GPS Personal Tracker

User Manual

V1.1

MT80

Contents

1.Product Overview

Thanks for purchasing GPS Tracker MT80.

The MT80 is a very small, light-weight, quality tracking device specially designed for lone workers, children, personal safety, car security or even pets.

Through GPS and GSM or GPRS communications, MT80 can get its position and send the position data back to your mobile phone or server to be displayed on maps.

What's New

- **Compact Size** - only 61mm x 42mm x 15mm
- **Light Weight** - only 50g (with battery)
- **Low Power Consumption** - 4 days in standby mode
- **Fast and Stable Reception for GPS/GSM Signal**
- **Modern and Professional Design**
- **Quad-band GSM** - Workable anywhere all over the world.
- **Clip for watch belt or pet collar**

Features

- SMS and GPRS TCP/UDP Communication
- Track on Demand
- Show Location Directly on Mobile Phone
- Track by Time Interval
- Listen (Voice Wiretapping)
- GSM Blind Area Memory
- Logging Capacity up to 180,000 Waypoints
- SOS Panic Button
- Movement Alarm
- Geo-fencing Control
- Low Battery Alarm
- GPS Blind Area Alarm (in/out).

2.MT80 Characteristics

Items	Specification
Device	
Charging Voltage	DC 4.2-5.5V/400mA (Mini USB port)

Battery	Rechargeable and removable 700 mAh battery (3.7V)
Dimension	61x42x15mm
Weight	50g (with battery)
Operating temperature	-20° to 55° C
Humidity	5% to 95% Non-condensing
Work time	96 hours in standby mode and 10 hours in continuous working mode
LED	2 LEDs showing GPS, GSM status
Button	One SOS panic button and one power On/Off button
Microphone	Built-in microphone for wiretapping
Memory	4MB
GSM	
GSM module	Quad-band GSM 850/900/1800/1900MHz
SIM Card Interface	Support SIM card: 1.8V, 3V
GPS	
GPS Chipset	Latest SiRF Star III high sensitivity single-chip GPS receiver
GPS Sensitivity	-159dB
GPS Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz chip rate
Channels	20 channel all-in-view tracking
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	<2 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/sec
Certification	
Module Approvals	CE, GCF, FCC, RoHS, PTCRB, IC

3.For Your Safety

Read these simple guidelines. Not following them may be dangerous or illegal.

Switch on safely   Do not switch on MT80 when wireless phone use is prohibited or when it may cause interference or danger.

Switch off in hospitals   Follow any restrictions. Switch MT80 off near medical equipment.

Switch off in aircraft   Follow any restrictions. Wireless devices can cause interference in aircraft.

Switch off when refueling Do not use MT80 when at a refueling point. Do not use near fuels or chemicals.

- 4 -

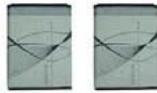|	
Switch off near blasting	Follow any restrictions. Do not use MT80 when blasting is in progress.
Qualified service	Only qualified personnel can repair MT80.
Water resistance	MT80 is not fully water resistant. Keep it dry. Use waterproof bag if necessary.

4.Getting Started

This section will describe how to set up your MT80.

4.1 Tracker and Accessories

MT80 is supplied in a box which includes:

MT80 Main Unit	Two Batteries	Wall Charger	Car Charger	Desktop Charger

USB Cable	USB-to-Serial Adaptor	Clip	CD

4.2 View

Front view	Back view		Side view	

4.3 Functional Parts

1. GSM LED (Green)
2. GPS LED (Blue)
3. Mini USB
4. Microphone
5. SOS Button
6. Power On/Off Button
7. Lanyard Loop

GPS LED - Blue	
Normally ON	SOS button is being pressed and held
Flashing (every 0.1 second)	The unit is being initialized
Flashing (0.1 second on and 2.9 seconds off)	MT80 has a GPS fix
Flashing (1 second on and 2 seconds off)	MT80 has no GPS fix
GSM LED - Green	
Flashing (every 0.1 second)	The unit is being initialized
Flashing (0.1 second on and 2.9 seconds off)	MT80 is connected to the GSM network
Flashing (1 second on and 2 seconds off)	MT80 is not connected to the GSM network
Buttons	
Power On/Off Button	To turn on/off MT80
SOS Button	When it is pressed, MT80 will send its position data back to the authorized phone number or server
Other Connectors	
Mini USB	Used for charging, firmware update, configuration on PC and exporting stored data. (USB-to-Serial Adaptor is required for firmware update, configuration and exporting stored data)
Microphone	for voice wiretapping (listen only)
Lanyard Loop	for connecting lanyard

5.First Use

- For the unit's first use, it will take around 4 hours to fully charge the battery.
  Two ways to charge the battery:
  - Put the battery into the tracker and charge it by wall or car charger
  - Put the battery on the desktop charger

- When charged, insert a workable SIM card and turn the unit on pressing the On/Off button for 4 seconds.

- It is important to keep the unit still and under the open sky for it to successfully get a fix on the satellites.

- 6 -

- Once the tracker has a GPS fix it will start to flash blue (0.1 second on and 2.9 seconds off).
- Check that if Green LED is also flashing (0.1 second on and 2.9 seconds off) which means it has GSM connection

6.Change Password

Command: ****PXXXX

Description: Send this SMS command to change user's password

Note:

The tracker will only accept SMS commands from a user with the correct password. Commands with wrong password will be ignored.

**** is the user's password. The default password is 0000.

XXXX is new password. Passwords are in 4 digits

Example:

Command   *Response*

The password is now changed to 1234.

7.Time Zone

Command: ****ZX

Description: Use this command to correct the time into your local time

Note:

X=0, to turn off this function

X=[1, 65535] to set time difference in minute to GMT.

For those ahead of GMT, just input the time difference in minute directly. For example, 0000Z120.

'-'is required for those behind GMT. For example, 0000Z-240.

This correction is only applied to location reports by SMS and SMS alarms, NOT GPRS.

Example:

 or

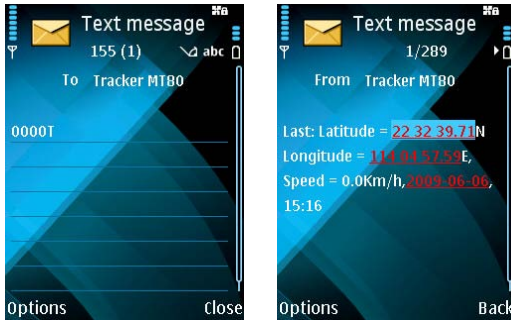*Command*   *Response*

8.Track

8.1 Track by SMS

- **Track on Demand - Reply with longitude, latitude, speed and date**

  Command: ****T

  Description: Get the current location of your MT80, send this SMS to MT80 and it will report its longitude and latitude by SMS.

  Example:

  Command   *Response*

- **Track on Demand - Reply with a Google Map link**

  Command: ****H

  Description: Send this command to MT80 then you receive an SMS with an http link. Click on the link then the location can be shown directly on Google Map.
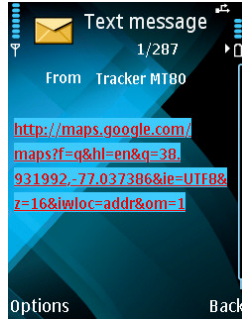
  Note:
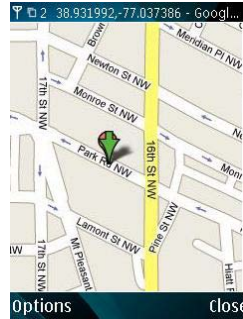
  Only smart phones and PDA support this function.

  Example:

Command   *Response*   *View*

8.2 Track by Calling

Command: ****RX

Description: Enable the tracker to report its longitude and latitude or Google Map link by SMS after a missed call is made to the tracker.

Note:

X=0, turn off this function

X=1, SMS in normal format

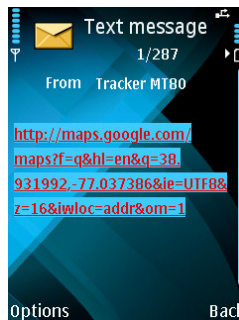X=2, SMS in Google Map format

Example:

Command   *Response*

Then call the tracker and it will reply as follows:

Call   *Response*   or

8.3 Track by Preset Interval
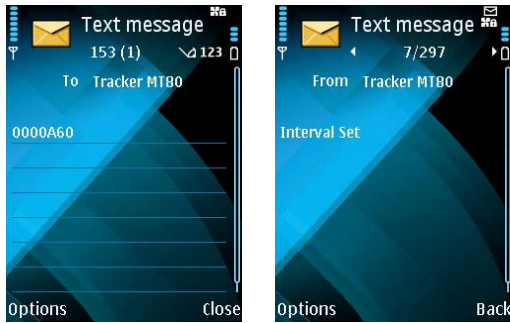
Command: *****A*X

Description: Sets an interval for the tracker to continuously return its location by SMS

Note:

X is the interval in minute with range [0, 999].

If X=0 it will stop tracking by interval)

Example:

Command   *Response*

The tracker will report its location by SMS every 60 minutes.

8.4 Google Earth and Google Map

Download Google Earth from http://earth.google.com/.

Start Google Earth (For more information about Google Earth please refer to http://earth.google.com/) or go to http://maps.google.com in your Internet Explorer

Input the latitude and longitude that you receive from the tracker by SMS and click the search button. Google Earth or Google Maps will display the location for you.
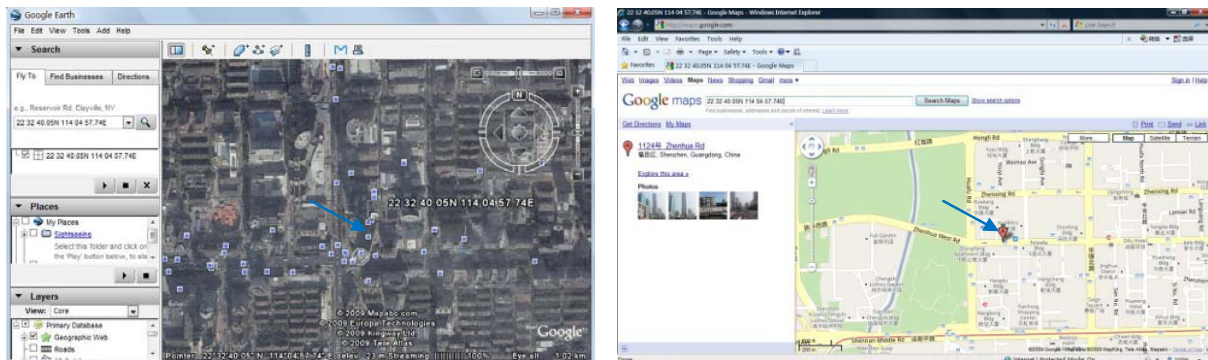
Example:

When you receive: Latitude = 22 32 40.05N Longitude = 114 04 57.74E

Type as the following picture shows:

(Note: you should input the latitude and longitude as: 22 32 40.05N 114 04 57.74E)

And then you can find the location of your tracker:

Or you can use local map software on PDA or car navigation device to input the coordinates.

8.5 Track by MS01

If you have bought our GPS Tracking Software MS01, after proper configuration, you can do tracking on MS01.

GPS Tracking System - MS01

Please refer to MS01 User Guide for more information.

8.6Track by GPRS between Server and Tracker

- **Set Tracker's GPRS ID**

  Command: ****NX

  Description: Send this command to set an GPRS ID for the tracker.

  Note:

  X is the GPRS ID in digit only and 14 digits max.

  Example:

  Command   *Response*

  Tracker's ID is now 0001.

- **Enable GPRS Tracking**

  Command: ****GIP,Port,APN,Username,Password,X,T

  Description: This command is to set IP, Port, APN, etc. to enable GPRS tracking.

  Note:

  IP: xxx.xxx.xxx.xxx

  Port: [1,65534]

  APN defaulted as CMNET.

If no username and password required, just leave them blank.

X=0, turn off GPRS tracking (default);

X=1, enable TCP

X=2, enable UDP

T is the interval of sending GPRS packet with range [0, 65535]. It is in the unit of 10 seconds.

Example:

0000G220.121.7.89,8500,CMNET,trackingmate,6688,1,60   [with APN user name and password]

0000G220.121.7.89,8500,CMNET, , ,1,60   [without APN user name and password]

Command   *Response*

So the GPRS tracking interval is 600 seconds (10 minutes).

For more information regarding GPRS tracking please refer to <MT80 GPRS Communication Protocol>

8.7 Track by GpsGate

The MT80 supports GpsGate Software.

Please contact us or GpsGate for more information of settings.

9. Authorization

Command: ****SX

Description: This is to authorize a phone number for the SOS button for receiving position reports or SMS alarms

Note:

X is the mobile phone number to receive messages.

Example:

- 12 -

Command   *Response*

When the SOS button is pressed, the tracker will send an SMS to telephone number '13888888888'. Other alarm will be also sent to this phone number.

10.Movement and Geo-fence
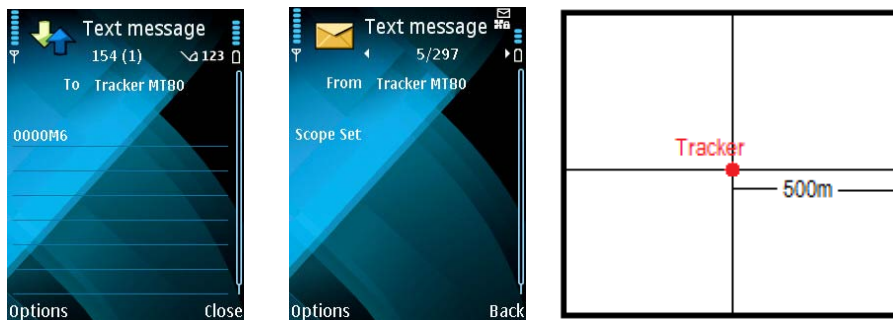
10.1 Movement Alarm

Command: ****MX

Description: Send this command to set movement alarm. When MT80 moves out of a preset square scope, it will send an SMS alarm to the authorized phone number for SOS button.

Note:

X is preset distance to original place

X=0, to turn off this function	=5, 300m
=1, 30m	=6, 500m
=2, 50m	=7, 1000m
=3, 100m	=8, 2000m
=4, 200m	

Example:

Command   *Response*

An SMS alarm will be sent if the tracker holder moves more than 500 meters to the original place.

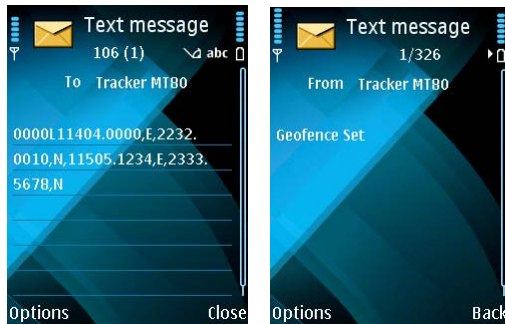### 10.2 Geo-fence Alarm

Command: ****EX or ****LX

Description: Turn on Geo-fencing alarm. When the tracker moves in/out the preset scope, it will send

- 13 -

an SMS alarm to the authorized phone number for SOS.

Note:

1. ****EX is to set alarm when the tracker enters the preset square scope and,

2. ****LX is to set alarm when the tracker exits the preset square scope.

3. Only one alarm can be set in either of above commands.

4. X is the coordinates which include Lower-left X,Lower-left Y,Upper-right X,Upper-right Y. For example: 11404.0000,E,2232.0010,N,11505.1234,E,2333.5678,N

5. Lower-left X should be less than Upper-right X;

6. All longitudes and latitudes should be in ASCII format as follows:

   Longitude: DDDMM.MMMM,E/W. 4 places of decimal. '0' is needed to be stuffed if no value available.

   Latitude: DDMM.MMMM,N/S. 4 places of decimal. '0' is needed to be stuffed if no value available;

7. Send ****M0 to turn off Geo-fence function.

8. Only one alarm can be set in either Movement Alarm or Geo-fence Alarm;

Example:

Command   *Response*

MT80 will send out SMS once it moves out the scope of 11404.0000,E,2232.0010,N,11505.1234,E, 2333.5678,N

11.Listen (Voice Wiretapping)

Command: ****WX

Description: Authorize a phone number to make a silence call to the tracker, the track answers the call automatically and allows the caller to listen to what happens around the tracker. There is no voice indication that the call is in progress.

Note:

X is the telephone number for wiretapping.

Example:

Command   *Response*

When you use 13888888888 to call MT80, it will answer the phone automatically and then you can hear what is happening around the tracker holder.

12.Power Down

Command: ****FX

Description: Make the tracker into power down mode when it is inactive for a period of time. In Power Down states, GPS stops working and GSM enters sleep and stop sending out message until it is activated by message, incoming calls or triggered by buttons.

Note:

X=0, to turn off this function.

X=1~255, to turn on Power Down after a specified period of being inactive. It is in unit of minute.

Example:

Command   *Response*

The tracker will enter power down mode after it is inactive for 10 minutes.
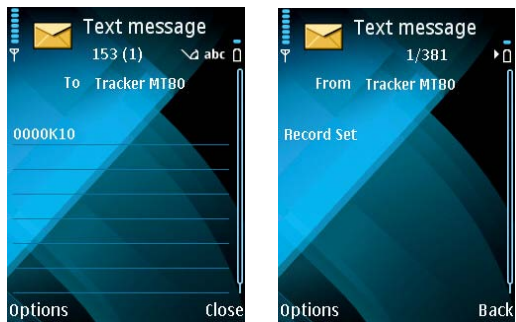
13.Track Log

13.1 Track by Interval

Command: ****KX

Description: Set time interval for logging GPS information. The information is stored within the device memory. When the memory gets full, the newest record will be overwritten on top of the oldest (FIFO - First In, First Out). In that case, only the newest information is stored.

Note:

1. X=0, to turn off this function. X=[1, 65535] to set interval in the unit of SECOND.

2. The logged message is in GPRMC format and includes:

   Date and time

   Longitude

   Latitude

   Speed

   Direction

3. All data, stored within the memory, may be exported to the PC using the USB connector. For this matter the "GPSLog" program has to be used (please refer to < GPSLog User Guide> and <GPRS Communication Protocol> for more information).

4. The device has 4MB internal memory space for storing the track log and is able to store up to 180,000 records within the memory.

Example:

Command   *Response*

The tracker will store GPS data every 10 seconds.

13.2 Auto Log when no GPRS

When there is no GPRS connection, the tracker can store all GPS information triggered by preset tracking interval, alarms, request, or button activation and send this information (FIFO - First In, First Out) to server by GPRS or preauthorized mobile phone by SMS when GPRS connection recovers.

The interval memory can store up to 1500 SMS and 4600 GPRS message.

14.Initialization

Command: default

Description: This is to make all settings back to factory default.

Note:

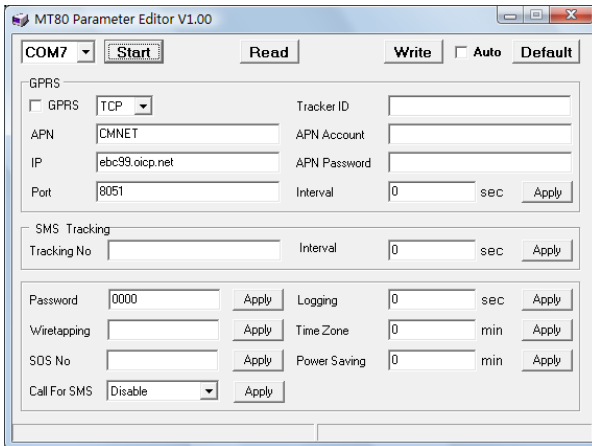When MT80 is on, send 'default' to the tracker to make all settings back to factory default

Example:

Command   *Response*

15.Parameter Editor

The tracker can be configured by computer using the Parameter Editor instead of sending SMS commands.

MT80 Parameter Editor

Please refer to <MT80 Parameter Editor> for more information.

17.Troubleshooting

Problem: Tracker will not turn on	
Possible Cause:	Resolution:
The power button is not pressed long enough	Press and hold the button for 3-5 seconds.
Battery needs charging	Recharge battery for 4 hours
Problem: Tracker will not reply with SMS	
Possible Cause:	Resolution:
Green LED is flashing (on for 1 second and off for 2 seconds)	Make MT80 connected to GSM network.
GSM Network is slow	Some GSM networks slow down during peak time or when they have equipment problems.
Unit is sleeping	Cancel sleeping mode
Wrong password in your SMS or wrong SMS format	Write correct password or SMS format

The SIM card has run out of credit	Replace or top up the SIM card
Problem: Green LED is Flashing (on for 1 second and off for 2 seconds)	
Possible Cause:	Resolution:
No GSM signal	Check with a mobile phone to see if there is a signal in the area or try to call the unit to see if you hear a ring tone.
No SIM card	Insert a working SIM card. Check in phone that the SIM can send SMS message.
SIM card has expired	Check in phone that the SIM can send SMS message. Replace SIM card if needed.
SIM has PIN code set	Remove PIN code by inserting SIM in you phone and deleting the code.
SIM is warped or damaged	Inspect SIM, clean the contacts. If re-inserting does not help try another to see if it will work.
Roaming not enabled	If you are in a different country your SIM account must have roaming enabled.
Battery is low	Recharge the unit and the GSM will start working.
Problem: Blue LED is Flashing (on for 1 second and off for 2 seconds) or the SMS received starts with 'Last...'	
Possible Cause:	Resolution:
Unit does not have clear view of the sky	Move the unit to a location where the sky is visible. Tall buildings, trees, heavy rain, can cause problems with the GPS reception.
Bad GPS reception	Place the front side of MT80 towards sky
Battery is low	Recharge the unit and the GPS will start working.
Problem: Unit Fails to Connect to Server via GPRS	
Possible Cause:	Resolution:
SIM card in MT80 does not support GPRS function	Enable SIM card GPRS function.
GPRS function of MT80 is turned off	Turn on GPRS function of MT80.
Incorrect IP address or PORT	Get the right IP address and PORT and reset to MT80.
GSM signal is weak	Move the unit to a location with good GSM reception.

Contacts

If you encounter any problems when using our products, and cannot solve them by yourself, please contact our technical support team by writing an E-Mail. We will be pleased to help you.