GL300M Series @Track Air Interface Protocol

EGPRS/LTE Cat-M1/LTE Cat-NB1/GNSS Tracker

QSZTRACGL300MAN0A01

Version: A.01

Document Title	GL300M Series @Track Air Interface Protocol
Version	A.01
Date	2021-01-14
Status	Released
Document Control ID	QSZTRACGL300MANA01

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Contents

0. Revision History

Version	Date	Author	Description of Change
1.01	2017-08-31	David Liu	Initial
1.02	2017-10-24	David Liu	1. Deleted AGPS and GSV, GTBCS, GTBDS, AT+GTBTC
1.03	2018-01-16	Roger Luo	1. Modified the protocol version number.
1.04	2018-02-27	Parker Xu	1. Added Device Status field in FRI/ERI Report
	2018-03-19	Parker Xu	2. Modified RESP: GTFRI/GTERI Report type
1.05	2018-03-21	Parker Xu	1. Modified Report type field in FRI/ERI Report
1.06	2018-03-23	Parker Xu	1. Added GTGAM
2.01	2018-05-30	Flame Zheng	1. Added <LET Mode> in AT+GTBSI. 2. Modified the <Network Mode> in the AT+GTBSI. 3. Added +RESP:GTLOC 4. Added '4.location mode' and '5.Mixed mode' of the <Function Key Mode> in the AT+GTFKS. 5. Added the <First Trigger time>, <Second Trigger Time>, <First Trigger Event>, <Second Trigger Event> in AT+GTFKS. 6. Modified the <Network Type> in the **+RESP:GTAIF.**
3.01	2018-8-06	Flame Zheng	1. Added <AGPS Mode> in the AT+GTCFG to support GL300M 1713 Series. 2. Corrected the description of some fields in the configuration of GTCFG and GTOWH.
3.02	2018-8-29	Flame Zheng	1. Added GTLWM
3.03	2018-9-10	Flame Zheng	1. Added the query command of the GTLWM in the GTRTO
3.04	2018-9-13	Flame Zheng	1. Added the configuration of the APN authentication methods in the GTCFG
3.05	2018-9-28	Flame Zheng	1. Deleted GTLWM 2. Added the temp and the motion status in the +RESP:GTRTL report.
3.06	2018-12-18	Kerwin Shen	1. Modify the range of <Hour Offset> in AT+GTTMA command.

5.01	2019-01-07	Flame Zheng	1. Modified the default value of <mode>,<Interval> in the AT+GTDOG. 2. Modified the description of the temp sensor in GTERI report. 3. Added the description of the buff report. 4. Modified the range of <Network Type> in the +RESP:GTAIF.
6.01	2019-08-08	Flame Zheng	1. Modify the system architecture. 2. Modified the AT+GTPDS. 3. Modified the AT+GTBSI. 4. Added the note in <Enable ODO> of AT+GTCFG.
7.01	2019-09-16	Flame Zheng	1. Added the “UDP with fixed local port mode” and “Backup server supported TCP long-connection mode” in <Report Mode> of AT+GTSRI. 2. Added “GSV” in <Sub Command> of AT+GTRTO. 3. Added +RESP:GTGSV report.
8.01	2019-12-30	Flame Zheng	1. Added GSM,DELBUF,ATI to the AT+GTRTO. 2. Added GTGSM and GTATI report. 3. Added <NMR report mode> in the AT+GTNMD. 4. Added the new mode in the AT+GTSPD. 5. Added the new mode in the AT+GTTEM 6. Added +RESP:GTGSM,+RESP:GTAT 7. Added AT+GTECF command 8. Added the new mode in the AT+GTBSI.
9.02	2020-03-04	Flame Zheng	1. Added AT+GTMSA command. 2. Added +RESP:GTMSA and +RESP:GTLGL report. 3. Added MSA in the AT+GTRTO(2),+RESP:GTALC
9.03	2020-03-27	Flame Zheng	1. Modified the AT+GTRTO.
9.04	2020-04-27	Flame Zheng	1. Modified the <Check Interval> range in the AT+GTFRI. 2. Modified the <Fix Interval at Rest> range in the AT+GTNMD.
9.05	2020-11-03	Flame Zheng	1. Updated some descriptions.
A.01	2021-01-14	Flame Zheng	1.Added the LTE mode 4 and LTE mode 5 in the AT+GTBSI command.

1. Overview

1.1. Scope

The @Track Air Interface Protocol, a digital communication interface based on printable ASCII characters over SMS or wireless network, is used for all communications 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.

The purpose of this document is to describe how to build 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 Name
ASCII	American National Standard Code for Information Interchange
LTE	Long Term Evolution
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

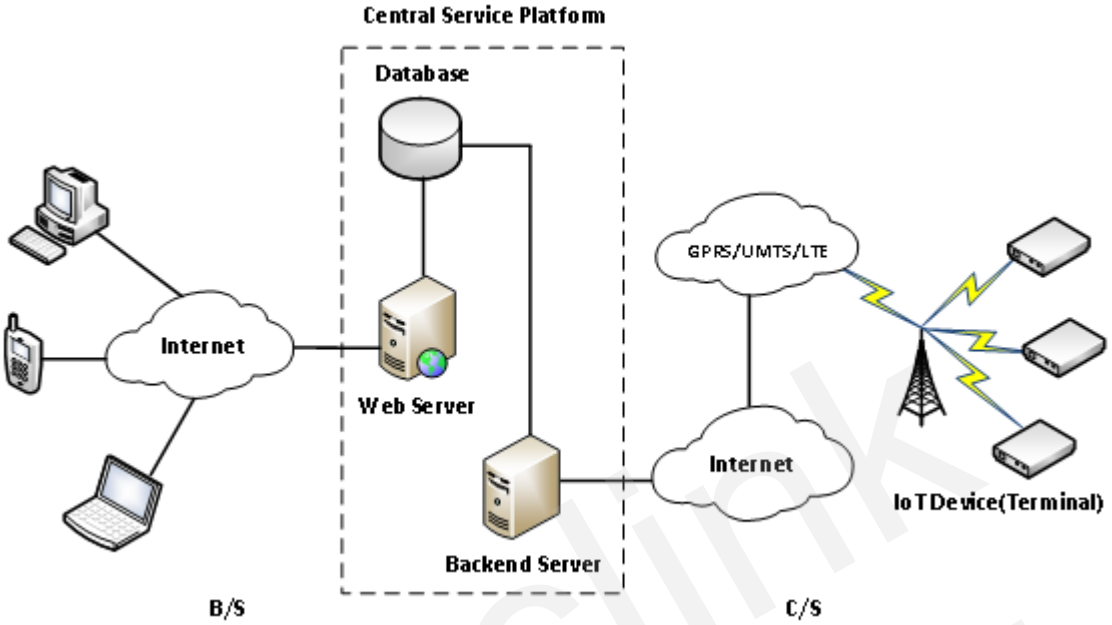

Figure 1: System Architecture

The backend server needs to be accessible to multiple terminals and should have the following abilities:

- The backend server should be able to access the internet and listen for the connection requests originating from the terminals.
- The backend server should be able to support 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 the @Track Air Interface Protocol messages are composed of printable ASCII characters. Message formats are shown in the table below:

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 the character '$'.

The characters 'XXX' allow the identification of the difference between messages.

The "<parameter1>,<parameter2>,…" carries 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 following ASCII characters: '0'-'9', 'a'-'z', and 'A'-'Z'.

Detailed descriptions of each message format are available in the corresponding 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.

The device can send other Reports to the server by configuring related parameters. Please see the following figure:

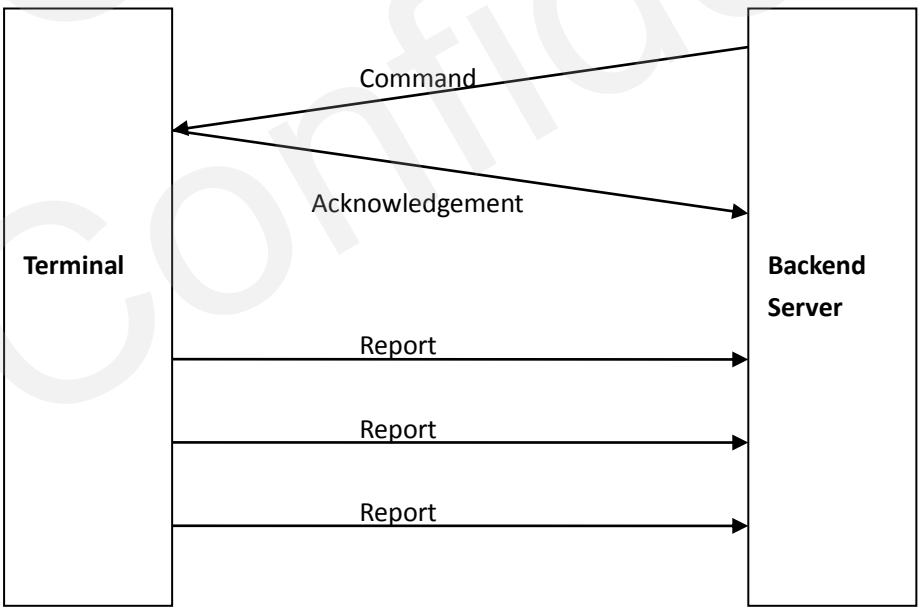

Figure 2: @Track Protocol Message Flow

When the device receives commands over the air, it supports several commands in one SMS or

network packet without separation symbol between adjacent commands. Make sure the total size of the several commands is no longer than 160 bytes if the commands are sent via SMS. Here is an example of sending three commands in one SMS.

AT+GTFRI=gl300,1,1,,,0000,2359,60,60,,,1F,0,,,,,,,,0007$AT+GTGEO=gl300,0,3,101.412248,21.187891,1000,600,,,,,,,,0008$AT+GTSPD=gl300,1,5,40,30,60,,,,,,,,,,,,,,0009$

There are three commands (**AT+GTFRI**, **AT+GTGEO** and **AT+GTSPD**) in the message above. And the terminal will handle the three commands one by one and it will report the following three acknowledgement messages to the backend server one by one.

+ACK:GTFRI,F50104,352948070074301,,0007,20161005074622,11F0$

+ACK:GTGEO,F50104,352948070074301,,0,0008,20161005074623,11F1$

+ACK:GTSPD,F50104,352948070074301,,0009,20161005074624,11F2$

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 network parameters.

➢ **AT+GTBSI=**

Example: **AT+GTBSI=gl300m,,,,,,,,0002$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	‘0’ - ‘9’, ‘a’ - ‘z’, ‘A’ - ‘Z’, ‘-’, ‘_’	gl300m
2	LTE APN	<=40		
3	LTE APN User Name	<=30		
4	LTE APN Password	<=30		
5	GPRS APN	<=40		
6	GPRS APN User Name	<=30		
7	GPRS APN Password	<=30		
8	Network Mode	1	0 - 3	
9	LTE Mode	1	0 - 5	
10	Serial Number	4	(HEX)	
11	Tail Character	1	$	$

✧ <*Password*>: The valid characters for the password include ‘0’-‘9’, ‘a’-‘z’, and ‘A’-‘Z’. The

default value is “gl300m”.

- ✧ *<LTE APN>*: The LTE access point name (APN).
- ✧ *<LTE APN User Name>*: The LTE APN user name. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ *<LTE APN Password>*: The LTE APN password. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ *<GPRS APN>*: The GPRS access point name (APN). When using a GPRS network, the < *GPRS APN*> will be used.
- ✧ *<GPRS APN User Name>*: The GPRS APN user name. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ *<GPRS APN Password>*: The GPRS APN password. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ *<Network Mode>*: Mobile network modes of the device.
  - 0: Auto. (LTE &GSM)
  - 1: GSM only.
  - 2: LTE only.
  - 3: GSM First. (LTE & GSM)
- ✧ *<LTE Mode>*: Select LTE network mode.
  - 0: Cat-M1 & Cat-NB1. (Cat-M1 First)
  - 1: Cat-NB1 & Cat-M1. (Cat-NB1 First)
  - 2: Cat-M1.
  - 3: Cat-NB1.
  - 4: Cat-NB1 first (network search sequence: NB1, 2G, M1). It is valid when *<Network Mode>* is set to 0: Auto. (LTE &GSM).
  - 5: Cat-NB1 only (network search sequence: NB1, 2G). It is valid when *<Network Mode>* is set to 0: Auto. (LTE &GSM).

The network search sequence list is shown as below:

Network Mode		LTE Mode		Search Order		
Mode	Detail	Mode	Detail	1	2	3
0	Auto	0	Cat-M1&Cat-NB1(Cat-M1 First)	M1	2G	NB1
		1	Cat-M1&Cat-NB1(Cat-NB1 First)	2G	NB1	M1
		2	Cat-M1	M1	2G	N/A
		3	Cat-NB1	2G	NB1	N/A
		4	Cat-NB1 First	NB1	2G	M1
		5	Cat-NB1 Only	NB1	2G	N/A
1	GSM Only	N/A	N/A	2G	N/A	N/A
2	LTE Only	0	Cat-M1&Cat-NB1(Cat-M1 First)	M1	NB1	N/A
		1	Cat-M1&Cat-NB1(Cat-NB1 First)	NB1	M1	N/A
		2	Cat-M1	M1	N/A	N/A
		3	Cat-NB1	NB1	N/A	N/A
3	GSM First	0	Cat-M1&Cat-NB1(Cat-M1 First)	2G	M1	NB1
		1	Cat-M1&Cat-NB1(Cat-NB1 First)	2G	NB1	M1
		2	Cat-M1	2G	M1	N/A
		3	Cat-NB1	2G	NB1	N/A

Note: When <Network Mode> is 1, <LTE Mode> is invalid.

- ✧ <*Serial Number*>: The serial number of the command. It will be included in the ACK message of the command.
- ✧ <*Tail Character*>: A character which indicates the end of the command. And it must be '$'.

Note: If there is only one APN, please use it as LTE APN.

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

- ➢ **+ACK:GTBSI,**

Example: **+ACK:GTBSI,F50601,015181001707687,,0040,20190906065404,004F$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- ✧ <*Protocol Version*>: The protocol version that the terminal conforms to. The first two characters represent the device type. As shown in the example, "**F5**" means GL300M. The middle two characters represent the major version number of the protocol and the last two characters represent the minor version number of the protocol. And all the version numbers are hex digits. For example, "**0101**" 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 included in the corresponding command and is used 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 other messages. It begins from "0000" and increases by 1 for each message. And it rolls back after "FFFF".
- ✧ <*Tail Character*>: A character which indicates the end of the command. It must be '$'.

Note: Only after both the commands **AT+GTBSI** and **AT+GTSRI** are properly set can the ACK messages and other messages be received by the backend server.

3.2.1.2. Backend Server Registration Information

The command **AT+GTSRI** is used to configure the backend server 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=gl300m,3,,1,218.17.46.11,95,213.175.74.200,5682,13824347475,5,1,1,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Report Mode	1	0 - 7	0
3	Reserved	0		
4	Buffer Mode	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 - 360(min)	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		
16	Serial Number	4	(HEX)	
17	Tail Character	1	$	$

✧ <*Report Mode*>: Supported report modes are as follows:

- 0: Stop mode.
- 1: TCP short-connection 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 cut off the connection when the terminal finishes sending data. And if the terminal fails to establish TCP connection with the backend server (including main server and backup server), it will try to send data via SMS.
- 2: TCP short-connection 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 cut off the connection when the terminal finishes sending data. And if the terminal fails to establish TCP connection with the backend server (including main server and backup server), the data will be stored in the BUFFER (if BUFFER function is enabled, please refer to <*Enable Buffer*>) or discarded (if the BUFFER function is disabled).
- 3: TCP long-connection mode. The connection is based on TCP protocol. The terminal connects to the backend server and maintains the connection by using the heartbeat data. Please note that in this mode the backend server should respond to the heartbeat data from the terminal.
- 4: UDP mode. The terminal will send data to the backend server through the UDP

protocol. It supports receiving protocol command via UDP. Make sure the IP address and UDP port of the device can be visited over the internet, which is generally realized by heartbeat package and the message **+RESP:GTPDP**.

- 5: Force on SMS mode. Only SMS is used for data transmission.
- 6: UDP with fixed local port mode. Like the UDP mode, the terminal will send data by using UDP protocol. The difference is the terminal will use a fixed local port rather than a random port to communicate with the server in this mode. Thus the backend server could use the 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 main server.
- 7: Backup server supported TCP long-connection mode. The connection is based on TCP protocol. The terminal connects to the backend server and maintains the connection by using the heartbeat data. The backend server should respond to the heartbeat data from the terminals. If the main server is lost, it will try to connect the backup server. And if the backup server is also lost, it will try to connect the main server again.

✧ <*Reserved*>: Not used at present. Please keep it empty.

✧ <*Buffer Mode*>: Enable or disable the BUFFER function. Please refer to Chapter 3.3.5 for details of the 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 real-time messages except 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 "+"). Short code (for example, 10086) is also supported.

✧ <*Heartbeat Interval*>: The interval for the terminal to send the heartbeat message to the backend server. If it is set to 0, no heartbeat message will be sent.

✧ < *SACK Enable*>: A numeral to indicate whether the backend server should reply with a SACK message to the device.

- 0: The backend server does not reply with a SACK message after receiving a message from the device.
- 1: The backend server should reply with a SACK message after receiving a message from the device.
- 2: The backend server replies with a SACK message when receiving a message from the terminal, but the terminal does not check the serial number of the SACK message.

✧ <*SMS ACK Enable*>: This defines whether the ACK confirmation should be replied via SMS when the command is sent via SMS.

- 0: The device will send the ACK confirmation according to the configuration of

<*Report Mode*>.

- 1: The device will send the ACK confirmation via SMS to the phone which sends the command by SMS.

✧ <*Reserved*>: Not used at present. Please keep it empty.

✧ <*Serial Number*>: The serial number of the command. It will be included in the ACK message of the command.

✧ <*Tail Character*>: A character to indicate the end of the command. And it must be '$'.

Note: If <*Report Mode*> is set to 4 (UDP mode), it is recommended to enable SACK or heartbeat mechanism (in this case, <*Heartbeat Interval*> should not be set to 0). Otherwise the backend server may not be able to send commands to the terminal.

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

➢ **+ACK:GTSRI,**

Example: **+ACK:GTSRI,F50601,015181001707687,,0044,20190906070335,005C$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

Note: Only after both the commands **AT+GTBSI** and **AT+GTSRI** are properly set can the ACK messages and other messages be received by the backend server.

3.2.1.3. Quick Start Setting

The command **AT+GTQSS** is used to set the network parameters and backend server information if the length of all its settings is within 160 bytes. Otherwise, use two commands **AT+GTBSI** and **AT+GTSRI** to configure the settings.

➢ **AT+GTQSS=**

Example: **AT+GTQSS=gl300m,net,,,3,,1,218.17.46.11,91,213.175.74.200,5682,13824347475,0,0,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	LTE APN	<=40		
3	LTE APN User Name	<=30		
4	LTE APN Password	<=30		

5	Report Mode	1	0 - 7	0
6	Reserved	0		
7	Buffer Mode	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 - 360(min)	0
14	SACK Enable	1	0|1|2	0
15	Reserved	0		
16	Reserved	0		
17	Serial Number	4	(HEX)	
18	Tail Character	1	$	$

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

- **+ACK:GTQSS,**

Example: **+ACK:GTQSS,F50601,015181001707687,,0045,20190906070824,0062$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
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=gl300m,gl300m,GL300M,0,0.0,1,5,1F,0,,3FFF,0,1,0,300,2,0,20491231235959,0,,1,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z',	gl300m

			'-', '_'	
2	New Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
3	Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
4	Enable ODO	1	0|1	0
5	ODO Initial Mileage	<=9	0.0 - 4294967.0(km)	0.0
6	GPS On Need	1	0|1|2	1
7	GPS Fix Delay	2	5 - 60(sec)	5
8	Report Item Mask	<=4	0000 - 007F	001F
9	APN Authentication Methods	1	0 - 3	0
10	Reserved	0		
11	Event Mask	4	0000 - 3FFF	0FFF
12	EPB mode	1	0|1	0
13	LED On	1	0 - 2	1
14	Info Report Enable	1	0|1	1
15	Info Report Interval	<=5	30 - 86400(sec)	300
16	Location Request Mask	1	0|2	2
17	Expiry Enable	1	0|1	0
18	Expiry Time	14	YYYYMMDDHHMMSS	20491231235959
19	AGPS Mode	1	0|1	0
20	Reserved	0		
21	Battery Switch Power On	1	0|1	0
22	Serial Number	4	(HEX)	
23	Tail Character	1	$	$

- <*New Password*>: It is used to change the current password.
- <*Device Name*>: The name of the device. It appears in each message.
- <*Enable ODO*>: Enable or disable the odograph function to calculate the total mileage. The current mileage is included in the message **+RESP:GTINF**.
  - 0: Disable the ODO mileage function.
  - 1: Enable the ODO mileage function.

  Note: The device will calculate the mileage even if <GPS on Need> is set to 1: Turn off GPS chip after retrieving GPS information every time. But the mileage will be calculated by using the last fix point before turning off GPS and current fix point. So the calculation will not be as accurate as keeping the GPS always on.
- <*ODO Initial Mileage*>: The value of current total mileage.
- <*GPS on Need*>: Whether to turn off GPS chip after retrieving GPS position information.
  - 0: Do not turn off GPS chip.
  - 1: Turn off GPS chip after retrieving GPS information every time.
  - 2: Do not turn off GPS chip in ignition on state or movement state.

- <*GPS Fix Delay*>: This value indicates the waiting time after GPS fix succeeds. After GPS fix succeeds, the device will wait for a period of time (specified by <*GPS Fix Delay*>) and then get the result of GPS fix because the position obtained immediately after the GPS fix may not be accurate. (e.g. If <*GPS Fix Delay*> is set to 7, the device will wait 7 seconds after GPS fix and then get the fix result). The range of the parameter value is 5 - 60, and the default value is 5. Unit: second.
- <*Report Item Mask*>: Bitwise report mask to configure the composition of all the report messages. Each bit represents a field in the message. If a bit is set to 1, the corresponding field will be filled if it is included in the message. Otherwise, the field will be empty.

  Bit 0 (0001): <*Speed*>
  Bit 1 (0002): <*Azimuth*>
  Bit 2 (0004): <*Altitude*>
  Bit 3 (0008): Cell information, including <*MCC*>, <*MNC*>, <*LAC*>, and <*Cell ID*>
  Bit 4 (0010): <*Send Time*>
  Bit 5 (0020): <*Device Name*>
  Bit 6 (0040): Reserved
- <*APN Authentication Methods*>: Configure the APN authentication methods.
  - 0: No authentication
  - 1: PAP authentication
  - 2: CHAP authentication
  - 3: PAP or CHAP authentication
- <*Event Mask*>: A Hex value to configure which event reports can be sent to the backend server. Each bit corresponds to a message. If the bit is set to 1, the corresponding message can be sent to the backend server. Otherwise, the corresponding message cannot be sent to the backend server. Here is the matching between each bit and message.

  Bit 0 (0001): **+RESP:GTPNA**
  Bit 1 (0002): **+RESP:GTPFA**
  Bit 2 (0004): **+RESP:GTEPN**
  Bit 3 (0008): **+RESP:GTEPF**
  Bit 4 (0010): Reserved
  Bit 5 (0020): **+RESP:GTBPL**
  Bit 6 (0040): **+RESP:GTBTC**
  Bit 7 (0080): **+RESP:GTSTC**
  Bit 8 (0100): **+RESP:GTSTT**
  Bit 9 (0200): Reserved
  Bit 10 (0400): **+RESP:GTPDP**
  Bit 11 (0800): **+RESP:GTPNL**
  Bit 12 (1000): **+RESP:GTIGN** and **+RESP:GTIGF**
  Bit 13 (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*>: It configures the working mode of LEDs.
  - 0: Each time after the device powers on or the parameter is set to 0, GPS LED will

work for 150 seconds and then shut off. NET LED and Power LED work normally.

- 1: All LEDs work normally.
- 2: All LEDs are off except the following circumstances: a. All LEDs work for a period time after power on. b. Power LED flashes fast during power off process. c. Power LED works normally in charging status when a charger is inserted in power off state.

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

- 0: Disable the device information report function.
- 1: Enable the device information report function.

✧ <*Info Report Interval*>: The interval for reporting the device information.

✧ <*Location Request Mask*>: Mask to control the location request

- Bit 0: Reserved.
- Bit 1: SMS location request.

✧ <*Enable Expiry*>: Enable or disable the expiry function to stop all the GPS fixing and reports.

- 0: Disable the expiry function.
- 1: Enable the expiry function.

✧ <*Expiration Time*>: The time to stop all the GPS fixing and 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". Please note that RTC time is used here.

✧ <*AGPS Mode*>: A numeral to indicate whether to enable AGPS. AGPS helps increase the chances of getting GPS position successfully and reduces the time needed to get GPS position.

- 0: Disable the AGPS function.
- 1: Enable the AGPS function.

✧ <*Battery Switch Power On*>: A numeral 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: <AGPS Mode> is only supported by GL300M_1713 Series.

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

➢ **+ACK:GTCFG,**

Example: **+ACK:GTCFG,F50601,015181001707687,,0047,20190906071107,0067$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	

Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.2. Auto Unlock PIN

The **AT+GTPIN** command is used to unlock the SIM automatically.

➢ **AT+GTPIN=**

Example: **AT+GTPIN=gl300m,1,1234,1,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Auto Unlock PIN	1	0|1	1
3	PIN	4- 8	'0' - '9'	
4	PIN Check	1	0|1	0
5	Reserved	0		
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		
9	Serial Number	4	(HEX)	
10	Tail Character	1	$	$

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

- 0: Do not unlock PIN automatically.
- 1: Each time the device powers on, it will detect whether the SIM card is locked with a PIN. If it is locked, the device will auto-unlock the PIN.

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

✧ <*PIN Check*>: A numeral to indicate whether to lock the device with PIN.

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

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

➢ **+ACK:GTPIN,**

Example: **+ACK:GTPIN,F50601,015181001707687,,0048,20190906071252,0068$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	

Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.3. Software Protocol Watchdog

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

➢ **AT+GTDOG=**

Example: **AT+GTDOG=gl300m,1,60,7,0200,,1,0,0,480,480,480,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Mode	1	0|1|2	1
3	Ignition Frequency	<=3	10 - 120	60
4	Reboot Interval	<=2	1 - 30	7
5	Reboot 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 - 1440(min)	480(min)
11	No Activation Interval	4	0|5 - 1440(min)	480(min)
12	Send Fail Timeout	4	0|5 - 1440(min)	480(min)
13	Serial Number	4	(HEX)	
14	Tail Character	1	$	$

✧ <*Mode*>: The working mode of the watchdog function.
- 0: Disable this function.
- 1: Reboot periodically according to the <*Interval*> and <*Time*> settings.
- 2: Reboot when the ignition is turned on.

✧ <*Ignition Frequency*>: If the time interval between two ignitions is greater than the specified value when the working mode is 2, the device will automatically reboot upon ignition on. If the function is enabled for the first time, the device will reboot at next ignition even if the interval is less than the value set in Ignition Frequency.

✧ <*Reboot Interval*>*:* The interval for rebooting the device.

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

✧ <*Report Before Reboot*>: Whether to report the **+RESP:GTDOG** message before reboot. 0

means “Do not report the **+RESP:GTDOG** message before reboot”, and 1 means “Report the **+RESP:GTDOG** message before reboot”. If this parameter is enabled, the device will obtain a real-time location and send it to the server.

- ✧ <*Input ID*>: The ID of the digital input port which is used to trigger the reboot manually. 0 means “Do not use manual reboot”. Only port 1 is supported.
- ✧ <*Unit*>: The unit of the <*Interval*> value.
  - 0: Day.
  - 1: Hour.
- ✧ <*No Network Interval*>: The interval for rebooting the device in no network signal situation. 0 means “Do not reboot the device”.
- ✧ <*No Activation Interval*>: The interval for rebooting the device when PDP context activation fails or the interaction of messages fails (e.g. no TCP ACK or Server ACK). 0 means “Do not reboot the device”.
- ✧ <Send Fail Timeout>: The time (minute) before rebooting the device when the device cannot send a message successfully. 0 means no rebooting the device.

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

➢ **+ACK:GTDOG,**

Example: **+ACK:GTDOG,F50601,015181001707687,,0049,20190906071358,0069$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	‘0’ - ‘9’, ‘a’ - ‘z’, ‘A’ - ‘Z’, ‘-’, ‘_’	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.4. Time Adjustment

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

➢ **AT+GTTMA=**

Example: **AT+GTTMA=gl300m,+,0,0,0,,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	‘0’ - ‘9’, ‘a’ - ‘z’, ‘A’ - ‘Z’, ‘-’, ‘_’	gl300m
2	Sign	1	+/-	+
3	Hour Offset	<=2	0 - 12	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		
11	Serial Number	4	(HEX)	
12	Tail Character	1	$	$

- <*Sign*>: It indicates the positive or negative offset of the local time from UTC time.
- <*Hour Offset*>: The UTC offset in hours.
- <*Minute Offset*>: The UTC offset in minutes.
- <*Daylight Saving*>: Enable/disable daylight saving time.
  - 0: Disable daylight saving time.
  - 1: Enable daylight saving time.
- <*UTC Time*>: UTC time used to adjust the local time.

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

- **+ACK:GTTMA,**

Example: **+ACK:GTTMA,F50601,015181001707687,,004A,20190906071451,006A$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.5. Non-movement Detection

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

- **AT+GTNMD=**

Example: **AT+GTNMD=gl300m,0,2,3,2,300,300,2,3,0,0,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
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	Fix Interval at Rest	5	1 - 86400(sec)	300
7	Send Interval at Rest	5	5 - 86400(sec)	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	NMD Report Mode	1	1-3	2
13	Reserved	0		
14	Reserved	0		
15	Serial Number	4	(HEX)	
16	Tail Character	1	$	$

- <*Mode*>: A hex numeral to determine how the function works. Each bit of the hex numeral indicates different actions the device can perform. If a bit is 1, the device will perform the corresponding action as described below.

  Bit 0 (1): Suspend the report of FRI and Geo-fence when it detects non-movement.

  Bit 1 (2): Report the message **+RESP:GTNMR** to the backend server when it detects non-movement.

  Bit 2 (4): Report the message **+RESP:GTNMR** to the backend server when it detects movement.

  Bit 3 (8): Change the fix interval and send interval of FRI to <*Rest Fix Interval*> and <*Rest Send Interval*> when it detects non-movement.
- <*Non-movement Duration*>: A time parameter to determine whether the device enters non-movement status. If the motion sensor detects that the device stays in non-movement status for a period of time specified by <*Non-movement Duration*>, the device will be considered to be 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 stays in movement for a period of time specified by <*Movement Duration*>, the device will be considered to be in movement status.
- <*Movement Threshold*>: The threshold for the motion sensor to determine whether the device is in movement state. The smaller the value is, the easier it will be for the device to be considered to enter the state of movement.
- <*Fix Interval at Rest*>: The fix interval for the report of FRI when the device is in rest state and Bit 3 of <*Mode*> is 1.
- <*Send Interval at Rest*>: The send interval for the report of FRI when the device is in rest state and Bit 3 of <*Mode*> is 1.
- <*PM Rest Threshold*>: The threshold for the EBK motion sensor to determine whether the EBK enters non-movement state.
- <*PM Motion Threshold*>: The threshold for the EBK motion sensor to determine whether the EBK enters movement state.

- <*URC Report*>: Enable or disable outputting sensor state through URC.
  - 0: Do not output the sensor's state to UART.
  - 1: Output a URC to UART to indicate the state change. "SENSOR:REST" means "State changing from MOTION to REST". "SENSOR:MOTION" means "State changing from REST to MOTION".
- <*Enter Movement by Command*>: A numeral to indicate whether to force the device to enter movement state after receiving the **AT+GTRTO** command with subcommand **RTL** or getting state update in **AT+GTLSW** from EBK.
  - 0: Do not change motion state after receiving the commands.
  - 1: Force the device to enter movement state after receiving one of the commands.
- <*Report Mode*>: A numeral to indicate the way of reporting GPS location of +RESP:GTNMD.
  - 1: Report the last fixed position.
  - 2:Report the current position.
  - 3: Report the last fixed position immediately, and then turn on GPS to get the current position and report position information again.

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

➢ **+ACK:GTNMD,**

Example: **+ACK:GTNMD,F50601,015181001707687,,004B,20190906071610,006B$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.6. Function Key Setting

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

➢ **AT+GTFKS=**

Example: **AT+GTFKS=gl300m,0,1,0,0,0,3,3,4,4,3,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Power Key Mode	1	0|1|2	1
3	Full Power On	1	0|1	1
4	Function Key Mode	1	0|1|2|3|4|5	3
5	Power Key Indication	0	0|1	0

6	Function Key Indication	0	0|1	0
7	SOS Report Mode	1	1|2|3	3
8	First Trigger Time	<=2	1 - 99s	3
9	Second Trigger Time	<=2	1 - 99s	4
10	First Trigger Event	1	0 - 4	4
11	Second Trigger Event	1	0 - 4	3
12	Serial Number	4	(HEX)	
13	Tail Character	1	$	$

- <*Power Key Mode*>: A numeral to indicate the working mode of the power key.
  - 0: Pressing power key will not power off the device.
  - 1: Pressing power key will power off the device.
  - 2: Long pressing power key to activate the SOS mode.
- <*Full Power On*>: A numeral to indicate whether the terminal powers on completely after charger is inserted.
  - 0: Do not power on the terminal completely. And the terminal will only be charged.
  - 1: Power on the terminal completely. The terminal will work as normally as it is powered on by long pressing the power key.
- <*Function Key Mode*>: The working mode for the function key operation.
  - 0: Ignore the function key operation.
  - 1: Geo-fence mode. Enable/disable the Geo-fence ID 0 when the function key is long pressed. After the function key is long pressed, the terminal will report the message **+RESP:GTSWG** to inform whether to enable or disable Geo-Fence ID 0 .
  - 2: Geo-fence around the current position. Enable/disable the Geo-fence ID 0 when the function key is long pressed and use the current position as the center of Geo-fence ID 0. After the function key is long pressed, the terminal will report the message **+RESP:GTSWG** immediately. If this operation is expected to enable Geo-fence ID 0, the terminal will start GPS fixing to get the current position as the center of Geo-fence ID 0. After GPS fixing finishes, the terminal will report the message **+RESP:GTGCR** to indicate the GPS fix result and whether Geo-fence ID 0 has been enabled successfully.
  - 3: SOS mode. When the function key is long pressed, the device will report the current position according to the result of the latest GPS fix and then start GPS fixing. After the GPS fixing finishes or timeout expires, the device will report the SOS message according to the GPS fix result.
  - 4: Location mode. After long press, the device will report a location report "**+RESP: GTLOC**" to the backend server with the real time position.
  - 5: Mixed mode. The device will report different message defined by <*First Trigger Event*> and <*Second Trigger Event*> after pressing for the time set by <*First Trigger Time*>, or <*Second Trigger Time*>.
- <*Power Key Indication*>: A numeral to indicate the working mode of the motor for power key operation.
  - 0: Disable the motor when the power key is long pressed.
  - 1: Enable the motor to vibrate when the power key is long pressed to power off.

- <*Function Key Indication*>: A numeral to indicate the working mode of the motor for function key operation.
  - 0: Disable the motor when the function key is long pressed.
  - 1: Enable the motor to vibrate when the function key is long pressed.
- <*SOS Report Mode*>: A numeral 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 is triggered and then tries to get the current GPS location to report.
- <First Trigger Time>: For function key's mixed mode, this is a numeric to indicate the time (second) before triggering the first trigger event after the function key is pressed, and if <Function Key Indication> is enabled, the motor will vibration once. For function key's other modes, this is a numeric to indicate the long press time (second).
- <*Second Trigger Time*>: A numeric to indicate the time (second) before triggering the second trigger event after the function key is pressed, this time must be longer than <*First Trigger Time*>, and if <*Function Key Indication*> is enabled, the motor will vibration twice. The parameter is valid only when <*Function Key Mode*> is set to 5 (Mixed mode).
- <*First Trigger Event*>: Event to trigger after function key is pressed for <*First Trigger Time*> and the <*Function Key Mode*> is set to 5 (Mixed mode).
  - 0: Ignore the function key operation
  - 1: Geo-fence mode
  - 2: Geo-fence around current position
  - 3: Send a SOS message to back server
  - 4: Send a **+RESP: GTLOC** to back server
- <*Second Trigger Event*>: Event to trigger after function key is pressed for <*Second Trigger Time*> and the <*Function Key Mode*> is set to 5 (Mixed mode).
  - 0: Ignore the function key operation
  - 1: Geo-fence mode
  - 2: Geo-fence around current position
  - 3: Send a SOS message to back server
  - 4: Send a **+RESP:GTLOC** to back server

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

- **+ACK:GTFKS,**

Example: **+ACK:GTFKS,F50601,015181001707687,,004C,20190906071635,006C$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.2.7. Network Select

The **AT+GTNTS** command is used to set network when the signal is weak.

➢ **AT+ GTNTS=**

Example: **AT+GTNTS=gl300m,0,0,0,,,,10,,FFFF$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
Enable	1	0|1	0
RSSI Threshold	3	0 - 35	4
Interval	3	0 - 300(min)	10
Oper1	10		
Oper2	10		
Oper3	10		
GSM Interval	3	0 - 300(min)	10
Reserved	0		
Serial number	4	(HEX)	
Tail character	1	$	$

✧ <*Enable*>: Enable or disable "NTS" based functionality.

- 0: Disable
- 1: Enable

✧ <*RSSI Threshold*>: The threshold of the CSQ value. This parameter is invalid for GL300MG.

✧ <*Interval*>: The interval to change to another operator. This parameter is invalid for GL300MG.

✧ <*Oper1*>: The first network to select .

✧ <*Oper2*>: The second network to select .

✧ <*Oper3*>: The third network to select.

✧ <*GSM Interval*>: The time (minute) before changing the operator without GSM network. This parameter is invalid for GL300MG.

The acknowledgment message of AT+ GTNTS command:

➢ **+ACK:GTNTS**

Example: **+ACK:GTNTS,F50601,015181001707687,,004F,20190906071850,006E$**			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol version	6	(HEX)	
Unique ID	15	(IMEI)	
Device name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial number	4	(HEX)	
Send time	14	YYYYMMDDHHMMSS	
Count number	4	(HEX)	
Tail character	1	$	$

3.2.2.8. Outside Working Hours

To protect the privacy of the drivers when they are off duty, the device can be configured to report empty location information outside working hours. The command **AT+GTOWH** is used to define the working hours and the working mode. When this function is enabled, the device will report empty latitude, empty longitude, empty Cell ID, empty LAC, empty MCC and empty MNC in all the messages except **+RESP:GTSOS**.

➢ **AT+GTOWH=**

Example:
AT+GTOWH=gl300m,0,0,0900,1200,1300,1800,,,0,0,,,,,,,FFFF$

SN	Parameter	Length (Byte)	Range/Format	Default
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
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		
19	Serial Number	4	(HEX)	
20	Tail Character	1	$	$

✧ <*Mode*>: The working mode of this function.

- 0: Disable this function.
- 1: Manual start mode. In this mode, location information will be hidden under two conditions: the device works at outside the working hours and digital input is triggered.
- 2: Full manual mode. In this mode, location information will be hidden under the following condition: the digital input is triggered.
- 3: Automatic mode. In this mode, location information will be hidden under the following condition: the device works at outside the working hours.

- <*Day of Work*>: It specifies the working days in a week in 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 duty day", and 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 the <*Mode*> is 1 or 2. Only digital input port 1 is supported.

3.2.2.9. Extended Configuration

The **AT+GTECF** command is used to configure the extended parameters.

➢ **AT+GTECF=**

Example: **AT+GTECF=gl300m,8004,20,,,,,,,,,,,,,,,,,0001$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	GSM Report	4		0
3	Battery Low Percentage	1	0 - 30	10
4	Manual Netreg	1	0 - 1	1
5	Reserved			
6	Reserved			
7	Reserved			
8	Reserved			
9	Reserved			
10	Reserved			
11	Reserved			
12	Reserved			
13	Reserved			
14	Reserved			
15	Reserved			
16	Reserved			
17	Reserved			

18	Reserved			
19	Reserved			
20	Reserved			
21	Serial Number	4	(HEX)	
22	Tail Character	1	$	$

✧ <*GSM Report*>: It controls how and when to report cell information. The message **+RESP:GTGSM** is only sent via TCP short connection even if the report mode is Force on SMS.

The 2 high bits, Bit 14 – 15, represent the GSM report mode.

- 0: Do not allow the cell information report.
- 1: Allow the cell information report after failing to get GPS position if cell information is available.
- 2: Report the message **+RESP:GTGSM** after each successful GPS fix if cell information is available.
- 3: Report the message **+RESP:GTGSM** regardless of getting GPS position is successful or not if cell information is available.

The 2 low bits, bit0 and bit2 are used to configure **+RESP:GTGSM** will be sent after which message.

- Bit 0 for **+RESP:GTRTL**
- Bit 2 for **+RESP:GTFRI/+RESP:GTERI**

✧ < Battery Low Percentage >: When the battery is lower than <Battery Low Percentage> and **+RESP:GTBPL** is enabled in <Event Mask> of **AT+GTCFG**, **+RESP:GTBPL** will be reported.

✧ <Manual Netreg>: Manual network registration selection.

- 0: Disable manually register the network.
- 1: Enable manually register the network.

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

➢ **+ACK:GTECF,**

Example: **+ACK:GTECF,F50601,015181001707687,,004E,20190906071721,006D$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
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 for scheduled report.

➢ **AT+GTFRI=**

Example: **AT+GTFRI=gl300m,1,0,,,0000,2359,30,30,60,60,,1000,1000,0,3,24,3,60,00000000,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
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	1 - 86400(sec)	180
9	Send Interval	<=5	5 - 86400(sec)	180
10	Ignition Check Interval	<=5	5 - 86400(sec)	180
11	Ignition Send Interval	<=5	5 - 86400(sec)	180
12	Reserved	0	.	
13	Distance	<=5	50 - 65535m	1000
14	Mileage	<=5	50 - 65535m	1000
15	Movement Detection 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	ERI Mask	8	00000000 - FFFFFFFF	00000000
21	Serial Number	4	(HEX)	
22	Tail Character	1	$	$

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

- 0: Disable the fixed report function.
- 1: Enable the fixed time report.
- 2: Enable the fixed distance report. The device reports its position each time the linear distance that the device has moved exceeds the specified distance. It ignores the specific path the device has passed along. This function is valid only when the GPS chip keeps working. Unit: Meter.
- 3: Enable the fixed mileage report. The device reports its position each time the path length that the device has moved exceeds the specified length. It calculates the

length of the path the device has passed along. This function is valid only when the GPS chip keeps working. Unit: Meter.

- 4: Optimum Report. The device simultaneously checks both time interval and path length between two adjacent reports. Device position will be reported if the calculated time interval between the current time and the time of last report is greater than the <*Send Interval*>, and the length of path between the current position and the last position is greater than the <*Mileage*>. In order for the function to work, <*GPS on Need*> must be 0 (Do not turn off GPS chip) or 2 (Do not turn off GPS chip in ignition on state or movement state).
- 5: Reserved.
- 6: Fixed Time or Mileage Report. The device checks either time interval or path length between two adjacent position reports. Device position will be reported if the calculated time interval between the current time and the time of last report is greater than the <*Send Interval*>, or the length of path between the current position and the last position is greater than the <*Mileage*>.

✧ <*Discard No Fix*>: 0 means "Report last known GPS position if there is no GPS fix", and 1 means "Do not send position information if there is no GPS fix".

✧ <*Begin Time*>: The start time of scheduled report. The valid format is "HHMM". The value range of "HH" is "00"-"23". The value range of "MM" is "00"-"59". Please note that system time is used here.

✧ <*End Time*>: The end time of scheduled report. The valid format and range are the same as those of <*Begin Time*>.

✧ <*Check Interval*>: The time interval for GPS fix when the device attached vehicle is ignition off.

✧ <*Send Interval*>: The interval to send the position information when the device attached vehicle is ignition off.

✧ <*Ignition Check Interval*>: The time interval for GPS fix when the device attached vehicle is ignition on.

✧ <*Ignition Send Interval*>: The time interval for sending the position information when the device attached vehicle is ignition on.

✧ <*Distance*>: The specified distance for sending the position information when <*Mode*> is 2 and this parameter is valid only when GPS chip keeps working. Unit: meter.

✧ <*Mileage*>: The specified path length to send the position information when <*Mode*> is 3 and this is valid only when GPS chip keeps working. Unit: meter.

✧ <*Movement Detection Mode*>: Enable or disable the movement detection function.

- 0: Disable the movement detection function.
- 1: Enable the movement detection function. The device is considered to be in non-movement state if the speed shown in the GPS fix result is less than <*Movement Speed*> and the distance between the current GPS position and the last GPS position is less than <*Movement Distance*>. If the device is considered to be in non-movement state, it will report FRI messages (speed field is shown as - 1 in these messages) <*Movement Send Number*> times at most.

✧ <*Movement Speed*>: The speed threshold for movement detection. The unit is (km/h).

✧ <*Movement Distance*>: The distance threshold for movement detection. The unit is meter.

- <*Movement Send Number*>: If the terminal is considered to be staying at the same position based on the speed threshold and distance threshold, the terminal will send at most this number of reports before it moves again.
- <*Corner*>: A numeral to indicate whether to report the **+RESP:GTFRI** message according to the heading change, i.e. the change of the device's movement direction.
  - 0: Disable the function. Do not detect whether the device has changed its direction.
  - 1-180: The angle is used to determine whether the device is turning around. If the heading change is greater than the specified value, the device will be considered to be turning around. Unit: degree.
- <*ERI Mask*>: When the serial port is connected to a peripheral, and the bit for this peripheral is set to 1, the device will report **+RESP:GTERI** instead of **+RESP:GTFRI**. This mask is used to configure whether to report the data from peripherals by **+RESP:GTERI**.
    - Bit 8 for <Temperature> field in the report of **+RESP:GTERI**.

Note:

Check Interval

If <*GPS on Need*> is set to 1 or <*GPS on Need*> is set to 2 without ignition on, according to the value of <*Check Interval*>, the GPS module has two working modes:

- Mode 1: If the <*Check Interval*> is greater than 60 seconds, the terminal will turn off the GPS chip every time after GPS fix finishes in order to save power.
- Mode 2: If the <*Check Interval*> is less than 60 seconds, the terminal will not turn off the GPS chip.

Due to the length limit of the message, make sure that the <*Send Interval*>/<*Check Interval*> ratio is no more than 15. If the limit is exceeded, the command will be discarded and the previous settings will be kept unchanged.

If the terminal is in "Force on SMS" (<*Report Mode*> = 5) and the <*Send Interval*>/<*Check Interval*> ratio is greater than 1, the terminal will report only the last position in the fixed time report. This is because only one position could be filled in a single SMS message (160 bytes at most).

Working Time of FRI Report

- <*Begin Time*> < <*End Time*>: The FRI report function works in the time period (Begin Time, End Time) every day.
- <*Begin Time*> > <*End Time*>: The FRI report function works from <*Begin Time*> and at <*End Time*> on the following day.
- <*Begin Time*> = <*End Time*>: The FRI report function works the whole day.

Scheduled Report Mode

For fixed distance report, fixed mileage report and optimum report, <*GPS on Need*> must be 0 (Do not turn off GPS chip) or 2 (Do not turn off GPS chip in ignition on state or movement state). For the fixed time report, it doesn't matter whether GPS keeps working.

Corner Report

Set <*GPS on Need*> to 0 or 2 to detect turning point. If not, the detection for turning point may not be so accurate and may lead to error in detecting turning point.

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

➢ **+ACK:GTFRI,**

Example: **+ACK:GTFRI,F50601,015181001707687,,0051,20190906072058,006F$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
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 around a geographic area using a location-based service. When the terminal enters or exits the area, a notification is generated. The notification contains information about the location of the terminal.

➢ **AT+GTGEO=**

Example: **AT+GTGEO=gl300m,0,1,114.015821,22.537364,50,30,0,,,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
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 - 6000000(m)	50
7	Check Interval	<=5	0|30 - 86400(sec)	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		
16	Serial Number	4	(HEX)	
17	Tail Character	1	$	$

- <*GEO ID*>: A numeral to identify the Geo-fence.
- <*Mode*>: A numeral which indicates when to report the notification to the backend server:
  - 0: Disable the Geo-fence on the specified GEO ID.
  - 1: Reports when entering the Geo-fence.
  - 2: Reports when leaving the Geo-fence.
  - 3: Reports when entering or leaving the Geo-fence.
- <*Longitude*>: The longitude of a point which is defined as the centre of the circular Geo-fence region. The format is "(-)XXX.XXXXXX" and the value range is from "-180.000000" to "180.000000". The unit is degree. West longitude is represented as a negative value starting with the minus sign "-" and east longitude is represented as a positive value without "+".
- <*Latitude*>: The latitude of a point which is defined as the centre of the circular Geo-fence region. The format is "(-)XX.XXXXXX" and the value range is from "-90.000000" to "90.000000". The unit is degree. South latitude is represented as a negative value starting with the minus sign "-" and north latitude is represented as a positive value without "+".
- <*Radius*>: The radius of the circular Geo-fence region. The value range is (50 -6000000) and the unit is meter.
- <*Check Interval*>: The checking interval for the Geo-fence alarm.
- <*State Mode*>: A numeral to indicate the mode of reporting the device's state.
  - 0: The device should report its state when getting the state for the first time.
  - 1: The device doesn't report its state until the state changes.

Note: If the parameter <*Check Interval*> is set to 0, <*Mode*> will be set to 0 automatically (For Geo-fence ID 0, <*Mode*> will be restored first so it could be used later when Geo-Fence ID 0 is enabled via Function Key). This is because the terminal doesn't know when to check Geo-fence if the parameter <*Check Interval*> is 0.

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

- **+ACK:GTGEO,**

Example: **+ACK:GTGEO,F50601,015181001707687,,0,0058,20190906072259,0074$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
GEO ID	1	0 - 4	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	

Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.2. Speed Alarm

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

➢ **AT+GTSPD=**

Example: **AT+GTSPD=gl300m,1,0,0,60,300,,,,,,,,,,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Mode	1	0|1|2|3|4	0
3	Min. Speed	<=3	0 - 400(km/h)	0
4	Max. Speed	<=3	0 - 400(km/h)	0
5	Valid Time	<=4	15 - 3600(sec)	60
6	Send Interval	<=4	0|5 - 3600(sec)	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		
22	Serial Number	4	(HEX)	
23	Tail Character	1	$	$

✧ <*Mode*>: A numeral to indicate the working modes 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.
- 3: Enable when current speed is within or outside the range.
- 4: Enable when current speed changes from inside to outside of from outside to inside of the speed range.

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

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

✧ <*Valid Time*>: If the speed is in a specified speed range and is maintained for a period of time specified by <Valid Time>, the speed alarm will be triggered.

✧ <*Send Interval*>: If the speed alarm is triggered, the speed alarm message will be sent periodically according to <*Send Interval*>. If the send interval is set to 0, the speed alarm message will be sent only once.

Note: The parameters <*Valid*> and <*Send Interval*> are invalid when the GPS is on need. The device will report speed alarm immediately when the speed of the terminal is detected to be outside the allowed speed range.

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

➢ **+ACK:GTSPD,**

Example: **+ACK:GTSPD,F50601,015181001707687,,006D,20190906072756,0095$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.3. Temperature Alarm

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

➢ **AT+GTTEM=**

Example: **AT+GTTEM=gl300m,1,0,0,60,300,,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Mode	1	0|1|2|3|4	0

3	Min. Temperature	<=3	-20(℃) - 60(℃)	0
4	Max. Temperature	<=3	-20(℃) - 60(℃)	0
5	Duration	<=4	0 - 3600(sec)	60
6	Send Interval	<=4	0|5 - 3600(sec)	300
7	Reserved	0		
8	Reserved	0		
9	Reserved	0		
10	Reserved	0		
11	Reserved	0		
12	Reserved	0		
13	Serial Number	4	(HEX)	
14	Tail Character	1	$	$

- <*Mode*>: A numeral to indicate the working mode of the temperature alarm function.
  - 0: Disable this function.
  - 1: Report the alarm message **+RESP:GTTEM** when the current temperature is lower than the temperature specified by <*Min. Temperature*>.
  - 2: Report the alarm message **+RESP:GTTEM** when the current temperature is inside the temperature range.
  - 3: Report the alarm message **+RESP:GTTEM** when the current temperature is higher than the temperature specified by <*Max. Temperature*>.
  - 4: Report the alarm message **+RESP:GTTEM** when current temperature within or outside the range. In this mode, the <Send Interval> is invalid, the temperature alarm message will be sent only once.
- <*Min. Temperature*>: The lower limit of the temperature range.
- <*Max. Temperature*>: The upper limit of the temperature range.
- <*Duration*>: If the temperature is in the specified temperature range and is maintained for a period of time specified by <*Duration*>, the temperature alarm will be triggered.
- <*Send Interval*>: If the temperature alarm is triggered, the temperature alarm message will be sent periodically according to <*Send Interval*>. If the <*Send Interval*> is set to 0, the temperature alarm message will be sent only once.

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

- **+ACK:GTTEM,**

Example: **+ACK:GTTEM,F50601,015181001707687,,006E,20190906072819,0097$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	

Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.4.4. Motion Sensor Alarm

The **AT+GTMSA** command is used to configure the motion sensor to detect fall accidents and report alarm.

➢ **AT+GTMSA=**

Example: **AT+GTMSA=gl300m,1,1,5,5,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Mode	1	0|1	0
3	Send Last Position	1	0|1	1
4	Sensitivity	<=2	1-10	5
5	Alarm Timeout	<=2	5-10(second)	5
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		
9	Serial Number	4	(HEX)	
10	Tail Character	1	$	$

✧ <*Mode*>: The working mode of the motion sensor.
- 0: Disable this function.
- 1: Get a location fix and then send **+RESP:GTMSA** with the current position to the backend server and an SMS with a Google Map link to the numbers according to the settings of AT+GTGLM if a fall accident is detected.

✧ <*Send Last Position*>: The device sends **+RESP:GTLGL** with the last known GNSS position before sending **+RESP:GTMSA**.
- 0: Disable this feature.
- 1: Enable this feature.

✧ <*Sensitivity*>: The sensitivity of the sensor, with a total of 10 levels. The smaller the value, the mode sensitive the detection will be.

✧ <*Alarm Timeout*>: The timeout for cancelling the alarm. When a fall accident is detected, the end user is notified to confirm the alarm sending through vibration. Alarm can be cancelled by pressing (not long pressing) the function key. If the end user does not cancel the alarm within the given time, the terminal will send the position information to the backend server accordingly.

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

➢ **+ACK:GTMSA,**

Example: **+ACK:GTMSA,F50601,015181001707687,,006E,20190906072819,0097$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.5. IO Application

3.2.5.1. Digital Input Port Settings

➢ **AT+GTDIS**

Example: **AT+GTDIS=gl300m,1,0,5,,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
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		
10	Serial Number	4	(HEX)	
11	Tail Character	1	$	$

✧ <*Input ID*>: The ID of the digital input. It is always 1.

✧ <*Mode*>: A numeral to decide whether to enable the digital input.

- 0: Disable the digital input. The status change of the digital input will be ignored.
- 1: Enable the digital input. If the status of the input changes, the device will report the message **+RESP:GTDIS** to the backend server to indicate 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, the SOS event will be triggered.

✧ <*Debounce Time*>: The time for the input to debounce.

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

➢ **+ACK:GTDIS,**

Example: **+ACK:GTDIS,F50601,015181001707687,,006F,20190906072848,0099$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
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 to execute certain actions.

➢ **AT+GTRTO=**

Example: **AT+GTRTO=gl300m,0,,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Sub Command	<=2	0 - F|14|1C	
3	Single Command Configuration|Configuration Mask|ATI Mask	3	0000000000000000 - FFFFFFFFFFFFFFFF	
4	Reserved	0		
5	Reserved	0		
6	Reserved	0		
7	Sub Command Parameter	<=1		
8	Serial Number	4	(HEX)	
9	Tail Character	1	$	$

✧ <*Sub Command*>: A numeral to indicate the sub command to be executed.

0: (**GPS**): Request GPS related information, including settings of <*GPS on Need*>, <*Report Item Mask*>, <*Report Mask*> of fixed report, GPS antenna type, GPS antenna status and the time of last known successful GPS fix.

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 the parameters to factory settings (or default settings) and clear all buffer messages.

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 network signal level.

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

9: (**BAT**): Request the device to report power supply related information including the external power supply status, the 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**): Request the device information report. The corresponding information will be reported via the message **+RESP:GTINF**.

C: (**GIR**): Get cell information via report **+RESP:GTGSM**.

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. The corresponding information will be reported via the message **+RESP:GTGSV**

14: (**DELBUF**): Delete all the buffered reports.

1C: (**ATI**): Get the detailed device version information.

✧ <*Single Command Configuration/Configuration Mask/ATI Mask*>:

- AT Command: To get a single AT command's configuration when <*Sub Command*> is set to 2, follow the format in the following example. For example, to get the configuration of **AT+GTFRI**, please set AT+GTRTO=gl300m,2,FRI,,,,,0015$, and get it via **+RESP:GTALS**.
- Configuration Mask: If <*Sub Command*> is set to 2, the configuration information of the specified <*Configuration Mask*> can be obtained via the message **+RESP:GTALC**. The Configuration Mask must be 16 bytes. If it's less than 16 bytes, '0' will be added in the high bytes of the Configuration Mask.
- If <*Sub Command*> is set to 2, and this parameter field is left empty, the device will report all the configurations via **+RESP:GTALC**.
- If <Sub Command> is set to 1C, the information will be reported via the message +RESP:GTATI according to chosen <ATI Mask>.

Configuration Mask Table:

Mask Bit	Item
Bit 63	Reserved
Bit 62	Reserved
Bit 61	Reserved
Bit 60	CMD
⋮	Reserved

Bit 48	UDF
⋮	Reserved
Bit 22	NTS
Bit 21	MSA
Bit 20	ECF
Bit 19	Reserved
Bit 18	GAM
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

ATI Mask Table:

Mask Bit	Item
Bit 4	Modem Software Version
Bit 3	Modem Hardware Version
Bit 2	MCU Bootloader Version
Bit 1	MCU Hardware Version

Bit 0	MCU Firmware Version

✧ <Sub Command Parameter>: This parameter is used for part of the sub commands. This field cannot be empty for the sub-commands listed below.

For the sub command RESET (4):

- 0: Light. Reset all configuration parameters, except:
  (1) Network-related configuration (APN, server IP, server port, network mode, etc.).
  (2) Device password.
  (3) Local time calibration (GTTMA).
- 1: Heavy. Reset all configuration parameters.

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

➢ **+ACK:GTRTO,**

Example: **+ACK:GTRTO,F50601,015181001707687,,READ,0070,20190906073020,009F$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Sub Command	<=6	Sub command string	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.6.2. Data Transfer Between UART and Backend Server

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

➢ **AT+GTDAT=**

Example: **AT+GTDAT=gl300m,0,,,0,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Command Type	1	0|1	0
3	Reserved	0		
4	Data	<=200	(ASCII)	
5	Need Ack	1	0|1	0
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		

9	Serial Number	4	(HEX)	
10	Tail Character	1	$	$

- ✧ <*Command Type*>: A numeral to indicate the way to transfer 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 a printable ASCII string.
- ✧ <*Need ACK*>: A numeral 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,F50601,015181001707687,,0072,20190906073156,00A7$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.6.3. White Number List Configuration

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

➢ **AT+GTWLT=**

Example: **AT+GTWLT=gl300m,1,1,1,,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Number Filter	1	0|1|2	1
3	Phone Number Start	1	1 - 10	
4	Phone Number End	1	1 - 10	
5	White Number List	<=20*10		
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		

9	Reserved	0		
10	Serial Number	4	(HEX)	
11	Tail Character	1	$	$

- <*Number Filter*>: A numeral to indicate whether to filter the original number according to <*White Number List*> and <*Direct Number List*> before sending an SMS with a Google Maps link to the original number.
  - 0: Do not return a Google Maps link via SMS to the original number. Ignore the event of **Position Request** message received no matter whether the original number is in the <*White Number List*> or <*Direct Number List*> or not.
  - 1: Do not filter the original number. It will return a Google Maps link via SMS to the original number as long as it receives **Position Request** message via SMS.
  - 2: Filter the original number. If the original number isn't in <*White Number List*> or <*Direct Number List*>, the device won't return a Google Maps link to the original number even if the device receives **Position Request** message via SMS.
- <*Phone Number Start*>: A numeral to indicate the first index of the White Number List numbers to be input. For example, if it is **1**, the device will update the White Number List from the **1**st number. If it is empty, there should be no <*White Number List*>.
- <*Phone Number End*>: A numeral to indicate the last index of the White Number List numbers to be input. For example, if it is **2**, the device will update the whitelist numbers until the **2**nd one. If it is empty, there should be no <*White Number List*>.
- <*White Number List*>: A white number list of phone numbers. Two adjacent phone numbers are separated with ",". The number of the phone numbers in the list is determined by the parameters <*Phone Number Start*> and <*Phone Number End*>. For example, if <*Phone Number Start*> is **1** and <*Phone Number End*> is **2**, the <*White Number List*> should include **2** phone numbers and the two numbers are separated by ",".

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

- **+ACK:GTWLT**

Example: **+ACK:GTWLT,F50601,015181001707687,,0086,20190906073850,00C3$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

Note: Make sure the size of the command is not greater than 160 bytes if it is sent via SMS.

3.2.6.4. Settings for SMS with Google Maps Link

The **AT+GTGLM** command is used to configure whether to send an SMS with a Google Maps link for SOS and GEO events.

➢ **AT+GTGLM=**

Example: **AT+GTGLM=gl300m,1,1,1,,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
2	Google Mode	1	0|1|2	0
3	Phone Number Start	1	1 - 3	
4	Phone Number End	1	1 - 3	
5	Direct Number List	<=20*3		
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		
9	Reserved	0		
10	Serial Number	4	(HEX)	
11	Tail Character	1	$	$

✧ <*Google Mode*>: A numeral to indicate whether to send an SMS with a Google Maps link to the number in <*Direct Number List*> for MSA, SOS and GEO events.

- 0: Do not send an SMS with a Google Maps link to the number in the <*Direct Number List*> for MSA, SOS and GEO events.
- 1: Send an SMS with a Google Maps link including the terminal name to the number in the <*Direct Number List*> for MSA, SOS and GEO events.
- 2: Send an SMS with a Google Maps link not including the terminal name to the number in the <*Direct Number List*> for MSA, SOS and GEO events.

✧ <*Phone Number Start*>: A numeral to indicate the first index of the direct numbers to be input. For example, if it is **1**, the device will update the direct number list from the **1**st number. If it is empty, there should be no <*Direct Number List*>.

✧ <*Phone Number End*>: A numeral to indicate the last index of the direct numbers to be input. For example, if it is **2**, the device will update the direct number list until the **2**nd one. If it is empty, there should be no <*Direct Number List*>.

✧ <*Direct Number List*>: A list of phone numbers. Two adjacent phone numbers are separated with "**,**". The number of the phone numbers in the list is determined by the parameters <*Phone Number Start*> and <*Phone Number End*>. For example, if <*Phone Number Start*> is **1** and <*Phone Number End*> is **2**, the <*Direct Number List*> should include **2** phone numbers and the two numbers are separated by ",".

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

➢ **+ACK:GTGLM,**

Example: +ACK:GTGLM,F50601,015181001707687,,0073,20190906073241,00AB$			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.6.5. Over-the-Air Configuration Update

The **AT+GTUPC** command is used to download configuration file over the air for the update of the local configuration.

➢ **AT+GTUPC=**

Example: AT+GTUPC=gl300m,0,10,0,1,0,http://218.17.46.11:9180/GL300M/deltabin/1234.ini,1,,,,FFFF$				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z'	gl300m
2	Max Download Retries	1	0 - 3	0
3	Download Timeout	<=2	5 - 30(min)	10
4	Download Protocol	1	0	0
5	Enable Report	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		
12	Serial Number	4	0000 - FFFF	
13	Tail Character	1	$	$

✧ <*Password*>: The valid characters for the password include '0'-'9', 'a'-'z', and 'A'-'Z'. The default value is "gl300m".

✧ <*Max Download Retries*>: It specifies the maximum number of retries to download the configuration file upon downloading failure.

✧ <*Download Timeout*>: If downloading is not finished within this time, it will be regarded that the downloading failed.

✧ <*Download Protocol*>: The protocol used to download the file. Only HTTP is supported now.

It is set to 0.

- ✧ <*Enable Report*>: A numeral to indicate whether to send the message **+RESP:GTUPC** to indicate the configuration is 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*>: It specifies the URL to download the configuration file. If the URL ends with "/", it means it is a path without any file name. <(IMEI)>.ini will be added as the file name at the end of URL.
- ✧ <*Mode*>: A numeral to indicate the working mode of downloading configuration over the air.
  - 0: Disable this function.
  - 1: Enable this function.

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

➢ **+ACK:GTUPC**

Example: **+ACK:GTUPC,F50601,015181001707687,,0074,20190906073419,00B0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	IMEI	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

Note:

(1) If the <*Download URL*> ends with "/", it means it is a path without any file name. <(IMEI)>.ini will be added as the file name at the end of URL. If it is larger than 100, an error will be reported.

(2) The maximum size of configuration file is 32*200 bytes. If the size of configuration file is larger than 32*200 bytes, configuration file cannot be downloaded.

(3) The length of a command should not exceed 200 bytes in the configuration file.

(4) Make sure there's only one command per line in the configuration file and there should be a "\r\n" between each command.

3.2.6.6. Preserve Device Special Logical State

The command **AT+GTPDS** is used to preserve special logic state of the terminal. Enable the function according to the working mode, and save the logic state according to the value of the <*Mask*>.

➢ **AT+GTPDS=**

Example: **AT+GTPDS=gl300m,1,69,,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9' 'a' - 'z' 'A' - 'Z'	gl300m
2	Mode	1	0|1|2	1
3	Mask	<=6	0-7FFFFF	69
4	Reserved			
5	Reserved			
6	Reserved			
7	Reserved			
8	Reserved			
9	Reserved			
10	Serial Number	4	(HEX)	
11	Tail Character	1	$	$

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

- 0: Disable this function.
- 1: Preserve special logic state of the device according to the value of the <*Mask*>.
- 2: Reset all the special logical states listed in the <*Mask*> after receiving the command, and then preserve special logic state of the device 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 **+RESP:GTPFA**, **+RESP:GTPNA**/**+RESP:GTPNL** messages when rebooted 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 external power supply
- Bit 6: State of charging
- Bit7: State of digital inputs
- Bit20: State in the command **AT+GTLSW** from EBK
- Bit21: State in the command **AT+GTTSW** from EBK
- Bit22: State in the command **AT+GTOMS** from EBK

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

➢ **+ACK:GTPDS,**

Example: +ACK:GTPDS,F50601,015181001707687,,0075,20190906073507,00B4$			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	IMEI	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.6.7. GPS-Assisted Motion Measurement

The command AT+GTGAM is used for assisting in measuring motion with GPS if the sensor detects motionless state while the vehicle is ignition on.

- **AT+GTGAM=**

Example: AT+GTGAM=gl300m,1,1,25,10,60,60,,,,,FFFF$				
SN	**Parameter**	**Length(byte)**	**Range/Format**	**Default**
1	Password	4 - 20	'0' - '9' 'a' - 'z' 'A' - 'Z'	gl300m
2	Mode	1	0|1	1
3	Speed Mode	1	0|1	1
4	Motion Speed Threshold	<=2	0 - 50(km/h)	25
5	Motion Cumulative Time	<=3	10 - 100(sec)	10
6	Motionless Cumulative Time	<=3	10 - 250(sec)	60
7	GPS Fix Failure Timeout	<=4	5 - 1800(sec)	60
8	Reserved	0		
9	Reserved	0		
10	Reserved	0		
11	Reserved	0		
	Serial Number	4	(HEX)	
	Tail Character	1	$	$

- ✧ <Mode>: The working mode of the GPS-assisted motion measurement function.
  - 0: Disable this function.
  - 1: Enable this function.
- ✧ <Speed Mode>: It combines with GPS speed to measure the status of movement.
  - 0: Disable the function.
  - 1: Enable the function.
- ✧ <Motion Speed Threshold>: The speed threshold which is combined with GPS speed to measure the status of movement.
- ✧ <Motion Cumulative Time>: If the average speed in <Motion Cumulative Time> is higher than <Motion Speed Threshold>, the device is considered to be in motion status.
- ✧ <Motionless Cumulative Time>: If the average speed in <Motionless Cumulative Time> is lower than <Motion Speed Threshold>, the device is considered to be in motionless status.
- ✧ <GPS Fix Failure Timeout>: If the time of GPS fix is more than <GPS Fix Failure Timeout>, the device will update motion status by motion sensor again.

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

➢ **+ACK:GTGAM,**

Example: **+ACK:GTGAM,F50601,015181001707687,,0087,20190906073959,00C6$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.6.8. Command String Storage

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

➢ **AT+GTCMD=**

Example: **AT+GTCMD=gl300m,1,0,AT+CFUN=4,,,,,FFFF$**				
SN	**Parameter**	**Length (Byte)**	**Range/Format**	**Default**
1	Password	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m

2	Mode	1	0 - 1	0
3	Stored cmd ID	3	0 - 31	
4	Command String	200	AT command	
5	Reserved	0		
6	Reserved	0		
7	Reserved	0		
8	Reserved	0		
9	Serial Number	4	(HEX)	
10	Tail Character	1	$	$

- <*Mode*>: The treating method of the command string.
  - 0: Delete the stored command.
  - 1: Add the stored command.
- <*Stored cmd ID*>: A numeral to identify the stored command.
- <*Command String*>: The whole content of the stored command. The command should end with '$'.

➢ **+ACK:GTCMD,**

Example: **+ACK:GTCMD,F50601,015181001707687,,0079,20190906073622,00B8$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	IMEI	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.6.9. User Defined Function

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

➢ **AT+GTUDF=**

Example: **AT+GTUDF=gl300m,1,0,1000000000,0,0,0,1,0,,,,,FFFF$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Password	4 - 20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m

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	(HEX)	
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 numeral to identify the group of input events and stored commands to be executed.
- <*Input ID Mask*>: The bitwise mask to indicate the input events that included in the group.

  Bit 0 (00000001): Select ID1
  Bit 1 (00000002): Select ID2
  Bit 2 (00000004): Select ID3
  Bit 3 (00000008): Select ID4
  For example:
  Bit (00000003): Select ID1, and ID2
  Bit (00000017): Select ID1, ID2, ID3, and ID5

ID	Mask Bit	Item
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 turned on
12	**Bit 11**	GPS is turned off

13	**Bit 12**	The device is stationary
14	**Bit 13**	The device is moving
15	**Bit 14**	External charger inserted
16	**Bit 15**	No external charger
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 the specified stored commands are executed.

✧ <*Inzizo Mask*>: The bitwise masks to indicate the input events within the Geo-fence.

ID	Mask Bit	Item
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 masks to indicate the input events outside the Geo-fence.

ID	Mask Bit	Item
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*> *or* <*Outzizo Mask*> is set to 0, please check Bit 26 - Bit 35 in <*Input ID Mask*>.

✧ <*Stocmd ID Mask*>: The bitwise masks of the stored command which will be executed after the state of the group becomes true (i.e. input events included in the group occur).

✧ <*Stocmd Ack*>: A numeral to indicate whether to send an acknowledgement message when a stored command is executed.

- 0: Do not send an acknowledgement message after a stored command is executed.

- 1: Send an acknowledgement message after a stored command is executed.

Note: Maximum 5 stored commands in a group will be executed.

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

- **+ACK:GTUDF**

Example: **+ACK:GTUDF,F50601,015181001707687,,007E,20190906073729,00BD$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	IMEI	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Serial Number	4	(HEX)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.2.6.10. SMS Position Request

This command can only be sent via SMS, and will enable the device to send SMS message with a Google Maps hyperlink of the current position immediately. Please refer to the Chapter 3.3.6 for details of the position report.

Command Format	**get position**
Example	get position

get position: It's a command string to request the current position.

3.3. Report

3.3.1. Position Related Report

3.3.1.1. General Position Report

- **+RESP:GTGEO**: The message for **AT+GTGEO**
- **+RESP:GTSPD**: The message for **AT+GTSPD**
- **+RESP:GTSOS**: The message after long pressing the function key if the function key is enabled and the mode is SOS mode
- **+RESP:GTRTL**: The message for **AT+GTRTO-RTL**
- **+RESP:GTPNL**: The first location message 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 change of digital input is detected if the parameter <*Enable*> is set to 1 in the command **AT+GTDIS**
- **+RESP:GTDOG:** The watchdog rebooting message

- **+RESP:GTIGL:** The location message for ignition on and ignition off
- **+RESP:GTLOC**: Current location message
- **+RESP:GTMSA**: The location message for motion sensor alarm.

Example:

+RESP:GTGEO,F50601,015181001707687,,0,1,1,1,0.0,0,123.3,114.015577,22.537246,20190906074358,0460,0000,27BD,0DFC,,100,20190906074359,00E4$

+RESP:GTSPD,F50601,015181001707687,,0,1,1,1,0.0,0,123.3,114.015577,22.537246,20190906074739,0460,0000,27BD,0DFC,,100,20190906074740,00F1$

+RESP:GTSOS,F50601,015181001707687,,0,0,1,1,0.0,265,116.7,114.015807,22.537240,20190906074855,0460,0000,27BD,0DFC,,100,20190906074855,00F8$

+RESP:GTRTL,F50601,015181001707687,,37.1,00,1,1,0.0,0,110.1,114.015730,22.537218,20190906075114,0460,0000,27BD,0DFC,,100,20190906075114,0105$

+RESP:GTPNL,F50601,015181001707687,,0,0,1,1,0.0,0,208.4,114.015584,22.538731,20190906083052,0460,0000,27BD,0DFC,,100,20190906083053,01CD$

+RESP:GTNMR,F50601,015181001707687,,0,00,1,1,0.0,0,182.3,114.015301,22.537341,20190906083306,0460,0000,27BD,0DFC,,100,20190906083307,01DA$

+RESP:GTDOG,F50601,015181001707687,,0,0,1,1,0.0,0,70.1,114.015182,22.537003,20190908090041,0460,0000,27BD,0DFC,,100,20190908090042,0784$

+RESP:GTDIS,F50601,015181001707687,gl300m,1,1,1,1,0.0,76,117.8,114.015473,22.537251,20190911031617,0460,0000,27BD,0DFC,0.0,100,20190911111618,004E$

+RESP:GTIGL,F50601,015181001707687,gl300m,0,0,1,2,0.0,76,110.1,114.015607,22.537200,20190911031901,0460,0000,27BD,0DFC,0.0,100,20190911111902,005F$

+RESP:GTLOC,F50601,015181001707687,gl300m,0,0,1,1,0.0,76,95.7,114.015303,22.537100,20190911032658,0460,0000,27BD,0DFC,0.1,100,20190911112659,006F$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Report ID	<=5	0 - 20|0.0 - 100.0	
Report Type	<=2	0|1|2|00 - FF	
Number	1	1	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Battery Percentage	<=3	0 - 100	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Report ID*>: Report ID is only for **+RESP:GTGEO**, **+RESP:GTDIS** and **+RESP:GTRTL** reports, for **+RESP:GTGEO** report, it means the Group ID of the Geo-fence, for **+RESP:GTDIS** report, it means the digital input ID, for **+RESP:GTRTL** report, it means the temperature (range is 0.0 - 100.0). For other reports, it is always 0.

✧ <*Report Type*>: Report Type is only for below reports. For other reports, it is always 0.

- 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 entering-movement trigger and the report type are in hex format. 4 high bits represent the entering-movement trigger and 4 low bits represent the report type.
  Entering-movement trigger defines the trigger of the message. There are three meanings as below:
  0: Triggered by motion sensor detection (Default)
  1: Triggered by the sub command **RTL** of **RTO**
  2: Triggered by the command **AT+GTLSW** from EBK
  Report type has two meanings below.
  0: The state of the device changed from motion to rest
  1: The state of the device changed from rest to motion
- For the **+RESP:GTDIS,** it is generated by the digital input.
  0: The current logic status of the input port is of low level.
  1: The current logic status of the input port is of high level.
- In the ignition on and ignition off message **+RESP:GTIGL**
  0: The engine is of ignition on.
  1: The engine is of ignition off.

- For **+RESP:GTDOG**
  0: Reboot periodically according to the <*Interval*> and <*Time*> settings or upon ignition on or by <*Input ID*>
  1: PDP is unable to register or the interaction of messages fails.
  2: No network signal
- For **+RESP:GTSOS** and **+RESP:GTLOC**
  0: A normal report when <Function Key Mode> is not set to 5 (Mixed mode)
  1: The first trigger report after the Function Key Button is pressed when <*Function Key Mode*> in the command AT+GTFKS is set to 5 (Mixed mode)
  2: The second trigger report after the Function Key Button is pressed when <*Function Key Mode*> in the command AT+GTFKS is set to 5 (Mixed mode)
- For **+RESP:GTRTL**
  0: The status of the device changed from motion to rest.
  1: The status of the device changed from rest to motion.

✧ <*Number*>: The number of points in one message. According to the settings of fixed report, there could be up to 15 points in one **+RESP:GTFRI** message. For other reports, this parameter value is always 1. If there is more than 1 points in the report, information from <*GPS Accuracy*> to <*ODO Mileage*> will repeat for each point.

✧ <*GPS Accuracy*>: A numeral to indicate the GPS fix status and HDOP of the GPS position. 0 indicates the current GPS fix fails and the last known GPS position is used. A non-zero value (1 - 50) indicates the current GPS fix is successful and represents the HDOP of the current GPS position.

✧ <*Speed*>: The speed read 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 represented as a negative value starting with the minus sign "-" and east longitude is represented as a positive value 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 represented as a negative value starting with the minus sign "-" and north latitude is represented as a positive value without "+".

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

✧ <*MCC*>: Mobile country code. It is 3-digit in length and ranges from 000-999. If Bit 3 of the field <*Report Composition Mask*> in **AT+GTCFG** is not set to 1, the length of this field is 0 in ASCII format message.

✧ <*MNC*>: Mobile network code. It is 3-digit in length and ranges from 000-999. If Bit 3 of the field <*Report Composition Mask*> in **AT+GTCFG** is not set to 1, the length of this field is 0 in ASCII format message.

✧ <*Cell ID*>: Cell ID in hex format.

✧ <*ODO Mileage*>: The total mileage. If <*Enable ODO*> is set to 0 in the command **AT+GTCFG**, the field will be empty.

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

➢ **+RESP:GTFRI**: Report of **AT+GTFRI**

Example: **+RESP:GTFRI,F50601,015181001707687,,0,0,1,0,0.0,0,123.3,114.015577,22.537246,20190906074209,0460,0000,27BD,0DFC,,100,20190906074337,00E3$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Report ID	1	0 - 4	
Report Type	<=2	0|1|16|17	
Number	<=2	1 - 15	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Battery Percentage	<=3	0 - 100	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Report Type*>: The type of the messages **+RESP:GTFRI**

0: The message is a scheduled position report generated in REST state.

1: Reserve.

16: The message is a scheduled position report generated in MOTION state.

17: The message is a turning point report generated in MOTION state.

➢ **+RESP:GTERI**: Report of **AT+GTERI**

If the **+RESP:GTERI** is enabled, the device will send the message **+RESP:GTERI** to the backend server.

Example: **+RESP:GTERI,F50601,015181001707687,gl300m,00000100,0,0,1,2,0.0,0,89.1,114.015245,22.537120,20190911033002,0460,0000,27BD,0DFC,0.1,100,1,35.1,,20190911113003,0075$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	

Unique ID		15	(IMEI)	
Device Name		<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
ERI Mask		8	00000000 - FFFFFFFF	
Report ID		1	0 - 4	
Report Type		<=2	0|1|16|17	
Number of Sensors		<=2	1 - 15	
GPS Accuracy		<=2	0 - 50	
Speed		<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID		<=8	(HEX)	
ODO Mileage		<=9	0.0 - 4294967.0(km)	
Battery Percentage		<=3	0 - 100	
Tempera ture	Number of Sensors	<=2	0-10	
	Temperature in Celsius	<=5		
	Temperature Data	4	000-FFFF	
Send Time		14	YYYYMMDDHHMMSS	
Count Number		4	(HEX)	
Tail Character		1	$	$

- <*Report Type*>: The type of the report messages **+RESP:GTERI**
  0: The message is a scheduled position report generated while in REST state.
  1: Reserve.
  16: The message is a scheduled position report generated while in MOTION state.
  17: The message is a turning point report generated while in MOTION state.
- <*Number of Sensors*>: The number of temperature sensor, the default value is always 1 as the temperature is detected by the internal thermistor only. The following field <*Temperature in Celsius*> means the internal real time temperature of the device, If Bit 8 of <ERI Mask> in AT+GTFRI is enabled, the whole part of <*Temperature*> will be displayed, otherwise, this part will not be displayed.
- <*Temperature in Celsius*>: Temperature value in Celsius.
- <*Temperature Data*>: It indicates the data read from the temperature sensor.

➢ **+RESP:GTMSA**: Report of **AT+GMSA**

Example:
+RESP:GTMSA,F50902,015181001708016,GL300M,0,0,1,1,0.0,0,431.4,114.017456,22.538930,20200304083056,0460,0000,2493,16F9,0.0,100,31.7,20200304093857,02FC$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Report ID	1	0	
Report Type	1	0	
Number	1	1	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Battery Percentage	<=3	0 - 100	
Temperature(optional)	<=5	(-)XX.X	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

3.3.1.2. Location Request Report

- **+RESP:GTLBC,**

Example:
+RESP:GTLBC,F50601,015181001707687,gl300m,18126107340,1,0.0,0,223.6,114.015619,22.536907,20190911033923,0460,0001,253D,AEC3,0.0,,20190911113924,0088$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Original Number	<=20	phone number	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Original Number*>: The phone number which initiates this report.

3.3.1.3. Location as Centre of Geo-Fence

If function key mode is set to 2 and function key is long pressed 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 fix finishes, the terminal will report the message **+RESP:GTGCR**.

➢ **+RESP:GTGCR,**

Example: **+RESP:GTGCR,F50601,015181001707687,gl300m,3,50,30,1,0.0,0,128.8,114.015508,22.537196,20190911034634,0460,0001,253D,AEC3,0.1,,20190911114635,009F$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Geo Mode	1	0|1|2|3	
Geo Radius	<=7	50 - 6000000(m)	
Geo Check Interval	<=5	0|30 - 86400(sec)	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	

Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- <*Geo Mode*>: The 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 current position fix is successful, this longitude will be used as the centre of Geo-fence 0.
- <*Latitude*>: The latitude of the current position. If current position fix is successful, this latitude will be used as the centre of Geo-fence 0.

3.3.2. Device Information Report

➢ **+RESP:GTINF:**

Example: **+RESP:GTINF,F50601,015181001707687,gl300m,42,898601178510871520 93,16,99,1,0.1,,4.18,1,1,0,,,20190911034659,100,,36.7,,,20190911114700,00A0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
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 - 4294967.0(km)	
Reserved	0		
Battery Voltage	<=4	0.0 - 4.50V	
Charging	1	0|1	
LED On	1	0 - 2	
GPS On Need	1	0|1|2	
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	(HEX)	
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 network signal strength level.
- <*CSQ BER*>: The quality of the network signal.
- <*External Power Supply*>: Whether the external power supply is connected.
  - 0: Not connected
  - 1: Connected
- <*Mileage*>: The total mileage, based on <*ODO Initial Mileage*> 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 fix.
- <*Temperature*>: The temperature of the device.

➢ **+RESP:GTGSM:**

Example:
+RESP:GTGSM,F50801,015181001708016,,FRI,0460,0000,2493,16F9,15,,0460,0000,2493,1465,-88,,0460,0000,2493,16FA,-88,,0460,0000,2493,1490,-88,,0460,0000,2493,13C5,-84,,0460,0000,27BD,134F,-86,,0460,0000,27BE,0E43,-94,,20191230132304,0156$

Parameter	Length	Range/Format	Default
Protocol version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Fix Type	3	FRI|ERI|RTL|GIR	
MCC1	4	0XXX	
MNC1	4	0XXX	
LAC1	4		

Cell ID1	4		
RX Level1	2	0 - 63	
Reserved	0		
MCC2	4	0XXX	
MNC2	4	0XXX	
LAC2	4		
Cell ID2	4		
RX Level2	2	0 - 63	
Reserved	0		
MCC3	4	0XXX	
MNC3	4	0XXX	
LAC3	4		
Cell ID3	4		
RX Level3	2	0 - 63	
Reserved	0		
MCC4	4	0XXX	
MNC4	4	0XXX	
LAC4	4		
Cell ID4	4		
RX Level4	2	0 - 63	
Reserved	0		
MCC5	4	0XXX	
MNC5	4	0XXX	
LAC5	4		
Cell ID5	4		
RX Level5	2	0 - 31	
Reserved	0		
MCC6	4	0XXX	
MNC6	4	0XXX	
LAC6	4		

Cell ID6	4		
RX Level6	2	0 - 63	
Reserved	0		
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4		
Cell ID	4		
RX Level	2	0 - 63	
Reserved	0		
Send time	14	YYYYMMDDHHMMSS	
Count number	4	(HEX)	
Tail character	1	$	$

- <*Fix Type*>: A string which indicates the type of GPS fix this cell information is for.
  "FRI": This cell information is for FRI request.
  "RTL": This cell information is for RTL request.
  "GIR": This cell information is for RTO (GIR) request.
- <*MCC (i)*>: MCC of the neighbor cell *i* (*i* is the index of the neighbor cell).
- <*MNC (i)*>: MNC of the neighbor cell *i*.
- <*LAC (i)*>: LAC in hex format of the neighbor cell *i*.
- <*Cell ID (i)*>: Cell ID in hex format of the neighbor cell *i*.
- <*RX level (i)*>: The signal strength of the neighbor cell *i*. This parameter specifies a 6-bit value coded in 1. The dBm steps:
  0: -113 dBm or less
  1: -111dBm
  2 to 30: -109 to -63 dBm
  31: -51dBm or greater
- <*MCC*>: MCC of the serving cell.
- <*MNC*>: MNC of the serving cell.
- <*LAC*>: LAC (in hex format) of the serving cell.
- <*Cell ID*>: Cell ID (in hex format) of the serving cell.
- <*RX level*>: The signal strength of the serving cell.

Note:

1. It may include information of several neighbor cells. If no neighbor cell is found, all the fields of the neighbor cell will be empty.
2. "ffff" in the fields of <*LAC(i)*> and <*Cell ID(i)*> means the terminal does not know the value.

3.3.3. Report for Querying

The reports for real time querying via the command **AT+GTRTO** are as follows.

- **+RESP:GTGPS:** The report for the real time operation of the subcommand **GPS**.

Example:
+RESP:GTGPS,F50601,015181001707687,gl300m,0,8,,3F,,,20190911034843,20190911114844,00A6$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
GPS On Need	1	0|1|2	
GPS Fix Delay	<=2	5 - 60(sec)	
Reserved	0		
Report Item Mask	<=4	(HEX)	
Reserved	0		
Reserved	0		
Last GPS Fix UTC Time	14	YYYYMMDDHHMMSS	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- **+RESP:GTALC:** The report for the real time operation of the subcommand **READ**. After the device receives the command **AT+GTRTO** to read all the configurations, it will send all configurations to the backend server by the message **+RESP:GTALC**. If the length of the message is greater than 1000 bytes, the **+RESP:GTALC** will be divided into several packets with the <*Configuration Mask*> indicating the content of each packet. This message is only sent via TCP connection even if the report mode is Force on SMS.

Example:
+RESP:GTALC,F50601,015181001707687,gl300m,000000000000003F,BSI,555555,34s22s,3444,3333,21ss,223,1,0,SRI,3,,1,218.17.46.11,91,218.17.46.11,90,15817439628,0,0,1,,,,CFG,gl300m,gl300m,1,0.1,0,8,003F,0,,3FFF,0,1,1,300,2,0,20491231235959,0,,1,DIS,1,1,5,,,,,,TMZ,+0800,0,,,,,FRI,1,0,,,0000,0000,60,60,180,180,,1000,1000,0,5,50,1,0,100,20190911115540,00A9$
+RESP:GTALC,F50601,015181001707687,gl300m,0000000000001FC0,GEO,0,3,114.015508,22.537196,50,30,0,,,,,,,,1,0,0.000000,0.000000,50,0,0,,,,,,,,2,0,0.000000,0.000000,50,0,0,,,,,,,,3,0,0.000000,0.000000,50,0,0,,,,,,,,4,0,0.000000,0.000000,50,0,0,,,,,,,,5,0,0.000000,0.000000,50,0,0,,,,,,,,6,0,0.000000,0.000000,50,0,0,,,,,,,,7,0,0.000000,0.000000,50,0,0,,,,,,,,8,0,0.000000,0.000000,50,0,0,,,,,,,,9,0,0.000000,0.000000,50,0,0,,,,,,,,10,0,0.000000,0.000000,50,0,0,,,,,,,,11,0,0.000000,0.000000,50,0,0,,,,,,,,12,0,0.000000,0.000000,50,0,0,,,,,,,,13,0,0.000000,0.000000,50,0,0,,,,,,,,14,0,0.000000,0.000000,50,0,0,,,,,,,,15,0,0.000000,0.000000,50,0,0,,,,,,,,16,0,0.000000,0.000000,50,0,0,,,,,,,,17,0,0.000000,0.000000,50,0,0,,,,,,,,18,0,0.000000,0.000000,50,0,0,,,,,,,,19,0,0.000000,0.

000000,50,0,0,,,,,,,,SPD,0,0,0,60,300,,,,,,,,,,,,,,,NMD,E,2,3,5,10800,10800,2,3,0,0,,,,FKS,1,1,2,1,1,3,3,4,4,3,GLM,0,,,,,,,,PIN,0,,0,,,,,OWH,0,0,0900,1200,1300,1800,,,0,,,,,,,,20190911115540,00AA$

+RESP:GTALC,F50601,015181001707687,gl300m,000000000047E000,DOG,0,60,30,0200,,1,0,0,60,60,60,,WLT,1,,,,,,,,,,,,,,TEM,0,0,0,60,300,,,,,,UPC,0,10,0,1,0,http://szqueclink.f3322.net:9180/GL300M/deltabin/UPC_1.ini,1,,,,PDS,1,69,,,,,,GAM,0,0,25,10,60,60,,,,NTS,0,0,0,,,,10,,20190911115540,00AB$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Configuration Mask	16	0000000000000000 - FFFFFFFFFFFFFFFF	
BSI	3	BSI	BSI
LTE APN	<=40		
LTE APN User Name	<=30		
LTE APN Password	<=30		
GPRS APN	<=40		
GPRS APN User Name	<=30		
GPRS APN Password	<=30		
Network Mode	1	0 - 3	
LTE Mode	1	0 - 5	
SRI	3	SRI	SRI
Report Mode	1	0 - 7	0
Reserved	0		
Enable Buffer	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|5 - 360(min)	0
Enable SACK	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	‘0’ - ‘9’, ‘a’ - ‘z’, ‘A’ - ‘Z’, ‘-’, ‘_’	gl300m
Enable ODO	1	0|1	0
ODO Mileage	<=9	0.0 - 4294967.0(km)	0.0
GPS On Need	1	0|1|2|3	0
GPS Fix Delay	<=2	5 - 60(sec)	5
Report Item Mask	<=4	(HEX)	001F
APN Authentication Methods	0	0-3	0
Reserved	0		
Event Mask	4	0000 - FFFF	0FFF
EPB mode	1	0|1	0
LED On	1	0 - 2	1
Enable Info Report	1	0|1	1
Info Report Interval	<=5	30 - 86400(sec)	300
Location Request Mask	1	0 - 3	2
Enable Expiry	1	0|1	0
Expiration Time	14	YYYYMMDDHHMMSS	20491231235959
AGPS Mode	0	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 - 86400(sec)	180
Send Interval	<=5	5 - 86400(sec)	180
Ignition Check Interval	<=5	5 - 86400(sec)	180
Ignition Send Interval	<=5	5 - 86400(sec)	180
Reserved	0		
Distance	<=5	50 - 65535m	1000
Mileage	<=5	50 - 65535m	1000
Movement Detection 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
ERI Mask	<=8	00000000 - FFFFFFFF	00000000
GEO	3	GEO	GEO
GEO ID0	<=2	0	0
Mode	1	0 - 3	0
Longitude	<=11	(-)XXX.XXXXXX	
Latitude	<=10	(-)XX.XXXXXX	
Radius	<=7	50 - 6000000(m)	50
Check Interval	<=5	0|30 - 86400(sec)	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	
Latitude	<=10	(-)XX.XXXXXX	
Radius	<=7	50 - 6000000(m)	50
Check Interval	<=5	0|30 - 86400(sec)	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	
Latitude	<=10	(-)XX.XXXXXX	
Radius	<=7	50 - 6000000(m)	50
Check Interval	<=5	0|30 - 86400(sec)	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	
Latitude	<=10	(-)XX.XXXXXX	
Radius	<=7	50 - 6000000(m)	50
Check Interval	<=5	0|30 - 86400(sec)	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|3|4	0
Min. Speed	<=3	0 - 400(km/h)	0
Max. Speed	<=3	0 - 400(km/h)	0
Valid Time	<=4	15 - 3600(sec)	60
Send Interval	<=4	30 - 3600(sec)	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 - 86400(sec)	300
Rest Send Interval	5	5 - 86400(sec)	300
PM Rest Threshold	1	2 - 9	2
PM Motion Threshold	1	2 - 9	3
URC Report	1	0|1	0
Enter Movement By Command	1	0|1	0
NMD Report Mode	1	1-3	2
Reserved	0		
Reserved	0		
FKS	3	FKS	FKS
Power Key Mode	1	0|1|2	1
Full Power On	1	0|1	1
Function Key Mode	1	0|1|2|3|4|5	3
Power Key Indication	1	0|1	0
Function Key Indication	1	0|1	0
SOS Report Mode	1	1|2|3	3
First Trigger Time	<=2	1 - 99s	3
Second Trigger Time	<=2	1 - 99s	4
First Trigger Event	1	0 - 4	4
Second Trigger Event	1	0 - 4	3
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	0|4- 8	'0' - '9'	
PIN Check	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	480
PDP Interval	<=4	0|5 - 1440	480

Send Fail Timeout	<=4	0|5 - 1440	480
Reserved	0		
WLT	3	WLT	WLT
Call Filter	1	0|1|2	1
White Number List Number	<=20		
White Number List Number	<=20		
White Number List Number	<=20		
White Number List Number	<=20		
White Number List Number	<=20		
White Number List Number	<=20		
White Number List Number	<=20		
White Number List Number	<=20		
White Number List Number	<=20		
White Number List Number	<=20		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
TEM	3	TEM	TEM
Mode	1	0|1|2|3|4	0
Min. Temperature	<=3	-20(℃) - 60(℃)	0
Max. Temperature	<=3	-20(℃) - 60(℃)	0
Duration	<=4	0 - 3600(sec)	60
Send Interval	<=4	0|5 - 3600(sec)	300
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
UPC	3	UPC	UPC
Max. Download Retry	1	0 - 3	0
Download Timeout	<=2	5 - 30(min)	10

Download Protocol	1	0	0
Enable Report	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	<=6	0-7FFFFF	69
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
GAM	3	GAM	GAM
Mode	1	0|1	1
Speed Mode	1	0|1	1
Motion Speed Threshold	<=2	0 - 50(km/h)	25
Motion Cumulative Time	<=3	10 - 100(sec)	10
Motionless Cumulative Time	<=3	10 - 250(sec)	60
GPS Fix Failure Timeout	<=4	5 - 1800(sec)	60
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
ECF	3	ECF	ECF
GSM Report	4		0
Battery Low Percentage	1	0 - 30	10
Manual Netreg	1	0 - 1	1
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		
MSA	3	MSA	MSA
Mode	1	0|1	0
Send Last Position	1	0|1	1
Sensitivity	<=2	1-10	5
Alarm Timeout	<=2	5-10(second)	5
Reserved	0		
Reserved	0		
Reserved	0		
NTS	3	NTS	NTS
Enable	1	0|1	0
RSSI Threshold	<=2	0 - 35	30
Interval	<=3	0 - 300(min)	10
Oper1	<=10		
Oper2	<=10		
Oper3	<=10		
GSM Interval	<=3	0 - 300(min)	10
Reserved	0		
UDF	3	UDF	UDF
Mode	1	0 - 2	0
Group ID 0	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			
⋮	⋮	⋮	⋮
Mode	1	0 - 2	0
Group ID 31	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 - FFFFFFFFFFFFFFF	
Stocmd Ack	1	0|1	0
Reserved			
Reserved			
Reserved			
Reserved			
CMD	3	CMD	CMD
Mode	1	0 - 1	0
Stored cmd ID 0	3	0 - 31	
Command String	200	AT command	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
⋮	⋮	⋮	⋮
Mode	1	0 - 1	0
Stored cmd ID 31	3	0 - 31	
Command String	200	AT command	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

Note: Regardless the report mode setting, **+RESP:GTALC** is only reported through TCP/UDP. If current report mode is Force on SMS, **+RESP:GTALC** will still be reported via TCP/UDP.

- **+RESP:GTCID:** The report for the real time operation of the subcommand **CID**.

Example:
+RESP:GTCID,F50601,015181001707687,gl300m,89860117851087152093,20190911115808,00B4$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
ICCID	20		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	

Tail Character	1	$	$

➢ **+RESP:GTCSQ:** The report for the real time operation of the subcommand **CSQ**.

Example: **+RESP:GTCSQ,F50601,015181001707687,gl300m,11,99,20190911115837,00B6$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
CSQ RSSI	<=2	0 - 31|99	
CSQ BER	<=2	0 - 7|99	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTVER:** The report for the real time operation of the subcommand **VER**.

Example: **+RESP:GTVER,F50601,015181001707687,gl300m,GL300M,0802,0106,0000,BG96,BG96MAR02A07M1G,20190911115908,00B8$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Device Type	<=10	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	gl300m
Firmware Version	4	(HEX)	
Hardware Version	4	(HEX)	
Reserved	4	0000	0000
Modem Hardware Version	<=20		
Modem Software Version	<=50		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

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

✧ <*Firmware Version*>: The firmware version of the device. The first two characters indicate the major version and the last two characters indicate the minor version. For example, 010A means version 1.10.

✧ <*Hardware Version*>: The hardware version of the device. The first two characters indicate the major version and the last two characters indicate the minor version. For example, 010A means version 1.10.

✧ <*Modem Hardware Version*>: It gives the modem hardware information of this device.

✧ <*Modem Software Version*>: It gives the modem software version information of this device.

➢ **+RESP:GTBAT:** The report for the real time operation of the subcommand **BAT**.

Example: **+RESP:GTBAT,F50601,015181001707687,gl300m,1,,100,4.19,1,1,20190911115945,00BA$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
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 - 2	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTTMZ:** The report for the real time operation of the subcommand **TMZ**.

Example: **+RESP:GTTMZ,F50601,015181001707687,gl300m,+0800,0,20190911120008,00BC$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Time Zone Offset	5	+/- HHMM	
Daylight Saving	1	0|1	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTALS:** The report for the real time operation of the subcommand **READ** (e.g. DIS).

Example: **+RESP:GTALS,F50601,015181001707687,gl300m,DIS,1,1,5,,,,,,20190911134609,010F$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
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	(HEX)	
Tail Character	1	$	$

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

Example:
+RESP:GTAIF,F50601,015181001707687,gl300m,555555,34s22s,3444,3333,21ss,223,89860117851087152093,19,99,AEC3,10.228.45.8,,,,,,0,20190911135211,0116$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
LTE APN	<=40		
LTE APN User Name	<=30		
LTE APN Password	<=30		
GPRS APN	<=40		
GPRS APN User Name	<=30		
GPRS APN Password	<=30		
ICCID	20		
CSQ RSSI	<=2	0 - 31|99	
CSQ BER	<=2	0 - 7|99	
Cell ID	<=8		
IP Address	<=15	0.0.0.0	
Main DNS	<=15	0.0.0.0	
Backup DNS	<=15	0.0.0.0	
Reserved			
Reserved			
Reserved			

Network Type	1	-1,0,2	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
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 network signal. The range is 0 -7, and 99 is for unknown signal strength.

✧ <*Cell ID*>: The cell ID (in hex format) of the serving operator.

✧ <*IP Address*>: The IP address of the device.

✧ <*Main DNS*>: The main DNS server.

✧ <*Backup DNS*>: The backup DNS server.

✧ <*Network Type*>: The type of the mobile network the device is currently registered to.

- -1: Unregistered
- 0: GSM
- 2: Cat-M1/Cat-NB1/LTE

➢ **+RESP:GTGSV:** After the device receives the command to get satellite information, it will send the satellite information via the message +RESP:GTGSV to the backend server.

Example:
+RESP:GTGSV,F50701,015181001708016,,11,2,11,3,10,4,0,5,22,6,30,9,14,12,34,17,35,19,30,23,20,28,13,20190916094936,3E2C$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
SV Count	<=2	0-24	
SV ID	<=2	>= 0	
SV Power	<=2	>= 0	
… … …			
SV ID	<=2		

SV Power	<=2		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

- <*SV Count*>: The count of satellites the GPS finds.
- <*SV ID*>: The satellite ID. In case of no satellite, the field is filled with zero.
- <*SV Power*>: Satellite power. In case of no satellite, the field is filled with zero.

➢ **+RESP:GTATI:**

Example:
+RESP:GTATI,F50801,015181001708016,,F,140a01,010B,0201,BG96,20191230132601,0162$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
ATI Mask	<=8	'0' - '9', 'a' - 'f', 'A' - 'F,	
Firmware Version	6		
Hardware Version	4		
Modem Hardware Version	<=20		
Modem Software Version	<=40		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

- < ATI Mask >: This mask is set by **AT+GTRTO**.
- <Firmware Version>: The firmware version. The first two characters represent the branch version, the middle two characters represent the major version and the last two characters represent the minor version. For example, **140A01** means the version **20.10.1**. If the corresponding bit in ATI Mask is set to 0, this field will be empty.
- <Hardware Version>: The hardware version. The first two characters represent the major version and the last two characters represent the minor version. For example,**010A** means the version **1.10.** If the corresponding bit in ATI Mask is set to 0, this field will be empty.
- <*Modem Hardware Version*>: It gives the modem hardware information of this device. If the corresponding bit in ATI Mask is set to 0, this field will be empty.
- <*Modem Software Version*>: It gives the modem software version information of this device. If the corresponding bit in ATI Mask is set to 0, this field will be empty.

3.3.4. Event Report

The following event reports are triggered when certain events occur.

+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: Enable or disable Geo-fence ID 0 via function key

+RESP:GTIGN: Ignition on report

+RESP:GTIGF: Ignition off report

+RESP:GTTEM: Temperature alarm report

+RESP:GTUPC: Configuration updated report

+RESP:GTLGL: If <Send Last Position> in **AT+GTMSA** is set to 1, the device will report **+RESP:GTLGL** when it detects fall accident.

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

➢ **+RESP:GTPNA,**

Example: **+RESP:GTPNA,F50601,015181001707687,gl300m,20190911135351,0119$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTPFA,**

Example: **+RESP:GTPFA,F50601,015181001707687,gl300m,20190911135337,0118$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTEPN,**

Example: **+RESP:GTEPN,F50601,015181001707687,gl300m,1,0.0,0,210.5,114.016051,22.539205,20190911055726,0460,0001,253D,AEC3,0.1,20190911135727,012B$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
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 represented as a negative value starting with the minus sign "-" and east longitude is represented as a positive value 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 represented as a negative value starting with the minus sign "-" and north latitude is represented as a positive value without "+".

➢ **+RESP:GTEPF,**

Example: **+RESP:GTEPF,F50601,015181001707687,gl300m,1,0.0,0,238.3,114.016303,22.539099,20190911055554,0460,0001,253D,AEC3,0.1,20190911135554,0122$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
GPS Accuracy	<=2	0 - 50	

Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTBPL,**

Example:
+RESP:GTBPL,F50601,015181001707687,,3.48,0,0.0,0,178.4,114.015571,22.537409,20190906013759,0000,0000,0000,0000,,20190906155248,0639$

Parameter	Length (Byte)	Range/Format	Default
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Battery Voltage	<=4	0.0 - 4.50V	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTBTC,**

Example:

+RESP:GTBTC,F50601,015181001707687,gl300m,1,0.0,0,210.5,114.016051,22.539205,20190911055726,0460,0001,253D,AEC3,0.1,20190911135727,012C$			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTSTC,**

Example: +RESP:GTSTC,F50601,015181001707687,gl300m,,1,0.0,0,238.3,114.016303,22.539099,20190911055554,0460,0001,253D,AEC3,0.1,20190911135555,0123$			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Reserved	0		
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	

ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTSTT,**

Example: **+RESP:GTSTT,F50601,015181001707687,gl300m,41,1,0.0,40,212.0,114.016205,22.539455,20190911055755,0460,0001,253D,AEC3,0.2,20190911135756,012E$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
State	2	21|22|41|42	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTPDP,**

Example: **+RESP:GTPDP,F50601,015181001707687,gl300m,20190911135513,011E$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

➢ **+RESP:GTSWG,**

Example: **+RESP:GTSWG,F50601,015181001707687,gl300m,0,3,0.0,40,234.9,114.015705,22.538426,20190911060133,0460,0001,253D,AEC3,0.3,20190911140134,0135$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Geo Activation	1	0|1	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Geo Activation*>: A numeral to indicate whether to activate or deactivate Geo-fence 0 by long pressing the function key.

- 0: Deactivate Geo-fence 0.
- 1: Activate Geo-fence 0.

➢ **+RESP:GTIGN,**

Example: **+RESP:GTIGN,F50601,015181001707687,gl300m,0,2,0.0,76,110.1,114.015607,22.537200,20190911031901,0460,0000,27BD,0DFC,0.0,20190911111901,005D$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Duration of Ignition Off	<=6	0 - 999999 sec	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Duration of Ignition Off*>: Duration since ignition off. If it is greater than 999999 seconds, 999999 seconds will be reported.

➢ **+RESP:GTIGF,**

Example: **+RESP:GTIGF,F50601,015181001707687,gl300m,6,2,0.0,76,110.1,114.015607,22.537200,20190911031906,0460,0000,27BD,0DFC,0.0,20190911111907,0061$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Duration of Ignition On	<=6	0 - 999999 sec	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Duration of Ignition On*>: Duration since last ignition on. If it is greater than 999999 seconds, 999999 seconds will be reported.

➢ **+RESP:GTTEM,**

Example: **+RESP:GTTEM,F50601,015181001707687,gl300m,2,38.1,1,0.0,0,225.9,114.015488,22.538050,20190911062008,0460,0001,253D,AEC3,0.3,20190911142009,014F$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Alarm Type	1	1|2|3|4	
Temperature	<=5	(-)XX.X	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
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 represented as a negative value starting with the minus sign "-" and east longitude is represented as a positive value 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 represented as a negative value starting with the minus sign "-" and north latitude is represented as a positive value without "+".

✧ <*Alarm Type*>: The type of the temperature alarm.

- 1: The current temperature is lower than the value specified by <*Min. Temperature*>.
- 2: The current temperature is within the temperature threshold range.
- 3: The current temperature is higher than the value specified by <*Max. Temperature*>.

- 4: The current temperature is within or outside the range.

✧ <*Temperature*>: The current temperature of the device.

➢ **+RESP:GTDAT,**

Example: **+RESP:GTDAT,F50601,015181001707687,gl300m,SSDXDDS,20190911142124,0152$**			
Parameter	**Length (Byte)**	**Range**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Data	<=200	(ASCII)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4		
Tail Character	1	$	$

✧ <*Data*>: The data to be transferred when the command **AT+GTDAT** is executed. It should be a printable ASCII string.

➢ **+RESP:GTUPC,**

Example: **+RESP:GTUPC,F50601,015181001707687,gl300m,0,100,http://szqueclink.f3322.net:9180/GL300M/deltabin/UPC_1.ini,20190911142238,0155$**			
Parameter	**Length(Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Command ID	1		
Result	3	100|101|102|103|200|201|202|300|301|302	
Download URL	<=100	URL	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 - FFFF	
Tail Character	1	$	$

✧ <*Command ID*>: The command ID in the update configuration file. It is always 0 before the device starts to update the configuration. It indicates the total number of the commands when the response result code is 301. It indicates wrong format of command ID when the response result code is 302.

✧ <*Result*>: A numeral to indicate whether the configuration is 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 configuration.
- 301: The device finishes updating the device configuration successfully.
- 302: The device fails to update the device configuration.

✧ <*Download URL*>: The URL to download the configuration. It includes the file name.

➢ **+RESP:GTLGL,**

Example: **+RESP:GTLGL,F50902,015181001708016,GL300M,0,0,0.0,0,414.0,114.017693,22.538816,20200304082623,0460,0000,2493,16F9,0.0,20200304093453,02E7$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Report Type	1	0	
GPS Accuracy	<=2	0 - 50	
Speed	<=5	0.0 - 999.9(km/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	(HEX)	
Cell ID	<=8	(HEX)	
ODO Mileage	<=9	0.0 - 4294967.0(km)	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

✧ <*Report Type*>: The type of the report message **+RESP:GTLGL**.

- 0: This message is triggered by MSA function.

3.3.5. Buffer Report

If the buffer function is enabled, the terminal will save the messages into the buffer in the following circumstances.

✧ No network signal.

✧ Failed to activate network context for the TCP or UDP connection.

✧ Failed to establish TCP connection with the backend server.

✧ The buffered messages' header will be "**+BUFF**" instead of "**+RESP**" if device reboot occurs,

for example, reboot caused by watchdog or manual reboot.

The buffered messages will be sent to the backend server when connection to the server recovers. 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 except **+RESP:GTALC** and **+RESP:GTPDP** can be buffered.
- ✧ In the buffer report, the original header string "**+RESP**" is replaced by "**+BUFF**". Other contents such as the original sending time and count number remain unchanged.
- ✧ Buffered messages will be sent only via network by TCP or UDP protocol. They cannot be sent via SMS.
- ✧ The buffered messages will be sent after the real-time messages if <*Buffer Mode*> in **AT+GTSRI** is set to 1.
- ✧ The buffered messages will be sent before the real-time messages 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,F50601,015181001707687,gl300m,0,16,1,1,0.0,0,225.9,114.015488,22.538050,20190911062436,0460,0001,253D,AEC3,0.0,100,20190911142438,0161$

3.3.6. Report with Google Maps Hyperlink

According to the settings of the command **AT+GTGLM** or upon receiving **SMS Position Request** message via SMS, the device can send an SMS with a Google Maps hyperlink to a mobile phone.

If the device receives **SMS Position Request** message via SMS, GL300M Series will send its current position to the original number via SMS with a 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 number in the White Number List (please refer to <*White Number List*> in the Chapter 3.2.6.3).

If the <*Google Link Mode*> in the command **AT+GTGLM** is set to 1, GL300M Series will send an SMS with a Google Maps hyperlink to the direct phone numbers after the messages **+RESP:GTSOS** and **+RESP:GTGEO**.

➢ **Google Maps Hyperlink**

Example: **gl300m SOS:** **http://maps.google.com/maps?q=22.538503,114.017054+%28gl300m%29** **F1 D2019/09/11T14:33:05 B100%**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
SMS Header	<=30		
Google Maps Hyperlink	<=77		
GPS Fix	2	F1|F0	

GPS UTC Time	20	DYYYY/MM/DDTHH:MM:SS	
Battery Level	<=5	B1 - 100(%)	

- ✧ <*SMS Header*>: A string that includes the terminal name and GPS fix type ("**SOS**", "**IN GEO-i**", "**OUT GEO-i**", "**LBC**", "**MSA**").
- ✧ <*Google Maps Hyperlink*>: A string which represents a Google Maps hyperlink.

3.4. Heartbeat

Heartbeat is used to maintain the contact between the device and the backend server via network communication. The heartbeat package is sent to the backend server at the interval specified by <*Heartbeat Interval*> in the **AT+GTQSS** or **AT+GTSRI** command.

➢ **+ACK:GTHBD,**

Example: **+ACK:GTHBD, F50601, 015181001707687,, 20190911142438,11F0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Unique ID	15	(IMEI)	
Device Name	<=20	'0' - '9', 'a' - 'z', 'A' - 'Z', '-', '_'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	(HEX)	
Tail Character	1	$	$

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

➢ **+SACK:GTHBD,**

Example: **+SACK:GTHBD,F50601,11F0$**			
Parameter	**Length (Byte)**	**Range/Format**	**Default**
Protocol Version	6	(HEX)	
Count Number	4	(HEX)	
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 package.

3.5. Sever Acknowledgement

If server acknowledgement is enabled by the **AT+GTQSS** or **AT+GTSRI** command, the backend server will 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	(HEX)	
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+GTECF
+ACK:GTECF
AT+GTNTS
+ACK:GTNTS
AT+GTFRI
+ACK:GTFRI
AT+GTGEO
+ACK:GTGEO
AT+GTSPD
+ACK:GTSPD
AT+GTTEM
+ACK:GTTEM
AT+GTMSA
+ACK:GTMSA
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+GTGAM
+ACK:GTGAM
AT+GTCMD
+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
+RESP:GTLOC
+RESP:GTMSA

✧ **Device Information Report**

+RESP:GTINF
+RESP:GTGSM

✧ **Report for Querying**

+RESP:GTGPS
+RESP:GTALC
+RESP:GTCID
+RESP:GTCSQ
+RESP:GTVER
+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
+RESP:GTLGL

✧ **Data Transfer Command Report**

+RESP:GTDAT

✧ **Heartbeat**

+ACK:GTHBD
+SACK:GTHBD

✧ **Server Acknowledgement**

+SACK