

GSM/GPRS/GPS TRACKER TK102-2 USER MANUAL

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1 Summary

Operation is based upon existing GSM/GPRS network and GPS satellites, this product can locate and monitor any remote targets by SMS or GPRS.

2 Applications

- Rental vehicle, boats / Fleet management etc
- Protection of capital goods and property
- Protect children / elderly / disabled / pets etc
- Provide peace-of-mind for businessmen
- Personnel management
- Covert Tracking
- Etc.

3 Hardware Description

3.1 Front face



3.2 Rear face



3.3 Side face

You can update software, charge battery from here

You can press the "SOS" buttons for 3s for emergent help

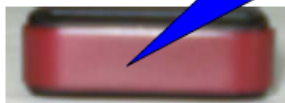
GSM/GPRS antenna is inside

Indicator for signals.

Turn on / off the unit here.

Microphone

3.4 Bottom face



3.5 Interior



| | |
|-------------------|---|
| Dim. | 64mm x 46mm x 17mm(1.8"*2.5"*0.65") |
| Weight | 50g |
| Network | GSM/GPRS |
| Band | 850/1800/1900Mhz or 900/1800/1900Mhz |
| GPS chip | SIRF3 chip |
| GSM/GPRS module | Siemens MC55/Siemens MC56 or Simcom300/Simcom340 |
| GPS sensitivity | -159dBm |
| GPS accuracy | 5m |
| Time To First Fix | Cold status 45s Warm status 35s Hot status 1s |
| Car charger | 12—24V input 5V output |
| Wall charger | 110 - 220V input 5V output |
| Battery | Chargeable changeable 3.7V 800mAh Li-ion battery |
| Standby | 48hours |
| Storage Temp. | -40°C to +85°C |
| Operation Temp. | -20°C to +55°C |
| Humidity | 5%--95% non-condensing |

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5 Utilisation

5.1 SIM card installation

Information: Make sure that there is **no call-forward** and **call display is on**, and **PIN code off**.

- 1 Open the rear cover, and pick out the battery.
- 2 Push the foil along and turn it left.



- Put the SIM card into the holder, and turn the foil right and fasten it in place.



5.2 Battery and Charger

Charge the battery to capacity in 8 -12 hours the first time. Use the battery and charger provided by the manufacturer. After first use, the battery can be charged fully in 3-5hours.

5.3 Start-up

- Insert the SIM card and battery
- Go outdoors
- Turn on the unit **outdoors** by pressing the “on/off” button until the LED is on.
- For first use, please initialize the unit and restore it to default setting. (Please refer to **5.4** for instruction.)
- In about 40seconds, the unit will acquire the GPS signals as well as the GSM signals. The LED will flash every 4 seconds when the unit is operative
- When the unit is operative, you can proceed to do all the following settings.

5.4 Initialization

This setting will perform a complete “factory reset”

Please note “lower case” for all SMS texts.

- *To activate send SMS:* “begin+password” by SMS to the unit, it will reply “begin ok” and initialize all the settings. **(default password: 123456)**

5.5 Change the password

If you want to maintain the password 123456 – skip this point

- *To change send SMS:* password+old password+space+new password - to change the password.
- **You can only use six digits as password!**

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5.6 Authorization

Information: Maximum 5 GSM numbers can be authorized. However when calling the tracker from a GSM phone only this number will receive the relevant information. By SOS-alarm all authorized numbers will receive the coordinates!

- Calling the tracker 10 times, will automatically authorize this GSM number
- *To activate send SMS:* admin+password+space+GSM-number
- *Answerback:* "admin ok!" by SMS.
- *To de-activate send SMS:* noadmin+password+space+authorized number
- Make sure to enter country code of GSM e.g. +41 for Switzerland
- Important – the additional four authorized numbers must be programmed using the GSM with the first number – if the additional number is correctly programmed the answerback will be "admin OK"

5.7 Real-time polling

Information: To request precise location of the Tracker – you must call it

If there is no authorized number, then the Tracker will send the Geo-info to the GSM that is making the call.

If there is (are) one or more authorized number(s), then the Tracker will only respond to when called by one of these numbers.

When calling the Tracker it will ring 2 to 5 times, then it will hang up (hence no cost) and report a real-time Geo-info as below:

090723164830,+13616959853,GPRMC,214830.000,A,3017.2558,N,09749.4888,W,26.9,108.8,230709,,,A*61,F, Help me,imei: 359587013388627,05,264.5,F:3.79V,0,122,13990,310,01,0AB0,345A

- = 090723164830=Serial no.(year, month, date, hour, minute, second)
- = +13616959853=Authorized no.
- = GPRMC,214830.000,A,3017.2558,N,09749.4888,W,26.9,108.8,230709,,,A*61=standard GPRMC sentences.
- = F=GPS signal is full, if it indicate " L ", means GPS signal is low
- = Help me=It is the SOS message, and this section is blank for tracking message
- = IMEI=Identify #.of the tracker
- = 05=Means you get 5 GPS fix (from 3 to 10)
- = 264.5=Altitude
- = F: 3.79V =Battery voltage
- = 0=Means the tracker is NOT charged. 1 means the tracker is charged
- = 122=The length of the GPRS string
- = 13990=Checksum
- = 310=MCC Mobile Country Code
- = 01=MNC Mobile Network Code
- = 0AB0=LAC Location area code
- = 345A=Cell ID



5.8 Auto-Track

Information: With Auto – Track the Tracker will report Geo-info at determined intervals to the authorized numbers for 5 times:

- *To activate send SMS:* t030s005n+password to the unit - (s: second, m: minute, h: hour). The setting must be in 3 digits and at maximum 255
- *Example:* t005m010n123456 = tracker will report Geo-info every 5 min. 10 times
t001h020n123456 = tracker will report Geo-info every hour 20 times
t001h***n123456 = tracker will report Geo-info every hour until switched off
- *To de-activate send SMS:* notn+password (e.g. Notn123456)
- Remark: the interval must not be less than 5s

5.9 Voice Surveillance

In this mode, the user can dial up the unit to monitor the surrounding noise transmitted through the microphone. (please refer to **5.10** for instruction).

5.10 Modes switch between “track” and “monitor”

Information: the default mode is “track”. To hear (listen) the tracker has to be set to monitor mode.

- *To activate send SMS:* monitor+password
- *Answer back:* “monitor ok!”
- *To de-activate & restore tracker mode send SMS:* tracker+password, it will reply
- *Answer back:* “tracker ok!”

5.11 Geo-fence

Information: It is possible to set up a geo-fence for the unit to restrict its movements within a specified area. To set the area it is necessary to first program the latitude & longitude of the upper left corner. Followed by the latitude & longitude of the bottom right corner. This will create a square = Geo-fence.

The tracker should be inside of the Geo-fence for 3 to 10 minutes prior to movement. The Geo-zone should not be too small as the accuracy or the GPS signal may cause false alarm.

This function will be out of effect after the unit moves outside the district.

Geo information (latitude & longitude) can be obtained:

<http://www.netzwelt.de/geocoding/index.html>
<http://www.mapsofworld.com/utilities/world-latitude-longitude.htm>
<http://www.gorissen.info/pierre/maps/googleMaplocationv3.php>
<http://pagesperso-orange.fr/universimmedia/geo/loc.htm>
<http://www.travelmath.com>

- *To activate send SMS:*
stockade+password+space+latitude,longitude,latitude,longitude
- *Example* stockade123456 48.389603,10.9122170;48.376549,10.927706
- *To de-activate send SMS:* nostockade+password

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5.12 Movement alert

Information: An alarm is sent when the Tracker is moved from a specific location. To avoid false alarm the tracker has to be moved ca. 500m before the alarm is released. The Tracker has to remain in the location for 3 to 10 minutes before movement. This setting remains after the tracker is switched off and on. This function will be out of effect after the unit moves outside the district.

- *To activate send SMS:* move+password
- *Answerback:* "move ok!"
- *Alarm if moved:* "Move" along with a Geo-info to the authorized numbers.
- *To deactivate:* nomove+password

5.13 Speeding alert:

Information: Set up: This function will advise you when the tracker is moving faster than a predetermined speed

- *To activate send SMS:* speed+password+space+080 (the speed is 80km/h),
- *Answerback:* "speed ok!"
- If speed exceeds 80 km/h, the unit will send SMS speed+080+Geo-info to the authorized numbers. It will alarm one time in each setting.
- *To deactivate:* nospeed+password

5.14 IMEI checking:

- Send SMS imei+password to the unit to check the IMEI number.

5.15 OS button

Information: The SOS button can be used to send an alarm. Press the SOS for 3 seconds, it will send "help me!+ Geo-info" to all the authorized numbers every 3 minutes.

- *To deactivate:* It will stop sending such a SMS when any authorized number reply SMS "help me!" to the tracker.

5.16 Low battery alert

Information: When the battery is almost empty (below 3.7V) the tracker will send an alert SMS every 30 minutes: low battery+Geo-info.

5.17 Hidden number tracking

Information: Irrespective what number you use to call the tracker, the tracker will reply SMS with the hidden number&Geo-info to all the authorized numbers.

- *To activate send SMS:* "hide number" to set up the hidden number.
- *To deactivate:* "nohide number" to delete the hidden number.

5.18 Time Zone

Information: Every Geo-Info SMS will show date & time – if this information is incorrect you have to set it.

- *To activate send SMS:* time+space+zone+password+timezone
- *Example:* time zone 123456 1 (time zone 1 for Switzerland)
- *Answerback:* "Time OK!"



5.19 SMS Center

Information: All coordinates will be sent to a determined GSM number

- *To activate send SMS:* adminsms+password+space+GSM number - to set the SMS center.
- *Example:* adminsms +4179xxxxxxxxxxx
- *Answerback:* "ADMINSMS OK!"
- *To deactivate:* noadminsms123456

5.20 GPRS setting

Information: The tracker can also be used over the GPRS. In order to use GPRS function, the user needs to set IP, Port and APN (access point name) by either cell phone, or specific PC software. We will be setting up an Online-portal for this purpose.

- *To activate an IP address and port send SMS:* adminip+123456+space+IP address+space+port.
- *Example:* adminip123456 80.22.38.12.1000
- *Answerback:* "adminip OK"
- *To deactivate:* noadminip123456

Set APN

- *To activate an APN send SMS:* apn+123456+apn name
- *Example:* apn+123456+swisscom
- *Answerback:* "APN ok"
- *To deactivate:* noadminip123456

As soon as the IP & Port & APN is set up, the user can make a call or send SMS to tracker. The tracker will hang up the telephone and report the coordinates to IP address.

The message sent by tracker to IP address is as following:

- Serial number + authorized number + GPRMC + GPS signal indicator + command + IMEI number + CRC16 checksum.
 - = 090723164830=Serial no.(year, month, date, hour, minute, second)
 - = +13616959853=Authorized no.
 - = GPRMC,214830.000,A,3017.2558,N,09749.4888,W,26.9,108.8,230709,, , A*61=standard GPRMC sentences.
 - = F=GPS signal is full, if it indicate " L ", means GPS signal is low
 - = Help me=It is the SOS message, and this section is blank for tracking message
 - = IMEI=Identify no.of the tracker
 - = 05=Means you get 5 GPS fix (from 3 to 10)
 - = 264.5=Altitude
 - = F: 3.79V =Battery voltage
 - = 0=Means the tracker is NOT charged. 1 means the tracker is charged
 - = 122=The length of the GPRS string
 - = 13990=Checksum
 - = 310=MCC Mobile Country Code
 - = 01=MNC Mobile Network Code
 - = 0AB0=LAC Location area code
 - = 345A=Cell ID

5.21 Goggle Maps and SMS

The SMS will be received in following format:

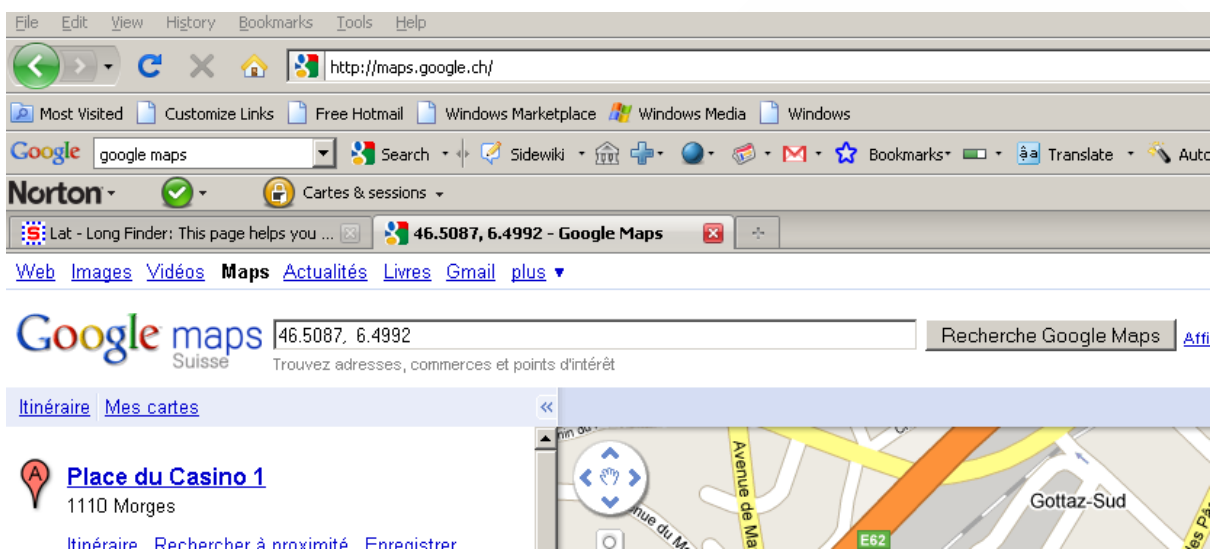
Lat: 46.5110980 long: 6.499560 speed:043.0 20/01/10 13:42 bat:F imei 32483234343

Lat = latitude // Long = longitude // speed = speed in km/hr // date // time

// Bat F = full, L = low / signal F = full, L = low

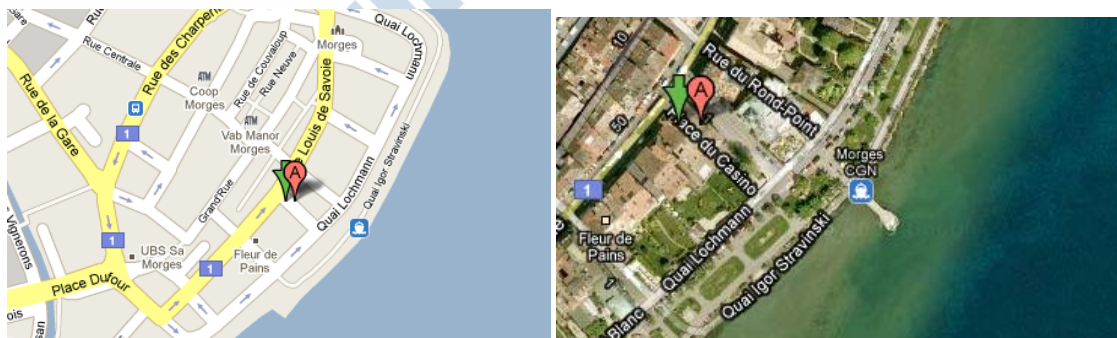
Go to <http://maps.google.com> 1st enter "lat" 2nd enter "long" data (the other data such as speed etc are irrelevant for tracking)

For example: 46.5087, 6.4992



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You can then choose between map or satellite image



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| Command | Description | SMS format | Example |
|----------|---|--------------------------------------|---|
| Password | Change password | Password+old pw+space+ new pw | password123456 000134 |
| Admin | Authorization | Admin+password+space+GSM# | admin123456 +4179xxxxx |
| adminsms | SMS center | Adminsms+pw+space+SMScenter# | adminsms123456 +4179xxxxx |
| Adminnip | IP & PORT (GPRS) | Adminip+pw+space+IP+space+port | andminip123456 83.37.1.1.899 |
| Tsn | Auto Track | T030s005n+password | t030s005123456 |
| Tracker | Tracking mode | Tracker+password | tracker123456 |
| Monitor | Listening mode | Monitor+password | monitor123456 |
| Fencing | Geo-fence | Stockade+pw+space+speed | stockade123456 48.567185, 10.051248 ; 48.555666,10.777888 |
| move | Movement alarm | Move+password | move123456 |
| speed | Speed alarm | Speed+password+space+speed | Speed123456 080 |
| Begin | Initilisation | Begin+password | begin123456 |
| IMEI | IMEI checking | IMEI+password | imei123456 |
| Help me | SOS alarm | Press and hold SMS button 3 to 5 sec | |
| Tracking | Activate tracking in an area where there is no GPS signal | Tracking + password | tracking123456 |
| APN | APN initialisation | apn+password+space+APN | apn123456 swisscom |
| APN user | APN user | Apnuser+pw+space+username | apnuser123456 joe |
| APN pw | APN password | Apnpasswd+pw+space+pw | Apnpasswd123456 abc123 |

Notes:

- The GPRS supports TCP or UDP protocol, so please confirm whether your GPRS webserver supports TCP or UDP.
- Use a SIM card that has GPRS function.
- Pls use the following SMS to set up GMT time in the SMS for the tracker time zone+password+space+ your location GMT TIME
- Pls use the following SMS to set up YOUR website in the SMS for the tracker home+password+space+ your WEBSITE
home+password+space+space (if there is no website in the SMS)