

# TK102-NANO



## DETAILED USER GUIDE

VERSION 4.9

Thank you for purchasing TK102-NANO. Please read this manual carefully before using this product. Please note that product specifications and information in this user guide are subject to changes without prior notice. Any changes will be integrated in the latest release. The manufacturer assumes no responsibility for any errors or omissions in this document.

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## **1. Summary**

TK102-NANO can locate any remote target by using Geographic Locating System and send instant SMS or Internet reports to the user by using GSM and GPRS network.

## **2 Applications**

- Vehicle rental, Fleet management etc
- Bike & Motorbike tracking.
- Personal tracking
- Vehicle security
- Asset Tracking

## **3 Hardware Description**



### 3.3 Bottom



### 3.4 Front



### 3.5 Interior



## 4 Specs.

Content	Specs.
Dimensions	64mm x 46mm x 17mm ( 1.8" x 2.5" x 0.65" )
Weight	50g
Network	GSM/GPRS
Band	850/900/1800/1900Mhz
GPS chip	SIRF3 chip
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	Rechargeable 3.7V 1000mAh Li-ion battery
Standby	16 hours to 30 days depending on usage and standby mode
Storage Temp.	-40°C to +85°C
Operation Temp.	-20°C to +55°C
Humidity	5%--95% non-condensing

## 5 Usage

### 5.1 SIM card installation

Please make sure that your SIM card is activated and that PIN code request is disabled. If you are using contract SIM card and would like to use GPRS tracking, you may need to contact your SIM card network to check if your internet data access is active.

#### Steps:

5.1.1 Open the rear cover and remove the battery.

5.1.2 **If you intend to use GPS Data logging**, please insert your Micro SD Card to the slot as seen on the guide picture below. If not, you can move on to the next step.



5.1.3 Insert the Standard SIM card into the sim card holder tray. **Please note that Micro and Nano sim cards are not supported.**



## 5.2 Battery and Charger

The battery should be charged between 8 - 12 hours for the first time. Please use the battery charging cradle provided. The battery charging cradle is located under the soft pads holding the GPS unit. This tracker uses built-in Li-ion battery technology, and a fully charged battery can power the TK102-NANO from 16 hours up to 30 days depending on usage and standby mode. After the first use, the battery should be charged for 2-4 hours.

### Cautions:

Do not puncture, heat or modify li-ion batteries. If at any time you witness a battery starting to get hot or swell up, discontinue charging process immediately. Improper usage of li-ion batteries may cause the battery to explode.

## 5.3 Startup

- Please make sure you are testing your TK102-NANO outdoors as GPS technology **will not work accurately indoors.**
- Turn on the unit by pressing the “on/off” button until the indicator is on.
- In 10 to 40 seconds it will begin to work and acquire GPS and GSM signal. The indicator will keep flashing frequently when its searching for signal.

- Once GSM and GPS connection is established, the led light will start flashing less frequently.

While reading the set-up commands, you will notice that some words are separated by + or space.

+ means two words should be written without a space, as one word.

Space means a space should be left between two words.

e.g reset+123456 means the command you should send to the tracker is **reset123456**

sleep+123456+space+shock means the command you should send to the tracker is

**sleep123456 shock** (there is a space between 6 and s)

## 5.4 Changing your password

**Command: password+old password+space+new password**

**Response: password OK**

e.g. **password123456 888888**

If you forget your password, you can restore it to the default password using

the command **adminpassword13142324** .Please note that it is not necessary

to change the password unless you intend to disclose the phone number of your tracker

to a third party.

## 5.5 Authorization

If you intend to use geo-fence, shock, movement or overspeed alarms, please register yourself to the unit as an authorized number. Up to 5 numbers can be authorized. If you call the tracker for 10 times continuously and get its position , it will save your mobile phone number as the authorized number automatically. Alternatively, you can authorize your phone using the sms command below;

**Command: admin+password+space+cell phone number   Response:**

**admin ok!**

**e.g   admin123456 +447776665544**

The other authorized numbers has to be set-up by the first authorized number.

**Once a user (phone number) is authorized, TK102-NANO will not reply to phone calls from unauthorized numbers with a location report. However, it will still respond to SMS commands as long as the password is correct. Alarm notifications can only be sent to authorized numbers.**

**Deleting the authorized number:**

**Command : noadmin+password+space+authorized number**

**e.g.   noadmin123456 +447776665544**

**You have to enter your phone number in +44 international format for TK102-NANO to be able to recognize your phone number. When entering your phone number in international format, do not forget to drop the first 0 before your number. For instance, 07771112233 should be entered as follows ; +447771112233**

## 5.6 Easy SMS Text message locating

If there aren't any authorized numbers set-up, TK102-NANO will reply to all calls with a location report. If there are authorized numbers set-up, TK102-NANO will only send location reports to the authorized numbers. The SMS Text message report will include coordinates, current speed & time. There will also be a direct Google Maps link for smartphone users.



## 5.7 Interval tracking

TK102-NANO can send automatic location reports at set intervals. If SMS mode is active, reports will be sent as SMS Text messages. If GPRS tracking mode is active, updates will be uploaded to the online tracking server.

**Command: fix030s\*\*\*n+password**

TK102-NANO will not respond to this message but it will start updating its location continuously at 30 seconds intervals.

e.g. **fix030s\*\*\*n123456**

Every 30 seconds is an ideal setting for GPRS (internet live tracking). Increasing this may reduce your mobile internet data usage. Size of each data package sent in GPRS mode is approximately 150 bytes.

**To cancel interval tracking:**

**Command: nofix+password e.g.**

**nofix123456**

## 5.8 Exact street address

You must set up the APN of your SIM card provider before using this function. If your network requires a username and password for GPRS login, please refer to sections 5.31 to configure the APN, user name and password for GPRS login.

**Command: address+password**

**Response: No 2, High Street, Bristol, BS1 2A e.g.  
address123456**

## **5.10 Location based service (LBS) / Cell-ID locating**

If the TK102-NANO cannot establish a solid GPS Fix, it will calculate its location using Cell-id GSM locating. Location reports will include the GPS coordinates of the last known position as well as a LAC code. Entering the LAC code to the “Manual Track” menu of web tracking platform will enable you to see the tracker’s current location. You can also send

command “address+password” to the tracker to request exact address. TK102-NANO will automatically switch to tracking by LBS in GPRS mode. Accuracy of LBS also known as Cell-id Tracking depends on the distance to the nearest GSM Network Cell Tower or Base Station. In urban areas this accuracy usually varies between 25-100 meters.

## **5.11 Monitor (Voice Surveillance)**

TK102-NANO is in Tracking mode by default. When monitor mode is activated, it will automatically answer incoming calls, rather than replying with location information.

**To activate monitor mode:**

**Command: monitor+password**

**Response: monitor ok! e.g.**

**monitor123456**

Now the TK102-NANO will answer your calls and you will be able to listen through the built-in high sensitivity microphone.

**To switch back to tracker mode**

**Command: tracker+password**

**Response: tracker ok! e.g.**

**tracker123456**

## 5.12 Data logging

**Auto logging:** If the TK102-NANO loses GSM or GPRS signal, it can store the tracking position and alerts automatically on the flash drive upon the pre-set conditions.

When GSM reception is re-established, all the event alerts will be auto-sent to the authorized numbers or online tracking server.

### Logging at preset intervals:

**Command: save030s005n+password**

**Response: save ok**

**e.g. save030s005n123456**

Once set, TK102-NANO will store the lat, long locations every 30 seconds for 5 times. (S: second, m: minute; h: hour).

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### Continuous logging:

**Command: save030s\*\*\*n+ password**

**Response: save ok**

**e.g. save030s\*\*\*n123456 Logging**

### Clearance:

**Command: clear+ password**

**Response: clear ok e.g.**

**clear123456**

**Logging Volume:** Built-in flash 1MB (store about 16,000 positions); This can be extended by adding a Micro SD card to the slot located under the Sim Card Slot. A 2gb Micro SD card is sufficient to record location data for up to 10 months.

Data Logging function also enables you to use this tracker as a GPS Logger. . You can download the location data to your pc by using the free PC Software provided through USB connection.

## 5.14 Shock Sensor Alarm

Shock sensor alarm is deactivated by default. **To activate:**

**Command:** shock+password

**Response: Shock is activated! e.g.**

**shock123456**

Now when TK102-NANO detects vibration, it will send SMS “Sensor alarm+location” to authorized numbers.

**To cancel shock sensor alarm:**

**Command: noshock+password e.g.**

**noshock123456**

**Shock sensor sensitivity configuration:**

The shock sensor module has three different sensitivity settings;

**First level:** Alarm will be triggered after detecting single vibration.

**Command: sensitivity+password+space+1 e.g.**

**sensitivity123456 1**

**Second level:** Alarm will be triggered after detecting 8 vibrations in 2 seconds.

**Command: sensitivity+password+space+2 e.g.**

**sensitivity123456 2**

**Third level:** Alarm will be triggered after detecting 25 vibrations in 5 seconds.

**Command: sensitivity+password+space+3 e.g.**

**sensitivity123456 3**

## 5.15 Geo-fence

This feature allows you to create safety zones. When the TK102-NANO enters or leaves this zone, it will send geo-fence alarm warnings to authorized numbers.

To be able to configure geo-fence TK102-NANO has to stay stationary for 5 minutes. After 5 minutes proceed as follows;

**Command: stockade+password+space+latitude,longitude; latitude,longitude**

In case of breach, it will respond with SMS “stockade!+location” to authorized phone numbers every 3 minutes.

Note: The first latitude&longitude is coordinate of the top left corner of the Geo-fence, while the second latitude&longitude is the coordinate of the bottom right corner. **e.g.**

**stockade123456 51.460959,-2.622643;51.456842,-2.604446**

You can obtain coordinates of any location from google maps by right clicking to the desired location and selecting “what’s here?” **To cancel:**

**Command: nostockade+password e.g.**

**nostockade123456**

## 5.16 Movement alarm

To be able to activate movement alert TK102-NANO has to stay stationary for 5 minutes. After 5 minutes proceed as follows;

**Command: move+password+space+0200**

**Response: move OK e.g. move123456 0200**

This will activate the movement alert with an area radius of 200 meters. Maximum radius limit is 999 meters. In case of such a movement, it will reply SMS “Move+ latitude & longitude” to the authorized numbers in 3 minutes intervals.

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Note: Setting the radius less than 100 meters may result in false movement alerts. The fault alert occurs if GPS position is miscalculated due to bad GPS reception. Inaccurate GPS reading will cause the TK102-NANO to think that it is in a different location, possibly farther from its current location, thus the processor will accept this as a movement and trigger the movement alarm.

**To cancel movement alarm:**

**Command: nomove+password e.g.**

**nomove123456**

## **5.17 Over speed alarm:**

**To activate:**

**Command: speed+password+space+080** (in km/h)

**Response: speed ok! e.g. speed123456 080**

When the speed exceeds 80 km/h, it will send the following SMS to authorized numbers every 3 minutes: “speed+080!+location” **To cancel:**

**Command: nospeed+password e.g.**

**nospeed123456**

## **5.18 SOS alarm**

TK102-NANO is equipped with an SOS button. In case of emergency, pressing this button will notify authorized numbers with three text message followed by a phone call. The SOS alarm is activated by default and the SOS button is enabled.

**To disable the SOS button:**

**Command: sos+password+space+off e.g.**

**sos123456 off** **To enable the SOS button**

**Command: sos+password+space+on e.g.**

**sos123456 on**

## **5.19 Low battery alarm**

Low battery alert helps users to know when the battery of TK102-NANO is low. It sends 3 notifications to authorized numbers; at %10 , at %5 and just before it's completely flat.

Low battery alert is activated by default. To activate;

**Command: lowbattery+password+space+on**

e.g. **lowbattery123456 on** To deactivate:

**Command: lowbattery+password+space+off e.g.**

**lowbattery123456 off**

## 5.20 GPS blind Spot alarm

This function is deactivated by default, to activate:

**Command: gpssignal+password+space+on e.g.**

**gpssignal123456 on**

Once activated TK102-NANO will send sms notifications to authorized numbers when it loses GPS reception.

**To deactivate:**

**Command: gpssignal+password+space+off e.g.**

**gpssignal123456 off**

## 5.22. Standby modes

### Timed standby after 5 minutes

When activated, after having no activity (call or sms commands) for 5 minutes, TK102-NANO will change to standard standby mode; GPS module and led light will be OFF, GSM module (phone line) will still be ON. It will wake up and turn the GPS module ON only if you call it to request position or send an SMS command.. Please note if movement or shock sensor alarm active this standby mode will not work.

**Command: sleep+password+space+time**

**Response: sleep time ok e.g. sleep123456**

**time**

### Standby with shock/movement sensor

With this mode TK102-NANO will change to shock sensor standby mode after being stationary for 5 minutes without any vibration or movement,.

GPS module and the led light will shut off, GSM module will still be ON. As the GSM module will be ON, you will still be able to communicate with the TK102-NANO. Vibration, movement, calling the tracker or sending an SMS message can wake it back up. **To activate;**

**Command: sleep+password+space+shock**

**Response: sleep shock ok e.g. sleep123456  
shock**

### **Deep standby mode with shock sensor**

When activated, after being stationary for 5 minutes without any vibration or movement, TK102-NANO will change to deep standby mode with shock sensor. GPS, GSM and led light will be OFF. Only vibration or movement can wake the tracker back up from Deep Sleep by Shock Sensor mode. Once it's awake, it will automatically send a notification message to the authorized numbers. As the GPS and GSM modules will be OFF, you won't be able to communicate directly with the tracker. However, if you send any SMS command, it can receive and process this command as soon as it wakes up from Deep Sleep mode.

For constant live internet tracking (GPRS), deep standby mode with shock sensor provides the longest battery life with a single charge as the GSM module (phone line) will also be OFF.

Please note that the auto interval setting used for live tracking will override this the standby and keep the TK102-NANO awake so GPRS economy mode should also be activated ;

**Command: sleep+password+space+deepshock”**

**Response: sleep deepshock ok e.g. sleep123456  
deepshock**

**Command: less+space+gprs+123456+space+on**

**Response: less gprs on ok e.g. less gprs123456 on**

If there are registered authorized numbers, each authorized number will receive a notification every time it wakes up from standby with a movement or vibration. Please use the command below if you do not want to receive SMS notifications whenever your tracker wakes up from deep sleep ;

**Command: wake+password+space+off e.g.  
wake123456 off**



## **Schedule work standby mode**

With scheduled work standby mode TK102-NANO is able to turn itself completely off and only wake up at pre-set intervals. When it wakes up it will work for 5 minutes, report its location (SMS or internet) and switch OFF. If you are using TK102-NANO in live internet tracking mode and would like to use schedule work mode, do not forget to activate less gprs mode as otherwise the auto update interval setting will override the standby. To activate send commands below;

**Command: schedule+password+space+time interval**

**Response: schedule ok**

Please check below for time interval settings ; m = minutes , h = hours , d = days . Maximum schedule setting is 30 days.

Please check Schedule work standby mode setting examples below; **schedule123456 30m**  
-- this will set the TK102-NANO to stay in standby and report its location for 5 minutes every 30 minutes.

**schedule123456 12h** -- this will set the TK102-NANO to stay in deep sleep and report its location every 12 hours.

Deep sleep / Start work at specific time mode will provide the longest standby duration as power usage will be minimum due to both GSM and GPS modules being on standby at all times. 2 location reports per day will provide approximately 2-4 days battery life.

To cancel the schedule work standby mode:

**Command: noschedule+password e.g.**

**noschedule123456**

## **Switching standby modes OFF**

Select the sleep mode that suits you best before starting to use your TK102-NANO. Real-Time GPS Tracking consumes significant amount of battery power and standby duration of your TK102-NANO will be reduced to 5-10 hours if there aren't any standby modes active. To turn switch all standby modes OFF;

**command: sleep+password+space+off e.g.**

**sleep123456 off**

### 5.23 Forwarding incoming SMS messages

TK102-NANO can forward incoming messages from a pre-set number. To activate:

**Command: forward+password+space+third parties phone number**

**Response: forward ok**

**e.g. forward123456 07587136846**

Only one number can be set-up for SMS forwarding.

**To deactivate:**

**Command: noforward+password e.g.**

**noforward123456**

### 5.24 Sim Card balance check

Using this function tracker you can instruct the TK102-NANO to send an SMS message to a specific phone number. For instance, to send a text message to your Sim card network provider to check the credit balance and it will forward the received content to the authorized number. To check Sim card balance proceed as follows;

**Command: balance+password+space+carrier's phone number+space+code e.g.**

**balance123456 check 0212**

This function assumes that your Sim card provider network has the option where you can check your Sim card's balance by sending a text message code to a specific number; which is sending check code to phone number 0212 in this example.

### 5.25 Status enquiry

**Command: check+password**

**Response: GSM: 100% GPS: OK/NO GPRS: ON/OFF battery: 100%. (example) e.g.**  
**check123456**

### 5.26 IMEI number request:

To request the IMEI number of your TK102-NANO use command below;

**Command: imei+password**

**Response: 8647150022365548 (example) e.g.  
imei123456**

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## 5.27 Time Setting

This setting can be used to change the time zone of your TK102-NANO.

**Command: time+space+zone+password+space+local time zone e.g.  
time zone123456 0**

The example above can be used to set-up UK Time zone.

If your country's time zone is minus, send the code with a - symbol as shown below;

**e.g. time zone123456 -4**

## 5.28 TCP/UDP switch

Command: gprs+password,0,0            TCP with keepalive data, this is the default mode.

Command: gprs+password,0,1        UDP with keepalive data

Command: gprs+password,1,0        TCP without keepalive data

Command: gprs+password,1,1        UDP without keepalive data

## 5.29 Reset

This command will restart/reboot GSM & GPS modules of TK102-NANO. Please note that this is only a hardware reboot, it will not restore TK102-NANO's settings to factory defaults.

**Command: reset+password**

**Response: reset ok e.g.**

**reset123456**

## 5.30 PC Software Tracking

The free PC Software supplied with your TK102-NANO can be used for both GPRS tracking and downloading GPS Logs. Please note that if you wish to use GPRS tracking mode with this Software, you will need to open ports from your router and firewall for the tracker to be able to communicate with your PC. Log-in details for the software are: User ID: admin  
Password: admin

Note: Rewire security recommends using Web platform for GPRS tracking as it is much easier to configure and can be accessed from any device with internet connection.

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## 5.31 GPRS (Online) Tracking

Online Tracking mode allows the TK102-NANO to upload its location data to a cloud server at preset intervals.

If you would like to use online tracking, please start by activating GPRS mode:

**Command: gprs+password**

**Response: gprs OK e.g.**

**gprs123456**

### 5.31.1 APN Configuration

APN (Access point name) setting differs with each GSM network. Please contact your Sim card GSM network provider to obtain the correct APN settings for your sim card. To set APN:

**Command: APN+password+space+your sim card's apn**

**Response: APN OK**

Please note that TK102-NANO will reply "APN OK" no matter what apn information you enter for your APN setting. It will not know if the APN information you have entered is correct or not. Please see examples below for some UK networks; **apn123456 uk.lebara.mobi**

-for UK Lebara network **apn123456 payandgo.o2.co.uk** -for O2 UK pay as you go

**apn123456 everywhere**

-for EE/Orange/Vodafone UK **apn123456**

**data.lycamobile.co.uk** -for Lycamobile UK

### 5.31.2 APN User ID and Password setup

If your network requires password authentication for APN access, please use command below:

**Command: up+password+space+user+space**

**+password e.g. apn123456 internet contract password**

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### 5.32 Server IP address and port setup

This setting will configure TK102-NANO to upload its location to the selected online tracking server.

**Command: adminip+password+space+ip address+space+port number**

**Response: adminip OK**

**e.g. adminip123456 94.229.67.57 10200**

If you are going to use Rewire security's UK based server [www.gpslive.co.uk](http://www.gpslive.co.uk), use the IP address and port above. 94.229.67.57 is the IP address and 10200 is the port of the server.

### 5.33 GPRS economy mode

With the GPRS economy mode, after being stationary for 5 minutes, 102-NANO can close the internet connection to save battery power and internet data usage. To activate:

**Command: less+space+gprs+password+space+on**

**Response: less gprs on ok! e.g. less gprs123456 on**

### 5.32 Restore to factory defaults

**Command: begin+password**

**Response: begin ok! e.g.**

**begin123456**

Sending this command will restore all settings of your tracker to factory defaults.

