GSM/GPRS/GPS Tracker **GL200**

@Track Air Interface Protocol

Application Notes: TRACGL200AN001

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0. Revision history

Revision	Date	Author	Description of change
0.02	2010-10-29	Eagle LIU	Initial
1.00	2010-10-29	Colin.HU	1. Add the parameter EPB mode in the command “AT+GTCFG” 2. Correct the range of Geo check interval in the message “+RESP:GTGCR”. 3. Modify the protocol version to 1.00 4. Restore the function of distance report and mileage report. 5. Add the command “AT+GTWLT” to control whether to return a google link SMS to the incoming call.
	2010-11-4	Colin HU	1. Add the command “AT+GTGLM” to control whether to send a SMS with google link to some specified number for SOS and GEO event. 2. Modify the definition of mode in the command “”AT+GTNMD to allow to report the message "+RESP:GTNMR" from rest to motion and adjust the fix interval and send interval for FRI when the state of GL200 change from motion to rest. 3. Add battery percentage in the report message "+RESP:GTINF", "+RESP:GTBAT" and position related message
	2010-11-5	Colin.HU	Add the command “AT+GTPIN” for how to unlock SIM-PN automatically.
1.01	2011-01-13	Colin.HU	1. Add the movement detection function in the command AT+GTFRI. 2. Modify the minimum value of the fix interval in the commands AT+GTFRI and AT+GTNMD to 5 seconds. 3. Modiy the minimum value of distance and mileage in the command AT+GTFRI to 50 meters.
1.02	2011-01-28	Colin.HU	1. Add the command AT+GTOUT and AT+GTDIS for the digital output and input application.
	2011-03-08	Colin.HU	1. Add the command AT+GTDOG to realize protocol watchdog reboot. 2. Separate the ignition state report to independent messages +RESP:GTIGN and +RESP:GTIGF.

1. Overview

1.1. Scope

The @Track Air Interface Protocol is a digital communication interface based on printable ASCII characters over SMS or GPRS which is used for all communication between the backend server and the terminal. The backend server sends a command to the terminal and then the terminal confirms with an acknowledgement message. If necessary, the terminal also sends report messages to the backend server.

The purpose of this document is to describe how to build up the backend server based on the @Track Air Interface Protocol.

1.2. Terms and Abbreviations

Table 1: Terms and abbreviations

Abbreviation	Description
APN	Access Point Network
ASCII	American National Standard Code for Information Interchange
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HDOP	Horizontal Dilution of Precision
ICCID	Integrated Circuit Card Identity
IP	Internet Protocol
SMS	Short Message Service
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
UTC	Coordinated Universal Time

2. System Architecture

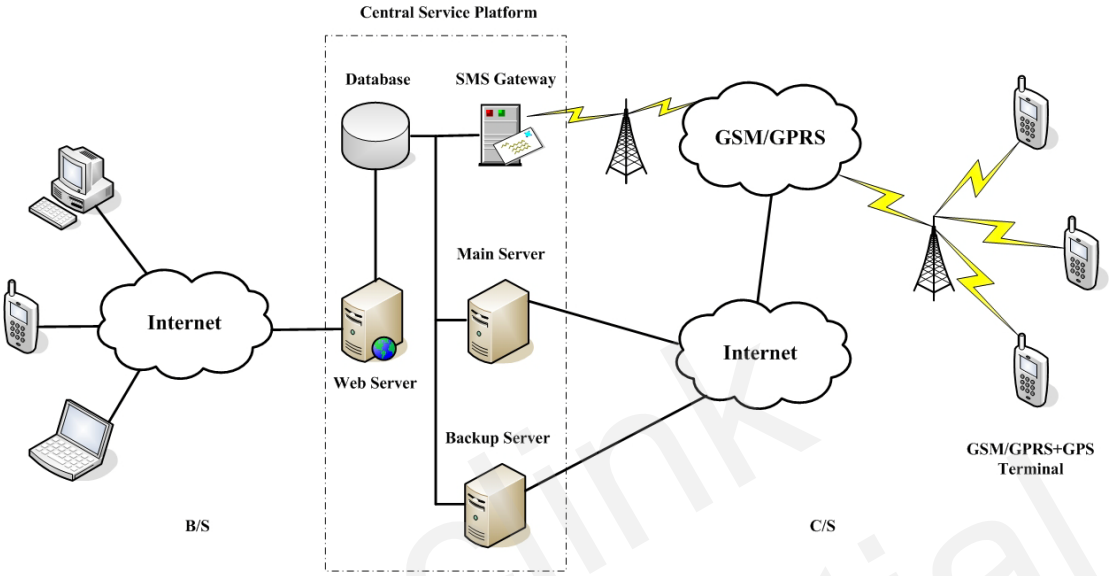

Figure 1: System architecture

The backend server can be accessed by many terminals and should have the following abilities:

- ✧ The backend server should be able to access the internet and listen to the connection originating from the terminal.
- ✧ The backend server should be able to support a TCP or UDP connection with the terminal. It should be able to receive data from the terminal and send data to the terminal.
- ✧ The backend server should be able to receive and send SMS.

3. Message Description

3.1. Message Format

All of the @Track Air Interface Protocol messages are composed of printable ASCII characters. Each message has the following format:

Message format	Message type
AT+GTXXX=<parameter1>,<parameter2>,…$	Command
+ACK:GTXXX,<parameter1>,<parameter2>,…$	Acknowledgement
+RESP:GTXXX,<parameter1>,<parameter2>,…$	Report

The entire message string ends with character '$'.
The characters 'XXX' identify the deferent message.
The "<parameter1>,<parameter2>,…" carry the message's parameters. The number of parameters is different in different messages. The ASCII character ',' is used to separate the neighbouring parameter characters. The parameter string may contain the ASCII characters: '0'-'9', 'a'-'z', 'A'-'Z'.
Detailed descriptions of each message format are located in the specific message sections.

By sending Commands to the terminal, the backend server can either configure and query the parameters of the terminal or control the terminal to perform specific actions. When the terminal receives Commands over the air, it will reply with a corresponding Acknowledgement message.
According to the configuration of the parameters, the terminal can send Report messages to the backend server. Please see the following figure:

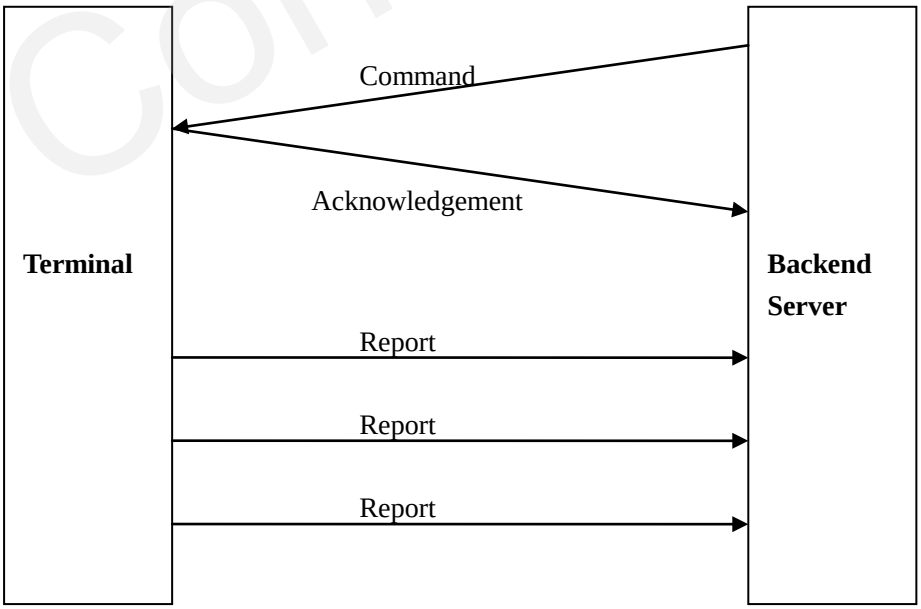

Figure 2: @Tracker protocol messages flow

When the device receives commands over the air, it supports several commands in one SMS or GPRS packet without separate symbol between two close commands. But it is necessary to make sure the total size of the several commands is not longer than 160 if the commands are sent via SMS. Here is an example to send three commands in one SMS.

AT+GTFRI=gl200,1,1,,,0000,2359,60,60,,,1F,0,,,,,,,0007$AT+GTGEO=gl200,0,3,101.412248,21.187891,1000,600,,,,,,,,0008$AT+GTSPD=gl200,1,5,40,30,60,,,,,,,,0009$

It includes three commands (**AT+GTFRI**, **AT+GTGEO** and **AT+GTSPD**) in the above message. And the terminal will handle the three commands one by one after it received the message via SMS and it will report the following three acknowledgement message to the backend server one by one.

+ACK:GTFRI,020102,135790246811220,,0007,20100310172830,11F0$

+ACK:GTGEO,020102,135790246811220,,0,0008,20100310172900,11F1$

+ACK:GTSPD,020102,135790246811220,,0009,20100310172930,11F2$

3.2. Command and Acknowledgement

3.2.1. Quick Start Setting

The command **AT+GTQSS** is used to set the GPRS parameter and backend server information in one command if all these settings are within 160 bytes, otherwise use **AT+GTBSI** and **AT+GTSRI** in two steps.

- **AT+GTQSS=**

Example: **AT+GTQSS=gl200,cmnet,,,4,,,116.226.44.17,9001,116.226.44.16,9002,+8613812341234,0,1,,,0001$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	‘0’ – ‘9’, ‘a’ – ‘z’, ‘A’ – ‘Z’	gl200
APN	<=40		
APN user name	<=20		
APN password	<=20		
Report mode	1	0 – 5	0
Reserved	0		0
Buffer enable	1	0|1	1
Main server IP/domain name	<=60		
Main server port	<=5	0 – 65535	0
Backup server IP	<=15		0.0.0.0
Backup server port	<=5	0 – 65535	0
SMS gateway	<=20		
Heartbeat interval	<=3	0|10 – 360min	0
SACK enable	1	0|1	0
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

- <*Password*>: The valid character of password is ‘0’-9’, ‘a’-‘z’, ‘A’-‘Z’. The default value is “gl200”.
- <*APN*>: Access point name (APN).
- <*APN user name*>: the GPRS APN user name. If the parameter field is empty, the parameter will be cleared.
- <*APN password*>: the GPRS APN password. If the parameter field is empty, the parameter will be cleared.
- <*Report mode*>: Supports report modes as following:

  0: Stop reporting.

  1: TCP short-connect preferred mode. The connection is based on TCP protocol. The

terminal connects to the backend server every time it needs to send data and will shut down the connection when the terminal finishes sending data. And if it is failed to establish a TCP connection with the backend server (including Main Server and Backup Server), it will try to send data via SMS.

2: TCP short-connect forced mode. The connection is based on TCP protocol. The terminal connects to the backend server every time it needs to send data and will shut down the connection when the terminal finishes sending data. And if it is failed to establish a TCP connection with the backend server (including Main Server and Backup Server), it will be stored in the BUFFER (if BUFFER function is enabled, please refer to <*Buffer enable*>) or discarded (if the BUFFER function is disabled).

3: TCP long-connect mode. The connection is based on TCP protocol. The terminal connects to the backend server and maintains the connection using the heart beat data. Please note that in this mode the backend server should respond to the heart beat data from the terminals.

4. UDP mode. The terminal will send data to the backend server by UDP protocol. It supports to receive protocol command via UDP. But it is recommended to make sure the IP address and UDP port of the device can be visited in the internet, and this is generally realized by heart beat package and the message **+RESP:GTPDP**.

5: Force on SMS. Only use the SMS for transmitting.

- <*Reserved*>: Not used at present. Please keep empty.
- <*Buffer enable*>: Enable or disable BUFFER function. Please refer to 3.3.5 for the details about BUFFER function.
  0 Disable the BUFFER function.
  1 Enable the BUFFER function.
- <*Main server IP/domain name*>: The IP address or the domain name of the main server.
- <*Main server port*>: The port of the main server.
- <*Backup server IP*>: The IP address of the backup backend server.
- <*Backup server port*>: The port of the backup server.
- <*SMS gateway*>: Maximum 20 characters including the optional national code starting with "+" for SMS messages. Short code (for example: 10086) is also supported.
- <*Heartbeat interval*>: the interval for the terminal to send heartbeat package message to the backend server. If set to 0, no heartbeat package is sent.
- <*SACK enable*>: A numeric to indicate whether the backend server should reply SACK message to the device.
  0: the backend server does not reply SACK message after receiving a message from the device.
  1: the backend server should reply SACK message after receiving a message from the device.
- <*Serial number*>: the serial number for the command. It will be invoked in the ACK message of the command.
- <*Tail character*>: a character to indicate the end of the command. And it should be "$".

Note:

If <*Report mode*> is set as 4 (UDP mode), it is strongly recommended to enable SACK or heart beat mechanism (<*Heartbeat interval*> doesn't equal to 0).

The acknowledgement message of **AT+GTQSS** command:

- **+ACK:GTQSS,**

Example: **+ACK:GTQSS,020102,135790246811220,,0001,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

- <*Protocol version*>: The combination of the device type and the version number of the applied protocol. The first two characters 'XX' indicate the device type. '02' represents GL200. The middle two characters are the main version number and the last two characters are the minimum version number. Both the main version and the minimum version are hex digital. For example, '020A' means version 2.10.
- <*Unique ID*>: ID of the device, use the IMEI of the current SIM card inside the terminal.
- <*Device name*>: Please refer to the parameter <*Device name*> in the command **AT+GTCFG**.
- <*Serial number*>: The same serial number which is sent to the device with the corresponding command. The backend server could use it to distinguish which command the ACK message is for.
- <*Send time*>: The local time to send the ACK message.
- <*Count number*>: The self-increasing count number will be put into every acknowledgment message and report message. The count is beginning from 0000 and increases by 1 every time. It will roll back after "FFFF".

3.2.2. Bearer Setting Information

The command **AT+GTBSI** is used to set the GPRS parameter.

- **AT+GTBSI=**

Example: **AT+GTBSI=gl200,cmnet,,,,,,,0002$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	‘0’ – ‘9’, ‘a’ – ‘z’, ‘A’ – ‘Z’	gl200
APN	<=40		
APN user name	<=20		
APN password	<=20		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

The acknowledgement message of **AT+GTBSI** command:

- **+ACK:GTBSI,**

Example: **+ACK:GTBSI,020102,135790246811220,,0002,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.3. Backend Server Register Information

The command **AT+GTSRI** is used to configure the backend server information that the terminal reports to and the report mode that defines the communication method between the backend server and the terminal.

- **AT+GTSRI=**

Example: **AT+GTSRI=gl200,4,,,116.226.44.17,9001,116.226.44.16,9002,+8613812341234,0,1,,,,,0003$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
Report mode	1	0 – 5	0
Reserved	0		0
Buffer enable	1	0|1	1
Main server IP/domain name	<=60		
Main server port	<=5	0 – 65535	0
Backup server IP	<=15		0.0.0.0
Backup server port	<=5	0 – 65535	0
SMS gateway	<=20		
Heartbeat interval	<=3	0|10 – 360min	0
SACK enable	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

The acknowledgement message of **AT+GTSRI** command:

- **+ACK:GTSRI,**

Example: **+ACK:GTSRI,020102,135790246811220,,0003,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.4. Global Configuration

The **AT+GTCFG** command is used to configure the global parameters.

- **AT+GTCFG=**

Example: **AT+GTCFG=quectl,123456,,,,,,,,,,,,,,,,,,0004$** **AT+GTCFG=gl200,,GL200,,,,0,7,0,,,,,1,1,300,1,,,,,,0004$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
New password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	
Device name	10	'0' – '9', 'a' – 'z', 'A' – 'Z'	GL200
Reserved	0		
Reserved	0		
GPS on need	1	0|1|2	1
GPS fix delay	2	5 – 60sec	5
Report items mask	<=4	0000 – FFFF	001F
Reserved	0		
Reserved	0		
Event mask	4	0000-FFFF	0FFF
EPB mode	1	0|1	0
LED on	1	0|1|2	1
Info report enable	1	0|1	1
Info report interval	<=5	30 – 86400sec	300
Location by call	1	0|1	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

- <*New password*>: Set to change the current password.
- <*Device name*>: the name of the device, which appears in each uplink message.
- <*GPS on need*>: Whether to close GPS chip after retrieving GPS position information.
  - 0: Never close GPS chip
  - 1: Close GPS chip after retrieving GPS information every time.
  - 2: Never close GPS chip only in ignition on state or movement state.
- <*GPS fix delay*>: This is the time to wait after GPS fixing succeed. After GPS fixing succeed, the device will wait for a period of time (defined by <*GPS fix delay*>) and then get the result of GPS fixing because maybe it is not accurate to get the position immediately after GPS fixing succeed. (e.g. if <*GPS fix delay*> is set as 7, we will wait for 7 seconds after GPS

fixing succeed and then get the position as the result). The range of the parameter is 5 – 60, and the default value is 5. Unit: second.

✧ <*Report items mask*>: Bitwise report mask to configure the composition of all the uplink message. Each bit represents a field in the uplink message. If some bit is set as 1, the corresponding field will be filled if it is included in the uplink message. Otherwise, the field will be empty.

Bit0(0001): <*speed*>
Bit1(0002): <*azimuth*>
Bit2(0004): <*altitude*>
Bit3(0008): GSM LAI and CI, including <*mcc*>, <*mnc*>, <*lac*>, <*cellid*> and the <*reserved1*> parameter "00"
Bit4(0010): <*send time*>
Bit5(0020): <*Device name*>

✧ <*Event mask*>: A Hex value to configure which event reports can be sent to the backend server: Each bit corresponds to a report message. And if the bit is set as 1, the corresponding report message can be sent to the backend server. Otherwise, it can not be sent to the backend server. Here is the mapping between each bit and each report message.

bit0(0001): **+RESP:GTPNA**
bit1(0002): **+RESP:GTPFA**
bit2(0004): **+RESP:GTEPN**
bti3(0008): **+RESP:GTEPF**
bit4(0010): Reserved
bit5(0020): **+RESP:GTBPL**
Bit6(0040): **+RESP:GTBTC**
Bit7(0080): **+RESP:GTSTC**
bit8(0100): **+RESP:GTSTT**
bit9(0200): **+RESP:GTANT**
bit10(0400): **+RESP:GTPDP**
bit11(0800): **+RESP:GTPNL**
bit12(1000): **+RESP:GTIGN** and **+RESP:GTIGF**

✧ <*EPB mode*>: The mode of External Power Control Unit With Built-in Motion Sensor.

0: disable External Power Control Unit With Built-in Motion Sensor.
1: enable External Power Control Unit With Built-in Motion Sensor.

✧ <*LED on*>: Configure the working mode of LEDs.

0: Each time the device powers on, GPS LED will work for 150 seconds and then turn off deadly. GSM LED and Power LED work normally.
1: All LEDs work normally. Please refer to 4 for the details.
2: All LEDs are off always.

✧ <*Info report enable*>: Enable/disable the device information report （**+RESP:GTINF**） function. The device information include state of the device, ICCID, GSM signal strength, adapter connection status, battery voltage, charging status, Power and GPS LED working mode, GPS on need setting, GPS antenna type, GPS antenna status, the last known time of GPS fix.

0: Disable the device information report function.

1: Enable the device information report function.

✧ <*Info report interval*>: The interval of reporting the device information.

✧ <*Location by call*>: Configure how to handle the incoming call.

0: Just hang up the call.

1: Hang up the call and report the current position.

The acknowledgement message of **AT+GTCFG** command:

➢ **+ACK:GTCFG,**

Example: **+ACK:GTCFG,020102,135790246811220,,0004,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.5. Non movement detection

The **AT+GTNMD** command is used to configure the parameters for non movement detection.

- **AT+GTNMD=**

Example: **AT+GTNMD=gl200,,3,2,3,,,,,,,,,0005$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
mode	1	0-F	0
Non-movement duration	<=3	1 – 255(×15sec)	2
Movement duration	<=2	1 – 10(×128ms)	3
Movement threshold	1	2 – 4	2
rest fix interval	5	5 – 86400sec	300
rest send interval	5	5 – 86400sec	300
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

- <*mode*>: A hex numeric to determine how the function works. Each bit of the hex numeric indicate different behavior that device could do. If the corresponding bit is 1, the device will behave as the description. Otherwise, it won't behave as the description.

  Bit0(1): Suspend the report of FRI and Geo-Fecne when it detects non-movement.

  Bit1(2): Report the message +RESP:GTNMR to the backend server when it detects non-movement.

  Bit2(4): Report the message +RESP:GTNMR to the backend server when it detects movement.

  Bit3(8): Change the fix interval and send interval of FRI to <rest fix interval> and <rest send interval> when it detects non-movement. In the case, It just modify the fix interval and send interval of FRI but not suspend the report of FRI even if Bit0 is 1.
- <*Non-movement duration*>: A time parameter to determine whether the device enters non-movement status, i.e. if the motion sensor detects that the device keeps in non-movement for a period of time defined by <*Non-movement duration*>, the device will be considered as in non-movement status.
- <*Movement duration*>: A time parameter to determine whether the device enters movement status. If the motion sensor detects that the device keeps in movement for a period of time defined by <*Movement duration*>, the device will be considered as in movement status.

- ✧ <*Movement threshold*>: The threshold for the motion sensor to determine whether the device is in movement. The less, the more likely to be treated as movement.
- ✧ <*rest fix interval*>: the fix interval for the report of FRI when the device is in rest state if Bit3 of <*mode*> is 1.
- ✧ <*rest send interval*>: the send interval for the report of FRI when the device is in rest state if Bit3 of <*mode*> is 1.

The acknowledgement message of **AT+GTNMD** command:

- ➢ **+ACK:GTNMD,**

Example: **+ACK:GTNMD,020102,135790246811220,,0005,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.6. Time Adjustment

The command **AT+GTTMA** is used to adjust local time. If the GPS fixing is successful, the local time will be automatically adjusted according to the GPS UTC time.

➢ **AT+GTTMA=**

Example: **AT+GTTMA=gl200,-,3,30,0,20090917203500,,,,,0006$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
Sign	1	+|-	+
Hour Offset	<=2	0 - 23	00
Minute Offset	<=2	0 - 59	00
Daylight Saving	1	0|1	0
UTC Time	14	YYYYMMDDHHMMSS	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Sign*>: Indicate the positive or negative of the local time offset to UTC
✧ <*Hour Offset*>: UTC offset in hours
✧ <*Minute Offset*>: UTC offset in minutes
✧ <*Daylight Saving*>: Enable/disable daylight saving time.
0: Disable daylight saving
1: Enable daylight saving
✧ <*UTC time*>: The configuration UTC time.

The acknowledgement message of **AT+GTTMA** command:

➢ **+ACK:GTTMA,**

Example: **+ACK:GTTMA,020102,135790246811220,,0007,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	

Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.7. Fixed Report Information

The command **AT+GTFRI** is used to configure the parameters of scheduled report.

➢ **AT+GTFRI=**

Example: **AT+GTFRI=gl200,0,,,,,,,,,,,,,,,,,0007$** **AT+GTFRI=gl200,1,1,,,0000,2359,60,60,,,1F,,,,,,,,,0007$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
Mode	1	0|1|2|3	0
Discard no fix	1	0|1	1
Reserved	0		
Reserved	0		
Begin time	4	HHMM	0000
End time	4	HHMM	0000
Check interval1	<=5	5 – 86400sec	180
Send interval1	<=5	5 – 86400sec	180
Check interval2	<=5	5 – 86400sec	180
Send interval2	<=5	5 – 86400sec	180
Report mask	<=4	0000 – FFFF	001F
Distance	<=5	50 – 65535m	1000
Mileage	<=5	50 – 65535m	1000
movement detect mode	1	0|1	0
movement speed	<=3	1-999(km/h)	5
movement distance	<=4	1-9999(m)	50
movement send number	1	1-5	5
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Mode*>:

0: Disable fixed report function.

1: Enable the scheduled timing report.

2: Enable the scheduled distance report. Report each time the straight length that the device moved has exceeded the specified distance. It ignores the detail path the device has passed along. This function is invalid unless the GPS chip opens always. Unit: Meter.

3: Enable the scheduled mileage report. Report each time the path length that the device moved has exceeded the specified length. It calculates the length of the detail path the device

has passed along. This function is invalid unless the GPS chip opens always. Unit: Meter.

- <*Discard no fix*>: 0 to report last known GPS position if there is no GPS fix, 1 to send nothing if there is no GPS fix.
- <*Begin time*>: The start time of scheduled fixed report. The valid format is "HHMM". The value range of "HH" is "00"-"23". The value range of "MM" is "00"-"59". It is noticed to use UTC time here.
- <*End time*>: The end time of scheduled fixed report. The valid format and range are same as <*Begin time*>.
- <*Check interval1*>: The interval time to fix GPS when the device attached vehicle is ignition off, its value range is 5-86400 and the unit is second.
- <*Send interval1*>: The period to send the position information when the device attached vehicle is ignition off. The value range is 60-86400 and the unit is second.
- <*Check interval2*>: The interval time to fix GPS when the device attached vehicle is ignition on, its value range is 5-86400 and the unit is second.
- <*Send interval2*>: The period to send the position information when the device attached vehicle is ignition on. The value range is 5-86400 and the unit is second.
- <*Report mask*>: Bitwise report mask to configure the composition of GPS position information for fixed report. If some bit is set as 1, the corresponding field will be filled in the position related message. Otherwise, the field will be empty.

  Bit0(0001): <*speed*>
  Bit1(0002): <*azimuth*>
  Bit2(0004): <*altitude*>
  Bit3(0008): GSM LAI and CI, including <*mcc*>, <*mnc*>, <*lac*>, <*cellid*> and the <*reserved1*> parameter "00"
  Bit4(0010): <*send time*>
- <*Distance*>: the specified distance to send the position information when <*Mode*> is 2 and this is valid only in the case that GPS chip keep opened always. Unit: meter.
- <*Mileage*>: the specified path length to send the position information when <*Mode*> is 3 and this is valid only in the case that GPS chip keep opened always.. Unit: meter.
- <*movement detect mode*>: Enable or disable the movement detect function.

  0: Disable the movement detect function.

  1: Enable the movement detect function. If the movement detect function is enabled, it will consider the device is non-movement if the speed according to the GPS fixing result is slower than <*movement speed*> and the distance between the current GPS point and the last moving GPS point is less than <*movement distance*>. After it considers the device is non-movement, it will stop reporting FRI message after report FRI messages (speed field is shown as -1 in these messages.) for <*movement send number*> times.
- <*movement speed*>: The speed threshold of movement detect. The unit is km/h.
- <*movement distance*>: The distance threshold of movement detect. The unit is meter.
- <*movement send number*>: According to the speed threshold and distance threshold, if the terminal is considered staying at one position, the terminal will send out at most this number of reports before it moves again.

***Note*:**

✧ **Check and send interval**

If <*GPS On Need*> was set as 1 or <*GPS On Need*> was set as 2 without ignition on,

The terminal has two modes to operate the GPS module according to the value of <*Check interval*>:

- **Normal mode: If the <*Check interval*> is more than 60 seconds, the terminal will close the GPS part every time after GPS fixing finishes in order to save power.**
- **Emergency mode: If the <*Check interval*> is less than 60 seconds, the terminal will never close the GPS part. In this mode, the <*Send interval*> will be ignored, the terminal reports every <*Check interval*> time, and the minimum value of <*Check interval*> is forced to 5 seconds.**

Due to the maximum length limitation of the report message, it must be assured that: <*Send interval*> / <*Check Interval*> <= 15. If exceed that limitation, the command is discarded and the previous settings keep untouched.

If the terminal is in "Force on SMS Mode" (<*Report mode*> = 5) while the <*Send interval*> / <*Check Interval*> > 1, the terminal will report only the last position in the fixed timing report, because only one position could be filled in one single SMS message (160 bytes at most).

✧ **Action time range**

- **<*Begin time*> < <*End time*>: reports in the time period (begin time, end time) every day.**
- **<*Begin time*> > <*End time*>: reports starting from <*Begin time*> and stopping at <*End time*> on the following day.**
- **<*Begin time*> = <*End time*>: reports on the whole day.**

The acknowledgement message of **AT+GTFRI** command:

➢ **+ACK:GTFRI,**

Example: **+ACK:GTFRI,020102,135790246811220,,0007,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.8. Geo-Fence Information

The command **AT+GTGEO** is used to configure the parameters of Geo-Fence. Geo-Fence is a virtual perimeter on a geographic area using a location-based service, so that when the geofencing terminal enters or exits the area a notification is generated. The notification can contain information about the location of the terminal and may be sent to the backend server.

➢ **AT+GTGEO=**

Example: **AT+GTGEO=gl200,0,3,101.412248,21.187891,1000,600,,,,,,,,0008$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
GEO ID	1	0 – 4	
Mode	1	0 – 3	0
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
Radius	<=7	50 – 6000000m	50
Check interval	<=5	0|30 – 86400sec	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*GEO ID*>: A numeric to identify the Geo-Fence.

✧ <*Mode*>: A numeric which indicates when to report the notification to the backend server based on the following:

0: Disable the Geo-Fence on the specified GEO ID.

1: Reports when enters the Geo-Fence.

2: Reports when leaves the Geo-Fence.

3: Reports when enters or leaves the Geo-Fence.

✧ <*Longitude*>: The longitude of a point which is defined as the center of the Geo-Fence circular region. The format is "(-)xxx.xxxxxx" and the value range is from "-180.000000" to "180.000000". The unit is degree. West longitude is defined as negative starting with minus "-" and east longitude is defined as positive without "+".

✧ <*Latitude*>: The latitude of a point which is defined as the centre of the Geo-Fence circular region. The format is "(-)xx.xxxxxx" and the value range is from "-90.000000" to "90.000000". The unit is degree. South Latitude is defined as negative starting with minus "-" and north Latitude is defined as positive without "+".

- ✧ <*Radius*>: The radius of the Geo-Fence circular region. The value range is (50-6000000) and the unit is meter.
- ✧ <*Check interval*>: The interval of GPS checking for the Geo-Fence alarm.

***Note*:**

If the parameter <*Check interval*> is set as 0, <*Mode*> will be set as 0 automatically (To Geo-Fence 0, <*Mode*> will be restored at first and it could be used later when switch on Geo-Fence 0 via Function Key), because the terminal doesn't know when to check Geo-Fence if the parameter <*Check interval*> is 0.

The acknowledgement message of **AT+GTGEO** command:

- ➢ **+ACK:GTGEO,**

Example: **+ACK:GTGEO,020102,135790246811220,,0,0008,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
GEO ID	1	0 – 4	
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.9. Speed Alarm

The **AT+GTSPD** command is used to configure speed alarm of the device. Based on the working mode set, the device will report speed alarm when its speed is outside or inside of a predefined range.

➢ **AT+GTSPD=**

Example: **AT+GTSPD=gl200,1,5,40,30,60,,,,,,,,,,,,,,0009$** **AT+GTSPD=gl200,2,0,80,30,60,,,,,,,,,,,,,,0009$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
Mode	1	0|1|2	0
Min speed	<=3	0 – 400km/h	0
Max speed	<=3	0 – 400km/h	0
Duration	<=4	15 – 3600sec	60
Send interval	<=4	30 – 3600sec	300
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Mode*>: A numeric to indicate the working mode of speed alarm.

0: Disable speed alarm.

1: Enable speed alarm. If the current speed is within the speed range defined by min speed and max speed, a speed alarm is sent.

2: Enable speed alarm. If the current speed is outside the speed range defined by min speed and max speed, a speed alarm is sent.

✧ <*Min speed*>: The lower limit of the speed range.

✧ <*Max speed*>: The upper limit of the speed range.

- ✧ <*Duration*>: According to the working mode, if the speed satisfies the specified speed range and maintains a period of time defined by <Duration>, the speed alarm will be triggered.
- ✧ <*Send interval*>: After the speed alarm is triggered, the speed alarm message is sent every interval time.

***Note*:**

The parameter <*Duration*> and <*Send interval*> are invalid when GPS doesn't open always. When GPS doesn't open always, it will report speed alarm immediately if it detects the speed of the terminal is out of the allowed speed range.

The acknowledgement message of **AT+GTSPD** command:

- ➢ **+ACK:GTSPD,**

Example: **+ACK:GTSPD,020102,135790246811220,,0009,20100310172830,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.10. Function Key Setting

The **AT+GTFKS** command is used to configure the function of the power key and the function key.

➢ **AT+GTFKS=**

Example: **AT+GTFKS=gl200,1, ,1,,,,,000A$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
Power key enable	1	0|1	1
Reserved	0		0
Function key mode	1	0|1|2|3	3
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Power key enable*>: A numeric to indicate the working mode of the power key.

0: Press power key will not power down the device.

1: Press power key will power down the device.

✧ <*Function key mode*>: The working mode for the function key operation..

0: Ignore the function key operation.

1: Geo-Fence mode. Switch on/off the Geo-Fence ID 0 when the function key is long pressed. And after long press the function key, the terminal will report the message **+RESP:GTSWG** to inform to switch on or off Geo-Fence ID 0 via this operation.

2: Geo-Fence in current position. Switch on/off the Geo-Fence 0 when the function key is long pressed and use the current position as the centre of Geo-Fence 0 when switch on the Geo Fence 0 via the function key. After long press the function key, the terminal will report the message **+RESP:GTSWG** immediately. And if this operation is expected to switch on Geo-Fence ID 0, the terminal will start GPS fixing to get the current position as the centre of Geo-Fence ID 0. After GPS fixing finishes, it will report the message **+RESP:GTGCR** to inform the result of GPS fixing and whether Geo-Fence ID 0 was switched on successfully.

3: SOS mode. After long press for 3 seconds, the device will report the current position according to the result of the latest GPS fixing and then start GPS fixing. After the GPS fixing finishes or timeout, the device will report the SOS message according the result of the GPS fixing.

The acknowledgement message of **AT+GTFKS** command:

➢ **+ACK:GTFKS,**

Example:

+ACK:GTFKS,020102,135790246811220,,000A,20100310172830,11F0$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.11. Real Time Operation

The **AT+GTRTO** command is used to configure the function of the power key and the function key.

➢ **AT+GTRTO=**

Example: **AT+GTRTO=gl200,0,,,,,,000B$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
Sub command	1	0 – B	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Sub command*>: A numeric to indicate the sub command to execute.

0 (**GPS**): Request GPS related information, including setting of <*GPS on need*>, <*Report items mask*>, <*Report mask*> of fixed report, GPS antenna type, GPS antenna status and the last known time of successful GPS fixing.

1 (**RTL**): Request the device to report its current position.

2 (**READ**): Request the device to report its entire configuration.

3 (**REBOOT**): Reboot the device remotely.

4 (**RESET**): Reset all parameters to factory default except parameter of **AT+GTBSI**, **AT+GTSRI**.

5 (**PWROFF**): Power off the device remotely.

6 (**CID**): Request the device to report the ICCID of the installed SIM card.

7 (**CSQ**): Request the device to report the current GSM signal level.

8 (**VER**): Request the device to report version information including the device type, the firmware version and the hardware version.

9 (**BAT**): Request the device to report power supply related information including the external power supply status, current voltage of the battery, the battery charging status and the working mode of LED.

A (**TMZ**): Request the device to report the time zone setting.

B: (**INF**): Read the device information report function. The corresponding information will be reported via the message +RESP:GTINF.

The acknowledgement message of **AT+GTRTO** command:

➢ **+ACK:GTRTO,**

Example: **+ACK:GTRTO,020102,135790246811220,,GPS,000B,20100310172830,11F0$**

Parameter	Length (byte)	Range/Format	Default
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Sub command	<=6	Sub command string	
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.12. White Call List Configuration

The **AT+GTWLT** command is used to set white call list table.

➢ **AT+GTWLT=**

Example: **AT+GTWLT=gl200,1,1,2,13813888888,13913999999,,,,,000C$**			
Parameter	**Length(byte)**	**Range/format**	**Default**
password	4~8	‘0’-‘9’,’a’-‘z’,’A’-‘Z’	gl200
call filter	1	0|1|2	1
mobile start	1	1-10	
mobile end	1	1-10	
white number list	<=20*10		
reserved	0		
reserved	0		
reserved	0		
reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	

✧ <*call filter*>: A numeric to indicate whether to filter the incoming call according to <*white number list*> and <*direct number list*> before it try to send google link SMS to the incoming number.

0: Do not return a google link SMS to incoming number no matter what the parameter <*location by call*> was set and no matter whether the incoming number is in the <*white number list*> or <*direct number list*>.

1: Do not filter the incoming call. It will return a google link SMS to the incoming number as long as the parameter <*location by call*> was set as 1.

2: Filter the incoming call. If the incoming number isn’t in <*white number list*> or <*direct number list*>, it won’t return a google link SMS to the incoming number even if the parameter <*location by call*> was set as 1.

✧ <*mobile start*>: A numeric to indicate the first index of the white call number to input. For example, if it is **1**, it will update the white call list from the **1**st one. If it is empty, it should not include <*white number list*> later.

✧ <*mobile end*>: A numeric to indicate the last index of the white call number to input. For example, if it is **2**, it will update the white call list until the **2**nd one. If it is empty, it should not include <*white number list*> later.

✧ <*white number list*>: A phone number list. It could include several phone numbers. And two close phone numbers are separated with "**,**". The number of the phone number in the list is up to the parameter <*mobile start*> and <*mobile end*>. For example, if <*mobile start*> is **1** and is <*mobile end*> **2**, the <*white number list*> should include **2** phone numbers and the two numbers are separated by with "**,**".

The acknowledgment message of the **AT+GTWLT** command:

➢ **+ACK:GTWLT,**

Example: **+ACK:GTWLT,020102, 135790246811220,,000C,20101029085505,0025$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

***Note*:**

It is necessary to make sure the total size of the command is not greater than 160 if it is sent via SMS.

3.2.13. Google link SMS configuration

The **AT+GTGLM** command is used to configure whether to send SMS with google link for SOS and GEO event.

➢ **AT+GTGLM=**

Example: **AT+GTGLM=gl200,1,1,2,13813888888,13913999999,,,,,000D$**			
Parameter	**Length(byte)**	**Range/format**	**Default**
password	4~8	'0'-'9','a'-'z','A'-'Z'	gl200
google mode	1	0|1|2	0
mobile start	1	1-3	
mobile end	1	1-3	
white number list	<=20*3		
reserved	0		
reserved	0		
reserved	0		
reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	

✧ <*google mode*>: A numeric to indicate whether to send a SMS with google link to the number in <*direct number list*> for SOS and GEO event.

0: Do not send a SMS with google link to the number is in the <*direct number list*> for SOS and GEO event.

1: Send a SMS with google link to the number is in the <*direct number list*> for SOS and GEO event and include the terminal name in the google hyperlink.

2: Send a SMS with google link to the number is in the <*direct number list*> for SOS and GEO event and do not include the terminal name in the google hyperlink.

- ✧ <*mobile start*>: A numeric to indicate the first index of the direct number to input. For example, if it is **1**, it will update the white call list from the **1**st one. If it is empty, it should not include <*direct number list*> later.
- ✧ <*mobile end*>: A numeric to indicate the last index of the direct number to input. For example, if it is **2**, it will update the direct list until the **2**nd one. If it is empty, it should not include <*direct number list*> later.
- ✧ <*direct number list*>: A phone number list. It could include several phone numbers. And two close phone numbers are separated with "**,**". The number of the phone number in the list is up to the parameter <*mobile start*> and <*mobile end*>. For example, if <*mobile start*> is **1** and is <*mobile end*> **2**, the <*direct number list*> should include **2** phone numbers and the two numbers are separated by with "**,**".

The acknowledgment message of the **AT+GTGLM** command:

➢ **+ACK:GTGLM,**

Example: **+ACK:GTGLM,020102, 135790246811220,,000D,20101029085505,0025$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.14. Auto unlock SIM-PIN

The **AT+GTPIN** command is used to configure whether to automatically unlock the PIN of the SIM card in the device.

➢ **AT+GTPIN=**

Example: **AT+GTPIN=gl200,1,1234,1,,,,,000E$**			
Parameter	**Length(byte)**	**Range/format**	**Default**
password	4~8	'0'-'9','a'-'z','A'-'Z'	gl200
auto unlock PIN	1	0|1	1
PIN	4-8	'0'-'9'	
PIN checking	1	0|1	
reserved	0		
reserved	0		
reserved	0		
reserved	0		
Serial number	4	0000 – FFFF	

Tail character	1	$	

✧ <*auto unlock PIN*>: A numeric to indicate whether to unlock the SIM-PIN for the device.

0: Do not unlock SIM-PIN automatically.

1: Each time the device powers on, it will detect whether the SIM card is locked with a PIN. If it is locked, the device will unlock the PIN automatically for one time.

✧ <*PIN*>: The PIN code which is used when unlocks PIN automatically. If it is empty, the PIN code saved in the device will be cleared.

✧ <*PIN checking* >: A numeric to indicate whether to lock the device with SIM-PIN.

0: Do not lock the SIM-PIN.

1: Lock the SIM-PIN.

The acknowledgment message of the **AT+GTPIN** command:

➢ **+ACK:GTPIN,**

Example: **+ACK:GTPIN,020102, 135790246811220,,000E,20101029085505,0027$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.15. Digital Output

The **AT+GTOUT** command is used to output specified wave shape from the digital output port. Total three wave shapes are supported as below. If wave shape 1 is set, the output port will maintain the specified state until power off or restart.

Wave shape 1:

✓ <*Duration*> = 0ms, <*Toggle Times*> = 0

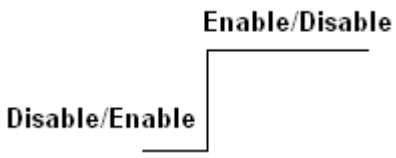

Figure 3: Wave Shape 1

Wave shape 2:

✓ <*Duration*> = 500ms, <*Toggle Times*> = 1

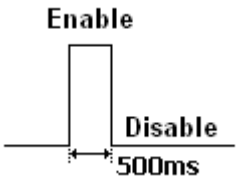

Figure 4: Wave Shape 2

Wave shape 3:

✓ <*Duration*> = 800ms, <*Toggle Times*> = 3

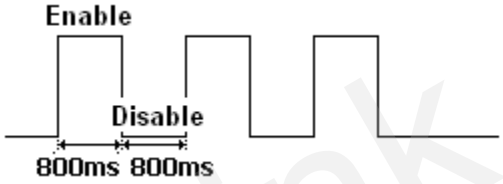

Figure 5: Wave Shape 3

Wave shape 4:

✓ <*Duration*> = 800ms, <*Toggle Times*> = 0, In this case, the square wave will maintain until it is changed again or power off or restart.

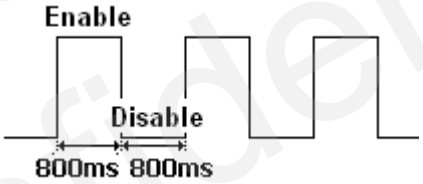

Figure 6: Wave Shape 4

➢ **AT+GTOUT=**

Example: **AT+GTOUT=gl200,1,8,1,,,,,000F$**			
Parameter	**Length(byte)**	**Range/format**	**Default**
password	4~8	‘0’-‘9’,’a’-‘z’,’A’-‘Z’	gl200
output status	1	0|1	
duration	<=3	0-255 (×100ms)	0
toggle times	<=3	0-255	0
reserved	0		
reserved	0		
reserved	0		
reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	

✧ <*output status*>: Used only for the wave shape 1 as shown in **Figure** 3 to set the final status of the output port. If the field is empty, it won’t change the output state of the IO.

0: Output disable status.

1: Output enable status.

✧ <*Duration*>: Please refer to **Figure** 3, **Figure** 4,**Figure** 5 and **Figure** 7. Unit is 100ms.

✧ <*Toggle Times*>: Please refer to **Figure** 3, **Figure** 4 , **Figure** 5 and **Figure** 8.

The acknowledgment message of the **AT+GTOUT** command:

➢ **+ACK:GTOUT,**

Example: **+ACK:GTOUT,020102, 135790246811220,,000F,20101029085505,0028$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.16. Digital Input Port Settings

➢ **AT+GTDIS**

Example: **AT+GTDIS=gl200,1,1,5,,,,,,0010$**			
Parameter	**Length(byte)**	**Range/format**	**Default**
password	4~8	'0'-'9','a'-'z','A'-'Z'	gl200
Input ID	1	1	1
Enable	1	0|1	1
Debounce time	<=2	1-20 (×10ms)	5
reserved	0		
reserved	0		
reserved	0		
reserved	0		
reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	

✧ <*Input ID*>: The ID of the digital input. It is always 1. If the filed is empty, the device will ignore the following settings about the digital input 1, i.e. change nothing about the digital input 1.

✧ <*Enable*>: A numeric to check whether to enable the digital input.

- 0: Disable the digital input, i.e. ignore the status changing of the digital input.
- 1: Enable the digital input. If the status of the input change, the device will report the message **+RESP:GTDIS** to the backend server to inform the latest status.

✧ <*Debounce time*>: The time for debouncing.

The acknowledgment message of the **AT+GTDIS** command:

➢ **+ACK:GTDIS,**

Example: **+ACK:GTDIS,020102,135790246811220,,0010,20101029085505,0028$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.2.17. Protocol watchdog

The **AT+GTDOG** command is used to reboot the device in a time based manner or upon ignition. This helps the device avoid working in an exceptional status for a long time. Besides these two automatically reboot method, the device also supports to use the digital input to trigger the reboot manually.

➢ **AT+GTDOG=**

Example: **AT+GTDOG=gl200,1,,1,0130,,1,1,,,,,0011$** **AT+GTDOG=gl200,2,30,,,,1,1,,,,,0011$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl200
Mode	1	0|1|2	0
Ignition Frequency	<=3	10-120	60
Interval	<=2	1-30 days	30
Time	4	HHMM	0200
Reserved	0		
Report Before Reboot	1	0|1	1
Input ID	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Mode*>: Working mode.

- 0: Disable this function

- 1: Reboot periodically according to the <*Interval*> and <*Time*> setting.
- 2: Reboot when ignition on.

✧ <*Ignition Frequency*>: When the working mode is 2, if the time interval between two adjacent ignitions is greater than the specified value, the device will automatically reboot upon ignition on.

✧ <*Interval*>: The interval to reboot the device in day.

✧ <*Time*>: At what time to perform the reboot operation when <*Interval*> is met.

✧ <*Report Before Reboot*>: Whether to report the **+RESP:GTDOG** message before reboot. 0 means no report, 1 to report. If this is enabled, the device will make a real-time location before sending the message in order to send it with the current location information.

<*Input ID*>: ID of the digital input port which is used to trigger the manually reboot. 0 means do not use manual reboot. Only port 1 is supported.

The acknowledgment message of the **AT+GTDOG** command:

➢ **+ACK:GTDOG,**

Example: **+ACK:GTDOG,020102,135790246811220,,0011,20101029085505,0028$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.3. Report

3.3.1. Position Related Report

3.3.1.1. General Position Report

- **+RESP:GTFRI**: report of **AT+GTFRI**
- **+RESP:GTGEO**: report of **AT+GTGEO**
- **+RESP:GTSPD**: report of **AT+GTSPD**
- **+RESP:GTSOS**: report after long press the function if the function key is enabled and the mode is SOS mode.
- **+RESP:GTRTL:** report of **AT+GTRTO-RTL**
- **+RESP:GTPNL**: The first location after the device powers on.
- **+RESP:GTNMR**: non movement is detected by motion sensor, according to the setting of **AT+GTNMD**
- **+RESP:GTDIS**: the status of digital input is detected being changed if the parameter <*Enable*> is set as 1 in the command **AT+GTDIS,**
- **+RESP:GTDOG**: the protocol watchdog reboot message.

Example:

+RESP:GTFRI,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$

+RESP:GTFRI,020102,135790246811220,,0,0,2,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,0,4.3,92,70.0,121.354335,31.222073,20090101000000,0460,0000,18d8,6141,00,,20090214093254,11F0$

+RESP:GTGEO,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$

+RESP:GTSPD,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$

+RESP:GTSOS,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$

+RESP:GTRTL,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$

+RESP:GTPNL,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$

+RESP:GTNMR,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,2009

0214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$

+RESP:GTDIS,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$

+RESP:GTDOG,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

Parameter	Length (byte)	Range/Format	Default
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Report ID	1	0 – 4	
Report type	1	0|1	
Number	<=2	0 – 15	
GPS accuracy	<=2	0|1 – 50	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	(-)xxxxx.x m	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved1	2	00	00
battery percentage	3	0-100	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

- <*Report ID*>: ID of Geo-Fence in **+RESP:GTGEO**, 0 for other reports.
- <*Report type*>: type of the report for **+RESP:GTGEO** and **+RESP:GTSPD** and **+RESP:GTNMR**, 0 for other reports.
  - For **+RESP:GTGEO**
    0: exit the corresponding Geo-Fence.
    1: enter the corresponding Geo-Fence.
  - For **+RESP:GTSPD**
    0: Outside the speed range.
    1: Inside the speed range.
  - For **+RESP:GTNMR**
    0: The state of the device changed from motion to rest.

1: The state of the device changed from rest to motion.

- In the **+RESP:GTDIS** report message generated by the digital input

  0: The current logical status of the input port is disable status.

  1: The current logical status of the input is enable status.

✧ <*Number*>: Number of points in one report message. According to the setting of fixed report, there could be up to 15 points in one **+RESP:GTFRI** report. For other reports, this is always 1. If there are more than 1 point in the report, information from <*GPS accuracy*> to <*Reserved1*> is repeated for each point.

✧ <*GPS accuracy*>: The HDOP defined in NMEA0183. The range of value is 1 – 50. The smaller the value, the higher the precision. Different from NMEA0183, 0 here means no fix, while GPS accuracy between 0 and 1 is set to 1.

✧ <*Speed*>: The speed from GPS.

✧ <*Azimuth*> The azimuth from GPS.

✧ <*Altitude*>: The height above sea level from GPS.

✧ <*Longitude*>: The longitude of the current position. The format is "(-)xxx.xxxxxx" and the value range is from "-180.000000" to "180.000000". The unit is degree. West longitude is defined as negative starting with minus "-" and east longitude is defined as positive without "+".

✧ <*Latitude*>: The latitude of the current position. The format is "(-)xx.xxxxxx" and the value range is from "-90.000000" to "90.000000". The unit is degree. South Latitude is defined as negative starting with minus "-" and north Latitude is defined as positive without "+".

✧ <*GPS UTC time*>: UTC time from GPS.

✧ <*MCC*>: Mobile country code. It is 3 digits in length and ranges from 000-999.

✧ <*MNC*>: Mobile network code. It is 3 digits in length and ranges from 000-999.

✧ <*LAC*>: Location area code in hex format.

✧ <*Cell ID*>: Cell ID in hex format.

✧ <*battery percentage*>: The current volume of the battery in percentage.

3.3.1.2. Location by Call Report

➢ **+RESP:GTLBC:**

Example: **+RESP:GTLBC,020102,135790246811220,,+8613800000000,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Call number	<=20	phone number	
GPS accuracy	<=2	0|1 – 50	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	

Longitude	<=11	±XXX.XXXXXX	
Latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved1	2	00	00
Reserved2	0		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Call number*>: the phone number of the incoming call which initiates this report.

3.3.1.3. Location as centre of Geo-Fence

If function key mode was set as 2 and long press function key to switch on Geo-Fence 0, the terminal will start GPS fixing to get the current position as the centre of Geo-Fence 0. And after GPS fixing finishes, the terminal will report the message **+RESP:GTGCR**.

➢ **+RESP:GTGCR:**

Example: **+RESP:GTGCR,020102,135790246811220,,3,50,180,2,0.4,296,-5.4,121.391055,31.164473,20100714104934,0460,0000,1878,0873,00,,20100714104934,000C$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Geo mode	1	0|1|2|3	
Geo radius	<=7	50 – 6000000m	
Geo check interval	<=5	0|30 – 86400sec	
GPS accuracy	<=2	0|1 – 50	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Longitude	<=11	±XXX.XXXXXX	
Latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	

Cell ID	4	XXXX	
Reserved1	2	00	00
Reserved2	0		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

- <*Geo mode*>: the new mode of Geo-Fence 0. Please refer to the parameter <*Mode*> in the command **AT+GTGEO**.
- <*Geo radius*>: the radius of Geo-Fence 0. Please refer to the parameter <*Radius*> in the command **AT+GTGEO**.
- <*Geo check interval*>: the check interval of Geo-Fence 0. Please refer to the parameter <*Check interval*> in the command **AT+GTGEO**.
- <*Longitude*>: The longitude of the current position. If it is successful to fix position this time, this longitude will be replace the longitude of the centre of Geo-Fence 0.
- <*Latitude*>: The latitude of the current position. If it is successful to fix position this time, this latitude will be replace the latitude of the centre of Geo-Fence 0.

3.3.2. Device Information Report

➢ **+RESP:GTINF:**

Example: **+RESP:GTINF,020102,135790246811220,,41,898600810906F8048812,16,0,0,0,,4.10,0,0,0,0,20100214013254,,,,+0800,0,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
State	2	21|22|41|42	
ICCID	20		
CSQ RSSI	<=2	0 – 31|99	
CSQ BER	<=2	0 – 7|99	
External power supply	1	0|1	
Reserved	0		
Reserved	0		
Battery voltage	<=4	0.0 – 4.50V	
Charging	1	0|1	
LED on	1	0|1	
GPS on need	1	0|1	
GPS antenna type	1	0|1	
GPS antenna state	1	0	
Last GPS fix UTC time	14	YYYYMMDDHHMMSS	
battery percentage	3	0-100	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*State*>: The current motion state of the device.

21: The device attached vehicle is ignition on and motionless.

22: The device attached vehicle is ignition on and moving.

41: The device is motionless without ignition on.

42: The device is moving without ignition on.

✧ <*ICCID*>: The ICCID of the installed SIM card.

✧ <*CSQ RSSI*>: The GSM signal strength level.

- <*CSQ BER*>: The quality of the GSM signal.
- <*External power supply*>: Whether the external power supply is connected.
  0: Not connected
  1: Connected
- <*Battery voltage*>: The voltage of the battery.
- <Charging>: Whether the battery is charging when the external power supply is connected.
  0: Not charging
  1: Charging
- <*LED on*>: The setting of <*LED on*> in **AT+GTCFG**.
- <*GPS on need*>: The setting of <*GPS on need*> in **AT+GTCFG**.
- <*GPS antenna type*>: A numeric to indicate which GPS antenna is working now.
  0: inside GPS antenna
  1: outside GPS antenna
- <*GPS antenna state*>: the status of the working GPS antenna.
  0: The antenna is working
- <*Last GPS fix UTC time*>: The UTC time of the latest successful GPS fixing.

3.3.3. Report for Querying

These are the report of real time querying by command **AT+GTRTO**.

➢ **+RESP:GTGPS:** The report for real time operation GPS

Example: **+RESP:GTGPS,020102,135790246811220,,0,1F,1F,0,0,20100214013254,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
GPS on need	1	0|1|2	
GPS fix delay	3	5 – 60sec	
GPS antenna type	1	0|1	
Report items mask	<=4	0000 – FFFF	
FRI report mask	<=4	0000 – FFFF	
GPS antenna state	1	0	
Last GPS fix UTC time	14	YYYYMMDDHHMMSS	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*FRI report mask*>: The setting of <*Report mask*> in **AT+GTFRI**.

➢ **+RESP:GTALL:** The report for real time operation READ

Example: **+RESP:GTALL,020102,135790246811220,,BSI,cmnet,,,,,,,SRI,4,,1,116.226.44.17,9001,116.226.44.16,9002,+8613812341234,0,1,,,,,CFG,gl200,GL200,,,0,5,001F,,,0FFF,0,1,1,300,1,,,,,,NMD,1,3,2,3,300,300,,,,,,,,TMZ,-0330,0,FRI,1,1,,,0000,2359,60,60,30,30,1F,1000,1000,0,5,50,5,,,GEO,0,3,101.412248,21.187891,1000,600,,,,,,,,1,0,,,500,0,,,,,,,,2,0,,,500,0,,,,,,,,3,0,,,500,0,,,,,,,,4,0,,,500,0,,,,,,,,SPD,2,0,80,30,60,,,,,,,,,,,,,,,FKS,1,,1,,,,,WLT,0,,,,,,,,,,,,,,,,,,GLM,1,,,,,,,,,,,,PIN,1,,0,,,,,DIS,1,0,5,,,,,DOG,0,60,30,0200,,1,0,,,,,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
BSI	3	BSI	BSI
APN	<=40		
APN user name	<=20		

APN password	<=20		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SRI	3	SRI	SRI
Report mode	1	0 – 5	
Reserved	0		
Buffer enable	1	0|1	
Main server IP/domain name	<=60		
Main server port	<=5	0 – 65535	
Backup server IP	<=15		
Backup server port	<=5	0 – 65535	
SMS gateway	<=20		
Heartbeat interval	<=3	0|10 – 360min	
SACK enable	1	0|1	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
CFG	3	CFG	CFG
New password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	
Device name	10		
Reserved	0		
Reserved	0		
GPS on need	1	0|1|2	
GPS fix delay	3	5 – 60sec	
Report items mask	<=4	0000 – FFFF	
Reserved	0		
Reserved	0		
Event mask	4	0000-FFFF	
EPB mode	1	0|1	
LED on	1	0|1|2	
Info report enable	1	0|1	
Info report interval	<=5	30 – 86400sec	
Location by call	1	0|1	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

NMD	3	NMD	NMD
mode	1	0-F	
Non-movement duration	<=3	0 – 255(×15sec)	
Movement duration	<=2	0 – 10(×100ms)	
Movement threshold	1	2 – 4	
rest fix interval	5	5 – 86400sec	
rest send interval	5	5 – 86400sec	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
TMZ	3	TMZ	TMZ
Time Zone	5	-|+HHMM	
Daylight Saving	1	0|1	
FRI	3	FRI	FRI
Mode	1	0|1	
Discard no fix	1	0|1	
Reserved	0		
Reserved	0		
Begin time	4	HHMM	
End time	4	HHMM	
Check interval1	<=5	5 – 86400sec	
Send interval1	<=5	5 – 86400sec	
Check interval2	<=5	5 – 86400sec	
Send interval2	<=5	5 – 86400sec	
Report mask	<=4	0000 – FFFF	
Distance	<=5	50 – 65535m	
Mileage	<=5	50 – 65535m	
movement detect mode	1	0|1	
movement speed	<=3	1-999(km/h)	
movement distance	<=4	1-9999(m)	
movement send number	1	1-5	
Reserved	0		
Reserved	0		
GEO	3	GEO	GEO
GEO ID0	1	0	0
Mode	1	0 – 3	

Longitude	<=11	±xxx.xxxxxx	
Latitude	<=10	±xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check interval	<=5	0|30 – 86400sec	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID1	1	1	1
Mode	1	0 – 3	
Longitude	<=11	±xxx.xxxxxx	
Latitude	<=10	±xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check interval	<=5	0|30 – 86400sec	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID2	1	2	2
Mode	1	0 – 3	
Longitude	<=11	±xxx.xxxxxx	
Latitude	<=10	±xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check interval	<=5	0|30 – 86400sec	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID3	1	3	3
Mode	1	0 – 3	

Longitude	<=11	±xxx.xxxxxx	
Latitude	<=10	±xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check interval	<=5	0|30 – 86400sec	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID4	1	4	4
Mode	1	0 – 3	
Longitude	<=11	±xxx.xxxxxx	
Latitude	<=10	±xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check interval	<=5	0|30 – 86400sec	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SPD	3	SPD	SPD
Mode	1	0|1|2	
Min speed	<=3	0 – 400km/h	
Max speed	<=3	0 – 400km/h	
Duration	<=4	15 – 3600sec	
Send interval	<=4	30 – 3600sec	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FKS	3	FKS	FKS
Power key enable	1	0|1	
Reserved	1		
Function key mode	1	0|1|2|3	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
WLT	3	WLT	WLT
call filter	1	0|1|2	
white number	20		
white number	20		
white number	20		
white number	20		
white number	20		
white number	20		
white number	20		
white number	20		
white number	20		
white number	20		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GLM	3	GLM	GLM
google mode	1	0|1|2	
direct number	20		
direct number	20		
direct number	20		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
PIN	3	PIN	PIN
auto unlock PIN	1	0|1	1
PIN	4-8	'0'-'9'	
PIN checking	1	0|1	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
DIS	3	DIS	DIS
Input ID	1	1	1
Enable	1	0|1	
Debounce time	<=2	1-20 (×10ms)	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
DOG	3	DOG	DOG
Mode	1	0|1|2	
Ignition Frequency	<=3	10-120	
Interval	<=2	1-30 days	
Time	4	HHMM	
Reserved	0		
Report Before Reboot	1	0|1	
Input ID	1	0|1	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ No matter what report mode is set, **+RESP:GTALL** is only reported through GPRS. If the current report mode is forcing on SMS, **+RESP:GTALL** will be reported via TCP short connection.

➢ **+RESP:GTCID:** The report for real time operation CID

Example: **+RESP:GTCID,020102,135790246811220,,898600810906F8048812,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
ICCID	20		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTCSQ:** The report for real time operation CSQ

Example: **+RESP:GTCSQ,020102,135790246811220,,16,0,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
CSQ RSSI	<=2	0 – 31 | 99	
CSQ BER	<=2	0 – 7 | 99	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTVER:** The report for real time operation VER

Example: **+RESP:GTVER,020102,135790246811220,,GL200,0100,0101,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Device type	10	'0' – '9', 'a' – 'z', 'A' – 'Z'	GL200
Firmware version	4	0000 – FFFF	
Hardware version	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	

Tail character	1	$	$

- ✧ <*Device type*>: A string represents the type of the device.
- ✧ <*Firmware version*>: The firmware version. The first two characters point out the main version and the last two characters point out the subsidiary version. For example: 010A means the version 1.10
- ✧ <*Hardware version*>: The hardware version. The first two characters point out the main version and the last two characters point out the subsidiary version. For example: 010A means the version 1.10

➢ **+RESP:GTBAT:** The report for real time operation BAT

Example: **+RESP:GTBAT,020102,135790246811220,,0,,,4.10,0,1,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
External power supply	1	0|1	
Reserved	0		
battery percentage	3	0-100	
Battery voltage	<=4	0.0 – 4.50V	
Charging	1	0|1	
LED on	1	0|1	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

- ✧ <*Device type*>: A string represents the type of the device.

➢ **+RESP:GTTMZ:** The report for real time operation TMZ

Example: **+RESP:GTTMZ,020102,135790246811220,-0330,0,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Time zone offset	5	±HHMM	
Daylight saving	1	0|1	

Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

3.3.4. Event Report

The following event reports are triggered when certain event occurs.
+RESP:GTPNA: Power on report
+RESP:GTPFA: Power off report
+RESP:GTEPN: The report for connecting external power supply
+RESP:GTEPF: The report for disconnecting external power supply
+RESP:GTBPL: Battery low report
+RESP:GTBTC: Start charging report
+RESP:GTSTC: Stop charging report.
+RESP:GTSTT: Device motion state indication
+RESP:GTANT: GPS antenna status indication
+RESP:GTPDP: GPRS PDP connection report
+RESP:GTSWG: Switch on or off Geo-Fence 0 via function key
+RESP:GTIGN: Ignition on report
+RESP:GTIGF: Ignition off report

In **+RESP:GTEPN**, **+RESP:GTEPF**, **+RESP:GTBTC**, **+RESP:GTSTC**, **+RESP:GTBPL**, **+RESP:GTSTT, +RESP:GTANT** and **+RESP:GTSWG** event reports, the last known GPS information and the current GSM network information are involved.

➢ **+RESP:GTPNA:**

Example: **+RESP:GTPNA,020102,135790246811220,,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTPFA:**

Example: **+RESP:GTPFA,020102,135790246811220,,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	

Tail character	1	$	$

➢ **+RESP:GTEPN:**

Example: **+RESP:GTEPN,020102,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Last longitude*>: The longitude of the last position. The format is "(-)xxx.xxxxxx" and the value range is from "-180.000000" to "180.000000". The unit is degree. West longitude is defined as negative starting with minus "-" and east longitude is defined as positive without "+".

✧ <*Last latitude*>: The latitude of the last position. The format is "(-)xx.xxxxxx" and the value range is from "-90.000000" to "90.000000". The unit is degree. South Latitude is defined as negative starting with minus "-" and north Latitude is defined as positive without "+".

➢ **+RESP:GTEPF:**

Example: **+RESP:GTEPF,020102,135790246811220,0,,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	

Device name	10		
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTBPL:**

Example:
+RESP:GTBPL,020102,135790246811220,,3.53,0,4.3,92,70.0,121.354335,31.222073,200902 14013254,0460,0000,18d8,6141,00,20100214093254,11F0$

Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Battery voltage	<=4	0.0 – 4.50V	
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTBTC:**

Example: **+RESP:GTBTC,020102,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTSTC:**

Example: **+RESP:GTSTC,020102,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Reserved	0		
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	

GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTSTT:**

Example:
+RESP:GTSTT,020102,135790246811220,,41,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20100214093254,11F0$

Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
State	2	21|22|41|42	
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTANT:**

Example:
+RESP:GTANT,020102,135790246811220,,0,0,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20100214093254,11F0$

Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF,	

		X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
GPS antenna type	1	0|1	
GPS antenna state	1	0	
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTPDP:**

Example: **+RESP:GTPDP,020102,135790246811220,,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

➢ **+RESP:GTSWG:**

Example: **+RESP:GTSWG,135790246811220,,1,0,2.1,0,27.1,121.390717,31.164424,20100901073917,0460,0000,1878,0873,00,20100901154653,0015$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		

Geo active	1	0|1	
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Geo active*>: A numeric to indicate to activate or deactivate Geo-Fence 0 by the long press of the function key.
0: deactivate Geo-Fence 0
1: activate Geo-Fence 0

➢ **+RESP:GTIGN:**

Example: **+RESP:GTIGN,020102,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Duration of Ignition Off	<=6	0 – 999999 sec	
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	

Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Duration of Ignition Off*>: Duration since last time the ignition is off. If greater than 999999 seconds, report as 999999 seconds.

➢ **+RESP:GTIGF:**

Example: **+RESP:GTIGF,020102,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Duration of Ignition On	<=6	0 – 999999 sec	
GPS accuracy	1	0	
Speed	<=5	0.0 – 999.9km/h	
Azimuth	<=3	0 – 359	
Altitude	<=8	±XXXXX.X m	
Last longitude	<=11	±XXX.XXXXXX	
Last latitude	<=10	±XX.XXXXXX	
GPS UTC time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ <Duration of Ignition On>: Duration since last time the ignition is on. If greater than 999999 seconds, report as 999999 seconds.

3.3.5. Buffer Report

If BUFFER function is enabled, the terminal will save the message into the BUFFER in the following circumstances.

- ✧ No GSM signal.
- ✧ Failed to activate GPRS context for the TCP or UDP connection.
- ✧ Failed to establish the TCP connection with the backend server.

These messages will be sent to the backend server after the message can be sent to the backend server. The device can save up to 100 messages if the length of each buffered message is not greater than 160.

- ✧ Only **+RESP** messages can be buffered except **+RESP:GTALL**
- ✧ In the buffer report, the original header string "**+RESP"** is replaced by "**+BUFF**" while keeps the other content untouched including the original sending time and count number.
- ✧ Buffered messages will be sent only via GPRS by TCP or UDP protocol. They cannot be sent via SMS. If the current report mode is forcing on SMS, the buffered messages will be sent via TCP short connection.
- ✧ The buffered messages will be sent after the other normal messages sending.

Example:

The following is an example of the buffered message:

+BUFF:GTFRI,020102,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0$

3.3.6. Report Google Maps hyperlink

According to the setting of the command **AT+GTGLM** and the configuration of location by call, the device can send a SMS with Google Maps hyperlink to a mobile phone.

If location by call is set to 1, GL200 will sent its current position to the incoming call via SMS with Google Maps hyperlink if the incoming call is a direct number (Please refer to <*direct number list*> in the chapter 3.2.13) or a white call (Please refer to <*white number list*> in the chapter 3.2.12).

If the <*google link mode*> was set as 1 in the command **AT+GTGLM**, GL100 will send a SMS with Google Maps hyperlink to the direct phone numbers after the message **+RESP:GTSOS** and **+RESP:GTGEO**.

➢ **Google Maps hyperlink**

Example: **GL200 SOS:** **http://maps.google.com/maps?q=31.222073,121.354335+%28GL100%29** **F1 D2009/01/01T00:00:00 B74%**			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Sms header	<=30		

Google Maps hyperlink	<=77		
GPS fix	2	F1|F0	
GPS UTC time	20	DYYYY/MM/DDTHH:MM:SS	
battery level	<=5	B1-100%	

- <*Sms header*>: A string that includes the terminal name set in the command **AT+GTGLM** and GPS fix type ("**SOS**", "**IN GEO-i**", "**OUT GEO-i**", "**LBC**").
- <*Google Maps hyperlink*>: A string of a google map hyperlink.

3.4. Heartbeat

Heartbeat is used to maintain the contact between the device and the backend server if communicating via GPRS. The heartbeat package is sent to the backend server at the interval defined by <*Heartbeat interval*> in **AT+GTQSS** or **AT+GTSRI** command.

➢ **+ACK:GTHBD:**

Example: **+ACK:GTHBD,020102,135790246811220,,20100214093254,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device name	10		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	$	$

Whenever the backend server receives a heartbeat package, it should reply an acknowledgement to the device.

➢ **+SACK:GTHBD:**

Example: **+SACK:GTHBD,020102,11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	XX0000 – XXFFFF, X∈{'A'-'Z','0'-'9'}	
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Count number*>: The backend server uses the <*Count number*> extracted from the heartbeat package from the device as the <*Count number*> in the server acknowledgement of the heartbeat.

3.5. Sever Acknowledgement

If server acknowledgement is enabled by AT+GTQSS or AT+GTSRI command, the backend server should reply to the device whenever it receives a message from the device.

➢ **+SACK:**

Example: **+SACK:11F0$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Count number	4	0000 – FFFF	
Tail character	1	$	$

✧ <*Count number*>: The backend server uses the <*Count number*> extracted from the received message as the <*Count number*> in the server acknowledgement.

4. LED Indication

LED	Event	State
GSM LED	Searching network	Fast flash
	Network has been registered	Slow flash
	Power off	Dark
	SIM-PIN Locked	Solid
	<*LED on*> is 2	Dark
GPS LED	GPS has fixed	Solid
	GPS is in fixing	Fast flash
	GPS is on and GPS data wrong	Slow flash
	GPS is off	Dark
	If <*LED on*> is 0, 150 seconds later after powers on.	Dark
	<*LED on*> is 2	Dark
Power LED	Power on and normal	Dark
	Charger inserted and charging completed	Solid
	Charger inserted and charging	Fast flash
	Power key was pressed and prepare to power off	Fast flash
	Abnormal	Fast flash
	Power low alert	Slow flash
	Power off or turn off the power light by command	Dark
	<*LED on*> is 2	Dark

Appendix: Message Index

✧ **Command and ACK**

✧ **Position Related Report**

+RESP:GTRTL
+RESP:GTLBC
+RESP:GTPNL
+RESP:GTNMR
+RESP:GTGCR
+RESP:GTDOG

✧ **Device Information Report**

+RESP:GTINF

✧ **Report for Querying**

+RESP:GTGPS
+RESP:GTALL
+RESP:GTCID
+RESP:GTCSQ
+RESP:GTVER
+RESP:GTBAT
+RESP:GTTMZ

✧ **Event Report**

+RESP:GTPNA
+RESP:GTPFA
+RESP:GTEPN
+RESP:GTEPF
+RESP:GTBTC
+RESP:GTSTC
+RESP:GTBPL
+RESP:GTSTT
+RESP:GTANT
+RESP:GTPDP
+RESP:GTSWG
+RESP:GTIGN
+RESP:GTIGF

✧ **Heartbeat**

+ACK:GTHBD
+SACK:GTHBD

✧ **Server Acknowledgement**

+SACK