TR-102

Personal Tracker

User Manual

Version 1.7

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1 Introduction

1.1 Introduction

TR-102 is a personal remote positioning device with built-in GPS and GSM modules; it's compact and portable. Not only can **TR-102** transmit the longitude and latitude coordinate to your cell phone by the short message service, but it can also transmit the longitude and latitude coordinate to your personal computer via GPRS network and then displaying the location by specific map software. There are three speed-dial keys and one emergency key on the **TR-102**. You can use these keys to protect and search children and old people. Further, you can use it as a security purpose and other purpose which needs remote positioning.

1.2 Features

1. GPS/GPRS personal locator.
2. GSM/SMS/GPRS communication.
3. Omni-directional high sensitive GPS antenna which can receive GPS signal from all direction.
4. New technology and latest GPS SiRF-Star III chipset! Excellent for fixing the position even at a weak signal status.
5. Remote command control via mobile phones or through online software.
6. Receive phone calls to have two way communications.
7. Monitors can track the person without interfering him, LIVE! Real-Time tracking!
8. Locate the locator holder just by pressing a button on PC software or through mobile phone via SMS (short messaging system).
9. Three quick dialing buttons for 3 preset phone numbers.
10. Works worldwide! Support 4-frequency GSM 850/900/1800/1900 MHz and GPRS class 12.
11. Independent SOS (emergency) button for sending GPS location information via SMS up to 3 preset phone numbers (it can be 3 sets of different numbers than the 3 sets of quick dialing numbers).
12. Device can be connected to PC via a USB cable for setup the arguments (package comes with mini USB cable when you purchase the device).
13. Report device holder's position at a preset time interval.
14. Low battery notification before the battery dies out! Worrying free on why the locator wouldn't respond for this kind of situation!

1.3 Hardware

GSM module:	embedded GSM 850/900/1800/1900 MHz , GPRS class 12
GPS Chipset:	SiRF Star III
Frequency:	L1, 1575.42 MHz
C/A code:	1.023 MHz chip rate
Channels:	20 channel all-in-view tracking
Antenna Type:	Omni-directional GPS antenna
Position Accuracy:	10 meters, 2D RMS
Velocity Accuracy:	0.1 m/s
Time Accuracy:	1 us synchronized to GPS time
Default datum:	WGS-84
Reacquisition:	0.1 sec., average
Hot start:	1 sec., average
Warm start:	38 sec., average
Cold start:	42 sec., average
Altitude Limit:	18,000 meters (60,000 feet) max.
Velocity Limit:	515 meters/second (1000 knots) max.
Acceleration Limit:	Less than 4g
Jerk Limit:	20 m/sec3
Operating temperature:	-20° to 55° C
Humidity:	5% to 95% Non-condensing
Dimension:	115 mm × 45 mm × 22.5 mm
Voltage:	Rechargeable and replaceable 1300 mAh battery (3.7V), 5V for charging input.
Charging connector:	DC 5V
Standby time:	Over 100 hours
Talking time:	5 ~ 6 hours
LED:	3 LED showing Power, GPS and GSM status.
Key:	7 Keys for Power On/Off key, Emergency key, Intimate call * 3, Lock key and Answer/Reject key.
USB port:	Mini USB port for connecting to PC.
SAR:	GSM850 Head: 0.758 GSM900 Head: 0.576 PCS1800 Head: 0.582 PCS1900 Head: 0.735 GSM850 Body: 0.21 PCS1900 Body: 0.223

2 Start-up

2.1 Accessories

 TR-102	 AC power adapter
 Mini USB cable	 1300 mAh Li-ion Battery
 CD-ROM	 Leather case (Optional)

2.2 Charging the battery

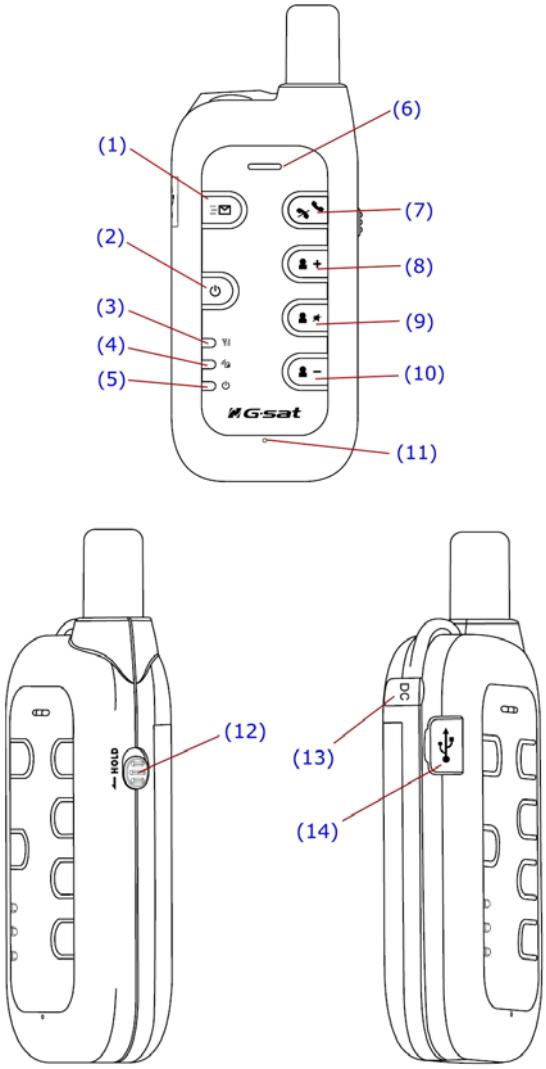
Fully charge the battery. Before using of TR-102 for the first time, please connect it with AC power adapter for battery charging at least **10** hours under the power-off condition. (The attached battery is specially designed for TR-102. Please do not use other types of battery; otherwise it will damage the device. If you need to change the battery for TR-102, please contact your local dealer.)

2.3 Install SIM card

Install SIM card:

1. Press on the battery cover, and then pull it downward to open it.
2. Take out the battery.
3. Insert the SIM card into the holder according to the direction shown, and close the cartridge when done.
4. Put back the battery, and close the battery cover.

2.4 Appearance



(1)	SOS button
(2)	Power button
(3)	GSM LED
(4)	GPS LED
(5)	Power LED
(6)	Speaker
(7)	Answer / Hang up
(8)	Quick Dial 1 / Volume up
(9)	Quick Dial 2 / Mute the microphone
(10)	Quick Dial 3 / Volume down
(11)	Microphone
(12)	Button Lock
(13)	Power Adapter Jack
(14)	Mini USB connector

2.5 Button description

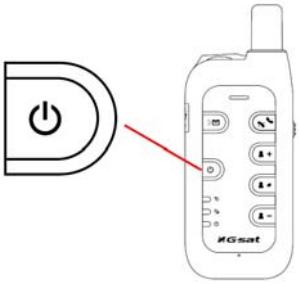
Power button	**Turn on / Turn off:** Please see page 11 for details.
SOS button	You can assign up to 3 sets of phone numbers to the SOS button. When this button is pressed, TR-102 will send its location information to these 3 sets of phone numbers by SMS.
Answer / Hang up	When there is an incoming call, you can answer the call by pressing this button. During the phone call, press it will hang up the phone.
Quick dial 1 / Volume up	You can assign a phone number for this button; when this button is pressed, TR-102 will dial the preset number. During the phone call, you can increase the volume by pressing this button.
Quick dial 2 / Mute the microphone	You can assign a phone number for this button; when this button is pressed, TR-102 will dial the preset number. During the phone call, the other party will not hear from you if this button is pressed to mute the microphone; press it again to enable the microphone.
Quick dial 3 / Volume down	You can assign a phone number for this button; when this button is pressed, TR-102 will dial the preset number. During the phone call, you can decrease the volume by pressing this button.

GSM LED	**LED is on:** TR-102 is turned on, but not connected to GSM network yet. **Blinking quickly** (once per second): TR-102 is in dialing or talking mode. **Blinking slowly** (once per 3 seconds): TR-102 is in the standby mode.
GPS LED	The LED will blink when TR-102 is fixing its location. More details please see page 12 for SOS button and page 46 for GPRS mode.
Power LED	The LED will turn orange when AC adapter is plugged for charging the battery. If the battery power is low, this LED will be on in red, and TR-102 will send a warning SMS to SOS number.
Power adapter jack	Plug in the Power adapter to TR-102's power adapter jack for battery charging.
Mini USB connector	Connecting TR-102 to PC by a Mini USB cable, you can setup all its features and functions from application

	software in PC.
Button Lock	Switch to lock all the buttons for the purpose of preventing buttons from been accidentally touched. When Button Lock is on, the LED indicators will flash 3 times if any other button is pressed. (Only when power is off and USB cable is connected, you can press the power button to turn on TR-102.)

3 Operating the device

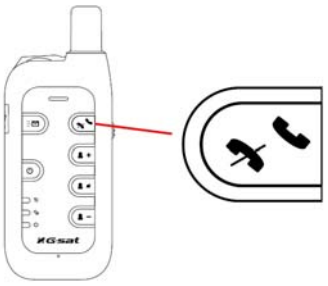
3.1 Turn on / Turn off



- **Turn on:** Press and hold the Power button for 3 seconds, three LED will start to flash quickly from top to bottom. After the startup process, it will enter standby mode and blue LED will flash slowly. (During the startup process, TR-102 can not be turned off.) And then GPS will do cold start to get fixed of its position for the first time and the green GPS LED will flash. After it gets fixed of the location, the GPS LED will be on for a few seconds and then go out. If it cannot get fixed the location within 3 minutes, the GPS function will enter sleep mode for 30 minutes. After 30 minutes, it will start to get fixed of the location again. It is suggested that you stay at outdoor place or near the window where TR-102 can receive better GPS signal while you turn on the device.

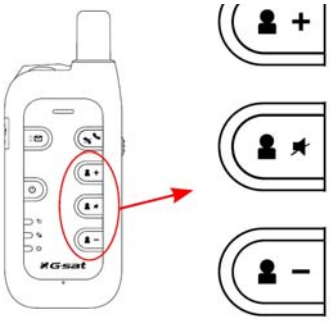
  NOTICE: If it does not successfully get the location fixed after turning the power on, TR-102 may be located in the weak signal area or on the move.
- **Turn off:** Press and hold the Power button for 3 seconds, three LED will start to flash slowly from bottom to top. When the power is turned off, LED will go out.

3.2 Answer / Hang up the phone



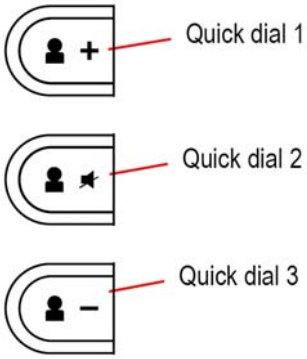
- When there is an incoming call, press this button to answer the incoming call.
- During the phone call, press it will hang up the phone.

3.3 Adjust the volume



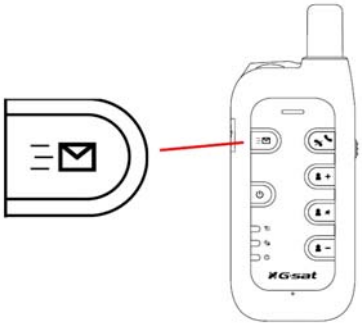
- During the phone call, you can increase the volume by pressing the "+" button.
- During the phone call, the other party will not hear from you if the mute button is pressed to mute the microphone; press it again to enable the microphone.
- During the phone call, you can decrease the volume by pressing the "-" button.

3.4 Making a phone call



- After setting up the Quick dial number by TR Management center (refer to 5.2.1.3 TR-102 Return Phone Number), you can press and hold the Quick dial button for **1** second to make a call to the preset number.

3.5 Send out emergency SMS



- After assigning 3 sets of phone numbers to the SOS button by TR Management center (refer to 5.2.1.3 TR-102 Return Phone Number), you can press this button to send out the location information to these 3 sets of phone numbers by SMS.
  To avoid accidentally touching of this button, when you want to send out the emergency SMS, please make sure you press and hold this button for over 2 seconds.
- TR-102 will firstly send SMS to the SOS number 1, then to SOS number 2, and then to SOS number 3.

How does it work when you press the SOS button?

1. To confirm that you have pressed SOS button correctly, TR-102 will long flash the red LED about 2 times.
2. TR-102 will start to position itself with green GPS LED flashing; when the GPS position is fixed, the LED will be on.
3. Then, TR-102 will turn off GPS and green LED goes out.
4. TR-102 begins to send SMS with blue LED flash once per second.
5. When it finished sending SMS, the blue LED comes back to standby mode with flash once per three seconds.
6. If the SMS has been sent out successfully, TR-102 will again long flash the red LED about 2 times.
7. If the GPS position can not be fixed for 3 minutes, it will send back the SMS with a "no fixed" message and the last fixed position.

4 TR-102 Management Center Setup

4.1 Install the USB driver

If the operating system of your PC is Vista, please click on the “**USB Driver for Vista**” button to install PL2303 USB driver of Vista version. Follow the screen instruction to finish the driver installation.

If the operating system of your PC is not Vista, please click on the “**Install USB Driver**” button to install PL2303 USB driver. Follow the screen instruction to finish the driver installation and reboot your PC to activate the USB driver.

4.2 Install, Update, Uninstall the TR Management Center program

4.2.1 Install TR Management Center

Step 1: Click “**English PC Software**” button to install the TR Management Center program.

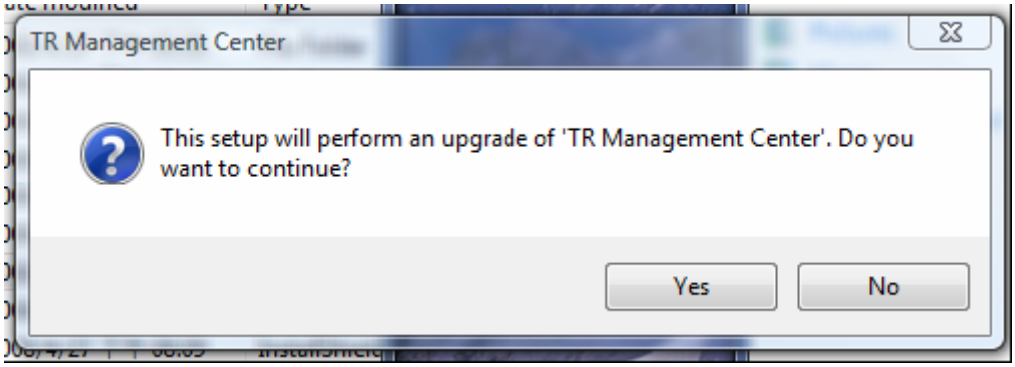
Step 2: Please follow the instruction of the Install Shield Wizard to install the English TR Management Center.

4.2.2 Update TR Management Center

If you download a new version of the TR Management Center software from the Globalsat website, you could install the downloaded software to upgrade the TR Management center without un-installing the previous version of TR Management center.

The update process is as follows:

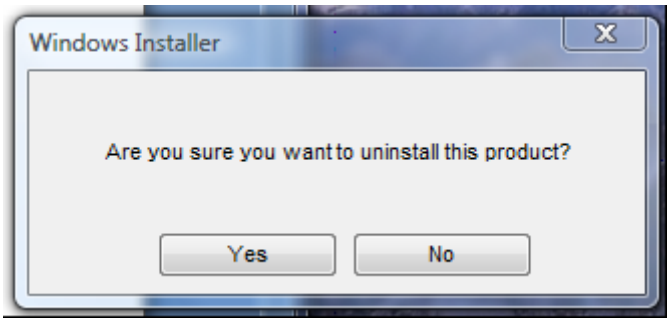
Step 1: Launch the update program. Press “Yes.”



Step 2: Please follow the instruction of the Install Shield Wizard to install the upgraded version of TR Management Center.

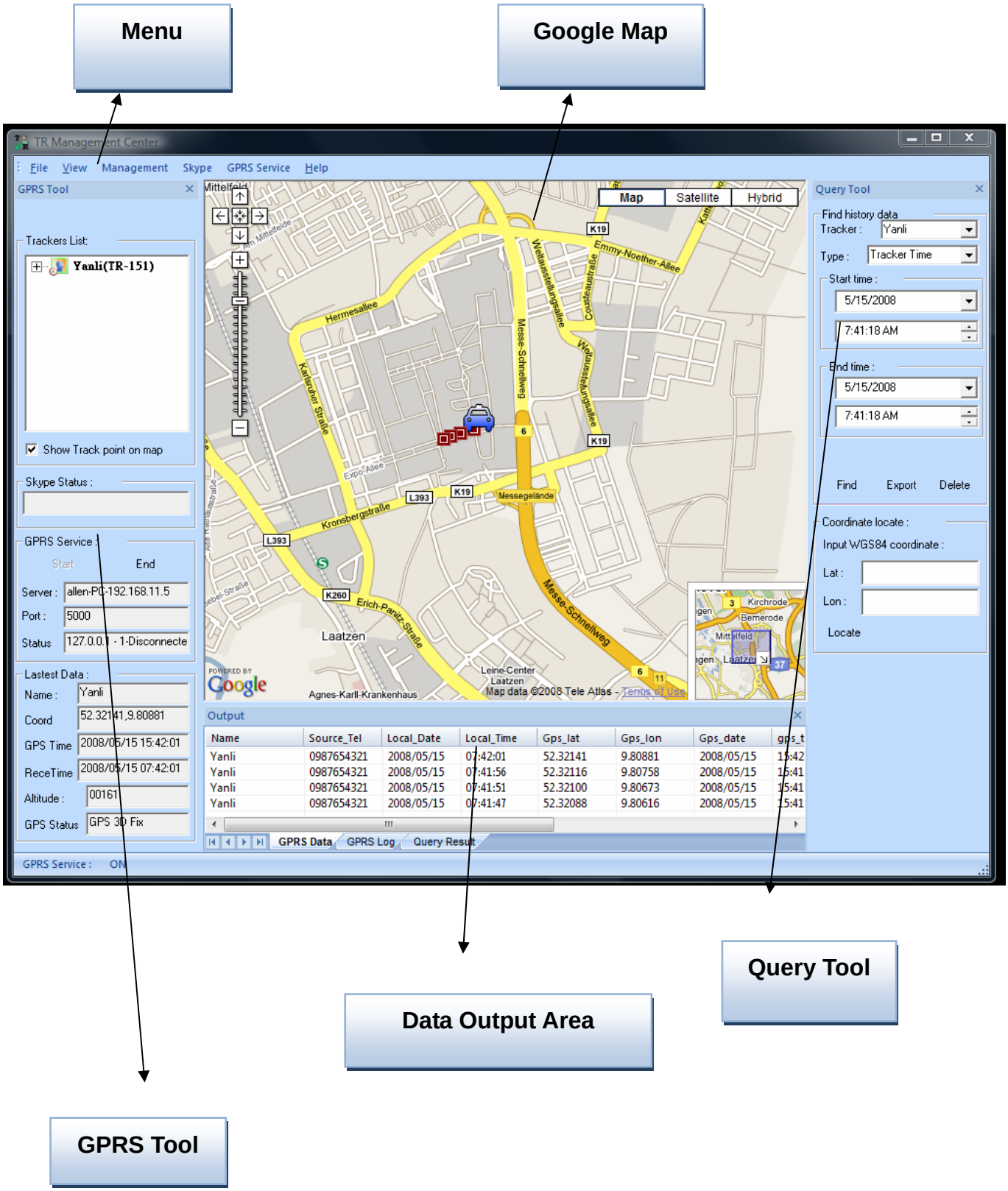
4.2.3 Uninstall TR Management Center

Step 1: Run "Start" → "Globalsat" → "TR Management Center" → "Uninstall TR Management Center" Press “Yes”



Step 2: Please follow the instruction to uninstall TR Management center

4.3 TR Management Center Screen Introduction



TR Management Center Main Screen

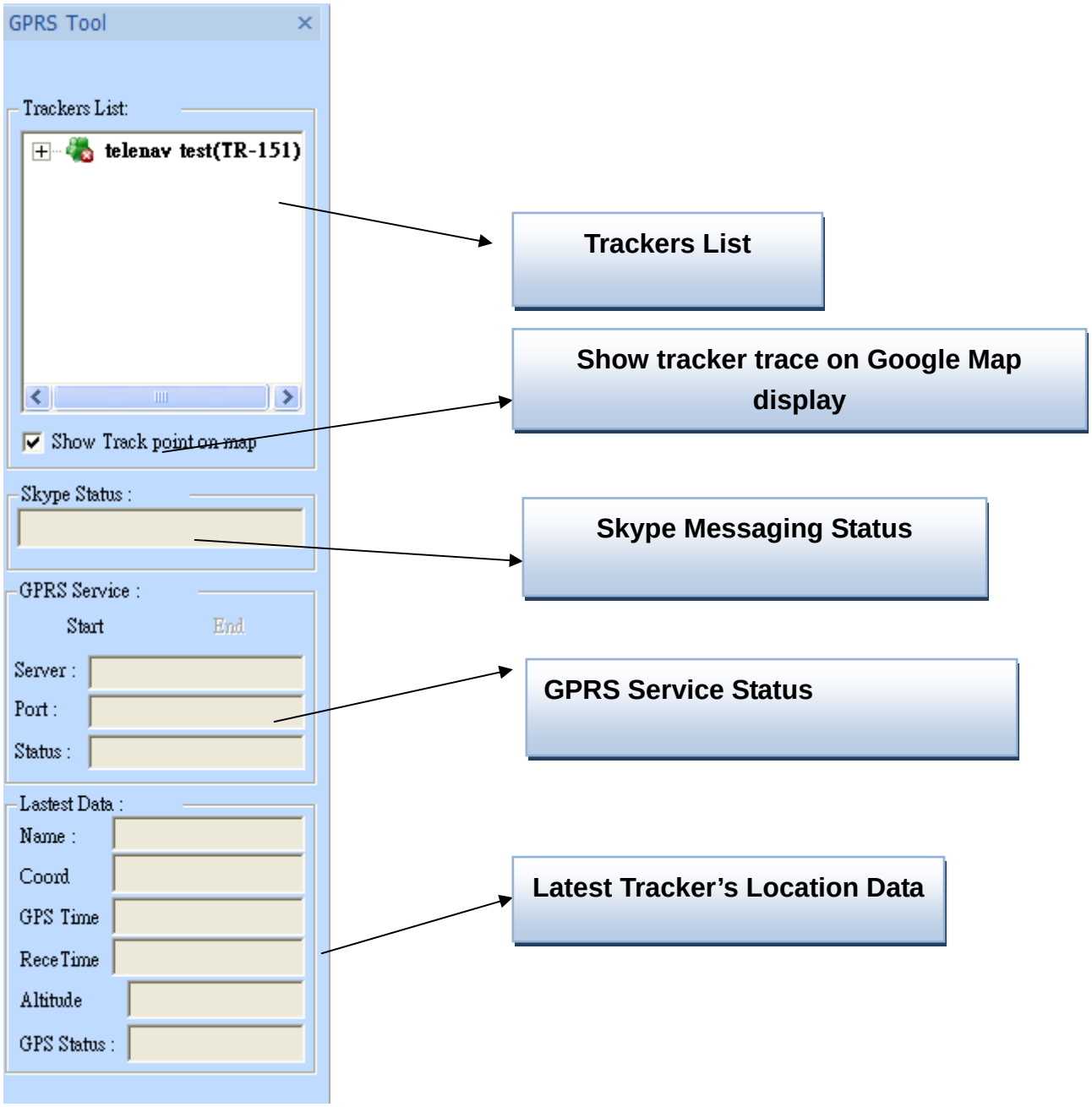
There are five parts of TR Management Center Screen as below.

- **Menu:** The basic menu options
- **GPRS Tools:** Shows the trackers' connection status, GPRS service status and the tracker's latest location
- **Query Tool:** Used for searching history data and finding coordinates
- **Data Output Area:** Shows the tracker login status, received GPRS data and query results
- **Google Map:** Shows the Google Map

The detailed description of each part is as following.

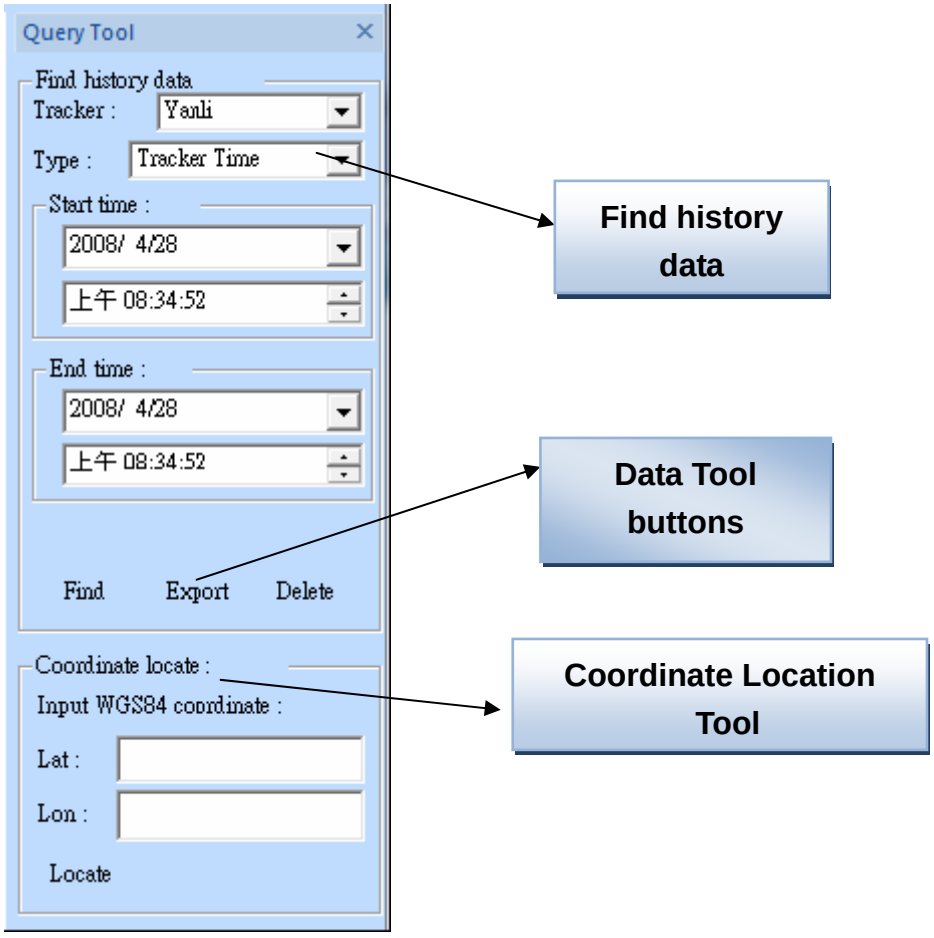
4.3.1 Tracker and GPRS Tool Bar

GPRS tool is for managing trackers and showing the GPRS server status



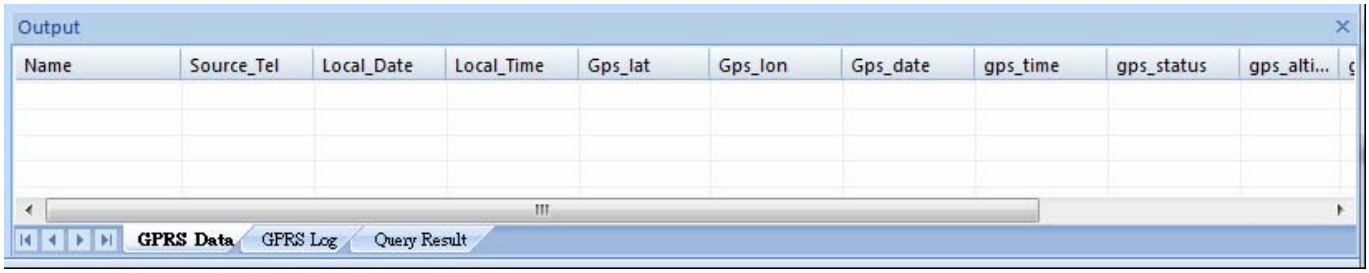
4.3.2 Query Tool

Query tool is for looking up for the history data and coordinate.



4.3.3 Data Output Area

Data output area is for displaying the GPRS data, GPRS log, and query result.



The Output area is divided into GPRS Data, GPRS Log and Query Result

GPRS Data: Shows the data sent from connected trackers. Only the last 100 entries from each tracker are shown.

GPRS Log: Shows the record of all tracker connections and disconnections including the raw transmitted data.

Query Result: Shows all matching results from the trackers' history data.

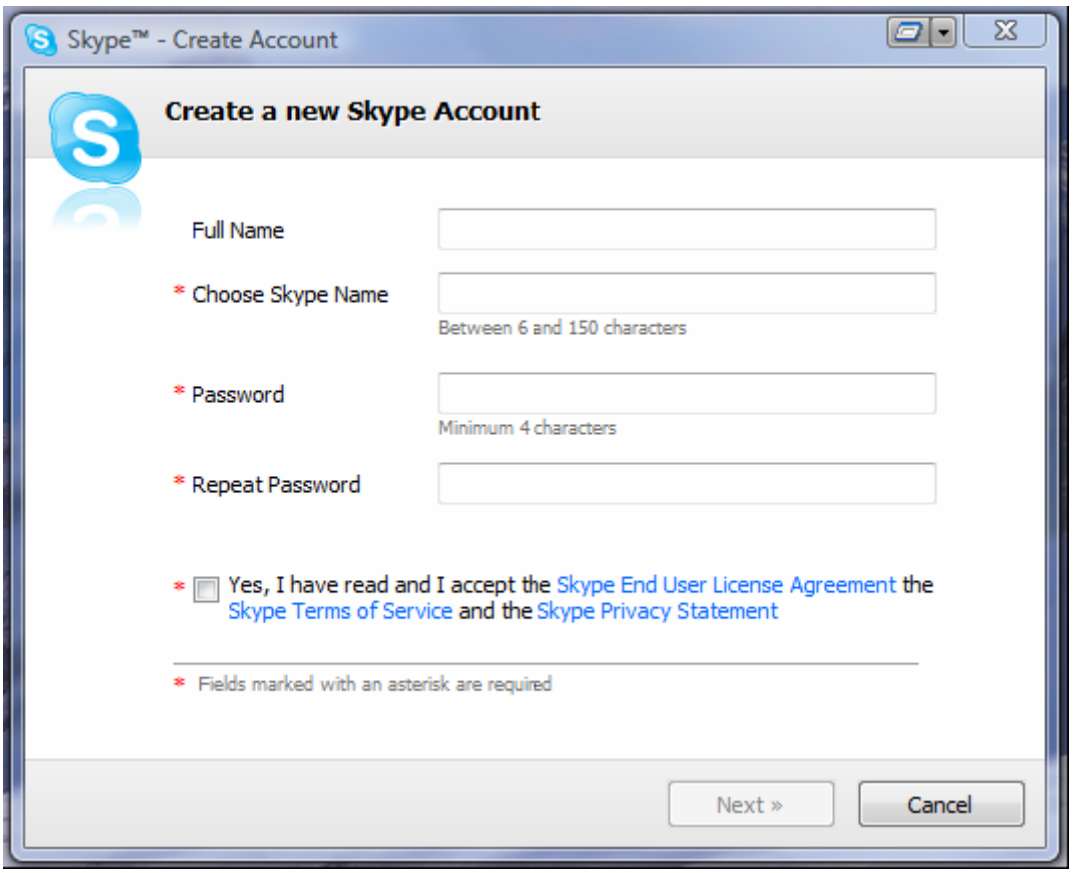
4.4 Skype Setup

In stead of sending SMS to trackers by mobile phones, TR Management Center sends SMS to trackers by Skype. You can not only send SMS to trackers for asking report by Skype, but send SMS to set the parameters of TR-151's function.
In order to send SMS by Skype, please complete the following steps to activate the SMS function of Skype.

Step 1: Install Skype Software
You can download Skype from www.skype.com or the website of the local Skype distributor. Please refer to the instruction of Skype to install the software.

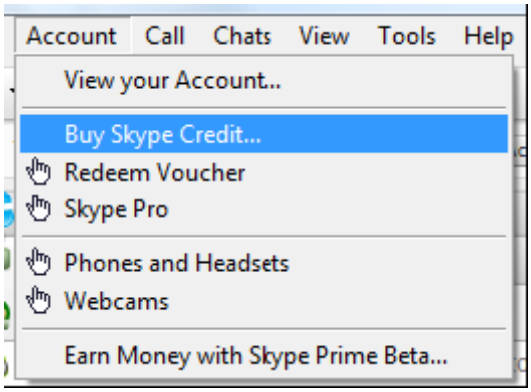
Note: The pictures and instructions provided in this manual are based on Skype version 3.6.1.xxx. If they do not match the version of Skype you are currently using, please download and upgrade to the latest version from the Skype website.

Step 2: Please create a user account.



Once you have created an account, you can login and use Skype's basic functions.

Step 3: Buy Skype credit

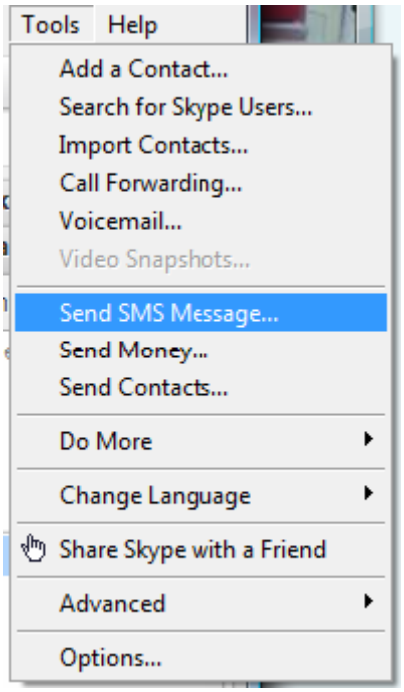


Step 4: Test the Skype SMS function

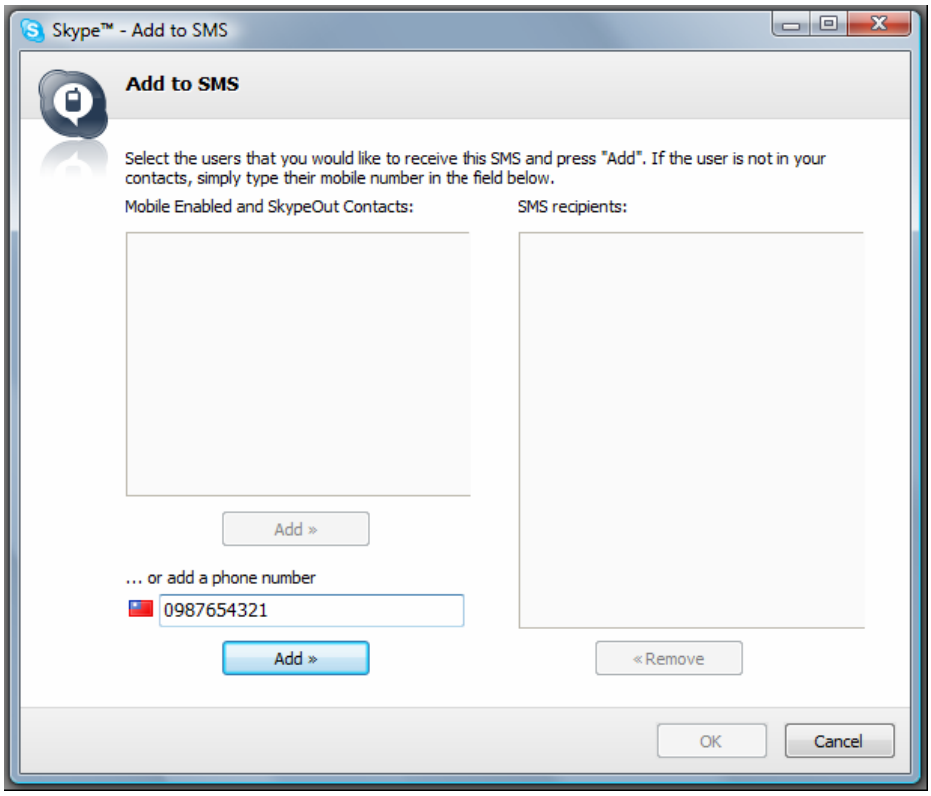
After completing the above process, please check if Skype's SMS functions can work by sending a test message to mobile phone. Follow the SMS messaging procedure below to send a SMS message and check that your Skype is working normally.

- Sending a test SMS

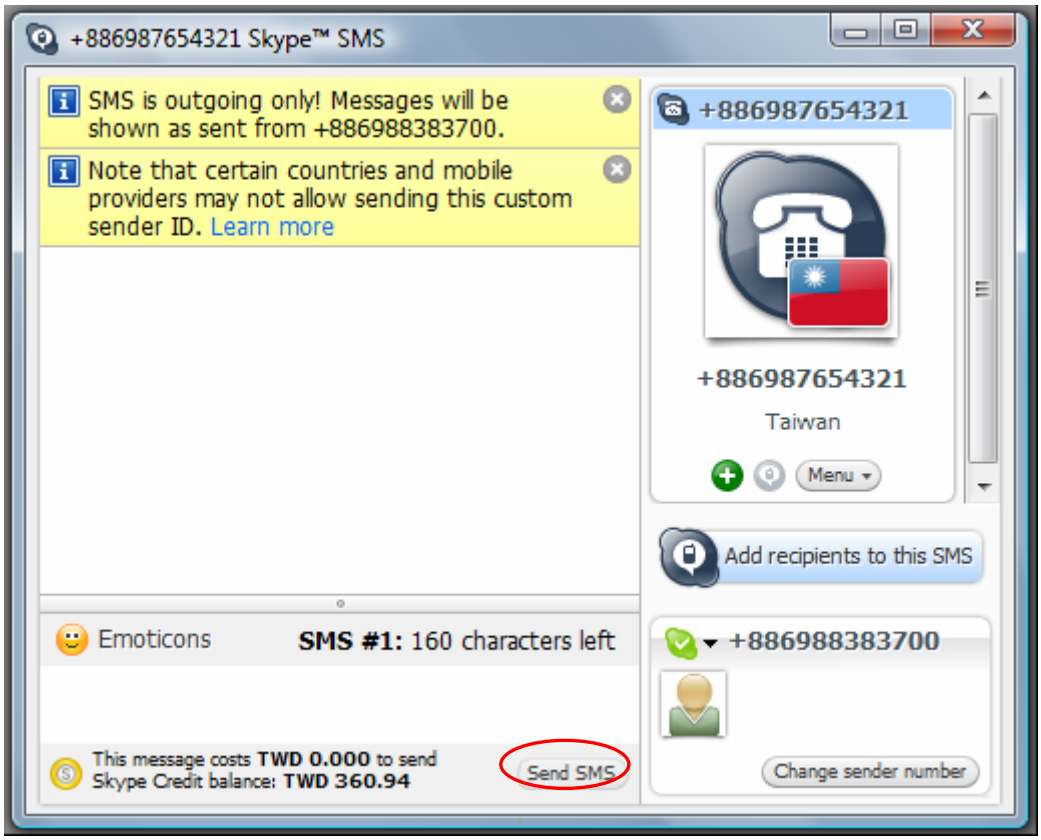
  From the Skype menu, select "Tools" → "Send SMS Message" then follow the steps shown below



Choose **Send SMS Message** from the menu

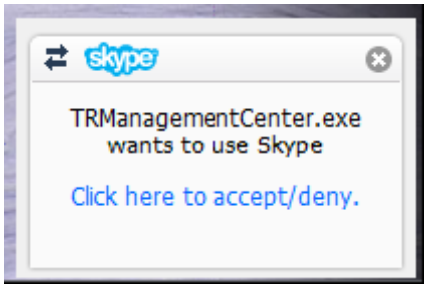


At the Send SMS interface, add the recipient's mobile phone number

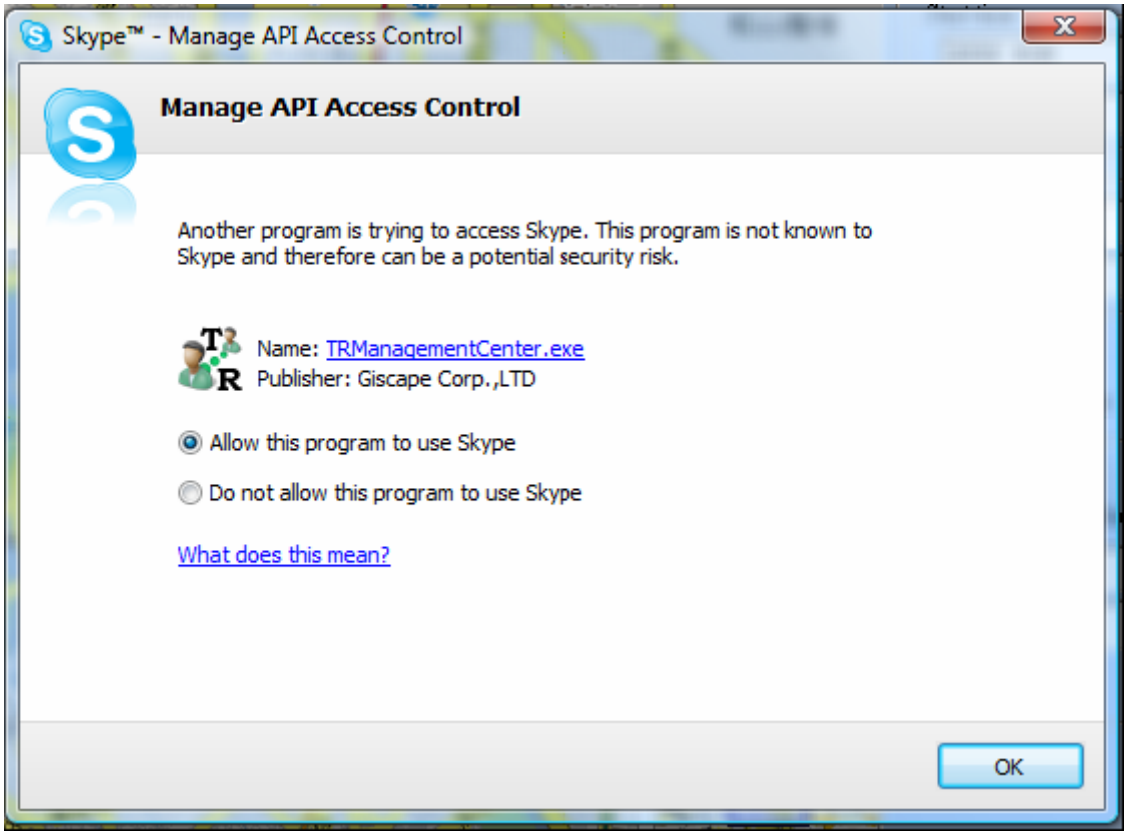


Write the content of SMS and click **Send SMS** button

Step 5: When you launch the TR Management Center program, the following security verification pop-up window will appear in the lower right corner of the screen asking you to allow the TR Management Center to use Skype functions.



Click the blue text to request Skype access.

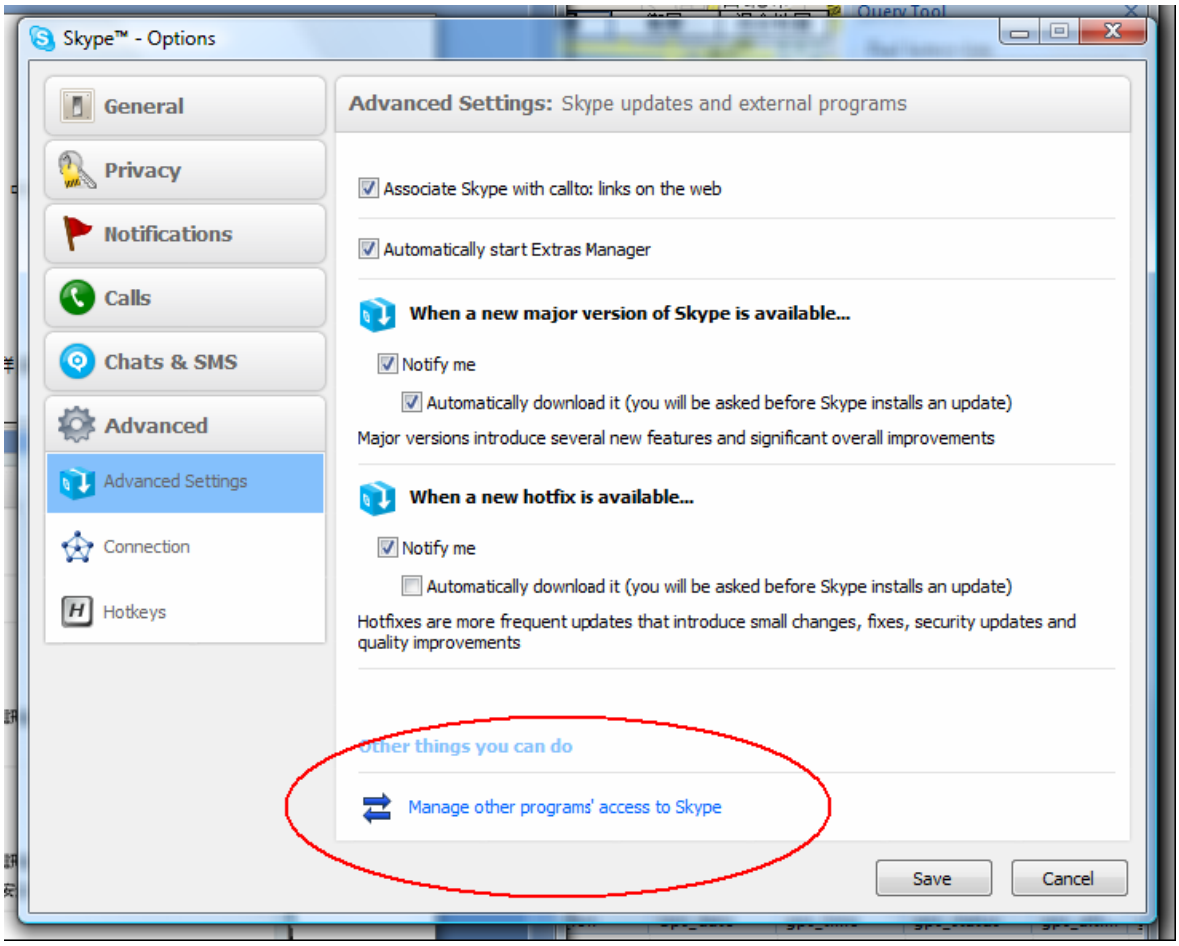


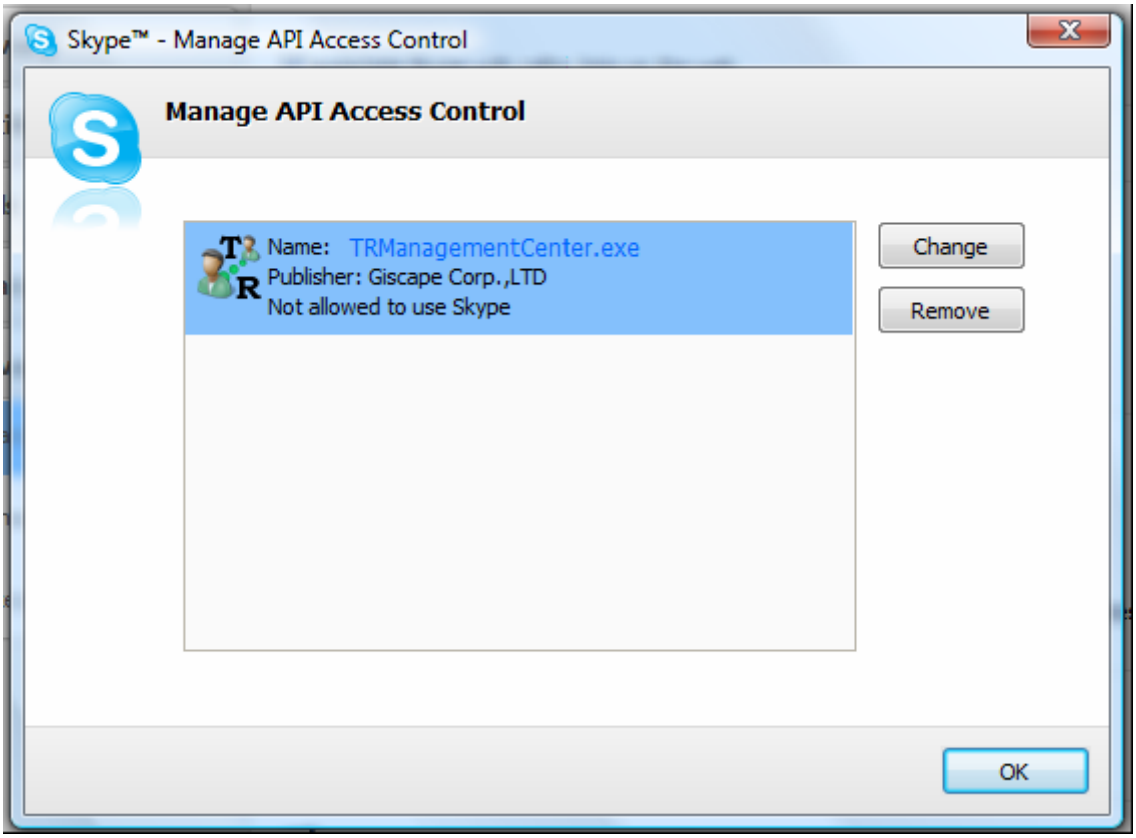
Select **"Allow this program to use Skype"**

If you accidentally select "Do not allow this program to use Skype", please change this from within the Skype program at "Options → "Advanced"

Note:

The exact procedure may vary from the version of Skype. Please refer to the Skype manual for more information.





If the TR Management Center is not allowed to use Skype, please click on the "**Change**" button and select "**Allow this program to use Skype**".

4.5 Firewall Setting

The TR Management Center sends data via GPRS network, so the firewall must be configured to allow external access. When you launch the GPRS service, a Windows Security Alert window will appear. Click on the "Unblock" button to let the TR Management Center to use the network.

4.6 TR Management Center System Requirement

The computer system requirements of the TR Management Center program:

1. The computer must be equipped with at least an Intel Pentium 4 or equivalent AMD CPU, 256MB of RAM and a network card.
2. Supports the following operating systems: Windows XP, Windows 2000, Windows 2003 or Windows Vista. (**It does not support 64 bits OS**)
3. The graphics card must support at least 256 colors and a resolution of 800x600 or higher.
4. Skype must be version 3.6 or higher. The latest version can be downloaded from www.Skype.com.
5. A fixed IP address is required. If a dial-up network connection is used, the program must be provided with this computer's external IP address. TR-151 trackers must be configured with this IP.

4.7 Copyrights and Example Information

The copyright on all software and hardware mentioned in this manual belong to their respective owners.

1. The copyright of Windows XP, Windows 2000, Windows 2003 and Windows Vista belong to the Microsoft Corporation.
2. The copyright of the Skype program belongs to Skype Technologies S.A.
3. The copyright of Google Map belongs to **Google Inc.**
4. The copyright of Intel Pentium belongs to the Intel Corporation.
5. The copyright of AMD belongs to Advanced Micro Devices, Inc.

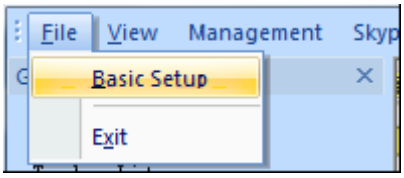
All text and telephone numbers mentioned in this manual are used as an example only. We apologize in advance for any coincidences.

Any copyrights not mentioned in this manual belong to their respective owners.

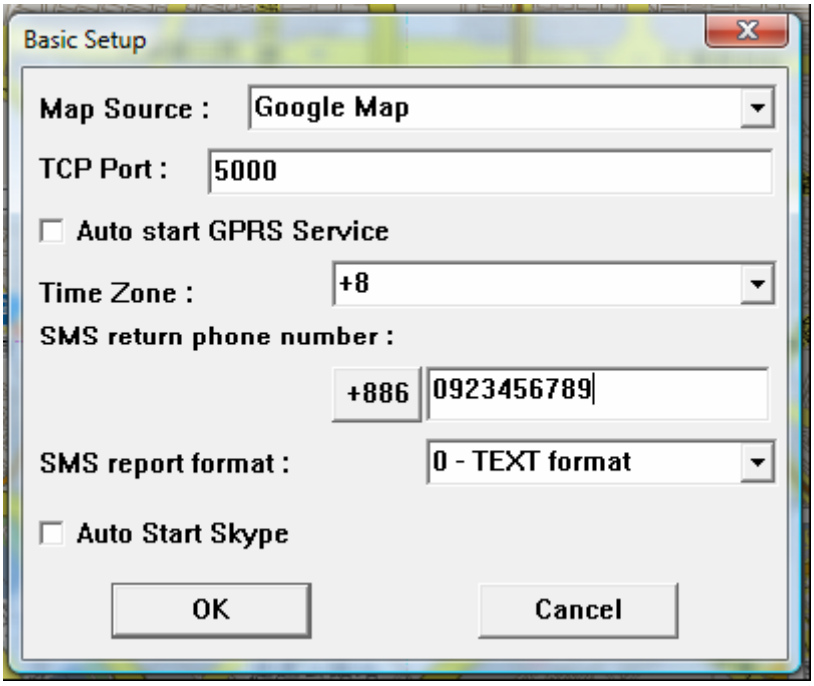
5. TR-102 Management Center Operation

5.1 TR Management Center Basic Setup

Before operating the TR Management Center, please set the operation parameters of the TR Management Center in the **Basic Setup**. It will make the afterward operation work properly.



Basic Setup



Basic Setup Interface

Item	Function	Description
Map Source	Choose to use Google Map or Google China Map	
TCP Port	Set the communication port for connecting GPRS network	The default is 5000. You can set form1024~5000.
Auto start GPRS service	Choose to automatically start GPRS service or not	
Time Zone	Set the time zone	
SMS Return phone number	Set the phone number for receiving the SMS report	
SMS report format	Set the SMS format	
Auto Start Skype	Choose to automatically start Skype	

Note: Please do the Basic Setup for the first time of using TR Management Center. If you want to use the China's map, please choose Google China Map in the Map Source and re-start TR Management Center.

5.2 Tracker Management

TR Management Center can track and manage up to 5 trackers. You have to set the parameters of TR-102 while adding a set of TR-102 in the TR Management Center. If you have already set 5 trackers in the TR Management Center and want to set one more tracker, please delete one of the existing trackers in the TR management center.

The tracker's information and parameters must be properly configured before using other functions of TR Management Center. Then your tracker can correctly send report back to the TR Management Center and that the program can correctly display the tracker's current location on the map.

5.2.1 Adding and setting a TR-102 tracker

You can add a new tracker by making TR-102 Setup, please follow the steps below.

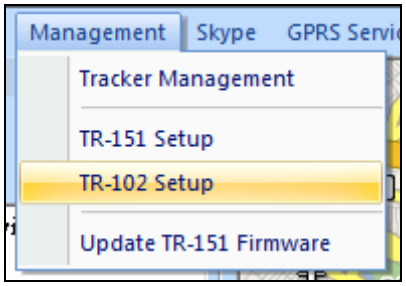
Step 1: Connect the TR-102 to the computer's USB port by the TR-102 USB cable.

Step 2: Turn on the power of TR-102:

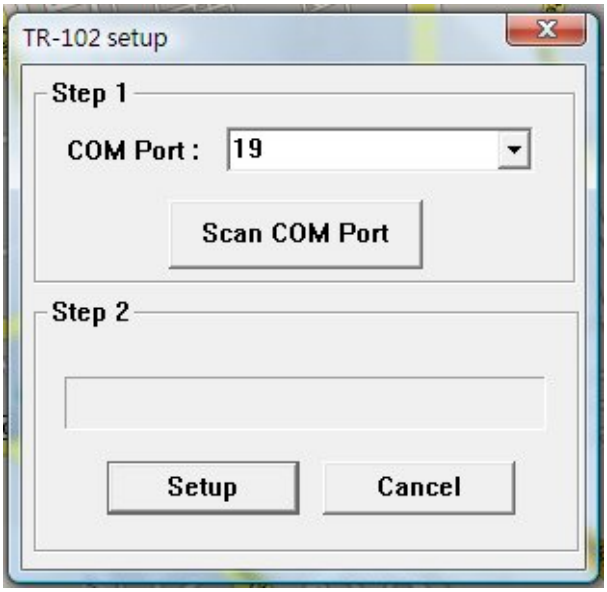
(I) Please wait for a while until the startup process is finished.

(II) Press and hold the "Answer/Hang up" button about 5 seconds until you see the three LED flashing slowly and simultaneously. Release the button and it will enter the setup mode.

Step 3: From the "Management" menu, select "TR-102 Setup" and enter the setup interface.

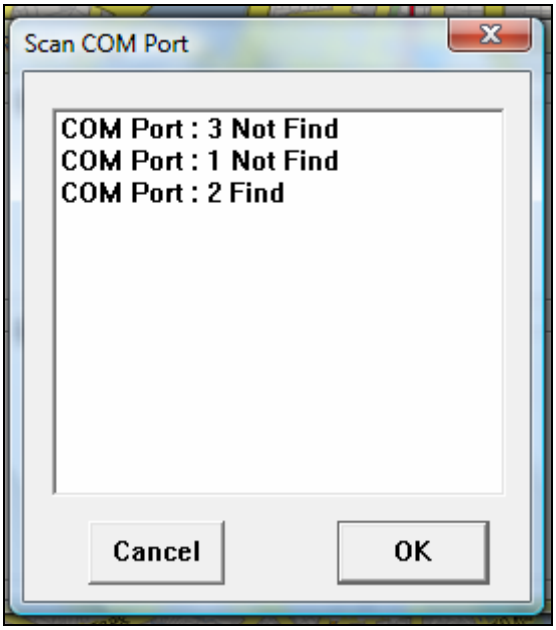


Step 4: After selecting "TR-102 Setup", please select the COM Port. If you are not sure which COM port you are using, click "**Scan COM Port**". Then please click "**Setup**" button to open the Setup window.



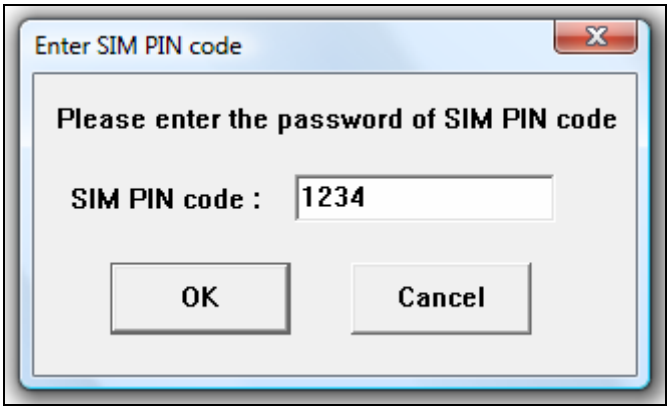
TR-102 Setup Interface

Click on Scan COM Port to find the port the TR-102 is connected to



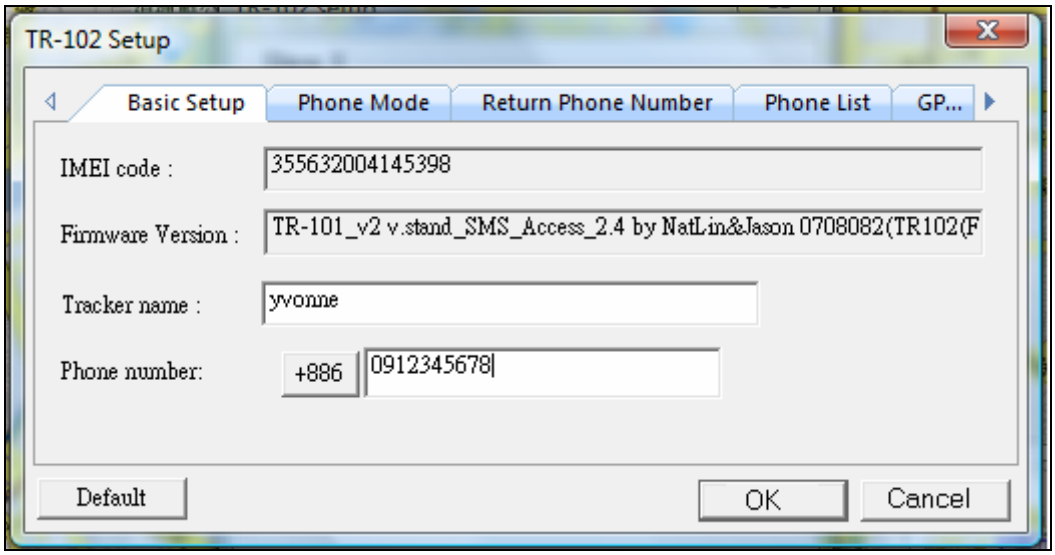
Scan Com Port interface

Note: If your SIM card asks for SIM PIN entry, a window will appear prompting you for the PIN password. (Please make sure you enter the correct code as the SIM card will be locked after three failed attempts. If you do not know the PIN code or the SIM card is locked, please contact your GSM network service provider for assistance.)



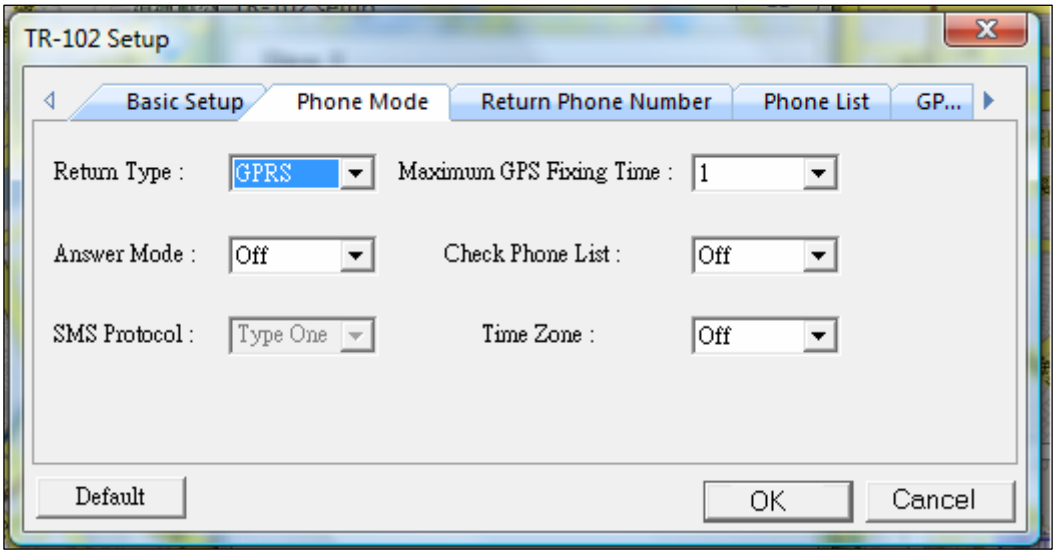
SIM PIN Code Interface

5.2.1.1 TR-102 Basic setup



Item	Description
IMEI code	International Mobile Equipment Identity
Firmware Version	Version of TR-102 firmware.
Tracker name	Please enter tracker name. (English or Arabic name only)
Phone number	Please enter the phone number for this TR-102 and select the country/area code.

5.2.1.2 TR-102 Phone Mode



Item	Option	Description	
Return Type	GPRS	TR-102 will send the location information by GPRS.	
	SMS	TR-102 will send the location information by SMS.	
SMS Protocol	Type One,	No matter what content of SMS sent to TR-102, TR-102 will only return one piece of SMS with the latest location information	
	Type Two	TR-102 will return SMS according to the command type of SMS: “Immediate report”, “Period report”, and “Stop report”.	
Maximum GPS Fixing Time	1~10 (minute)	The maximum time allowed for a GPS fix. If TR-102 cannot get fixed of the location within the specified time, TR-102 will turn off GPS and send back its last known position.	
Check Phone List	Off	Answer Mode **ON**	TR-102 will receive any phone numbers’ incoming calls and SMS. While receiving SMS, TR-102 will return the location information according to the setting of “Return Type.
		Answer Mode **OFF**	TR-102 will only ring one time and then hang up for any phone numbers’ incoming calls. It can receive any phone numbers’ SMS and return the location information according to the setting of “Return Type.
	On	Answer Mode **ON**	TR-102 will receive incoming calls and SMS from Phone List’s phone numbers. While receiving SMS, TR-102 will return the location information according to the setting of “Return Type.
		Answer Mode **OFF**	TR-102 will not ring for the phone number not under Phone List. It will neither return location information to the SMS not send from Phone

			List's phone numbers. While receiving incoming call from Phone List's phone number, TR-102 will only ring one time and then hang up. While receiving the SMS send from Phone List's phone number, TR-102 will return the location information according to the setting of "Return Type."
Time zone	On	It is only available when the SMS Protocol is set to **Type 1**. The time information of TR-102's returned SMS will be the same time zone of the PC where you install the TR Management Center. For example, if the PC is in the Germany, the time information of TR-102's returned SMS will be Coordinated Universal Time added with one hour (UTC+01:00).	
	Off	The time information of TR-102's returned SMS will be Coordinated Universal Time, abbreviated UTC.	

Note:

1. When you select **Type 1** for **SMS Protocol**, the format of SMS from TR-102 to your mobile phone will be like the following example

   Position Report:
   TR102
   2005/01/02 11:20:30
   24.9965,121.4877
   GPS fixed

- The second line shows your Tracker Name (default is "TR102").
- The third line contains the date and time. (yyyy/mm/dd hh:mm:ss)
- The fourth line contains the latitude and longitude. You can copy this value and input it to "Google Earth" or maps.google.com to find this position on map.
- The fifth line indicates "GPS fixed" or "GPS not fixed". (If it is "GPS not fixed", then the information of third and fourth lines will be the one from last time GPS fixed.)

2.When you select **Type 2** for **SMS Protocol**, the format of SMS from TR-102 to your mobile phone will be **Command_Head,IMEI,status,GPS_fix,date,time,longitude,latitude,altitude,speed,heading,number of satellites in use,HDOP,Command_End**

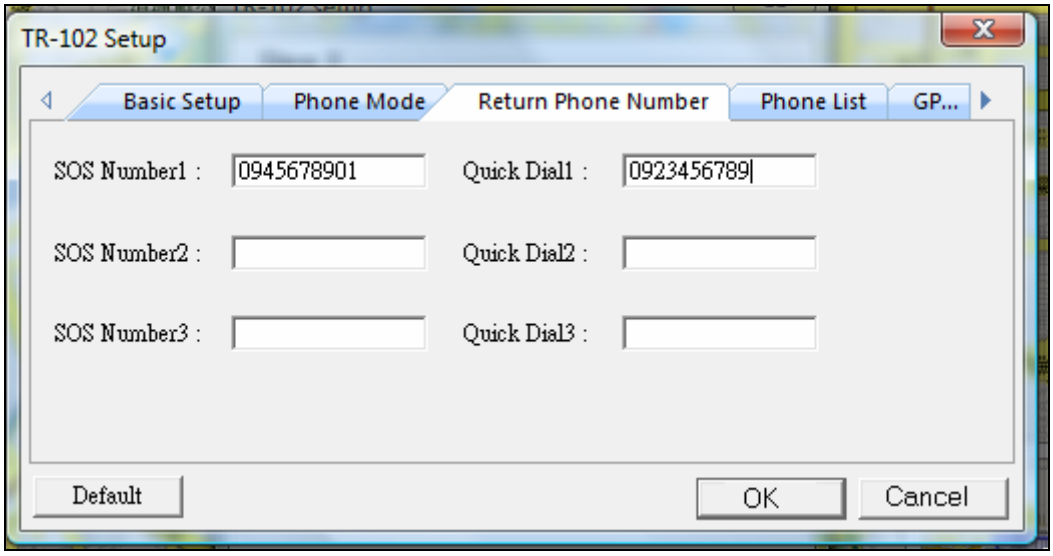
Format	Value	Note
Command_Head	?	
IMEI	(The number of IMEI)	
Status	0 1	0: Immediate report 1: Period report
GPS_fix	1 2 3	1: Fix not available 2: GPS 2D Fix 3: GPS 3D Fix
date	ddmmyy	
time	hhmmss	
longitude	(E or W)dddmm.mmmm	Example: E12129.2186 → E 121°29.2186'
latitude	(N or S)ddmm.mmmm	Example: N2459.8915 → N 24°59.8915'
altitude	xxxxx.x	unit: meters
speed	xxxxx.xx	unit: knots (1knots = 1.852km)

heading	ddd	
number of satellites in use	xx	
HDOP	x.x	
Command END	!	

Example :

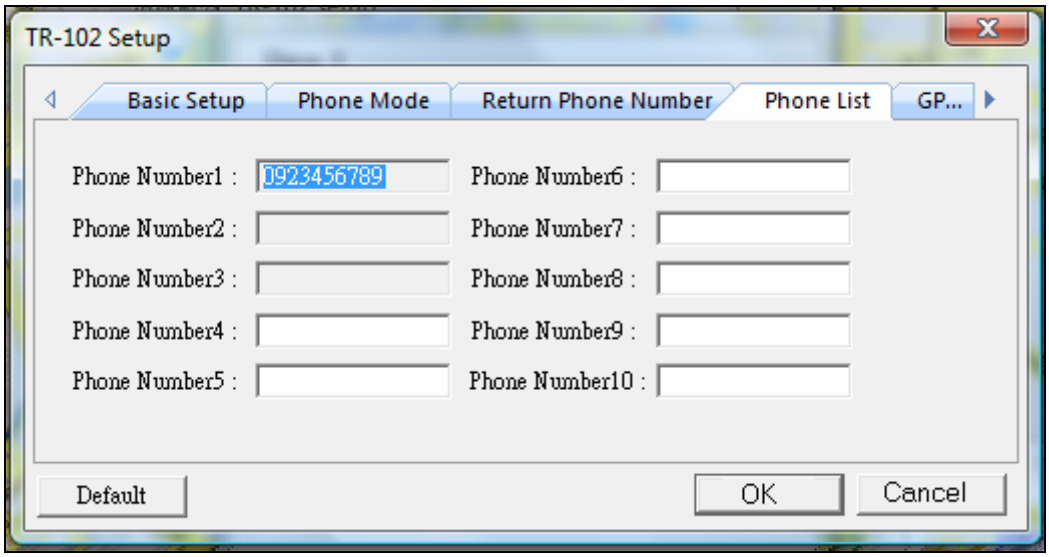
?355632000166323,1,1,040202,093633,E12129.2252,N2459.8891,00161,0.0100,147,07,37!

5.2.1.3 TR-102 Return Phone Number



Item	Description
SOS Number 1~3	Assign phone numbers to the 3 SOS buttons. When SOS button is pressed, TR-102 will send location information to these 3 phone numbers by SMS.
Quick Dial 1~3	Assign phone numbers to Quick Dial button 1~3 respectively. (see page 46 figure 5)

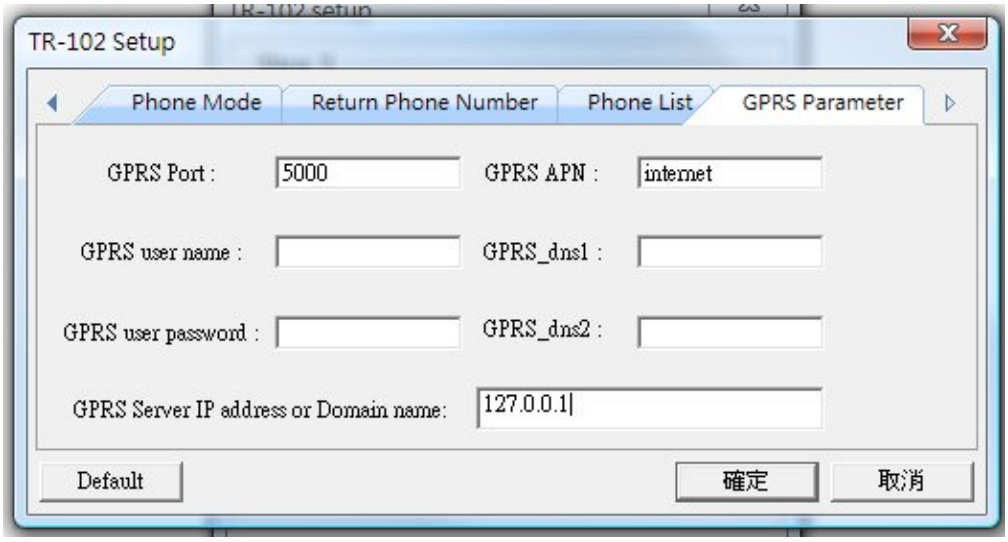
5.2.1.4 TR-102 Phone List



If you choose **On** for "**Check Phone List**" in the Phone Mode (5.2.1.2 TR-102 Phone Mode), TR-102 will only accept the phone call and SMS from the phone numbers in this Phone List.

Item	Description
Phone Number 1~3	These 3 numbers are set as the phone numbers of the Quick Dial Number.
Phone Number 4~10	You can specify phone numbers 4~10. If you select "**On**" for **Check Phone List** under Basic Setup tab, TR-102 will only receive the phone calls and SMS from these phone numbers.

5.2.1.5 TR-102 GPRS Setting



GPRS Setup Interface

Item	Description
GPRS Port	The default GPRS connection port is "5000". Do not specify a port already in use as this may result in conflict.
GPRS user name	Please consult with your GPRS network service provider for all other parameter values.
GPRS user password	
GPRS APN	
GPRS_DNS1	
GPRS_DNS2	
GPRS server IP address or Domain Name.	Enter the IP address of GPRS server or Domain Name.

Once you have set up all of the parameters, please click on "OK" to apply the settings or click on "Cancel" to cancel the setup.

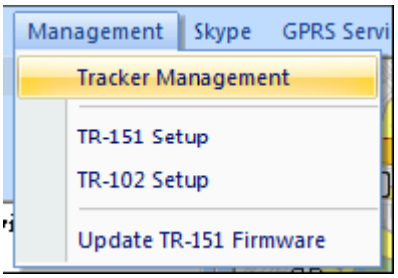
Note 1: Once the parameters have been applied, the TR-102 will restart. Once it has finished reinitializing it can be used.

Note 2: If the data is lost for any reason, clicking on the "Default" button will restore the tracker to its default settings.

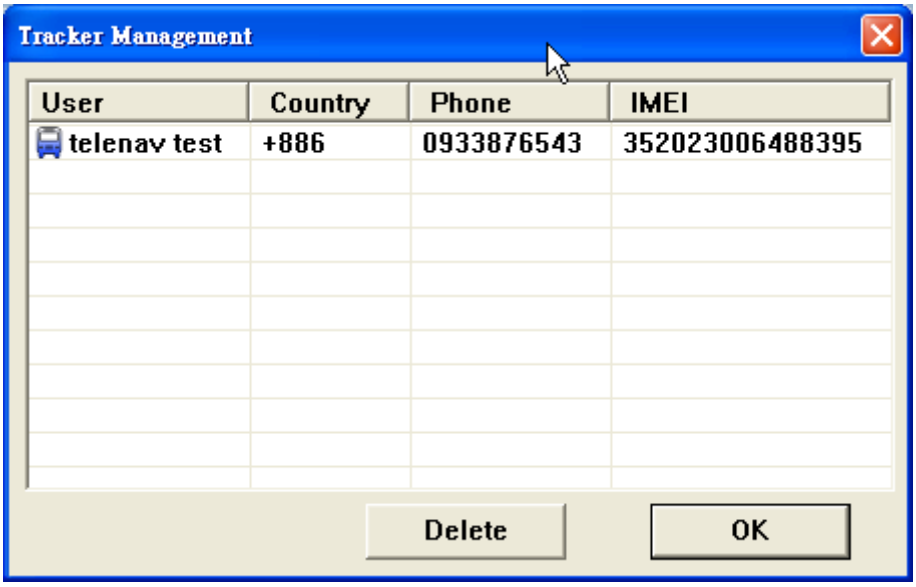
5.2.2 Tracker Management

Tracker Management is used to manage registered or previously configured trackers. In Tracker Management, you can edit or delete trackers.

You can find Tracker Management from the Menu "Management" → "Tracker Management".



The Tracker Management option under Management in Menu

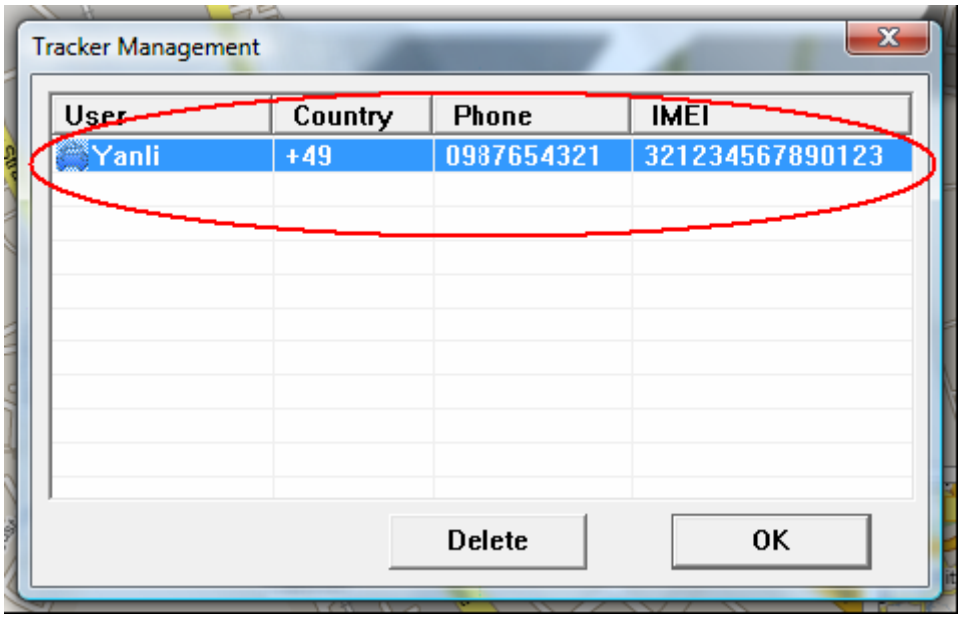


Tracker Management interface

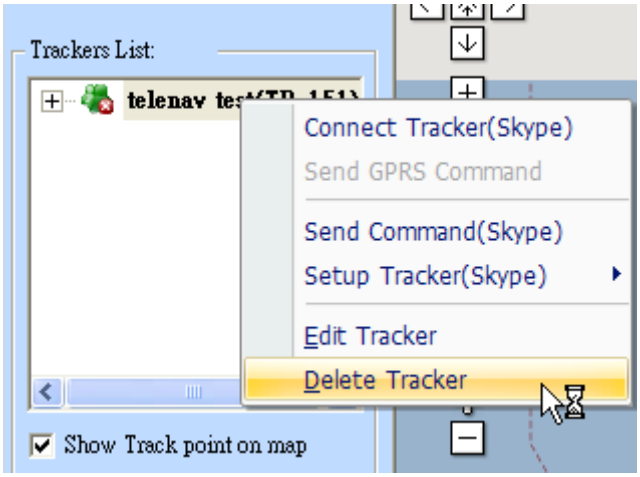
5.2.3 Deleting a TR-102 tracker

There are two ways for deleting TR-102 trackers in the TR Management Center

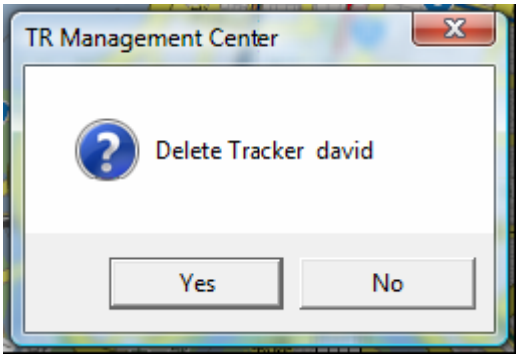
1. Select "Management" → "Tracker Management" from menu bar.
   Choose the TR-102 you want to delete, and then click on the "**Delete**" button.



2. The other way of deleting TR-102 tracker is selecting a tracker from the Trackers List and right clicking the mouse button to bring the tracker menu. Now click on **Delete Tracker** to delete the selected tracker.



Method 2 for deleting a tracker



A confirmation window will appear when deleting a tracker

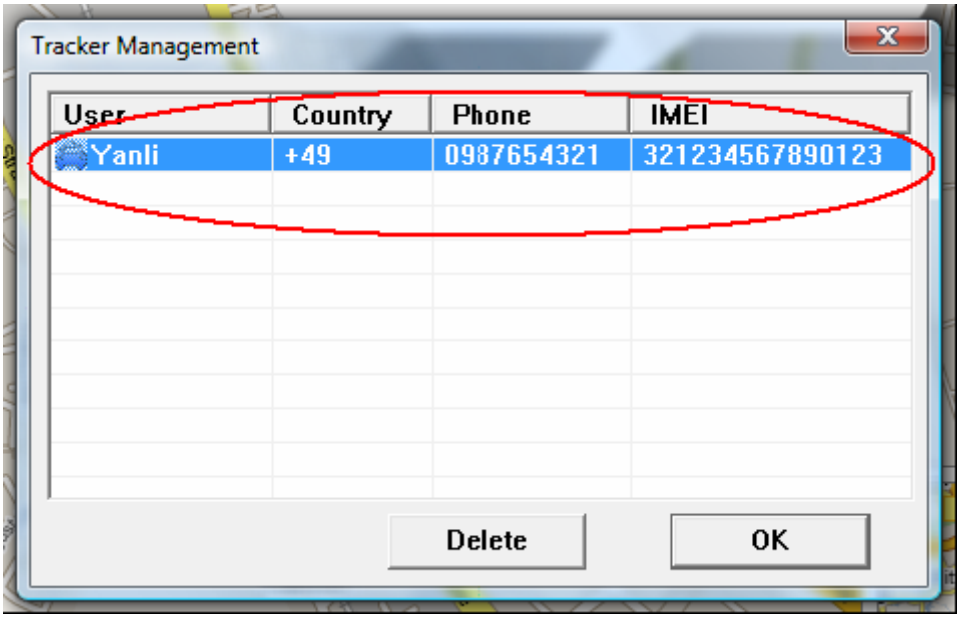
Note: Deleting a tracker does not actually delete its history data from the database. To delete all history data, please use the editing features in Microsoft Access.

5.2.4 Editing a TR-102 tracker

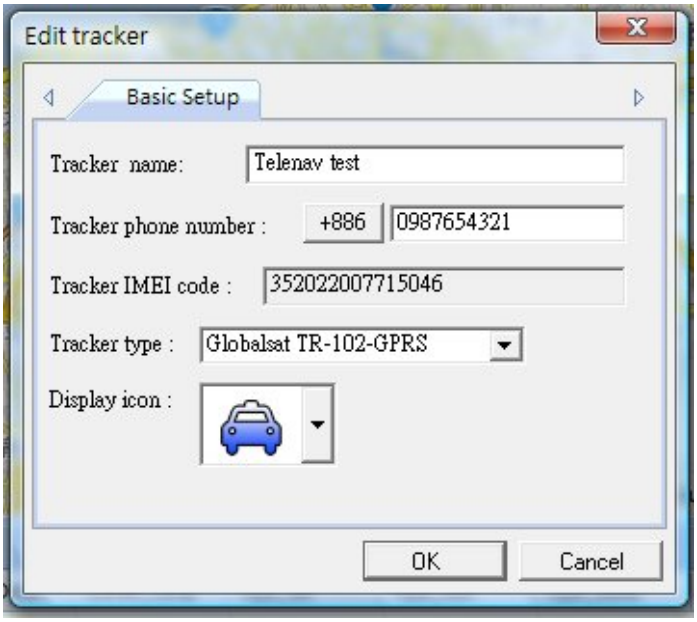
If you want to change the information of TR-151 tracker, you can edit the information by “Edit tracker”

There are two ways of bring up “**Edit tracke**r”

1. Click “Management” → “Tracker Management” from menu.



Double click a tracker, and then the window of “Edit tracker” will be brought up.



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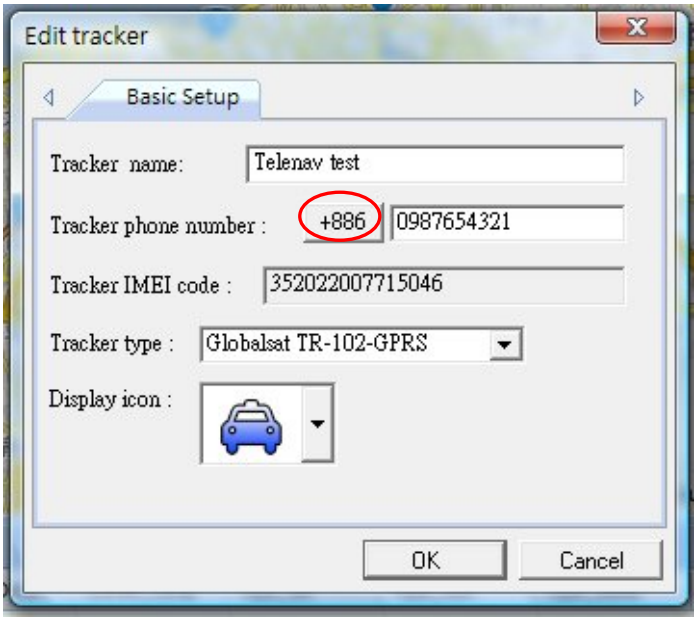
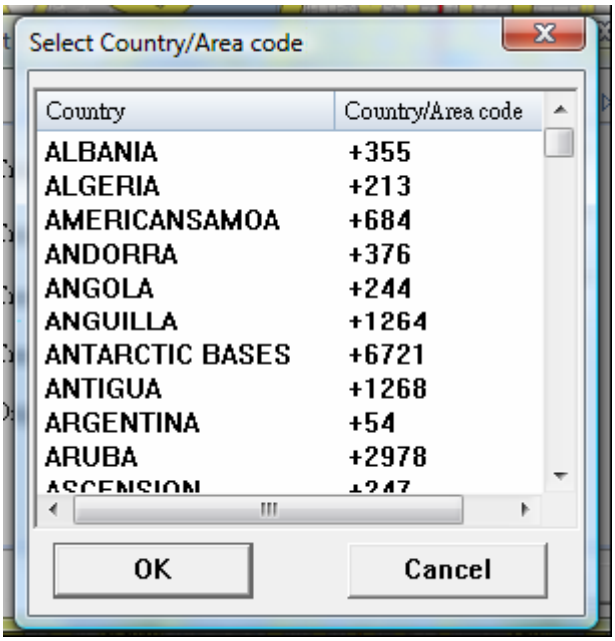
5.2.5 Selecting Country Code/Area Code

It requires adding country code/Area code prior to the phone number while sending SMS by Skype to TR-102 or sending SMS to TR-102 by mobile phone when you and TR-102 are in the different country or area.

Please click the button beside the phone number in the window of "**Edit tracker**" The window for selecting country code/ area code will be brought up.





You can press the first letter of the country name by the keyboard to go to the countries with the same first letter. After selecting the country code, please click OK.

5.3 Instruction of Using TR Management Center

5.3.1 Instructions for Beginners

If it is the first time for you to use TR-102, please refer 5.2.1 Adding and setting a TR-102 tracker to set TR-102. It will ensure TR-102 can send the report to TR Management center via GPRS network and display the location on the map.

Precautions before use:

1. The SIM card installed in TR-102 should support GPRS connection. This is usually what GSM/GPRS network operators refer to as a 2G or 3G SIM card. Please check if the SIM card supports GPRS connection with your GSM/ GPRS network service provider.
2. Please make sure the computer where you install TR Management center has a fixed IP. If the PC uses a dial-up network, please check the float IP address should be the same IP with TR-102's setting.
3. Please check that the firewall on your computer or router does not block the receiving TCP Port. If this port is not unblocked in the firewall, TR-102 will not be able to send its data to TR Management center through this port.
4. Please consult with your GSM/GPRS network service provider about the GPRS setting, GPRS will not connect properly if the settings are incorrect.
5. In order to send SMS by Skype, please install the Skype software, create a user account and buy Skype credits. The Skype SMS messaging function must be set up correctly as well. Skype only can send SMS. It is unable to receive SMS from TR-151

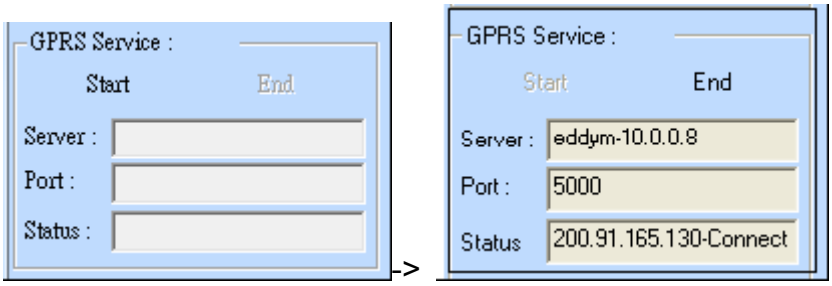
5.3.2 Making GPRS connection between TR-102 and TR Management Center

In order to make GPRS connection between TR-102 and TR Management Center, there is some setting should be made.

Step 1: Activate GPRS service

Please set the GPRS port. (You can refer to 5.2.1.5 TR-102 GPRS setting) After setting GPRS port, please activate GPRS server

To activate the GPRS service, please click the "**Start**" button at GPRS Service. After activating the GPRS service, the GPRS service status will be shown as the right screen below.

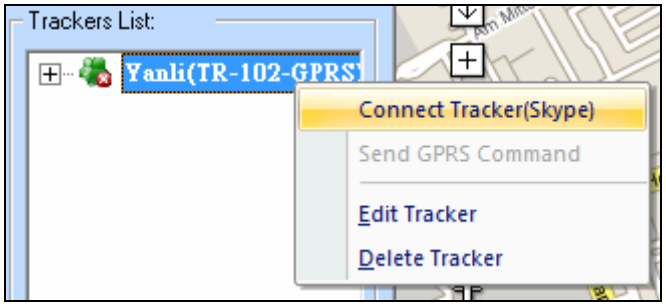


Step 2: Send command to connect TR-102.

Please make the "**Return Type**" of TR-102 to be "**GPRS**" (refer to 5.2.1.2 TR-102 Phone Mode)

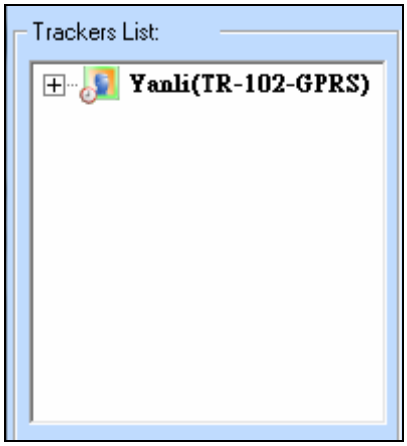
If you set the **Answer Mode** as "**Off**", you can also make a phone call to TR-102 to ask it to make GPRS connection with TR Management Center. If **Answer Mode** is "**ON**", please send SMS by Skype to TR-102 to make GPRS connection with the TR Management center. About the Answer Mode setting, please refer to 5.2.1.2 TR-102 Phone Mode.

Please select the TR-102 under Tracker list and right click the mouse to bring out the menu as below.



Please select "**Connect Tracker (Skype)**" to ask TR-102 to make GPRS immediate report to TR Management center.

Step 3: When TR-102 is making GPRS connection with TR Management center, you will see TR-102 show the status on the tracker list as the screen below.

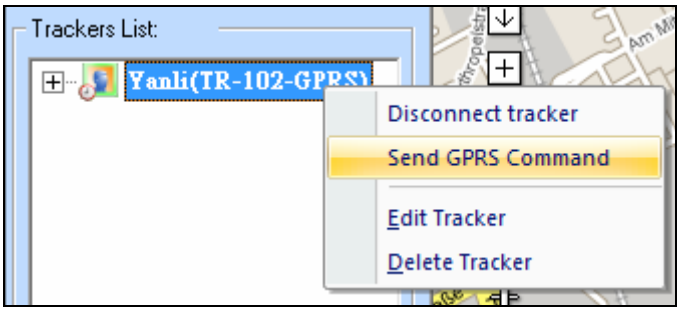

Trackers List:
Yanli(TR-102-GPRS)

5.3.3 Asking TR-102 to send GPRS position report to TR Management Center

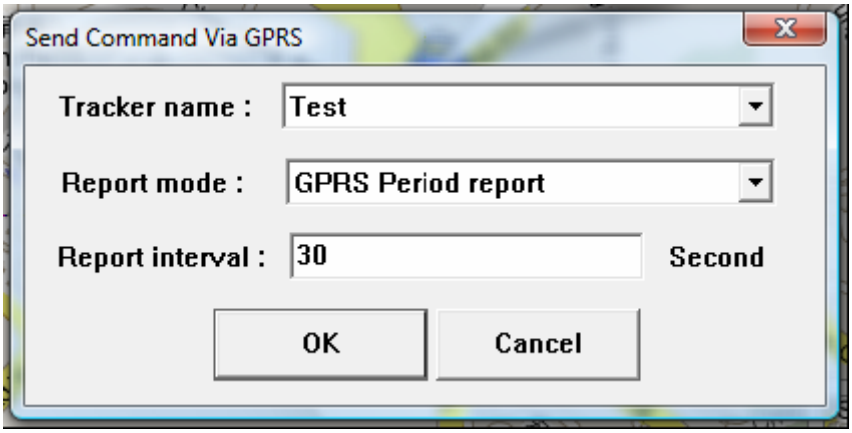
You can ask TR-102 to immediately or periodically send its position report

Before asking GPRS position report, please refer to 5.3.2 to make GPRS connection between TR-102 and TR Management center.

Step1: Select a GPRS connected TR-102, right click the mouse to bring up the option menu, and select "**Send GPRS command**"



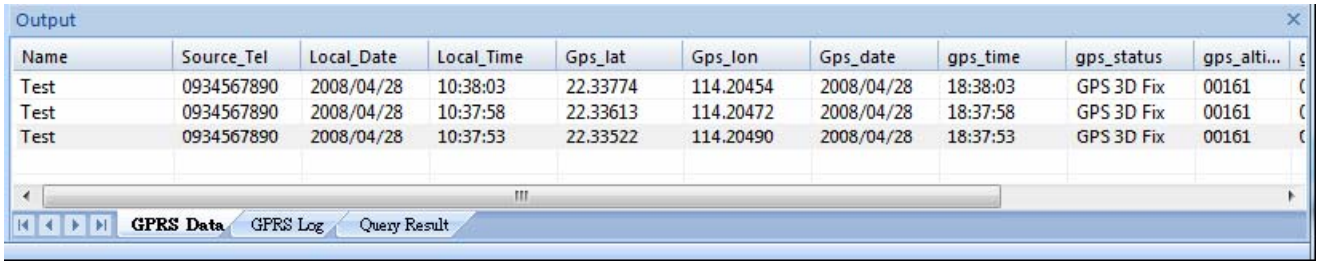
Step 2: Select the Report mode. If you select GPRS Period report or Stop connection and set period report, please also set the Report interval.



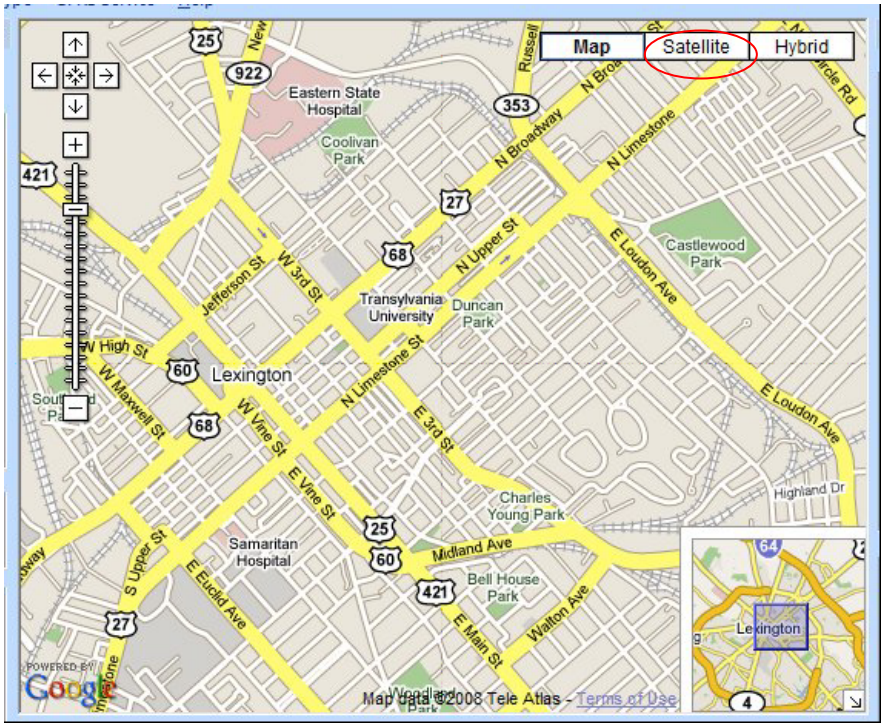
Item	Description
GPRS Immediate Report	Ask the connected TR-102 to report its latest position immediately.
GPRS Period Report	Ask the connected TR-102 to report according to the Report interval periodically
Stop Report	Ask the connected TR-102 to disconnect from TR Management center
Stop connection and set period report	Ask the connected TR-102 to disconnect from TR Management center and then periodically according to the report interval

Step 3: Click **OK**.

TR-102 will send the position report to TR Management center shown as the picture below.



You can make the location of that position report to show on Google map by clicking that report.



You can also click Satellite to see the location on satellite map.

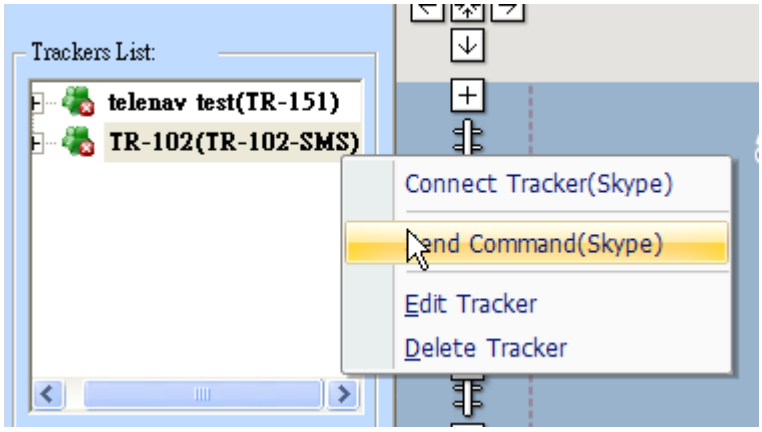
5.3.4 Asking TR-102 to send SMS position report by Skype

You can ask TR-102 to immediately or periodically send its position report to the phone number by sending SMS via Skype

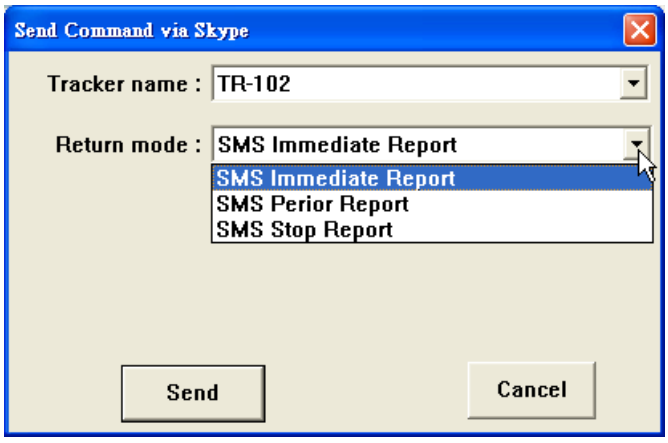
.

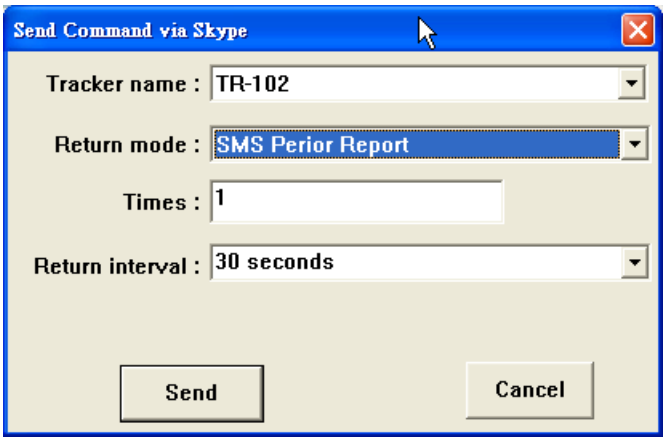
Step 1: Please make the **Return Type** of TR-102 as "**SMS**" (refer to 5.2.1.2 TR-102 Phone Mode)

Step 2: Select the TR-102, right click the mouse to bring up the option menu, and select "**Send Command (Skype)**"



Step 3: Select the return mode. If you select SMS Period Report, please also set the Report interval, and number of report (**Times**)





Step 4: Click **Send**.

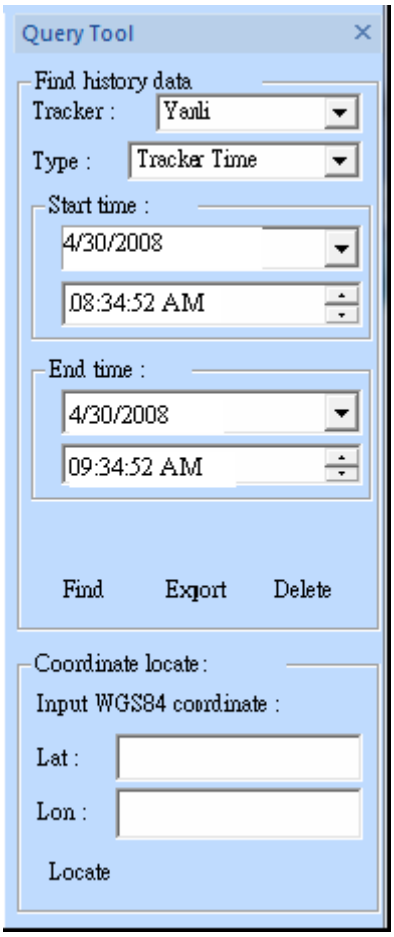
TR-102 will send the position report to the phone number you set in Basic setup. (Refer to 5.1 TR Management Center Basic Setup.)

5.4 TR Management Center Query

All the data sent from TR-102 will be stored in the database of TR Management center. You can make this data show on Google map or export them into KML format.

5.4.1 Look up for history data

You can look up for the history data that TR-102 sent to TR Management center by Query Tool.

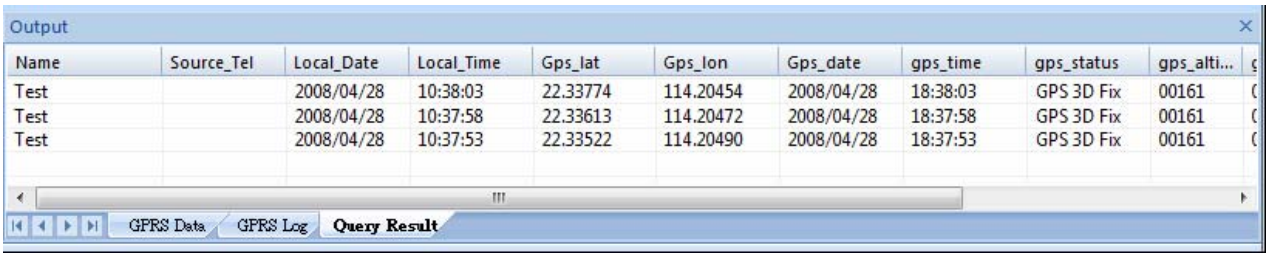


"Query Tool"

Item	Description
Tracker	Select the tracker whose history data you'd like to look up for
Type	To look up for the data according to the time of Tracker's timer (**Tracker Time**) or the receiving time of the PC (**Local Time**)
Start time	The start time of the period of looking up the history data
End Time	The end time of the period of looking up the history data
Find	Start to look up for the data
Export	Export the data into KML format
Delete	Delete query results

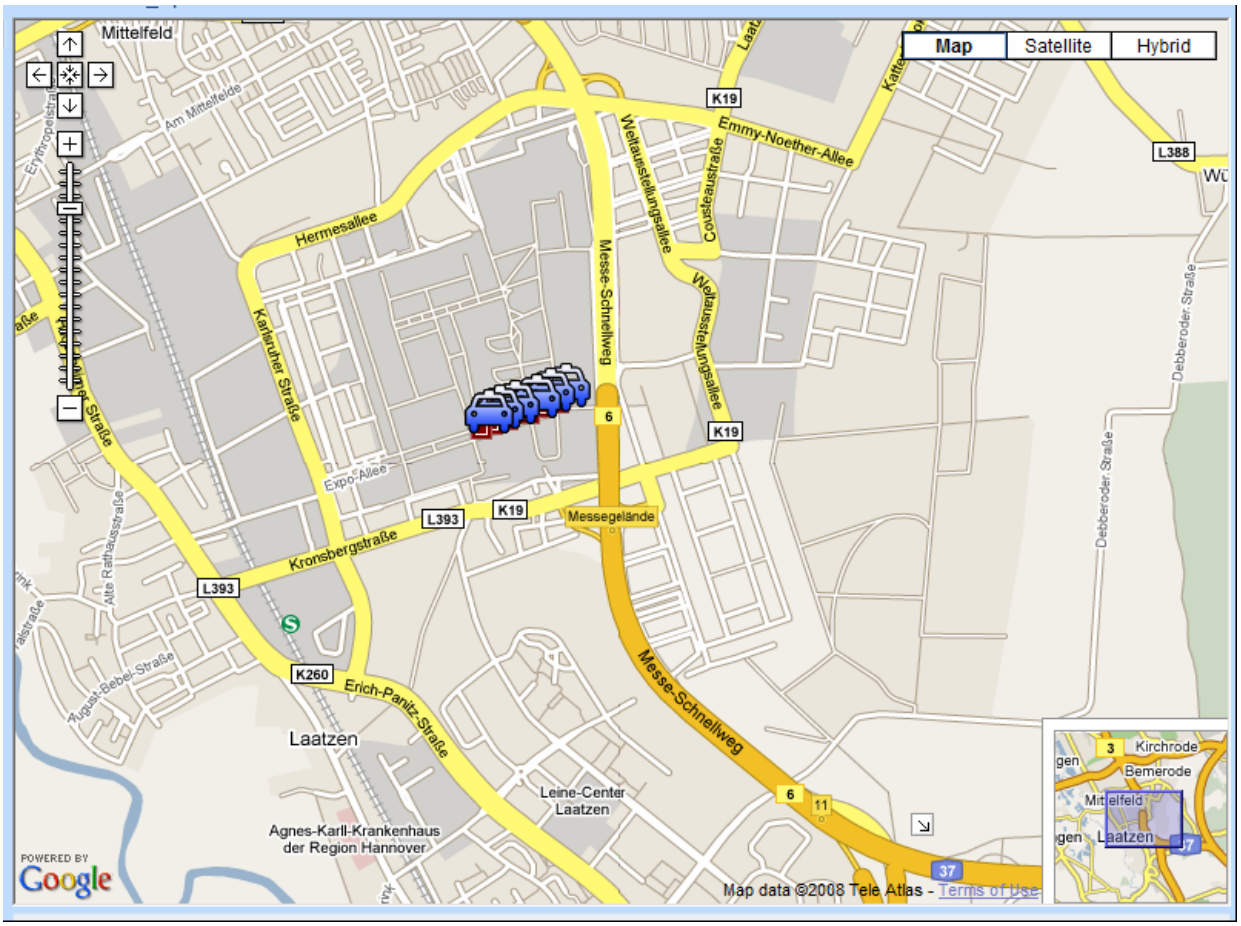
After specifying all the queried conditions, click the **Find** button and the query results will be

shown on the Data Output Area..



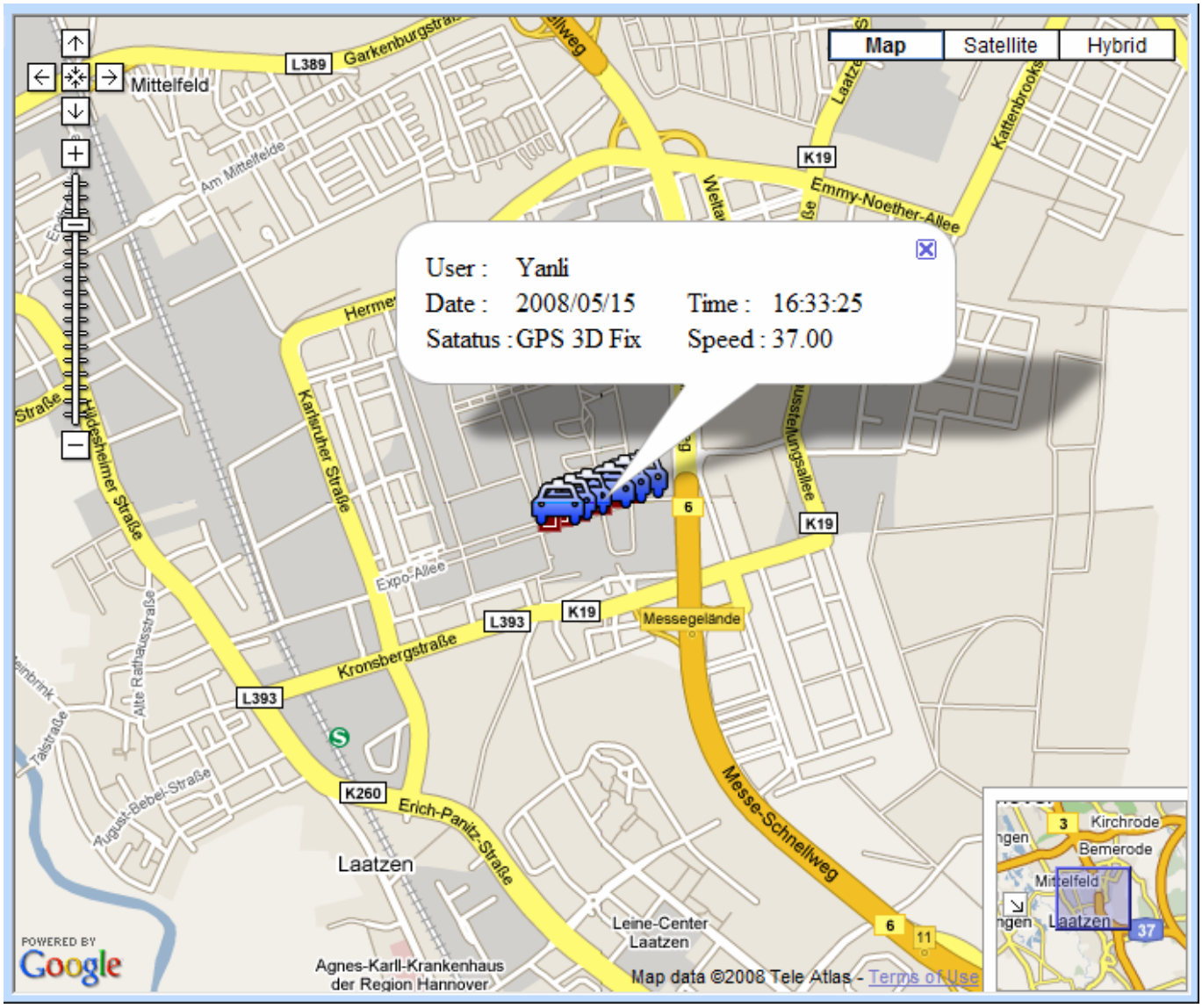
Query Result list

The results will also be shown on the Google Map.



Query results displayed on the Google Map

If you select a piece of result under the Data Output Area, its location and corresponding details will be shown on the Google Map.



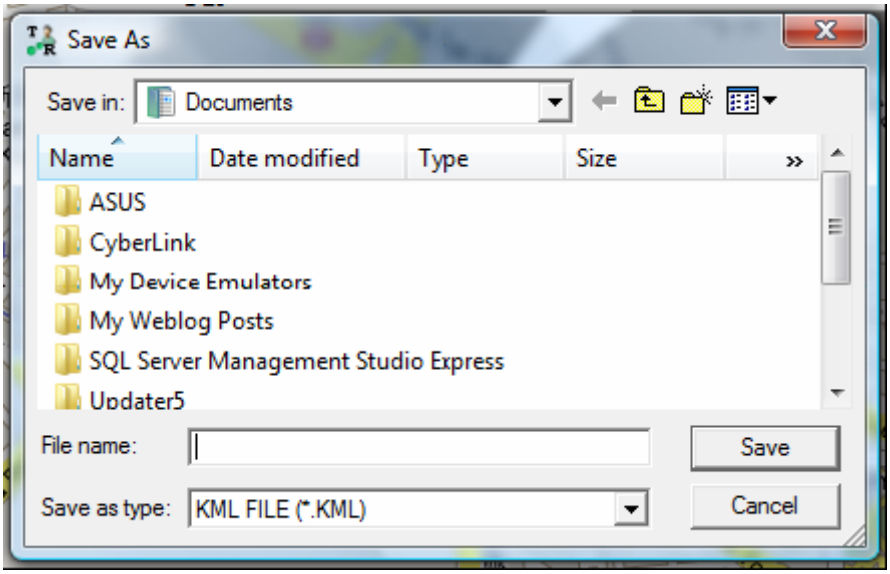
If you click on one of the tracker icon on the Google map, the selected tracker's data under Data Output Area will be highlighted.

5.4.2 Export the data into KML format

You can export the queried data into KML format for others to show the data on the Google map or Google earth.

Step 1: Please refer to 5.4.1 to look up for the history data.

Step 2: Please click the **Export** button on the Query Tool. And then enter a name for the exported data in the field of File name.

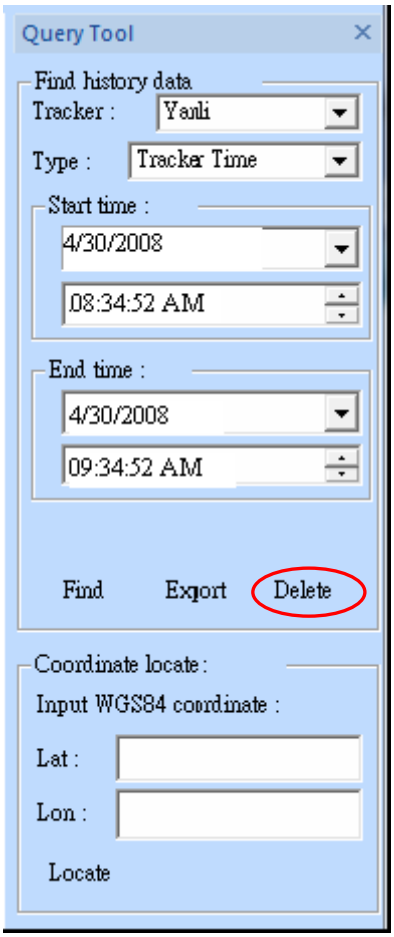


Enter a name for the exported KML file

5.4.3 Delete the history data in the database

You can delete the history data in the database.

Step 1: Select the name of the tracker and time interval whose data you'd like to delete.



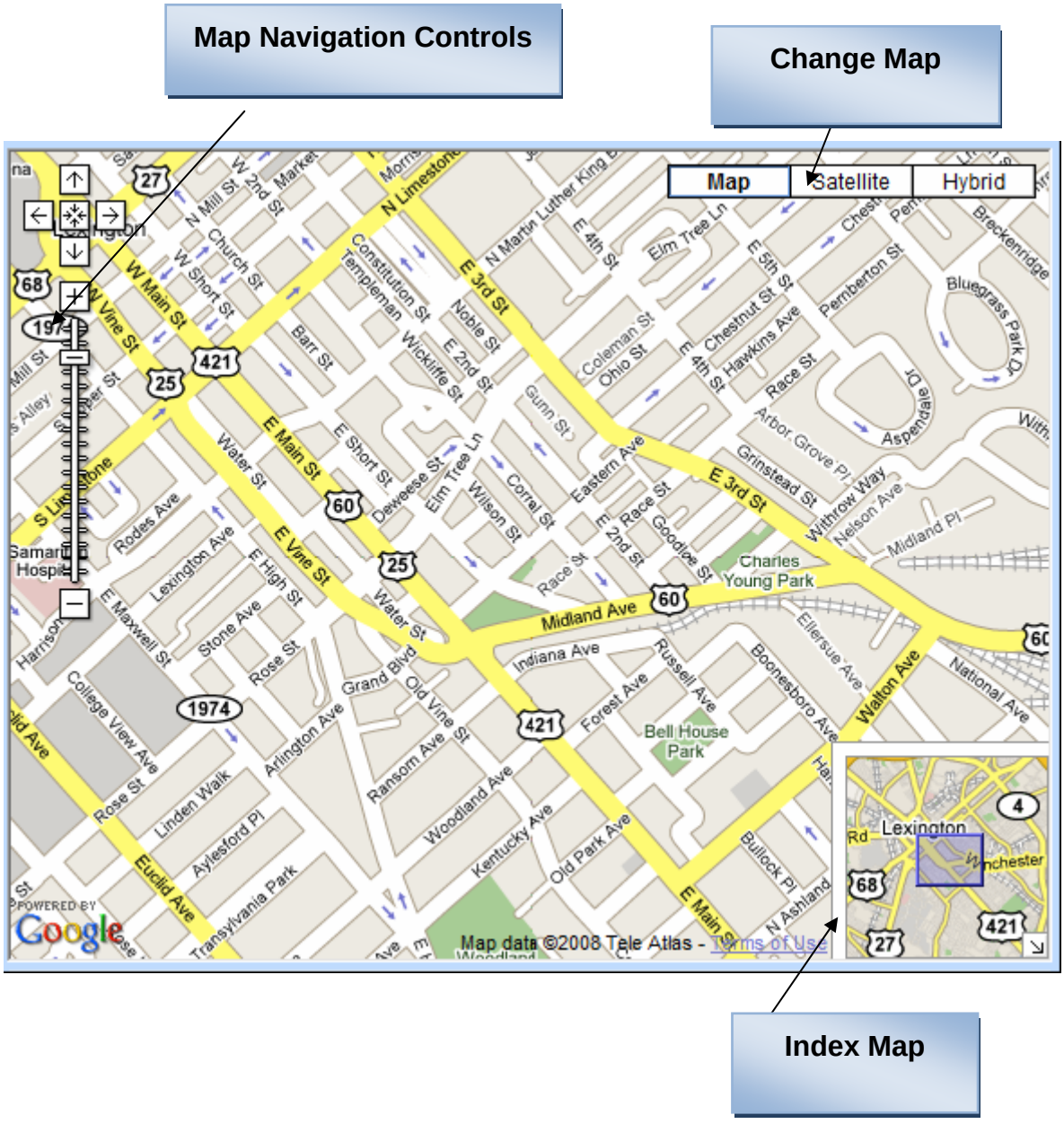
Step 2: Click the **Delete** button.

5.5 Using Google Map

Google Map is an online map developed by Google Inc. It offers access to major maps of the world and is constantly updated.

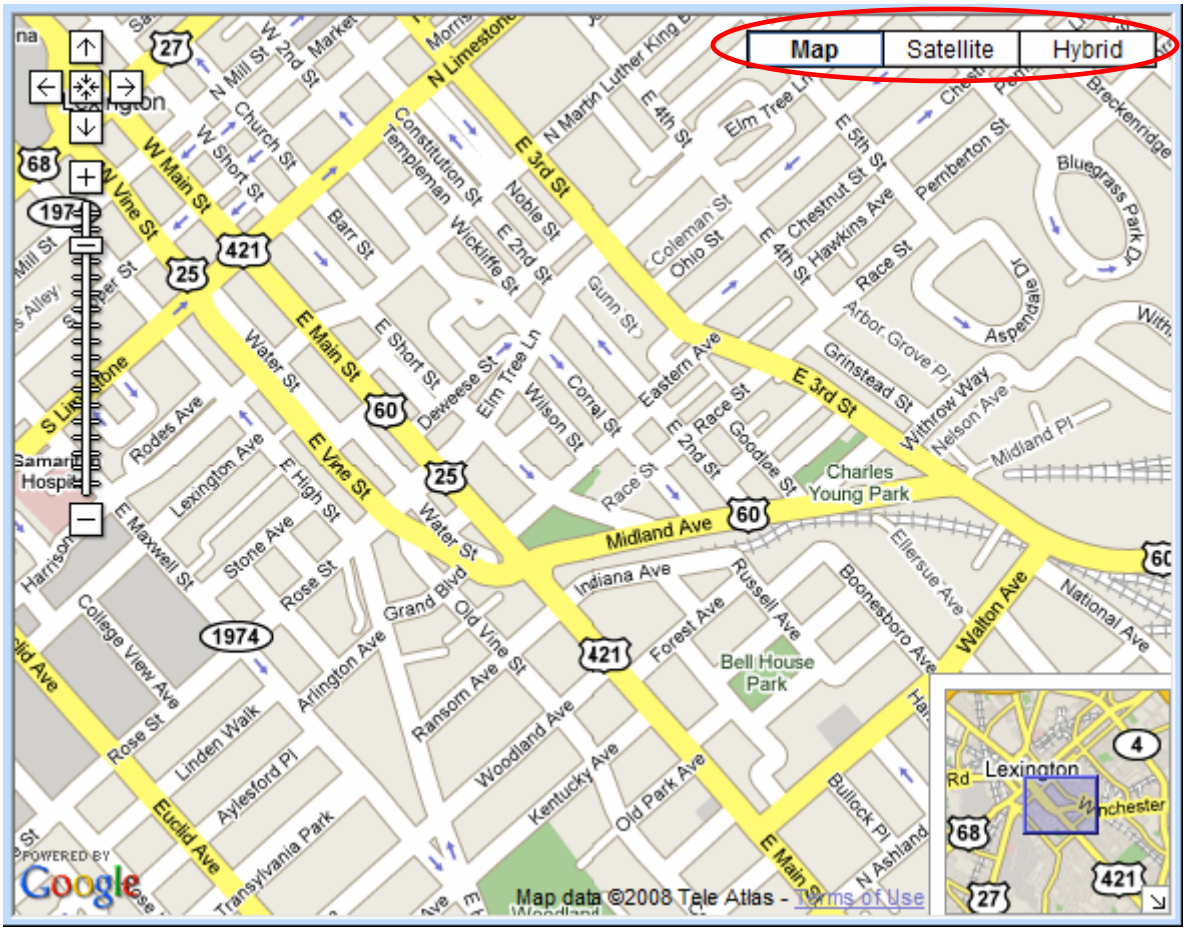
As Google Map is integrated into TR Management center, TR Management center can work under Internet connected status. If you start TR Management center under no Internet connection, a warning window of No Internet connection will appear.

Below please see the introduction of Google Map

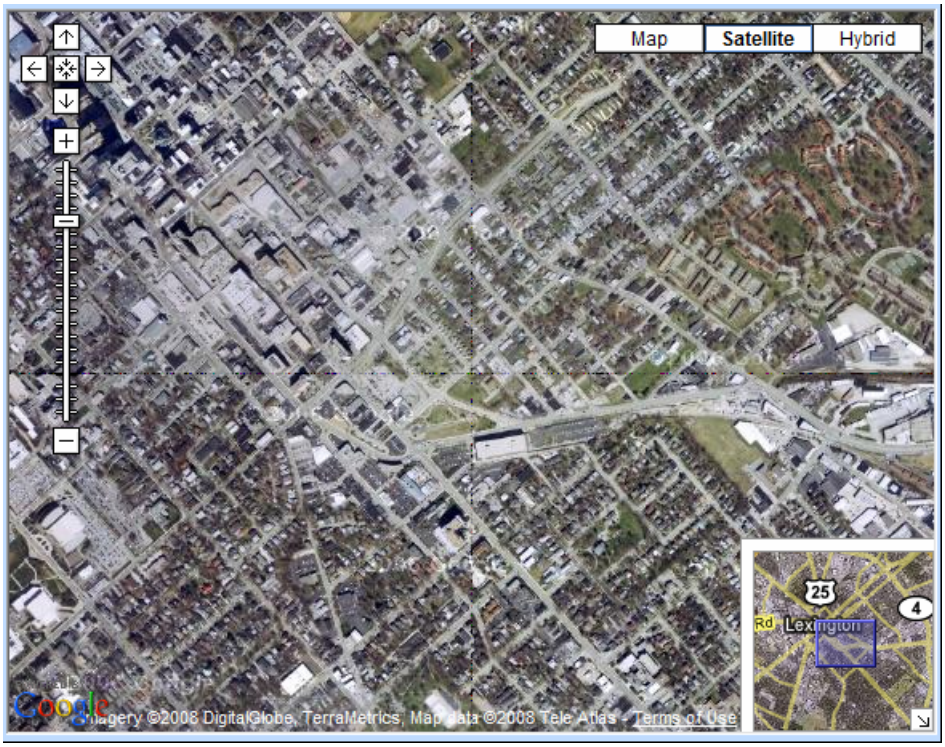


5.5.1 Google map data

Google Map includes the basic map, satellite map, hybrid map and other map data.
You can switch the map by the buttons on the upper right corner of Google map.



Basic Map



Satellite Map

Hybrid Map

5.5.2 Google map operation

Move the map: You can move the map by right clicking and dragging the map. Or you can move the map by the tool on the Google map.

Zoom the map: You can zoom in or zoom out the map by scrolling forward or backward the mouse. Or you can zoom in or out the map by the tool

6 Making TR-102 send or stop position report by SMS

You can ask TR-102 to send immediate or periodic position report or stop periodic report by sending SMS via mobile phone or SMS tool.
Before sending SMS to ask TR-102 to return the position report, please make the SMS protocol to be **Type 2**, and Return Type to be **SMS**. Please refer to 5.2.1.2 TR-102 Phone Mode.

6.1 How to ask TR-102 to return immediate position report by SMS?

You can ask TR-102 to send immediate position report by sending SMS with the following content.
Immediate report content: "**?0,IMEI, Report format,Return phone number!"**
TR-102 will return a confirmation message of "?0,IMEI,Immediate report setting OK !" to imform it has got the setting before sending the position report.

The description of SMS

Format	Description
?0	Start sign and function code of immediate position report
IMEI	IMEI of TR-102
Report format	Report format is set to be 1.
Return phone number	The phone number for receiving the position report
!	End sign

For example, if you want TR-102 to send immediate report to the phone number 626-123456.
You can send SMS as **?0,355632000166323,1,626123456!**
TR-102 will return "?0,355632000166323,Immediate report setting OK!" to the phone number of 626123456.
For the position report from TR-102, please refer to 6.3 The format of return SMS from TR-102

6.2 How to ask TR-102 to return periodic position report by SMS?

You can ask TR-102 to send periodic position report by sending SMS with the following content.
Periodic report content: "**?1,IMEI,Report_Interval,Number of Reports,Report format,Return phone number!"**
TR-102 will return a confirmation message of "?1,IMEI,Period report setting OK !" before sending the position report.

The description of SMS

Format	Description
?1	Start sign and function code of periodic report
IMEI	IMEI of TR-102
Report Interval (sec)	The interval between sending data report
Number of reports	How many reports will be sent
Report format	Report format is set 1.
Return phone number	The phone number for receiving the position report
!	End sign

Number of reports : 0 : continuous report

X : X times report

For example, if you want TR-102 to continuously send periodic reports for every 120 seconds to the phone number of 626123456.
You can send SMS of **?1,355632000166323,120, 0,1,626123456!**
TR-102 will return "?1,355632000166323,Period report setting OK!" to the phone number of 626123456.
And then TR-102 will send position report every 120 seconds. For the position report from TR-102, please refer to 6.3 The format of return SMS from TR-102

If you want TR-102 to send 10 pieces of periodic reports for every 180 seconds to the phone number of 626123456
You can send SMS as **?1, 355632000166323,180,10,1,626123456 !**
And then TR-102 will send position report every 120 seconds.TR-102 will return "?1,355632000166323,Period report setting OK!" to the phone number of 626123456.

Stop periodic position report:
If you want to stop sending the periodic report, you can SMS of "?2,IMEI,Return Phone Number" to TR-102 to stop the periodic report.
For example, if you want TR-102 to stop periodic report, you can send SMS of "?2, 355632000166323,626123456!"
TR-102 will return "?2,355632000166323,stop report setting OK!"

Note: Return phone number:

TR-102 will send **confirmation message and position report** back to this return phone number.

If return phone number is empty, TR-102 will send report back to caller ID.

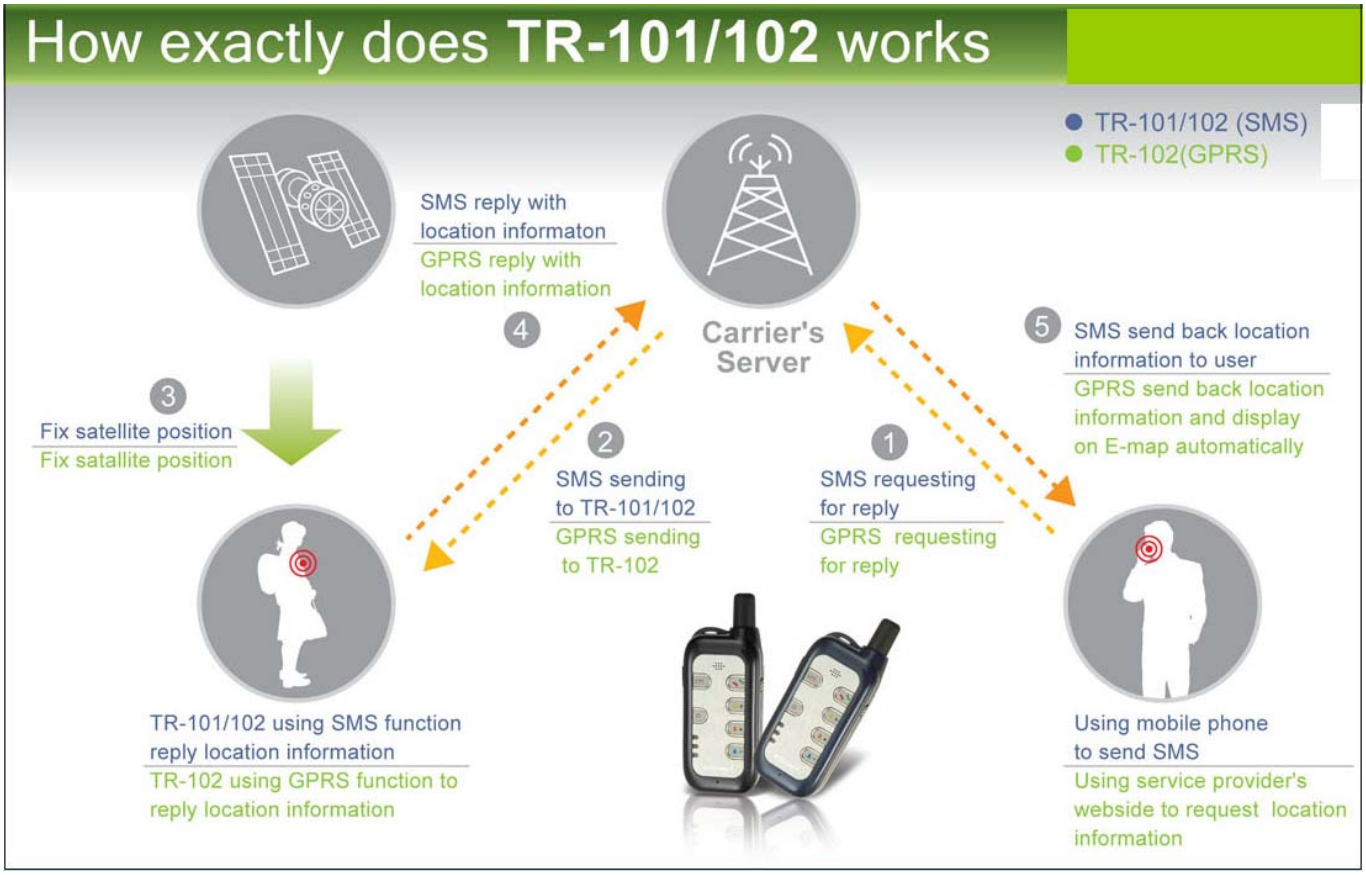
6.3 The format of return SMS from TR-102

If you send SMS to TR-102 for asking immediate or periodic position report, you will get the position report like the following format.

Command_Head,IMEI,status,GPS_fix,date,time,longitude,latitude,altitude,speed,heading,number of satellites in use,HDOP,Command_End

Format	Value	Note
Command_Head	?	
IMEI	(The number of IMEI)	
Status	0 1	0: Immediate report 1: Period report
GPS_fix	1 2 3	1: Fix not available 2: GPS 2D Fix 3: GPS 3D Fix
date	ddmmyy	
time	hhmmss	
longitude	(E or W)dddmm.mmmm	Example: E12129.2186 → E 121°29.2186’
latitude	(N or S)ddmm.mmmm	Example: N2459.8915 → N 24°59.8915’
altitude	xxxxx.x	unit: meters
speed	xxxxx.xx	unit: knots (1knots = 1.852km)
heading	ddd	
number of satellites in use	xx	
HDOP	x.x	
Command END	!	

7 How does TR-102 work by SMS and GPRS?



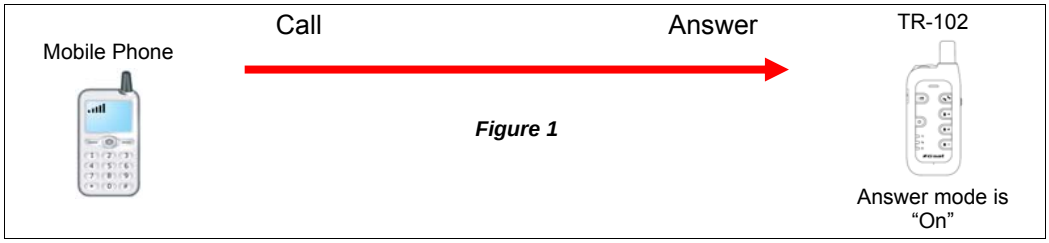


Figure 1

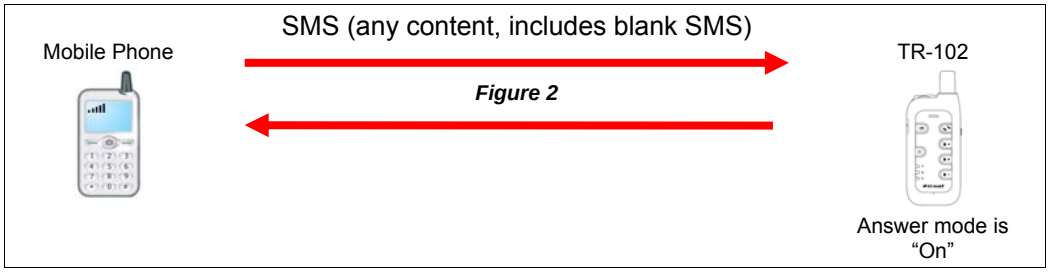


Figure 2

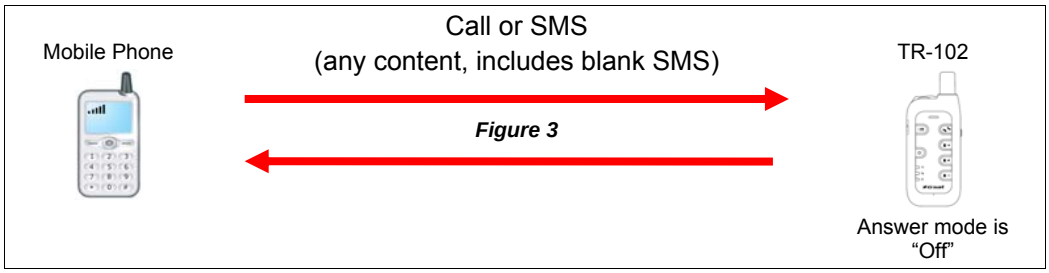


Figure 3

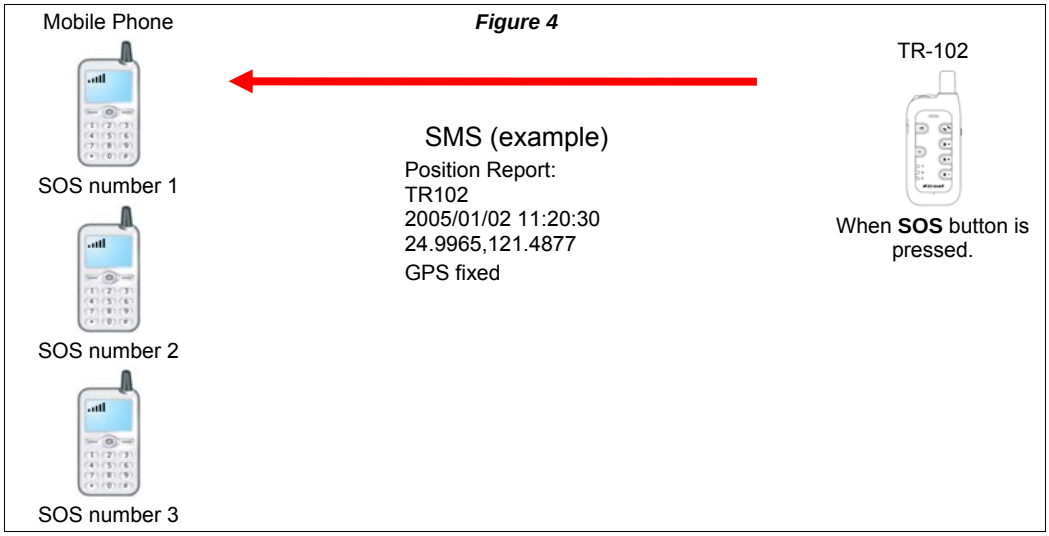


Figure 4

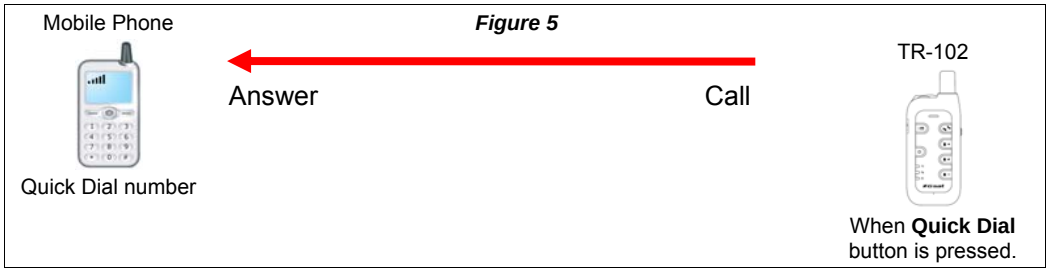


Figure 5

8 Troubleshooting and Safety info

status	cause	solution
After turning on the power of TR-102, the three LED are flashing simultaneously.	The SIM card is not inserted.	Please insert the SIM card into TR-102.
	The SIM card is inserted in the TR-102, but it asks for SIM PIN entry and the PIN code is mismatched.	Please take out the SIM card, use your mobile phone to disable the PIN entry and then insert the SIM card back to TR-102. Then you will not be asked the PIN code. Or connect the TR-102 to PC and enter the setup mode of TR Management Center program to enter the correct SIM PIN.
After you turn on the power of TR-102, the Blue GSM LED is on.	The signal is too weak.	Please take TR-102 to a location where there is a stronger signal.

- In general situation, it needs about 4 ~ 5 hours to fully charge the battery under the power-off condition. If you charge the battery under the power-on condition, it may need longer charging time depending on different usage mode.

- There is a little tenon on the rubber cover of TR-102 USB port (please see the right figure). You have to press it a little harder downward to close it firmly. There will be a click sound if you do the right way.
- Please do not connect TR-102 to AC power adapter during its startup process; otherwise it can not be turned on properly.
- Please do not connect TR-102 to a USB cable when you are changing the battery, otherwise it will make some beep sound.
- If TR-102 can not be turned off properly, please open the battery cover and remove the battery for 3 seconds at least. Put the battery back and then restart it.
- When the device is turned on, it will begin to do the initialization process, and you will hear a short “toot” sound from the speaker. This is a normal situation, not a defect.
- Please avoid storing the device in an excessive heat or humidity place. Please do not leave the device in your car under the direct sunshine with windows closed. A high temperature environment may damage the device or even cause the battery explosion.
- When you use TR-102 to make a call, but the other party can not be reached for some reason (not turn on, busy line, reject the call), you may hear the voice that requests you to leave a message in the voice box. If you don't want to leave a message, **please make sure to press the hang up button** on TR-102 to end the call, otherwise TR-102 will keep hanging on with the voice box system and can not come back to standby mode.
- Do not hold TR-102 to your ear when it rings! When you receive a call, press the answer button to accept the call before bringing TR-102 to your ear in order to avoid ear damage caused by the loud ring tones.

FCC Regulations:

- This mobile phone complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

- This mobile phone has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiated radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user‘s authority to operate the equipment.

RF Exposure Information (SAR)

This model phone meets the government's requirements for exposure to radio waves.
This phone is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. *Tests for SAR are conducted using standard operating positions accepted by the FCC with the phone transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the phone while operating can be well below the maximum value. This is because the phone is designed to operate at multiple power levels so as to use only the poser required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

The highest SAR value for the model phone as reported to the FCC when tested for use at the ear is 0.758 W/kg for GSM850 / 0.735 W/kg for PCS1900 and when worn on the body, as described in this user guide, is 0.21 W/kg for GSM850 / 0.223 W/kg for PCS1900 (Body-worn measurements differ among phone models, depending upon available enhancements and FCC requirements.)

While there may be differences between the SAR levels of various phones and at various positions, they all meet the government requirement.

The FCC has granted an Equipment Authorization for this model phone with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this model phone is on file with the FCC and can be found under the Display Grant section of http://www.fcc.gov/oet/fccid after searching on FCC ID: RID-TR101.

For body worn operation, this phone has been tested and meets the FCC RF exposure guidelines for use with an accessory that contains no metal and the positions the handset a minimum of 1.5 cm from the body. Use of other enhancements may not ensure compliance with FCC RF exposure guidelines. If you do no t use a body-worn accessory and are not holding the phone at the ear, position the handset a minimum of 1.5 cm from your body when the phone is switched on.