

GL300W @Track Air Interface Protocol

GSM/GPRS/WCDMA/GNSS Tracker

TRACGL300WAN001

Version:2.04

GL300W



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0. Revision history

Revision	Date	Author	Description of change
1.00	2014-08-20	Felix.Jiang	Initial
1.01	2014-12-18	Felix.Jiang	1. Delete +RESP:GTCEL . 2. Delete the <i><Report Item Mask></i> in AT+GTFRI . 3. Use +RESP:GTALC instead of +RESP:GTALL . 4. Add description about bit 6 of <i>< Report Items Mask ></i> in AT+GTCFG .
2.00	2015-07-10	Felix.Jiang	1. Add AT+GTPDS , AT+GTUPC , AT+GTCMD and GTUDEF .
2.01	2015-09-24	Felix.Jiang	1. Add <i><EPB Mode></i> in GTCFG . 2. Add <i><pm rest threshold></i> , <i><pm motion threshold></i> and <i><Enter Movement By Command></i> in GTNMD . 3. Add new mask in GTPDS about EBK function.
2.02	2015-10-21	Felix.Jiang	1. Add <i><Sack Enable></i> mode 2.
2.03	2015-11-26	Felix.Jiang	1. Add <i><Location Request Mask></i> in AT+GTCFG . 2. Add <i><Network Mode></i> in AT+GTBSI . 3. Add new <i><Sub Command></i> D in AT+GTRTO .
2.04	2015-12-05	Felix.Jiang	1. Add <i><Battery Switch Power On></i> in GTCFG .

1. Overview

1.1. Scope

The @Track Air Interface Protocol is a digital communication interface based on printable ASCII characters over SMS or UMTS 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
WCDMA	Wideband Code Division Multiple Access
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

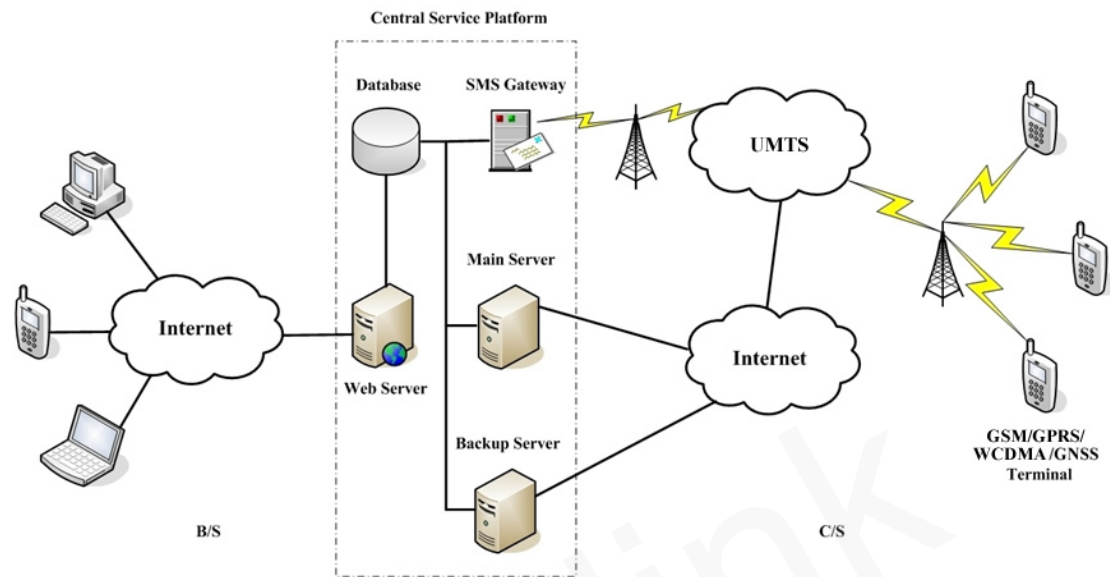


Figure 1: System architecture

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:

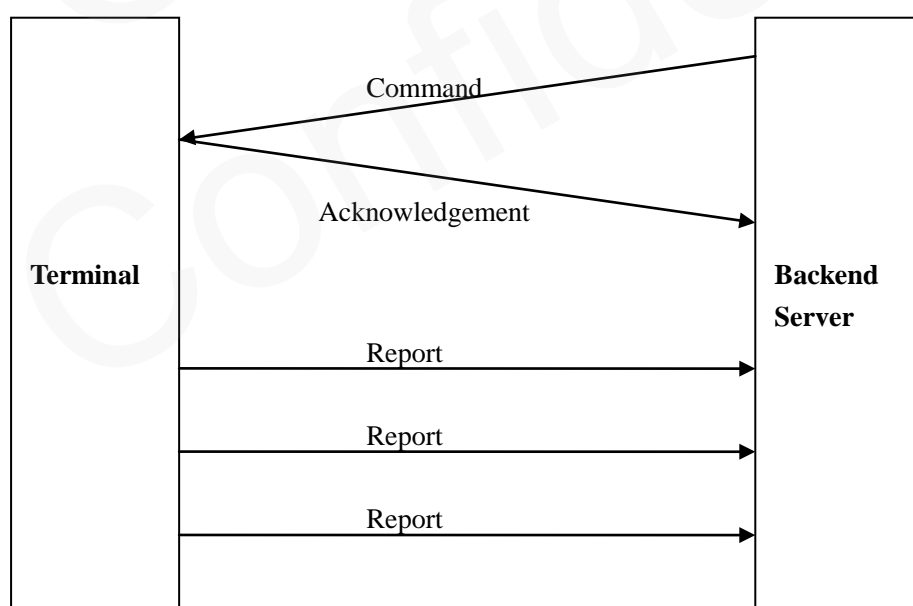


Figure 2: @Tracker protocol messages flow

When the device receives commands over the air, it supports several commands in one SMS or WCDMA 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=gl300w,1,1,,,0000,2359,60,60,,,1F0,,,,,,0007$AT+GTGEO=gl300w,0,3,101.412248,21.187891,1000,600,,,,,,0008$AT+GTSPD=gl300w,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,2C0204,135790246811220,,0007,20100310172830,11F0$
```

```
+ACK:GTGEO,2C0204,135790246811220,,0,0008,20100310172900,11F1$
```

```
+ACK:GTSPD,2C0204,135790246811220,,0009,20100310172930,11F2$
```

3.2. Command and Acknowledgement

3.2.1. Server Connection

3.2.1.1. Bearer Setting Information

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

➤ **AT+GTBSI=**

Example: AT+GTBSI=gl300w,,,,,,0002\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	APN	<=40		
3	APN User Name	<=30		
4	APN Password	<=30		
5	Backup APN	<=40		
6	Backup APN User Name	<=30		
7	Backup APN Password	<=30		
8	Network Mode	1	0-2	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

"gl300w".

- ✧ <APN>: Access point name (APN)
- ✧ <APN User Name>: the WCDMA APN user name. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ <APN Password>: the WCDMA APN password. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ <Backup APN>: Backup access point name (APN). If the <APN> does not useful, the <Backup APN> will be used.
- ✧ <Backup APN User Name>: the backup WCDMA APN user name. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ <Backup APN Password>: the backup WCDMA APN password. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ <Network Mode>: Mobile network mode of device working on.
 - 0: Auto.
 - 1: GSM only.
 - 2: WCDMA only.
- ✧ <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 must be "\$".

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

➤ **+ACK:GTBSI,**

Example:			
+ACK:GTBSI,2C0204,135790246811220,,0002,20100310172830,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Protocol Version>: The protocol version that the terminal conforms to. The first two characters point out the device type. As in the example, "2C" means GL300W. The middle two characters point out the major version number of protocol and the last two characters point out the minor version number of protocol. And both version numbers are hex digital. For example, "1001" means version 1.01.
- ✧ <Unique ID>: The IMEI of the terminal.
- ✧ <Device Name>: The specified name of the device.
- ✧ <Serial Number>: A serial number which is equal to the <Serial Number> in the corresponding command to distinguish which command the ACK message is for.
- ✧ <Send Time>: The local time to send the ACK message.

- ✧ <Count Number>: A self-increasing count number in each acknowledgment message and report message. It begins from 0000 and increases by 1 for each message. And it rolls back after "FFFF".
- ✧ <Tail Character>: A character to indicate the end of the command. Must be "\$".

Note:

Only after both the command **AT+GTBSI** and **AT+GTSRI** are properly set, the ACK messages and other report messages can be sent to the backend server.

3.2.1.2. 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=gl300w,4,,116.226.44.17,9001,116.226.44.16,9002,+8613812341234,0,1,,,,,0003\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Report Mode	1	0 – 6	0
3	Reserved	0		
4	Buffer Enable	1	0 1 2	1
5	Main Server IP/Domain Name	<=60		
6	Main Server Port	<=5	0 – 65535	0
7	Backup Server IP/Domain Name	<=60		
8	Backup Server Port	<=5	0 – 65535	0
9	SMS Gateway	<=20		
10	Heartbeat Interval	<=3	0 5 – 360min	0
11	SACK Enable	1	0 1 2	0
12	SMS ACK Enable	1	0 1	0
13	Reserved	0		
14	Reserved	0		
15	Reserved	0		
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

- ✧ <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.
 - 6: UDP with fixed local port. Like the UDP mode, the terminal will send data using UDP protocol. The difference is the terminal will use fixed local port rather than random port to communicate with the server in this mode. Thus the backend server could use identical port to communicate with all terminals if the backend server and the terminals are all in the same VPN network. The port number the device uses is the same as the port number of the primary server.
- ✧ <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.
 - 2: High priority. Enable the buffer report function. Under this working mode, the device will send all the buffered messages before sending any normal message except for the SOS message (+RESP:GTSOS).
- ✧ <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.
 - 2: the backend server replies SACK message when receiving any message form the terminal, but the terminal does not check the serial number of the SACK message.
- ✧ **<Serial Number>**: The serial number for the command. It will be invoked in the ACK message of the command.
- ✧ **<SMS ACK Enable>**: This defines whether the ACK confirmation should respond by SMS when the command was sent by SMS.
- 0: The device will send the ACK confirmation with the mode configured by the **<Report Mode>**.
 - 1: The device will send the ACK confirmation by SMS to the phone which sent the command by SMS.
- ✧ **<Reserved>**: Not used at present. Please keep empty.
- ✧ **<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+GTSRI** command:

➤ **+ACK:GTSRI,**

Example:			
Parameter	Length (byte)	Range/Format	Default
+ACK:GTSRI,2C0204,135790246811220,,0003,20100310172830,11F0\$			
Protocol Version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

Note:

Only after both the command **AT+GTBSI** and **AT+GTSRI** are properly set, the ACK messages and other report messages can be sent to the backend server.

3.2.1.3. Quick Start Setting

The command **AT+GTQSS** is used to set the WCDMA parameter and backend server information

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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=gl300w,cmnet,,,4,,,116.226.44.17,9001,116.226.44.16,9002,+8613812341234,0,1,,,0001\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	APN	<=40		
3	APN User Name	<=30		
4	APN Password	<=30		
5	Report Mode	1	0 – 6	0
6	Reserved	0		
7	Buffer Enable	1	0 1 2	1
8	Main Server IP/Domain Name	<=60		
9	Main Server Port	<=5	0 – 65535	0
10	Backup Server IP/Domain Name	<=60		
11	Backup Server Port	<=5	0 – 65535	0
12	SMS Gateway	<=20		
13	Heartbeat Interval	<=3	0 5 – 360min	0
14	SACK Enable	1	0 1 2	0
15	Reserved	0		
16	Reserved	0		
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

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

➤ **+ACK:GTQSS,**

Example: +ACK:GTQSS,2C0204,135790246811220,,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	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	

Tail Character	1	\$	\$
----------------	---	----	----

3.2.2. Device Configuration

3.2.2.1. Global Configuration

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

➤ AT+GTCFG=

Example:

AT+GTCFG= gl300w,123456,,,,,,,,,,,,,0004\$

AT+GTCFG=gl300w,,GL300W,0,0.0,0,7,0,0,,,1,1,300,,0,20491231235959,1,,,0004\$

SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	New Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	
3	Device Name	20	'0' – '9', 'a' – 'z', 'A' – 'Z', '-', '_'	GL300W
4	ODO Enable	1	0 1	0
5	ODO Mileage	<=9	0.0 – 4294967.0Km	0.0
6	GPS On Need	1	0 1 2	1
7	GPS Fix Delay	2	5 – 60sec	5
8	Report Items Mask	<=4	0000 – 007F	001F
9	Reserved	0		
10	Reserved	0		
11	Event Mask	4	0000-3FFF	0FFF
12	EPB mode	1	0 1	0
13	LED On	1	0 1 2	1
14	Info Report Enable	1	0 1	1
15	Info Report Interval	<=5	30 – 86400sec	300
16	Location Request Mask	1	0 2	2
17	Expiry Enable	1	0 1	0
18	Expiry Time	14	YYYYMMDDHHMMSS	204912312 35959
19	AGPS Mode	1	0 1	0
20	Reserved	0		
21	Battery Switch Power On	1	0 1	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.
- ✧ <ODO Enable>: Enable or disable the odograph function to calculate the total mileage. The current mileage is included in the message GTINF.

- 0: Disable the ODO mileage function.
- 1: Enable the ODO mileage function.
- ✧ <ODO Mileage>: The value of the current total mileage.
- ✧ <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): Cell information, including <MCC>, <MNC>, <SID/NID>, <BID>
 - Bit4(0010): <Send Time>
 - Bit5(0020): <Device Name>
 - Bit6(0040): reserved
- ✧ <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**
 - Bit3(0008): **+RESP:GTEPF**
 - Bit4(0010): Reserved
 - Bit5(0020): **+RESP:GTBPL**
 - Bit6(0040): **+RESP:GTBTC**
 - Bit7(0080): **+RESP:GTSTC**
 - Bit8(0100): **+RESP:GTSTT**
 - Bit9(0200): Reserved
 - Bit10(0400): **+RESP:GTPDP**
 - Bit11(0800): **+RESP:GTPNL**
 - Bit12(1000): **+RESP:GTIGN** and **+RESP:GTIGF**
 - Bit13(2000): **+RESP:GTIGL**
- ✧ <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 after the device powers on or the parameter is updated to 0 from other values, GPS LED will work for 150 seconds and then turn off deadily. NET LED and Power LED work normally.
 - 1: All LEDs work normally.
 - 2: All LEDs are off always except the following cases. The first exception is all LEDs will work for a period time after power on. The second exception is Power LED will flash fast during power off procedure. The third exception is Power LED will work normally for charging status when a charger is inserted in power off state.
- ✧ <Info Report Enable>: Enable/disable the device information report (**+RESP:GTINF**) function. The device information include state of the device, ICCID, WCDMA 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 Request Mask>: Mask to control the location request
 - Bit 0: Reserved.
 - Bit 1: SMS Location Request.
- ✧ <Expiry Enable >: Enable or disable the expiry function to stop all the GPS fixing and any reports.
 - 0: Disable the Expiry function.
 - 1: Enable the Expiry function.
- ✧ <Expiry Time>: The time when to stop all the GPS fixing and any reports. The valid format is "YYYYMMDDHHMMSS". The value range of "YYYY" is "2000"- "3000". The value range of "MM" is "01"- "12". The value range of "DD" is "00"- "31". The value range of "HH" is "00"- "23". The value range of "MM" is "00"- "59". The value range of "SS" is "00"- "59" It is noticed to use RTC time here.
- ✧ <AGPS Mode>: A numeric to indicate whether to enable AGPS. AGPS is helpful to improve the ratio to get GPS position successfully and reduce the time to get GPS position.
 - 0: Disable the AGPS function.
 - 1: Enable the AGPS function.
- ✧ <Battery Switch Power On>: A numeric to indicate whether the device will reboot after the external battery is removed.
 - 0: The device will power off.
 - 1: The device will switch to internal battery and reboot.

Note:

For AGPS function, it is necessary to download AGPS file from the specified URL, so it is unavoidable to cost some data traffic for the AGPS function. At present, it takes about 10 KB data traffic for the AGPS function each day.

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

➤ **+ACK:GTCFG,****Example:****+ACK:GTCFG,2C0204,135790246811220,,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	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.2.2. Auto Unlock SIM-PIN

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

➤ **AT+GTPIN=****Example:****AT+GTPIN=gl300w,1,1234,1,,,,,000E\$**

SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Auto Unlock PIN	1	0 1	1
3	PIN	4-8	'0'-'9'	
4	PIN Checking	1	0 1	0
5	Reserved	0		
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

✧ **<Auto Unlock PIN>**: A numeric to indicate whether to unlock the USIM-PIN for the device.

- 0: Do not unlock USIM-PIN automatically.
- 1: Each time the device powers on, it will detect whether the USIM 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 USIM-PIN.

- 0: Do not lock the USIM-PIN.
- 1: Lock the USIM-PIN.

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

➤ **+ACK:GTPIN,**

Example:			
+ACK:GTPIN,2C0204,135790246811220,,000E,20101029085505,0027\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.2.3. Protocol Watchdog

The **AT+GTD0G** 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+GTD0G=**

Example:				
AT+GTD0G=gl300w,1,,1,0130,,1,1,,,,,0011\$				
AT+GTD0G=gl300w,2,30,,,,1,1,,,,,0011\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Mode	1	0 1 2	0
3	Ignition Frequency	<=3	10-120	60
4	Interval	<=2	1-30	30
5	Time	4	HHMM	0200
6	Reserved	0		
7	Report Before Reboot	1	0 1	1
8	Input ID	1	0 1	0
9	Unit	1	0 1	0
10	No Network Interval	4	0 5-1440min	60min
11	No Activation Interval	4	0 5-1440min	60min
12	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.
- ✧ **<Time>**: At what time to perform the reboot operation when **<Interval>** is met.
- ✧ **<Report Before Reboot>**: Whether to report the **+RESP:GTD OG** 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.
- ✧ **<Unit>**: Unit.
 - 0: Unit is day.
 - 1: Unit is hour.
- ✧ **<No Network Interval>**: The interval to reboot the device when in no network signal situation. 0 means do not reboot the device.
- ✧ **<No Activation Interval>**: The interval to reboot the device when PDP unable to register successfully or message interactive failure (such as no TCP ack, Server ack). 0 means do not reboot the device.

The acknowledgment message of the **AT+GTD OG** command:

➤ **+ACK:GTD OG,**

Example:			
+ACK:GTD OG,2C0204,135790246811220,,0011,20101029085505,0028\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.2.4. Time Adjustment

The command **AT+GTTMA** is used to adjust local time.

➤ **AT+GTTMA=**

Example:				
AT+GTTMA=gl300w,-,3,30,0,20090917203500,,,,,0006\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Sign	1	+ -	+
3	Hour Offset	<=2	0 - 23	00
4	Minute Offset	<=2	0 - 59	00
5	Daylight Saving	1	0 1	0
6	UTC Time	14	YYYYMMDDHHMMSS	
7	Reserved			
8	Reserved	0		
9	Reserved	0		
10	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,2C0204,135790246811220,,0007,20100310172830,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.2.5. Non movement detection

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

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➤ **AT+GTNMD=****Example:****AT+GTNMD=gl300w,,3,2,3,,,,,,,,,0005\$**

SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Mode	1	0-F	0
3	Non-movement Duration	<=3	1 – 255(×14sec)	2
4	Movement Duration	<=2	1 – 50(×128ms)	3
5	Movement Threshold	1	2 – 9	2
6	Rest Fix Interval	5	5 – 86400sec	300
7	Rest Send Interval	5	5 – 86400sec	300
8	pm rest threshold	1	2-9	2
9	pm motion threshold	1	2-9	3
10	URC Report	1	0 1	0
11	Enter Movement By Command	1	0 1	0
12	Reserved	0		
13	Reserved	0		
14	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-Fence 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 status 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.
- ✧ **<pm rest threshold>**: The threshold for the EBK motion sensor to determine whether the EBK enters non-movement status.
- ✧ **<pm motion threshold>**: The threshold for the EBK motion sensor to determine whether the EBK enters movement status.
- ✧ **<URC Report>**: Enable or disable output sensor state through URC.
 - 0: Do not output the sensor's state to UART.
 - 1: Output a URC to UART to indicate state changing. "SENSOR:REST" means state changing from MOTION to REST. "SENSOR:MOTION" means state changing from REST to MOTION.
- ✧ **<Enter Movement By Command>**: A numeric to indicate whether to force entering movement state after receiving GTRTO command with subcommand RTL or getting GTLSW state update from EBK.
 - 0: Do not change motion state after receiving the commands.
 - 1: Force entering movement state after receiving one of the commands.

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

➤ **+ACK:GTNMD,**

Example:			
+ACK:GTNMD,2C0204,135790246811220,,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	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.2.6. 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=gl300w,1,,1,1,1,,ffff\$

SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Power Key Mode	1	0 1 2	1
3	Full Power Up	1	0 1	1
4	Function Key Mode	1	0 1 2 3	3
5	Power Key Ind	0	0 1	0
6	Function Key Ind	0	0 1	0
7	SOS Report Mode	1	1 2 3	3
8	Reserved	0		
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

- ✧ <Power Key Mode>: 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.
 - 2: Press power key after long press, it will work as SOS mode.
- ✧ <Full Power Up>: A numeric to indicate whether the terminal powers on completely after the terminal was power on because of charger inserted.
 - 0: Do not power on the terminal completely. And the terminal will only work on charging.
 - 1: Power on the terminal completely. The terminal will work normally as power on by power key long pressed.
- ✧ <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, 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.
- ✧ <Power Key Ind>: A numeric to indicate the working mode of the motor for power key.
 - 0: Disable drive the motor when the power key is long pressed
 - 1: Drive the motor vibration when the power key is long pressed to power off
- ✧ <Function Key Ind>: A numeric to indicate the working mode of the motor for function key.

- 0: Disable drive the motor when the function key is long pressed
 - 1: Drive the motor vibration when the function key is long pressed
- ✧ <SOS Report Mode>: A numeric to indicate the way of reporting GPS location for SOS event.
- 1: Report only the last GPS location immediately after SOS event is triggered.
 - 2: Try to report the current GPS location after SOS event is triggered.
 - 3: Report the last GPS location immediately after SOS event triggered and then try to get the current GPS location to report.

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

➤ **+ACK:GTFKS,**

Example:			
+ACK:GTFKS,2C0204,135790246811220,,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	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.2.7. Outside Working Hours

To protect the privacy of the driver when they are off duty, the device could be configured to report empty location information during the outside working hours. The command **AT+GTOWH** is used to define the working hours and the working mode to protect the privacy. When this function is enabled, the device will report empty latitude, empty longitude, empty SID/NID, empty BID, empty MCC and empty MNC in all the report messages except for **+RESP:GTSOS**.

➤ **AT+GTOWH=**

Example:				
AT+GTOWH=gl300w,1,1F,0900,1200,1300,1730,,,1,,,,,,,,,0012\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Mode	1	0 1 2 3	0
3	Day of Work	<=2	0 – 7F	1F
4	Working Hours Start1	4	HHMM	0900
5	Working Hours End1	4	HHMM	1200
6	Working Hours Start2	4	HHMM	1300
7	Working Hours End2	4	HHMM	1800

8	Reserved	0		
9	Reserved	0		
10	Digital Input ID	1	0 1	0
11	Reserved	0		
12	Reserved	0		
13	Reserved	0		
14	Reserved	0		
15	Reserved	0		
16	Reserved	0		
17	Reserved	0		
18	Reserved	0		
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

✧ *<Mode>*: Working mode.

- 0: Disable this function.
- 1: Manual mode. Use the specified digital input (refer to the parameter *<Digital Input ID>*) to control whether to check working hours. After the digital input is enabled, if the device finds it is outside of the working hours, it will hide the location information. Otherwise report normally.
- 2: Full manual mode. Use the specified digital input (refer to the parameter *<Digital Input ID>*) to control whether to hide the location information. It hides the location information when the input is enabled and reports normally when the input is disabled.
- 3: Automatic mode. Under this mode, the device will ignore the status of the digital input. It will automatically check the current time against the working hours arrange. If it is outside of the working hours, the device will hide the location information. Otherwise report normally.

✧ *<Day of Work>*: Specify the working days in a week in a bitwise manner.

- Bit 0 for Monday
- Bit 1 for Tuesday
- Bit 2 for Wednesday
- Bit 3 for Thursday
- Bit 4 for Friday
- Bit 5 for Saturday
- Bit 6 for Sunday

For each bit, 0 means off day, 1 means working day.

✧ *<Working Hours Start1>*, *<Working Hours End1>*: The first period of the working hours in a day.

✧ *<Working Hours Start2>*, *<Working Hours End2>*: The second period of the working hours in a day.

✧ *<Digital Input ID>*: The input ID used to trigger this function when mode is 1 or 2. Only digital input port 1 is supported.

The acknowledgment message of **AT+GTOWH** command:

➤ **+ACK:GTOWH,**

Example:			
+ACK:GTOWH,2C0204,135790246811220,,0012,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.3. Position Related Report

3.2.3.1. Fixed Report Information

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

➤ AT+GTFRI=

Example: AT+GTFRI=gl300w,0,,,,,,,,,,,,,0007\$ AT+GTFRI=gl300w,1,1,,,0000,2359,60,60,,,1F,,,,,,,,,0007\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Mode	1	0 1 2 3 4 5 6	0
3	Discard No Fix	1	0 1	1
4	Reserved	0		
5	Reserved	0		
6	Begin Time	4	HHMM	0000
7	End Time	4	HHMM	0000
8	Check Interval	<=5	5 – 86400sec	180
9	Send Interval	<=5	5 – 86400sec	180
10	Ignition Check Interval	<=5	5 – 86400sec	180
11	Ignition Send Interval	<=5	5 – 86400sec	180
12	Reserved	0	.	
13	Distance	<=5	50 – 65535m	1000
14	Mileage	<=5	50 – 65535m	1000
15	Movement Detect Mode	1	0 1	0
16	Movement Speed	<=3	1-999(km/h)	5
17	Movement Distance	<=4	1-9999(m)	50
18	Movement Send Number	1	1-5	5
19	Corner	3	0 - 180	0
20	Reserved	0		
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

✧ <Mode>: The working mode of the fixed report.

- 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.

- 4: Optimum Report. Simultaneously observe time interval and path length between two adjacent reports. Report device position if the calculated time interval per current time against the last report time is greater than the <Send Interval>, and the length of path between the current position and the last position is greater than the <Mileage> setting. There is a precondition for the function. It is that <GPS On Need> must be 0 (Never close GPS chip) or 2 (Never close GPS chip in ignition on state or movement state).
 - 5: Reserved.
 - 6: Fixed Time or Mileage Report. Simultaneously observe both time interval and path length between two adjacent reports. Report device position if the calculated time interval per current time against the last report time is greater than the <Send Interval>, or the length of path between the current position and the last position is greater than the <Mileage> setting.
- ✧ <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 system time here.
 - ✧ <End Time>: The end time of scheduled fixed report. The valid format and range are same as <Begin Time>.
 - ✧ <Check Interval>: 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 Interval>: The period to send the position information when the device attached vehicle is ignition off. The value range is 5-86400 and the unit is second.
 - ✧ <Ignition Check Interval>: 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.
 - ✧ <Ignition send interval>: 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.
 - ✧ <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.
- ✧ *<Corner>*: A numeric to indicate whether to report +RESP:GTFRI message according to the heading changing, i.e. the movement direction of the device changing.
 0: disable the function, i.e. do not detect whether the device has changed its direction.
 1 – 180: The angle used for deciding whether the device turn around. If the heading changing is greater than the specified value, the device will be considered turning around.
 Unit: degree.

Note:

✧ **Check 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>*:

- Mode 1: 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.
- Mode 2: If the *<Check Interval>* is less than 60 seconds, the terminal will never close the GPS part in this mode.

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.

✧ **Scheduled Report Mode**

For the mode schedule distance report and scheduled mileage report and optimum report, *<GPS On Need>* must be 0 (Never close GPS chip) or 2 (Never close GPS chip in ignition on state or movement state) for the function. For the mode scheduled timing report, it doesn't care whether GPS works always.

✧ **Corner report**

It is necessary to set *<GPS On Need>* as 0 or 2 for detecting turning point. Because the detection for turning point is based on heading in GPS position which is not so accurate, it could make mistake to detect turning point sometimes.

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

➤ **+ACK:GTFRI,**

Example:

+ACK:GTFRI,2C0204,135790246811220,,0007,20100310172830,11F0\$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.4. Alarm Settings

3.2.4.1. 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=gl300w,0,3,101.412248,21.187891,1000,600,,,,,,,,,0008\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	GEO ID	1	0 – 19	
3	Mode	1	0 – 3	0
4	Longitude	<=11	(-)xxx.xxxxxx	
5	Latitude	<=10	(-)xx.xxxxxx	
6	Radius	<=7	50 – 6000000m	50
7	Check Interval	<=5	0 30 – 86400sec	0
8	State Mode	1	0 1	0
9	Reserved	0		
10	Reserved	0		
11	Reserved	0		
12	Reserved	0		
13	Reserved	0		
14	Reserved	0		
15	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.
- ✧ <State Mode>:
 - 0: It should report when get the state first time.
 - 1: It doesn't report until the state changes.

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,2C0204,135790246811220,,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	20		
GEO ID	1	0 – 4	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.4.2. 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=gl300w,1,5,40,30,60,,,,,,,,,,,,,0009\$				
AT+GTSPD=gl300w,2,0,80,30,60,,,,,,,,,,,,,0009\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' –	gl300w

			'Z'	
2	Mode	1	0 1 2	0
3	Min Speed	<=3	0 – 400km/h	0
4	Max Speed	<=3	0 – 400km/h	0
5	Duration	<=4	15 – 3600sec	60
6	Send Interval	<=4	0 5 – 3600sec	300
7	Reserved	0		
8	Reserved	0		
9	Reserved	0		
10	Reserved	0		
11	Reserved	0		
12	Reserved	0		
13	Reserved	0		
14	Reserved	0		
15	Reserved	0		
16	Reserved	0		
17	Reserved	0		
18	Reserved	0		
19	Reserved	0		
20	Reserved	0		
21	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, but when the send interval is set to 0, the speed alarm message will be sent only once.

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:

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➤ **+ACK:GTSPD,****Example:****+ACK:GTSPD,2C0204,135790246811220,,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	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.4.3. Temperature Alarm

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

➤ **AT+GTTEM=****Example:****AT+GTTEM=gl300w,1,-05,10,15,30,,,,,,000E\$**

SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Mode	1	0 1 2 3	0
3	Min Temperature	<=3	-20℃ – 60℃	0
4	Max Temperature	<=3	-20℃ – 60℃	0
5	Duration	<=4	0 – 3600sec	60
6	Send Interval	<=4	0 5 – 3600sec	300
7	Reserved	0		
8	Reserved	0		
9	Reserved	0		
10	Reserved	0		
11	Reserved	0		
12	Reserved	0		
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

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

- 0: Disable this function.

- 1: Report the alarm message **+RESP:GTTEM** when the current temperature is lower than the lowest temperature defined by *<Min Temperature>*.
 - 2: Report the alarm message **+RESP:GTTEM** when the current temperature is inside of the temperature range.
 - 3: Report the alarm message **+RESP:GTTEM** when the current temperature is higher than the highest temperature defined by *<Max Temperature>*.
- ✧ *<Min Temperature>*: The lower limit of the temperature range
- ✧ *<Max Temperature>*: The upper limit of the temperature range
- ✧ *<Duration>*: According to the working mode, if the temperature is in the specified temperature range and maintains a period of time defined by *<Duration>*, the temperature alarm will be triggered.
- ✧ *<Send Interval>*: After the temperature alarm is triggered, the temperature alarm message will be sent each time of *<Send Interval>*, but when the send interval is set to 0, the temperature alarm message will be sent only once.

The acknowledgment message of AT+GTTEM command:

➤ **+ACK:GTTEM,**

Example:			
Parameter	Length(byte)	Range/Format	Default
+ACK:GTTEM, 2C0204,135790246811220,,000E,20090214093254, 000E\$			
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.5. IO Application

3.2.5.1. Digital Input Port Settings

➤ AT+GTDIS

Example:

AT+GTDIS=gl300w,1,1,5,,,,,0010\$

SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Input ID	1	1	1
3	Mode	1	0 1 2 3	0
4	Debounce Time	<=2	0-20 (×10ms)	5
5	Reserved	0		
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		
9	Reserved	0		
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

- ✧ <Input ID>: The ID of the digital input. It is always 1. If the field is empty, the device will ignore the following settings about the digital input 1, i.e. change nothing about the digital input 1.
- ✧ <Mode>: 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.
 - 2: If the status of the input is changed to 0, the device will disable the sleep mode. If the status of the input is changed to 1, the device will enable the sleep mode.
 - 3: If the status of the input is changed to 0, it will trigger the SOS event.
- ✧ <Debounce Time>: The time for debouncing.

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

➤ +ACK:GTDIS,

Example:

+ACK:GTDIS,2C0204,135790246811220,,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	20		
Serial Number	4	0000 – FFFF	

Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.6. Other Settings

3.2.6.1. Real Time Operation

The **AT+GTRTO** command is used to retrieve information from the terminal or control the terminal.

➤ AT+GTRTO=

Example: AT+GTRTO=gl300w,0,,,,,,000B\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Sub Command	1	0 – F	
3	Single Configuration Command Configuration Mask	3	0000000000000000 – FFFFFFFFFFFFFFFF	
4	Reserved	0		
5	Reserved	0		
6	Reserved	0		
7	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**, **AT+GTTMA**.

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 WCDMA signal level.

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

C: (RESERVED)

D: (**AIF**). Get APN, ICCID, base station ID, RSSI, cell ID, IP and DNS server Network Type via **+RESP: GTAIF**.

E: (**GSV**): Request the device to report the GPS fix level.

F: (RESERVED)

✧ <Single Configuration Command / Configuration Mask >:

- AT Command: If <Sub Command> is set to 2 and you want to get single AT command configuration, the parameter <Single Configuration Command> including AT Command that we defined which save by NVRAM. For example, if you want to get configuration of **AT+GTFRI**, Please set AT+GTRTO=gl300w,2,FRI,,,,,0015\$, through **+RESP:GTALS** to get it.
- Configuration Mask: If <Sub Command> is set to 2, according to choose the <configuration Mask>, you will get configuration information which you want to get via message **+RESP: GTALC** and the configuration Mask must is 16 bytes. If it's less than 16 bytes, it should add '0' in the high bytes of the configuration Mask.
- If <Sub Command> is set to 2, and left this item empty, the device will report all the configurations via **+RESP: GTALC**.

✧ Configuration Mask Table:

Bit	Item to Mask
Bit63	Reserved
Bit62	Reserved
⋮	Reserved
Bit 17	PDS
Bit 16	UPC
Bit 15	TEM
Bit 14	WLT
Bit 13	DOG
Bit 12	OWH
Bit 11	PIN
Bit 10	GLM
Bit 9	FKS
Bit 8	NMD
Bit 7	SPD
Bit 6	GEO
Bit 5	FRI

Bit 4	TMZ
Bit 3	DIS
Bit 2	CFG
Bit 1	SRI
Bit 0	BSI

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

➤ **+ACK:GTRTO,**

Example: +ACK:GTRTO,2C0204,135790246811220,,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	20		
Sub Command	<=6	Sub command string	
Serial Number	4	0000 – FFFF	
Send Time	14	YYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.6.2. Data transfer between UART and backend server

The **AT+GTDAT** command is used to transfer the data between UART and the backend server.

➤ **AT+GTDAT=**

Example: AT+GTDAT=gl300w,0,,data needs to be sent,0,,,,0016\$ AT+GTDAT=gl300w,1,,config command to the CAN bus device,1,,,,0016\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Command Type	1	0 1	0
3	Reserved	0		
4	Data	<=200	ASCII code	
5	Need Ack	1	0 1	0
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		
	Serial Number	4	0000 – FFFF	

	Tail Character	1	\$	\$
--	----------------	---	----	----

- ✧ <Command Type>: A numeric to indicate the direction of the transferred data.
 - 0: The data should be transferred from UART to the backend server.
 - 1: The data should be transferred from the backend server to UART.
- ✧ <Data>: The data to be transferred. It should be printable ASCII string.
- ✧ <Need Ack>: A numeric to indicate whether the device should reply +ACK message to the backend server.
 - 0: Do not send +ACK:GTDAT to the backend server.
 - 1: Send +ACK:GTDAT to the backend server.

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

➤ **+ACK:GTDAT,**

Example: +ACK:GTDAT,2C0204,135790246811220,,0011,20101029085505,0028\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.6.3. White Number List Configuration

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

➤ **AT+GTWLT=**

Example: AT+GTWLT=gl300w,1,1,2,13813888888,13913999999,,,,,000C\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Number Filter	1	0 1 2	1
3	Mobile Start	1	1-10	
4	Mobile End	1	1-10	
5	White Number List	<=20*10		
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		

9	Reserved	0		
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

- ✧ **<Number Filter>**: A numeric to indicate whether to filter the original number according to **<White Number List>** and **<Direct Number List>** before it tries to send google link SMS to the original number.
 - 0: Do not return a google link SMS to original number, ignore the **Request Position** message received and no matter whether the original number is in the **<White Number List>** or **<Direct Number List>**.
 - 1: Do not filter the original number. It will return a google link SMS to the original number as long as receive **Request Position** message via SMS
 - 2: Filter the original number. If the original 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 device receive **Request Position** message via SMS.
- ✧ **<Mobile Start>**: A numeric to indicate the first index of the white number to input. For example, if it is **1**, it will update the white Number list from the **1st** 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 number to input. For example, if it is **2**, it will update the white Number list until the **2nd** 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 **<Mobile End>** is **2**, the **<White Number List>** should include **2** phone numbers and the two numbers are separated with ",".

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

➤ **+ACK:GTWLT,**

Example:			
+ACK:GTWLT,2C0204,135790246811220,,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	20		
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.

3.2.6.4. 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=gl300w,1,1,2,13813888888,13913999999,,,,,000D\$				
SN	Parameter	Length (byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	Google Mode	1	0 1 2	0
3	Mobile Start	1	1-3	
4	Mobile End	1	1-3	
5	Direct Number List	<=20*3		
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		
9	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 direct number list from the **1st** 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 number list until the **2nd** 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,2C0204,135790246811220,,000D,20101029085505,0025\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.6.5. Update configuration over the air

The **AT+GTUPC** command is used to send control command.

➤ **AT+GTUPC=**

Example:				
AT+GTUPC=gl300w,0,10,0,0,168,http://www.queclink.com/configure.ini,,,,0001\$				
SN	Parameter	Length(byte)	Range/Format	Default
1	password	4 – 20	'0'-'9', 'a'-'z', 'A'-'Z'	gl300w
2	max download retry	1	0 – 3	0
3	download timeout	<=2	5 – 30 min	10
4	download protocol	1	0	0
5	report enable	1	0 1	0
6	update interval	1	0 – 8760	0
7	download URL	<=100	URL	
8	Mode	1	0 1	0
9	reserved	0		
10	reserved	0		
11	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 "gl300w".
- ✧ <Max download retry>: specifies the maximum time of retrying to download the configuration file upon downloading failure.
- ✧ <Download timeout>: specifies the expiration timeout of one single downloading. If the downloading expires, it is considered to be failure.

- ✧ *<Download protocol>*: the protocol used to download the file. Only HTTP is supported now. Set to 0.
- ✧ *<Report enable>*: A numeric to indicate whether to report the message **+RESP:GTUPC** to indicate the configuration was updated over the air.
 - 0: Do not report the message **+RESP:GTUPC**
 - 1: Report the message **+RESP:GTUPC**
- ✧ *<Update interval>*: The time interval in hour for updating the configuration over the air.
- ✧ *<Download URL>*: specifies the URL to download the configuration file. If the URL is end with "/" which means this is just a path without any file, the unit will add <imei>.ini as the default configuration file name at the end of URL.
- ✧ *<Mode>*: A numeric to indicate the working mode of downloading configuration over the air.
 - 0: Disable this function.
 - 1: Enable this function

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

➤ **+ACK:GTUPC**

Example:			
Parameter	Length (byte)	Range/Format	Default
+ACK:GTUPC,2C0204,135790246811220,,0005,20100310172830,11F0\$			
Protocol version	6	XX0000 – XXFFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	MEID	
Device name	20		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	\$	\$

Notice:

If the *<download URL>* is end with "/" which means the URL is just a path without file name, the unit will add <imei>.ini as the file name to complete the URL. If it is larger than 100 will be returned error.

3.2.6.6. Preserve special device logical state

The command **AT+GTPDS** is used to preserving special device logical state for the terminal. According to the working mode whether to open the function, According to the value of the MASK choose to save what logic state.

➤ **AT+GTPDS=**

Example:

AT+GTPDS=gl300w,1,1F,,,,,,FFFF\$

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SN	Parameter	Length(byte)	Range/Format	Default
1	Password	4 – 20	'0' – '9' 'a' – 'z' 'A' – 'Z'	gl300w
2	Mode	1	0 1 2	1
3	Mask	8	00000000-FFFFFFFF	69
4	Reserved			
5	Reserved			
6	Reserved			
7	Reserved			
8	Reserved			
9	Reserved			
	Serial Number	4	0000 – FFFF	
	Tail Character	1	\$	\$

✧ **<Mode>**: Working mode of the **AT+GTPDS** command.

- 0: Disable this function
- 1: Preserve special device logical state according to the value of the **<Mask>**
- 2: Reset all the special device logical states list in the **<Mask>** after receiving the command, and then preserve special device logical state according to the value of the **<Mask>**

✧ **<Mask>**: Bitwise mask to configure which device states will be preserved.

Each bit represents a state.

- Bit 0: States of GEO
- Bit 1: Device reset type. The device will not send GTPFA/GTPFL,GTPNA/GTPNL messages when reboot by RTO or DOG.
- Bit2: Reserved
- Bit 3: Information of last known position
- Bit 4: Current device state,including ignition state and motion state
- Bit 5: State of extern power
- Bit 6: State of charge
- Bit7: State of digital inputs
- Bit20: State in the command GTLSW from EBK
- Bit21: State in the command GTTSW from EBK
- Bit22: State in the command GTOMS from EBK

The acknowledgment message of **AT+GTPDS** command:

➤ **+ACK:GTPDS,**

Example:

+ACK:GTPDS,2C0204,135790246811220,,000D,20090214093254,FFFF\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	MEID	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_' '?'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.6.7. Store Command String

The **AT+GTCMD** command is used to store the commands which will be used by the command **AT+GTUDF**.

➤ **AT+GTCMD=**

Example:

AT+GTCMD=gl300w,1,1,AT+GTRTO=gl300w,0,,,,,000B\$,,,,,0005\$

SN	Parameter	Length(byte)	Range/Format	Default
1	Password	<=20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
2	mode	1	0-1	0
3	Store cmd id	3	0 – 31	
4	Command string	200	AT command	
5	Reserved	0		
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		
	Serial number	4	0000 – FFFF	
	Tail character	1	\$	\$

✧ **<Mode>**:The working mode of the store command string.

- 0: Delete the stored command.
- 1: Add the stored command.

✧ **<Store cmd id>**: A numeric to identify the stored command.

✧ **<Command string>**: The whole content of the stored command,the command should be end with '\$'.

➤ **+ACK:GTCMD**

Example: +ACK:GTCMD,2C0204,135790246811220,,0005,20100310172830,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	MEID	
Device name	20		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	
Tail character	1	\$	\$

3.2.6.8. User Defined Function

The **AT+GTUDF** command is used to bind input event and the stored commands. The input events will trigger the corresponding stored commands.

➤ **AT+GTUDF=**

Example: AT+GTUDF=gl300w,1,1,FFFFFFFF,30,,,FFFFFFFF,1,,,,,0005\$			
Parameter	Length (byte)	Range/Format	Default
Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	gl300w
mode	1	0-2	0
Group id	2	0 – 31	
Input id mask	16	0-FFFFFFFFFFFFFFFF	
Debounce time	5	0-86400(s)	0
Inzizo mask	5	0- FFFFF	0
Outzizo mask	5	0- FFFFF	0
Stocmd id mask	16	0-FFFFFFFFFFFFFFFF	
Stocmd ack	1	0 1	0
Reserved			
Reserved			
Reserved			
Reserved			
Serial number	4	0000 – FFFF	
Tail character	1	\$	\$

✧ **<Mode>**: The working mode of the user defined function.

- 0: Disable the group.
- 1: Enable the group.

- 2: Delete the group.

✧ <Group id>: A numeric to identify the group of input events and stored commands to execute.

✧ <Input id mask>: The bitwise mask to indicate the input events that the group cares about...

Bit0(00000001): select id1

Bit1(00000002): select id2

Bit2(00000004): select id3

Bit3(00000008): select id4

For example:

Bit(00000003): select id1,id2

Bit(00000017): select id1,id2,id3,id5

ID	Bit	Item to Mask
1	Bit 0	Power on finished
2	Bit 1	Ignition on
3	Bit 2	Ignition off
4	Bit 3	The PDP connection is attached
5	Bit 4	The PDP connection is not attached
6	Bit 5	The network is registered
7	Bit 6	The network is not registered
8	Bit 7	Network roaming
9	Bit 8	Network non roaming
10	Bit 9	SIM card is locked
11	Bit 10	GPS is opened
12	Bit 11	GPS is closed
13	Bit 12	The device is stationary
14	Bit 13	The device is moving
15	Bit 14	External charge inserted
16	Bit 15	No external charge.
17	Bit 16	The device is charging
18	Bit 17	The device is not charging
19	Bit 18	External battery inserted
20	Bit 19	No external battery
21	Bit 20	Digital input 1 is low
22	Bit 21	Digital input 1 is high
23	Bit 22	SIM card is inserted.
24	Bit 23	SIM card is not inserted
25	Bit 24	Reserved
26	Bit 25	Reserved
27	Bit 26	Inside the Geo 0
28	Bit 27	Outside the Geo 0
29	Bit 28	Inside the Geo 1
30	Bit 29	Outside the Geo 1

31	Bit 30	Inside the Geo 2
32	Bit 31	Outside the Geo 2
33	Bit 32	Inside the Geo 3
34	Bit 33	Outside the Geo 3
35	Bit 34	Inside the Geo 4
36	Bit 35	Outside the Geo 4
37	Bit 36	Inside the speed range
38	Bit 37	Outside the speed range
39	Bit 38	Messages need to be sent
40	Bit 39	No messages need to be sent
41	Bit 40	SOS event

✧ <Debounce time>: The debounce time for input events before executing the specified stored commands.

✧ <Inzizo mask>: The bitwise mask to indicate the input events within the GEO.

ID	Bit	Item to Mask
1	Bit 0	Inside the Geo 0
2	Bit 1	Inside the Geo 1
3	Bit 2	Inside the Geo 2
4	Bit 3	Inside the Geo 3
5	Bit 4	Inside the Geo 4
6	Bit 5	Inside the Geo 5
7	Bit 6	Inside the Geo 6
8	Bit 7	Inside the Geo 7
9	Bit 8	Inside the Geo 8
10	Bit 9	Inside the Geo 9
11	Bit 10	Inside the Geo 10
12	Bit 11	Inside the Geo 11
13	Bit 12	Inside the Geo 12
14	Bit 13	Inside the Geo 13
15	Bit 14	Inside the Geo 14
16	Bit 15	Inside the Geo 15
17	Bit 16	Inside the Geo 16
18	Bit 17	Inside the Geo 17
19	Bit 18	Inside the Geo 18
20	Bit 19	Inside the Geo 19

✧ <Outzizo mask>: The bitwise mask to indicate the input events outside the GEO.

ID	Bit	Item to Mask
1	Bit 0	Outside the Geo 0
2	Bit 1	Outside the Geo 1

3	Bit 2	Outside the Geo 2
4	Bit 3	Outside the Geo 3
5	Bit 4	Outside the Geo 4
6	Bit 5	Outside the Geo 5
7	Bit 6	Outside the Geo 6
8	Bit 7	Outside the Geo 7
9	Bit 8	Outside the Geo 8
10	Bit 9	Outside the Geo 9
11	Bit 10	Outside the Geo 10
12	Bit 11	Outside the Geo 11
13	Bit 12	Outside the Geo 12
14	Bit 13	Outside the Geo 13
15	Bit 14	Outside the Geo 14
16	Bit 15	Outside the Geo 15
17	Bit 16	Outside the Geo 16
18	Bit 17	Outside the Geo 17
19	Bit 18	Outside the Geo 18
20	Bit 19	Outside the Geo 19

Note:

If the *<Inzizo mask>* was set 0, we will check the bit 26 – bit 35 in *<Input id mask>*, so do *<Outzizo mask>*

- ✧ *<Stocmd id mask>*: The bitwise of the stored commands which will be executed after the state of the group becomes TRUE (i.e. all cared input events happen.).
- ✧ *<Stocmd ack>*: A numeric to indicate whether to return acknowledgement message after the stored commands are executed.
 - 0: Do not send acknowledgement message when execute the stored command.
 - 1: Send acknowledgement message when execute the stored command.

Note:

The maximum number of the stored commands to execute in a group is five

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

➤ **+ACK:GTUDF**

Example:			
+ACK:GTUDF,2C0204,135790246811220,,0005,20100310172830,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol version	6	XX0000 – XXFFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	MEID	
Device name	20		
Serial number	4	0000 – FFFF	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	0000 – FFFF	

Tail character	1	\$	\$
----------------	---	----	----

3.2.6.9. SMS Request Position

This command can only be sent via SMS, and will let the device report SMS message with google maps hyperlink with the current position immediately. Please refer to the chapter 3.3.6 for the details of the position report.

Command format	get position
Example	get position

get position: it's command string for ask current position.

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:GTDG:** The protocol watchdog reboot message.
- **+RESP:GTIGL:** The location message for ignition on and ignition off.

Example:

```
+RESP:GTFRI,2C0204,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,2009021
4013254,0460,0000,18d8,6141,00,,20090214093254,11F0$
```

```
+RESP:GTFRI,2C0204,135790246811220,,0,0,2,1,4.3,92,70.0,121.354335,31.222073,2009021
4013254,0460,0000,18d8,6141,00,0,4.3,92,70.0,121.354335,31.222073,20090101000000,046
0,0000,18d8,6141,00,,20090214093254,11F0$
```

```
+RESP:GTGEO,2C0204,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,200902
14013254,0460,0000,18d8,6141,00,,20090214093254,11F0$
```

```
+RESP:GTSPD,2C0204,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,2009021
4013254,0460,0000,18d8,6141,00,,20090214093254,11F0$
```

```
+RESP:GTSOS,2C0204,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,2009021
4013254,0460,0000,18d8,6141,00,,20090214093254,11F0$
```

```
+RESP:GTRTL,2C0204,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,2009021
4013254,0460,0000,18d8,6141,00,,20090214093254,11F0$
```

```
+RESP:GTPNL,2C0204,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,2009021
4013254,0460,0000,18d8,6141,00,,20090214093254,11F0$
```

```
+RESP:GTNMR,2C0204,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,200902
14013254,0460,0000,18d8,6141,00,,20090214093254,11F0$
```

+RESP:GTDIS,2C0204,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0\$

+RESP:GTDOG,2C0204,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0\$

+RESP:GTIGL,2C0204,867844000125073,,,00,1,5,,,,117.201362,31.832724,20120821032037,,,,,000C\$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9', '-' '_'\}$	
Unique ID	15	IMEI	
Device Name	20		
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	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
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**, ID of input id in **+RESP:GTDIS**, 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:GTFRI**

0: This is a common scheduled position report.

1: This is a turning point.

- 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**

The enter movement cause and the type of the report type in hex format. 4 high bits means enter movement cause and 4 low bits means report type.

Enter movement cause defines the factor who triggers the message, it has three meanings as below.

 - 0: Triggered by motion sensor detection. It is defaulted.
 - 1: Triggered by RTO sub command RTL.
 - 2: Triggered by the command GTLSW from EBK.

Report type has two meanings as below.

 - 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 low level
 - 1: The current logical status of the input port is high level
- In the message of ignition on and ignition off message **+RESP:GTIGL**
 - 0: The engine is ignition on.
 - 1: The engine is ignition off.
- For **+RESP:GTDG**
 - 0: Reboot periodically according to the <Interval> and <Time> setting or ignition on or <Input ID> cases to reboot.
 - 1: PDP unable to register successfully or message interactive failure cases to reboot
 - 2: Without WCDMA signal cases to reboot
- ✧ <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 <ODO Mileage> 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. If the bit 3 is not set to 1 in field <Report Composition Mask> within **AT+GTCFG**, the length of this field is 0 in ASCII format report message.
- ✧ <MNC>: Mobile network code. It is 3 digits in length and ranges from 000-999. If the bit 3 is not set to 1 in field <Report Composition Mask> within **AT+GTCFG**, the length of this field is 0 in ASCII format report message.
- ✧ <Cell ID>: Cell ID in hex format.
- ✧ <ODO Mileage>: The total mileage in the position defined by <Latitude> and <Longitude>. If <ODO Enable> was set as 0 in the command AT+GTCFG, the field will be empty.
- ✧ <Battery Percentage>: The current volume of the battery in percentage.

3.3.1.2. Location Request Report

➤ +RESP:GTLBC:

Example: +RESP:GTLBC,2C0204,135790246811220,,+8613800000000,1,4.3,92,70.0,121.354335,31.222 073,20090214013254,0460,0000,18d8,6141,00,,20090214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Original 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	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Original Number>: The phone number who 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,2C0204,135790246811220,,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, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
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	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
Reserved	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 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 replace the latitude of the centre of Geo-Fence 0.

3.3.2. Device Information Report

➤ +RESP:GTINF:

Example: +RESP:GTINF,2C0204,135790246811220,,41,898600810906F8048812,16,0,0,0,,4.10,0,0,0,0,2 0100214013254,,,,+0800,0,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
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	
Mileage	<=9	0.0 – 4294967.0Km	
Reserved	0		
Battery Voltage	<=4	0.0 – 4.50V	
Charging	1	0 1	
LED On	1	0 1 2	
GPS On Need	1	0 1 2 3	
Reserved	0		
Reserved	0		
Last GPS Fix UTC Time	14	YYYYMMDDHHMMSS	
Battery Percentage	3	0-100	
Reserved	0		
Temperature	<=5	(-)XX.X	
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 WCDMA signal strength level.

✧ <CSQ BER>: The quality of the WCDMA signal.

- ✧ <External Power Supply>: Whether the external power supply is connected.
 - 0: Not connected
 - 1: Connected
- ✧ <Mileage>: The total mileage is base on <ODO Initial mileage> which is a parameter in AT+GTCFG.
- ✧ <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**.
- ✧ <Last GPS Fix UTC Time>: The UTC time of the latest successful GPS fixing.
- ✧ <Temperature>: The temperature of the device.

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,2C0204,135790246811220,,0,1F,1F,0,0,20100214013254,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
GPS On Need	1	0 1 2	
GPS Fix Delay	3	5 – 60sec	
Reserved	0		
Report Items Mask	<=4	0000 – FFFF	
Reserved	0		
Reserved	0		
Last GPS Fix UTC Time	14	YYYYMMDDHHMMSS	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTALC**: The report for real time operation READ

Example: +RESP:GTALC,2C0100,863835020007568,GL300w,000000000000FFFF,BSI,cmnet,,,,,0,SRI,3,,1,116.228.146.250,10052,,0,13696796946,15,1,0,,,CFG,gl300w,GL300w,0,0,0,0,5,003F,0,,3FFF,,1,1,60,1,0,20491231235959,0,,0,DIS,1,0,5,,,,,TMZ,+0000,0,,,,,FRI,1,0,,,0000,0000,60,60,90,180,,1000,1000,0,5,50,5,0,,GEO,0,0,,,50,0,0,,,,,1,0,,50,0,0,,,,,2,0,,50,0,0,,,,,3,0,,50,0,0,,,,,4,0,,50,0,0,,,,,5,0,,50,0,0,,,,,6,0,,50,0,0,,,,,7,0,,50,0,0,,,,,8,0,,50,0,0,,,,,9,0,,50,0,0,,,,,10,0,,50,0,0,,,,,11,0,,50,0,0,,,,,12,0,,50,0,0,,,,,13,0,,50,0,0,,,,,14,0,,50,0,0,,,,,15,0,,50,0,0,,,,,16,0,,50,0,0,,,,,17,0,,50,0,0,,,,,18,0,,50,0,0,,,,,19,0,,50,0,0,,,,,SPD,0,0,0,60,300,,,,,NMD,0,2,3,2,300,300,,,0,,,,,FKS,1,1,3,0,0,3,,GLM,0,,,,,PIN,1,,,,,OWH,0,1F,0900,1200,1300,1800,,,0,,,,,DOG,0,60,30,0200,,1,0,0,60,60,,TEM,0,0,0,60,300,,,,,20141113081719,00A2\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
Configuration Mask	16	0000000000000000 –	

		FFFFFFFFFFFFFFF	
BSI	3	BSI	BSI
APN	<=40		
APN User Name	<=30		
APN Password	<=30		
Backup APN	<=40		
Backup APN User Name	<=30		
Backup APN Password	<=30		
Network Mode	1	0 1	0
SRI	3	SRI	SRI
Report Mode	1	0 – 6	0
Reserved	0		
Buffer Enable	1	0 1	1
Main Server IP/Domain Name	<=60		
Main Server Port	<=5	0 – 65535	0
Backup Server IP/Domain Name	<=60		
Backup Server Port	<=5	0 – 65535	0
SMS Gateway	<=20		
Heartbeat Interval	<=3	0 10 – 360min	0
SACK Enable	1	0 1	0
SMS ACK Enable	1	0 1	0
Reserved	0		
Reserved	0		
Reserved	0		
CFG	3	CFG	CFG
New Password	4 – 20	'0' – '9', 'a' – 'z', 'A' – 'Z'	
Device Name	20		GL300W
ODO Enable	1	0 1	0
ODO Mileage	<=9	0.0 – 4294967.0Km	0.0
GPS On Need	1	0 1 2	1
GPS Fix Delay	3	5 – 60sec	5
Report Items Mask	<=4	0000 – FFFF	001F
Reserved	0		
Reserved	0		
Event Mask	4	0000-FFFF	0FFF
Reserved	0		
LED On	1	0 1 2	1
Info Report Enable	1	0 1	1
Info Report Interval	<=5	30 – 86400sec	300

Location Request Mask	1	0 2	2
Expiry Enable	1	0 1	0
Expiry Time	14	YYYYMMDDHHMMSS	20491231 235959
AGPS Mode	1	0 1	0
Reserved	0		
Battery Switch Power On	1	0 1	0
DIS	3	DIS	DIS
Input ID	1	1	1
Enable	1	0 1	0
Debounce Time	<=2	1-20 (×10ms)	5
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
TMZ	3	TMZ	TMZ
Time Zone	5	- +HHMM	
Daylight Saving	1	0 1	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FRI	3	FRI	FRI
Mode	1	0 1 2 3 4 5 6	0
Discard No Fix	1	0 1	1
Reserved	0		
Reserved	0		
Begin Time	4	HHMM	0000
End Time	4	HHMM	0000
Check Interval	<=5	5 – 86400sec	180
Send Interval	<=5	5 – 86400sec	180
Ignition Check Interval	<=5	5 – 86400sec	180
Ignition Send Interval	<=5	5 – 86400sec	180
Reserved	0		
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
Corner	3	0 - 180	0
Reserved	0		
GEO	3	GEO	GEO
GEO ID0	<=2	0	0
Mode	1	0 – 3	0
Longitude	<=11	±xxx.xxxxxx	0.00000
Latitude	<=10	±xx.xxxxxx	0.00000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 30 – 86400sec	0
State Mode	1	0 1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID1	<=2	1	1
Mode	1	0 – 3	0
Longitude	<=11	±xxx.xxxxxx	0.00000
Latitude	<=10	±xx.xxxxxx	0.00000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 30 – 86400sec	0
State Mode	1	0 1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
⋮	⋮	⋮	⋮
GEO ID18	<=2	18	18
Mode	1	0 – 3	0
Longitude	<=11	±xxx.xxxxxx	0.00000
Latitude	<=10	±xx.xxxxxx	0.00000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 30 – 86400sec	0
State Mode	1	0 1	0

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID19	<=2	19	19
Mode	1	0 – 3	0
Longitude	<=11	±xxx.xxxxxx	0.00000
Latitude	<=10	±xx.xxxxxx	0.00000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 30 – 86400sec	0
State Mode	1	0 1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SPD	3	SPD	SPD
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		

NMD	3	NMD	NMD
Mode	1	0-F	0
Non-movement Duration	<=3	1 – 255(×15sec)	2
Movement Duration	<=2	1 – 50(×100ms)	3
Movement Threshold	1	2 – 9	2
Rest Fix Interval	5	5 – 86400sec	300
Rest Send Interval	5	5 – 86400sec	300
Reserved	0		
Reserved	0		
URC Report	1	0 1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FKS	3	FKS	FKS
Power Key Mode	1	0 1 2	1
Full Power Up	1	0 1	1
Function Key Mode	1	0 1 2 3	3
Power Key Ind	0	0 1	0
Function Key Ind	0	0 1	0
SOS Report Mode	1	1 2 3	3
Reserved	0		
GLM	3	GLM	GLM
Google Mode	1	0 1 2	0
Direct Number	20		
Direct Number	20		
Direct Number	20		
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	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
OWH	3	OWH	OWH
Mode	1	0 1 2 3	0

Day of Work	<=2	0 – 7F	1F
Working Hours Start1	4	HHMM	0900
Working Hours End1	4	HHMM	1200
Working Hours Start2	4	HHMM	1300
Working Hours End2	4	HHMM	1800
Reserved	0		
Reserved	0		
Digital Input ID	1	0 1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
DOG	3	DOG	DOG
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
Unit	1	0 1	0
Network Interval	4	0 5-1440	60
PDP Interval	4	0 5-1440	60
Reserved	0		
WLT	3	WLT	WLT
Call Filter	1	0 1 2	1
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		
TEM	3	TEM	TEM
Mode	1	0 1 2 3	0
Min Temperature	<=3	-20℃ – 60℃	0
Max Temperature	<=3	-20℃ – 60℃	0
Duration	<=4	0 – 3600sec	60
Send Interval	<=4	0 5 – 3600sec	300
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
UPC	3	UPC	UPC
max download retry	1	0 – 3	0
download timeout	<=2	5 – 30 min	10
download protocol	1	0	0
report enable	1	0 1	0
update interval	1	0 – 8760	0
download URL	<=100	URL	
Mode	1	0 1	0
reserved	0		
reserved	0		
reserved	0		
PDS	3	PDS	PDS
Mode	1	0 1 2	1
Mask	8	00000000-FFFFFFFF	69
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

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

Example:			
+RESP:GTCID,2C0204,135790246811220,,898600810906F8048812,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
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,2C0204,135790246811220,,16,0,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
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,2C0204,135790246811220,,GL300W,0100,0101,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Device Type	10	'0' – '9', 'a' – 'z', 'A' – 'Z'	GL300W
Firmware Version	4	0000 – FFFF	
Hardware Version	4	0000 – FFFF	
MCU Version	4	0000 – FFFF	
Reserved	0		

Reserved	0		
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,2C0204,135790246811220,,0,,,4.10,0,1,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
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 2	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

Example:			
+RESP:GTTMZ,2C0204,135790246811220,-0330,0,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Time Zone Offset	5	±HHMM	

Daylight Saving	1	0 1	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- **+RESP:GTALS:** The report for real time operation READ,for example DIS

Example: +RESP:GTALS,2C0204,135790246811220,GL300W,DIS,1,1,5,,,,,20121119083156,10FB\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
DIS	3	DIS	DIS
Input ID	1	1	1
Mode	1	0 1 2 3	0
Debounce Time	<=2	0-20 (×10ms)	5
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- **+RESP:GTAIF:** After the device receives the command AT+GTRTO to get the AIF, it will send the information by the message +RESP:GTAIF to the backend server.

Example: +RESP:GTAIF,270201,862170010903183,,,,cmnet,,,898602a5121106029714,20,0,0358,10.194.113.168,211.138.180.2,211.136.17.108,,,,2,20120716051300,0181\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' ' ' ' _ '	
APN	<=40		

APN User Name	<=30		
APN Password	<=30		
Backup APN	<=40		
Backup APN User Name	<=30		
Backup APN Password	<=30		
ICCID	20		
CSQ RSSI	<=2	0 – 31 99	
CSQ BER	<=2	0 – 7 99	
Cell ID	<=8		
IP addr	7	0.0.0.0	
Main DNS	7	0.0.0.0	
Backup DNS	7	0.0.0.0	
Reserved			
Reserved			
Reserved			
Network Type	1	0,1,2	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <CSQ RSSI>: The signal strength level.

CSQ RSSI	Signal Strength (dBm)
0	<-133
1	-111
2 – 30	-109 – -53
31	>-51
99	Unknown

✧ <CSQ BER>: The quality of the UMTS signal. The range is 0-7, 99 for unknown.

✧ <Cell ID>: Cell ID in hex format of the service cell.

✧ <IP addr>: The IP address of the device.

✧ <Main DNS>: The main DNS server.

✧ <Backup DNS>: The backup DNS server.

✧ <Network Type>: Type of current resisted mobile network.

- 0: Unregistered.
- 1: GSM
- 2: WCDMA

➤ **+RESP:GTGSV:** The report for GPS level

Example:

+RESP:GTGSV,2C0204,359464036001111,,3,17,11,30,24,31,30,32,28,32,29,12,0,14,17,16,18,20,0,22,24,24,0,25,0,20120305101643,000F\$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
GPS Level	1	0 1 2 3	
Jamming Indicator	1	0-255	
SV Count	2	0-12	
Sv Id	2	0-50	
Sv Power	2	0-55	
Sv Id	2	0-50	
Sv Power	2	0-55	
.....			
Sv Id	2	0-50	
Sv Power	2	0-55	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ **<GPS Level>**: Four levels:

- 0: Can not fix
- 1: Hard to fix
- 2: A little hard fix
- 3: Easy to fix

✧ **<Jamming Indicator>**: Scaled (0 = no CW jamming, 255=strong CW jamming)

✧ **<SV Count>**: Count of satellites the GPS found.

✧ **<Sv Id>**: Satellite id

✧ **<SV Power>**: Satellite power

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:GTPDP:** 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
- +RESP:GTTEM:** Temperature alarm report
- +RESP:GTUPC:** Indicate the configuration was updated.

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

➤ **+RESP:GTPNA:**

Example: +RESP:GTPNA,2C0204,135790246811220,,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTPFA:**

Example: +RESP:GTPFA,2C0204,135790246811220,,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTEPN:**

Example: +RESP:GTEPN,2C0204,135790246811220,,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, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
GPS Accuracy	1	0	
Speed	≤ 5	0.0 – 999.9km/h	
Azimuth	≤ 3	0 – 359	
Altitude	≤ 8	$\pm XXXXX.X$ m	
Last Longitude	≤ 11	$\pm XXX.XXXXXX$	
Last Latitude	≤ 10	$\pm XX.XXXXXX$	
GPS UTC Time	14	YYYYMMDDHHMMSS	
MCC	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	≤ 8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
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,2C0204,135790246811220,0,,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, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
GPS Accuracy	1	0	
Speed	≤ 5	0.0 – 999.9km/h	
Azimuth	≤ 3	0 – 359	
Altitude	≤ 8	$\pm XXXXX.X$ m	
Last Longitude	≤ 11	$\pm XXX.XXXXXX$	

Last Latitude	<=10	±XX.XXXXXX	
GPS UTC Time	14	YYYYMMDDHHMMSS	
MCC	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTBPL:****Example:**

+RESP:GTBPL,2C0204,135790246811220,,3.53,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20100214093254,11F0\$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A'-'Z', '0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
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	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTBTC:****Example:**

+RESP:GTBTC,2C0204,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013

254,0460,0000,18d8,6141,00,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
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	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTSTC:****Example:**

**+RESP:GTSTC,2C0204,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013
254,0460,0000,18d8,6141,00,20100214093254,11F0\$**

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
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	0 4	0XXX	
MNC	0 4	0XXX	

LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTSTT:****Example:**

+RESP:GTSTT,2C0204,135790246811220,,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	20		
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	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTPDP:****Example:**

+RESP:GTPDP,2C0204,135790246811220,,20100214093254,11F0\$

Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	

Device Name	20		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTSWG:****Example:**

+RESP:GTSWG,2C0204,135790246811220,,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	20		
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	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
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,2C0204,135790246811220,,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,	

		$X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
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	$\pm XXXXX.X$ m	
Last Longitude	≤ 11	$\pm XXX.XXXXXX$	
Last Latitude	≤ 10	$\pm XX.XXXXXX$	
GPS UTC Time	14	YYYYMMDDHHMMSS	
MCC	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	≤ 8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
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,2C0204,135790246811220,,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, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
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	$\pm XXXXX.X$ m	
Last Longitude	≤ 11	$\pm XXX.XXXXXX$	
Last Latitude	≤ 10	$\pm XX.XXXXXX$	

GPS UTC Time	14	YYYYMMDDHHMMSS	
MCC	0 4	0XXX	
MNC	0 4	0XXX	
LAC	0 4	XXXX	
Cell ID	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
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.

➤ **+RESP:GTTEM**

Example: +RESP:GTTEM,2C0204,860599000000448,,3,33,0,5.8,0,33.4,117.201191,31.832502,20130109 061410,0460,0000,5678,2079,,20130109061517,0091\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Alarm type	1	1 2 3	
Temperature	<=5	(-)XX.X	
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	<=8	XXXX	
ODO Mileage	9	0.0 – 4294967.0Km	
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 “+”.
- ✧ <Alarm type>: The type of temperature alarm.
 - 1: The current temperature lower than the low temperature threshold defined by <Min Temperature>.
 - 2: The current temperature in setting temperature threshold range
 - 3: The current temperature higher than the high temperature threshold defined by <Max Temperature>.
- ✧ <Temperature>: The current temperature of the device.

➤ +RESP:GTDAT

Example:

+RESP:GTDAT,2C0204,135790246811220,GL300W,config command to the CAN bus device,20121117112247,032D\$

Parameter	Length(byte)	Range	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z', '0'-'9'}	
Unique ID	15	IMEI	
Device Name	20		
Data	4	0XXX	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4		
Tail Character	1	\$	\$

- ✧ <Data>: The data to be transferred when you execute the command “AT+GTDAT”, it should be printable ASCII string.

➤ +RESP:GTUPC:

Example:

+RESP:GTUPC,2C0204,135790246811220,,1,http://www.queclink.com/configure.ini,,20090201000000,11F0\$

Parameter	Length(byte)	Range/Format	Default
protocol version	6	XX0000 – XXXFFF, X ∈ {'A'-'Z', '0'-'9'}	
unique ID	15	IMEI	
device name	20	'0'-'9','a'-'z','A'-'Z'	
Command id	1		
result	2	100 101 102 103 200 201 202 300 301 302	
download URL	<=60	Complete URL	
reserved	0		

send time	14	YYYYMMDDHHMMSS	
count number	4	0000-FFFF	
tail character	1	\$	\$

- ✧ <Command id>: The command id in the update configure file. It is always 0 before the device start to update device configure. It is total number of the commands when the respond result code is 301. It is wrong format of command id when the respond result code is 302.
- ✧ <Result>: A numeric to indicate whether the configuration was updated successfully.
 - 100: the update command is starting.
 - 101: the update command is confirmed by the device.
 - 102: the update command is refused by the device.
 - 103: the update process is refused because the battery is low.
 - 200: the device starts to download the package.
 - 201: the device finishes downloading the package successfully.
 - 202: the device fails to download the package.
 - 300: the device starts to update the device configure.
 - 301: the device finishes updating the device configure successfully.
 - 302: the device fails to update the device configure.
- ✧ <Download URL>: The complete URL to download the configuration. It includes the file name.

3.3.5. Buffer Report

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

- ✧ No WCDMA signal.
- ✧ Failed to activate WCDMA 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 buffer reports are saved to the built-in non-volatile memory in case the device is reset. The device can save 10000 messages at most.

- ✧ Only **+RESP** messages can be buffered except **+RESP:GTALC**
- ✧ 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 WCDMA by TCP or UDP protocol. They cannot be sent via SMS.
- ✧ The buffered messages will be sent after the other normal messages sending if *<Buffer Mode>* in **AT+GTSRI** is set to 1.
- ✧ The buffered messages will be sent before the other normal messages sending if *<Buffer Mode>* in **AT+GTSRI** is set to 2. The SOS message has the highest priority and is sent before the buffered messages.

Example:

The following is an example of the buffered message:

```
+BUFF:GTFRI,2C0204,135790246811220,,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** or receive **SMS Request Position** message via SMS, the device can send a SMS with Google Maps hyperlink to a mobile phone.

If the device receive **SMS Request Position** message via SMS, GL300W will sent its current position to the original number via SMS with Google Maps hyperlink if the original number is a direct number (Please refer to *<direct number list>* in the chapter 3.2.6.4) or a white number (Please refer to *<white number list>* in the chapter 3.2.6.3)

If the *<google link mode>* was set as 1 in the command **AT+GTGLM**, GL300W 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:

GL300W 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:M M:SS	
Battery Level	<=5	B1-100%	

- ✧ *<SMS Header>*: A string that includes the terminal name 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 WCDMA. 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,2C0204,135790246811220,,20100214093254,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
Unique ID	15	IMEI	
Device Name	20		
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,2C0204,11F0\$			
Parameter	Length (byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, $X \in \{'A'-'Z', '0'-'9'\}$	
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. Appendix: Message Index

✧ Command and ACK

AT+GTBSI

+ACK:GTBSI

AT+GTSRI

+ACK:GTSRI

AT+GTQSS

+ACK:GTQSS

AT+GTCFG

+ACK:GTCFG

AT+GTPIN

+ACK:GTPIN

AT+GTDOG

+ACK:GTDOG

AT+GTTMA

+ACK:GTTMA

AT+GTNMD

+ACK:GTNMD

AT+GTFKS

+ACK:GTFKS

AT+GTOWH

+ACK:GTOWH

AT+GTFRI

+ACK:GTFRI

AT+GTGEO

+ACK:GTGEO

AT+GTSPD

+ACK:GTSPD

AT+GTTEM

+ACK:GTTEM

AT+GTDIS

+ACK:GTDIS

AT+GTRTO

+ACK:GTRTO

AT+GTDAT

+ACK:GTDAT

AT+GTWLT

+ACK:GTWLT

AT+GTGLM

+ACK:GTGLM

AT+GTUPC

+ACK:GTUPC

AT+GTCMD

TRACGL300WAN001

+ACK:GTCMD

AT+GTUDF

+ACK:GTUDF

AT+GTPDS

+ACK:GTPDS

✧ **Position Related Report**

+RESP:GTFRI

+RESP:GTGEO

+RESP:GTSPD

+RESP:GTSOS

+RESP:GTRTL

+RESP:GTPNL

+RESP:GTNMR

+RESP:GTDIS

+RESP:GTDOG

+RESP:GTIGL

+RESP:GTGCR

+RESP:GTLBC

✧ **Device Information Report**

+RESP:GTINF

✧ **Report for Querying**

+RESP:GTGPS

+RESP:GTALC

+RESP:GTCID

+RESP:GTCSQ

+RESP:GTVR

+RESP:GTBAT

+RESP:GTTMZ

+RESP:GTALS

+RESP:GTAIF

+RESP:GTGSV

✧ **Event Report**

+RESP:GTPNA

+RESP:GTPFA

+RESP:GTEPN

+RESP:GTEPF

+RESP:GTBPL

+RESP:GTBTC

+RESP:GTSTC

+RESP:GTSTT

+RESP:GTPDP

+RESP:GTSWG

+RESP:GTIGN

+RESP:GTIGF

+RESP:GTTEM

+RESP:GTUPC

✧ **Executive command Report**

+RESP:GTDAT

✧ **Heartbeat**

+ACK:GTHBD

+SACK:GTHBD

✧ **Server Acknowledgement**

+SACK