SMS & GPRS

COMMUNICATION PROTOCOL

(Model: WT100 & TK333)

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Notice：

- ASCII Code is used in this communication protocol, we use # as the control character; please avoid to use # as content in communication.
- Most control commands and the commands for parameter's settings will give you feedback message.
- The SMS commands for parameters setting begin with # and end with ##

Format of feedback message：

GPRS command：&IMEI_no&user_ID&Command_code&Error_code&&
SMS command feedback：
&SMS command_code&Error_code&&

E.g. send out SMS command #710#13800138000#0000##
SMS feedback message：&710&Config OK&&
GPRS feedback message： &1357902468112 22&13486119277&710&0&&

Error Code

Error Code	Content
0	config ok
1	password error
2	invalid command code
3	…

- Either SMS channel or GPRS channel uses the same command's format.
- The device has the ability of anti-jamming. It can filter the useless character around the control commands and data packets.
- Each device has a unique IMEI number with 15 digits. It is the ID of the device.
- The unit of the latitude & longitude is degree. The unit of the speed is KM/H

The following commands are also supported to be operated by GPRS.
That is to say, to send the command by GRPS channel to the device, the device can interpret correctly and give the feedback as following:

&IMEI_number&user_ID&command_code&Error_code&&

I. The Commands for Parameter's Settings

1.1 、Set the Working Mode:

Command Format： #command_code(700)#mode#password##

Remark:

mode = 0（default setting）: normal condition
mode = 1: power save mode.

1.2 、Set the SMS Center Number for Receiving Alarms:

Command format: #710#center No.#password##

Eg: #710#13922713571#0000##

This command is used to set the center number.
All the alarm SMS (including SOS alert, low-power alert, Geo-fence alert etc.) will be sent to the SMS center number.

1.3 、Set the Calling Phone No. for the Call Buttons

Command format:

#711#the 1st phone#the 2nd phone#the 3rd phone#Password##

Eg: #711#13922713571#0#0#0000##

After setting successfully, press the call 1 button, the tracker will automatically call the 1st phone No.; press the call 2 button, the tracker will automatically call the 2nd phone; press the call 3 button, the tracker will automatically call the 3rd phone No.

1.4 、Set the Time Interval for SMS Auto-reporting

Command Format: #720#time interval#password##

Eg: #720#5#0000##

(The tracker will report the location by SMS to the center number for every 5 minutes)

This instruction is used to program the tracker to report the location to the SMS center number automatically by the time interval.

Note:

- The value range of time interval is: 5～65535 (unit: minutes), if time interval=0, it will disable the auto-reporting function.
- If the SMS center number is empty, this SMS instruction will be invalid & this function will not be enabled.

1.5 、Set the Time-interval for GPRS Reporting

Command format:
#730#time interval(5-65535)#upload packets No.(0-10)#password##

E.g. #730#30#5#0000##

(Uploading GPRS data packet is enabled, the tracker will sample one data packet for every 30 seconds, then upload 5 packets at one time to the GPRS server.)

#730#0#0#0000## (to cancel the uploading)

Note:

- Default setting of the time interval is 0, that is to cancel uploading
- If time interval or upload packets No. is 0, uploading function is cancel
- The range of time interval is: 5~65535 seconds. (Minimum: 5 sec.)
- The range of upload packets No.: 0-10
- This setting is only available for the GPRS uploading. It is working for SMS auto-reporting.

GPRS upload packet's format：

#IMEI No.#User ID#Status#password#data type#packet's numbers#
#GSM base station code#longitude,latitude,speed,direction#date#time#
GSM base station code#longitude,latitude,speed,direction#date#time#....##

(If the GPS signal is available, the GSM base station code is replaced by V)

E.G:（sample time: 6 seconds, upload 10 packets each time. That is to say, upload time interval is 1 minute）
#135790246811222#13486119277#1#0000#AUT#10#27bc10af#11407.

4189,E,2232.7893,N,0.00,0.66#070709#132022.000#27bc10af#11407.
4189,E,2232.7898,N,0.00,0.66#070709#132028.000#27bc10af#11407.
4189,E,2232.7902,N,0.00,0.66#070709#132034.000#27bc10af#11407.
4190,E,2232.7908,N,0.00,0.66#070709#132040.000#27bc10af#11407.
4190,E,2232.7912,N,0.00,0.66#070709#132046.000#27bc10af#11407.
4190,E,2232.7913,N,0.00,0.66#070709#132052.000#27bc10af#11407.
4192,E,2232.7917,N,0.00,0.66#070709#132058.000#27bc10af#11407.
4197,E,2232.7974,N,0.00,0.66#070709#132104.000#27bc10af#11407.
4205,E,2232.7972,N,0.00,0.66#070709#132110.000#27bc10af#11407.
4211,E,2232.7972,N,0.00,0.66#070709#132116.000##

1.6 、Change the User Password

Command format: #770#new password#old password##
Eg: #770#12aB#0000##

This instruction is used to change the user password. The length of the user's password is 4 digits. It can be combined with numbers and letters.

The default user password is: 0000

1.7 、Set the User ID

Command format: #801#deivce ID#password##
E.g.. #801#TK333#0000##

Note:

- The default setting of the device ID is the IMEI number of the tracker, users are suggested to used the default setting & do not change it.
- The Device ID is only used for GPRS tracking.
- The device ID can be combined by letters & numbers.
- The length of the device ID is: 4-20 figures.
- Normally speaking, there is no need for user to change it.

1.8 、Set APN (Access Point Name)

Command format: #802#APN#APN-user#APN-password#password##
Eg 1: #802#internet###0000##
Eg 2: #802#web.gprs.mtnnigeria.net#web#gprs#0000##

Note:

- The default setting of the APN is internet, APN user & APN password are empty.
- When the APN user or APN password is guest or empty, you can use 0 or empty at the place.

1.9 、Set the GPRS Server IP & Port

#803#server#port#password##
E.g.: #803#98.143.144.145#8500#0000##

Note:
- The server can be the IP address or the domain name

1.10 、Set the Server IP & Port for Address Translation

#ADD#server#port#password##
E.g.: #ADD#98.143.144.145#8500#0000##

Note:
- The server can be the IP address or the domain name

1.11 、Geo-fence Settings Instructions

Set Geo-fence parameters

Command format:
#600#fen-code#switch#longitude#latitude#radius#start-time#end-time#password##

Eg: #600#1#1#+113.9013#+22.5338#1000#09:30#15:00#0000##

Note:

Fen code	: 1~5 （total 5 fences for different period）
switch	: 1: ON, 0: OFF
longitude	: East +.... , West -... (with +/-, in degree format)
latitude	: North +.... ,South -... (with +/-, in degree format)
radius	: 50~65535 (unit: meters)
start-time	: HH:MM (fixed time format in 24hours, with 0 before number1~9, such as 09:05)
end-time	: HH:MM (fixed time format in 24hours, with 0 before number1~9, such as 20:05)

Switch ON/OFF Geo-fence function

Command format:
#601#fen-code#swtich#password##

Note:

Fence code : 1~5 , (if it is 0, it stands for all the fences)
Switch : 1: ON, 0: OFF

E.g.: #601#1#0#0000## turn off the 1st fence
#601#0#0#0000## turn off all the fences
#601#0#1#0000## turn on all the fences

Check the Setting of Geo-fence

Command format:
#602#fen-code#password##

Note:
Fence code: 1~5 , (if it is 0, it stands for all the fences)
E.g.: #602#1#0000## check the setting of the 1st fence

The tracker will feed back SMS in the following format:
Ffence-code,switch,longitude,latitude,radius,start-time,end-time

1.12 、Compositive SMS for GPRS Setting

WWWpassword#IP:Sever domain or IP,COM port#APN:APN,APN-user,APN-password#RPT:time interval,upload packet numbers#TCP:1 (0)##

e.g.:
WWW0000#IP:www.yourdomain.com,8101#APN:CMNET,,#RPT:300,5#TCP:1##

Note:

- IP : it can be Server IP or server domain name
- APN : access point name of the GSM SIM card
- RPT : time interval (5-65535) means sampling time interval. The system will firstly sample the GPS data by this time interval, then upload several data packets together to GPRS platform for saving GPRS flow. The range of upload number is: 0-10
- TCP : 1: open GPRS connection; 0: terminate the GPRS connection

1.13 、GPRS ON/OFF Command：

Activate the GPRS connection

#904#password##

Disconnect the GPRS connection

#905#password##

II. Control Commands

2.1 、Check the GPS Coordinates

SMS Command: 666password
Eg: 6660000

Send command (default password is 0000) to the system SIM card, and then the mobile phone will get an SMS message from the tracker.

Data format:

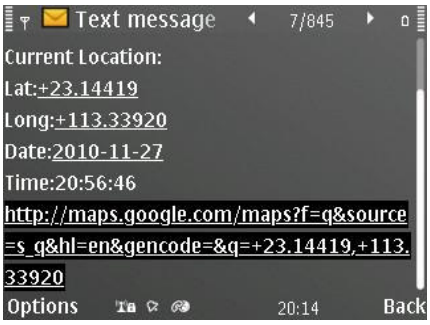
Lat	: Latitude Direction (+/-) Latitude Value
Long	: Longitude Direction (+/-) Longitude Value
Speed	: Speed KM/H
Direction	: Direction
Date	: Date YYYY-MM-DD
Time	: Time HH：MM：SS (GMT)
BS	: GSM Base Station code
Fix	: Location state (A:available / V:shielded GPS signal)
ID	: IMEI number
STATE	: Message state

Note:
If the tracker can not get valid GPS signal in 2 minutes, it will send out the last stored GPS coordinate.

2.2 、Check the Location by Google Map's URL

SMS Command: 999password
Eg: 9990000

User can use any mobile phone to send SMS command 999password to the tracker SIM card number, the tracker will automatically send back the location information with Google map's URL, user can use smart phone(be able to visit internet) to open the URL link, the tracker's location will be showed on the Google map.



Note:
The SIM card inside the tracker must be activated with the service of caller's ID display.
If the tracker can not get valid GPS signal or the last stored GPS coordinate in 2 minutes, it will send back this SMS to user "Can not get a valid location!"

2.3 、Process of Checking the Real Physical Address

SMS command: ADDpassword or addpassword
Eg: add0000

Remark：this command is used to get the real physical address of the tracker

(1) Tracker get the SMS command, it will send the following information via GPRS to the server which is set by the charter 1.10 (Set the Server IP & Port for Address Translation).

#IMEI#ID#ADD#inquiry mobile No.#lat,lon#

(2) The GPRS server get the information, then translate the latitude and longitude into the real physical address, then send the following information via GPRS to the tracker.

#inquiry mobile No.#Real physical address#

(3) The tracker get the real physical address via GPRS from the server, then send the following confirmation message to the server.

#IMEI#ID#ADDOK#

The tracker then sends the Real Physical Address to the inquiry mobile by SMS.

Remark: IMEI is the same as the ID, the GPRS server should send out the information in UTF-8 code.

2.4 、SOS Alert

After setting up the SMS center number, when the tracker holder press the SOS button for about 2 seconds, the tracker will send out the alert message to the SMS center number (or GPRS platform), then it will call out the 3 stored phone numbers in sequence.

The SOS alert message is as following:

Data format by SMS:

Lat : Latitude Direction (+/-) Latitude Value
Long : Longitude Direction (+/-) Longitude Value
Speed : Speed KM/H
Direction : Direction
Date : Date YYYY-MM-DD
Time : Time HH：MM：SS (GMT)
BS : GSM Base Station code
Fix : Location state (A:available / V:shielded GPS signal)
ID : IMEI number
STATE : SOS

Data format by GPRS Reporting:

#IMEI#User_ID#Status#Password#SOS#1#GSM Base Station Code#longitude,E,latitude,N,speed,direction#data#time##

E.G.:

#135790246811222#13486119277#1#0000#SOS#1#27bc10af#11407.4182,E,2232.7632,N,0.00,79.50#070709#134147.000##

2.5 、Low Power Alert

When the battery is low power, the tracker will automatically send out the alert message to the SMS center number (or GPRS platform).
The low power alert message is as following:

Data format by SMS:

Lat : Latitude Direction (+/-) Latitude Value
Long : Longitude Direction (+/-) Longitude Value
Speed : Speed KM/H
Direction : Direction
Date : Date YYYY-MM-DD
Time : Time HH：MM：SS (GMT)
BS : GSM Base Station code
Fix : Location state (A:available / V:shielded GPS signal)
ID : IMEI number
STATE : ***LPD***

Data format by GPRS Reporting:

#IMEI#User_ID#Status#Password#LPD#1#GSM Base Station Code#longitude,E,latitude,N,speed,direction#data#time##

E.G.:

#135790246811222#13486119277#1#0000#LPD#1#27bc10af#11407.4182,E,2232.7632,N,0.00,79.50#070709#134147.000##

2.6 、Geo-fence Alert

When the tracker is outside the certain fence during the period, the tracker will automatically send out the alert message to the SMS center number (or GPRS platform).

If the tracker is working at power save mode, this function can not work properly.

Please refer to the later chapter for the setting of Geo-fence.

The Geo-fence alert message is as following:

Data format by SMS:

Lat	: Latitude Direction (+/-) Latitude Value
Long	: Longitude Direction (+/-) Longitude Value
Speed	: Speed KM/H
Direction	: Direction
Date	: Date YYYY-MM-DD
Time	: Time HH：MM：SS (GMT)
BS	: GSM Base Station code
Fix	: Location state (A:available / V:shielded GPS signal)
ID	: IMEI number
STATE	: OUT

Data format by GPRS Reporting:

#IMEI#User_ID#Status#Password#OUT#1#GSM Base Station Code#longitude,E,latitude,N,speed,direction#data#time##

E.G.:

#135790246811222#13486119277#1#0000#OUT#1#27bc10af#11407.4182,E,2232.7632,N,0.00,79.50#070709#134147.000##

Reset the Parameters with default settings

Please hold the SOS button, and turn on power switch at the same time, then the system will be reset with the factory default setting as following:

Working Mode:	Normal mode
Password:	0000
Call 1, Call 2, Call 3 phone numbers:	Empty
SMS center number:	Empty
SMS Auto-reporting function:	OFF
GPRS data uploading:	OFF
Geo-fence function	OFF
GPRS server IP	www.yourdomain.com COM: Port
APN	Internet
Time zone	00.00