

TR-150

Vehicle/Asset Tracker

User Manual

Version **0.9.02**



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1. Introduction and Features

1.1 Introduction

TR-150 is durable and water resistant GPS/GSM tracker. Allow a user to track his vehicle and assets from anywhere through SMS. TR-150 is designed with high capacity Li-ion battery for long operation time. There is one SOS button on the TR-150 for emergency help. It is very easy to install or hide TR-150 in the car to perform tracking. TR-150 is ideal application for vehicle tracking and equipment/assets monitoring.

1.2 Features

- SiRF Star III LT GPS chipset, SiRF latest, flagship performance, lowest power consumption GPS chipset.
- Combination of GPS ,GSM wireless network
- Durable and water resistant GPS tracker
- Easy to install or hide in the car to perform tracking. No external wires needed.
- Ideal application for vehicle tracking and equipment/assets monitoring
- Optional external antenna for GPS reception
- Rechargeable 2100mA high capacity Li-ion battery for long operation time
- External DC power supply
- Configuration can be done via SMS commands or by application software via USB interface.SOS (emergency) button.
- Voice monitor function to monitor the sound/conversation live.
- Geofence function

2. Specifications

2.1 Hardware

GSM module:	Siemens GSM 900/1800
GPS Chipset:	SiRF Star III LT chipset
Frequency:	L1, 1575.42 MHz
C/A code:	1.023 MHz chip rate
Channels:	20 channel all-in-view tracking
Horizontal Position Accuracy:	< 2.5 meters
Velocity Accuracy:	0.01 m/s
Tracking Sensitivity	-159 dBm
Default datum:	WGS-84
Hot start:	1 sec., average
Warm start:	35 sec., average
Cold start:	35 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/sec ³
Operating temperature:	-20° to 55° C
Antenna Type:	GPS patch antenna
Dimension:	86.7*48.9*32.5 mm
Battery:	2100mA rechargeable Li-ion battery
LED indicator:	For Charging, GPS, GSM and Status.
Interface:	Mini USB port for connecting to PC
Casing:	Water resistant
GPS external antenna port:	MMCX port

3. Start-up

3.1 Accessories



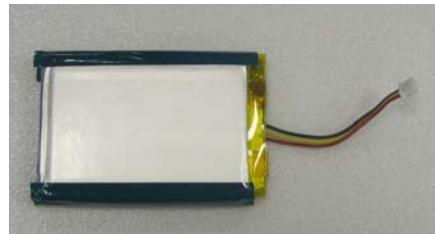
TR-150



AC charger



USB Cable



Battery



Car charger



Mounting bracket with magnet
(optional)

3.2 Install SIM card and Battery



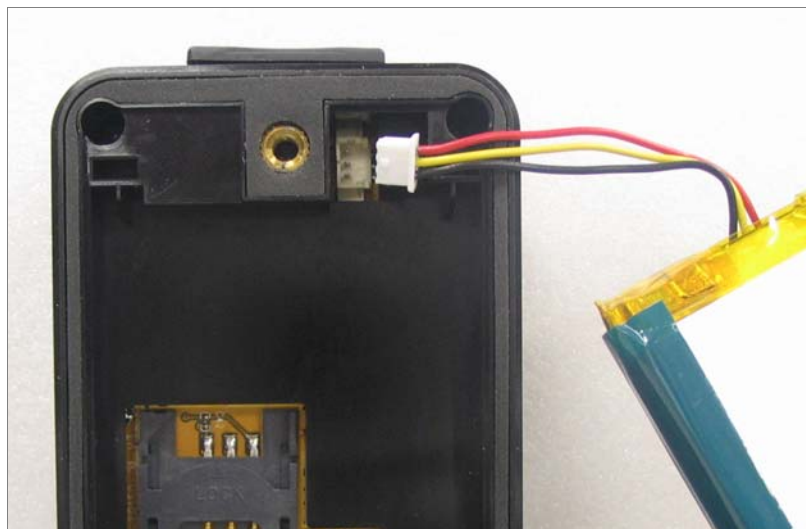
- Use a coin or screwdriver to loosen the screw on back cover.



- Lift the back cover and remove it as the direction shown.



- Slide down the SIM card slot as the direction marked "OPEN" on it.
- Slide in the SIM card with its metal contacts facing down and the cut corner at the top left.



- Plug the battery connector into socket. Be aware that the **red wire** is on the top side when you plug in the connector.

3.3 Charging the battery

Before you can use the TR-150, you must complete the following procedures:



1. Fully charge the battery. Before your first time using of TR-150, please connect it with AC power adapter for battery charging under the power-off condition. (The included battery is specially designed for TR-150. Please do not use other type of battery; otherwise it will damage the device. If you need to change the battery for TR-150, please contact you local dealer.)

3.4 TR-150 with magnetic holder



- Insert the TR-150 with the Power button side facing out.



- Push TR-150 into the holder until it clicks in position.



- On the back of magnetic holder, there are 4 circular magnets which you can use it for attaching TR-150 onto the metal material of vehicle or machine.



- To remove TR-150, slightly push the both sides of holder outward, and slide out the TR-150.


4. Hardware Overview

4.1 Appearance



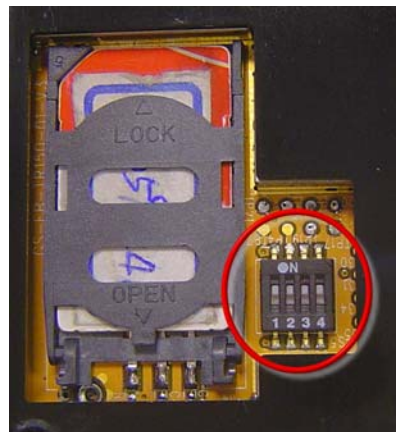
(1)	Power button
(2)	SOS button
(3)	Indicators
(4)	USB connector
(5)	Microphone
(6)	External antenna connector

4.2 Button description

Power button	<ol style="list-style-type: none">1. Power On: Press and hold the power button for 3-4 seconds. The status LED will flash 2 times2. Power Off: Press and hold the power button for 3-4 seconds. The status LED will flash 1 time.
SOS button	Presses the SOS Button, the status LED will flash 3 times to indicate the button is activated. TR-150 will immediately send out an emergency message along with its GPS report to 3 preset phone numbers.
Indicator	 <ol style="list-style-type: none">1. GSM LED:<ul style="list-style-type: none">• Voice monitoring: LED steady on.• When no SIM card inserted, network search in progress, ongoing user authentication, or network login in progress: LED is blinking quickly (about once per second).• In standby mode: LED is blinking slowly (once per 3 seconds)2. GPS LED: The LED is steady on when it is fixing the location. The LED will be blinking when TR-150's location is fixed.3. Status LED:<ul style="list-style-type: none">• When battery low: LED steady on.• When enter setup mode: LED steady on.• Press power button to turn on: LED will flash 2 times.• Press power button to turn off: LED will flash 1 times.• When SOS button is pressed: LED will flash 3 times.• When encounter error: LED will flash 5 times.4. Power LED: The LED will be orange when charger is plugged for charging the battery. When the battery is been fully charged, the LED goes off.

USB connector	Connecting TR-150 to PC by a Mini USB cable, you can setup all its features and functions from application software in PC. You can also plug in USB cable for charging the battery.
Microphone	For voice monitoring use.
External antenna connector	For you to connect a MMCX external GPS antenna.

4.3 DIP switch

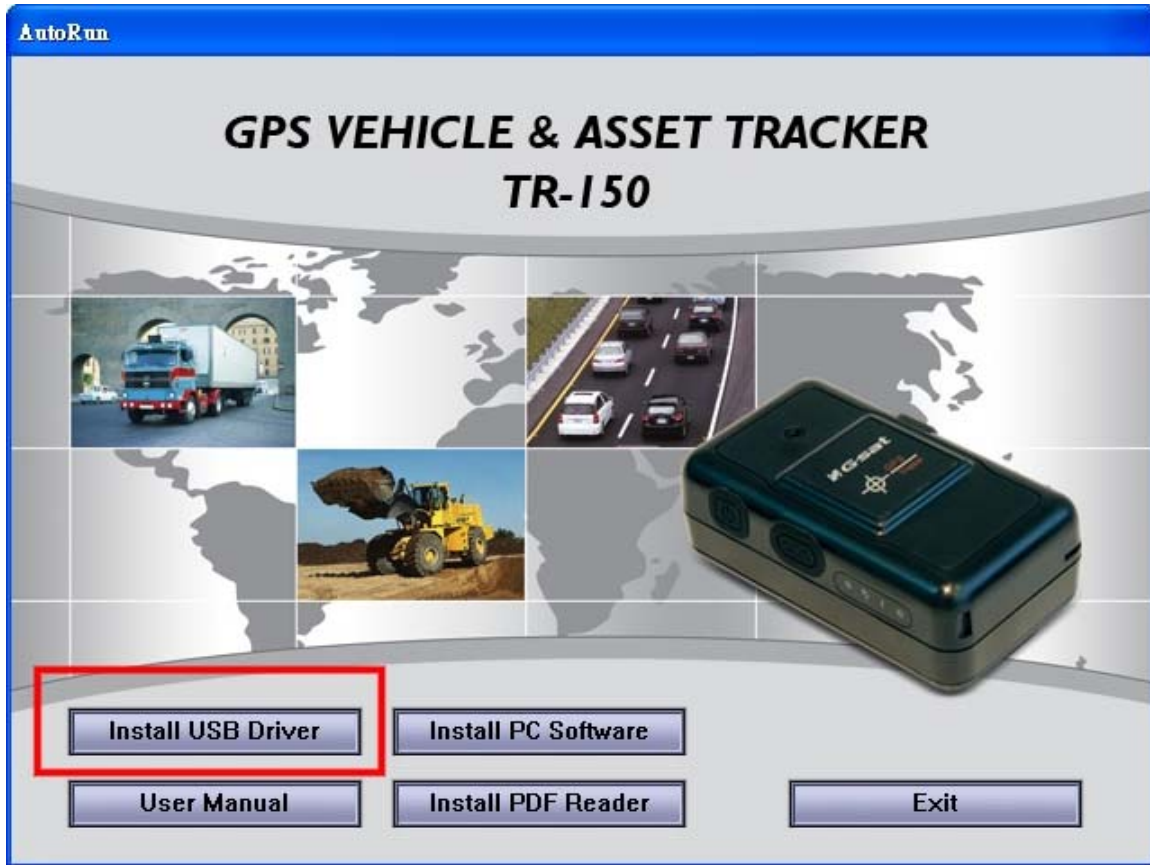


Note: The Factory default of DIP switch is set to OFF.

- Switch 1 sets to ON:** Enable the Auto-On feature. When external power is connected, the device will auto-on. When remove external power, the device is off.
- Switch 2 sets to ON:** All LEDs (except Status LED) go off to perform secret tracking. Status LED flashes as usual except battery low. (In another word, Status LED is not on if battery is low.)
- Switch 3 sets to ON:** For entering setting mode.
- Switch 4:** Reserved for future use.

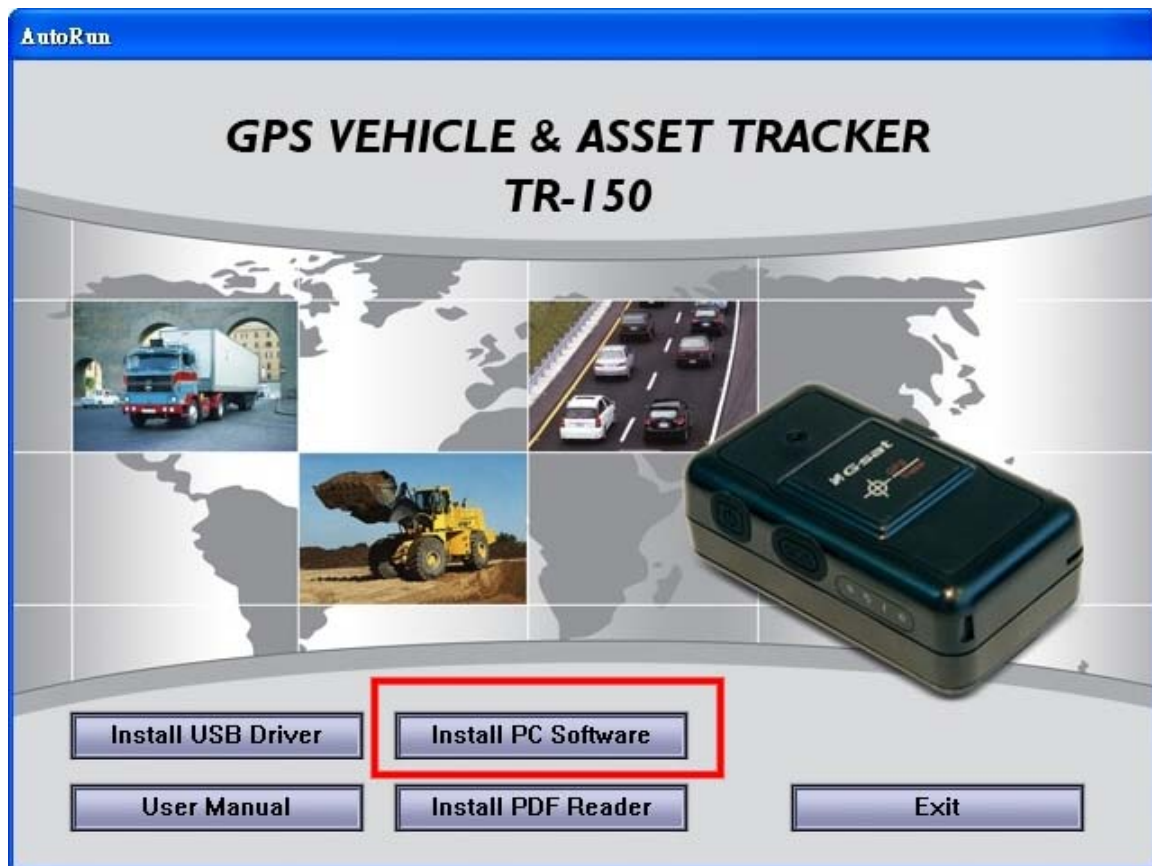
5. TR-150 Setup and Call Center Operation

5.1 Install the USB driver



- 1.) Insert the Driver CD into your CD-ROM driver.
- 2.) AutoRun installation window will appear.
- 3.) Click "Install USB Driver" button to install the USB driver.
- 4.) You will see two folders. If your Windows is Vista version, please double click to open "**PL2303_USB_Driver_for_Windows_Vista**" folder and double click on "**PL-2303 Vista Driver Installer.exe**" to begin installation. Follow the instruction to complete the installation process.
- 5.) If your Windows is XP or 2000 version, please double click to open "**PL2303_USB_Driver_for_Windows_2000_XP**" folder and double click on "**PL-2303 Driver Installer.exe**" to begin installation. Follow the instruction to complete the installation process.

5.2 Install the Call Center program



- 1.) Click "Install PC Software" button to install the Call Center program.
- 2.) Follow the instruction to complete the installation process.
- 3.) After the installation is completed, you will see the icon "TR150-Call Center" appears on desktop. Double click on this icon to start TR150 Call Center program.



5.3 Call Center Menu

TR150-Call Center V1.01

File Management Device Map About

SMS Tracking Search Records SMS Command

SMS Information

Latitude : GPS Speed :






User Name : Longitude : GPS Direction :

Phone Number : GPS Status : GPS Date-Time :

Module IMEI : GPS Altitude : Receive Date-Time :

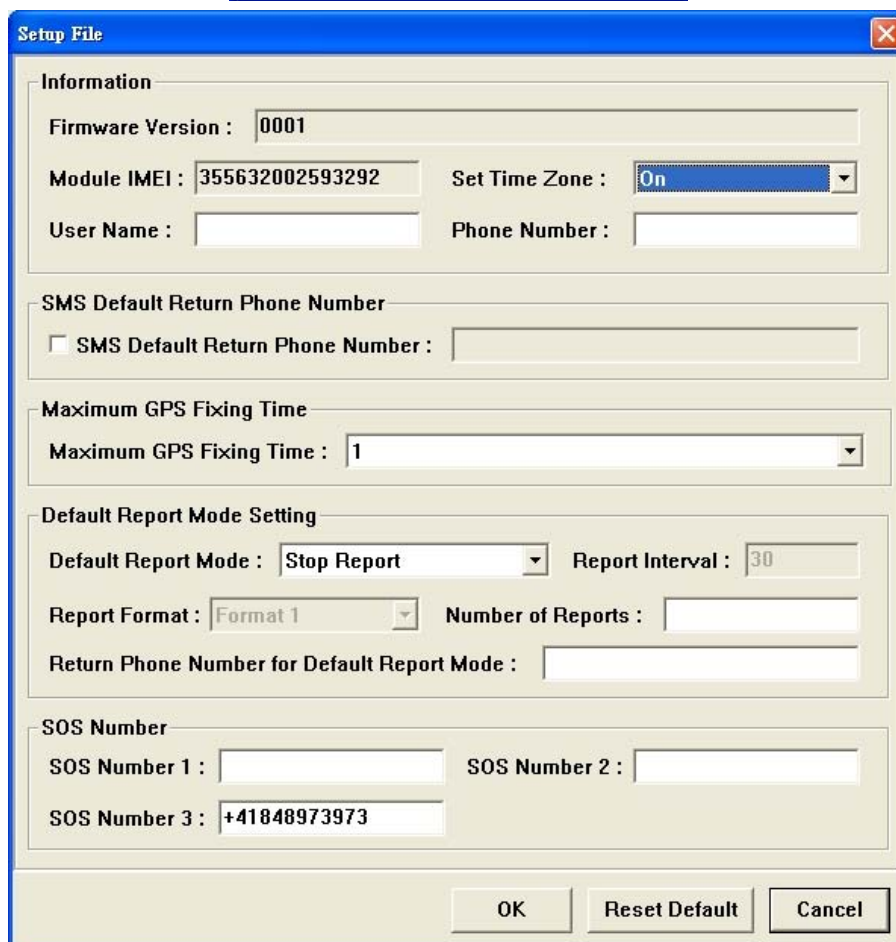
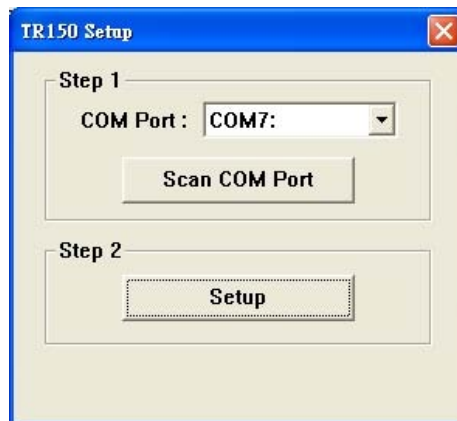
User Name	Receive_Date	Receive_Time	GPS_Latitude	GPS_Longitude	GPS_Date	GPS_Time	GF
-----------	--------------	--------------	--------------	---------------	----------	----------	----

2007/08/23 11:25:03 NUM

Menu item	Description
File > Exit	Close the Call Center program.
Management > User Information 	Display the User Information. You can setup up to 5 users in the Call Center.
Management > User Edit	For deleting a user. The Call Center can only hold 5 users' information at most. If you want to add a new user after you have already set 5 users, please delete an existing one first.
Device > TR150 Setup 	When a TR-150 is connected to your PC, you can do the basic setup for TR-150.
Map > View Tracking Points 	Check this item to mark returned location in the Google Map. When you receive the latest data report from TR-150, it will automatically update the point on Google Map. (Only for SMS Tracking function.)
Map > Export KML File 	Export information to the KML Format. (Only for SMS Tracking function.)
About	Version information.
	Delete user.

5.4 TR-150 Setup

- 1.) Connect the USB cable to TR-150 and the USB port on your PC.
- 2.) Set DIP Switch 3 to "On" position.
- 3.) Turn on the power of TR-150. The status LED will light on red indicating it has already entered the setup mode.
- 4.) Start Call Center program.
- 5.) Click **Device > TR150 Setup** to select the COM port. If you are not sure about which COM port to use, please click "Scan COM Port" button to automatically scan it. Then click "Setup" button to enter setup window.



Information: the basic information of TR-150

Item	Description
Firmware Version	Firmware version of TR-150
Module IMEI	International Mobile Equipment Identity
Set Time Zone	On: The SMS returned by TR-150 will contain a local time. Off: The SMS returned by TR-150 will contain a Coordinated Universal Time, abbreviated UTC.
User Name	Input a user name here.
Phone Number	Input the phone number of this TR-150.

SMS Default Return Phone Number

Item	Description
SMS Default Return Phone Number	TR-150 will send data report or confirmed message back to this return phone number that is in the last field of all SMS tracking commands. If user leaves “ Return Phone Number ” empty in the tracking commands, TR-150 will send report back to “ SMS Default Return Phone Number ”. If “ Return Phone Number ” and “ SMS Default Return Phone Number ” are both empty, TR will send report back to caller ID.

Maximum GPS Tracking Time

Item	Description
Maximum GPS Fixing Time	The time that allows for GPS fixing. If GPS fixing is not achieved in time, it will close GPS and send back the previous location info.

Default Report Mode Setting

Item	Description
Default Report Mode	User can configure TR-150 to perform the “Default Report Mode”. There are 3 report modes: immediate report, period report, stop report (standby). When you select some report mode, the unavailable item will be disabled. After power on the device, TR-150 will perform the “Default Report Mode” automatically. For example, if the default report mode is set to “Period Report” mode, every time when user power on the TR-150, it will send out period reports by default.
Report Interval	Time interval of sending data report for period report mode. The unit is second.
Report Format	Set TR-150 to return message by Format0 or Format1 . (Please see description later in this user manual.)
Number of Reports	Set how many reports will be sent for period report mode?
Return Phone Number for Default Report Mode	After turn on the TR-150, it will perform default report mode and send the data report to this number.

SOS Number

Item	Description
SOS Number	When SOS button is pressed, TR-150 will dial to these 3 numbers and send the location information to them by SMS.
OK	OK to confirm and save.
Reset Default	Reset system to Factory Default.
Cancel	Cancel the Setup.

5.5 SMS Tracking commands and Configuration for SMS Call Center software developer

You can connect one TR-150 to PC and use GlobalSat PC software Call Center to send **SMS tracking commands** and **SMS configurations** to control the other TR-150 which is outside on the road. It can help Call Center service providers to evaluate TR-150 and build their own SMS Call Center efficiently.

Please refer to "[SMS_Call_Center_software_Development_manual_VX.X_EN.doc](#)" for details.

6. Operating the TR-150

6.1 Turn on / Turn off

- **Turn on:** When the device is off, press the Power button for 3~4 seconds to turn on the device. When the device is on, GPS will do cold start to locate its position for the first time with the green GPS LED on. If location is fixed, the LED will be blinking. If the location is not fixed within specified time, it will send back previous location and close GPS function. It is suggested that you stay at outer place or near the window where it can receive the better GPS signal when you turn on the device.

NOTICE: If it did not finish the successful fix after turned on, it may be difficult to get fixed in the weak signal area or on the move.

After it is turned on or received the report command, TR-150 starts the GPS fixing process. User can define the maximum time allowable for this GPS fixing process. If TR-150 finishes the GPS fixing within the time, it returns location data, and then close GPS. If TR-150 can not finish the GPS fixing within the time, it returns previous location data, and then close GPS.

- **Turn off:** When the device is on, press the Power button for 3~4 seconds to turn it off. When the LEDs go out, it indicates that the device is turned off for sure.

6.2 Tracking/Monitoring TR-150 by SMS

User sends following tracking commands to TR-150 to control the device. After TR-150 receives the command, TR-150 will perform the specific report mode. There are five report functions: **Immediate report**, **Period report**, **Stop** (Standby), **Geofence** and **Voice monitor**.

SMS Commands for controlling TR-150

	Report type	Format	Return message
0	Immediate report	?0,IMEI,Report_Format,Return_Phone_Number!	\$0,IMEI,OK!
1	Period report	?1,IMEI,Report_Interval,Number_of_Reports,Report_Format,Return_Phone_Number!	?1,IMEI,OK!
2	Stop	?2,IMEI,Return_Phone_Number!	?2,IMEI,OK!
4	Geofence	?4,IMEI,{[R,longitude,latitude,longitude,latitude],[C,longitude,latitude,radius(meter)]},In_or_Out,Report_Interval,Number_of_Reports,Report_Format,Return_Phone_Number!	?4,IMEI,OK!
6	Voice monitor	?6,IMEI,Return_Phone_Number! Note: If return phone number is empty, TR will call back to Caller ID	?6,IMEI,OK!

Note :

1. Data Report Format:

`Report_Format` = 0 → Format0

`Report_Format` = 1 → Format1

Please refer to description in this chapter later.

2. Return Phone Number:

`Return_Phone_Number`

TR will send data report and return message back to this return phone number.

If `Return_Phone_Number` is empty, TR will send report back to `SMSDefaultReturnPhoneNumber`.

If `SMSDefaultReturnPhoneNumber` is also empty, TR will send report back to caller ID.

3. Number of Report:

`Number_of_Reports` = 0 → continuous report

`Number_of_Reports` = x → X times report

4. Report Interval:

`Report_Interval`

Set Report Interval in seconds.

► SMS Report functions _ Immediate Report

Immediate Report: When TR150 receives the **SMS command**, it will return a SMS to confirm the receipt of command. TR150 starts to get position fixed within the **Maximum GPS Fixing Time**. If it can not fix the position in the period of time, it will return the previous location. When the GPS position is fixed, it will again return the position data.

	Report type	Format	Return message
0	Immediate report	?0,IMEI,Report_Format,Return_Phone_Number!	\$0,IMEI,OK!

The description of SMS

Format	Description
?0	Start sign and function code
IMEI	IMEI of TR
Report_Format	Ask TR to return message by Format0 or Format1. (see description below)
Return_Phone_Number	The report message will be sent to the phone number.
!	End sign

Example: Require immediate report in format1 sent to 626-123456
?0,355632000166323,1,626123456!

► SMS Report functions _ Period Report

Period Report: When TR150 receives the SMS, it will return a SMS to confirm the receipt of command. TR150 starts to get position fixed. When the GPS position is fixed, it will again return the position data, and continue to send back the data by the **Interval Time** you set. You can set the number of report in **Number of reports** field. If you set "0", it will not limit the number of report.

	Report type	Format	Return message
1	Period report	?1,IMEI,Report_Interval,Number_of_Reports,Report_Format,Return_Phone_Number!	?1,IMEI,OK!

The description of SMS

Format	Description
?1	Start sign and function code
IMEI	IMEI of TR
Report_Interval	Time interval of sending data report. The unit is second.
Number_of_Reports	How many reports will be sent? Number_of_Reports=0 → continuous report Number_of_Reports=X → X times report
Report_Format	Ask TR to return message by Format0 or Format1. (see description below)
Return_Phone_Number	The report message will be sent to the phone number.
!	End sign

Example 1: Require continuous 120-sec period report in format1 sent to 626123456
?1,355632000166323,120,0,1,626123456!

Example 2: Require 10 times, 180-sec period report in format0 sent to 626123456
?1,355632000166323,180,10,0,626123456!

► SMS Report functions _ Stop Report

Stop Report: When TR150 receives the **SMS**, it will return a SMS to confirm the receipt of command and stop **all report modes** and back to standby status.

	Report type	Format	Return message
2	Stop	?2,IMEI,Return_Phone_Number!	?2,IMEI,OK!

The description of SMS

Format	Description
?2	Start sign and function code
IMEI	IMEI of TR
Return_Phone_Number	The report message will be sent to the phone number. No report message.
!	End sign

Example:

Send Stop command to disable data report and make GPS off. Return message will be sent to 626123456

?2,355632000166323,626123456!

6.3 Geofence

1. Send SMS command to make TR-150 enter into Geofence mode. The content of the SMS also includes boundary information (rectangle or circular), in or out to send alarm, time intervals of alarm report, number of reports, report format and return phone number.
2. After the TR-150 enter into this mode, the device will start GPS fixing and the GPS is always on. Once TR-150 detects the device in or out the boundary, the TR-150 will send alarm message back to preset number by SMS.

	Report type	Format	Return message
4	Geofence	?4,IMEI,{[R,longitude,latitude,longitude,latitude],[C,longitude,latitude,radius(meter)]},In_or_Out,Report_Interval,Number_of_Reports,Report_Format,Return_Phone_Number!	?4,IMEI,OK!

The description of SMS

Format	Description
?4	Start sign and function code
IMEI	IMEI of TR
{[R,longitude,latitude,longitude,latitude],[C,longitude,latitude,radius(meter)]}	Boundary information: R: rectangle → Follow by two longitudes, latitudes. C: circular → Follow by one longitude, latitude and one radius.
In_or_Out	In_or_Out=in → In the boundary to send alarm. In_or_Out=out → Out the boundary to send alarm.
Report_Interval	Time interval of sending data report. The unit is second.
Number_of_Reports	Set how many reports will be sent? Number_of_Reports=0 → continuous report Number_of_Reports=X → X times report
Report_Format	Set TR-150 to return message by Format0 or Format1. (see description below)
Return_Phone_Number	The alarm message will be sent to the phone number.
!	End sign

Note 1:

User can set up to 10 rectangle or circular boundaries. Each SMS contains one boundary setting. User can send numerous SMS to complete one set of settings, including numerous rectangle or circle boundaries. For example, user want to set the boundary includes 2 rectangles and 1 circle. User has to send 3 SMS, two with rectangle information, one with circle information.

SMS1:

```
?4,IMEI,R,longitude,latitude,longitude,latitude,In_or_Out,Report_Interval,Number_of_Reports,Report_Format,Return_Phone_Number!
```

SMS2:

```
?4,IMEI,R,longitude,latitude,longitude,latitude,In_or_Out,Report_Interval,Number_of_Reports,Report_Format,Return_Phone_Number!
```

SMS3:

```
?4,IMEI,C,longitude,latitude,radius,In_or_Out,Report_Interval,Number_of_Reports,Report_Format,Return_Phone_Number!
```

If user uses numerous SMS in one setting, the `IMEI`, `In_or_Out`, `Report_Interval`, `Number_of_Reports`, `Report_Format`, `Return_Phone_Number` must be the same between each SMS. If above parameters are not the same between SMS, TR-150 only follows **last SMS**.

Note 2:

In Boundary information

```
{[R,longitude,latitude,longitude,latitude],[C,longitude,latitude,radius],}
```

User can set

R: rectangle follows by two longitudes, latitudes.

Or

C: circular follows by one longitude, latitude and one radius.

Example: Rectangle

```
R,E12128.1883,N2342.8117,E12129.2186,N2459.8915
```

Example: Circle (radius is 1000 meters)

```
C,E12129.2186,N2459.8915,1000
```

Note 3:

Example:

- Send **one SMS** to setup Geofence.
- Boundary includes **one rectangle** (two longitudes, latitudes → E12128.1883,N2342.8117,E12129.2186,N2459.8915)
- When TR is out boundary, sending format1, 10 times, 120 sec interval, alarm message to 626123456.

```
?4,355632000166323,R,E12128.1883,N2342.8117,E12129.2186,N2459.8915,out,120,10,1,616123456!
```

Example:

- Send **three SMS** to setup Geofence.
- Boundary includes **one rectangle** (two longitudes, latitudes → E12128.1883,N2342.8117,E12129.2186,N2459.8915) and **two circles** (one longitude/latitude is E12228.1883,N2442.8117, and radius is 1000 meter) (the other longitude/latitude is E12328.1883,N2452.8117, and radius is 1500 meter)
- When TR is out boundary, sending format1, 10 times, 120 sec interval, alarm message to 626123456.

SMS1:

```
?4,355632000166323,R,E12128.1883,N2342.8117,E12129.2186,N2459.8915,out,120,10,1,616123456!
```

SMS2:

```
?4,355632000166323,C,E12228.1883,N2442.8117,1000,out,120,10,1,616123456!
```

SMS3:

```
?4,355632000166323,C,E12328.1883,N2452.8117,1500,out,120,10,1,616123456!
```

6.4 Voice monitor function

1. Send SMS with IMEI and return phone number to TR-150 to enable voice monitor function.
2. Then TR-150 call back.

	Report type	Format	Return message
6	Voice monitor	?6,IMEI,Return_Phone_Number!	?6,IMEI,OK!

The description of SMS

Format	Description
?6	Start sign and function code
IMEI	IMEI of TR
Return_Phone_Number	TR will call back to this phone number.
!	End sign

Note: If return phone number is empty, TR will call back to Caller ID

Example:

User send voice command and make TR call back to 626123456

?6,355632000166323,626123456!

6.5 The format of return SMS from TR-150

The data format is configurable in the SMS tracking commands. The return data format can be following two formats.

Format0 is for general end users who send SMS commands to TR-150 by their cell phone or PDA phone. This format is very easy to read by end users.

Format1 is specifically read by software Call Center that is developed by service provider.

Data Report Format:

Report_Format=0 → **Format0**

Report_Format=1 → **Format1**

Format0:	Example:
Position report Name Time Date GPS position Fix or not	Position report Name 2006/9/15 10:20:39 N2459.8915,E12129.2186 GPS fixed

Format1:
?IMEI,Status,GPS_Fix,Date,Time,Longitude,Latitude,Altitude,Speed,Heading,Number_of_Satellites_In_Use,HDOP!
Example:
?353857014816785,2,3,280807,035825,E12129.2616,N2459.7918,97.2,0.13,142.31,04,2.4!

The description of Format1

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

6.6 SOS function

Presses the SOS Button, the status LED will flash 3 times to indicate that the button is activated. TR-150 will immediately send out an emergency message along with its GPS report to 3 preset phone numbers.

6.7 SMS Configuration

User can configure following parameters into TR-150 by SMS. There are four parts setting as below.

- SMS Default Return Phone Number
- Maximum GPS Fixing Time
- Default Report Mode Setting
- SOS Numbers

Report type	Format	Return message
SMS Default Return Phone Number	?7,IMEI,1,Enable_SMSDefaultReturnPhoneNumber, SMSDefaultReturnPhoneNumber,Return_Phone_Number!	\$7,IMEI,OK!
Maximum GPS Fixing Time	?7,IMEI,2,Maximum_GPS_Fixing_Time, Return_Phone_Number!	?7,IMEI,OK!
Default Report Mode Setting	?7,IMEI,3,Default_Report_Mode,Report_Interval, Number_of_Reports,Report_Format, ReturnPhoneNnumberForDefaultReportMode, Return_Phone_Number!	?7,IMEI,OK!
SOS Numbers	?7,IMEI,4,SOS1,SOS2,SOS3,Return_Phone_Number!	?7,IMEI,OK!

- **Default_Report_Mode:**
 - Default_Report_Mode = 0 → immediate report
 - Default_Report_Mode = 1 → period report
 - Default_Report_Mode = 2 → stop
- **Enable_SMSDefaultReturnPhoneNumber:**
 - Enable or disable SMS Default Return Phone Number.
 - Enable_SMSDefaultReturnPhoneNumber = 0 → Disable
 - Enable_SMSDefaultReturnPhoneNumber = 1 → Enable
- **Maximum_GPS_Fixing_Time:**
 - If GPS is not fixed within the time, it returns previous location and close GPS.
 - The unit is minute.
- **Number_of_Reports:**
 - Set how many report will be sent.
 - Number_of_Reports = 0 → continuous report
 - Number_of_Reports = X → X times report
- **Report_Format:** Ask TR to return message by Format0 or Format1.
- **Report_Interval:** Time interval of sending data report. The unit is second.
- **Return_Phone_Number:** TR-150 will send confirmed message back to this [Return_Phone_Number](#).
 - If user let [Return_Phone_Number](#) be empty, TR-150 will send report back to [SMSDefaultReturnPhoneNumber](#).
 - If [Return_Phone_Number](#) and [SMSDefaultReturnPhoneNumber](#) are both empty, TR-150 will send report back to caller ID.
- **ReturnPhoneNnumberForDefaultReportMode:** Return phone number for default report mode. TR-150 will send report to this number after it is turned on when Default Report Mode is set to immediate report or period report.
- **SMSDefaultReturnPhoneNumber:** Set SMS Default Return Phone Number.

► SMS Configuration _ SMS Default Return Phone Number

Report type	Format	Return message
SMS Default Return Phone Number	?7,IMEI,1,Enable_SMSDefaultReturnPhoneNumber, SMSDefaultReturnPhoneNumber,Return_Phone_Number!	\$7,IMEI,OK!

The description of SMS

Format	Description
?7	Start sign and function code
IMEI	IMEI of TR
1	Setting code for SMS Default Return Phone Number
Enable_SMSDefaultReturnPhoneNumber	0 → Disable 1 → Enable
SMSDefaultReturnPhoneNumber	In the SMS tracking commands (immediate report, period report, stop report, Geofence), if the field <code>Return_Phone_Number</code> is empty, TR-150 will send data report to this <code>SMSDefaultReturnPhoneNumber</code> .
Return_Phone_Number	The confirmed SMS sent to the phone number to indicate the setting is successful.
!	End sign

Example: To configure SMS default return phone number as 313-987654, and send confirmed SMS to 626-123456.

?7,355632000166323,1,1,313987654,626123456!

Example: To Disable SMS default return phone number and send confirmed SMS to 626-123456.

?7,355632000166323,1,0,,626123456!

► SMS Configuration _ Maximum GPS Fixing Time

Report type	Format	Return message
Maximum GPS fixing time	?7,IMEI,2,Maximum_GPS_Fixing_Time,Return_Phone_Number!	?7,IMEI,OK!

The description of SMS

Format	Description
?7	Start sign and function code
IMEI	IMEI of TR
2	Setting code for Maximum GPS fixing time
Maximum_GPS_Fixing_Time	The time that allows for GPS fixing. If GPS fixing is not achieved within the time, it will close GPS and send back the previous location info.
Return_Phone_Number	The confirmed SMS sent to the phone number to indicate the setting is successful.
!	End sign

Example: To configure Maximum GPS fixing time to 5 minutes and send confirmed SMS to 626-123456.
?7,355632000166323,2,5,626123456!

► SMS Configuration _ Default Report Mode Setting

Report type	Format	Return message
Default report mode setting	?7,IMEI,3,Default_Report_Mode,Report_Interval,Number_of_Reports,Report_Format,ReturnPhoneNnumberForDefaultReportMode,Return_Phone_Number!	?7,IMEI,OK!

The description of SMS

Format	Description
?7	Start sign and function code
IMEI	IMEI of TR
3	Setting code for Default report mode setting
Default_Report_Mode	0 → immediate report 1 → period report 2 → stop
Report_Interval	Time interval of sending data report. The unit is second.
Number_of_Reports	Set how many report will be sent. 0 → continuous report X → X times report
Report_Format	0 → Format0 1 → Format1
ReturnPhoneNnumberForDefaultReportMode	Return phone number for default report mode.
Return_Phone_Number	The confirmed SMS sent to the phone number to indicate the setting is successful.
!	End sign

Note:

The configuration is for default report mode (Immediate, Period or Stop) settings. In immediate and stop settings, some fields are unnecessary, please leave these fields empty and separate them by a comma. Please see following examples for detail.

Example: Immediately report. Configure default report mode as **immediate report**, send format1 report data to 313-987654, and send confirmed SMS to 626-123456.

?7,355632000166323,3,0,,,1,313987654,626123456!

Example: Period report. Configure default report mode as **period report**, send 10 times, 180-sec period report in format0 to 313-987654, and send confirmed SMS to 626-123456.

?7,355632000166323,3,1,180,10,0,313987654,626123456!

Example: Stop. Configure default report mode as **stop (standby)**, and send confirmed SMS to 626-123456.

?7,355632000166323,3,2,,,,,626123456!

► SMS Configuration _ SOS Numbers

Report type	Format	Return message
SOS numbers	?7,IMEI,4,SOS1,SOS2,SOS3,Return_Phone_Number!	?7,IMEI,OK!

The description of SMS

Format	Description
?7	Start sign and function code
IMEI	IMEI of TR
4	Setting code for SOS numbers
SOS	SOS numbers
Return_Phone_Number	The confirmed SMS sent to the phone number to indicate the setting is successful.
!	End sign

Example: Configure SOS1, SOS2 and SOS3 as 616123456, 717123456, 818123456, and send confirmed SMS to 626-123456.

?7,355632000166323,4,616123456,717123456,818123456,626123456!

7. Appendix

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.

Note: TR-150 is designed for vehicle and asset for tracking purpose, not for carried by people.