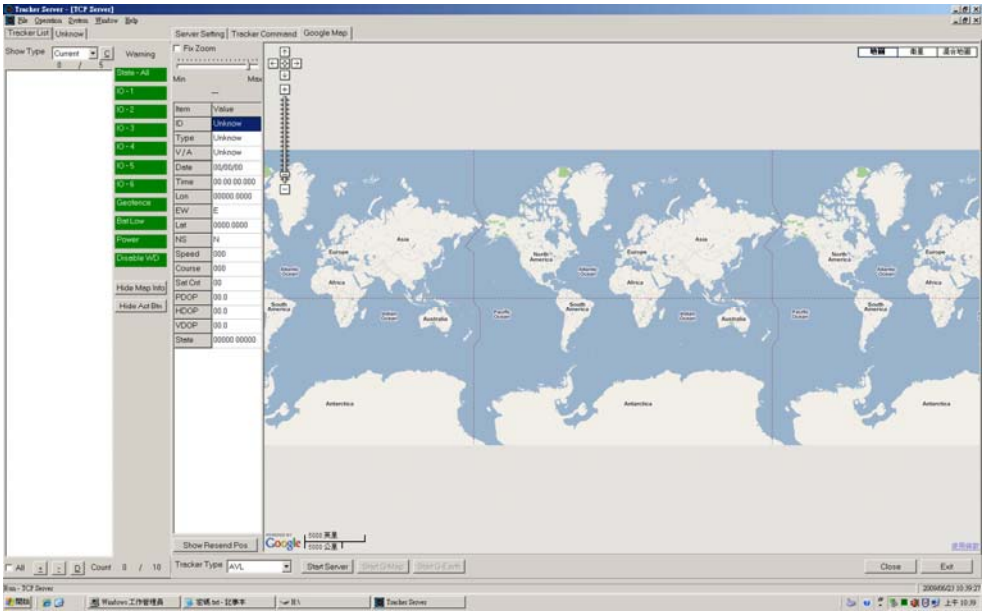
2) Set up the server: 【**Server Setting**】



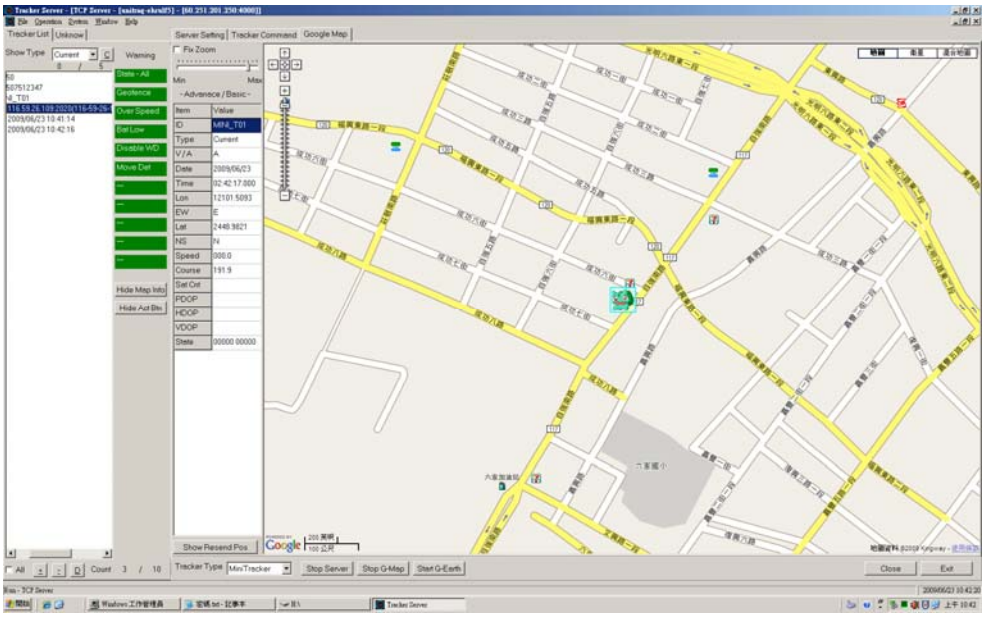
Server IP: key in the server IP
Server Port: key in the port number

Double click on the 【**Start Server**】to active the server.

3) The device connecting with the server.



After the GPS is tracked, the server shows as the following:



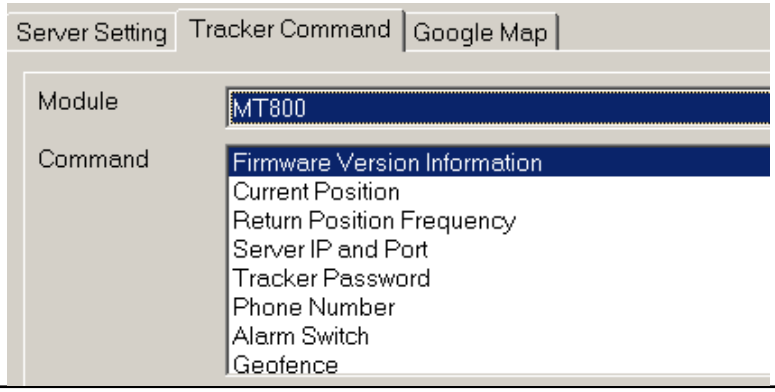
6.2 Warning Indicators

There are 4 warning states which the device will send notification to the server to indicate which event happened. While the Warning Light turns to be **red**, it indicates some warning event happened. The event of each state is:

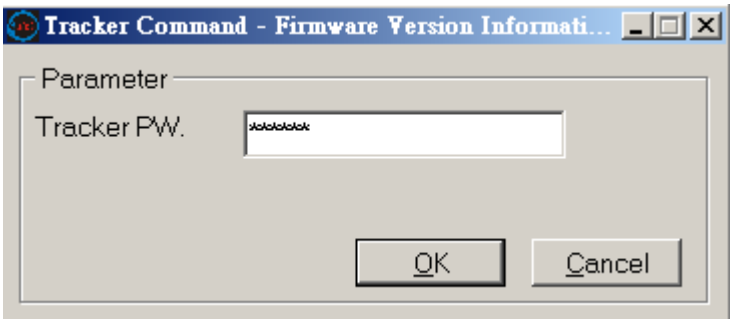
State-1: Geofence alert.
State-2: Over Speed alert.
State-3: Battery Low alert.

6.3 Functions Introduction

Click to the 【MT800 Command】and select the command in the Command window:



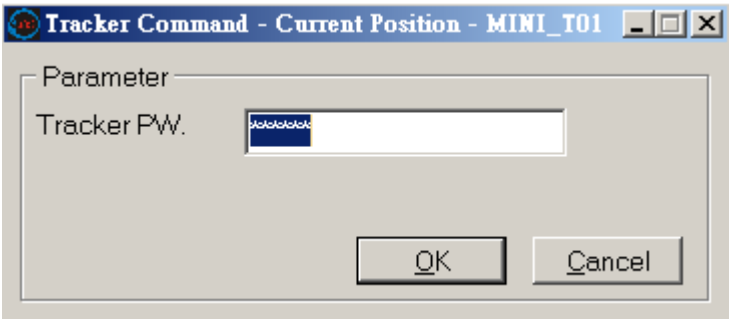
1) Firmware Version Information: Check current firmware version.



Key in the device's password and click OK. The default password is 123456. In the Result window can find the following message.

[MINI_T01] Inquire "Firmware Version Information". (2009/06/22 15:54:24)
[MINI_T01] Inquire "Firmware Version Information" success. [MT800] - [0.3.8]. (2009/06/22 15:54:28)

2) Current Position: get the current GPS information.

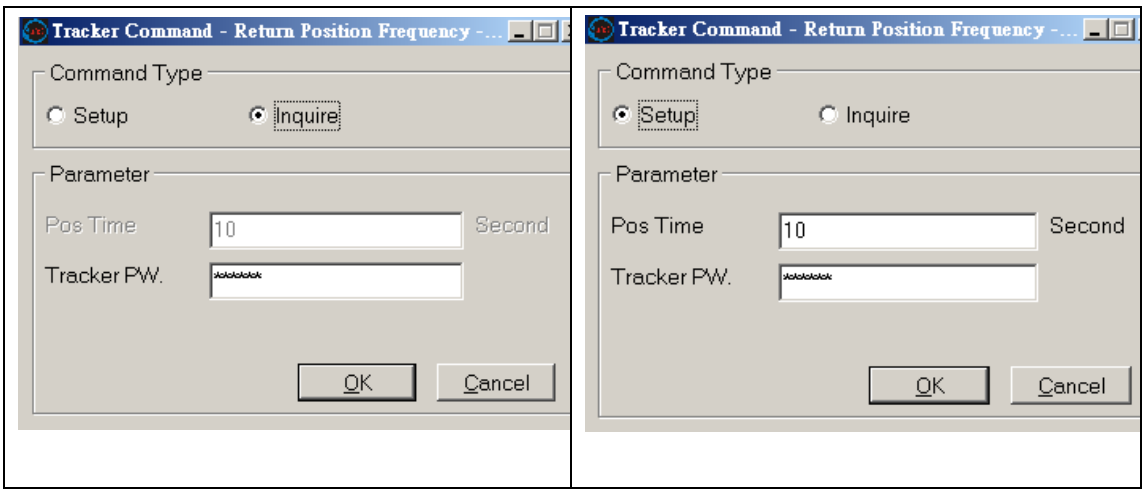


Key in the device's password and click OK. The default password is 123456. In the Result window can find the following message.

[MINI_T01] Inquire "Current Position" success. (2009/06/22 16:14:18)

Please go to the 【Google】 Map and the latest GPS information is updated.

3) Return Position Frequency: inquire or change the device's GPS position information response time.

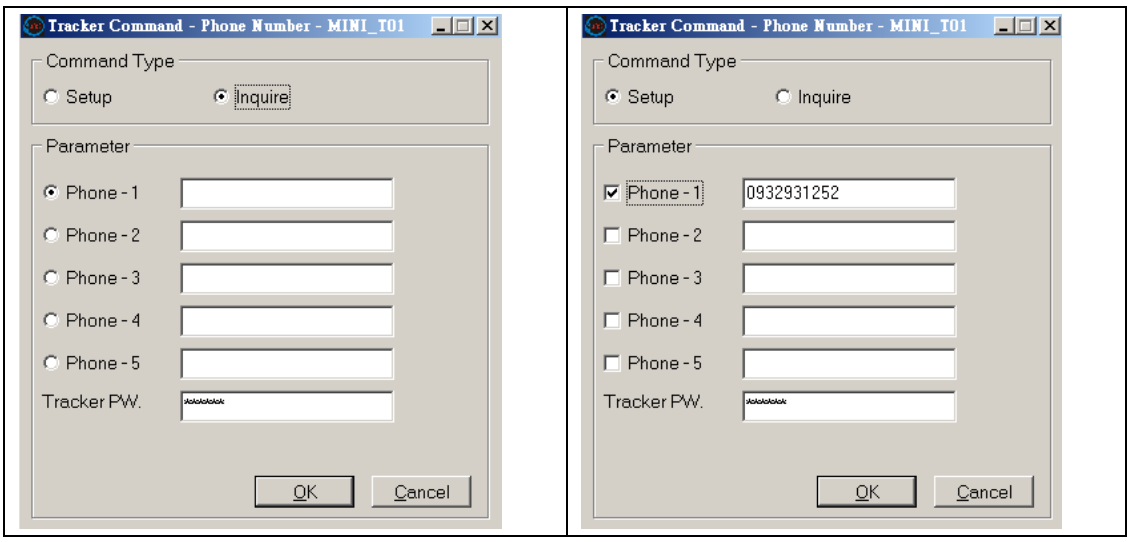


- ❖ Inquire:
  Enter the device's password and click OK.
- ❖ Setup:
  To change the position response time, the Pos Time should be entered. After that, enter the device's password and click OK.
- ❖ The display message:

[MINI_T01] Inquire "Return Position Frequency". (2009/06/22 16:37:33)
[MINI_T01] Inquire "Return Position Frequency" success. [10]. (2009/06/22 16:37:35)

[MINI_T01] Set "Return Position Frequency" as [10]. (2009/06/22 16:38:13)

4) Phone Number: inquire or set up the mobile phone number. The SMS warning message will be sent to the number while the predefined warning event happened.



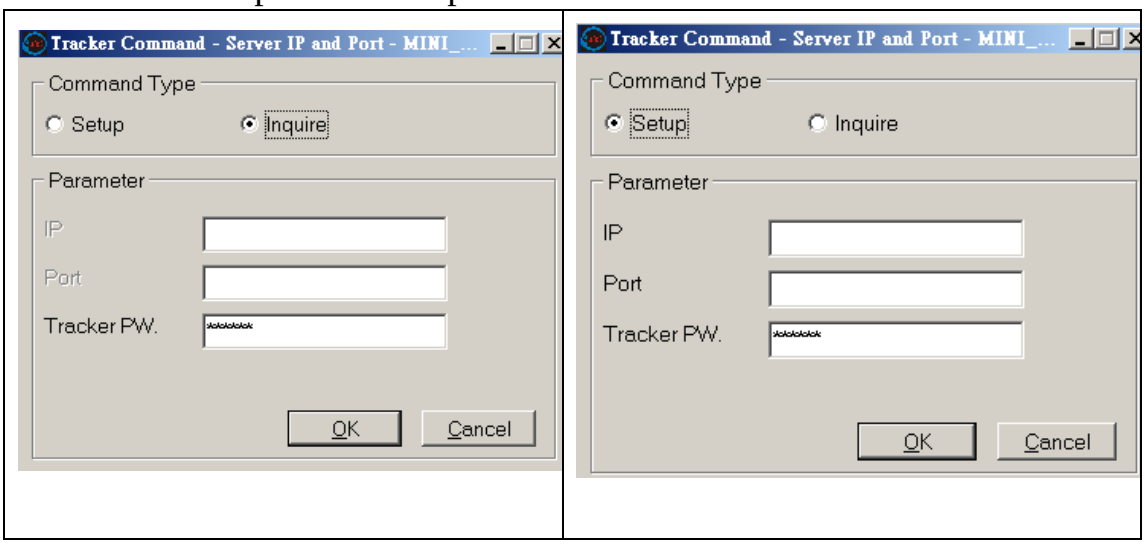
There are at most **3** mobile phone numbers can be set into the device. And the execution of Inquire or Setup should be done with **one phone number** by each time.

- ❖ Inquire:
  Select the proper phone group and enter the device's password then click on OK.
- ❖ Setup:
  Check the proper phone group and enter the phone number and the device's password then click on OK.
- ❖ The display message:

[MINI_T01] Inquire "Phone Number": [1]. (2009/06/22 17:20:23)
[MINI_T01] Inquire "Phone Number" success. [1] - [0]. (2009/06/22 17:20:26)

[MINI_T01] Set "Phone Number": [1:0932931252]. (2009/06/22 17:22:10)
[MINI_T01] Set "Phone Number" [1] - [0932931252] success. (2009/06/22 17:22:12)

5) Server IP and Port: inquire or setup the connected device's TCP IP and port number parameters.



❖ Inquire:
Inquire the connecting server's TCP IP and port number.

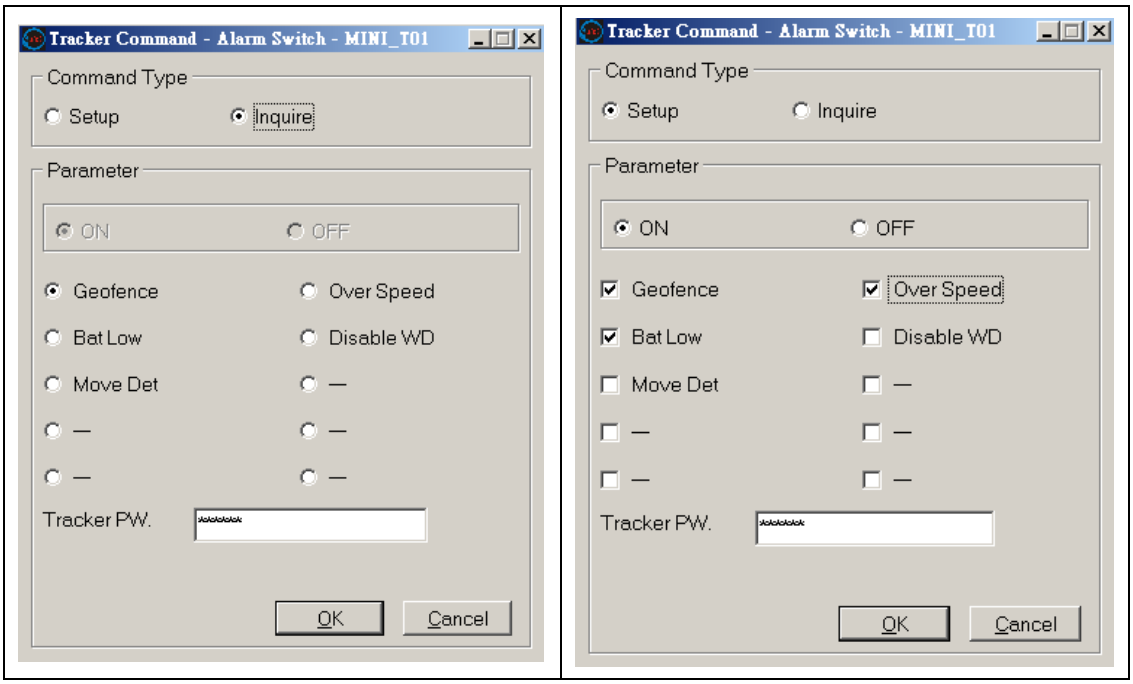
❖ Setup:
Setup the new IP address and port number for the new connection with other server.

❖ The display message:

[MINI_T01] Inquire "Server IP and Port". (2009/06/22 17:15:31)
[MINI_T01] Inquire "Server IP and Port" success. [60.251.201.250] - [4000]. (2009/06/22 17:15:33)

[MINI_T01] Set "Server IP and Port" as [60.251.201.250] - [4000]. (2009/06/22 17:16:58)
[MINI_T01] Set "Server IP and Port" as [60.251.201.250] - [4000] success. (2009/06/22 17:17:00)

6) Alarm Switch: inquire or setup the warning event's status in active or not.

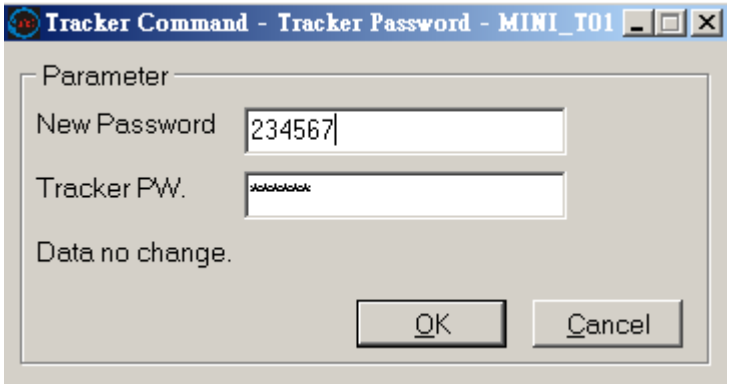


- Inquire:
  Inquire the active status of the selected event each at a time.
- Setup:
  Check the box to setup the corresponding event with active, uncheck the box to setup the event with inactive.
- The display message:

[MINI_T01] Inquire "Alarm Switch": [1]. (2009/06/22 17:23:45)
[MINI_T01] Inquire "Alarm Switch" success. [ON] - [1]. (2009/06/22 17:23:48)

[MINI_T01] Set "Alarm Switch": [ON] [1] [2] [3]. (2009/06/22 17:25:38)
[MINI_T01] Set "Alarm Switch" [ON] - [1] success. (2009/06/22 17:25:40)
[MINI_T01] Set "Alarm Switch" [ON] - [2] success. (2009/06/22 17:25:41)
[MINI_T01] Set "Alarm Switch" [ON] - [3] success. (2009/06/22 17:25:42)
[MINI_T01] Set "Alarm Switch": [ON] [1] [2] [3] [4]. (2009/06/22 17:27:02)
[MINI_T01] Set "Alarm Switch" [ON] - [1] success. (2009/06/22 17:27:05)
[MINI_T01] Set "Alarm Switch" [ON] - [2] success. (2009/06/22 17:27:06)
[MINI_T01] Set "Alarm Switch" [ON] - [3] success. (2009/06/22 17:27:08)
[MINI_T01] Set "Alarm Switch" [ON] - [4] success. (2009/06/22 17:27:09)

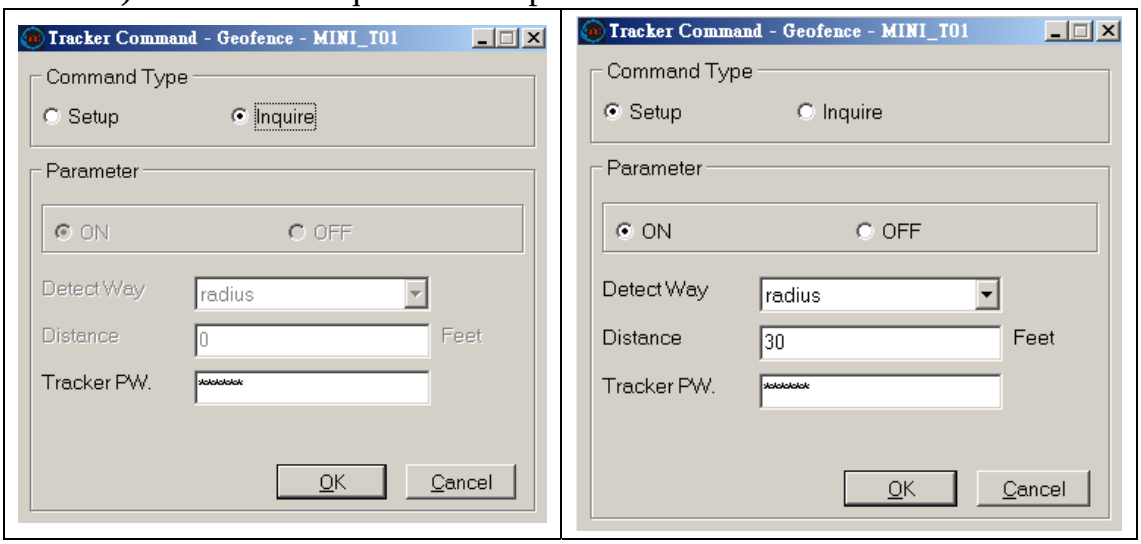
7) Tracker Password: setup the device's password. The length should be 4 to 10 alphanumeric characters.



- Enter the new password and confirm the password again, then enter the original password and OK.
- The display message:

[MINI_T01] Set "Tracker Password" as [******]. (2009/06/22 17:18:38)
[MINI_T01] Set "Tracker Password" as [******] success. (2009/06/22 17:18:40)

8) Geofence: inquire or setup the event status.



- Inquire:
  Enter the device's password and OK.
- Setup:
  Select ON to enable this function, OFF to disable it.
  Detect way should select the **radius**.
  The Distance is the range of the Geofence, the unit is feet.

❖ The display message:

[MINI_T01] Inquire "Geofence". (2009/06/22 17:28:27)
[MINI_T01] Inquire "Geofence" success. [OFF] - [radius] - [300]. (2009/06/22 17:28:29)

[MINI_T01] Set "Geofence" as [ON] - [radius] - [50(Feet)]. (2009/06/22 17:29:20)
[MINI_T01] Set "Geofence" as [ON] - [radius] - [50] success. (2009/06/22 17:29:22)

9) Battery Status: inquire the current voltage level of the battery.

❖ Inquire:
Inquire the current battery voltage of the device.

❖ The display message:

[MINI_T01] Inquire "Battery Status". (2009/06/22 17:35:57)
[MINI_T01] Inquire "Battery Status" success. [4096]. (2009/06/22 17:36:00)

PS: 4096 indicates 4.096 volt.

7. Short Message Service Control

7.1 Introduction

The tracker also provides another way for control access or configuration. From the Short Message Service, the user can use the defined number mobile phone to control the tracker. After received the SMS, the tracker will perform as the request command and will response to the mobile phone with SMS.

7.2 General Rule

1) Password: pppppp, 6 ~12 alphanumeric characters.
2) *: Start symbol.
3) #: End symbol.
4) ID: Tracker Identification number, 4 ~ 16 alphanumeric characters.

5) No Space character is allowed, only "," between the * and #.

6) RX: receive from mobile phone.
7) TX: response to mobile phone.
8) GPS location information: the format will be
yy/mm/dd,hh:mm:ss,Elongitude,Nlatitude,Sxxx.x,Cxxx.x
9) x: 0~9 digital number.

7.3 Command Description

1) Set Tracker ID

Function	Set up the ID into the tracker.	
Format	RX	*ID,PPPPPP,setid,new ID,new ID#
Response	TX	New ID Setup OK
or	TX	Old ID Setup fail

2) Set Cellular Number

Function	Set up the phone number(s) into the tracker.	
Format	RX	*ID,PPPPPP,fonsetup,phone - 1(, phone - 2, phone - 3)#
Response	TX	ID fonsetup OK
or	TX	ID fonsetup fail

3) Set Time Interval

Function	Set up the location response time interval into the tracker, the unit is seconds.	
Format	RX	*ID,PPPPPP,tintsetup,xxxxx#
Response	TX	ID tintsetup OK
or	TX	ID tintsetup fail

4) Enable and Set up Geofence

Function	Set up the radius of the Geofence into the tracker, the unit is meters.	
Format	RX	*ID,PPPPPP,geofenceon,xxxxx#
Response	TX	ID geofence ON,xxxxx,GPS location information
or	TX	ID geofence on fail

5) Disable Geofence

Function	Disable the Geofence function of the tracker.	
Format	RX	*ID,PPPPPP,geofenceoff#
Response	TX	ID geofence OFF
or	TX	ID geofence off fail

6) Set Tracker Password

Function	Set up the password into the tracker.	
Format	RX	*ID,PPPPPP,setpass,new password,new password#
Response	TX	ID setpass OK
or	TX	ID setpass fail

7) Inquire Current Location

Function	Inquire the location information from the tracker.	
Format	RX	*ID,PPPPPP,gpsinq#
Response	TX	ID,GPS location information
or	TX	ID gpsinq fail

8) Inquire IMEI code

Function	Inquire the GSM IMEI code from the tracker.	
Format	RX	*ID,PPPPPP,getimei#
Response	TX	ID 15 decimal of IMEI
or	TX	ID getimei fail

9) Set IP and Port

Function	Set up the IP and Port of the server into the tracker.	
Format	RX	*ID,PPPPPP,ippsetup,xxx.xxx.xxx.xxx,xxxxx#
Response	TX	ID IPxxx.xxx.xxx.xxx Portxxxxx
or	TX	ID ippsetup fail

10) Inquire Battery Voltage

Function	Inquire the battery voltage from the tracker.	
Format	RX	*ID,PPPPPP,batteryinq#
Response	TX	ID battery x.xx
or	TX	ID battery fail

11) Set Notification Way

Function	Select notification from the GPRS or GSM SMS.	
Format	RX	*ID,PPPPPP,notify,GPRS on/ff,SMS on/off#
Response	TX	ID notify GPRS on/ff,SMS on/off
or	TX	ID notify fail

12) Enable and Set up Over Speed Detection

Function	Set up the speed threshold for alarm detection into the tracker, the unit is kilometer.	
Format	RX	*ID,PPPPPP,overspeedon,xxx #
Response	TX	ID overspeed ON xxx
or	TX	ID overspeed fail

13) Disable Over Speed Detection

Function	Disable the over speed detection function.	
Format	RX	*ID,PPPPPP,overspeedoff#
Response	TX	ID overspeed OFF
or	TX	ID overspeed fail

14) Enable Unauthorized Movement Detection

Function	Activate the movement detection function.	
Format	RX	*ID,PPPPPP,movedeton#
Response	TX	ID move detection ON
or	TX	ID move detection fail

15) Disable Unauthorized Movement Detection

Function	Disable the movement detection function.	
Format	RX	*ID,PPPPPP,movedetoff#
Response	TX	ID move detection OFF
or	TX	ID move detection fail

16) Set Idle Time Period

Function	Set up the system idle time interval for the tracker to get into the sleep mode, the unit is seconds.	
Format	RX	*ID,PPPPPP,tidlesetup,xxxxx #
Response	TX	ID tidlesetup OK
or	TX	ID tidlesetup fail

17) Enable Audio Monitoring

Function	Activate the audio monitoring function.	
Format	RX	*ID,PPPPPP,moniteron#
Response	TX	ID audio monitor ON
or	TX	ID audio monitor fail

18) Disable Audio Monitoring

Function	Disable the audio monitoring function.	
Format	RX	*ID,PPPPPP,moniteroff#
Response	TX	ID audio monitor OFF
or	TX	ID audio monitor fail

UniTraQ International Corp

2F., No.136, Ziqiang S. Rd., Zhubei City, Hsinchu County 30264, Taiwan (R.O.C.)
TEL：886-3-6578491 FAX：886-3-6578492

Email support@unitraq.com
Website www.unitraq.com

All of products designed and produced in Taiwan, and RoHS compliance