



GSM/GPRS/GPS/GLONASS Tracker **GV200G**

@Track Air Interface Protocol

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0. Revision history

Revision	Date	Author	Description of change
V1.0	2011-09-13	Amy YANG	Initial
V1.01	2011-11-23	Amy YANG	Add function: white list, button call setting
V2.00	2012-03-06	Eric Xu	1. Add a new command AT+GTURT for the second serial port (UART2) setting. 2. Define a long report format of +RESP:GTDAT message to report external device data with GPS information. Extend the <i><Command Type></i> of command AT+GTDAT to use the long report format +RESP:GTDAT message. 3. Use one of the reserved field of AT+GTSRI and AT+GTQSS as <i><Protocol Format></i> to set the format of the report message. 4. Add new command AT+GTHRM to customize the composition of the HEX report message. 5. Describe HEX format report messages. 6. Modify the range of <i><Time to Stationary></i> in AT+GTIDL to 1-30mins.
V2.01	2012-04-01	Eric Xu	1. GTCFG: update power saving mode. GTFRI: update <i><IGF Report Interval></i> range. 2. Modified the <i><Device name></i> in AT+GTCFG to support '-' and '_' in the string. All the description of <i><Device name></i> is modified in this version. 3. Redefined longitude and latitude protocol parameter and modified the range of some parameter in EVT and RSP.
V2.02	2012-8-24	Amy Yang	1. <i><Send Interval>/<Validity></i> can be set 0 in AT+GTSPD. 2. Update the length of <i><Device Name></i> to 20 bytes. 3. Update <i><long relay option></i> descript in AT+GTOUT. 4. Update protocol version in +ACK example. 5. Add backup APN in AT+GTBSI. 6. Add PDP and GSM watchdog in AT+GTDOG. 7. Add RTO=D to collect the information of APN, ICCID, base station ID, RSSI, cell ID via +RESP:GTAIF, in AT+RTO. 8. Use one of the reserved field of AT+GTRTO as <i><Single Configuration Command></i> to get the

			specified command configuration of the terminal. 9. Add <format protocol> in SRI of GTALL .
V2.03	2012-9-13	Bart Yuan Joseph Tang Arthur Li	1. AC100 1wire bus support. 2. Add <ERI Mask> to command AT+GTFRI to configure whether to report the data from peripherals by +RESP:GTERI . 3. Add +RESP:GTERI message to extend the message +RESP:GTFRI . Add digit fuel sensor support 5. Add ID authentication 6. Add +RESP: GTFLA HEX report. 7. Add IDA/ERI/AC100 in GTALL 8. add GTGSV report message in the AT+GTRTO. 9. Modify the document format of the Report of Real Time Querying 10. Add +RESP:GTAIF index 11. Add fixed report mode 5 12. Add multi analog input mode 3 13. Add +RESP:GTERI index
		Forrest Cao	14. Add new command AT+GTPDS to support preserving special device logical state 15. Modified the password 、 device id and protocol version error.
		Joseph Tang	16. Add <Data Length> parameter before the <data> in the HEX rmessage of +RESP:GTDAT reporting. 17. Add “ERI” in the <Fix Type> of the +RESP:GTGSM (HEX). 18. Add “auto online mode” in the <Sleep Enable> of the AT+GTURT . 19. Add IDA index
		Evan Tu	20. Modified IDA HEX message and Add +RESP:GTERI HEX message. 21. Add +RESP:GTFLA message (ASC).
		Eric Xu	22. Modified the parameter<Mode> in AT+GTMON . 23. Modified the parameter <1wire Devices Data> in +RESP:GTERI .
	2012-12-5	Arthur Li	
	2013-1-22	Joseph Tang Forrest Cao	

V2.04	2013-1-30	Eric Xu	1. Add configuration command in the <i><Single Configuration Command Configuration Mask></i> of AT +GTRTO and report +RESP:GTALC message by set configuration command. 2. Add Jamming Behavior Function. 3. Add “RJB” Value control Jamming behavior function in the <i><Sub Command></i> of AT+GTRTO. 4. Add “QFS100” in the <i><Digit Fuel Sensor Type></i> of the AT+GTURT. 5. Add <i><Ex Filter Factor></i> parameter in the AT+GTEFS. 6. Add Wave 4 function in the AT+GTOUT. 7. Add JBS parameters in the +RESP:GTALL and +RESP:GTALC. 8. Add New command AT+GTJDC for jamming detection.
	2013-2-17	Forrest Cao	9. Modified the description of <i><Long Operation></i> in AT+GTOUT.
V2.05	2013-3-16	Page Zhong	1. Add mode 4 in AT+GTSPD. 2. Add new command AT+GTTMP for temperature alarm. 3. Add new command AT+GTSSR for detecting the vehicle’s started or stop status.
	2013-3-29	Forrest Cao	4. Modified the description of <i><GIR Trigger Typ></i> in the +RESP:GTINF. 5. Add the description of <i><cell number></i> in the +RESP:GTINF.
V2.06	2013-5-29	Forrest Cao	1. Add new command AT+GTNMC to activate /deactivate the sending of the NMEA sentence through the second port. 2. Add new command AT+GTBSE to set MS preferred band. 3. Modify the parameter <i><Extern GPS Annetal satellites number></i> +RESP:GTTMP,+RESP:GTIDA,+RESP:GTFLA.
	2013-6-13	Page Zhong	4. Add new report message +RESP:GTALM to subpackage +RESP:GTALL when the length of +RESP:GTALL is too long. 5. Add mode 6 in the AT+GTURT.

V3.00	2013-12-5	Forrest.Cao	1) Modified the <i><C1 Threshold></i> parameter as <i><Reserved></i> and added <i><Jamming Cell Number Threshold></i>, <i><Enter Jamming Timer Threshold></i>, <i><Quit Jamming Timer Threshold></i> parameters in the AT+GTJDC command. 2) Add value '2' in the <i><mode></i> of AT+GTJDC command to report +RESP:GTJDS message. 3) Add "SMS" mode in <i><Call Filter></i> parameter of the AT+GTWLT. Made the <i><Call Filter></i> parameter consist of MON, LBC, SMS bits. 4) Add +RESP:GTJDS hex report message 5) Add new parameter <i><DOS Report></i> in command AT+GTOUT to report +RESP:GTDOS message when the status of wave shape 1 on special output changed. 6) Modify AT+GTRTO sub command for reset parameter. 7) Add mode 5 in AT+GTSOS.
V3.01	2013-12-6	Forrest.Cao	1) Modify the description of <i><mode></i> in AT+GTJDC. 2) Add the mask of wave shape one of AT+GTPDS. 3) Modify the scope of <i>< Min Threshold>< Max Threshold></i> in AT+GTAIS. 4) Add the format of +RESP:GTJDS. 5) Modify the chart of AT+GTJBS.

1. Overview

1.1. Scope of This Document

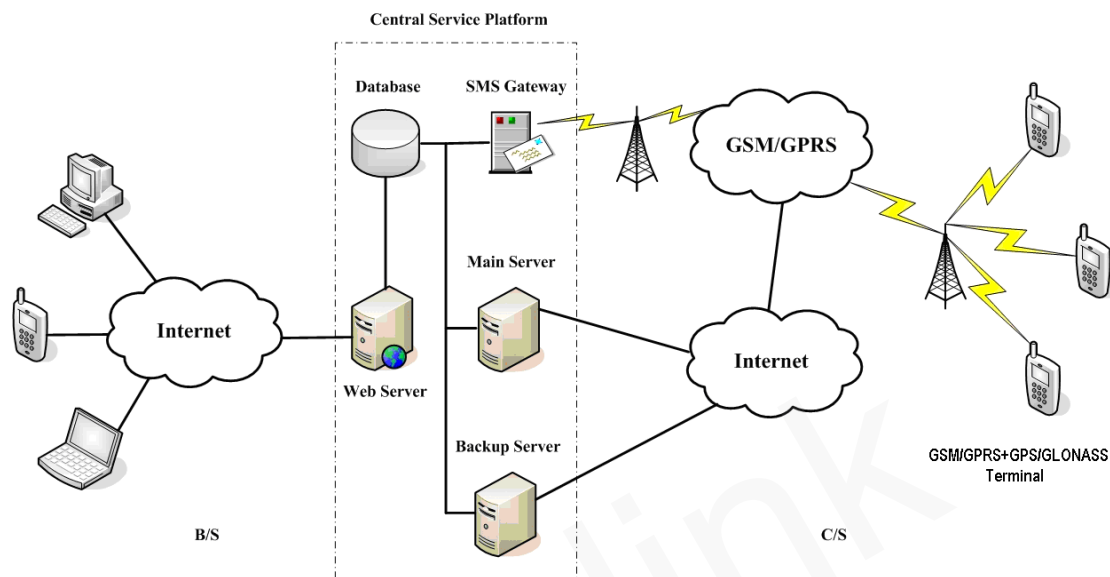
The @Track Air Interface Protocol is a digital communication interface based on printable ASCII characters over SMS or GPRS which is used for all communication between the backend server and the terminal. The backend server sends a command to the terminal and then the terminal confirms with an acknowledgement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

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

1.2. Terms and Abbreviation

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

2. System Architecture



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

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

3. Message Description

3.1. Message Format

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

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

The entire message string ends with character '\$'.

The characters 'XXX' identify the deferent message.

The "<parameter1>,<parameter2>,..." carry the message's parameters. The number of parameters is different in different messages. The ASCII character ',' is used to separate the neighbouring parameter characters. The parameter string may contain the ASCII characters: '0'-'9', 'a'-'z', 'A'-'Z'.

Detailed descriptions of each message format are located in the specific message sections.

By sending Commands to the terminal, the backend server can either configure and query the parameters of the terminal or control the terminal to perform specific actions. When the terminal receives Commands over the air, it will reply with a corresponding Acknowledgement message.

According to the configuration of the parameters, the terminal can send Report messages to the backend server. Please see the following figure:

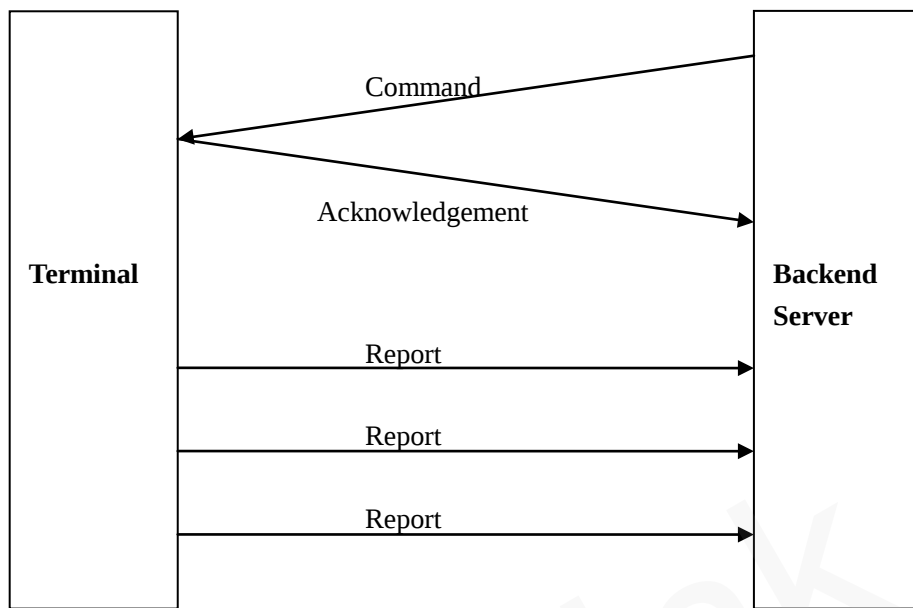


Figure 1: @Tracker Protocol messages flow

3.2. Command And Acknowledgement

3.2.1. Bearer Setting Information

The command **AT+GTBSI** is used to configure the GPRS parameters.

➤ **AT+GTBSI=**

Example: AT+GTBSI=gv200g,cmnet,,,,,,,,0000\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
APN	<=40		
APN User Name	<=30		
APN Password	<=30		
Backup APN	<=40		
Backup APN User Name	<=30		
Backup APN Password	<=30		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Password>: The valid character of password is '0' – '9', 'a' – 'z', 'A' – 'Z'. The default value is "gv200g".
- ✧ <APN>: Access point name (APN).
- ✧ <APN User Name>: the GPRS APN user name. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ <APN Password>: the GPRS APN password. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ <Backup APN>: Backup access point name (APN). If the <APN> does not useful, the <Backup APN> will be used.
- ✧ <Backup APN User Name>: the backup GPRS APN user name. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ <Backup APN Password>: the backup GPRS APN password. If the parameter field is empty, the current value of this parameter will be cleared.
- ✧ <Reserved>: Not used at present. Please keep empty.
- ✧ <Serial Number>: the serial number for the command. It will be invoked in the ACK message of the command.

✧ *<Tail Character>*: a character to indicate the end of the command. And it must be “\$”.

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

➤ **+ACK:GTBSI,**

Example: +ACK:GTBSI,0B0201,135790246811220,,0000,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ *<Protocol Version>*: The protocol version that the terminal conforms to. The first two characters XX point out the device type. 0B means GV200G. The middle two characters point out the main version number of protocol and the last two characters point out the sub version number of protocol. And both of the main version and the minimum version are hex digital. For example, **020A** means version 2.10.
- ✧ *<Unique ID>*: The IMEI of the terminal.
- ✧ *<Device Name>*: The specified name of the device.
- ✧ *<Serial Number>*: A serial number which is equal to the *<Serial Number>* in the corresponding command to distinguish which command the ACK message is for.
- ✧ *<Send Time>*: The local time to send the ACK message.
- ✧ *<Count Number>*: A self-increasing count number in each acknowledgment message and report message. It begins from 0000 and increases by 1 for each message. And it rolls back after “FFFF”.
- ✧ *<Tail Character>*: a character to indicate the end of the command. Must be “\$”.

Note:

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

3.2.2. Backend Server Register Information

The command **AT+GTSRI** is used to configure where and how to report all the messages, including the server information and the communication method between the backend server and the terminal. When the terminal is configured correctly, it should be able to report data to the backend server.

➤ **AT+GTSRI=**

Example:

AT+GTSRI=gv200g,3,,1,116.226.44.17,7011,116.226.45.229,7012,+8613812341234,15,1,,,,,0001\$

AT+GTSRI=gv200g,3,,1,some.host.name,7011,116.226.45.229,7012,+8613812341234,15,1,,,0001\$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Report Mode	1	0 – 6	0
Reserved	0		
Buffer Mode	1	0 1 2	1
Main Server IP / Domain Name	<=60		
Main Server Port	<=5	0 – 65535	
Backup Server IP	<=15		
Backup Server Port	<=5	0 – 65535	
SMS Gateway	<=20		
Heartbeat Interval	<=3	0 5 – 360min	0
SACK Enable	1	0 1	0
Protocol Format	1	0 1	0
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ **<Report Mode>**: This defines the communication method between the backend server and the terminal. Supported report modes as following:

- 0: Stop reporting.

- 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 shut down the connection when the terminal finishes sending data. And if it fails to establish TCP connection to the backend server (both Main Server and Backup Server), it will try to send data via SMS to the SMS gateway.
 - 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 shut down the connection when the terminal finishes sending data. And if it fails to establish TCP connection to the backend server (both Main Server and Backup Server), it will store the data in the memory buffer if buffer report function is enabled. Otherwise the data is dropped.
 - 3: TCP long-connection mode. The connection is based on TCP protocol. The terminal connects to the backend server and maintains the connection using the heart beat data. The backend server should respond to the heart beat data from the terminals.
 - 4: UDP mode. The terminal will send data to the backend server by UDP protocol. Receiving protocol commands via UDP is supported if the GPRS network allows it. It is recommended to enable heartbeat sending and **+RESP:GTPDP** report when UDP receiving is the case.
 - 5: Force on SMS. Only use the SMS for transmitting.
 - 6: UDP with fixed local port. Like the UDP mode, the terminal will send data using UDP protocol. The difference is the terminal will use fixed local port rather than random port to communicate with the server in this mode. Thus the backend server could use identical port to communicate with all terminals if the backend server and the terminals are all in the same VPN network. The port number the device uses is the same as the port number of the primary server.
- ✧ **<Buffer Mode>**: The working mode the buffer report function. When buffer report function is enabled, if the device goes into areas without GSM/GPRS network covering, it will stores all report locally. When the device goes back to areas with GSM/GPRS network covering, it will then send all the buffered reports through GPRS.
- 0: Disable the buffer report function.
 - 1: Low priority. Enable the buffer report function. Under this working mode, the device will send the buffered messages after sending the normal messages.
 - 2: High priority. Enable the buffer report function. Under this working mode, the device will send all the buffered messages before sending any normal message except for the SOS message (**+RESP: GTSOS**).
- ✧ **<Main Server IP / Domain Name>**: The IP address or the domain name of the primary server.
- ✧ **<Main Server Port>**: The port of the primary server.
- ✧ **<Backup Server IP>**: The IP address of the backup server.
- ✧ **<Backup Server Port>**: The port of the backup server.
- ✧ **<SMS Gateway>**: Maximum 20 characters including the optional national code starting with “+” for SMS messages sending. Short code (for example: 10086) is also supported.
- ✧ **<Heartbeat Interval>**: the interval of sending heartbeat package message (**+ACK:GTHBD**) when report mode is TCP long-connection mode or UDP mode. If set to 0, no heartbeat

package message sending.

- ✧ **<SACK Enable>**: This defines whether the backend server should respond to the terminal with SACK message when receiving messages from the terminal.
 - 0: the backend server does not reply SACK message after receiving message from the terminal.
 - 1: the backend server replies SACK message when receiving any message from the terminal.
- ✧ **<Protocol Format>**: This defines the format of the report message sent from the device to the backend server. 0 means using the ASCII format, 1 means the HEX format.

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

➤ **+ACK:GTSRI,**

Example:			
+ACK:GTSRI,0B0201,135790246811220,,0001,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

Note:

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

3.2.3. Quick Start Setting

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

➤ **AT+GTQSS=**

Example:

AT+GTQSS=gv200g,cmnet,,3,,1,116.226.44.17,7011,116.226.45.229,7012,+8613812341234,15,1,,0002\$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
APN	<=40		
APN User Name	<=30		
APN Password	<=30		
Report Mode	1	0 – 6	0
Reserved	0		
Buffer Mode	1	0 1 2	1
Main Server IP / Domain Name	<=60		
Main Server Port	<=5	0 – 65535	
Backup Server IP	<=15		
Backup Server Port	<=5	0 – 65535	
SMS Gateway	<=20		
Heartbeat Interval	<=3	0 5 – 360min	0
SACK Enable	1	0 1	0
Protocol Format	1	0 1	0
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

➤ **+ACK:GTQSS,**

Example:

+ACK:GTQSS,0B0201,135790246811220,,0002,20090214093254,11F0\$

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

3.2.4. Global Configuration

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

➤ AT+GTCFG=

Example:

AT+GTCFG=gv200g,123456,gv200g,,,,,,,,,,,,,0003\$

AT+GTCFG=gv200g,,,1,123.4,0,,0,1,3,2FF,1,1,1,300,0,1,1,1, 00100:00:00,,0003\$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
New Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	gv200g
ODO Enable	1	0 1	0
ODO Initial Mileage	<=9	0.0 – 4294967.0Km	0.0
GPS On Need	1	0 1	0
Gsm report	1	0 1 2 3	0
Report Items Mask	<=4	0000 – FFFF	003F
Power Saving Mode	1	0 – 2	1
GNSS mode	1	1-3	3
Event Mask	<=4	0000 – FFFF	3FFF
Backup Battery On	1	0 1	0
LED On	1	0 1	0
Info Report Enable	1	0 1	1
Info Report Interval	<=5	30 – 86400sec	300
Location By Call	1	0 1 2	0
Echo Suppression	1	1 – 4	3
Backup Battery Charge Mode	1	0 1	0
5V Output Control	1	0 1	0
Maximum Call Time	11	00000:00:00-99999:00:00	00000:00:00
Reserved	0		
Serial Number	4	0000 – FFFF	

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

- ✧ *<New Password>*: Set to change the current password.
- ✧ *<Device Name>*: An ASCII string to represent the name of the device.
- ✧ *<ODO Enable>*: Enable/disable the odograph function to calculate the total mileage. The current mileage is included in every position report message.
- ✧ *<ODO Initial Mileage>*: The initial value for calculating the total mileage.
- ✧ *<GPS On Need>*: Whether to close GPS chip after retrieving GPS position information.
 - 0: Never close GPS chip
 - 1: Close GPS chip after retrieving GPS information every time.
- ✧ *<Report Items Mask>*: Bitwise report mask to configure the composition of report message, especially the GPS information composition.
 - Bit 0 for *<Speed>*
 - Bit 1 for *<Azimuth>*
 - Bit 2 for *<Altitude>*
 - Bit 3 for GSM tower data, including *<MCC>*, *<MNC>*, *<LAC>*, *<Cell ID>* and the *<reserved>* parameter "00"
 - Bit 4 for *<Mileage>*
 - Bit 5 for *<Send Time>*
 - Bit 6 for *<Device Name>*

For each bit, set it to 1 to enable corresponding component in the report, 0 to disable. This mask is effective to all report messages except fixed report.

- ✧ *<Power Saving Mode>*: Set mode of power saving function. If mode of power saving function is set to 0, and the *<IGF Report Interval>* in **AT+GTFRI** is not set to 0, the fixed report will report and its fix and send interval will be set to *<IGF Report Interval>* when the engine is off. If mode of power saving function is set to 1, the fixed report, geo-fence and speed alarm report functions are suspended when the device is at a standstill or the engine is off. If mode of power saving function is set to 2, it would like mode 1 if the *<IGF Report Interval>* in **AT+GTFRI** is set to 0, otherwise the fixed report will report and its fix and send interval will be set to *<IGF Report Interval>* in **AT+GTFRI** when the engine is off.
 - 0: Disable power saving function
 - 1: Mode 1 of power saving function
 - 2: Mode 2 of power saving function
- ✧ *<GNSS Mode>*: Set the GNSS constellation type for navigation solution.
 - 1: GPS only
 - 2: GLONASS only
 - 3: combined
- ✧ *<Gsm report>*: If GPS fixing for the report message **+RESP:GTSOS**, **+RESP:GTRTL**, **+RESP:GTLBC**, **+RESP:GTTOW**, **+RESP:GTERI** and **+RESP:GTFRI** were failed and the parameter *<Gsm report>* was set to 1, the terminal reports the message **+RESP:GTGSM**, including the information of the service cell and the neighbour cells after those messages if cell's information available. If it was set to 2, the terminal will report the message **+RESP:GTGSM** after getting GPS position successfully every time if cell's information available. If it was set to 3, the terminal will report **+RESP:GTGSM** no matter what result of

getting GPS position every time if cell's information available.

- 0: Not allow the cells' information report.
- 1: Allow the cells' information report after failed to get GPS position if cell's information available.
- 2: Report the message **+RESP: GTGSM** after getting GPS position successfully every time if cell's information available.
- 3: Report the message **+RESP:GTGSM** no matter what result of getting GPS position every time if cell's information available.

✧ **<Event Mask>**: Bitwise mask to configure which event report should be sent to the backend server.

- Bit 0 for **+RESP:GTPNA**
- Bit 1 for **+RESP:GTPFA**
- Bit 2 for **+RESP:GTMPN**
- Bit 3 for **+RESP:GTMPF**
- Bit 4 is reserved
- Bit 5 for **+RESP:GTBPL**
- Bit 6 for **+RESP:GTBTC**
- Bit 7 for **+RESP:GTSTC**
- Bit 8 for **+RESP:GTSTT**
- Bit 9 for **+RESP:GTANT**
- Bit 10 for **+RESP:GTPDP**
- Bit 11 for the power on **+RESP:GTRTL**
- Bit 12 for the ignition report **+RESP:GTIGN** and **+RESP:GTIGF**
- Bit 13 for the ignition on location report **+RESP:GTIGL**

For each bit, set it to 1 to enable corresponding event report, 0 to disable.

✧ **<Backup Battery On>**: Configure whether to enable backup battery, 1 to enable, 0 to disable. The backup battery will only be used when this parameter is set to 1 and the external power is not connected.

✧ **<LED On>**: Configure the working mode of power LED and GPS LED.

- 0: Each time the device powers on, both LED's will work for 30 minutes and then are turned off deadly.
- 1: turn on Power LED and GPS LED if necessary.

✧ **<Info Report Enable>**: Enable/disable the device information report function (**+RESP:GTINF**). The device information include state of the device, ICCID, GSM signal strength, adapter connection status, backup battery enable setting, battery voltage, charging status, Power and GPS LED working mode, GPS on need setting, external GPS antenna status, the last known time of GPS fix, analog input voltage, all digit inputs and outputs status, time zone information and daylight saving setting..

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

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

✧ **<Location By Call>**: Configure how to handle the incoming call if **<Mode>** in **AT+GTMON** is not equal to 2 or 3.

- 0: Just hang up the call.

- 1: Hang up the call and report the current position (+RESP:GTLBC).
- 2: Hang up the call and report the current position with Google Map link through SMS to the phone number of the incoming call.
- ✧ <Echo suppression>: Configure to one of the four phases for echo suppression.
 - 1: Cancel echo in the audio channel of the earphone.
 - 2: Cancel and weakly suppress echo in the audio channel of the earphone.
 - 3: Cancel and suppress echo in the audio channel of hands-free kit.
 - 4: Cancel and strongly suppress echo in the audio channel of hands-free kit
- ✧ <Backup Battery Charge Mode>: Control the charge mode of the backup battery.
 - 0: When the main power supply is connected, charge the backup battery on need.
 - 1: When the main power supply is connected, only charge the backup battery when ignition on is detected. The charge process will begin 3 minutes after the ignition on. The charge process is stopped when ignition off.
- ✧ <5V Output Control>: Control 5V output.
 - 0: Disable 5V output.
 - 1: Enable 5V output.
- ✧ <Maximum Call Time>: Maximum duration time for a single incoming and outgoing call except ECC or SOS call. It is formatted with 5 hour digits and 2 minute digits and 2 second digits and ranges from 00000:00:00– 99999:00:00. If it is 00000:00:00, the limitation is disabled. If a call time except ECC and SOS call reaches this limitation, the call will be disconnected..

The acknowledgment message of AT+GTCFG command:

➤ +ACK:GTCFG,

Example: +ACK:GTCFG,0B0201,135790246811220,,0003,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.5. Tow Alarm Configuration

The **AT+GTTOW** command is used to configure the motion sensor and the parameters for tow alarm.

➤ **AT+GTTOW=**

Example: AT+GTTOW=gv200g,1,5,0,120,1,0,5,10,4,10,4,,,,,,,,,0004\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Tow Enable	1	0 1	0
Engine Off to Tow	<=2	5 – 15 min	10
Fake Tow Delay	<=2	0 – 10 min	1
Tow Interval	<=5	30 – 86400 sec	300
Tow Output ID	1	0 – 4	
Tow Output Status	1	0 1	
Tow Output Duration	<=3	0 – 255 (×100ms)	0
Tow Output Toggle Times	<=3	0 – 255	0
Rest Duration	<=3	1 – 255 (×15sec)	2
Motion Duration	<=2	1 – 10 (×100ms)	3
Motion Threshold	1	2 – 4	2
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Tow Enable>: Enable or disable tow alarm (+**RESP:GTTOW**).

- 0: Disable the tow alarm
- 1: Enable the tow alarm
- ✧ <Engine Off to Tow>: A time parameter to judge whether the device is considered being towed after the engine off. If the motion sensor doesn't detect stillness within the specified time after engine off, the device is being towed.
- ✧ <Fake Tow Delay>: After engine off and stillness detected, if the motion sensor detects moving again, the device turns into a state called fake tow. If the device keeps in fake tow after a period of time defined by the parameter <Fake Tow Delay>, it is considered being towed.
- ✧ <Tow Interval>: The period to send tow alarm message.
- ✧ <Tow Output ID>: The ID of the output port to output the specified wave shape when tow event is detected.
- ✧ <Tow Output Status>: Please refer to the parameter <Output1 - 4 Status> in the chapter 3.2.6.
- ✧ <Tow Output Duration>: Please refer to the parameter <Duration> in the chapter 3.2.6.
- ✧ <Tow Output Toggle Times>: Please refer to the parameter <Toggle Times> in the chapter 3.2.6.
- ✧ <Rest Duration>: A time parameter to make sure that the device enters stillness status, i.e. the status of the device will be changed to stillness if the motion sensor detects stillness and maintains for a period of time defined by the parameter <Rest Duration>.
- ✧ <Motion Duration>: A time parameter to make sure that the device enters motion status, i.e. the status of the device will be changed to motion if the motion sensor detects motion and maintains for a period of time defined by the parameter <Motion Duration>.
- ✧ <Motion Threshold>: The threshold for the motion sensor to measure whether the device is moving.

The acknowledgment message of AT+GTTOW command:

➤ +ACK:GTTOW,

Example: +ACK:GTTOW,0B0201,135790246811220,,0004,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.6. Digital Output

The **AT+GTOUT** command is used to output specified wave shape from the digital output ports. Total three wave shapes is supported as below. If set to wave shape 1, the device will maintain this wave shape at the specified output port after power reset.

If wave shape 4 is set to specified output port, and then the port will output maintain square wave. But when the main power is off, the port will stop outputting the wave, and then make the main power on, the port will start to output the wave again. In the other situation, if the device reboot, the port will still output the wave.

Wave shape 1:

✓ $\langle \text{Duration} \rangle = 0\text{ms}$, $\langle \text{Toggle Times} \rangle = 0$

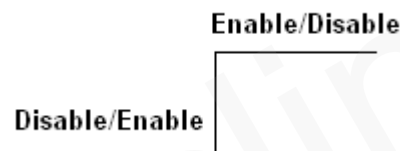


Figure 2: Wave Shape 1

Wave shape 2:

✓ $\langle \text{Duration} \rangle = 500\text{ms}$, $\langle \text{Toggle Times} \rangle = 1$

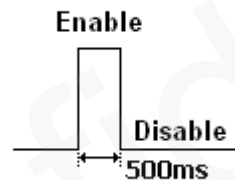


Figure 3: Wave Shape 2

Wave shape 3:

✓ $\langle \text{Duration} \rangle = 800\text{ms}$, $\langle \text{Toggle Times} \rangle = 3$

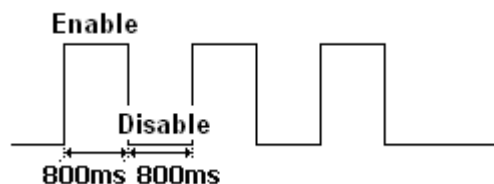


Figure 4: Wave Shape 3

Wave shape 4:

✓ $\langle \text{Duration} \rangle = 800\text{ms}$, $\langle \text{Toggle Times} \rangle = 0$

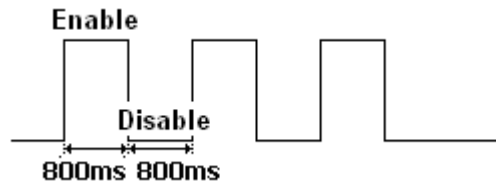


Figure 5: Wave Shape 4

➤ **AT+GTOUT=**

Example: AT+GTOUT=gv200g,1,0,0,0,0,0,0,5,1,0,8,3,,,,,0005\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Output1 Status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Output2 Status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Output3 Status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Output4 Status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Long Operation	<=3	0 – 120min	0
DOS Report	1	0 – F	0
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Output1 – 4 Status>: Used only for the wave shape 1 as shown in **Figure 2** to set the final status of the output port.

- 0: Disable status.

- 1: Enable status.
- ✧ <Duration>: Please refer to **Figure 2**, **Figure 3** and **Figure 4** and **Figure 5**. Unit is 100ms.
- ✧ <Toggle Times>: Please refer to **Figure 2**, **Figure 3** and **Figure 4** and **Figure 5**.
- ✧ <Long Operation>: Output wave 1 and 4 for a long time as specified by this parameter on output port4. After the specified time, restore the status of the output. If it is wave 3 and it's two parameters <Duration> × <Toggle Times> is larger than <Long Operation>. The wave 3 will also be stop output after such <Long Operation> time passed.
- <DOS Report>: Output status change with wave shape 1, whether or not report +RESP:GTDOS.
 - Bit 0: for output 1 report +RESP:GTDOS
 - Bit 1: for output 2 report +RESP:GTDOS
 - Bit 2: for output 3 report +RESP:GTDOS
 - Bit 3: for output 4 report +RESP:GTDOS

For each bit, set it to 1 to enable, 0 to disable.

The acknowledgment message of AT+GTOUT command:

➤ +ACK:GTOUT,

Example: +ACK:GTOUT,0B0201,135790246811220,,0005,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.7. Analog Input Port Setting

The command **AT+GTAIS** is used to configure the parameters of analog input port.

➤ **AT+GTAIS=**

Example: AT+GTAIS=gv200g,2,250,12000,3,2,1,1,0,0,1,,0006\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 1 2	0
Min Threshold	<=5	250 – 32000 mV	
Max Threshold	<=5	250 – 32000 mV	
Sample Period	<=2	0 1 – 12(×2s)	0
Debounce Time	1	0 – 5 (×1s)	0
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Sync with FRI	1	0 1	0
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ **<Mode>**: Working mode of the analog input alarm (**+RESP :GTAIS**).

- 0: Disable analog input alarm.
- 1: Enable analog input alarm. If the current input voltage is within the range of (*<Min Threshold>*, *<Max Threshold>*), the alarm will be triggered.
- 2: Enable analog input alarm. If the current input voltage is outside the range of (*<Min Threshold>*, *<Max Threshold>*), the alarm will be triggered.
- 3: No alarm mode, only check the voltage, but no alarm will trigger.

✧ **<Min Threshold>**: The lower limit to the voltage of the analog input port to trigger the alarm.

✧ **<Max Threshold>**: The upper limit to the voltage of the analog input port to trigger the alarm.

- ✧ <Sample Period>: The sampling period of the analog input port.
- ✧ <Debounce Time>: The time for debouncing to avoid exceptional voltage drop on analog input port.
- ✧ <Output ID>: Specify the ID of the output port (1 to 4) to output specified wave shape when the analog input alarm is triggered. If set to 0, no output wave.
- ✧ <Sync with FRI>: Besides the alarm report of analog input, the device can also send the analog input voltage periodically along with fixed report message. Set this field to 1 to enable it, 0 to disable.

The acknowledgment message of AT+GTAIS command:

➤ +ACK:GTAIS,

Example: +ACK:GTAIS,0B0201,135790246811220,,0006,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.8. Digital Input Port Setting

The command **AT+GTDIS** is used to configure the parameters of 4 digital input ports. Input ID 1 is dedicated for ignition detection. The rest three inputs are customizable. If the logical status is changed on one of the three digital inputs port, the device will report message **+RESP:GTDIS** to the backend server.

➤ **AT+GTDIS=**

Example:

AT+GTDIS=gv200g,1,2,3,2,1,4,3,1,2,4,3,4,,,,,0007\$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Input ID 1	1	1	1
Sample Period	<=2	0 1 – 12(×2s)	1
Debounce Time	<=2	0 – 400(×50ms)	2
Input ID 2	1	2	2
Enable	1	0 1	0
Debounce Time	<=2	0 – 20(×10ms)	0
Input ID 3	1	3	3
Enable	1	0 1	0
Debounce Time	<=2	0 – 20(×10ms)	0
Input ID 4	1	4	4
Sample Period	<=2	0 1 – 12(×2s)	0
Debounce Time	<=2	0 – 400(×50ms)	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Input ID 1~4>: the digital input port ID.

✧ <Sample Period>: the sampling period of the non-interruptible input port.

✧ <Enable>: Enable or disable the interrupt input.

- 0: Disable
- 1: Enable

✧ *<Debounce Time>*: The time for debouncing. For non-interrupt input ports, this time should be shorter than *<Sample Period>* and during debouncing, the device will check the status of the digital input every 50ms. If the status of the digital input changes before sampling and keeps no change within *<Debounce Time>*, then the logical status of the digital input is changed.

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

➤ **+ACK:GTDIS,**

Example: +ACK:GTDIS,0B0201,135790246811220,,0007,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.9. Input/Output Port Binding

This command is used to configure the user defined output-port action triggered by input ports. If the IO combination is set and the corresponding condition appears, the device will output specified wave shape on the specified output port. And the device will report message +**RESP:GTIOB** to the backend server when the logical status of bound input ports changes.

➤ **AT+GTIOB=**

Example: AT+GTIOB=gv200g,1,1A,A,3,1,0,8,3,,,,,0008\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
IOB ID	1	0 – 3	
Input Mask	<=2	0 – 1F	0
Trigger Mask	<=2	0 – 1F	0
Input Sample Period	<=2	0 1 – 12(×2s)	0
Output ID	1	0 – 4	0
Output Status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <IOB ID>: ID of the user defined IO binding.
- ✧ <Input Mask>: Bitwise mask for input ports composition. Each bit, from bit 0 to bit 3, represents one digital input port. Set to 1 to enable and 0 to disable corresponding input port.
 - bit0: digital input 1
 - bit1: digital input 2
 - bit2: digital input 3
 - bit3: digital input 4
- ✧ <Trigger Mask>: bitwise mask for trigger condition composition of the corresponding input ports. Each bit, from bit 0 to bit 3, represents the logical status of the corresponding input

port to trigger the IOB event. Set to 1 to use enable status as the trigger condition and 0 to use disable status. Only when the logical status of all the input ports in one IO binding meets the trigger condition is the IOB event triggered.

- bit0: digital input 1
- bit1: digital input 2
- bit2: digital input 3
- bit3: digital input 4

- ✧ <Input Sample Period>: The period to check the status of all the digital input ports in one IO binding. **AT+GTIOB** and **AT+GTDIS** use independent sample period to check the input port status even for the same input port.
- ✧ <Output ID>: ID of the output port to output specified wave when the trigger condition meets. 0 means no wave will be output.

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

➤ **+ACK:GTIOB,**

Example: +ACK:GTIOB,0B0201,135790246811220,,1,0008,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ { 'A' – 'Z', '0' – '9' }	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
IOB ID	1	0 – 3	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.10. Time Adjustment

The command **AT+GTTMA** is used to adjust the local time of the device remotely. Upon this command, the device will set the time zone and daylight saving accordingly. Then it will use the given UTC time to adjust the local time based on the time zone and daylight saving setting. This command will also trigger the device to start GPS. After a successful GPS fix, the device will update the local time with the GPS UTC time again.

➤ AT+GTTMA=

Example:

AT+GTTMA=gv200g,-,3,30,0,20090917203500,,,,,0009\$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Sign	1	+ -	+
Hour Offset	<=2	0 – 23	
Minute Offset	<=2	0 – 59	
Daylight Saving	1	0 1	
UTC Time	14	YYYYMMDDHHMMSS	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character			

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

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

➤ +ACK:GTTMA,

Example:

+ACK:GTTMA,0B0201,135790246811220,,0009,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {‘A’ – ‘Z’, ‘0’ – ‘9’}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.11. Fixed Report Information

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

➤ **AT+GTFRI=**

Example:

AT+GTFRI=gv200g,0,,,,,,,,,,,,,000A\$

AT+GTFRI=gv200g,1,1,0,1,1000,2300,180,30,,,21,,600,,,000A\$

AT+GTFRI=gv200g,2,1,0,1,1000,2300,,,500,,31,,,,000A\$

AT+GTFRI=gv200g,3,1,0,1,1000,2300,,,1000,0,,,,000A\$

AT+GTFRI=gv200g,4,1,0,1,1000,2300,,60,,300,0,,,,000A\$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 – 5	0
Discard No Fix	<=2	0 1	1
Max Send	<=5	0 – 65535	0
Period Enable	1	0 1	1
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
Check Interval	<=5	30 – 86400sec	180
Send Interval	<=5	5 – 86400sec	30
Distance	<=5	50 – 65535m	1000
Mileage	<=5	50 – 65535m	1000
Report Mask	<=4	0000 – FFFF	3F
Corner Report	<=3	0 – 180	0
IGF Report Interval	<=5	0 5-86400sec	600
ERI Mask	8	00000000 – FFFFFFFF	00000000
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

- 0: Disable this function.
- 1: Fixed Timing Report. The positional report message is sent to the backend server

periodically according to the parameter *<Send Interval>*.

- 2: Fixed Distance Report. The positional report message is sent to the backend server when the straight-line distance between the current GPS position and the last sent GPS position is greater than or equal to the distance specified by parameter *<Distance>*.
 - 3: Fixed Mileage Report. The positional report message is sent to the backend server when the path length between the current GPS position and the last sent GPS position is greater than or equal to the mileage specified by parameter *<Mileage>*. This function need connect the vehicle ignition signal to the specified digital input port of the device.
 - 4: Optimum Report. Simultaneously observe both time interval and path length between two adjacent reports. Report device position if the calculated time interval per current time against the last report time is greater than the *<Send Interval>*, and the length of path between the current position and the last position is greater than the *<Mileage>* setting. This function need connect the vehicle ignition signal to the specified digital input port of the device.
 - 5: Fixed Time and Mileage Report. Simultaneously observe both time interval and path length between two adjacent reports. Report device position if the calculated time interval per current time against the last report time is greater than the *<Send Interval>*, or the length of path between the current position and the last position is greater than the *<Mileage>* setting. This function need connect the vehicle ignition signal to the specified digital input port of the device.
- ✧ *<Discard No Fix>*: Disable/enable reporting when there is no GPS fixing
- 0: Enable reporting
 - 1: Disable reporting
- ✧ *<Max Send>*: the maximum times of reporting. 0 means to no limit.
- ✧ *<Period Enable>*: Disable/enable the time range specified by *<Start time>* and *<End time>*. If the time range is enabled, the position reporting is limited within the time range.
- ✧ *<Start Time>*: The start time of the scheduled fixed report. The valid format is “HHMM”. The value range of “HH” is “00”–“23”. The value range of “MM” is “00”–“59”.
- ✧ *<End Time>*: The end time of the scheduled fixed report. The valid format and range are same as *<Start Time>*.
- ✧ *<Check Interval>*: The interval time to fix GPS, its value range is 30 – 86400 and the unit is second. The parameter is used only when the parameter *<GPS On Need>* in **AT+GTCFG** is set to 1.
- If *<GPS On Need>* was set as 1, the device has two modes to operate the GPS module according to the value of *<Check Interval>*:
- “Normal mode”: If the *<Check Interval>* is no less than 60 seconds, the terminal will close the GPS chip every time after GPS fixing finishes in order to save power.
 - “Emergency mode”: If the *<Check Interval>* is less than 60 seconds, the terminal will never close the GPS chip unless *<Power Saving Enable>* is 1 and the state in +RESP:GTINF is 0x16(Tow) or 0x1A(Fake Tow) or 0x11(Ignition Off Rest) or 0x12(Ignition Off Motion) or 0x41(Sensor Rest). In this mode, the *<Send Interval>* will be ignored, the terminal reports every *<Check Interval>* time, and the *<Check*

Interval> will be forced to 30 seconds if it is less than 30 seconds.

Due to the limitation of the maximum report message length, it must be assured that: *<Send Interval>* / *<Check Interval>* ≤ 15.

- ✧ *<Send Interval>*: Period to send the position information. The value range is 5 – 86400 and the unit is second. If *<report mode>* in **AT+GTSRI** is set to force on SMS, this should be greater than 15 seconds.
- ✧ *<Distance>*: the specified distance to send the position information when *<Mode>* is 2. Unit: meter.
- ✧ *<Mileage>*: the specified length to send the position information when *<Mode>* is 3,4and5. Unit: meter.
- ✧ *<Report Mask>*: Bitwise report mask to configure the composition of the fixed report message.
 - Bit 0 for *<Speed>*
 - Bit 1 for *<Azimuth>*
 - Bit 2 for *<Altitude>*
 - Bit 3 for GSM tower data, including *<MCC>*, *<MNC>*, *<LAC>*, *<Cell ID>* and the *<reserved>* parameter “00”
 - Bit 4 for *<Mileage>*
 - Bit 5 for *<Send Time>*
 - Bit 6 for *<Digital Ports Status>*

For each bit, set it to 1 to enable corresponding component in the report, 0 to disable. This mask is effective only to the fixed report.

- ✧ *<Corner Report>*: The threshold to determine whether the device is turning around a corner. 0 to disable the corner report. For other values, the device will compare the current heading with the last known corner, if the difference is greater than or equal to this value, send the corner report with **+RESP:GTFRI**.
- ✧ *<IGF Report Interval>*: Period to fix and send the position information when *<Power Saving Mode>* in **AT+GTCFG** is set to 0,2 and the engine is off and if *<Mode>* is set to 1 (Fixed Timing Report). Its value range is 5 – 86400 and the unit is second,0 to disable.
- ✧ *<ERI Mask>*: If this mask is not 0x00000000, the GV200 will report **+RESP: GTERI** instead of **+RESP: GTFRI**, and this mask is used to configure whether to show the items.
 - Bit 0: digit fuel sensor.
 - Bit 1: AC100 1wire bus controller.

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

➤ **+ACK:GTFRI**,

Example:			
+ACK:GTFRI,0B0201,135790246811220,,000A,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {‘A’ – ‘Z’, ‘0’ – ‘9’}	

Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.12. Geo-Fence Information

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

➤ AT+GTGEO=

Example: AT+GTGEO=gv200g,0,3,121.412248,31.187891,1000,600,1,1,0,0,,,,,000B\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
GEO ID	1	0 – 4	
Mode	1	0 – 3	0
Longitude	<=11	(-)xxx.xxxxxxx	
Latitude	<=10	(-)xx.xxxxxxx	
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 5 – 86400sec	0
Output ID	1	0 – 4	0
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <GEO ID>: ID of the Geo-Fence. Total five zones, 0 to 4, are supported.
- ✧ <Mode>: The working mode of the Geo-Fence to report the message **+RESP:GTGEO** to the backend server.
 - 0: disable the zone's Geo-Fence function.
 - 1: Entering the zone. The report will be generated only when the terminal enters the Geo-Fence.

- 2: Exiting the zone. The report will be generated only when the terminal exits from the Geo-Fence.
- 3: Both entering and exiting.
- ✧ <Longitude>: The longitude of a point which is defined as the center of the Geo-Fence circular region. The format is “(-)xxx.xxxxxx” and the value range is from “-180.000000” to “180.000000”. The unit is degree. West longitude is defined as negative starting with minus “-” and east longitude is defined as positive without “+”.
- ✧ <Latitude>: The latitude of a point which is defined as the centre of the Geo-Fence circular region. The format is “(-)xx.xxxxxx” and the value range is from “-90.000000” to “90.000000”. The unit is degree. South Latitude is defined as negative starting with minus “-” and north Latitude is defined as positive without “+”.
- ✧ <Radius>: The radius of the Geo-Fence circular region. The value range is (50 – 6000000) and the unit is meter.
- ✧ <Check Interval>: The interval of GPS checking for the Geo-Fence alarm.

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

➤ **+ACK:GTGEO,**

Example: +ACK:GTGEO,0B0201,135790246811220,,0,000B,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {‘A’ – ‘Z’, ‘0’ – ‘9’}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
GEO ID	1	0 – 4	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.13. Speed Alarm

This command is used to set a speed-alarm range for the terminal. According to the working mode, the terminal will report message **+RESP:GTSPD** to the backend server when its moving speed is outside or inside of the range.

➤ **AT+GTSPD=**

Example:

AT+GTSPD=gv200g,1,80,120,60,300,1,1,0,0,,,,,,,,,000C\$

AT+GTSPD=gv200g,2,80,120,60,300,1,1,0,0,,,,,,,,,000C\$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 1 2 3 4	0
Min Speed	<=3	0 – 400km/h	0
Max Speed	<=3	0 – 400km/h	0
Validity	<=4	0 – 3600sec	60
Send Interval	<=4	0 30 – 3600sec	300
Output ID	1	0 – 4	0
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	

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

- ✧ **<Mode>**: The working mode of the speed alarm.
 - 0: Disable speed alarm.
 - 1: Report speed alarm if the current speed is within the speed range defined by **<Min Speed>** and **<Max Speed>**.
 - 2: Report speed alarm if the current speed is outside the speed range defined by **<Min Speed>** and **<Max Speed>**.
 - 3: Report speed alarm only one time if the current speed is within or outside the speed range defined by **<Min Speed>** and **<Max Speed>**. In this mode, **<Send Interval>** will be ignored.
 - 4: Report speed alarm if the speed changed from inside to outside or from outside to inside of the speed range. But the backend server never receive **+RESP:GTSPD** for speed changed from inside to outside unless receive for speed changed from outside to inside first. In this mode, **<Send Interval>** will be ignored.
- ✧ **<Min Speed>**: The lower limit speed.
- ✧ **<Max Speed>**: The upper limit speed.
- ✧ **<Validity>**: If the speed meets the alarm condition and maintains a period of time defined by **<Validity>**, the speed alarm will be triggered.
- ✧ **<Send Interval>**: The interval time of sending speed alarm message. If it was set 0, the device will report the speed alarm only once when the speed meets the alarm condition. And if the same command with **<send interval>** equals 0 is sent, the device will send the response again if speed meets the alarm condition.

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

➤ **+ACK:GTSPD,**

Example: +ACK:GTSPD,0B0201,135790246811220,,000C,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ { 'A' – 'Z', '0' – '9' }	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.14. SOS Function

This command is used to configure the specified input port for emergency. When an emergency occurs, the end user can use this input port to trigger the emergency call and report position message **+RESP:GTSOS** to the backend server. A specified wave shape can be configured to output on specified output port.

➤ **AT+GTSOS=**

Example: AT+GTSOS=gv200g,1,4,+8613812341234,1,1,0,0,,,,,000D\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 – 5	0
Digital Input ID	1	0 2 – 4	0
SOS Number	<=20		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
SOS Microphone	2	0 – 10	5
SOS Speaker	1	0 – 7	4
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

- 0: Disable SOS function.
- 1: SOS call only.
- 2: Send the current position to the backend server only.
- 3: Send the current position to the backend server first and then make SOS call.
- 4: Send the current position to the backend server via SMS and make SOS call.
- 5: Send hyper link to SOS number via SMS and make SOS call.

✧ **<Digital Input ID>**: ID of the digital input port which triggers the SOS function. 0 means the SOS function is disabled. The corresponding digital input port should be configured by the command **AT+GTDIS** first. If configured to trigger the SOS function, there is no **+RESP:GTDIS** report message for the specified digital input port.

- ✧ <SOS number>: the emergency phone number.
- ✧ <SOS Microphone>: Set the volume of the microphone, 0 means disable microphone.
- ✧ <SOS Speaker>: Set the volume of the speaker, 0 means disable speaker.

The acknowledgment message of AT+GTSOS command:

➤ +ACK:GTSOS,

Example: +ACK:GTSOS,0B0201,135790246811220,,000D,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ { 'A' – 'Z', '0' – '9' }	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.15. Voice Monitoring

The command **AT+GTMON** is used to set stealthy voice monitoring. After the command is executed, the device will send the message **+RESP:GTMON** to the backend server via SMS.

➤ AT+GTMON=

Example: AT+GTMON=gv200g,1,+8613812341234,5,0,,,,,000E\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0–3	0
Stealthy Phone Number	<=20		
Stealthy Microphone	2	0 – 10	5
Stealthy Speaker	1	0 – 7	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Mode>: Stealthy voice monitoring mode.

- 0: Disable stealthy voice monitoring.
- 1: The device will make the stealthy call to the phone number specified in <Stealthy Phone Number>, but it will not answer incoming calls.
- 2: The device will answer any incoming call and open the stealthy voice monitoring.
- 3: The device combines mode 1 and 2. It will make the stealthy call to the <Stealthy Phone Number> and answer incoming calls.

Note: For mode 2 and 3, if the parameter <Call Filter> in the White list function is different from 0, the device will only answer incoming calls of the predefined phone numbers.

✧ <Stealthy Phone Number>: The phone number to make stealthy voice call.

✧ <Stealthy Microphone>: Set the volume of the microphone, 0 means disable microphone.

✧ <Stealthy Speaker>: Set the volume of the speaker, 0 means disable speaker.

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

➤ **+ACK:GTMON,**

Example:

+ACK:GTMON,0B0201,135790246811220,,000E,20090214093254,11F0\$

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

3.2.16. Real Time Operation

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

➤ AT+GTRTO=

Example: AT+GTRTO=gv200g,A,,,,,000F\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Sub Command	1	0 – F	
Single Configuration Command Configuration Mask	3 16	“SRI” 0000000000000000 – FFFFFFFFFFFFFFFF	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Sub Command>: Valid value is 0–9, A, B, C.

- 0: **GPS**. Get the GPS related information via message **+RESP:GTGPS**.
- 1: **RTL**. Request the terminal to report its current position immediately via message **+RESP:GTRTL**.
- 2: **READ**. Get the current configuration of the terminal via message **+RESP:GTALL**.
- 3: **REBOOT**. Reboot the terminal.
- 4: **RESET**. Reset all parameters to factory setting. Parameters configured by **AT+GTBSI**, **AT+GTSRI**, **AT+GTQSS**, **AT+GTCFG** and **AT+GTTMA** will not be reset.
- 5: **PWROFF**. Power off the device.
- 6: **CID**. Get the ICCID of the SIM card which is being used by the terminal via message **+RESP:GTCID**.
- 7: **CSQ**. Get the current GSM signal level of the terminal via message **+RESP:GTCSQ**.
- 8: **VER**. Get the version information of the device via message **+RESP:GTVER**.
- 9: **BAT**. Get the battery level and adapter status of the terminal via message **+RESP:GTBAT**.

- A: **IOS**. Get status of all the IO ports via message **+RESP:GTIOS**.
- B: **TMZ**. Get the time zone settings via message **+RESP:GTTMZ**.
- C: **GIR**. Get cell information via message **+RESP:GTGSM**.
- D: **AIF**. Get APN, ICCID, base station ID, RSSI, cell ID, IP and DNS server via **+RESP:GTAIF**.
- E: **GSV**. Request the device to report the GPS fix level.
- F: **RJB**. Reset jamming behavior. This command is used in the **AT+GTJBS**.

✧ <Single Configuration Command / Configuration Mask>:

If <Sub Command> is set to 2, this parameter is used to specify a configuration or a set of configurations to read

- About single Configuration command, if you want to get the configuration of **AT+GTCFG**, you can send the command "**AT+GTRTO=gv200g, 2,CFG,,,,,000F\$**".
- About configuration mask, according to choose the *configuration Mask*, you will get configuration information which you want to get via message **+RESP:GTALC**.

NOTE: This parameter is available only when <Sub Command> is set to 2.

Configuration Mask Table:

Bit	Item to Mask
Bit63	Reserved
Bit62	Reserved
⋮	Reserved
Bit 35	Reserved
Bit 34	OUT
Bit 33	BSE
Bit 32	NMC
Bit 31	SSR
Bit 30	TMP
Bit 29	JBS
Bit 28	PDS
Bit 27	ACD
Bit 26	IDA
Bit 25	EFS
Bit 24	HRM
Bit 23	JDC
Bit 22	URT

Bit 21	BCS
Bit 20	WLT
Bit 19	HMC
Bit 18	HBM
Bit 17	IDL
Bit 16	MAI
Bit 15	DOG
Bit 14	OWH
Bit 13	PIN
Bit 12	MON
Bit 11	SOS
Bit 10	SPD
Bit 9	GEO
Bit 8	FRI
Bit 7	TMA
Bit 6	IOB
Bit 5	DIS
Bit 4	AIS
Bit 3	TOW
Bit 2	CFG
Bit 1	SRI
Bit 0	BSI

If <Sub Command> is set to 4, this parameter is used to specify the configuration to be reset. To specify a configuration, use the last three letters of the protocol command. For example, if you want to reset configuration of **AT+GTFRI** command, you can send command "**AT+GTRTO=gv200,4,FRI,,,,,000F\$**". A special usage is to delete the saved buffer messages with command "**AT+GTRTO=gv200,4,BUF,,,,,000F\$**". Configuration of commands **AT+GTBSI**, **AT+GTSRI**, **AT+GTQSS**, **AT+GTCFG**, **AT+GTTMA**, **AT+GTBSE** and **AT+GTPIN** can not be reset by this command.

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

➤ **+ACK:GTRTO,**

Example:

+ACK:GTRTO,0B0201,135790246811220,,IOS,000F,20090214093254,11F1\$

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

✧ <Sub Command>: A string to indicate the sub command of **AT+GTRTO**.

3.2.17. Auto-unlock PIN

The command **AT+GTPIN** is used to configure the auto-unlock PIN function of the device. Some operators offer SIM card with PIN code protection by default. To make the device work with the PIN-protected SIM card, use this command to let the device auto-unlock the SIM PIN with the pre-set PIN code.

➤ AT+GTPIN=

Example: AT+GTPIN=gv200g,1,0000,0,,,,,0010\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Enable Auto-unlock PIN	1	0 1	1
PIN	4 – 8	'0' – '9'	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Enable Auto-unlock PIN>: 1 to enable the auto-unlock PIN function, 0 to disable.
- ✧ <PIN>: Code used to unlock the SIM PIN.

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

➤ +ACK:GTPIN,

Example: +ACK:GTPIN,0B0201,135790246811220,,0010,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ { 'A' – 'Z', '0' – '9' }	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	

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

3.2.18. Second Serial Port Setting

The second serial port of the device is used to connect with external devices to extend the application of the device. This command **AT+GTURT** is used to configure the working mode of the serial port for different external devices and the parameters for the serial port communication.

➤ **AT+GTURT=**

Example: AT+GTURT=gv200g,1,5,8,1,0,0,0,,0018\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200
Working Mode	1	0 1 2 3 4 5 6	0
Baudrate Index	<=2	1 – 12	12
Data Bits	1	7 – 8	8
Stop Bits	1	1 – 3	1
Parity Bits	1	0 – 4	0
Sleep Enable	1	0 1 2	0
Input ID of Wakeup	0	0 2	0
Digit Fuel Sensor Type	1	0 – 2	0
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Working Mode>: Configure the working mode of UART2.

- 0: Disable UART2.
- 1: Use UART2 to transfer data via **AT+GTDAT**.
- 2: Use UART2 for GARMIN.
- 3: Use specific RFID card reader to communicate with UART2 of GV200G. The GV200G will report the card ID received from the card reader to the backend server with message **+RESP:GTIDA**. Set the Baudrate as 9600, and set **AT+GTDIS** command to enable input port 2.

Note: Set **AT+GTDIS** command to enable input port 2 for RFID, set <Input ID of Wakeup> as 2. If the working mode quit the “RFID mode”, the <Input ID of Wakeup> must set as 0.

- 4: Used for digit fuel sensor.

Note: different fuel sensor support different baud rate, users should make sure that the baud rate set is suit for the sensor.

- 5: Used for AC100 devices.

Note: Any time a new temperature sensor access; you must restart the device to work

properly. The maximum number of AC100 devices is one ibutton and two temperature sensor.

- 6: Used for the second serial port of the NMEA data output.

- ✧ <Baudrate Index>: The index of the supported baudrate of the second serial port. All supported baudrates are listed below.

Baudrate Index	Baudrate
1	1200
2	2400
3	4800
4	7200
5	9600
6	14400
7	19200
8	28800
9	33900
10	38400
11	57600
12	115200

- ✧ <Data Bits>: Data Bits of the UART2 and its' value may be 7 and 8.
- ✧ <Stop Bits>: Stop Bits of the UART2 and its' value may be 0, 1 and 2.
- 1: 1 Stop Bits.
 - 2: 2 Stop Bits.
 - 3: 1.5 Stop Bits.
- ✧ <Parity Bits>: Parity Bits of the UART2 and its' value may be 0, 1, 2, 3, and 4.
- 0: None Parity.
 - 1: Odd Parity.
 - 2: Even Parity.
 - 3: Space Parity.
 - 4: Mark Parity.
- ✧ <Sleep Enable>: The device support low power mode to reduce the power consumption. When the device enters into low power mode, the response to the serial port will be very slow unless being waked up. This parameter is used to enable or disable the lower power mode of the device.
- 0: disable the device sleep mode.
 - 1: enable the device sleep mode.
 - 2: disable serial port sleep mode.
- If the device sleep mode is enabled, the external device must have the ability to wakeup the device from the low power mode by the digital input specified by parameter<Input ID of Wakeup>.
- ✧ <Input ID of Wakeup>: The ID of the digital input of GV200G used to wakeup the device from the low power mode for serial port communication
- 0: Do not use digital input to wakeup the device.

- 2: Use digital input 2 to wakeup the device. The parameter of the digital input 2 should be set by command **AT+GTDIS**.

✧ <Digit Fuel Sensor Type>: The type of digit fuel sensor connects with serial port.

- 0: EPSILON ES2 or ES4.
- 1: LLS 20160.
- 2: DUT-E
- 3: QFS100

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

➤ **+ACK:GTURT,**

Example:			
+ACK:GTURT,0B0201,135790246811220,,0018,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.19. Transparent Data Transmission

The command **AT+GTDAT** is used to transfer data between the backend server and the equipment connected to the second serial port of the device. Data to the backend server is wrapped into message **+RESP:GTDAT** and sent to the backend server while data to the equipment is directly output to the second serial port without the @Tracker protocol stuffing. All data is transparent to the device.

➤ AT+GTDAT=

Example:

AT+GTDAT=gv200g,0,,data to the backend server,,,,,0011\$

AT+GTDAT=gv200g,1,,data to the serial port,,,,,0011\$

AT+GTDAT=gv200g,2,,data to the backend server,,,,,0011\$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	Gv200
Command Type	1	0 1 2	
Reserved	0		
Data	<=100	ASCII Code	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Command Type>: Command type to indicate which way to send the data.
 - 0: means to send message to the backend server with **+RESP:GTDAT (Short Format)**.
 - 1: means to send the pure data directly to the second serial port.
 - 2: means to send message to the backend server with **+RESP:GTDAT (Long Format)**.
- ✧ <Data>: Data to be transferred between the backend server and the equipment connected to the second serial port of the device.

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

➤ +ACK:GTDAT,

Example:

+ACK:GTDAT,0B0201,135790246811220,,0011,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
-----------	--------------	--------------	---------

Protocol Version	6	XX0000 – XXXFFF, X ∈ {‘A’ – ‘Z’, ‘0’ – ‘9’}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.20. Outside Working Hours

To protect the privacy of the driver when they are off duty, the device could be configured to report empty location information during the outside working hours. The command **AT+GTOWH** is used to define the working hours and the working mode to protect the privacy. When this function is enabled, the device will report empty latitude, empty longitude, empty LAC and empty Cell ID in all the report messages except for **+RESP:GTSOS**. For **AT+GTMON**, it only reports the **+RESP:GTMON** message to the backend server (with empty location information) and does not make the monitoring phone call.

➤ AT+GTOWH=

Example: AT+GTOWH=gv200g,1,1F,0900,1200,1300,1730,,,4,1,1,0,0,,,,,0012\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
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 4	0
Output ID	1	0 – 4	0
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ **<Mode>**: Working mode.
 - 0: Disable this function.
 - 1: Manual mode. By using the equipment connected to the specified digital input, the driver manually enable the time checking. If the device finds it is outside the working hours, it will hide the location information in the report messages. Otherwise report normally.
 - 2: Full manual mode. By using the equipment connected to the specified digital input, the driver has full control to the privacy protection. The device will not check the time against the working hours arrange. It just hides the location information when the input is enabled and reports normally when the input is disabled.
 - 3: Automatic mode. Under this mode, the device will ignore the status of the digital input. It will automatically check the current time against the working hours arrange. If outside the working hours, hide the location information. Otherwise report normally.
- ✧ **<Day of Work>**: Specify the working days in a week in a bitwise manner.
 - Bit 0 for Monday
 - Bit 1 for Tuesday
 - Bit 2 for Wednesday
 - Bit 3 for Thursday
 - Bit 4 for Friday
 - Bit 5 for Saturday
 - Bit 6 for Sunday

For each bit, 0 means off day, 1 means working day.
- ✧ **<Working Hours Start1>, <Working Hours End1>**: The first period of the working hours in a day.
- ✧ **<Working Hours Start2>, <Working Hours End2>**: The second period of the working hours in a day.
- ✧ **<Digital Input ID>**: The input ID used to trigger this function when mode is 1 or 2. Only digital input port 4 is supported. The working parameter of the specified input must be set by **AT+GTDIS** first.
- ✧ **<Output ID>, <Output Status>, <Duration> and <Toggle Times>**: When this function is enabled and current is off duty time, the specified wave will be output to the specified output.

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

➤ **+ACK:GTOWH,**

Example:			
+ACK:GTOWH,0B0201,135790246811220,,0012,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {‘A’ – ‘Z’, ‘0’ – ‘9’}	
Unique ID	15	IMEI	

Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.21. Protocol Watchdog

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

➤ AT+GTDog=

Example: AT+GTDog=gv200g,1,,1,0130,,1,2,,,,,0013\$ AT+GTDog=gv200g,2,30,,,,1,3,,,,,0013\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 1 2	0
Ignition Frequency	<=3	10 – 120 min	60
Interval	<=2	1 – 30 day	30
Time	4	HHMM	0200
Reserved	0		
Report Before Reboot	1	0 1	1
Input ID	1	0 2 3	0
Reserved	0		
GSM Interval	4	0 5-1440 min	60
PDP Interval	4	0 5-1440 min	60
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Mode>: Working mode.
 - 0: Disable this function
 - 1: Reboot periodically according to the <Interval> and <Time> setting.
 - 2: Reboot when ignition on.
- ✧ <Ignition Frequency>: When the working mode is 2, if the time interval between two adjacent ignitions is greater than the specified value, the device will automatically reboot upon ignition on.
- ✧ <Interval>: The interval to reboot the device in day.
- ✧ <Time>: At what time to perform the reboot operation when <Interval> is met.
- ✧ <Report Before Reboot>: Whether to report the +RESP:GTDog message before reboot. 0

means no report, 1 to report. If this is enabled, the device will make a real-time location before sending the message in order to send it with the current location information.

- ✧ <Input ID>: ID of the digital input port which is used to trigger the manually reboot. 0 means do not use manual reboot. Only digital input port 2 and 3 are supported.
- ✧ <GSM interval>: The interval to reboot the device when in no GSM signal situation. 0 means do not reboot the device.
- ✧ <PDP interval>: The interval to reboot the device when GPRS unable to register successfully. 0 means don't reboot the device.

The acknowledgment message of AT+GTDG command:

➤ +ACK:GTDG,

Example:			
+ACK:GTDG,0B0201,135790246811220,,0013,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ { 'A' – 'Z', '0' – '9' }	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.22. Multi Analog Input Port Setting

The command **AT+GTMAI** is used to configure the parameters of multi analog input ports.

➤ **AT+GTMAI=**

Example:

AT+GTMAI=gv200g,1,2,250,2700,2,,1,1,0,0,1,2,2,250,2700,2,,1,1,0,0,1,3,2,250,2700,2,,1,1,0,0,1,,,0014\$

Parameter	Length(byte)	Range/Format	Default
Password	4~6	'0'~'9' 'a'~'z' 'A'~'Z'	gv200g
Analog Input ID1	1	1	1
Mode	1	0 1 2 3	0
Min Threshold	<=4	250~2700mV	
Max Threshold	<=4	250~2700mV	
Sample Rate	<=2	0 1~12(×2s)	0
Reserved	0,TBD		
Output ID	1	0~4	
Output Active	1	0 1	
Duration	<=3	0~255(×100ms)	0
Toggle Times	<=3	0~255	0
Sync with FRI	1	0 1	0
Analog Input ID2	1	2	2
Mode	1	0 1 2	0
Min Threshold	<=4	250~2700mV	
Max Threshold	<=4	250~2700mV	
Sample Rate	<=2	0 1~12(×2s)	0
Reserved	0,TBD		
Output ID	1	0~4	
Output Active	1	0 1	
Duration	<=3	0~255(×100ms)	0
Toggle Times	<=3	0~255	0
Sync with FRI	1	0 1	0

Analog Input ID3	1	3	3
Mode	1	0 1 2	0
Min Threshold	<=4	250~2700mV	
Max Threshold	<=4	250~2700mV	
Sample Rate	<=2	0 1~12(×2s)	0
Reserved	0,TBD		
Output ID	1	0~4	
Output Active	1	0 1	
Duration	<=3	0~255(×100ms)	0
Toggle Times	<=3	0~255	0
Sync with FRI	1	0 1	0
Reserved	0,TBD		
Reserved	0		
Reserved	0		
Serial Number	4	0000~FFFF	
Tail Character	1	\$	\$

- ✧ < Analog Input ID 1~3>: The analog input port ID.
- ✧ <Mode>: Working mode of the analog input alarm (+RESP :GTMAI).
 - 0: Disable analog input alarm.
 - 1: Enable analog input alarm. If the current input voltage is within the range of (<Min Threshold>, <Max Threshold>), the alarm will be triggered.
 - 2: Enable analog input alarm. If the current input voltage is outside the range of (<Min Threshold>, <Max Threshold>), the alarm will be triggered.
 - 3: No alarm mode, only check the voltage, but no alarm will trigger.
- ✧ <Min Threshold>: The lower limit to the voltage of the analog input port to trigger the alarm.
- ✧ <Max Threshold>: The upper limit to the voltage of the analog input port to trigger the alarm.
- ✧ <Sample Rate>: The sampling period of the analog input port.
- ✧ <Output ID>: Specify the ID of the output port (1 to 4) to output specified wave shape when the analog input alarm is triggered. If set to 0, no output wave.
- ✧ <Output Active>: set the final status of the output port.
 - 0: Disable status.
 - 1: Enable status.
- ✧ <Toggle Times>: The times of the square-wave.
- ✧ <Sync with FRI>: The device can send the analog input voltage periodically along with fixed

report message. Set this field to 1 to enable it, 0 to disable.

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

➤ **+ACK:GTMAI,**

Example: +ACK:GTMAI,0B0201,135790246811220,,0014,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.23. Excessive Idling Detection

The command **AT+GTIDL** is used to detect the engine excessive idling (stationary while ignition on). To use this command, the ignition signal must be connected to the device. When the device detects that the vehicle is entering into the idle status, it will report event message **+RESP:GTIDN** to the backend server. When the vehicle leaves the idle status, the device will report event message **+RESP:GTIDF** to the backend server.

➤ AT+GTIDL=

Example: AT+GTIDL=gv200g,1,2,1,,,,,1,1,0,0,,,,,0015\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 1	0
Time to Stationary	2	1 – 30min	2
Time to Movement	1	1 – 5 min	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 4	0
Output Status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Mode>: Working mode.

- 0: Disable this function
- 1: Enable this function.

✧ <Time to Stationary>: If the vehicle is detected to be stationary with ignition on for this time

long, it is considered to be in idling status.

- ✧ <Time to Movement>: After the vehicle enters into idling status, if it moves again or turns ignition off and keeps in that status for this time long, the vehicle is considered to leave idling status.
- ✧ <Output ID>: Specify the ID of the output port (1 to 4) to output specified wave shape when the vehicle enters into idling status. If set to 0, no output wave.

The acknowledgment message of AT+GTIDL command:

➤ +ACK:GTIDL,

Example:			
+ACK:GTIDL,0B0201,135790246811220,,0015,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.24. Hour Meter Counter

The command **AT+GTHMC** is used to measure time of use with each actuation of the ignition on. To use this command, the ignition signal must be connected to the device. When the device sends **+RESP:GTFRI** and **+RESP:GTERI** and **+RESP:GTIGN** and **+RESP:GTIGF**, <hour meter counter> will be sent in these reports.

➤ AT+GTHMC=

Example: AT+GTHMC=gv200g,1,12345:12:34,,,,,,,,,0016\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Hour Meter Enable	1	0 1	0
Initial Hour Meter Count	11	00000:00:00-99999:00:00	00000:00:00
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Hour Meter Enable>: Enable or disable hour meter counter function. If hour meter counter function is enabled, hour meter count will be increased when the device is in ignition.
 - 0: Disable hour meter counter function
 - 1: Enable hour meter counter function
- ✧ <Initial Hour Meter Count>: Initial hours meter count. It is formatted with 5 hour digits and 2 minute digits and 2 second digits and ranges from 00000:00:00– 99999:00:00. When engine is on at the first time, <Hour Meter Count> which report in **+RESP:GTFRI**/**+RESP:GTERI** /**+RESP:GTIGN**/**+RESP:GTIGF** will be increased based on this value.

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

➤ +ACK:GTHMC,

Example: +ACK:GTHMC,0B0201,135790246811220,,0016,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.25. Harsh Behavior Monitoring

The command **AT+GTHBM** is used to monitor the harsh behavior of drive with GPS. Two harsh behaviors are monitored, the harsh braking and the harsh acceleration. According the speed read from GPS, 3 levels of speed are defined including high speed, medium speed and low speed. For each speed level, 2 thresholds of speed change are defined to determine the harsh braking and harsh acceleration. If the change of speed within 5 seconds are greater than the corresponding threshold, the device will report **+RESP:GTHBM** message to the backend server to indicate the harsh behavior. The same harsh behavior within 30 seconds only reports once. For this function to work, the *<GPS on Need>* in **AT+GTCFG** must set to 0.

➤ AT+GTHBM=

Example: AT+GTHBM=gv200g,1,,,100,21,6,,60,21,6,,,21,15,,1,1,8,3,,,,,0017\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Enable	1	0 1	0
Reserved	0		
Reserved	0		
High Speed	<=3	100 – 400km/h	100
ΔV_{hb}	<=3	0 – 100km/h	0
ΔV_{ha}	<=3	0 – 100km/h	0
Reserved	0		
Medium Speed	<=3	60 – 100km/h	60
ΔV_{mb}	<=3	0 – 100km/h	0
ΔV_{ma}	<=3	0 – 100km/h	0
Reserved	0		
Reserved	0		
ΔV_{lb}	<=3	0 – 100km/h	0
ΔV_{la}	<=3	0 – 100km/h	0
Reserved	0		
Output ID	1	0 – 4	0
Output Status	1	0 1	0
Duration	<=3	0 – 255($\times 100ms$)	0

Toggle Times	≤ 3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ *<Enable>*: Enable or disable this function.
 - 0: Disable this function
 - 1: Enable this function
- ✧ *<High Speed>*, *<Medium Speed>*: If the last known speed of the device read from GPS is greater or equal to *<High Speed>*, the vehicle that the device is attached to is considered to be high speed. If the last known speed is less than *<High Speed>* while greater or equal to *<Medium Speed>*, the vehicle is considered to be medium speed. If the last known speed is less than *<Medium Speed>*, the vehicle is considered to be low speed.
- ✧ *< ΔV_{hb} >*: The threshold for harsh braking in high speed level. If within 5 seconds, the current speed is less than the last known speed and the change of the speed is greater than or equal to this value, a harsh braking is detected in high speed level. If set to 0, do not monitor harsh braking behavior in high speed level.
- ✧ *< ΔV_{ha} >*: The threshold for harsh acceleration in high speed level. If within 5 seconds, the current speed is greater than the last known speed and the change of the speed is greater than or equal to this value, a harsh acceleration is detected in high speed level. If set to 0, do not monitor harsh acceleration behavior in high speed level.
- ✧ *< ΔV_{mb} >*: The threshold for harsh braking in medium speed level. If within 5 seconds, the current speed is less than the last known speed and the change of the speed is greater than or equal to this value, a harsh braking is detected in medium speed level. If set to 0, do not monitor harsh braking behavior in medium speed level.
- ✧ *< ΔV_{ma} >*: The threshold for harsh acceleration in medium speed level. If within 5 seconds, the current speed is greater than the last known speed and the change of the speed is greater than or equal to this value, a harsh acceleration is detected in medium speed level. If set to 0, do not monitor harsh acceleration behavior in medium speed level.
- ✧ *< ΔV_{lb} >*: The threshold for harsh braking in low speed level. If within 5 seconds, the current speed is less than the last known speed and the change of the speed is greater than or equal to this value, a harsh braking is detected in low speed level. If set to 0, do not monitor harsh braking behavior in low speed level.
- ✧ *< ΔV_{la} >*: The threshold for harsh acceleration in low speed level. If within 5 seconds, the current speed is greater than the last known speed and the change of the speed is greater than or equal to this value, a harsh acceleration is detected in low speed level. If set to 0, do not monitor harsh acceleration behavior in low speed level.
- ✧ *<Output ID>*: Specify the ID of the output port (1 to 4) to output specified wave shape when

the harsh behavior is detected. If set to 0, no output wave.

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

➤ **+ACK:GTHBM,**

Example: +ACK:GTHBM,0B0201,135790246811220,,0017,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.26. White List

The command **AT+GTWLT** is used to configure a list of authorized phone numbers which are allowed to perform the location by call or voice monitoring functions.

➤ AT+GTWLT=

Example: AT+GTWLT=gv200g,3,1,2,13813888888,13913999999,,,,,0018\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Call Filter	1	0 – 7	0
Start Index	<=2	1 – 10	
End Index	<=2	1 – 10	
Phone Number List	<=20*10		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Call Filter>: The working mode of this function.

- Bit 0: White list for location by call
- Bit 1: White list for voice monitoring.
- Bit 2: White list for SMS.

For each bit, set it to 1 to enable, 0 to disable. If the value of Bit0, Bit1 and Bit2 are all 0, disable this function and allow any phone number to use the location by call and voice monitoring functions.

✧ <Start Index>, <End Index>: The index range of the white list to which the phone numbers are to be updated. For example, the <Start Index> is set to 1 and the the <End Index> is set to 2. Then the first two phone numbers in the white list will be updated by the numbers provided in the parameter <Phone Number List>. The <Start Index> and <End Index> defines the total amount of phone numbers that will be updated. If either one is empty, there should be no <Phone Number List> parameter followed.

✧ <Phone Number List>: A list of phone numbers, which are separated by comma, to be updated to the white list. The amount of the phone numbers are defined by <Start Index> and <End Index>.

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

➤ **+ACK:GTWLT,**

Example: +ACK:GTWLT,0B0201,135790246811220,,0018,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.27. Button Call Setting

The command **AT+GTBCS** is used to pre-set phone numbers to digital input 2, 3 and 4. When the logic status of these inputs change to enable, the device will automatically call the pre-set phone numbers. The volume of the microphone and speaker is configurable.

If this function is enabled, the device will only report **+RESP:GTDIS** message when logic status changes to enable status. Whether to send this report message is configurable.

➤ **AT+GTBCS=**

Example:

AT+GTBCS=gv200g,2,13813888888,0,3,13913999999,0,0,,,5,4,1,1,1,8,3,,,,,0019\$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Input ID2	1	0 2	2
Phone Number	<=20		
Hang-up Call	1	0 1	0
Input ID3	1	0 3	3
Phone Number	<=20		
Hang-up Call	1	0 1	0
Input ID4	1	0 4	4
Phone Number	<=20		
Hang-up Call	1	0 1	0
Microphone	2	0 – 10	5
Speaker	1	0 – 7	4
Send Position	1	0 1	1
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		

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

- ✧ <Input ID2>, <Input ID3>, <Input ID4>: ID of the digital inputs. If set 0, the pre-set phone number won't be updated by <Phone Number>.
- ✧ <Phone Number>: The phone number to be set for the corresponding digital input.
- ✧ <Hang-up Call>: Whether to hang-up an active call which is not a stealthy voice call if the logical status of relative digital input changes to enable.
- ✧ <Microphone>: The volume of the microphone when voice call is established.
- ✧ <Speaker>: The volume of the speaker when voice call is established.
- ✧ <Send Position>: Whether to send the current position when the corresponding digital input is triggered. 1 to send, 0 not to send.
- ✧ <Output ID>: When the corresponding digital input is triggered, the device will output specified wave on the digital output of this ID. Please refer to 3.2.6, wave 3 is recommended.

The acknowledgment message of AT+GTBCS command:

➤ +ACK:GTBCS,

Example: +ACK:GTBCS,0B0201,135790246811220,,0019,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.28. Extend Digit Fuel Sensor

The command **AT+GTEFS** is used to configure the parameters of the extend digit fuel sensor. If *< Working Mode >* in **AT+GTURT** is set to 4, the parameters of this command is used.

➤ **AT+GTEFS=**

Example: AT+GTEFS=gv200g,,,,15,10,,0,5,,,,,FFFF\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Reserved	0		
Reserved	0		
Reserved	0		
Ex Fuel Sensor Delay	<=3	0 – 600 sec	30
Ex Fuel Lost Alarm	<=2	0 1 – 50 %	10
Reserved	0		
Ex Unsolicited Enable	1	0 1	0
Ex Detect Frequency	<=3	5 – 600 sec	10
Ex Filter Factor	1	0 – 9	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ *<Ex Fuel Sensor Delay>*: After ignition on, the fuel sensor will need to delay before it can report correct fuel level.
- ✧ *<Ex Fuel Lost Alarm>*: If the difference between the current fuel level after ignition on and the last measured fuel level before the previous ignition off is greater than this value, an unusual fuel consumption alarm is sent with event message **+RESP: GTFLA**, and 0 means to disable this function.
- ✧ *<Ex Unsolicited Enable>*: If enable, the GV200 device will not send command to the fuel sensor, and the sensor must be set as periodical data output. , QFS100 can not support this function.

- ✧ < *Ex Detect Frequency* >: If < *Ex Unsolicited Enable* > is disable, the GV200 device will send READ command to the fuel sensor and read the data as this frequency.
- ✧ < *Ex Filter Factor* >: The filter factor of the sensor and now only QFS100 can use this factor, and for other sensors, this parameter is ignored.
 - 0: No filter
 - 1: 12 seconds
 - 2: 24 seconds
 - 3: 36 seconds
 - 4: 60 seconds
 - 5: 120 seconds
 - 6: 180 seconds
 - 7: 240 seconds
 - 8: 480 seconds
 - 9: 960 seconds

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

➤ **+ACK:GTEFS,**

Example: +ACK:GTEFS, 0B0201,135790246811220,,0008,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=10	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.29. ID Authentication

The command **AT+GTIDA** is used to protect against unauthorized user. This is achieved through a ID card reader for driver identification, and connecting an external relay to cut the starter or the fuel pump. To use this command, both the ID card reader and the external relay must be connected to the device, we suggest using the Normal Close relay which is more appropriate. When the device reads a ID, it will report event message **+RESP: GTIDA** to the backend server. If the ID is in the white list, it will be authorized until next time the ignition is off. After the ignition is off again, the authentication will be last for a short period of time according to the setting. Within this period, the driver can turn on the engine again without identifying himself again.

➤ AT+GTIDA=

Example: AT+GTIDA=gv200g,1,1,2,D2C4FBC5,87654321,45,3,,,,,1,1,0,0,,,,,FFFF\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 1	0
Start Index	<=2	1 – 20	
End Index	<=2	1 – 20	
ID Number List	<=160	'0' – '9','a' – 'z', 'A' – 'Z'	
Timeout after Ignition off	3	30 – 600sec	30
Report mode	1	0 1 2 3	0
Reserved			
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 4	0
Output Status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ **<Mode>**: Working mode.
 - 0: Disable this function
 - 1: Enable this function.
- ✧ **<Start Index>, <End Index>**: The index range of the white list to which the phone numbers are to be updated. For example, the **<Start Index>** is set to 1 and the **<End Index>** is set to 2. Then the first two phone numbers in the white list will be updated by the numbers provided in the parameter **<ID Number List>**. The **<Start Index>** and **<End Index>** defines the total amount of ID numbers that will be updated. If either one is empty, there should be no **<ID Number List>** parameter followed Index. You can update 8 numbers at most.
- ✧ **<ID Number List>**: A list of ID numbers, which are separated by comma, to be updated to the white list. The amount of the ID numbers are defined by **<Start Index>** and **<End Index>**.
- ✧ **< Timeout after ignition off >**: when the ignition off, it still be authorized for a little time. In this period, you don't need the authentication..
- ✧ **< Report mode >**:
 - 0: Don't report
 - 1: Report the ID which is authorized.
 - 2: Report the ID which is unauthorized.
 - 3: Report the both
- ✧ **<Output ID>**: Specify the ID of the output port to output specified wave shape when it is authorized. Only support the wave shape 1.

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

➤ **+ACK:GTIDA,**

Example: +ACK: GTIDA, 0B0201,862170013895931,,FFFF,20110101000009,0088\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=10	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.30. AC100 Devices Setting

The command **AT+GTACD** is used to configure the parameters of AC100 devices. AC100 devices include iButton and temperature sensor. When the iButton access, a specified wave shape can be configured to output on specified output port. Temperature sensor can be configured how long to read a real-time temperature.

➤ **AT+GTACD=**

Example: AT+GTACD=gv200g,1,0,0,10,1,10,,,,,0005\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
iButton timer	<=2	1 – 10(s)	0
Output ID	1	0 1 2 3 4	0
Output status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle	<=3	0 – 255	0
Temperature timer	<=3	10– 255(s)	0
Reserved			
Reserved			
Reserved			
Reserved			
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ < *iButton Timer* >: interval of Search the iButton ID
- ✧ < *Output ID* >: The ID of out put,0 means no output wave.
- ✧ < *Output status* >: Used only for the wave shape 1 as shown in **Figure 2** to set the final status of the output port.
 - 0: Disable status.
 - 1: Enable status.
- ✧ < *Duration* > Please refer to **Figure 2**, **Figure 3**, **Figure 4**. Unit is 100ms..
- ✧ < *Toggle* >: Please refer to **Figure 2**, **Figure 3**, **Figure 4**.
- ✧ < *Temperature Timer* >: Interval of read temperature sensor value. when more than one temperature sensor connects to 1-Wire,the device will read the temperature from the temperature sensor one by one according to sensor ID, and read only one every <Temperature timer>.

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

➤ **+ACK:GTACD,**

Example:			
+ACK:GTACD, 0B0201,135790246811220,,0005,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=10	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.31. Preserve special device logical state

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

➤ **AT+GTPDS=**

Example: AT+GTPDS=gv200g,1,1F,,,,,FFFF\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 1 2	0
Mask	4	0000-FFFF	0
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

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

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

Each bit represents a state.

- Bit 0: States of GEO
- Bit 1: Reserved bit
- Bit 2: State of GPS antenna
- Bit 3: Information of last known position
- Bit 4: State of ignition
- Bit 5: State of wave shape 1

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

➤ **+ACK:GTPDS,**

Example: +ACK:GTPDS, 0B0201,135790246811220,,000D,20090214093254,FFFF\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ { 'A' – 'Z', '0' – '9' }	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.32. Jamming Detection

The command **AT+GTJDC** is used to configure the parameter for jamming detection. When the detection condition is matched, the device will report **+RESP:GTJDR** or **+RESP:GTJDS** event message to the backend server.

➤ AT+GTJDC=

Example: AT+GTJDC=gv200g,1,25,,5,10,10,,1,1,15,5,,0019\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 1 2	0
Signal Threshold	<=3	0 – 31	25
Reserved	0		
Jamming Cell Number Threshold	<=2	0 – 99	5
Enter Jamming Timer Threshold	<=3	0 – 300 sec	10
Quit Jamming Timer Threshold	<=4	0 – 3600 sec	10
Reserved	0		
Output ID	1	0 – 4	0
Output Status	1	0 1	0
Duration	<=3	0~255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Mode>: Working mode.

- 0: Disable this function.
- 1: Enable this function, if the jamming is detected, the device will report +RESP:GTJDR message. This message only is reported with entering into “Jamming”..
- 2: Enable Jamming detection function, if the jamming is detected, the device will report +RESP:GTJDS message. This message is reported with entering into “Jamming” or quitting the “Jamming”.

- ✧ <Signal Threshold>, < Jamming Cell Number Threshold >: The built-in jamming detection algorithm uses these two parameters to judge whether the device is currently being jammed. The smaller the parameter, the more sensitive.
- ✧ <Enter Jamming Timer Threshold>: when the device detects the jamming, the device based on <Enter Jamming Timer Threshold> parameter to trigger the enter Jamming event.
- ✧ <Quit Jamming Timer Threshold>: when the device quits the jamming, the device based on <Quit Jamming Timer Threshold> parameter to trigger the quit Jamming event.

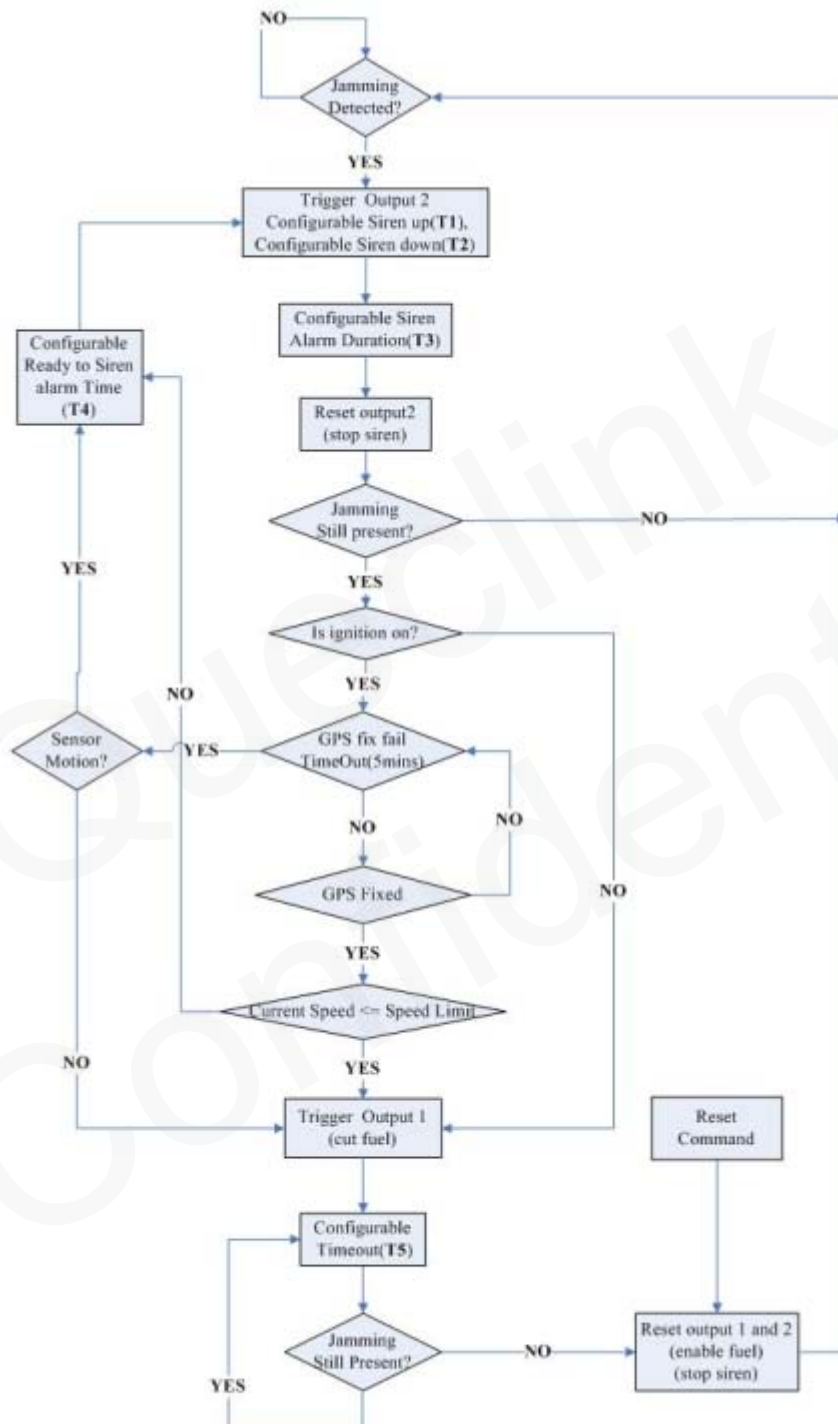
The acknowledgment message of AT+GTJDC command:

➤ +ACK:GTJDC,

Example: +ACK:GTJDC,060100,135790246811220,,0019,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.33. Jamming Behavior Setting

The command **AT+GTJBS** is used for the Jamming Behavior Setting function and The “Jamming Behavior Setting” function is based on the “Jamming Detection” function. The output1 is used in “cut fuel” and the output2 is used in “siren” alarm.



➤ **AT+GTJBS=**

Example:

AT+GTJBS=gv200g,1,,10,10,60,30,3600,1,30,,,,,001A\$

Parameter	Length (byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200
Mode	1	0 1	0
Reserved	0		
Siren up Timer(T1)	5	1 – 65535(×100ms)	10
Siren down Timer(T2)	5	1 – 65535(×100ms)	10
Siren Alarm duration(T3)	5	1 – 65535(sec)	60
Preparing Alarm Timer(T4)	5	1 – 65535(sec)	30
Cut fuel Timer(T5)	5	1 – 65535(sec)	3600
Need Judge Motion Sensor	1	0 1	1
Speed Limit	3	0 – 999km/h	30
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Mode>: Working mode.
 - 0: Disable JBS function.
 - 1: Enable JBS function
- ✧ <Siren up Timer (T1)>: it pointed to the siren up length of time.
- ✧ <Siren down Timer (T2)>: it pointed to the siren down length of time.
- ✧ <Siren Alarm Duration (T3)>: it pointed to the siren Alarm length of time.
- ✧ <Preparing Alarm Timer (T4)>: it pointed to the preparing alarm length of time.
- ✧ <Cut fuel Timer (T5)>: it pointed to cut fuel length of time.
- ✧ <Speed Limit>: the speed limit of cutting fuel.
- ✧ <Need Judge Motion Sensor>: The GPS fixed fail is timeout, whether need judge motion sensor state to cut fuel. If the <Need Judge Motion Sensor> set as 0, the machine state will always judge the GPS fixed state.
 - 0: Disable to need judge motion sensor.
 - 1: Enable to need judge motion sensor.

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

➤ **+ACK:GTJBS,**

Example:

+ACK:GTJBS, 060100,135790246811220,,001A,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX8000 – XX80FF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.34. Temperature Alarm

This command is used to set a temperature-alarm range for the terminal. According to the working mode, the terminal will report event message **+RESP:GTTMP** to the backend server when the device detect the temperature is outside or inside of the range.

➤ AT+GTTMP=

Example: AT+GTTMP=gv200g,0,1,0000000000000000,,,-20,50,,,2,10,,,1,1,0,0,,,,,000C\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Alarm ID	1	0-3	
Mode	1	0-3	0
Sensor ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved	0		
Reserved	0		
Low Temperature	<=3	-55 – 125℃	0
High Temperature	<=3	-55 – 125℃	0
Reserved	0		
Reserved	0		
Validity	<=2	1 – 10	2
Send Interval	<=2	0 – 60	10
Reserved	0		
Reserved	0		
Output ID	1	0 – 4	0
Output Status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	

Tail Character	1	\$	\$
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- ✧ <Alarm ID>: ID of the temperature alarm. Total four samples, 0-3, are supported.
- ✧ <Mode>: The working mode of the temperature alarm.
 - 0: Disable temperature alarm.
 - 1: Report temperature alarm if the current temperature is within the temperature range defined by <Low Temperature> and <High Temperature>.
 - 2: Report temperature alarm if the current temperature is outside the temperature range defined by <Low Temperature> and <High Temperature>.
 - 3: Report temperature alarm only one time if the current temperature is within or outside the temperature range defined by <Low Temperature> and <High Temperature>. In this mode, <Send Interval> will be ignored.
- ✧ <Sensor ID>: ID of the temperature sensor. Total four sensors are supported.
- ✧ <Low Temperature>: The lower limit temperature.
- ✧ <High Temperature>: The upper limit temperature.
- ✧ <Validity>: When the temperature sensor detects the environment temperature meets the alarm condition, it will continuously check the temperature <validity> times based on the reading timer <Temperature Timer> set in command **AT+GTACD**. If the temperature keeps meeting the alarm condition, the temperature alarm will be triggered.
- ✧ <Send Interval>: After passing the <Validity> checking, based on the reading timer of temperature sensor, the device will report temperature alarm every <Send Interval> times of temperature reading. If <Send Interval> set to 0, it will only report once.

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

➤ **+ACK:GTTMP,**

Example: +ACK:GTTMP,040100,135790246811220,,0,000C,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {‘A’ – ‘Z’, ‘0’ – ‘9’}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Alarm ID	1	0-3	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.35. Start Stop Report

The command **AT+GTSSR** is used to detect the status of vehicle (Start or Stop status). When the device detects that the vehicle is entering into start status, it will report event message **+RESP:GTSTR** to the backend server. When the vehicle leaves the start status, and then enters into stop status, it will report event message **+RESP:GTSTP** to the backend server.

➤ AT+GTSSR=

Example: AT+GTSSR=gv200g,1,2,1,5,10,,,,,000F\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Mode	1	0 1	0
Time to Stop	2	1 – 30 min	2
Time to Start	1	1 – 5 min	1
Start Speed	2	1 – 10 km/h	5
Long Stop	<=5	0 – 43200 min	0
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Mode>: Working mode.
 - 0: Disable this function
 - 1: Enable this function
- ✧ <Time to Stop>: After the vehicle enters into start status, if it rest again and keeps in that status for this time long, the vehicle is considered to leave start status.
- ✧ <Time to Start>: If the vehicle is detected to be moving with ignition on for this time long, it is considered to be in start status.
- ✧ <Start Speed>: The start speed threshold to determine whether the vehicle is start or not. When the device is detected to be moving with ignition on by the built-in motion sensor, it will start to check the speed from GPS. If the device speed stays greater than this <Start Speed> longer than <Time to Start>, the vehicle is regarded to be start status. The event report **+RESP:GTSTR** will be reported. Otherwise, if the device speed stays less than or equal with this <Start Speed> longer than <Time to Stop>, the vehicle is regarded to quit start status. The event report **+RESP:GTSTP** will be reported. If GPS fix abnormal more than 1 minutes, only use the built-in motion sensor to detect the start / stop status and do not check the speed.

- ✧ *<Long Stop>*: After the vehicle enters into stop status and stay stop for this time long, the **+RESP:GTLSP** will be sent, and 0 means disable this function.

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

➤ **+ACK:GTSSR,**

Example: +ACK:GTSSR,060100,135790246811220,,000F,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.2.36. NMEA Output Control

The command **AT+GTNMC** to activate /deactivate the sending of the NMEA sentence through the second port.

➤ **AT+GTNMC=**

Example: AT+GTNMC=gv200g,1,,,,,,0014\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
NMEA Mask	<=2	00-FF	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ < NMEA Mask >: As output configuration of NMEA through second port.

- Bit 0 for GPRMC.
- Bit 1-7: Reserved.

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

➤ **+ACK:GTNMC,**

Example: +ACK:GTNMC,060100,135790246811220,,0014,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ { 'A' – 'Z', '0' – '9' }	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_' '?'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	

Tail Character	1	\$	\$
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3.2.37. MS Band Select

The command **AT+GTBSE** to set MS preferred band.

➤ **AT+GTBSE=**

Example: AT+GTBSE=gv200g,12,,,,,,0014\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Preferred Band	2	0-12	12
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ < Preferred Band >: To set MS preferred band.

- 0: Band 90
- 1: Band 800
- 2: Band 900
- 3: Dual Band (900/1800)
- 4: Band 850
- 5: Dual Band (850/1900)
- 6: Dual Band (850/1800)
- 7: Dual Band 900/1900)
- 8: Triple Band 850/900/1800)
- 9: Triple Band 900/1800/1900)
- 10: Triple Band 850/900/1900)
- 11: Triple Band (850/1800/1900)
- 12: Quad Band 850/900/1800/1900)

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

➤ **+ACK:GTBSE,**

Example: +ACK:GTBSE,060100,135790246811220,,0014,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default

Protocol Version	6	XX0000 – XXXFFF, X ∈ {‘A’ – ‘Z’, ‘0’ – ‘9’}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' ' ' ' _ ' ? '	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.3. Report

This section defines the formats of the report messages. Due to the max length of SMS message (160 bytes), it is recommended to carefully set the *<Report Items Mask>* in **AT+GTCFG** to limit the length of the report which contains GPS position information if you choose SMS as the transmit method. Otherwise the report will be truncated to fit the length of SMS message.

3.3.1. Position Related Report

➤ **+RESP:GTTOW,**

If the tow alarm is enabled by the command **AT+GTTOW**, the device will send the message **+RESP: GTTOW** to the backend server when the motion sensor detects tow.

➤ **+RESP:GTDIS,**

If the status of digital inputs are detected being changed, the device will send the message **+RESP: GTDIS** to the backend server.

➤ **+RESP:GTIOB,**

If the IO combination is set and the corresponding condition appears, the device will report the message **+RESP:GTIOB** to the backend server.

➤ **+RESP:GTGEO,**

If Geo-Fence is configured and enabled, the device will send the message **+RESP:GTGEO** to the backend server according to settings when the device enters or exits the Geo-Fence.

➤ **+RESP:GTSPD,**

If the speed alarm is enabled, the device will send the message **+RESP:GTSPD** to the backend server when the speed of the device is detected into the alarm range,.

➤ **+RESP:GTSOS,**

If the SOS function is enabled, the device will send the message **+RESP:GTSOS** to the backend server when the corresponding digital input port triggers SOS.

➤ **+RESP:GTRTL,**

After the device receives the command **AT+GTRTO**, it will start GPS to get the current position and then send the message **+RESP: GTRTL** to the backend server.

➤ **+RESP:GTDOG,**

The protocol watchdog reboot message.

➤ **+RESP:GTIGL,**

The protocol ignition on and ignition off location message.

➤ **+RESP:GTHBM,**

If harsh behavior is detected, this message will be sent to the backend server.

All of the above report messages have the same format as shown below.

Example:

```
+RESP:GTTOW,0B0203,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTDIS,0B0203,135790246811220,,,20,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTIOB,0B0203,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTGEO,0B0203,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTSPD,0B0203,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTSOS,0B0203,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTRTL,0B0203,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTDOG,0B0203,135790246811220,,,01,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTIGL,0B0203,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTHBM,0B0203,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

```
+RESP:GTHBM,0B0203,135790246811220,,,11,1,1,24.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
```

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

Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Reserved			
Report ID/Report Type	2	X(0-4)X(0-3)	
Number	1	0 – 1	
GPS Accuracy	<=2	0 1 – 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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	
Mileage	<=9	0.0 – 4294967.0 km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Report ID/Report Type>: The report ID and the type of the report type in hex format. 4 high bits mean report ID and 4 low bits means report type.

Report ID has different meanings in different messages as below.

- The ID of digital input port which triggers the report message **+RESP: GTDIS** and **+RESP: GTSOS**. The range is 1 – 4.
- The ID of the bound IO which triggers the report message **+RESP: GTIOB**. The range is 0 – 3.
- The ID of Geo-Fence in the report message **+RESP: GTGEO**. The range is 0 – 4.
- The ID of the digital input port which triggers the reboot message **+RESP: GTDOG**. The valid value is 2 or 3.
- The speed level of which the harsh behavior is detected in message **+RESP: GTHBM**. 3 is high speed, 2 is medium speed and 1 is low speed.

For the rest of the messages, it will always be 0.

Report type has different meanings in different messages as below.

- In the **+RESP:GTDIS** report message generated by the digital input
 - 0: The current logical status of the input port is disable status.
 - 1: The current logical status of the input is enable status.
- In the **+RESP:GTIOB** report message generated by bound IO
 - 0: The current logical status of the bound IO does not meet the alarm condition.
 - 1: The current logical status of the bound IO meets the alarm condition.
- In Geo-Fence report message **+RESP:GTGEO**
 - 0: Exit from the Geo-Fence.
 - 1: Enter the Geo-Fence.
- In the message of speed alarm **+RESP:GTSPD**
 - 0: Outside of the predefined speed range.
 - 1: Inside of the predefined speed range.
- In the message of protocol watch dog reboot message **+RESP:GTDOG**
 - 1: Reboot message for time based working mode
 - 2: Reboot message for ignition on working mode
 - 3: Reboot message for input triggered reboot
- In the message of harsh behavior monitoring message **+RESP:GTHBM**
 - 0: Harsh braking behavior
 - 1: Harsh acceleration behavior
- In the message of ignition on or off location message **+RESP:GTIGL**
 - 0: ignition on.
 - 1: ignition off.

For the rest of the messages, it will always be 0.

- ✧ **<Number>**: The number of the GPS position included in the report message. Generally, it equals to 1.
- ✧ **<GPS Accuracy>**: The HDOP defined in NMEA0183 (The National Marine Electronics Association (NMEA) is a non-profit association of manufacturers, distributors, dealers, educational institutions, and others interested in peripheral marine electronics occupations. The NMEA 0183 standard defines an electrical interface and data protocol for communications between marine instrumentation.). The range of value is 0 – 50. Here 0 means no GPS fix.
- ✧ **<Speed>**: The current speed. Unit: km/h
- ✧ **<Azimuth>**: The azimuth of the GPS fixing.
- ✧ **<Altitude>**: The height above the sea level.
- ✧ **<Longitude>**: The longitude of the current position.
- ✧ **<Latitude>**: The latitude of the current position.
- ✧ **<GPS UTC Time>**: The UTC time from the GPS chip.
- ✧ **<MCC>**: Mobile country code. It is 3 digits in length and ranges from 000–999.
- ✧ **<MNC>**: Mobile network code. It is 3 digits in length and ranges from 000–999.
- ✧ **<LAC>**: Location area code in hex format.
- ✧ **<Cell ID>**: Cell ID in hex format.
- ✧ **<Mileage>**: The current total mileage.

➤ **+RESP:GTFRI,**

If fixed report is enabled, the device will send the message **+RESP:GTFRI** to the backend server according to the working mode.

Example:

+RESP:GTFRI,0B0203,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,12345:12:34,,,,,,,,,20090214093254,11F0\$

+RESP:GTFRI,0B0203,135790246811220,,,10,2,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,0,4.3,92,70.0,121.354335,31.222073,20090101000000,0460,000,18d8,6141,00,2000.0,12345:12:34,,,,,,,,,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Analog Input VCC	<=5	0 – 28000 mV	
Report ID/Report Type	2	X(1-4)X(0-1)	
Number	<=2	0 – 15	
GPS Accuracy	<=2	0 1 – 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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	
Mileage	<=9	0.0 – 4294967.0 km	
Hour Meter Count	11	HHHHH:MM:SS	
Multi Analog VCC1	<=4	250~3000 mV	

Multi Analog VCC2	<=4	250~3000 mV	
Multi Analog VCC3	<=4	250~3000 mV	
Digital Input	2	00 – 0F	
Digital Output	2	00 – 0F	
Reserved			
Reserved			
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Analog Input VCC>: The value of the analog input voltage. If using command **AT+GTAIS** to set the device report the analog input voltage periodically with fixed report, the device will send the current analog input voltage along with **+RESP:GTFRI** message to the backend server. If not set, this field will be reserved.
- ✧ <Report ID/Report Type>: Indicate the working mode of the fixed report and the type of the message.
Report ID has four meanings as below.
 - 1: fixed timing report.
 - 2: fixed distance report.
 - 3: fixed mileage report.
 - 4: fixed timing and mileage report.
 Report type has two meanings as below.
 - 0: the normal fixed report.
 - 1: corner report which indicates that the device just turns around a corner.
- ✧ <Number>: The number of the GPS position included in the report message. In the message **+RESP:GTFRI**, it probably includes one or several GPS position according to the setting of <Send Interval> and <Check Interval>. If multi-position in one **+RESP:GTFRI** message, the green part repeats.
- ✧ <Hour Meter Count>: If hour meter counter function is enabled by the command **AT+GTHMC**, total hours meter counted when engine is on will be reported in this field. It is formatted with 5 hour digits and 2 minute digits and 2 second digits and ranges from 00000:00:00– 99999:00:00. If the function is disabled, this field will be reserved.
- ✧ <Multi Analog1 VCC 1~3>: The value of the multi analog input 1~3 voltage. If using command **AT+GTMAI** to set the device report the multi analog input 1~3 voltage periodically with fixed report, the device will send the current analog input 1~3 voltage along with **+RESP:GTFRI** message to the backend server. If not set, this field will be reserved.
- ✧ <Digital Input>: A bitwise hex integer to represents the logical status of the digital input. From the lowest bit to the highest bit, each bit represents one of the digital inputs 1 – 4

respectively. For each bit, 0 means disable status, 1 means enable status.

- ✧ *<Digital Output>*: A bitwise hex integer to represents the logical status of the digital output. From the lowest bit to the highest bit, each bit represents one of the digital outputs 1 – 4 respectively. For each bit, 0 means disable status, 1 means enable status

➤ **+RESP:GTERI,**

If extern report is enabled, the device will send the message **+RESP:GTERI** to the backend server instead of **+RESP:GTFRI**.

Example: +RESP:GTERI,0B0203,862170010903183,,00000001,,10,1,1,0.5,55,71.8,117.200986,31.83287 1,20120818041519,0460,0000,5663,5A02,00,0.0,,,,,,1,0097,20120818041528,0030\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=10	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
ERI Mask	8	00000000 – FFFFFFFF	
Analog Input VCC	<=5	0 – 28000 mV	
Report ID/Report Type	2	X(1-4)X(0-1)	
Number	<=2	0 – 15	
GPS Accuracy	<=2	0 1 – 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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	

Mileage	<=9	0.0 – 4294967.0 km	
Hour Meter Count	11	HHHHH:MM:SS	
Multi Analog VCC1	<=4	250~3000 mV	
Multi Analog VCC2	<=4	250~3000 mV	
Multi Analog VCC3	<=4	250~3000 mV	
Digital Input	2	00 – 0F	
Digital Output	2	00 – 0F	
UART Device Type	<= 2	0 - 99	
Digit fuel sensor Data (optional)	<= 20		
AC100 devices number(optional)	<= 2	0 - 19	
1wire device ID (optional)	16		
1wire device TYPE (optional)	2		
1wire device DATA (optional)	<= 40		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <ERI Mask>: The parameter from AT+GTFRI.
- ✧ <Analog Input VCC>: The value of the analog input voltage. If using command AT+GTAIS to set the device report the analog input voltage periodically with fixed report ,<ERI Enable> is true, and the second serial port is set connect with peripherals, the device will send the current analog input voltage along with +RESP:GTERI message to the backend server. If not set, this field will be reserved.
- ✧ <Report ID/Report Type>: Indicate the working mode of the fixed report and the type of the message.

Report ID has four meanings as below.

- 1: fixed timing report.
- 2: fixed distance report.
- 3: fixed mileage report.
- 4: fixed timing and mileage report.
- 5: fixed timing or mileage report.

Report type has two meanings as below.

- 0: the normal fixed report.

- 1: corner report which indicates that the device just turns around a corner.
- ✧ <Number>: The number of the GPS position included in the report message. In the message **+RESP:GTERI**, it probably includes one or several GPS position according to the setting of <Send Interval> and <Check Interval>. If multi-position in one **+RESP:GTERI** message, the green part repeats.
- ✧ <Hour Meter Count>: If hour meter counter function is enabled by the command **AT+GTHMC**, total hours meter counted when engine is on will be reported in this field. It is formatted with 5 hour digits and 2 minute digits and 2 second digits and ranges from 00000:00:00– 99999:00:00. If the function is disabled, this field will be reserved.
- ✧ <Multi Analog1 VCC 1~3>: The value of the multi analog input 1~3 voltage. If using command **AT+GTMAI** to set the device report the multi analog input 1~3 voltage periodically with fixed report, the device will send the current analog input 1~3 voltage along with **+RESP:GTERI** message to the backend server. If not set, this field will be reserved.
- ✧ <UART Device Type>: Type of device which connected to the second serial port.
 - 0: No device connect
 - 1: Digit fuel sensor
 - 2: AC100 1wire bus
- ✧ <Digit fuel sensor data>: if bit 0 of <ERI_mask> in **AT+GTFRI** is enable, this part will show and it include the data get from digit fuel sensor.
- ✧ <AC100 Devices number>: if bit 1 of <ERI_mask> in **AT+GTFRI** is enable, the red part and the blue parts will show, the number of the devices connected to 1wire bus will report with this item. In this message it includes all the devices data on 1wire bus, and if the devices are more than 1, the blue part will repeat. 0 means no device and the blue parts will hidden.
- ✧ <1wire Devices ID>: means the 1wire device ID read from the device.
- ✧ <1wire Devices TYPE>: means the 1wire device type
 - 1: Temperature sensor.
- ✧ <1wire Devices DATA>: means the data read from the 1wire devices. If the value of <1wire Devices Type> is the temperature sensor, this indicates the temperature value. To convert the value of the two bytes in hex to decimal, multiply it by 0.0625 to get the temperature value in Celsius degrees. If the first 5 bits of the high byte are all 1, then the temperature value is below zero Celsius degrees and the value is represented in two's complement format. To obtain the temperature in decimal, plus the hexadecimal data by 1 and then multiply it by 0.0625 to get the value in Celsius degrees.

Note: the key word (optional) means the item is controlled by the parameter <Report Mask> .

➤ **+RESP:GTAIS,**

If the analog input alarm is enabled by the command **AT+GTAIS**, the device will send the message **+RESP:GTAIS** to the backend server when analog input voltage enters the alarm range.

➤ **+RESP:GTMAI,**

If the analog input alarm is enabled by the command **AT+GTMAI**, the device will send the message **+RESP:GTMAI** to the backend server when analog input voltage enters the alarm

range.

All of the above report messages have the same format as shown below.

Example:

+RESP:GTAIS,0B0203,135790246811220,,13500,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0\$

+RESP:GTMAI,0B0203,135790246811220,,1980,11,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Analog Input VCC	<=5	0 – 28000 0 – 3000mV	
Report ID/Report Type	2	X(0-3)X(0-1)	
Number	<=2	0 – 1	
GPS Accuracy	<=2	0 1 – 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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	
Mileage	<=9	0.0 – 4294967.0 km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Analog Input VCC>: The value of the analog input voltage. When the voltage of the analog input meets the alarm condition as set by command **AT+GTAIS** or **AT+GTMAI**, the device will send the current analog input voltage with **+RESP:GTAIS** or **+RESP:GTMAI** message to the backend server
- ✧ <Report ID/Report Type>: The report ID and the type of the report type in hex format. 4 high bits mean report ID and 4 low bits means report type.
Report ID has different meanings in these two messages.
 - The ID of analog input port which triggers report message **+RESP:GTAIS**. The value is 0.
 - The ID of analog input port which triggers report message **+RESP:GTMAI**. The range is 1-3.
 Report type has two meanings as below.
 - 0: Outside of the predefined range.
 - 1: Inside of the predefined range.
- ✧ <Number>: The number of the GPS position included in the report message. Generally, it equals to 1.

➤ **+RESP:GTLBC,**

If the parameter <Location By Call> is set to 1 by the command **AT+GTCFG**, the device will get and send the current position to the backend server by the message **+RESP:GTLBC** when there is an incoming call.

Example:

**+RESP:GTLBC,0B0203,135790246811220,,
13800000000,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2
0090214093254,11F0\$**

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Call Number	<=20	phone number	
GPS Accuracy	<=2	0 1 – 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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ *<Call Number>*: The phone number of the incoming call which triggers the report message.

➤ **+RESP:GTIDA,**

if *<Mode>* is set to 1, +RESP:GTIDA will be reported as the configuration in *<report mode>*.

if *<Mode>* is set to 0, +RESP:GTIDA will be always reported and never check the status of ID authorization.

Example:

**+RESP:GTIDA,0B0203,862170013895931,,,D2C4FBC5,1,1,1,0.8,0,22.2,117.198630,3
1.845229,20120802121626,0460,0000,5663,2BB9,,0.0,,,,,20120802121627,008E\$**

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Reserved			
ID	<=20	'0' – '9' 'A' – 'Z'	
ID Report Type	1	0 1	
Number	1	0 – 1	
GPS Accuracy	<=2	0 1 – 50	0 means the last fix position
Speed	<=5	0.0 – 999.9 km /h	
Heading	<=3	0 – 359	
Altitude	<=8	(-)xxxxx.x m	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
GPS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	
Mileage	<=9	0.0 – 4294967.0 km	
Reserved			
Reserved			
Reserved			
Reserved			
Send Time	14	YYYYMMDDHHMMSS	

Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <ID>: The ID which is read
- ✧ <ID Report Type>:
 - 1: the ID is authorized.
 - 0: the ID is unauthorized.
- ✧ <Number>: The number of the GPS position included in the report message. Generally, it equals to 1.
- ✧ <GPS Accuracy>: The HDOP defined in NMEA0183 (The National Marine Electronics Association (NMEA) is a non-profit association of manufacturers, distributors, dealers, educational institutions, and others interested in peripheral marine electronics occupations. The NMEA 0183 standard defines an electrical interface and data protocol for communications between marine instrumentation.). The range of value is 0 – 50. Here 0 means the last fix position.
- ✧ <Speed>: The current speed. Unit: km/h
- ✧ <Heading>: The Heading of the GPS fixing.
- ✧ <Altitude>: The height above the sea level.
- ✧ <Longitude>: The longitude of the current position.
- ✧ <Latitude>: The latitude of the current position.
- ✧ <GPS UTC Time>: The UTC time from the GPS chip.
- ✧ <MCC>: Mobile country code. It is 3 digits in length and ranges from 000–999.
- ✧ <MNC>: Mobile network code. It is 3 digits in length and ranges from 000–999.
- ✧ <LAC>: Location area code in hex format.
- ✧ <Cell ID>: Cell ID in hex format.
- ✧ <Mileage>: The current total mileage.

3.3.2. Device Information Report

If the device information report function is enabled by the command **AT+GTCFG**, the device will send the device information by the message **+RESP:GTINF** to the backend server periodically.

➤ **+RESP:GTINF,**

Example:

+RESP:GTINF,0B0203,135790246811220,,16,898600810906F8048812,16,0,1,1,0,4.4,0,0,0,20090214013254,13000,00,00,+0800,0,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
State	2	11 12 21 22 41 42 1A 16	
ICCID	20		
CSQ RSSI	<=2	0 – 31 99	
CSQ BER	<=2	0 – 7 99	
Main Supply	1	0 1	
5V Output Status	1	0 1	
Backup Battery On	1	0 1	
Backup Battery VCC	<=4	0.0 – 4.5 V	
Charging	1	0 1	
LED On	1	0 1	
GPS On Need	1	0 1	
External GPS Antenna	1	0 1 3	
Last Fix UTC Time	14	YYYYMMDDHHMMSS	
Analog Input VCC	<=5	0 – 28000 mV	
Digital Input	2	00 – 0F	
Digital Output	2	00 – 0F	
Time Zone Offset	5	± HHMM	
Daylight Saving	1	0 1	
Send Time	14	YYYYMMDDHHMMSS	

Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <State>: The current motion state of the device.
 - 16 (**Tow**): The device attached vehicle is ignition off and it is towed.
 - 1A (**Fake Tow**): The device attached vehicle is ignition off and it might be towed.
 - 11 (**Ignition Off Rest**): The device attached vehicle is ignition off and it is motionless.
 - 12 (**Ignition Off Motion**): The device attached vehicle is ignition off and it is moving before it is treated as being towed.
 - 21 (**Ignition On Rest**): The device attached vehicle is ignition on and it is motion less
 - 22 (**Ignition On Motion**): The device attached vehicle is ignition on and it is moving
 - 41 (**Sensor Rest**): The device attached vehicle is motionless without ignition signal detected
 - 42 (**Sensor Motion**): The device attached vehicle is moving without ignition signal detected

✧ <ICCID>: The ICCID of the SIM card.

✧ <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 GSM signal. The range is 0-7, 99 for unknown.
- ✧ <Main Supply>: Whether the main power supply is connected.
 - 0: Not connected
 - 1: Connected
- ✧ <5V Output Status>: The state of 5V output.
 - 0: 5V output is disabled
 - 1: 5V output is enabled
- ✧ <Backup Battery On>: The state of the backup battery.
 - 0: Do not use backup battery
 - 1: Use backup battery to provide power supply
- ✧ <Backup Battery VCC>: The voltage of the backup battery. The value of this field is only valid when the external power is not connected.
- ✧ <Charging>: Whether the backup battery is charging when the main power supply is connected.
 - 0: Not charging
 - 1: Charging
- ✧ < External GPS Antenna>: the status of the external GPS antenna.
 - 0: The external GPS antenna of the device is working.
 - 1: The external GPS antenna of the device is detected in open circuit state.
 - 3: The external GPS antenna of the device is in unknown state.

- ✧ <Last Fix UTC Time>: The UTC time of the latest successful GPS fixing.
- ✧ <Analog Input VCC>: The voltage of the analog input.
- ✧ <Digital Input>: A bitwise hex integer to represents the logical status of the digital input. From the lowest bit to the highest bit, each bit represents one of the digital inputs 1 – 4 respectively. For each bit, 0 means disable status, 1 means enable status.
- ✧ <Digital Output>: A bitwise hex integer to represents the logical status of the digital output. From the lowest bit to the highest bit, each bit represents one of the digital outputs 1 – 4 respectively. For each bit, 0 means disable status, 1 means enable status
- ✧ <Time Zone Offset>: The time offset of the local time zone to the UTC time.
- ✧ <Daylight Saving>: The current setting of the daylight saving.
 - 0: Daylight saving is disabled
 - 1: Daylight saving is enabled

3.3.3. Report of Real Time Querying

3.3.3.1. +RESP:GTGPS

After the device receives the command **AT+GTRTO** to read the GPS information, it will send the GPS information to the backend server by the message **+RESP:GTGPS**.

➤ **+RESP:GTGPS,**

Example:

+RESP:GTGPS,0B0203,135790246811220,,0,,,0000,003F,0,20090214013254,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
GPS On Need	1	0 1	
Reserved	0		
Reserved	0		
Report Items Mask	4	0000 – FFFF	
FRI Report Mask	4	0000 – FFFF	
External GPS Antenna	1	0 1 3	
Last Fix UTC Time	14	YYYYMMDDHHMMSS	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <Report Items Mask>: Refer to <Report Items Mask> of **AT+GTCFG** command

✧ <FRI Report Mask>: Refer to <Report Mask> of **AT+GTFRI** command.

3.3.3.2. +RESP:GTALL

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:GTALL**. This message only sends via GPRS even if the report mode is force on SMS.

➤ **+RESP:GTALL,**

Example:

```
+RESP:GTALL,0B0203,135790246811220,,BSI,cmnet,,,,,,SRI,3,1,1,116.226.44.17,7011,116.
226.45.229,7012,+8613812341234,15,1,0,,,CFG,gv200g,gv200g,1,123.4,0,0,0000,1,0000,02FF,
1,0,1,300,0,3,1,0,00100:00:00,,TOW,1,10,0,120,1,0,5,10,200,10,4,,,,,,AIS,2,250,12000,3,2,1,1
,0,0,1,,,DIS,1,2,3,2,1,4,3,1,2,4,3,4,,,,,,IOB,0,1A,A,3,1,0,8,3,,,,,1,0,0,0,0,0,0,0,,,,,2,0,0,0,0,0,0,0,,,
,,3,0,0,0,0,0,0,0,,,,TMZ,-0330,0,,,,FRI,1,1,0,1,1000,2300,180,30,1000,1000,21,0,600,,,GEO,0,
3,121.412248,31.187891,1000,600,1,1,0,0,,,,,1,0,,,0,0,0,0,0,0,,,,,2,0,,,0,0,0,0,0,0,,,,,3,0,,,0,0,0,0,0,
0,,,,,4,0,,,0,0,0,0,0,0,,,,,SPD,1,80,120,60,300,1,1,0,0,,,,,,SOS,1,4,+8613812341234,1,1,0,0,5,
4,,,MON,1,+8613812341234,1,0,,,,,PIN,1,0000,0,,,,OWH,1,1F,0900,1200,1300,1730,,,2,1,1,0,0
,,,,,DOG,1,60,1,0130,,1,3,,,,,MAI,1,0,0,0,0,,0,0,0,0,0,2,0,0,0,0,,0,0,0,0,0,3,0,0,0,0,,0,0,0,0,0,,,ID
L,1,2,1,,,,,1,1,0,0,,,,,HMC,1,12345:12:34,,,,,,HBM,1,,,100,21,6,,60,21,6,,,21,15,,1,1,8,3,,,,,H
MC,1,12345:12:34,,,,,,WLT,3,13813888888,13913999999,,,,,,BCS,2,13813888888,0,3,13
913999999,0,4,,0,5,4,1,1,1,8,3,,,,,URT,1,5,8,1,0,0,0,,HRM,,,FF,FFFFFFFF,FFFFFFFF,FFFFE
FF,,,,20090214093254,11F0,ERI,,,,,15,10,,0,5,,,,,IDA,1,1,2,D2C4FBC5,87654321,45,3,,,,,1,1,
0,0,,,,,FFFF,ACD,1,2,1,10,3,10,,,,,PDS,1,1f,,,,,JBS,1,,10,10,60,30,3600,1,30,,,,,TMP,0,0,,,,,0,0,
,,2,10,,,0,0,0,0,,,,,0,0,,,0,0,2,10,,,0,0,0,0,,,,,0,0,,,0,0,2,10,,,0,0,0,0,,,,,0,0,,,0,0,2,10,,,0,0,0,0,,,
,,SSR,1,2,1,10,1,,,,,NMC,1,,,,,BSE,12,,,,,,20090214093254,0005$
```

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
BSI	3	BSI	BSI
APN	<=40		
APN User Name	<=30		
APN Password	<=30		
Backup APN	<=40		
Backup APN User Name	<=30		
Backup APN Password	<=30		
Reserved	0		
SRI	3	SRI	SRI
Report Mode	1	0 – 6	
Reserved	1	0 1	
Buffer Mode	1	0 1 2	
Main Server IP / Domain Name	<=60		
Main Server Port	<=5	0 – 65535	

Backup Server IP	<=15		
Backup Server Port	<=5	0 – 65535	
SMS Gateway	<=20		
Heartbeat Interval	<=3	0 5 – 360min	
SACK Enable	1	0 1	
Protocol Format	1	0 1	
Reserved	0		
Reserved	0		
Reserved	0		
CFG	3	CFG	CFG
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
ODO Enable	1	0 1	
ODO Initial Mileage	<=9	0.0 – 4294967.0Km	
GPS On Need	1	0 1	
Gsm report	1	0 1 2 3	0
Report Items Mask	4	0000 – FFFF	
Power Saving Mode	1	0 – 2	
Reserved	4	0000 – FFFF	0000
Event Mask	4	0000 – FFFF	
Backup Battery On	1	0 1	
LED On	1	0 1	
Info Report Enable	1	0 1	
Info Report Interval	<=5	30 – 86400sec	
Location By Call	1	0 1 2	
Echo Suppression	1	1 – 4	
Backup Battery Charge Mode	1	0 1	
5V Output Control	1	0 1	0
Maximum Call Time	11	00100:00:00	
Reserved	0		

TOW	3	TOW	TOW
Tow Enable	1	0 1	
Engine Off to Tow	≤ 2	5 – 15min	
Fake Tow Delay	≤ 2	0 – 10min	
Tow Interval	≤ 5	30 – 86400sec	
Tow Output ID	1	0 – 4	
Tow Output Status	1	0 1	
Tow Output Duration	≤ 3	0 – 255($\times 100\text{ms}$)	
Tow Output Toggle Times	≤ 3	0 – 255	
Rest Duration	≤ 3	0 – 255($\times 15\text{sec}$)	
Motion Duration	≤ 2	0 – 10($\times 100\text{ms}$)	
Motion Threshold	1	2 – 4	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
AIS	3	AIS	AIS
Mode	1	0 1 2	
Min Threshold	≤ 5	250 – 28000 mV	
Max Threshold	≤ 5	250 – 28000 mV	
Sample Period	≤ 2	0 1 – 12($\times 2\text{s}$)	
Debounce Time	1	0 – 5($\times 1\text{s}$)	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100\text{ms}$)	
Toggle Times	≤ 3	0 – 255	

Sync with FRI	1	0 1	
Reserved	0		
Reserved	0		
Reserved	0		
DIS	3	DIS	DIS
Input ID 1	1	1	1
Sample Period	≤ 2	$0 1 - 12(\times 2s)$	
Debounce Time	≤ 2	$0 - 400(\times 50ms)$	
Input ID 2	1	2	2
Enable	1	0 1	
Debounce Time	≤ 2	$0 - 20(\times 10ms)$	
Input ID 3	1	3	3
Enable	1	0 1	
Debounce Time	≤ 2	$0 - 20(\times 10ms)$	
Input ID 4	1	4	4
Sample Period	≤ 2	$0 1 - 12(\times 2s)$	
Debounce Time	≤ 2	$0 - 400(\times 50ms)$	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IOB	3	IOB	IOB
IOB ID0	1	0	0
Input Mask	2	$0 - 3F$	
Trigger Mask	2	$0 - 3F$	
Input Sample Period	≤ 2	$0 1 - 12(\times 2s)$	
Output ID	1	$1 - 4$	
Output Status	1	0 1	
Duration	≤ 3	$0 - 255(\times 100ms)$	

Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IOB ID1	1	1	1
Input Mask	2	0 – 3F	
Trigger Mask	2	0 – 3F	
Input Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Output ID	1	1 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IOB ID2	1	2	2
Input Mask	2	0 – 3F	
Trigger Mask	2	0 – 3F	
Input Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Output ID	1	1 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved			
IOB ID3	1	2	3

Input Mask	2	0 – 3F	
Trigger Mask	2	0 – 3F	
Input Sample Period	<=2	0 1 – 12(× 2s)	
Output ID	1	1 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(× 100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved			
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 – 5	
Discard No Fix	2	0 1	
Max Send	<=5	0 – 65535	
Period Enable	1	0 1	
Begin Time	4	HHMM	
End Time	4	HHMM	
Check Interval	<=5	0 30 – 86400sec	
Send Interval	<=5	0 5 – 86400sec	
Distance	<=5	300 – 65535m	
Mileage	<=5	300 – 65535m	
Report Mask	<=4	0000 – FFFF	

Corner Report	<=3	0 40 – 100	
IGF Report Interval	<=5	300-86400sec	
ERI Mask	8	00000000 – FFFFFFFF	
Reserved	0		
GEO	3	GEO	GEO
GEO ID0	1	0	0
Mode	1	0 – 3	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check Interval	<=5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID1	1	1	1
Mode	1	0 – 3	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check Interval	<=5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
GEO ID2	1	2	2
Mode	1	0 – 3	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check Interval	<=5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID3	1	3	3
Mode	1	0 – 3	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check Interval	<=5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
GEO ID4	1	4	4
Mode	1	0 – 3	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check Interval	<=5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SPD	3	SPD	SPD
Mode	1	0 1 2	
Min Speed	<=3	0 – 400km/h	
Max Speed	<=3	0 – 400km/h	
Validity	<=4	15 – 3600sec	
Send Interval	<=4	30 – 3600sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SOS	3	SOS	SOS
Mode	1	0 – 4	
Digital Input ID	1	0 2 – 4	
SOS Number	<=20		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
SOS Microphone	2	0 – 10	
SOS Speaker	1	0 – 7	
Reserved	0		
Reserved	0		
MON	3	MON	MON
Mode	1	0 – 3	
Stealthy Phone Number	<=20		
Stealthy Microphone	2	0 – 15	
Stealthy Speaker	1	0 – 7	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
PIN	3	PIN	PIN
Enable Auto-unlock PIN	1	0 1	
PIN	1	'0' – '9'	

SIM PIN Lock	1	0 1	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
OWH	3	OWH	OWH
Mode	1	0 1 2 3	
Day of Work	<=2	0 – 7F	
Working Hours Start1	4	HHMM	
Working Hours End1	4	HHMM	
Working Hours Start2	4	HHMM	
Working Hours End2	4	HHMM	
Reserved	0		
Reserved	0		
Digital Input ID	1	0 4	
Digital Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
DOG	3	DOG	DOG
Mode	1	0 1 2	
Ignition Frequency	<=3	10 – 120min	
Interval	<=2	1 – 30	
Time	4	HHMM	
Reserved	0		
Report Before Reboot	1	0 1	

Input ID	1	0 2 3	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
MAI	3	MAI	MAI
Analog Input ID1	1	1	1
Mode	1	0 1 2 3	
Min Threshold	≤ 4	250 – 2700 mV	
Max Threshold	≤ 4	250 – 2700 mV	
Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Sync with FRI	1	0 1	
Analog Input ID2	1	2	2
Mode	1	0 1 2	
Min Threshold	≤ 4	250 – 2700 mV	
Max Threshold	≤ 4	250 – 2700 mV	
Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Sync with FRI	1	0 1	
Analog Input ID3	1	3	3
Mode	1	0 1 2	

Min Threshold	<=4	250 – 2700 mV	
Max Threshold	<=4	250 – 2700 mV	
Sample Period	<=2	0 1 – 12(× 2s)	
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(× 100ms)	
Toggle Times	<=3	0 – 255	
Sync with FRI	1	0 1	
Reserved	0		
Reserved	0		
Reserved	0		
IDL	3	IDL	IDL
Mode	1	0 1	
Time to Stationary	1	1 – 5 min	
Time to Movement	1	1 – 5 min	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(× 100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
HBM	3	HBM	HBM
HBM Enable	1	0 1	

High Speed	≤ 3	100 – 400km/h	
ΔV_{hb}	≤ 3	0 – 100km/h	
ΔV_{ha}	≤ 3	0 – 100km/h	
Reserved	0		
Medium Speed	≤ 3	100 – 400km/h	
ΔV_{mb}	≤ 3	0 – 100km/h	
ΔV_{ma}	≤ 3	0 – 100km/h	
Reserved	0		
Reserved	0		
ΔV_{lb}	≤ 3	0 – 100km/h	
ΔV_{la}	≤ 3	0 – 100km/h	
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$
HMC	3	HMC	HMC
Hour Meter Enable	1	0 1	
Initial Hour Meter Count	11	00000:00:00-99999:00:00	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
WLT	3	WLT	WLT
Call Filter	1	0 1 2 3	
Phone number 1	<=20		
Phone number 2	<=20		
Phone number 3	<=20		
Phone number 4	<=20		
Phone number 5	<=20		
Phone number 6	<=20		
Phone number 7	<=20		
Phone number 8	<=20		
Phone number 9	<=20		
Phone number 10	<=20		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
BCS	3	BCS	BCS
Input ID2	1	2	2
Phone Number	<=20		
Hang-up Call	1	0 1	
Input ID3	1	3	3
Phone Number	<=20		
Hang-up Call	1	0 1	
Input ID4	1	4	4
Phone Number	<=20		
Hang-up Call	1	0 1	

Microphone	<=2	0 – 10	
Speaker	1	0 – 7	
Send Position	1	0 1	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
URT	3	URT	URT
Working Mode	1	0 1 2 3 4 7	0
Baud rate Index	<=2	1 – 12	12
Data Bits	1	7 – 8	8
Stop Bits	1	1 – 3	1
Parity Bits	1	0 – 4	0
Sleep Enable	1	0 1	0
Input ID of Wakeup	0	0 2	0
Digit Fuel Sensor Type	1	0 – 2	0
Reserved	0		
JDC	3	JDC	JDC
Mode	1	0 1	0
Signal Threshold	<=3	0-255	10
C1 Threshold	<=3	0 – 255	40
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 4	0
Output Status	1	0 1	
Duration	<=3	0~255(×100ms)	0

Toggle Times	<=3	0 – 255	0
Reserved	0		
HRM	3	HRM	HRM
Reserved	0		
Reserved	0		
ACK Mask	1	'0' – '9' 'a' – 'f' 'A' – 'F'	EF
Response Mask	4	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFFFFBF
Event Mask	4	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFFFFBF
Information Mask	2	'0' – '9' 'a' – 'f' 'A' – 'F'	FF7D
HBD Mask	1	'0' – '9' 'a' – 'f' 'A' – 'F'	80
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
EFS	3	EFS	EFS
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200
Reserved	0		
Reserved	0		
Reserved	0		
Ex Fuel Sensor Delay	<=3	0 – 600 sec	30
Ex Fuel Lost Alarm	<=2	0 1 – 50 %	10
Reserved	0		
Ex Unsolicited Enable	1	0 1	0
Ex Detect Frequency	3	5 – 600 sec	10
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

IDA	3	IDA	IDA
enable	1	0 1	0
ID number 1	<=2		
⋮			
ID number 20	<=2		
Timeout after Ignition off	<=3	30 – 600sec	30
Report mode	1	0 1 2 3	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	1-3	1
Output Status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
ACD	3	ACD	ACD
iButton timer	<=2	1 – 10(s)	1
Output ID	1	0 1 2 3 4	0
Output_status	1	0 1	0
Duration	<=3	0 – 255(×100ms)	10
Toggle	<=3	0 – 255	1
Temperature timer	2 3	10– 255(s)	10
Reserved			
Reserved			
Reserved			
Reserved			
PDS	3	PDS	PDS
Mode	1	0 1 2 3	0

Mask	4	0000-FFFF	0
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
JBS	3	JBS	JBS
Mode	1	0 1	0
Reserved	0		
Siren up Timer(T1)	5	1 – 65535(×100ms)	10
Siren down Timer(T2)	5	1 – 65535(×100ms)	10
Siren Alarm duration(T3)	5	1 – 65535(sec)	60
Preparing Alarm Timer(T4)	5	1 – 65535(sec)	30
Cut fuel Timer(T5)	5	1 – 65535(sec)	3600
Need Judge Motion Sensor	1	0 1	1
Speed Limit	3	0 – 999km/h	30
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
TMP	3	TMP	TMP
Alarm ID0	1	0	0
Mode	1	0-3	0
Sensor ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved			
Reserved			
Low Temperature	<=3	-55 – 125℃	0
High Temperature	<=3	-55 – 125℃	0
Reserved			
Reserved			
Validity	<=2	1-10	2
Send Interval	<=2	0-60	10
Reserved			
Reserved			

Output ID	1	0-4	0
Output Status	1	0 1	0
Duration	<=3	0-255(×100ms)	0
Toggle Times	<=3	0-255	0
Reserved			
Reserved			
Reserved			
Reserved			
Alarm ID1	1	1	1
Mode	1	0-3	0
Sensor ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved			
Reserved			
Low Temperature	<=3	-55 – 125℃	0
High Temperature	<=3	-55 – 125℃	0
Reserved			
Reserved			
Validity	<=2	1-10	2
Send Interval	<=2	0-60	10
Reserved			
Reserved			
Output ID	1	0-4	0
Output Status	1	0 1	0
Duration	<=3	0-255(×100ms)	0
Toggle Times	<=3	0-255	0
Reserved			
Reserved			
Reserved			
Reserved			
Alarm ID2	1	2	2

Mode	1	0-3	0
Sensor ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved			
Reserved			
Low Temperature	≤ 3	-55 – 125°C	0
High Temperature	≤ 3	-55 – 125°C	0
Reserved			
Reserved			
Validity	≤ 2	1-10	2
Send Interval	≤ 2	0-60	10
Reserved			
Reserved			
Output ID	1	0-4	0
Output Status	1	0 1	0
Duration	≤ 3	0-255($\times 100\text{ms}$)	0
Toggle Times	≤ 3	0-255	0
Reserved			
Reserved			
Reserved			
Reserved			
Alarm ID3	1	3	3
Mode	1	0-3	0
Sensor ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved			
Reserved			
Low Temperature	≤ 3	-55 – 125°C	0
High Temperature	≤ 3	-55 – 125°C	0
Reserved			
Reserved			
Validity	≤ 2	1-10	2

Send Interval	<=2	0-60	10
Reserved			
Reserved			
Output ID	1	0-4	0
Output Status	1	0 1	0
Duration	<=3	0-255(×100ms)	0
Toggle Times	<=3	0-255	0
Reserved			
Reserved			
Reserved			
Reserved			
SSR	3	SSR	SSR
Mode	1	0 1	0
Time to Stop	2	1-30 min	2
Time to Start	1	1-5 min	1
Start Speed	2	1-10 Km/h	5
Long Stop	3	0-255 min	0
Reserved			
Reserved			
Reserved			
NMC	3	NMC	NMC
NMEA Mask	<=2	00-FF	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
BSE	3	BSE	BSE
Preferred Band	2	0-12	12
Reserved	0		
Reserved	0		

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

3.3.3.3. +RESP:GTALM

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:GTALL**. This message only sends via GPRS even if the report mode is force on SMS. If the message's length is too long, then subpackage it into several messages **+RESP:GTALM**. The **+RESP:GTALM** is not support the HEX report.

✧ **+RESP:GTALM.**

Example:

+RESP:GTALM,04040D,862170014697104,,2,1,BSI,cmnet,,,,,,,,SRI,3,0,1,116.228.146.250,81
86,192.0.0.0,0,,0,0,0,,,,CFG,gv200,gv200,0,0.0,0,0,003F0,,3FFF,0,1,1,300,0,3,0,0,00000:00:00,
,TOW,0,10,1,300,0,0,0,0,2,3,2,,,,,,,,AIS,0,0,0,0,0,0,0,0,0,0,,,,DIS,1,1,2,2,0,0,3,0,0,4,0,0,,,,IOB,
0,00,00,0,0,0,0,0,,,,1,00,00,0,0,0,0,0,,,,2,00,00,0,0,0,0,0,,,,3,00,00,0,0,0,0,0,,,,TMZ,+0000,0,,,,
,FRI,0,1,0,1,1,0000,0000,180,30,1000,1000,003F0,600,00000000,,GEO,0,0,,50,0,0,0,0,0,,,,1,0,,
50,0,0,0,0,0,,,,2,0,,50,0,0,0,0,0,,,,3,0,,50,0,0,0,0,0,,,,4,0,,50,0,0,0,0,0,,,,SPD,0,0,0,60,300,0,0,
0,0,,,,,,,,SOS,0,0,,0,0,0,0,5,4,,MON,0,5,0,,,,PIN,1,,,,,OWH,0,1f,0900,1200,1300,1800,,0,0
,0,0,0,,,,DOG,0,60,30,0200,,1,0,,60,60,,20130613032357,001D\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Total Packets	1	2	
Current Packet	1	1 – 2	
Configurations	< 1500		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- *<Total Packets>*: The total number of **+RESP:GTALM**
- *<Current Packet>*: The sequence serial number of current packet.
- *<Configurations>*: The current configuration of device. The first message contain from **BSI** to **DOG**, the second from **MAI** to the end.

Note: The length of every message +**RESP:GTALM** (include header and tail) <= 1500 characters.

3.3.3.4. +RESP:GTALC

After the device receives the command **AT+GTRTO** to read the configurations, according to the mask of configuration, it will send corresponding configuration information to the backend server by the message **+RESP:GTALC**. This message only sends via GPRS even if the report mode is force on SMS. The **+RESP:GTALC** is not support the HEX report.

➤ +RESP:GTALC.

Example:

```
+RESP:GTALC,040100,135790246811220,,1FFFFFFF,,BSI,cmnet,,,,,,,,SRI,3,1,1,116.226.44.
17,7011,116.226.45.229,7012,+8613812341234,15,1,,,,CFG,gv200,gv200,1,123.4,0,0,0000,1,00
00,02FF,1,0,1,300,0,3,1,0,00100:00:00,,TOW,1,10,0,120,1,0,5,10,200,10,4,,,,,,,,,AIS,2,250,1200
0,3,2,1,1,0,0,1,,,,DIS,1,2,3,2,1,4,3,1,2,4,3,4,,,,,IOB,0,1A,A,3,1,0,8,3,,,,,1,0,0,0,0,0,0,,,,,2,0,0,0,
0,0,0,0,,,,,3,0,0,0,0,0,0,0,,,,,TMZ,-0330,0,,,,,FRI,1,1,0,1,1000,2300,180,30,1000,1000,21,0,600,
00000003,,GEO,0,3,121.412248,31.187891,1000,600,1,1,0,0,,,,,1,0,,,0,0,0,0,0,0,,,,,2,0,,,0,0,0,0,0
,0,,,,,3,0,,,0,0,0,0,0,0,,,,,4,0,,,0,0,0,0,0,0,,,,,SPD,1,80,120,60,300,1,1,0,0,,,,,,,,,SOS,1,4,+861381
2341234,1,1,0,0,5,4,,,MON,1,+8613812341234,1,0,,,,,PIN,1,0000,0,,,,,OWH,1,1F,0900,1200,13
00,1730,,,2,1,1,0,0,,,,,DOG,1,60,1,0130,,1,3,,,,,MAI,1,0,0,0,0,,0,0,0,0,0,2,0,0,0,0,,0,0,0,0,0,3,0,0,
0,0,,0,0,0,0,0,,,,,IDL,1,2,1,,,,,1,1,0,0,,,,,HBM,1,100,21,6,,60,21,6,,,21,15,,1,1,8,3,,,,,HMC,1,1234
5:12:34,,,,,,,,,WLT,3,13813888888,13913999999,,,,,,,,,,,,,BCS,2,13813888888,0,3,13913999999,
0,4,,0,5,4,1,1,1,8,3,,,,,URT,1,5,8,1,0,0,0,,,JDC,1,10,40,,,,,1,1,15,5,,HRM,,,FF,FFFFFFFF,FFFF
FFFF,FFFF,FF,,,,,EFS,,,,30,10,,0,10,,,,,,IDA,0,EC69EED2,,,,,,,,,,,,,30,3,,,,,1,1,0,0,,,,,ACD,
1,0,0,10,1,10,,,,,PDS,1,1f,,,,,,JBS,1,,10,10,60,30,3600,1,30,,,,,TMP,0,0,,,,,0,0,,,2,10,,,0,0,0,0,,,,,
0,0,,,0,0,,,2,10,,,0,0,0,0,,,,,0,0,,,,,0,0,,,2,10,,,0,0,0,0,,,,,0,0,,,0,0,,,2,10,,,0,0,0,0,,,,,SSR,1,2,1,10,1,
...20090214093254.11F0$
```

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Configuration Mask	<=16	0000000000000000 – FFFFFFFFFFFFFFFF	
Reserved	0		
Reserved	0		

BSI	3	BSI	BSI
APN	<=40		
APN User Name	<=30		
APN Password	<=30		
Backup APN	<=40		
Backup APN User Name	<=30		
Backup APN Password	<=30		
Reserved	0		
SRI	3	SRI	SRI
Report Mode	1	0 – 6	
Reserved	1	0 1	
Buffer Mode	1	0 1 2	
Main Server IP / Domain Name	<=60		
Main Server Port	<=5	0 – 65535	
Backup Server IP	<=15		
Backup Server Port	<=5	0 – 65535	
SMS Gateway	<=20		
Heartbeat Interval	<=3	0 5 – 360min	
SACK Enable	1	0 1	
Protocol Format	1	0 1	0
Reserved	0		
Reserved	0		
Reserved	0		
CFG	3	CFG	CFG
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
ODO Enable	1	0 1	
ODO Initial Mileage	<=9	0.0 – 4294967.0Km	
GPS On Need	1	0 1	
Gsm report	1	0 1 2 3	0

Report Items Mask	4	0000 – FFFF	
Power Saving Mode	1	0 – 2	
Reserved	4	0000 – FFFF	0000
Event Mask	4	0000 – 3FFF	
Backup Battery On	1	0 1	
LED On	1	0 1	
Info Report Enable	1	0 1	
Info Report Interval	<=5	30 – 86400sec	
Location By Call	1	0 1 2	
Echo Suppression	1	1 – 4	
Backup Battery Charge Mode	1	0 1	
5V Output Control	1	0 1	0
Maximum Call Time	11	00000:00:00-99999:00:00	
Reserved	0		
TOW	3	TOW	TOW
Tow Enable	1	0 1	
Engine Off to Tow	<=2	5 – 15min	
Fake Tow Delay	<=2	0 – 10min	
Tow Interval	<=5	30 – 86400sec	
Tow Output ID	1	0 – 4	
Tow Output Status	1	0 1	
Tow Output Duration	<=3	0 – 255(×100ms)	
Tow Output Toggle Times	<=3	0 – 255	
Rest Duration	<=3	0 – 255(×15sec)	
Motion Duration	<=2	0 – 10(×100ms)	
Motion Threshold	1	2 – 4	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
AIS	3	AIS	AIS
Mode	1	0 1 2	
Min Threshold	≤ 5	250 – 28000 mV	
Max Threshold	≤ 5	250 – 28000 mV	
Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Debounce Time	1	0 – 5($\times 1s$)	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Sync with FRI	1	0 1	
Reserved	0		
Reserved	0		
Reserved	0		
DIS	3	DIS	DIS
Input ID 1	1	1	1
Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Debounce Time	≤ 2	0 – 400($\times 50ms$)	
Input ID 2	1	2	2
Enable	1	0 1	
Debounce Time	≤ 2	0 – 20($\times 10ms$)	
Input ID 3	1	3	3
Enable	1	0 1	
Debounce Time	≤ 2	0 – 20($\times 10ms$)	
Input ID 4	1	4	4
Sample Period	≤ 2	0 1 – 12($\times 2s$)	

Debounce Time	≤ 2	0 – 400($\times 50\text{ms}$)	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IOB	3	IOB	IOB
IOB ID0	1	0	0
Input Mask	2	0 – 3F	
Trigger Mask	2	0 – 3F	
Input Sample Period	≤ 2	0 1 – 12($\times 2\text{s}$)	
Output ID	1	1 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100\text{ms}$)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IOB ID1	1	1	1
Input Mask	2	0 – 3F	
Trigger Mask	2	0 – 3F	
Input Sample Period	≤ 2	0 1 – 12($\times 2\text{s}$)	
Output ID	1	1 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100\text{ms}$)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
IOB ID2	1	2	2
Input Mask	2	0 – 3F	
Trigger Mask	2	0 – 3F	
Input Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Output ID	1	1 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved			
IOB ID3	1	2	3
Input Mask	2	0 – 3F	
Trigger Mask	2	0 – 3F	
Input Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Output ID	1	1 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved			
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 – 5	
Discard No Fix	2	0 1	
Max Send	<=5	0 – 65535	
Period Enable	1	0 1	
Begin Time	4	HHMM	
End Time	4	HHMM	
Check Interval	<=5	0 30 – 86400sec	
Send Interval	<=5	0 5 – 86400sec	
Distance	<=5	300 – 65535m	
Mileage	<=5	300 – 65535m	
Report Mask	<=4	0000 – FFFF	
Corner Report	<=3	0 – 180	
IGF Report Interval	<=5	300-86400sec	
ERI Mask	8	00000000 – FFFFFFFF	
Reserved	0		
GEO	3	GEO	GEO
GEO ID0	1	0	0
Mode	1	0 – 3	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check Interval	<=5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
GEO ID1	1	1	1
Mode	1	0 – 3	
Longitude	≤ 11	(-)xxx.xxxxxx	
Latitude	≤ 10	(-)xx.xxxxxx	
Radius	≤ 7	50 – 6000000m	
Check Interval	≤ 5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100$ ms)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID2	1	2	2
Mode	1	0 – 3	
Longitude	≤ 11	(-)xxx.xxxxxx	
Latitude	≤ 10	(-)xx.xxxxxx	
Radius	≤ 7	50 – 6000000m	
Check Interval	≤ 5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100$ ms)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
GEO ID3	1	3	3
Mode	1	0 – 3	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check Interval	<=5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
GEO ID4	1	4	4
Mode	1	0 – 3	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
Radius	<=7	50 – 6000000m	
Check Interval	<=5	0 5 – 86400sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SPD	3	SPD	SPD

Mode	1	0 1 2	
Min Speed	<=3	0 – 400km/h	
Max Speed	<=3	0 – 400km/h	
Validity	<=4	15 – 3600sec	
Send Interval	<=4	0 30 – 3600sec	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SOS	3	SOS	SOS
Mode	1	0 – 4	
Digital Input ID	1	0 2 – 4	
SOS Number	<=20		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
SOS Microphone	2	0 – 10	
SOS Speaker	1	0 – 7	

Reserved	0		
Reserved	0		
MON	3	MON	MON
Mode	1	0 – 3	
Stealthy Phone Number	<=20		
Stealthy Microphone	2	0 – 15	
Stealthy Speaker	1	0 – 7	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
PIN	3	PIN	PIN
Enable Auto-unlock PIN	1	0 1	
PIN	1	'0' – '9'	
SIM PIN Lock	1	0 1	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
OWH	3	OWH	OWH
Mode	1	0 1 2 3	
Day of Work	<=2	0 – 7F	
Working Hours Start1	4	HHMM	
Working Hours End1	4	HHMM	
Working Hours Start2	4	HHMM	
Working Hours End2	4	HHMM	
Reserved	0		
Reserved	0		
Digital Input ID	1	0 4	
Digital Output ID	1	0 – 4	

Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
DOG	3	DOG	DOG
Mode	1	0 1 2	
Ignition Frequency	<=3	10 – 120min	
Interval	<=2	1 – 30	
Time	4	HHMM	
Reserved	0		
Report Before Reboot	1	0 1	
Input ID	1	0 2 3	
Reserved	0		
GSM Interval	4	0 5-1440 min	
PDP Interval	4	0 5-1440 min	
Reserved	0		
MAI	3	MAI	MAI
Analog Input ID1	1	1	1
Mode	1	0 1 2	
Min Threshold	<=4	250 – 2700 mV	
Max Threshold	<=4	250 – 2700 mV	
Sample Period	<=2	0 1 – 12(× 2s)	
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(× 100ms)	
Toggle Times	<=3	0 – 255	

Sync with FRI	1	0 1	
Analog Input ID2	1	2	2
Mode	1	0 1 2	
Min Threshold	≤ 4	250 – 2700 mV	
Max Threshold	≤ 4	250 – 2700 mV	
Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Sync with FRI	1	0 1	
Analog Input ID3	1	3	3
Mode	1	0 1 2	
Min Threshold	≤ 4	250 – 2700 mV	
Max Threshold	≤ 4	250 – 2700 mV	
Sample Period	≤ 2	0 1 – 12($\times 2s$)	
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100ms$)	
Toggle Times	≤ 3	0 – 255	
Sync with FRI	1	0 1	
Reserved	0		
Reserved	0		
Reserved	0		
IDL	3	IDL	IDL
Mode	1	0 1	
Time to Stationary	1	1 – 5 min	
Time to Movement	1	1 – 5 min	

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100\text{ms}$)	
Toggle Times	≤ 3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
HBM	3	HBM	HBM
HBM Enable	1	0 1	
High Speed	≤ 3	100 – 400km/h	
ΔV_{hb}	≤ 3	0 – 100km/h	
ΔV_{ha}	≤ 3	0 – 100km/h	
Reserved	0		
Medium Speed	≤ 3	100 – 400km/h	
ΔV_{mb}	≤ 3	0 – 100km/h	
ΔV_{ma}	≤ 3	0 – 100km/h	
Reserved	0		
Reserved	0		
ΔV_{lb}	≤ 3	0 – 100km/h	
ΔV_{la}	≤ 3	0 – 100km/h	
Reserved	0		
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	≤ 3	0 – 255($\times 100\text{ms}$)	
Toggle Times	≤ 3	0 – 255	

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
HMC	3	HMC	HMC
Hour Meter Enable	1	0 1	
Initial Hour Meter Count	11	00000:00:00-99999:00:00	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
WLT	3	WLT	WLT
Call Filter	1	0 1 2 3	
Phone number 1	<=20		
Phone number 2	<=20		
Phone number 3	<=20		
Phone number 4	<=20		
Phone number 5	<=20		
Phone number 6	<=20		
Phone number 7	<=20		
Phone number 8	<=20		
Phone number 9	<=20		
Phone number 10	<=20		
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
BCS	3	BCS	BCS
Input ID2	1	2	2
Phone Number	<=20		
Hang-up Call	1	0 1	
Input ID3	1	3	3
Phone Number	<=20		
Hang-up Call	1	0 1	
Input ID4	1	4	4
Phone Number	<=20		
Hang-up Call	1	0 1	
Microphone	<=2	0 – 10	
Speaker	1	0 – 7	
Send Position	1	0 1	
Output ID	1	0 – 4	
Output Status	1	0 1	
Duration	<=3	0 – 255(×100ms)	
Toggle Times	<=3	0 – 255	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
URT	3	URT	URT
Working Mode	1	0 1 2 3	0
Baudrate Index	<=2	1 – 12	12
Data Bits	1	7 – 8	8
Stop Bits	1	1 – 3	1
Parity Bits	1	0 – 4	0
Sleep Enable	1	0 1	0
Input ID of Wakeup	0	0 2	0

Digit Fuel Sensor Type	1	0 - 2	0
Reserved	0		
JDC	3	JDC	JDC
Mode	1	0 1	0
Signal Threshold	<=3	0-255	10
C1 Threshold	<=3	0 – 255	40
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 4	0
Output Status	1	0 1	
Duration	<=3	0~255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
HRM	3	HRM	HRM
Reserved	0		
Reserved	0		
ACK Mask	1	'0' – '9' 'a' – 'f' 'A' – 'F'	EF
Response Mask	4	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFFFFBF
Event Mask	4	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFFFFBF
Information Mask	2	'0' – '9' 'a' – 'f' 'A' – 'F'	FF7D
HBD Mask	1	'0' – '9' 'a' – 'f' 'A' – 'F'	80
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
EFS	3	EFS	EFS
Reserved	0		
Reserved	0		

Reserved	0		
Ex Fuel Sensor Delay	≤ 3	0 – 600 sec	30
Ex Fuel Lost Alarm	≤ 2	0 1 – 50 %	10
Reserved	0		
Ex Unsolicited Enable	1	0 1	0
Ex Detect Frequency	3	5 – 600 sec	10
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IDA	3	IDA	IDA
enable	1	0 1	0
ID number 1	≤ 2		
⋮			
ID number 20	≤ 2		
Timeout after Ignition off	≤ 3	30 – 600sec	30
Report mode	1	0 1 2 3	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	1-3	1
Output Status	1	0 1	0
Duration	≤ 3	0 – 255(×100ms)	0
Toggle Times	≤ 3	0 – 255	0
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
ACD	3	ACD	ACD
ibutton timer	<=2	1 – 10(s)	1
Output ID	1	0 1 2 3 4	0
Out_status	1	0 1	0
duration	<=3	0 – 255(×100ms)	10
toggle	<=3	0 – 255	1
Temperature timer	2 3	10– 255(s)	10
Reserved			
Reserved			
Reserved			
Reserved			
PDS	3	PDS	PDS
Mode	1	0 1 2 3	0
Mask	4	0000-FFFF	0
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
JBS	3	JBS	JBS
Mode	1	0 1	0
Reserved	0		
Siren up Timer(T1)	5	1 – 65535(×100ms)	10
Siren down Timer(T2)	5	1 – 65535(×100ms)	10
Siren Alarm duration(T3)	5	1 – 65535(sec)	60
Preparing Alarm Timer(T4)	5	1 – 65535(sec)	30
Cut fuel Timer(T5)	5	1 – 65535(sec)	3600
Need Judge Motion	1	0 1	1

Sensor			
Speed Limit	3	0 – 999km/h	30
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
TMP	3	TMP	TMP
Alarm ID0	1	0	0
Mode	1	0-3	0
Sensor ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved			
Reserved			
Low Temperature	<=3	-55 – 125℃	0
High Temperature	<=3	-55 – 125℃	0
Reserved			
Reserved			
Validity	<=2	1-10	2
Send Interval	<=2	0-60	10
Reserved			
Reserved			
Output ID	1	0-4	0
Output Status	1	0 1	0
Duration	<=3	0-255(×100ms)	0
Toggle Times	<=3	0-255	0
Reserved			
Reserved			
Reserved			
Reserved			
Alarm ID1	1	1	1
Mode	1	0-3	0

Sensor ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved			
Reserved			
Low Temperature	≤ 3	-55 – 125°C	0
High Temperature	≤ 3	-55 – 125°C	0
Reserved			
Reserved			
Validity	≤ 2	1-10	2
Send Interval	≤ 2	0-60	10
Reserved			
Reserved			
Output ID	1	0-4	0
Output Status	1	0 1	0
Duration	≤ 3	0-255($\times 100\text{ms}$)	0
Toggle Times	≤ 3	0-255	0
Reserved			
Reserved			
Reserved			
Reserved			
Alarm ID2	1	2	2
Mode	1	0-3	0
Sensor ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved			
Reserved			
Low Temperature	≤ 3	-55 – 125°C	0
High Temperature	≤ 3	-55 – 125°C	0
Reserved			
Reserved			
Validity	≤ 2	1-10	2
Send Interval	≤ 2	0-60	10

Reserved			
Reserved			
Output ID	1	0-4	0
Output Status	1	0 1	0
Duration	≤ 3	0-255($\times 100\text{ms}$)	0
Toggle Times	≤ 3	0-255	0
Reserved			
Reserved			
Reserved			
Reserved			
Alarm ID3	1	3	3
Mode	1	0-3	0
Sensor ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved			
Reserved			
Low Temperature	≤ 3	-55 – 125°C	0
High Temperature	≤ 3	-55 – 125°C	0
Reserved			
Reserved			
Validity	≤ 2	1-10	2
Send Interval	≤ 2	0-60	10
Reserved			
Reserved			
Output ID	1	0-4	0
Output Status	1	0 1	0
Duration	≤ 3	0-255($\times 100\text{ms}$)	0
Toggle Times	≤ 3	0-255	0
Reserved			
Reserved			
Reserved			

Reserved			
SSR	3	SSR	SSR
Mode	1	0 1	0
Time to Stop	2	1-30 min	2
Time to Start	1	1-5 min	1
Start Speed	2	1-10 Km/h	5
Long Stop	3	0-255 min	0
Reserved			
Reserved			
Reserved			
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.3.3.5. +RESP:GTCID

After the device receives the command **AT+GTRTO** to read the ICCID of the SIM card, it will send the ICCID to the backend server by the message **+RESP:GTCID**.

➤ **+RESP:GTCID,**

Example: +RESP:GTCID,0B0203,135790246811220,,898600810906F8048812,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
ICCID	20		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.3.3.6. +RESP:GTCSQ

After the device receives the command **AT+GTRTO** to read the GSM signal level, it will send

the GSM signal level to the backend server by the message **+RESP:GTCSQ**.

➤ **+RESP:GTCSQ**,

Example: +RESP:GTCSQ,0B0203,135790246811220,,16,0,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
CSQ RSSI	<=2	0 – 31 99	
CSQ BER	<=2	0 – 7 99	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <CSQ RSSI>: The signal strength level.

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

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

3.3.3.7. +RESP:GTVER

After the device receives the command **AT+GTRTO** to get the versions (including software version and hardware version), it will send the version information to the backend server by the message **+RESP:GTVER**.

➤ **+RESP:GTVER**,

Example: +RESP:GTVER,0B0203,135790246811220,,gv200g,0100,0101,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	

Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Device Type	10	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Software Version	4	0000 – FFFF	
Hardware Version	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Device Type>: The type of the device.
- ✧ <Software Version>: The software 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**.
- ✧ <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**.

3.3.3.8. +RESP:GTBAT

After the device receives the command **AT+GTRTO** to read the power supply information, it will send the power supply information to the backend server by the message **+RESP:GTBAT**.

➤ +RESP:GTBAT,

Example: +RESP:GTBAT,0B0203,135790246811220,,1,,0,4.40,0,0,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Main Supply	1	0 1	
Reserved	0		
Backup Battery On	1	0 1	
Backup Battery VCC	<=4	0.0 – 4.5 V	
Charging	1	0 1	
LED On	1	0 1	
Send Time	14	YYYYMMDDHHMMSS	

Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.3.3.9. +RESP:GTIOS

After the device receives the command **AT+GTRTO** to get all the IO ports status, it will send the status to the backend server by the message **+RESP:GTIOS**.

➤ **+RESP:GTIOS,**

Example: +RESP:GTIOS,0B0203,135790246811220,,13000,00,00,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Analog Input VCC	<=5	0 – 28000 mV	
Digital Input	2	00 – 0F	
Digital Output	2	00 – 0F	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

3.3.3.10. +RESP:GTTMZ

After the device receives the command **AT+GTRTO** to get the time zone settings, it will send the time zone settings by the message **+RESP:GTTMZ** to the backend server.

➤ **+RESP:GTTMZ,**

Example: +RESP:GTTMZ,0B0203,135790246811220,,+0800,0,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Time Zone Offset	5	± HHMM	

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

3.3.3.11. +RESP:GTAIF

After the device receives the command **AT+GTRTO** to get the **AIF**, it will send the information by the message **+RESP:GTAIF** to the backend server. The **+RESP:GTAIF** is not support the HEX report.

➤ +RESP:GTAIF,

Example:

+RESP:GTAIF,0B0203,862170010903183,,,,,cmnet,,,898602a5121106029714,20,0,0358,10.194.113.168,211.138.180.2,211.136.17.108,,,,,20120716051300,0181\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
APN	<=40		
APN User Name	<=30		
APN Password	<=30		
Backup APN	<=40		
Backup APN User Name	<=30		
Backup APN Password	<=30		
ICCID	20		
CSQ RSSI	<=2	0 – 31 99	
CSQ BER	<=2	0 – 7 99	
Cell ID	4		
IP addr	7	0.0.0.0	
Main DNS	7	0.0.0.0	
Backup DNS	7	0.0.0.0	

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

✧ <CSQ RSSI>: The signal strength level.

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

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

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

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

✧ <Main DNS>: The main DNS server.

✧ <Backup DNS>: The backup DNS server.

3.3.3.12. +RESP:GTGSV

+RESP:GTGSV: the report for GPS level.

➤ +RESP:GTGSV,

Example:

+RESP:GTGSV,0B0203,359464036001111,,3,11,30,24,31,30,32,28,32,29,12,0,14,17,16,18,20,0,22,24,24,0,25,0,20120305101643,000F\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device name	20		
GPS level	1	0 1 2 3	
SV count	2	0-32	
Sv_id	2	> 0	

Sv_power	2	> 0	
Sv_id	2	> 0	
Sv_power	2	> 0	
.....			
Sv_id	2	> 0	
Sv_power	2	> 0	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <GPS level>: Four levels:

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

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

✧ <Sv id>: Satellite id

✧ <SV power>: Satellite power

3.3.4. Event Report

The following event reports are triggered when certain events occur.

- +RESP:GTPNA: Power on report
- +RESP:GTPFA: Power off report
- +RESP:GTMPN: The report for connecting main power supply
- +RESP:GTMPF: The report for disconnecting main power supply
- +RESP:GTBTC: Backup battery starts charging report
- +RESP:GTSTC: Backup battery stop charging report.
- +RESP:GTBPL: Backup battery low
- +RESP:GTSTT: Device motion state indication when the motion state is changed
- +RESP:GTANT: External GPS antenna status indication when the state is changed
- +RESP:GTMON: Indication of the device is being voice-monitored
- +RESP:GTPDP: GPRS connection establishment report
- +RESP:GTIGN: ignition on report
- +RESP:GTIGF: ignition off report
- +RESP:GTIDN: Enter into idling status
- +RESP:GTIDF: Leave idling status
- +RESP:GTGSM: The report for the information of the service cell and the neighbor cells.
- +RESP:GTFLA: Unusual fuel consumption alarm.
- +RESP:GTJDR: Jamming indication
- +RESP:GTTMP: Temperature alarm.
- +RESP:GTSTR: Vehicle enters into start status
- +RESP:GTSTP: Vehicle enters into stop status
- +RESP:GTLSP: Vehicle enters into long stop status.
- +RESP:GTDOS: Output status change with wave shape 1.
- +RESP:GTJDS: **Jamming detection status.**

In +RESP:GTMPN, +RESP:GTMPF, +RESP:GTBTC, +RESP:GTSTC, +RESP:GTBPL, +RESP:GTSTT, +RESP:GTANT, +RESP:GTMON, +RESP:GTIGN, +RESP:GTIGF, +RESP:GTIDN, +RESP:GTIDF, +RESP:GTFLA, +RESP:GTJDR, +RESP:GTTMP, +RESP:GTSTR, +RESP:GTSTP, +RESP:GTLSP, +RESP:GTDOS, +RESP:GTJDS event reports, the last known GPS information and the current GSM network information are involved.

- +RESP:GTPNA,
- +RESP:GTPFA,
- +RESP:GTPDP,

Example:

```
+RESP:GTPNA,0B0203,135790246811220,,20090214093254,11F0$
+RESP:GTPFA,0B0203,135790246811220,,20090214093254,11F0$
+RESP:GTPDP,0B0203,135790246811220,,20090214093254,11F0$
```

Parameter	Length(byte)	Range/Format	Default
-----------	--------------	--------------	---------

Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- +RESP:GTMPN,
- +RESP:GTMPE,
- +RESP:GTBTC,
- +RESP:GTJDR

Example:

+RESP:GTMPN,0B0203,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$

+RESP:GTMPE,0B0203,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$

+RESP:GTBTC,0B0203,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$

+RESP:GTJDR,040408,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	

MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

If the *<Mode>* set as 2 in the **AT+GTJDC** command, when jamming is detected, the device will report **+RESP: GTJDS** message.

+RESP: GTJDS,

Example: +RESP:GTJDS,040408,135790246811220,,2,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_' '?'	
Jamming Status	1	1 2	
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00

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

➤ **<Jamming Status>**: The current Jamming status of the device.

- 1: Quit the jamming.
- 2: Enter the jamming.

➤ **+RESP:GTSTC,**

Example:

+RESP:GTSTC,0B0203,135790246811220,,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Reserved	0		
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTBPL,****Example:**

+RESP:GTBPL,0B0203,135790246811220,,3.53,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 - XXFFFF, X ∈ {'A' - 'Z', '0' - '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' - '9' 'a' - 'z' 'A' - 'Z'	
Backup Battery VCC	<=4	0.0 - 4.5 V	
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 - FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTSTT,****Example:**

+RESP:GTSTT,0B0203,135790246811220,,16,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
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Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
State	2	11 12 21 22 41 42 16	
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

- 16 (Tow): The device attached vehicle is ignition off and it is towed.
- 11 (Ignition Off Rest): The device attached vehicle is ignition off and it is motionless.
- 12 (Ignition Off Motion): The device attached vehicle is ignition off and it is moving before it is treated as being towed.
- 21 (Ignition On Rest): The device attached vehicle is ignition on and it is motion less
- 22 (Ignition On Motion): The device attached vehicle is ignition on and it is moving
- 41 (Sensor Rest): The device attached vehicle is motionless without ignition signal detected
- 42 (Sensor Motion): The device attached vehicle is moving without ignition signal detected

➤ +RESP:GTANT,

Example:

+RESP:GTANT,0B0203,135790246811220,,0,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
External GPS Antenna	1	0 1 3	
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ < External GPS Antenna>: The current state of the external GPS antenna.

- 0: The external GPS antenna of the device is working.
- 1: The external GPS antenna of the device is detected in open circuit state.
- 3: The external GPS antenna of the device is in unknown state.

➤ +RESP:GTMON,

Example: +RESP:GTMON,0B0203,135790246811220,,13812341234,1,0,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default

Protocol Version	6	XX0000 – XXXFFF, $X \in \{'A' - 'Z', '0' - '9'\}$	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Stealthy Phone Number/Incoming Call Number	<=20		
MON Type	1	1 2	
Stealthy Microphone	<=2	0 – 15	5
Stealthy Speaker	1	0 – 7	0
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Stealthy Phone Number/Incoming Call Number>: If <MON Type> is set to 1, <Stealthy Phone Number> set by **AT+GTMON** will be filled in this field; if <MON Type> is set to 2, the number of incoming call which launches voice monitoring will be filled in this field.
- ✧ <MON Type>: The type of voice monitoring. MON type has two meanings as below:
 - 1: current call is an outgoing call for voice monitoring.
 - 2: current call is an incoming call for voice monitoring.
- ✧ <Stealthy Microphone>: The volume of stealthy microphone.

➤ **+RESP:GTIGN,****Example:**

+RESP:GTIGN,0B0203,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,,20090214093254,11F0\$

+RESP:GTIGN,0B0203,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,12345:12:34,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Duration of Ignition Off	<=6	0 – 999999 sec	
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	
Mileage	<=9	0.0 – 4294967.0 km	
Hour Meter Count	11	HHHHH:MM:SS	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

✧ *<Hour Meter Count>*: If hour meter counter function is enabled by the command

AT+GTHMC, total hours meter counted when engine is on will be reported in this field. If the function is disabled, this field will be reserved. It is formatted with 5 hour digits and 2 minute digits and 2 second digits and ranges from 00000:00:00– 99999:00:00.

➤ **+RESP:GTIGF,**

Example:

+RESP:GTIGF,0B0203,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,,20090214093254,11F0\$

+RESP:GTIGF,0B0203,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,12345:12:34,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Duration of Ignition On	<=6	0 – 999999 sec	
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	
Mileage	<=9	0.0 – 4294967.0 km	
Hour Meter Count	11	HHHHH:MM:SS	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	

Tail Character	1	\$	\$
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- ✧ <Duration of Ignition On>: Duration since last time the ignition is on. If greater than 999999 seconds, report as 999999 seconds.
- ✧ <Hour Meter Count>: If hour meter counter function is enabled by the command **AT+GTHMC**, total hours meter counted when engine is on will be reported in this field. If the function is disabled, this field will be filled with '00'. It is formatted with 5 hour digits and 2 minute digits and 2 second digits and ranges from 00000:00:00– 99999:00:00.

➤ **+RESP:GTIDN,**

Example:
+RESP:GTIDN,0B0203,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Reserved	0		
Reserved	0		
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Mileage	<=9	0.0 – 4294967.0 km	
Send Time	14	YYYYMMDDHHMMSS	

Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTIDE,****Example:**

+RESP:GTIDE,0B0203,135790246811220,,22,300,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Motion State	2	11 12 16 22	
Duration of Idling Status	<=6	0 – 999999 sec	
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Mileage	<=9	0.0 – 4294967.0 km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ *<Motion State>*: The current motion state when the vehicle leaves idling status.

✧ *<Duration of Idling Status>*: The time that the vehicle has been in idling status. If greater

than 999999 seconds, report as 999999 seconds.

+RESP:GTGSM

Example: +RESP:GTGSM,0B0203,135790246811220,FRI,0460,0000,1878,0871,20,,0460,0000,1878,0152,16,,,,,,,,,,,,,,,,,,,,,0460,0000,1878,0873,57,00,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A'-'Z','0'-'9'}	
Unique ID	15	IMEI	
Fix Type	3	SOS RTL LBC FRI GIR TO W ERI	
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	0-63	
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	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ <Fix Type> : A string to indicate what kind of GPS fixing this cell information is for.
- "SOS" This cell information is for SOS requirement.
 - "RTL" This cell information is for RTL requirement.
 - "LBC" This cell information is for LBC requirement.
 - "FRI" This cell information is for FRI requirement.
 - "GIR" This cell information is for sub command "C" in AT+GTRTO command.
 - "TOW" This cell information is for TOW requirement.

“ERI” This cell information is for ERI requirement.

- ✧ $\langle MCC(i) \rangle$: MCC of the neighbor cell i (i is the index of the neighbor cell).
- ✧ $\langle MNC(i) \rangle$: MNC of the neighbor cell i .
- ✧ $\langle LAC(i) \rangle$: LAC in hex format of the neighbor cell i .
- ✧ $\langle Cell\ ID(i) \rangle$: Cell ID in hex format of the neighbor cell i .
- ✧ $\langle RX\ Level(i) \rangle$: The signal strength of the neighbor cell i . This parameter is a 6-bit coded in 1 dB steps:
 - 0: -110 dBm
 - 1 to 62: -109 to -48 dBm
 - 63: -47 dBm
- ✧ $\langle MCC \rangle$: MCC of the service cell.
- ✧ $\langle MNC \rangle$: MNC of the service cell.
- ✧ $\langle LAC \rangle$: LAC in hex format of the service cell.
- ✧ $\langle Cell\ ID \rangle$: Cell ID in hex format of the service cell.
- ✧ $\langle RX\ Level \rangle$: The signal strength of the service cell.

Note:

1. It probably includes only several neighbor cells' (even no neighbor cell) information. If some neighbor cell wasn't find, all the fields of the neighbor cell will be empty.
2. "ffff" in the field of $\langle LAC(i) \rangle$, $\langle Cell\ ID(i) \rangle$ means the terminal doesn't know the value.
3. This message cannot be sent via SMS.

The device will record the last fuel level measured before ignition off. Next time, when ignition on again, the device will calculate the difference between the first fuel level measured after ignition on and the previous saved value. If the difference is greater than $\langle Fuel\ Lost\ Alarm \rangle$ in command **AT+GTEFS**, then there is an unusual fuel consumption happened. It will report the event message **+RESP:GTFLA** as an alarm to the backend server.

➤ **+RESP:GTFLA**

Example:			
+RESP:GTFLA,0B0203,135790246811220,,2,92,70,0,4,3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, $X \in \{'A' - 'Z', '0' - '9'\}$	
Unique ID	15	IMEI	
Device Name	≤ 20	'0' – '9' 'a' – 'z' 'A' – 'Z' ' ' ' _'	
Input ID	1	0 1 2	
Ignition Off Fuel Level	≤ 4	0 - 100	

Ignition On Fuel Level	<=4	0 - 100	
GPS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 – 999.9 km /h	
Heading	<=3	0 – 359	
Altitude	<=8	(-)xxxxx.x m	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
GPS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- ✧ < Input ID>: ID of the input to which the fuel sensor is connected to, 0 means connected with serial port.
- ✧ <Ignition Off Fuel Level>: The fuel level saved before last ignition off.
- ✧ <Ignition On Fuel Level>: The fuel level after current ignition on.

➤ +RESP:GTTMP

Example:

```
+RESP:GTTMP,04040B,862170013467608,NMX_Beta,,0,31,1,0,0,4,0,2,2,121.390957,31.164
567,20130115083120,0460,0000,1877,0873,00,0,0,00000:00:00,2791,2639,2691,09,09,,,,28967
B41040000F1,,25,20130115163122,01AA$
```

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=10	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Reserved	0		
Analog Input VCC	<=5	0 – 28000 mV	

Report ID/Report Type	2	X(0-3)X(0-1)	
Number	<=2	0 – 15	
GPS Accuracy	<=2	0	
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	
Mileage	<=9	0.0 – 4294967.0 km	
Hour Meter Count	11	HHHHH:MM:SS	
Multi Analog VCC1	<=4	250~3000 mV	
Multi Analog VCC2	<=4	250~3000 mV	
Multi Analog VCC3	<=4	250~3000 mV	
Digital Input	2	00 – 0F	
Digital Output	2	00 – 0F	
Reserved	0		
Reserved	0		
Reserved	0		
Temperature Sensor device ID	16	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved	0		
Temperature Sensor device DATA	<=3	-55 – 125℃	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	

Tail Character	1	\$	\$
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- ✧ *<Report ID/Report Type>*: The report ID and the type of the report type in hex format. 4 high bits mean report ID and 4 low bits means report type.

Report ID:

- ✧ The ID of temperature alarm in the report message **+RESP:GTTMP**. The range is 0-3.

Report type:

- ✧ In the message of temperature alarm **+RESP:GTTMP**
 0: Outside of the predefined temperature range.
 1: Inside of the predefined temperature range.

- ✧ *<Temperature Sensor device ID>*: The ID of the temperature sensor.

- ✧ *<Temperature Sensor device DATA>*: The current temperature the sensor detected.

➤ **+RESP:GTSTR,**

➤ **+RESP:GTSTP,**

➤ **+RESP:GTLSP,**

Example:

+RESP:GTSTR,060100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0\$

+RESP:GTSTP,060100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0\$

+RESP:GTLSP,060100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' ' ' ' _ '	
Reserved	0		
Reserved	0		
GPS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 – 999.9 km /h	
Heading	<=3	0 – 359	
Altitude	<=8	(-)xxxxx.x m	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	

GPS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Mileage	<=9	0.0 – 4294967.0 km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTDOS****Example:**

+RESP:GTDOS,04040E,862170014697104,,2,1,0,0,1,0,61.3,117.201362,31.832962,20130812 114537,0460,0000,5663,5A02,00,20130812114538,0047\$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Wave1 output id	1	1 – 4	
Wave1 output active	1	0 1	
GPS Accuracy	<=2	0	0, Last known
Speed	<=5	0.0 – 999.9 km /h	
Heading	<=3	0 – 359	
Altitude	<=8	(-)xxxxx.x m	
Longitude	<=11	(-)xxx.xxxxxx	
Latitude	<=10	(-)xx.xxxxxx	
GPS UTC Time	14	YYYYMMDDHHMMSS	
MCC	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	

Cell ID	4	XXXX	
Reserved	2	00	00
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

- <Wave1 output id>: ID of the output with wave shape 1.
- <Wave1 output active>: The output status with wave shape 1.

3.3.5. Buffer Report

If the buffer report function is enabled by command **AT+GTSRI**, the terminal will save the report messages in a local buffer when the following occurs.

- ✧ GSM network is not available
- ✧ Failed to activate GPRS context for the TCP or UDP connection.
- ✧ Failed to establish the TCP connection with the backend server.

These messages will be sent to the backend server when connection to the server recovers again. The terminal can buffer up to 3000 messages (160 bytes per message).

Detailed information about buffer report is listed below.

- ✧ Only **+RESP** messages are buffered except that **+RESP:GTALL** and **+RESP:GTALM** is not buffered.
- ✧ In the buffer report, the original header string “**+RESP**” is replaced by “**+BUFF**” while keeps the other content untouched including the original sending time and count number.
- ✧ Buffered messages will be sent only via GPRS by TCP or UDP protocol. They cannot be sent via SMS. If the current report mode is forcing on SMS, the buffered messages will be sent via TCP short connection.
- ✧ The buffered messages will be sent after the other normal messages sending if *<Buffer Mode>* in **AT+GTSRI** is set to 1.
- ✧ The buffered messages will be sent before the other normal messages sending if *<Buffer Mode>* in **AT+GTSRI** is set to 2. The SOS message has the highest priority and is sent before the buffered messages.

Example:

The following is an example of the buffered message:

+BUFF::GTFRI,0B0203,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,12345:12:34,,,,,,,,,20090214093254,11F0\$

3.3.6. Transparent Data Transmission

The device supports to transparently transfer data between the backend server and the peripheral device connected to its second serial port. GV200 supports bi-directional data transmission. In both directions, the data is transparent to the device.

a) Transfer data from the peripheral device to the backend server

According to the *<working mode>* of the command **AT+GTURT**, there are two ways for the peripheral device communicates with GV200.

1. If the peripheral device supports **AT+GTDAT** command, it can transfer data via this command. The peripheral device can send command **AT+GTDAT** with the data to the serial port. According to the *<command type>* of **AT+GTDAT**, The device wrap the corresponding data format into backend server with **+RESP: GTDAT** message either in short format or in long format.

2. GV200 support to transfer data for specific RFID card reader connected to its second serial port. The data from the RFID card reader is sent to the backend server with **+RESP: GTIDA** message in long format.

b) Transfer data from the backend server to the peripheral device

If the backend server needs to send data to the peripheral device, it can send command **AT+GTDAT** with the data to GV200 and GV200 will pick out the pure data and send it to the second serial port. Thus the peripheral device can get the data from the serial port.

Data to the backend server

➤ **+RESP:GTDAT(Short Format),**

Example: +RESP:GTDAT, 0B0203,135790246811220,,data,20111222122137,0017\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Data to the Backend Server	<=100	ASCII Code	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

➤ **+RESP:GTDAT (Long Format)**

Example: +RESP:GTDAT,0B0203,135790246811220,,3,,,1645026150,0,0.5,0,29.4,121.390923,31.164295,20111222022935,0460,0000,1806,2142,00,,,,,20111222022938,001A\$			
--	--	--	--

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'	
Report Type	1	0 1 2 3	
Reserved	0		
Reserved	0		
Data to the Backend Server	<=100	ASCII Code	
GPS Accuracy	<=2	0	0, Last known
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	4	0XXX	
MNC	4	0XXX	
LAC	4	XXXX	
Cell ID	4	XXXX	
Reserved	2	00	00
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

◇ <Report Type>: the value of <Report Type> refer to <Working Mode> of AT+GTURT.

- 0: Disable the second serial port.
- 1: AT+GTDAT.

- 2: Reserve.
- 3: RFID (special).

Data to the second serial port starts with a new line and is terminated with '\r\n'.

Example:
data to the serial port

3.3.7. Report Google Maps Hyperlink

If <Location By Call> in command **AT+GTCFG** is set to 2, the device will send its current location position to the incoming call via SMS with Google Maps hyperlink.

➤ Google Maps hyperlink

Example:

gv200g:

<<http://maps.google.com/maps?q=31.222073,121.354335>

F1 D2009/01/01T00:00:00>

Parameter	Length(byte)	Range/Format	Default
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Google Maps Hyperlink Header	30	http://maps.google.com/maps?q=	http://maps.google.com/maps?q=
Latitude	<=10	(-)xx.xxxxxx	
Longitude	<=11	(-)xxx.xxxxxx	
GPS Fix	<=3	F0 F1 – F50	
GPS UTC Time	20	DYYYY/MM/DDTHH:MM:SS	

✧ <GPS Fix>: The accuracy of the location information. F0 means no GPS fix.

3.4. Heartbeat

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

➤ **+ACK:GTHBD**

Example: +ACK:GTHBD,0B0203,135790246811220,,20100214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	≤20	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

➤ **+SACK:GTHBD**

Example: +SACK:GTHBD,0B0203,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

3.5. Server Acknowledgement

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

➤ **+SACK:**

Example: +SACK:11F0\$			
Parameter	Length(byte)	Range/Format	Default
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

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

4. HEX Format Report Message

From this version, the @Tracker protocol starts to support report messages in HEX format. For all the commands, they are still using the ASCII format as described above. By default the device using ASCII format report messages. The backend server could use **AT+GTQSS** or **AT+GTSRI** command to enable the HEX format report messages by setting the *<Protocol Format>* to 1.

All the report messages are sorted into 5 categories and messages in the same category use the same header string, including acknowledgement to command (**+ACK**), location report (**+RSP**), event report (**+EVT**), information report (**+INF**) and the heartbeat data (**+HBD**).

The composition of the HEX report message could be customized by **AT+GTHRM** command. The actual length of each HEX report message varies depending on set some mask in **AT+GTHRM**.

The device uses CRC16 method to calculate the checksum of the report data and appends the checksum to the end of the data. The backend server could use this checksum to verify the integrity of the received data.

At the end of each HEX report message, the device uses 0x0D and 0x0A to mark the end.

The HEX report messages are transmitted in network byte order (big-endian).

4.1. Hex Report Mask

AT+GTHRM command consists of <+ACK Mask>, <+RSP Mask>, <+EVT Mask>, <+INF Mask> and <+HBD Mask> to control the composition of the corresponding HEX report message. In each HEX report message, the corresponding mask for the report is involved to indicate which part is reported.

➤ **AT+GTHRM=**

Example: AT+GTHRM=gv200g,,FF,FFFFFFFF,FFFFFFFF,FFFF,FE,,,,,0018\$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv200g
Reserved	0		
Reserved	0		
+ACK Mask	1	00 – FF	FF
+RSP Mask	4	00000000 – FFFFFFFF	FFFFFFFF
+EVT Mask	4	00000000 – FFFFFFFF	FFFFFFFF
+INF Mask	2	0000 – FFFF	FFFF
+HBD Mask	1	00 – FF	FF
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	\$	\$

✧ <+ACK Mask>: Component mask of the acknowledgement received.

Bit	Item to Mask
Bit 7	Reserved
Bit 6	<Count Number>
Bit 5	<Send Time>
Bit 4	<Device Name>
Bit 3	<Firmware Version>

Bit 2	<Protocol Version>
Bit 1	<Device Type>
Bit 0	<Length>

✧ <+RSP Mask>: Component mask of the location report message.

Bit	Item to Mask
Bit 31	Reserved
Bit 30	Reserved
Bit 29	Reserved
Bit 28	Reserved
Bit 27	Reserved
Bit 26	Reserved
Bit 25	Reserved
Bit 24	<RFID>
Bit 23	<Total Hour Meter Count>
Bit 22	<Current Hour Meter Count>
Bit 21	<Total Mileage>
Bit 20	<Current Mileage>
Bit 19	<GPS Antenna And Satellites Information>
Bit 18	<Motion Status>
Bit 17	<Digital IO Status>
Bit 16	<Analog Input3 Voltage>
Bit 15	<Analog Input2 Voltage>
Bit 14	<Analog Input1 Voltage>
Bit 13	Reserved
Bit 12	<External Power Supply Voltage>
Bit 11	Reserved
Bit 10	<Firmware Version>
Bit 9	<Protocol Version>
Bit 8	<Device Type>

Bit 7	<Length>
Bit 6	<Device Name>
Bit 5	<Count Number>
Bit 4	<Send Time>
Bit 3	<MCC/MNC/LAC/Cell ID/Reserved>
Bit 2	<Altitude>
Bit 1	<Azimuth>
Bit 0	<Speed>

✧ <+EVT Mask>: Component mask of the event report message.

Bit	Item to Mask
Bit 31	Reserved
Bit 30	Reserved
Bit 29	Reserved
Bit 28	Reserved
Bit 27	Reserved
Bit 26	Reserved
Bit 25	Reserved
Bit 24	<RFID>
Bit 23	<Total Hour Meter Count>
Bit 22	<Current Hour Meter Count>
Bit 21	<Total Mileage>
Bit 20	<Current Mileage>
Bit 19	<GPS Antenna And Satellites Information>
Bit 18	<Motion Status>
Bit 17	<Digital IO Status>
Bit 16	<Analog Input3 Voltage>
Bit 15	<Analog Input2 Voltage>
Bit 14	<Analog Input1 Voltage>
Bit 13	Reserved

Bit 12	<External Power Supply Voltage>
Bit 11	Reserved
Bit 10	<Firmware Version>
Bit 9	<Protocol Version>
Bit 8	<Device Type>
Bit 7	<Length>
Bit 6	<Device Name>
Bit 5	<Count Number>
Bit 4	<Send Time>
Bit 3	<MCC/MNC/LAC/Cell ID/Reserved>
Bit 2	<Altitude>
Bit 1	<Azimuth>
Bit 0	<Speed>

- ✧ <+INF Mask>: Component mask of the information report message. Bit 8 to Bit 15 indicate which group of items is included when reporting message other than +RESP:GTINF.

Bit	Item to Mask
Bit 15	+RESP:GTGSM
Bit 14	+RESP:GTTMZ
Bit 13	+RESP:GTCSQ
Bit 12	+RESP:GTCID
Bit 11	+RESP:GTBAT
Bit 10	+RESP:GTGPS
Bit 9	+RESP:GTIOS
Bit 8	+RESP:GTVER
Bit 7	Reserved
Bit 6	<Count Number>
Bit 5	<Send Time>
Bit 4	<Firmware Version>
Bit 3	<Protocol Version>
Bit 2	<Device Type>

Bit 1	<Device Name>
Bit 0	<Length>

✧ <+HBD Mask>: Component mask of the heartbeat data..

Bit	Item to Mask
Bit 7	<UID>
Bit 6	<Count Number>
Bit 5	<Send Time>
Bit 4	<Device Name>
Bit 3	<Firmware Version>
Bit 2	<Protocol Version>
Bit 1	<Device Type>
Bit 0	<Length>

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

➤ **+ACK:GTHRM,**

Example: +ACK:GTHRM,0B0203,135790246811220,,0019,20090214093254,11F0\$			
Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXXFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	\$	\$

4.2. Acknowledgement +ACK

➤ +ACK,

Example:

2B 41 43 4B 22 FB 22 01 0C 01 67 76 32 30 30 00 00 00 00 18 07 DC 01 1E 09 28 31 00 12
D9 AE 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+ACK	+ACK
Message Type	1		
Report Mask	1	00 – FF	
Length	1		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
ID	1		
Serial Number	2	0000 – FFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ <Message Type>: The ID of the command that the device received.

Command	ID
AT+GTBSI	0
AT+GTSRI	1
AT+GTQSS	2
AT+GT CFG	4
AT+GTTOW	5
AT+GTAIS	6
AT+GTDIS	7
AT+GTOUT	8
AT+GTIOB	9

AT+GTTMA	10
AT+GTFRI	11
AT+GTGEO	12
AT+GTSPD	13
AT+GTSOS	14
AT+GTMON	15
AT+GTRTO	16
AT+GTUPD	21
AT+GTPIN	22
AT+GTDAT	23
AT+GTOWH	24
AT+GTDOG	25
AT+GTMAI	26
AT+GTIDL	27
AT+GTHBM	28
AT+GTHMC	29
AT+GTURT	31
AT+GTWLT	32
AT+GTBCS	33
AT+GTHRM	34
AT+GTJDC	35
AT+GTEFS	38
AT+GTACD	39
AT+GTPDS	40
AT+GTIDA	44
AT+GTJBS	45
AT+GTTMP	46
AT+GTSSR	47

- ✧ <Report Mask>: It refer to the <+ACK Mask> in **AT+GTHRM**.
- ✧ <Length>: The whole length of the acknowledgement message header to the tail characters.
- ✧ <Unique ID>: If the Bit 4 of <+ACK Mask> is 0, IMEI of the device as the unique ID of the

device. IMEI is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

IMEI	13	57	90	24	68	11	22	0
HEX	0D	39	5A	18	44	0B	16	00

If the Bit 4 of *<+ACK Mask>* is 1, use the device name as the unique ID of the device. The device name refer to the *<Device Name>* in **AT+GTCFG**. Device name is 8-bytes string, if the length of the *<Device Name>* is more than 8 bytes, it will only acquire the first 8 bytes. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the rest of bytes set as 0.

Device Name	g	v	2	0	0			
HEX	67	76	32	30	30	00	00	00

- ✧ *<ID>*: Sub-command ID of **AT+GTRTO** or the ID of **AT+GTIOB**, **AT+GTGEO** and **AT+GTTMP**, for others, set to 0.
- ✧ *<Send Time>*: The local time to send the acknowledgement message. Total 7 bytes. The first 2 bytes are for year, the rest 5 bytes for month, day, hour, minute and second respectively.

Send Time	2011		01	31	06	29	11
HEX	07	DB	01	1F	06	1D	0B

- ✧ *<Checksum>*: The CRC16 checksum for data from *<Message Type>* to *<Count Number>*.

4.3. Location Report +RSP

Location report messages including **+RESP:GTTOW**, **+RESP:GTAIS**, **+RESP:GTDIS**, **+RESP:GTIOB**, **+RESP:GTFRI**, **+RESP:GTGEO**, **+RESP:GTSPD**, **+RESP:GTRTL**, **+RESP:GTDOG**, **+RESP:GTIGL**, **+RESP:GTHBM** and **+RESP:GTMAI** use this format.

➤ **+RSP,**

Example:

```
2B 52 53 50 0B FF FF FF BF 00 68 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00  
00 00 0C 00 41 18 00 01 01 00 00 00 00 00 00 0F 07 3C 46 8F 01 DB 89 BF 07 DC 01 1E 0A 08  
1D 04 60 00 00 18 78 08 73 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
07 DC 01 1E 0A 08 1E 00 22 5D 1A 0D 0A
```

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+RSP	+RSP
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
Report ID / Report Type	1		
Number	1	1 – 15	

GPS Accuracy	1	0 1 – 50	
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ <Message Type>: The ID of location report message.

Command	ID
+RESP:GTTOW	1
+RESP:GTLBC	3
+RESP:GTAIS	4
+RESP:GTDIS	5
+RESP:GTIOB	6
+RESP:GTFRI	7
+RESP:GTGEO	8
+RESP:GTSPD	9

+RESP:GTSOS	10
+RESP:GTRTL	11
+RESP:GTD OG	12
+RESP:GTMAI	13
+RESP:GTHBM	14
+RESP:GTIGL	15
Reserved	16
Reserved	17
+RESP:GTIDA	18
+RESP:GTERI	19

- ✧ **<Report Mask>**: It refer to the **<+RSP Mask>** in **AT+GTHRM**.
- ✧ **<Unique ID>**: If the Bit 6 of **<+RSP Mask>** is 0, IMEI of the device as the unique ID of the device. IMEI is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

IMEI	13	57	90	24	68	11	22	0
HEX	0D	39	5A	18	44	0B	16	00

If the Bit 6 of **<+RSP Mask>** is 1, use the device name as the unique ID of the device. The device name refer to the **<Device Name>** in **AT+GTCFG**. Device name is 8-bytes string, if the length of the **<Device Name>** is more than 8 bytes, it will only acquire the first 8 bytes. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the rest of bytes set as 0.

IMEI	g	v	2	0	0			
HEX	67	76	32	30	30	00	00	00

- ✧ **<GNSS mode / Satellite Number>**: The first 2 bits of the high nibble is for **<GNSS mode>**, the last 2 bits of the high nibble is for external GPS antenna status and the low nibble is for **<Satellite Number>**.
- ✧ **<Report ID / Report Type>**: The high nibble is for **<Report ID>** and the low nibble is for **<Report Type>**
- ✧ **<Speed>**: Total 3 bytes. The first 2 two bytes are for the integer part of the speed and the last byte is for the fraction part. The fraction part only has 1 digit.
- ✧ **<Longitude>**: The longitude of the current position. Total 4 bytes. Convert the longitude to an integer with 6 implicit decimals and report this integer in HEX format. If the value of the longitude is negative, it is represented in 2's complement format. If it's out of working time, the longitude set as 88888888.

Longitude 121.390847				
HEX	07	3C	46	FF

- ✧ <Latitude>: The latitude of the current position. Total 4 bytes. Convert the latitude to an integer with 6 implicit decimals and report this integer in HEX format. If the value of the latitude is negative, it is represented in 2's complement format. If it's out of working time, the Latitude set as 88888888.

✧

Latitude 31.164503				
HEX	01	DB	88	57

- ✧ <GPS UTC Time>: The UTC time from the GPS chip. Total 7 bytes. The first 2 bytes are for year, the rest 5 bytes for month, day, hour, minute and second respectively.

GPS UTC Time	2011	07	14	08	24	13
HEX	07	DB	07	0E	08	18

- ✧ <Current Mileage>: Total 3 bytes. The first 2 bytes are for the integer part of the current mileage and the last byte is for the fraction part. The fraction part only has 1 digit.

Current Mileage	0	0
HEX	00	00

- ✧ <Total Mileage>: Total 5 bytes. The first 4 bytes are for the integer part of the total mileage and the last byte is for the fraction part. The fraction part only has 1 digit.

Total Mileage	0	0
HEX	00	00

- ✧ <Total Hour Meter Count>: Total 6 bytes. The first 4 bytes are the hour part, The fifth byte is the minute part. The sixth byte is the second part.

Total Hour Meter Count	0	0	0	0
HEX	00	00	00	00

- ✧ <RFID>: it consist of the special card id. Total 4 bytes.

RFID	0
HEX	00

Location report message for +RESP:GTLBC use below format

Example:

2B 52 53 50 03 FF FF FF BF 00 68 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 0C 00 41 18 00 70 02 15 44 50 29 3F 01 01 00 00 00 00 00 00 0F 07 3C 46 8F 01 DB 89

BF 07 DC 01 1E 0A 08 1D 04 60 00 00 18 78 08 73 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DC 01 1E 0A 08 1E 00 22 5D 1A 0D 0A			
Parameter	Length(byte)	Range/Format	Default
Message Header	4	+RSP	+RSP
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
Report ID / Report Type	1		
Number Length / Number Type	1		
Phone Number	<=10		
Number	1	1 – 15	
GPS Accuracy	1	0 1 – 50	
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		

Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

- ✧ *<Number Length / Number Type>*: The high nibble is for *<Number Length>* and the low nibble is for *<Number Type>*. *<Number Length>* is the number of byte used to represent the phone number including this byte. *<Number Type>* indicates if there is a '+' sign before the phone number. 1 means has the sign, 0 means no sign.

	Number Length	Number Type
HEX	7	0

- ✧ *<Phone Number>*: Not more than 10 bytes. In each byte, use the high nibble and low nibble to represent one digit of the phone number respectively. If the last low nibble has no digit to represent, fill in 0xF.

Phone Number	02	15	44	50	29	3
02154450293						
HEX	02	15	44	50	29	3F

Location report message for +**RESP:GTSOS** use below format

Example:

2B 52 53 50 0A FF FF FF BF 00 68 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 0C 00 41 18 00 55 01 01 00 00 00 00 00 00 0F 07 3C 46 8F 01 DB 89 BF 07 DC 01 1E 0A

08 1D 04 60 00 00 18 78 08 73 00 07 DC 01 1E 0A 08 1E 00 22 5D 1A 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+RSP	+RSP
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
Report ID / Report Type	1		
Mic Vol / Speaker Vol	1		
Number	1	1 – 15	
GPS Accuracy	1	0 1 – 50	
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		

GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

- ✧ <Mic Vol / Speaker Vol>: the high nibble express current microphone volume and low nibble express current speaker volume.

Location report message for +RESP:GTIDA use below format

➤ +RSP,

Example:

2B 52 53 50 12 FF FF FF BF 00 67 0B 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 0C 00 41 18 FF FF FF FF 01 00 01 01 00 00 00 00 00 00 0F 07 3C 46 8F 01 DB 89 BF 07 DC 01 1E 0A 08 1D 04 60 00 00 18 78 08 73 00 07 DC 01 1E 0A 08 1E 00 22 5D 1A 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+RSP	+RSP
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1	0B	0B

Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
ID Length	1	4 8	
ID	<=20	'0' – '9' 'A' – 'Z'	
ID Report Type	1	0 1	
Number	1	1 – 15	
GPS Accuracy	1	0 1 – 50	
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	

Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ <ID>: The ID which is read

✧ <ID Report Type>:

1: the ID is authorized.

0: the ID is unauthorized.

Location report message for +RESP:GTERI use below format

➤ +RSP,

Example:

2B 52 53 50 13 01 FF D7 FF 00 00 00 02 00 7A 0B 04 09 13 02 67 76 32 30 30 00 00 00 00 00 00 00 00 00 00 09 00 22 15 10 02 01 28 ED 29 41 03 00 00 FD 01 02 01 9D 01 01 00 00 00 01 0C 00 60 06 FC 59 5A 01 E5 BB B7 07 DC 09 1C 08 2E 02 04 60 00 00 56 78 2D 80 07 DC 09 1C 08 2E 07 00 21 2B 4D 0D 0A

Message Header	4	+RSP	+RSP
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
ERI Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	

Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
Report ID / Report Type	1		
UART Device Type	1	0 - 99	
Digit fuel sensor Data (optional)	2	0000 – FFFF	
AC100 devices number(optional)	1	0 - 19	
1wire device ID (optional)	8		
1wiredevice TYPE(optional)	1	00 – FF	
Device Data Length (optional)	1	00 – FF	
1wire device DATA (optional)	<= 20	00000000 – FFFFFFFF	
Number	1	1 – 15	
GPS Accuracy	1	0 1 – 50	
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	

RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

- ✧ *<UART Device Type>*: Type of device which connected to the second serial port.
 - 0: No device connect
 - 1: Digit fuel sensor
 - 2: AC100 1wire bus
- ✧ *<Digit fuel sensor data>*: if bit 0 of *<ERI_mask>* in **AT+GTFRI** is enable, the yellow part will show and it include the data get from digit fuel sensor.
- ✧ *<AC100 Devices number>*: if bit 1 of *<ERI_mask>* in **AT+GTFRI** is enable, the blue part will show, the number of the devices connected to 1wire bus will report with this item. In this message it includes all the devices data on 1wire bus, and if the devices are more than 1, the blue part will repeat. 0 means no device and the blue parts will hidden.
- ✧ *<1wire Devices ID>*: means the 1wire device ID read from the device.
- ✧ *<1wire Devices TYPE>*: means the 1wire device type
 - 1: Temperature sensor.
- ✧ *<Device Data Length>*: it expresses the length of *<1wire Devices DATA>*.
- ✧ *<1wire Devices DATA>*: means the data read from the 1wire devices. For example If *<1wire Devices TYPE>* value is Temperature sensor, this means the temperature value, this value to sixteen hexadecimal display, can be multiplied by 0.0625 to get Celsius degree. If the first five bit is 1, this means below zero degrees Celsius, the hexadecimal data to take to complement and plus one , then multiplied by 0.0625 to get Celsius degree.

Note: the key word (optional) means the item is controlled by the parameter *<ERI Mask>*.

4.4. Information Report +INF

Information report messages include **+RESP:GTINF**, **+RESP:GTGPS**, **+RESP:GTCID**, **+RESP:GTCSQ**, **+RESP:GTVER**, **+RESP:GTBAT**, **+RESP:GTIOS** and **+RESP:GTTMZ**. **+RESP:GTGIR**, These messages use the same format as below, however only **+RESP:GTINF** includes all the items while others only include related information to themselves.

➤ **+INF**,

Example: 2B 49 4E 46 01 FF FE 67 76 32 30 30 00 00 00 01 04 02 0C 01 01 03 01 01 00 00 00 00 00 00 0C 00 00 41 10 21 07 DC 01 1E 09 21 35 00 01 7F BF 00 1E 02 58 80 00 00 11 6A 89 86 00 91 09 11 69 00 46 01 14 00 00 00 00 04 60 00 00 18 78 08 73 00 26 07 DC 01 1E 09 25 23 00 10 1F 27 0D 0A			
Parameter	Length (byte)	Range/Format	Default
Message Header	4	+INF	+INF
Message Type	1		
Report Mask	2	0000 – FFFF	
Length	2		
Unique ID	8	IMEI/Device Name	
Device Type	1	0B	+RESP:GTVER
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Hardware Version	2	0000 – FFFF	
MCU Version	2	0000 – FFFF	
Reserved	2	0000	
Reserved	1	00	
Analog Input1 Voltage	2		+RESP:GTIOS
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Reserved	1	00	
Reserved	2	0000	
Reserved	2	0000	
Reserved	2	0000	

Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
5V Output	1		
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	+RESP: GTGPS
Reserved	1	00	
GNSS mode Satellites Number	1		
GPS on Need / Power Saving Enable / OWH Mode / Outside Working Hour	1		
Last Fix UTC Time	7	YYYYMMD DHHMMSS	
Reserved	1	00	
FRI Discard No Fix	1	0 1	
Response Report Items Mask	2		
IGN Interval	2		
IGF Interval	2		
Reserved	4	00000000	
Reserved	1	00	
Main Supply / Backup Battery On / Charging / LED On / Backup Battery Charge Mode	1		+RESP: GTBAT
Main Supply VCC	2	0	
Backup Battery VCC	2	0 – 4500mV	
Reserved	1	00	
ICCID	10	ICCID	+RESP: GTCID
CSQ RSSI	1	0 – 31 99	+RESP: GTCSQ
CSQ BER	1	0 – 7 99	
Time Zone Offset Sign / Daylight Saving Enable	1		+RESP: GTTMZ
Time Zone Offset	2	HHMM	
GIR Trigger Type	1		+RESP:

Cell Number	1	0 – 7	GTGIR
MCC	2		
MNC	2		
LAC	2		
Cell ID	2		
Reserved	1		
RX Level	1	0-63	
Send Time	7	YYYYMMD DHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ <Message Type>: The ID of information report message.

Command	ID
+RESP:GTINF	1
+RESP:GTGPS	2
+RESP:GTCID	4
+RESP:GTCSQ	5
+RESP:GTVER	6
+RESP:GTBAT	7
+RESP:GTIOS	8
+RESP:GTTMZ	9
+RESP:GTGIR	10

✧ <Report Mask>: It refer to the <+INF Mask> in **AT+GTHRM**.

✧ <Unique ID>: If the Bit 1 of <+INF Mask> is 0, IMEI of the device as the unique ID of the device. IMEI is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

IMEI	13	57	90	24	68	11	22	0
HEX	0D	39	5A	18	44	0B	16	00

If the Bit 1 of <+INF Mask> is 1, use the device name as the unique ID of the device. The device name refer to the <Device Name> in **AT+GTCFG**. Device name is 8-bytes string, if

the length of the <Device Name> is more than 8 bytes, it will only acquire the first 8 bytes. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the rest of bytes set as 0.

IMEI	g	v	2	0	0			
HEX	67	76	32	30	30	00	00	00

- ✧ <GPS on Need / Power Saving Enable / OWH Mode / Outside Working Hour>: The highest bit, bit 7 is for <GPS on Need>, bit 6 and bit 5 is for <Power Saving Enable>, bit 4 and bit 3 are for <OWH Mode>, bit 2 is for <Outside Working Hour>, <Outside Working Hour> is used to indicate whether the device is currently outside the working hour. 1 means outside.
- ✧ <Main Supply / Backup Battery On / Charging / LED On / Backup Battery Charge Mode>: The highest bit, bit 7 is for <Main Supply> to indicate whether the external power supply is connected to the device. Bit 6 is for <Backup Battery On> to indicate enable backup battery by **AT+GTCFG**. Bit 5 is for <Charging> to indicate whether the backup battery is currently charging. Bit 4 is for <LED On> to indicate whether the LED's are turned on. Bit 0 is for <Backup Battery Charge Mode>.
- ✧ <ICCID>: ICCID is a 20-digit string. In the HEX format message, every 4 bits are used to represent one digit of the 20 digits of the ICCID.

ICCID	89	86	00	00	09	09	17	21	49	53
HEX	89	86	00	00	09	09	17	21	49	53

- ✧ <Time Zone Offset Sign / Daylight Saving Enable>: Bit 1 is for <Daylight Saving Enable> to indicate whether the daylight saving function is currently enabled. Bit 0 is for <Time Zone Offset Sign> to indicate the positive or negative of the local time offset to UTC. 1 means negative.
- ✧ <GIR Trigger Type>: A string to indicate what kind of GPS fixing this cell information is for.
 - "SOS" This cell information is for SOS requirement.
 - "RTL" This cell information is for RTL requirement.
 - "LBC" This cell information is for LBC requirement.
 - "TOW" This cell information is for TOW requirement.
 - "FRI" This cell information is for FRI requirement.
 - "GIR" This cell information is for sub command "C" in **AT+GTRTO** command.
 - "ERI" This cell information is for ERI requirement.

Fix Type	ID
SOS	1
RTL	2
LBC	3
TOW	4
FRI	5

GIR	6
ERI	7

- ✧ <Cell Number>: the <Cell Number> express have how many group of the <MCC>, <MNC>, <LAC>, <Cell ID>.

4.5. Event Report +EVT

Event report messages including +RESP:GTPNA, +RESP:GTPFA, +RESP:GTMPN, +RESP:GTMPF, +RESP:GTBTC, +RESP:GTSTC, +RESP:GTSTT, +RESP:GTPDP, +RESP:GTIDN, +RESP:GTJDR, +RESP:GTSTR, +RESP:GTSTP, +RESP:GTLSP, +RESP:GTANT use this format.

➤ +EVT,

Example:

2B 45 56 54 0A FF FF FF BF 00 67 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 00 0C 00 41 10 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 04 60 00 00 18 78 08 72 00 07 DC 01 1E 0A 08 06 00 20 7F F3 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		

Number	1	1	
GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ <Message Type>: The ID of event report message.

Command	ID
+RESP:GTPNA	1
+RESP:GTPFA	2
+RESP:GTMPN	3
+RESP:GTMPF	4
+RESP:GTBPL	6
+RESP:GTBTC	7
+RESP:GTSTC	8

+RESP:GTSTT	9
+RESP:GTANT	10
Reserved	11
+RESP:GTPDP	12
+RESP:GTIGN	13
+RESP:GTIGF	14
+RESP:GTUPD	15
+RESP:GTIDN	16
+RESP:GTIDF	17
+RESP:GTDAT	18
Reserved	19
+RESP:GTJDR	20
+RESP:GTFLA	21
+RESP:GTTMP	22
+RESP:GTSTR	23
+RESP:GTSTP	24
+RESP:GTLSP	25
Reserved	26
Reserved	27
+RESP:GTDOS	28
+RESP:GTJDS	29

- ✧ **<Report Mask>**: It refer to the **<+EVT Mask>** in **AT+GTHRM**.
- ✧ **<Unique ID>**: If the Bit 6 of **<+EVT Mask>** is 0, IMEI of the device as the unique ID of the device. IMEI is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

IMEI	13	57	90	24	68	11	22	0
HEX	0D	39	5A	18	44	0B	16	00

If the Bit 6 of **<+EVT Mask>** is 1, use the device name as the unique ID of the device. The device name refer to the **<Device Name>** in **AT+GTCFG**. Device name is 8-bytes string, if the length of the **<Device Name>** is more than 8 bytes, it will only acquire the first 8 bytes. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the rest of bytes set as 0.

IMEI	g	v	2	0	0			
HEX	67	76	32	30	30	00	00	00

Event report message +RESP:GTBPL uses this format.

➤ +EVT,

Example: 2B 45 56 54 06 FF FF FF BF 00 67 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 0C 00 41 10 00 00 01 00 04 60 00 00 18 78 08 72 00 07 DC 01 1E 0A 08 06 00 20 7F F3 0D 0A			
Parameter	Length(byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
Backup Battery VCC	2	0 – 4500 mV	
Number	1	1	

GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

Event report message +RESP:GTJDS uses this format.

➤ +EVT,

Example:

2B 45 56 54 1D 01 FF D7 FF 00 68 04 04 0E 17 06 67 76 32 30 30 2D 54 53 00 00 00 00 00 00 00 00 09 00 21 18 01 01 00 00 01 01 00 FA 00 34 06 FC 59 79 01 E5 BC 1D 07 DD 09 02 02 19 36 04 60 00 01 55 04 58 2B 00 00 1A 04 00 00 00 43 02 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DD 09 02 0A 19 38 00 59 B1 88 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		

Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1	06	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
Battery Level	1	0~100	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
External GPS Antenna Status Satellites in View	1		
Jamming Status	1	1 2	
Number	1	1	
GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	

Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

➤ **<Jamming Status>**: The current Jamming status of the device.

- 1: Quit the jamming
- 2: Enter the jamming.

Event report message **+RESP:GTIGN** and **+RESP:GTIGF** use this format. For these two messages, the **<mileage>** field will always be present in spite of the **<Report Items Mask>** setting.

➤ **+EVT**,

Example:

2B 45 56 54 0D FF FF FF BF 00 67 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 00 0C 00 41 10 00 00 00 D5 01 00 04 60 00 00 18 78 08 72 00 07 DC 01 1E 0A 08 06 00 20 7F F3 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		

Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
Duration of Ignition On or Ignition Off	4	0 – 999999 sec	
Number	1	1	
GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	

Tail Characters	2	0x0D 0x0A	0x0D 0x0A
-----------------	---	-----------	--------------

Event report message **+RESP:GTUPD** uses this format. For this message, the *<Protocol Version>* and *<Firmware Version>* will always be present in spite of the *<Report Items Mask>* setting

➤ **+EVT,**

Example:

2B 45 56 54 0F FF FF FF BF 00 67 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 00 00 0C 00 41 10 00 64 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 04 60 00 00 18 78 08 72 00 07 DC 01 1E 0A 08 06 00 20 7F F3 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		

Code	2		
Retry	1		
Number	1	1	
GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

Event report message +RESP:GTIDF uses this format.

➤ +EVT,

Example:

```
2B 45 56 54 11 FF FF FF BF 00 67 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00
00 00 0C 00 41 10 00 64 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 04 60 00 00 18 78 08 72 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

00 07 DC 01 1E 0A 08 06 00 20 7F F3 0D 0A			
Parameter	Length(byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
Duration of Idling	4		
Number	1	1	
GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		

GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

Event report message +RESP:GTDAT uses this format.

➤ +EVT,

Example:

2B 45 56 54 12 FF FF FF BF 00 67 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 00 0C 00 41 10 00 64 00 01 00 04 60 00 00 18 78 08 72 00 07 DC 01 1E 0A 08 06 00 20 7F F3 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	

Unique ID	8	IMEI	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
Data Length	2		
data			
Number	1	1	
GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	

Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ <Data length>: It express the length of <data> parameter.

Event report message **+RESP:GTFLA** uses this format.

➤ **+EVT,**

Example: 2B 45 56 54 15 FF FF FF BF 00 67 01 04 02 0C 01 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 00 0C 00 41 10 00 64 00 01 00 04 60 00 00 18 78 08 72 00 07 DC 01 1E 0A 08 06 00 20 7F F3 0D 0A			
Parameter	Length(byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12	

		0x21 0x22 0x41 0x42 0x16 0x1A	
GNSS mode Satellites Number	1		
Input ID	1	0 1 2	
Ignition Off Fuel Level	<=4	0 - 100	
Ignition On Fuel Level	<=4	0 - 100	
Number	1	1	
GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ < Input ID>: ID of the input to which the fuel sensor is connected to, 0 means connected with serial port.

Temperature Status	1	0 1	
Temperature Sensor device ID	8	'0' – '9' 'a' – 'f' 'A' – 'F'	
Reserved	1	00	00
Temperature Sensor device DATA	2	-55 – 125°C	
Number	1	1	
GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

- ✧ <Message Type>: The ID of event report message. The value is 22 in the report message +RESP:GTTMP.
- ✧ <Temperature Alarm ID>: The ID of temperature alarm.
- ✧ <Temperature Sensor device ID>: The ID of the temperature sensor.
- ✧ <Temperature Status>: The status of current temperature. 0 means outside of the predefined

temperature range. 1 means inside of the predefined temperature range.

✧ <Temperature Sensor device DATA>: The current temperature the sensor detected.

Event message +RESP:GTDOS uses this format.

✧ +EVT,

Example:

2B 45 56 54 1C 01 FF D7 FF 00 69 04 04 0E 17 03 67 76 32 30 30 00 00 00 00 00 00 00 00 00 00 00 00 00 0D 0F 21 18 01 01 01 00 00 00 00 00 00 B7 00 3B 06 FC 59 64 01 E5 BB 58 07 DD 08 0C 0B 21 19 04 60 00 00 56 63 5A 02 00 07 DD 08 0C 0B 21 1C 00 42 41 29 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+EVT	+EVT
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		04
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
External Power Supply Voltage	2		
Analog Input1 Voltage	2		
Analog Input2 Voltage	2		
Analog Input3 Voltage	2		
Digital Input Status	1	00 – 1F	
Digital Output Status	1	00 – 1F	
Motion Status	1	0x11 0x12 0x21 0x22 0x41 0x42 0x16 0x1A	
External GPS Antenna Status Satellites in View	1		
Wave1 output id	1	1 – 4	

Wave1 output active	1	0 1	
Number	1	1	
GPS Accuracy	1	0	0
Speed	3	0.0 – 999.9km/h	
Azimuth	2	0 – 359	
Altitude	2		
Longitude	4		
Latitude	4		
GPS UTC Time	7	YYYYMMDDHHMMSS	
MCC	2	0000 – FFFF	
MNC	2	0000 – FFFF	
LAC	2	0000 – FFFF	
Cell ID	2	0000 – FFFF	
Reserved	1	00	00
Current Mileage	3	0.0 – 65535.0 km	
Total Mileage	5	0.0 – 4294967.0 km	
Current Hour Meter Count	3	HHMMSS	
Total Hour Meter Count	6	HHHHHHHHMMSS	
RFID	4	00000000 – FFFFFFFF	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

4.6. Heartbeat Data +HBD

➤ +HBD,

Example:

2B 48 42 44 EB 1E 01 0C 01 23 5C 1F 03 43 23 1B 00 07 DC 01 1E 09 20 26 00 0D E2 9C 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+HBD	+HBD
Report Mask	1	00 – FF	
Length	1		
Device Type	1		0B
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

- ✧ <Report Mask>: It refer to the <+HBD Mask> in **AT+GTHRM**.
- ✧ <Unique ID>: If the Bit 4 of <+HBD Mask> is 0, IMEI of the device as the unique ID of the device. IMEI is a 15-digit string. In the HEX format message, each 2 digits are encoded into one byte as an integer.

IMEI	13	57	90	24	68	11	22	0
HEX	0D	39	5A	18	44	0B	16	00

If the Bit 4 of <+HBD Mask> is 1, use the device name as the unique ID of the device. The device name refer to the <Device Name> in **AT+GTCFG**. Device name is 8-bytes string, if the length of the <Device Name> is more than 8 bytes, it will only acquire the first 8 bytes. In the Hex format message, each byte is encoded into one byte as an integer. If the device name is less than 8 bytes, the rest of bytes set as 0.

IMEI	G	V	2	0	0			
HEX	47	56	32	30	30	00	00	00

If the mask of <UID> set as 0 in the <+HBD Mask> of **AT+GTHRM**, the heart beat message will

not report device name or IMEI information. If the mask of <UID> is set as 1, then according to the mask of <device name>, the heart beat message will report device name or IMEI information

4.7. Buffer Report in HEX Format

When HEX format messages go into the local buffer, the device will replace the 2nd byte of the report messages with 'B'. Thus, **+BSP** is buffered report for **+RSP**, **+BNF** is buffered report for **+INF** and **+BVT** is buffered report for **+EVT**. The rest part of the report messages keep untouched.

Appendix: Message Index

✧ Command and ACK

AT+GTBSI

+ACK:GTBSI

AT+GTSRI

+ACK:GTSRI

AT+GTQSS

+ACK:GTQSS

AT+GTCFG

+ACK:GTCFG

AT+GTTOW

+ACK:GTTOW

AT+GTOUT

+ACK:GTOUT

AT+GTAIS

+ACK:GTAIS

AT+GTDIS

+ACK:GTDIS

AT+GTIOB

+ACK:GTIOB

AT+GTTMA

+ACK:GTTMA

AT+GTFRI

+ACK:GTFRI

AT+GTGEO

+ACK:GTGEO

AT+GTSPD

+ACK:GTSPD

AT+GTSOS

+ACK:GTSOS

AT+GTMON

+ACK:GTMON

AT+GTRTO

+ACK:GTRTO

AT+GTPIN

+ACK:GTPIN

AT+GTURT

+ACK:GTURT

AT+GTDAT

+ACK:GTDAT

AT+GTOWH

+ACK:GTOWH

AT+GTDG

+ACK:GTDG

AT+GTMAI

+ACK:GTMAI

AT+GTIDL

+ACK:GTIDL

AT+GTHMC

+ACK:GTHMC

AT+GTHBM

+ACK:GTHBM

AT+GTWLT

+ACK:GTWLT

AT+GTBCS

+ACK:GTBCS

AT+GTEFS

+ACK:GTEFS

AT+GTHRM

+ACK:GTHRM

AT+GTJDC

+ACK:GTJDC

AT+GTJBS

+ACK:GTJBS

AT+GTACD

+ACK:GTACD

AT+GTPDS

+ACK:GTPDS

AT+GTIDA

+ACK:GTIDA

AT+GTTMP

+ACK:GTTMP

AT+GTSSR

+ACK:GTSSR

AT+GTNMC

+ACK:GTNMC

AT+GTBSE

+ACK:GTBSE

✧ Position Related Report

+RESP:GTTOW

+RESP:GTAIS

+RESP:GTDIS

+RESP:GTIOB

+RESP:GTFRI

+RESP:GTERI

+RESP:GTGEO

+RESP:GTSPD
+RESP:GTSOS
+RESP:GTRTL
+RESP:GTLBC
+RESP:GTDOG
+RESP:GTMAI
+RESP:GTIGL
+RESP:GTHBM
+RESP:GTIDA

✧ Device Information Report

+RESP:GTINF

✧ Report for Querying

+RESP:GTGPS
+RESP:GTALL
+RESP:GTALM
+RESP:GTALC
+RESP:GTCID
+RESP:GTCSQ
+RESP:GTVER
+RESP:GTBAT
+RESP:GTIOS
+RESP:GTTMZ
+RESP:GTAIF
+RESP:GTGSV

✧ Event Report

+RESP:GTPNA
+RESP:GTPFA
+RESP:GTMPN
+RESP:GTMPE
+RESP:GTBTC
+RESP:GTSTC
+RESP:GTBPL
+RESP:GTSTT
+RESP:GTANT
+RESP:GTMON
+RESP:GTPDP
+RESP:GTIGN
+RESP:GTIGF
+RESP:GTDAT (Short Format)
+RESP:GTDAT (Long Format)
+RESP:GTIDN
+RESP:GTIDF

+RESP:GTGSM

+RESP:GTFLA

+RESP:GTJDR

+RESP:GTJDS

✧ Heartbeat

+ACK:GTHBD

+SACK:GTHBD

✧ Server Acknowledgement

+SACK

✧ Hex format report message

+ACK

+RSP

+EVT

+INF

+HBD