GSM/GPRS/GPS Tracker GV300

@Track Air Interface Protocol

Application Notes: **TRACGV300AN004**

Revision: 8.00

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Contents

0. Revision history

Revision	Date	Author	Description of change
0.1	2011-07-28	Eagle LIU	Initial
0.2	2011-08-10	Eagle LIU	1) Change default value of *<ODO Initial Mileage>* in command **AT+GTCFG** to 0.0. 2) Change default value of *<Report Composition Mask>* in command **AT+GTCFG** to 003F. 3) Change value range of *<Echo Suppression>* in command **AT+GTCFG** from 1-4 to 1-2. Remove setting for earphone channel. 4) Change default value of *<Tow Enable>* in command **AT+GTTOW** to 0.
0.3	2011-08-16	Eagle LIU	1) Modify the sample in **AT+GTAIS**. 2) Add new command **AT+GTURT** to configure the parameter of serial port 3) Remove command type 2 in **AT+GTDAT**. 4) Change format of message **+RESP:GTALL** for above modification.
0.4	2011-08-18	Eagle LIU	1) Modify the value range of external GPS antenna status in message **+RESP:GTINF** and **+RESP:GTANT**. 2) Add backup battery capacity percentage in message **+RESP:GTFRI**.
0.5	2011-08-19	Eagle LIU	1) Add new command **AT+GTJDC** and new event report message **+RESP:GTJDR** for jamming detection. 2) Update message **+RESP:GTALL** for jamming detection.
0.6	2011-08-23	Eagle LIU	1) Add Mode 0 to **AT+GTURT** to disable the serial port listening. Change default mode to 0. 2) Update message **+RESP:GTALL**.
0.7	2011-08-29	Eagle LIU	1) Allow to use interruptible digital input port in **AT+GTOWH** command. 2) Update message **+RESP:GTALL** for above change.
0.8	2011-09-19	Batty ZHANG	1) Use one of the reserved field of **AT+GTCFG** to Add *<AGPS Mode>* which indicates whether to enable AGPS to improve the ratio to get GPS position successfully and reduce the time to get GPS position.

0.9	2011-09-26	Batty ZHANG	1） Use one of the reserved field of **AT+GTCFG** to Add *<GSM Report>* to control how or when to report cells' information.
0.10	2011-10-21	Batty ZHANG	1） Add Device Status in message **+RESP:GTFRI.** The device status includes the current motion state of the device, the input ports status and the output ports status.
0.11	2011-11-04	Batty ZHANG	1） Add new command **AT+GTWLT** to support white list for location by call and voice monitoring.
1.0	2011-12-16	Batty ZHANG	1） Modify the range of *<Corner Report>* in **AT+GTFRI** to 0-180. 2） Add a new state 3 for external GPS antenna in report message **+RESP:GTINF** and event message **+RESP:GTANT**.
2.0	2012-3-7	Eric Xu	1） Add a new command **AT+GTURT** for the second serial port (UART2) setting. 2） Define the long report format of the message **+RESP:GTDAT** to report external device data with GPS information. Extend the *<Command Type>* 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 *<Protocol Format>* 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.
2.1	2012-3-12	Batty ZHANG	1） Add a Extend the setting of *<Location by Call>* in command **AT+GTCFG** to support sending location information with Google Maps hyperlink through SMS to the cell phone number of the incoming call; 2） Support continuous wave output when *<Duration>* is not 0 while *<Toggle Times>* is 0. Refer to the description of **AT+GTOUT** command.
2.2	2012-3-22	Gavin Chang	1） Use one of the reserved fields of **AT+GTCFG** as *<GPS Lost Time>* to set the GPS check time. 2） Modify part of **+RESP:GTALL** to keep pace with **AT+GTCFG**. 3） Add **+RESP:GTGSS** to indicate GPS lost event or GPS come back event.

			4）Modify the range of *<Device Name>* in **AT+GTCFG** to support '-' and '_'.	
2.3	2012-3-27	Eric Xu	1) Redefined longitude and latitude protocol parameter and modified the range of some parameter in EVT and RSP.	
2.5	2012-5-18	Bart. Yuan	1) Extend for reporting +**RESP: GTIGL** when ignition off.	
		Forrest Cao	2) Add new command **AT+GTFFC** to change FRI Report frequency when some certain event has happened.	
			3) Extend report type of +**RESP: GTFRI**.	
		Eric. Xu	4) Add new command **AT+GTJBS**.	
		Joseph Tang	5) Use one of the reserved fields of **AT+GTSRI** as *<SMS ACK Enable>* to set the ACK mode.	
		Gavin Chang	6) Add a new command **AT+GTSSR** for Start / Stop detection.	
			7) Add two new events +**RESP:GTSTR** and +**RESP:GTSTP** for reporting Start /Stop event	
2.6	2012-5-25	Gavin Chang	1) Add a new mode for **AT+GTSPD** to support speed alarm.	
		Forrest Cao	2) Modify **AT+GTFFC** *<FRI mode>* parameter area.	
			3) Add state chart and *<Mode>* in **GTJBS**.	
	2012-5-31	Eric Xu Forrest Cao	4) Add the parameters of **AT+GTFFC** to the report message +**RESP:GTALL**.	
			5) Add the *<battery level>* in the RSP and EVT mask of the **GTHRM.**	
2.7	2012-6-21	Gavin Chang	1) Modify the description of *<Sub Command>* as **RESET** in **AT+GTRTO**.	
			2) Modify the description of *<Mode>* in the **AT+GTAIS** command.	
			3) Modify the description of **AT+GTOUT** for wave shape 4.	
			4) Modified **AT+GTJBS** command.	
		Eric Xu		
V2.8	2012-7-3	Gavin Chang	1) Modify the description of **AT+GTOUT** for the suggestion to set *<Duration>* and *<Toggle Times>*.	
			2) Extend the parameter of *<Command Type>* in the **AT+GTDAT**.	
			3) Distinguish ignition on and ignition off in +**RESP:GTIGL**	
		Bart. Yuan	4) +**RESP:GTGSM** add TOW type.	
	2012-7-14			
		Forrest Cao		

2.10	2012-7-18	Gavin Chang	1) Modify the length of the parameter <Device Name>, which is from 10 bytes to 20 bytes. 2) Modify the mode 2 as Garmin function in the parameter of <Working Mode> in the command **AT+GTURT**. 3) Add the Type 3 for as corner report with FFC in the parameter of <Report ID / Report Type> in the message +**RESP:GTFRI**.
2.11	2012-7-31	Gavin Chang	1）Modify the accuracy of the parameter <Backup Battery VCC> in the message +**RESP:GTINF,** +**RESP:GTBAT** and +**RESP:GTBPL**.
2.12	2012-8-23	Gavin Chang	1) Add parameters <GSM Interval> and <PDP Interval> to the command **AT+GTDOG** and the message +**RESP:GTALL**. 2) Modify the range of <IGF Report Interval> in the command **AT+GTFRI**, which is from 300-86400s to 0|5-86400s. 3) Modify the range of <FRI IGF Report Interval> in the command **AT+GTFFC**, which is from 300-86400s to 0|5-86400s. 4) Add <ERI Mask> to command **AT+GTFRI** to configure whether to report the data from peripherals by +**RESP:GTERI**. 5) Add <ERI Mask> to +**RESP:GTALL** for the customers to get the relevant set information. 6) Add +**RESP:GTERI** message to extend the message +**RESP:GTFRI**.
2.13	2012-8-30	Gavin Chang && Eric Xu	1) Add new command **AT+GTACD** to configure the AC100 devices, including I-button and temperature sensors. 2) Add a mode to the parameter <Working Mode> and add the parameter <Digital Fuel Sensor Type> in the command **AT+GTURT** and the message +**RESP:GTALL**. 3) Add new command **AT+GTEFS** to configure the extend digital fuel sensor. 4) Add new command **AT+GTIDA** to protect against unauthorized use. 5) Add +**RESP:GTIDA** HEX report.
2.14	2012-9-6	Joseph.Tang && Eric Xu	1) Add < Backup APN >, <Backup APN User Name>, <Backup APN Password> in **AT+GTBSI**. 2) Add +**RESP:GTFLA** HEX report.
	2012-9-17	Forrest.cao	3) Add +**RESP: GTALS** for **GTRTO**.

		Forrest.cao	4)	Add +**RESP: GTALS** adjust position for hex
	2012-9-28	Bart.yuan	5)	Add +**RESP: GTERI** message in the hex.
	2012-10-15	Forrest.cao	6)	Add +**RESP: GTDOS** message about ASCII.
	2012-10-16	Forrest.cao	7)	Add +**RESP: GTDOS** and +**RESP: GTALS** description.
	2012-10-17	Eric Xu	8)	Add +**RESP: GTDOS** HEX report.
	2012-10-18	Forrest.Cao	9)	Modify **AT+GTRTO** format.
	2012-10-19	Joseph.Tang	10)	Add new **AT+GTRTO** command D.
	2012-10-22	Batty Zhang	11)	Modify the description of +**RESP: GTOWH**
	2012-10-23	Joseph.Tang	12)	Add no alarm mode in **AT+GTAIS**.
		Evan.Tu	13)	Add new conmand **AT+GTPDS.**
		Forrest.Cao	14)	Add +**RESP:GTAIF** and +**RESP:GTDOS** appendix.
	2012-10-29	Forrest.Cao	15)	Add +**RESP:GTDOS** appendix
			16)	Add +**RESP:GTDOS** report control bit.
	2012-10-30	Forrest.Cao	17)	Modify description about No ignition in **AT+GTDIS**.
			18)	Modify **AT+GTOUT** control bit format about +**RESP:GTDOS**.
	2012-10-31	Forrest.Cao	19)	Modify **AT+GTOUT** control bit format about +**RESP:GTDOS**.
			20)	Modify **AT+GTOUT** control bit format about +**RESP:GTDOS**.
	2012-11-5	Batty Zhang	21)	Add the parameters of **AT+GTOUT** to the report message +**RESP:GTALL**.
		Evan.Tu	22)	Modify the description of parameter <**Mask**> in command **AT+GTPDS**
	2012-11-6	Evan.Tu	23)	Delete the command mode 3 in**AT+GTPDS**.
			24)	Add <Data *Length*> parameter before the <*data*> in the HEX rmessage of +**RESP:GTDAT** reporting.
	2012-11-26	Bart Yuan	25)	Change default value of <*iButton Timer*> in command **AT+GTACD** to 0
			26)	Change default value of <*Temperature Timer*> in command **AT+GTACD** to 0
	2012-12-5	Forrest Cao	27)	Add description +**RESP:GTDOS** parameters about wave1 output id and wave1 output active
			28)	Add description about **AT+GTRTO** sub AT command
			29)	Add description about+**RESP: GTALS**.

2.15	2012-12-12	Joseph.Tang	1) Add CR606 digital fuel sensor support
			2) Add *<Validity Time>* and *<Validity Mode>* in **+RESP: GTDIS**
			3) Add new commands **AT+GTSPA** and **AT+GTBZA**.
			4) Add Trigger Mode and Trigger Report in **AT+GTGEO**
			5) Add **+RESP:GTGES** message.
2.16	2012-12-29	Joseph.Tang	1) Add warning mode in **AT+GTSPA**
2.17	2013-1-10	Joseph.Tang	1) Modify the description of the *< Ex Unsolicited Enable >* in **AT+GTEFS**
			2) **Save** State of wave shape 1 in **AT+GTPDS**
	2013-1-15	Forrest.Cao	3) Add description about **+RESP: GPGSV**, including ASCII and HEX.
			4) Add *<Expand INF Mask>* parameters in the **AT+GTHRM**.
			5) Add*<Expand INF Mask>* composition content in the +**RESP: GTINF**.
	2013-1-21	Joseph.Tang	6) Add new "Fixed Time or Mileage Report" mode in **AT+GTFRI**.
			7) Add new parameter *<Long Stop>* in **AT+GTSSR** and new response **+RESP:GTLSP**.
		Eric Xu	8) Add *<Need Judge Motion Sensor>* and *<GPS Fix Fail Timeout Timer>* parameters in the **AT+GTJBS**.
	2013-1-22	Batty Zhang	9) Modified default value of the seventh *<Reserved>* of **+RESP:GTGSM**.
	2013-1-24	Batty Zhang	10) Add mode2 in the *<Sleep Enable>* of the **AT+GTURT**
		Eric Xu	11) Add **+RESP:GTALC** message.
	2013-1-28	Batty Zhang	12) Modify the range of *<Min Threshold> and <Max Threshold>* in **AT+GTEPS** to 250 – 32000.
	2013-1-29	Batty Zhang	13) Add *<Report ID / Report Type>* parameter before the *<ID Length>* in the HEX rmessage of **+RESP:GTIDA**.
2.18	2013-4-16	Page Zhong	1) Modify *<GEO ID>* in **AT+GTGEO**.
			2) Modify *<Report ID/Report Type>* in HEX message **+RESP:GTGES** to two segments *<Trigger GEO ID>* and *<Trigger GEO Enable>*.

2.19	2013-6-21	Forrest Cao	1) Modify *<Mode>* and *< Timeout after Ignition off>* in **AT+GTIDA**.
2.30	2013-4-9	Page Zhong	1) Use the fourth and fifth reserved fields as *<Long Operation2>* and *<Long Operation3>* of **AT+GTOUT** to set long operation time for output2 and output3. 2) Add new report message +**RESP:GTALM** to subpackage +**RESP:GTALL** when the length of +**RESP:GTALL** is too long.
	2013-5-9	Bart.Yuan	3) Add new parameter*<Format>*、*<Interval>*and *<Length>*、 in **AT+GTURT** to transfer serial port data. 4) Add a new report message +**RESP:GTDTT** transfer data from auxiliary serial port to backend server. 5) Change the length of parameter < Data to the Backend Server > to 1024 bytes.
	2013-5-21	Joseph.Tang	6) Add new parameter *<Output ID>* and *<Output Status>* in **AT+GTMON** 7) Add new command **AT+GTMUT** to configure the parameters of the main serial port. 8) Modify *<Sub AT Command>* in **AT+GTRTO**
	2013-6-8	Page.Zhong	9) Add new command **AT+GTTMP** for temperature alarm.
	2013-6-15	Bart.Yuan	10) Add new parameter *<data type>*in +**RESP:GTDTT**.
	2013-6-24	Bart.Yuan	11) Change the length of paramenter *< Data to the Backend Server >* to 1280 btyes.
	2013-7-17	Eric Xu	12) Add the new parameter *<Enable Siren>* in the **AT+GTJBS**.
	2013-8-7	Forrest.Cao	13) Add new command **AT+GTUDT** for uart data transfer. 14) Add new message +**RESP:GTUDT** for transfer data to the serial port 15) Modify parameter *<mode>* in **AT+GTIDA.** 16) Modify *<Configuration Mask Table>* in **AT+GTRTO**
	2013-8-15	Eric Xu	17) Modified the *<C1 Threshold>* parameter as *<Reserved>* and added *<Jamming Cell Number Threshold>*, *<Enter Jamming Timer Threshold>*, *<Quit Jamming Timer Threshold>* parameters in the **AT+GTJDC** command. 18) Add value '2' in the *<mode>* of **AT+GTJDC**

	2013-9-17	Joseph.Tang	19)	command to report **+RESP:GTJDS** message. Add SACK mode 2.
2.31	2013-9-25	Joseph.Tang	1) 2) 3)	Add mode 3 and mode 5 in **AT+GTAIS** Add **AT+GTFSC** Modify the Bit 13 of the *<+RSP Mask >* and *<+EVT Mask >* in **AT+GTHRM** for the analog input mode.
2.40	2013-9-2	Forrest Cao	1)	Modify **AT+GTRTO** parameter *<sub command>* for resetting special configuration.
	2013-9-17	Berry Xu	2)	Add **AT+ GTRMD** and modify **AT+GTFFC** for roaming detection configuration.
	2013-10-16	Berry Xu	3)	Update the description of Buzzer Alarm Definition. If we connect the device with a garmin, the buzzer will beep if the driver starts the vehicle but doesn't login on garmin unless he finishes the login.
	2013-10-17	Forrest Cao	4) 5) 6) 7) 8) 9) 10)	Add new command **AT+GTPEO.** Add the ASCII format and hex format of **+RESP:GTGIN** and **+RESP:GTGOT**. Add hex message type of **+RESP:GTGIN**, and **+RESP:GTGOT.** Modify the *<Configuration Mask>* in **AT+GTRTO.** Modify the scope of ID index of **AT+GTIDA.** Modify the *<Configuration Mask>* in **AT+GTRTO.** Use the *<Reserved>* in +**RESP:GTALC** for *<Next Packet>* and *<Current Packet>*.
	2013-11-28	Page Zhong	11) 12) 13) 14) 15)	Add *<Working Mode>* '9' in command **AT+GTURT** for camera device. Add new command **AT+GTCMS** for setting camera parameters. Add new command **AT+GTTAP** for real-time photographing. Add message **+RESP:GTPHL** for reporting location information before reporting photo data and message **+RESP:GTPHD** for reporting photo data. Add *<+DAT Mask>* in command **AT+GTHRM** for data report.
	2014-1-16	Forrest Cao	16)	Add *<Mask Group>* in **+RESP:GTGIN** and **+RESP:GTGOT** for HEX.
	2014-1-16	Joseph Tang	17)	Add *<Full Value>* in **AT+GTEFS.**

			18) Add new fuel sensor type 'UFSxxx' in **AT+GTURT.**
			19) Add *<GEO Status Mask>* in +**RESP:GTUDT**.
			20) Add *<ID Validity Time>* in **AT+GTIDA.**
	2014-1-20	Forrest Cao	21) Modify the description for the parameter *<Sub Command>* of **AT+GTRTO.**
	2014-1-26	Berry Xu	22) Add the description of relationship about *<Power Saving Mode>* and **AT+GTPEO.**
			23) Modify the description for the parameter *<Mask>* of **AT+GTPDS**. Preserve the states of digital input, SSR, SPD and main power.
	2014-1-27	Forrest Cao	24) Add *<message type>* of HEX for **AT+GTPEO.**
	2014-2-13	Forrest Cao	25) Add *<Mask Group>* item in +**RESP:GTGIN** and +**RESP:GTGOT.**
			26) Add *<Analog Input Mode>* for +**RESP:GTGIN** and +**RESP:GTGOT**.
			27) Add PEO packet information for +**RESP:GTALL** and +**RESP:GTALC**.
			28) Update the description of mask required for PEO/IDA.
			29) Modify the range of *<Start Point>* and *<End Point>* for **AT+GTPEO**.
3.00	2014-4-24	Forrest Cao	1) Add mode 6 for **AT+GTMUT**. 2) Modify the description for TCP long-connection mode of *< Report Mode>* of **AT+GTSRI.**
3.01	2014-4-28	Forrest Cao	1) Add mode 11 for **AT+GTMUT**, and delete mode 6. 2) Add mode 7 for *< Report Mode>* of **AT+GTSRI**.
3.02	2014-5-4	Berry Xu	1) Add the parameter <Need Ack> for **AT+GTDAT.**
3.03	2014-5-5	Berry Xu	1) Update fuel sensor calibration table protocol **AT+GTFSC.**
3.04	2014-5-21	Dgreen Lin	1) Add command **AT+GTCAN** for supporting canbus device.
3.05	2014-6-3	Dgreen Lin	1) Add *<Report Type>* and *<CANBUS Device State>* fields in +**RESP: GTCAN**. 2) Add *<+CAN Mask>* parameter in command **AT+GTHRM**.
	2014-6-5	Berry Xu	3) Add <Main UART device> in +**RESP: GTERI.**
3.06	2014-6-12	Berry Xu	1) Change the default value of *< Mode >* in **AT+GTCAN**. 2) Add type 6 in *<Digital Fuel Sensor Type>* of **AT+GTURT** for DUE-E SUM fuel sensor

				support.
3.07	2014-6-18	Berry Xu	1) Add note to describe the relationship about *<ERI Mask>* and **AT+GTFSC**. 2) Change the default value of <CAN *Report Mask>* in **AT+GTCAN**
3.08	2014-7-8	Dgreen Lin	1）change *<+CAN mask>* in **AT+GTHRM** 2）delete 4 reservers in **+RESP:GTCAN** in hex format. 3) Modify the description of buffer number from 3000 to 10000.
4.00	2014-8-5	Berry Xu	1）Add **AT+GTUFS** and message **+RESP:GTUFS** to upgrade the firmware in UFSxxx fuel sensor over the air. 2）Add **AT+GTFTP** and *<Server Type>* in command **AT+ GTCMS** for transferring pictures to FTP server 3）Add the new mode 14 of **AT+GTURT**. 4）Add mode 3 in *<Location By Call>* of **AT+GTCFG** 5）Add three additional fields to the GoogleMaps Hyperlink SMS 6）Add bit 14 of *<Event Mask>* in **AT+GTCFG** for message +RESP:GTEXP report. 7) Support CANBUS device in main serial port. 8) Change range of *<CAN Report Interval>* and *<CAN Report Interval IGF>*. 9) Add sub command in **AT+GTRTO** to get real time **+RESP:GTCAN** report. 10) Add field *<Total Vehicle Overspeed Time>* and *<Total Vehicle Engine Overspeed Time>* in **+RESP:GTCAN** 11) Add parameter in **AT+GTCAN** to control report **+RESP:GTCAN** when device ignition is on/off**.
4.01	2014-8-27	Dgreen Lin	1) Change default value of <CAN Report Mask> in **AT+GTCAN** command.
4.02	2014-10-23	Berry Xu	1）Modify the scope *<ID Length>* for **+RESP:GTIDA** HEX format. 2）Add sub cmd 11 in **AT+GTRTO** to get the verison number information of UFSxxx sensor by message **+RESP:GTUVN**. 3）Add <Report Sensor Data> in **AT+GTEFS** for reporting raw data from fuel sensor by message

			+**RESP:GTFSD**.
			4）Add HEX Acknowledgement message **AT+GTUFS** and **AT+GTFTP**.
			5）Delete the related content about AC200.
5.00	2014-12-9	Dgreen Lin	1) Add command **AT+GTCMD** and **AT+GTUDF**.
			2) Add sub command in **AT+GTRTO** to get software version of CAN100.
5.01	2015-1-9	Forrest Cao	1) Add *<CAN DATA>* for *<+RESP MASK>* and *<Event Mask>* in **AT+GTHRM**.
			2) Add the paremeter *<Behavior Duration>* for **AT+GTHBM.**
			3) Add the parameter *<Start Time>*, *<End Time>* for **AT+GTGEO**.
5.02	2015-2-25	Dgreen Lin	1) Add *<CANBUS Report Mask>* field in *<CAN DATA>*.
			2）Add *<CANBUS Device State>* field in *<CAN DATA>*
6.00	2015-5-13	Dgreen Lin	1) Add Bit 22 *<Total Distance Impulses >* in **GTCAN** command control the composition of CAN DATA only in HEX format.
6.01	2015-5-22	Jared Jiang	1) Support DUT-E fuel sensor of parameter *<Ex Full Value>* of the command **AT+GTEFS**.
			2) Add a new parameter *<Ex Detect Frequency IGF>* to the command of **AT+GTEFS** and +**RESP:GTALL**.
			3) Add a new parameter *<Report Type>* to the report message of +**RESP:GTFLA**(ascii & hex).
			4) Modify the parameter *<Ignition On Fuel Level>* to *<Current Fuel Level>* of the report message +**RESP:GTFLA**.
6.02	2015-6-23	Dgreen Lin	1) Modify the range *<Motion Threshold>* in **AT+GTTOW** from 2-4 to 2-9.
6.03	2015-7-21	Jared Jiang	1) Delete the parameter *<Report Type>* of the report message of +**RESP:GTFLA**(asci & hex).
			2) Modify unit of *<Ex Detect Frequency IGF>* from min to second.
7.00	2015-9-1	Dgreen Lin	1) Add White List for SMS in **AT+GTWLT** command.
7.01	2015-9-8	Dgreen Lin	1) change *<Call Filter>* in **AT+GTWLT** command.
			1)

8.00	2016-03-17	Pino Chen	Add PEO-Fence state in message **+RESP:GTUDT**.

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. Reference

Garmin_FMI Protocol Reference

SN	Document name	Remark
[1]	@Track Air Interface for Garmin-FMI Protocol	The air protocol interface between GV300 and Garmin.

1.3. 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

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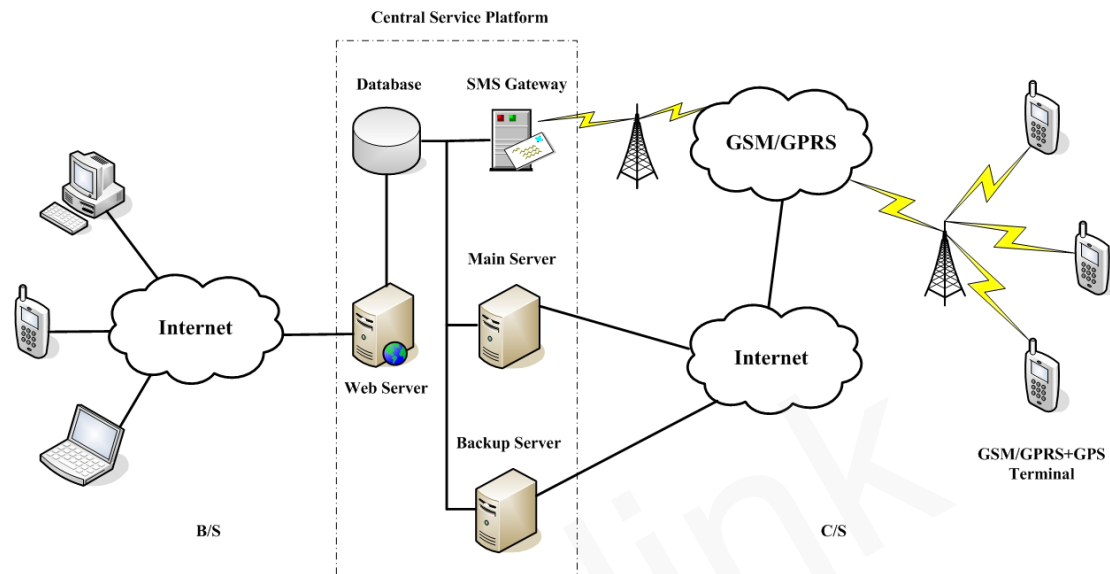
The backend server can be accessed by many terminals and should have the following abilities:

✧ 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:
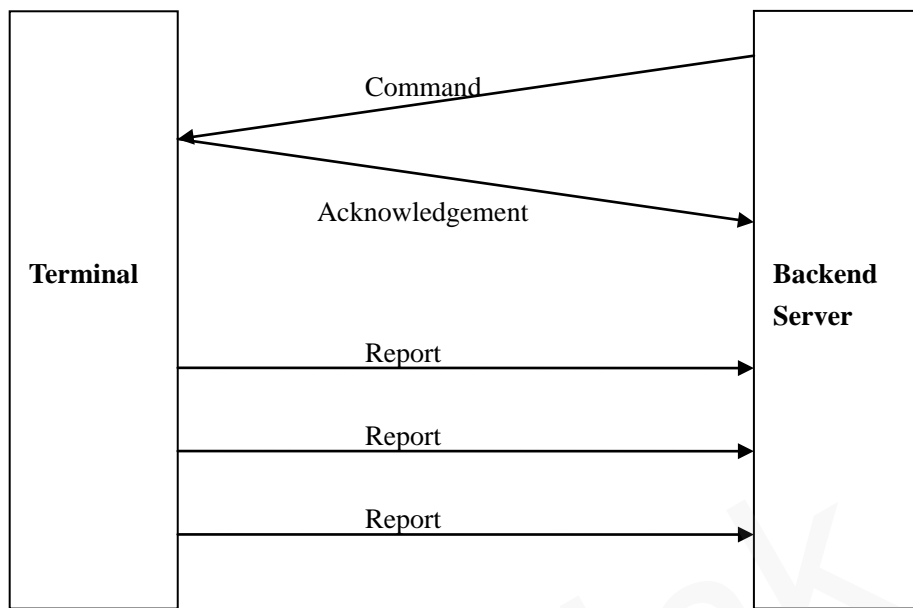
Figure 1: @Tracker Protocol messages flow

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=gv300,cmnet,,,wapnet,,,,0000$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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 "gv300".

✧ *<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,060100,135790246811220,,0000,20090214093254,11F0$

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	$	$

✧ *<Protocol Version>*: The protocol version that the terminal conforms to. The first two characters point out the device type. As in the example, "**06**" means GV300. The middle two characters point out the major version number of protocol and the last two characters point out the minor version number of protocol. And both version numbers are hex digital. For example, "**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=gv300,3,,1,116.226.44.17,7011,116.226.45.229,7012,+8613812341234,15,1,,,,,0001$
AT+GTSRI=gv300,3,,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'	gv300
Report Mode	1	0 – 7	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|2	0
Protocol Format	1	0|1	0
SMS ACK Enable	1	0|1	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.
- 7: TCP long-connection mode with the backup server. 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. If the main server is lost, it will try to conncet the backup server. And if the backup server is also lost, it will try to connect the main server again.

✧ *<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.
- 2: the backend server replies SACK message when receiving any message form the terminal, but the terminal does not check the serial number of the SACK message.

✧ <*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.

✧ <*SMS ACK Enable*>: This defines whether the ACK confirmation should respond by SMS when the command was sent by SMS.

- 0: the device will send the ACK confirmation with the mode configured by the <*Report Mode*>.
- 1: the device will send the ACK confirmation by SMS to the phone which sent the command by SMS.

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

➢ **+ACK:GTSRI,**

Example:
+ACK:GTSRI,060100,135790246811220,,0001,20090214093254,11F0$

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	$	$

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=gv300,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'	gv300
APN	<=40		
APN User Name	<=30		
APN Password	<=30		
Report Mode	1	0 – 7	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|2	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,060100,135790246811220,,0002,20090214093254,11F0$			

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	$	$

3.2.4. Global Configuration

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

➢ **AT+GTCFG=**

Example:
AT+GTCFG=gv300,123456,gv300,,,,,,,,,,,,,,,,0,0003$
AT+GTCFG=gv300,,,1,123.4,0,,0,1,,2FF,0,1,1,300,0,1,1,,,0,0003$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
New Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	gv300
ODO Enable	1	0|1	0
ODO Initial Mileage	<=9	0.0 – 4294967.0Km	0.0
GPS On Need	1	0|1	0
Reserved	0		
Report Composition Mask	<=4	0000 – FFFF	003F
Power Saving Mode	1	0 – 2	1
Reserved	0		
Event Mask	<=4	0000 – FFFF	3FFF
Pin15 Mode	1	0|1	0
LED On	1	0|1	0
Info Report Enable	1	0|1	0

Info Report Interval	<=5	30 – 86400sec	300
Location By Call	1	0|1|2|3	0
Echo Suppression	1	1|2	1
Backup Battery Charge Mode	1	0|1	0
AGPS Mode	1	0|1	0
GSM Report	4	0000 – FFFF	000F
GPS Lost Time	2	0 – 30min	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 Composition 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.

✧ *<Power Saving Mode>*: Set mode of power saving function. If mode of power saving function is set to 0, the fixed report will follow *<IGF Report Interval>* when the engine is off. If mode of power saving function is set to 1, the fixed report, geo-fence （**AT+GTGEO** and **AT+GTPEO**） and speed alarm (**AT+GTSPD**) report functions are suspended when the device is at a standstill or the engine is off, but auto parking fence and manual parking fence will not be suspended. If mode of power saving function is set to 2, it is mostly like mode 1 and the difference is that the fixed report will not be suspended and the fix and send interval of it 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

✧ *<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 location report +**RESP:GTIGL** when ignition on or ignition off
  - Bit 14 for the UFSxxx fault code report +**RESP:GTEXP**

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

✧ *<Pin15 Mode>*: Configure the working mode of the 15 pin on the connector.
  - 0: Analog input 1.
  - 1: Digital input 3.

✧ *<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, voltage of external power supply, 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.
  - 3: Hang up the call. Report the current position (+**RESP:GTLBC**) and report the current position with Google Map link through SMS to the phone number of the

incoming call at the same time.

✧ *<Echo suppression>*: Configure to one of the two phases for echo suppression.
- 1: Cancel and suppress echo.
- 2: Cancel and strongly suppress echo.

✧ <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.

✧ *<AGPS Mode>*: A numeric to indicate whether to enable AGPS. AGPS is helpful to improve the ratio to get GPS position successfully and reduce the time to get GPS position.
- 0: Disable the AGPS function.
- 1: Enable the AGPS function.

✧ *<GSM Report>*: Control how or when to report cells' information. The message **+RESP:GTGSM** only sends via TCP short connect even if the report mode is force on SMS

   Bit 14 – 15, the 2 high bits mean GSM report mode
- 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.

   Bitwise mask to configure which event report should be sent to the backend server.
- Bit 0 for **+RESP:GTRTL**
- Bit 1 for **+RESP:GTLBC**
- Bit 2 for **+RESP:GTFRI / +RESP:GTERI**
- Bit 3 for **+RESP:GTSOS**
- **Bit 4 for+RESP:GTTOW**
- Bit 5 – 13 are reserved

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

✧ *<GPS Lost Time>*: A time parameter to monitor the GPS signal. If the device stays *<GPS Lost Time>* consecutively without GPS signal or without successful GPS fix, it will send the event report **+RESP:GTGSS** to indicate the GPS signal lost. When the GPS signal is recovered or a successful fix obtained again, the device will send the event report **+RESP:GTGSS** to indicate the recovery. 0 means disable this function.

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

➢ **+ACK:GTCFG,**

Example:				
+ACK:GTCFG,060100,135790246811220,,0003,20090214093254,11F0$				
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	$	$

3.2.5. Digital Output

The **AT+GTOUT** command is used to output specified wave shape from the digital output ports. Total four 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.

The digital output 1 is a latched output. The final status of the output will be latched during power off. It supports only wave shape 1.

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

Figure **2**: Wave Shape 1

Wave shape 2:
✓ *<Duration>* = 500ms, *<Toggle Times>* = 1
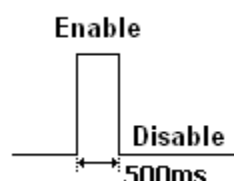
Figure **3**: Wave Shape 2

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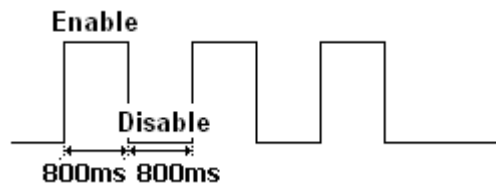
✓ *<Duration>* = 800ms, *<Toggle Times>* = 3

Figure **4**: Wave Shape 3

Wave shape 4:

✓ *<Duration>* = 800ms, *<Toggle Times>* = 0
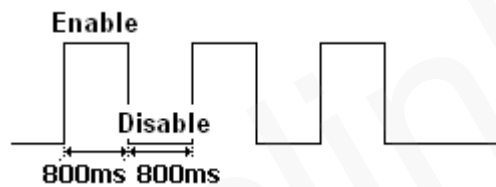
Figure **5**: Wave Shape 4

➢ **AT+GTOUT=**

| Example: |
| AT+GTOUT=gv300,1,,,0,0,0,0,5,1,0,,1,1,,,,0004$ |

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Output1 Status	1	0|1	0
Reserved	0		
Reserved	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
DOS Report	1	0–7	0
Reserved	0		

TRACGV300AN004

Long Operation2	<=3	0 – 120min	0
Long Operation3	<=3	0 – 120min	0
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Output1–3 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 and **Figure** 4. Unit is 100ms.

✧ *<Toggle Times>*: Please refer to **Figure** 2, **Figure** 3, **Figure** 4 and **Figure** 4.

When the *<Duration>* is set to 0, the *<Toggle Times>* must be set to 0 than other values, or the command may be invalid.

✧ *<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

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

✧ *<Long Operation2>* and *<Long Operation3>*: The long operation time for output2 and output3. After such long time passed, the output wave will be stopped on the special output port. These two parameters would be effective only when the output wave shape is 1 or 4.

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

➢ **+ACK:GTOUT,**

Example:
+ACK:GTOUT,060100,135790246811220,,0004,20090214093254,11F0$

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	$	$

3.2.6. Digital Input Port Setting

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

Before using digital input 3, *<Pin15 Mode>* in **AT+GTCFG** command must be set to 1.

➢ **AT+GTDIS=**

Example: AT+GTDIS=gv300,0,1,,0,1,1,4,,2,1,2,,3,3,,,,,,,0005$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Ignition Detection	1	0	0
Sample Period	<=2	0|1 – 12(×2s)	1
Reserved	0		
No ignition	1	0|1	0
Input ID 1	1	1	1
Enable	1	0|1	0
Debounce Time	<=2	0 – 20(×10ms)	0
Validity Time	<=2	0|1 – 12(×2s)	0
Input ID 2	1	2	2
Enable	1	0|1	0
Debounce Time	<=2	0 – 20(×10ms)	0
Validity Time	<=2	0|1 – 12(×2s)	0
Input ID 3	1	3	3
Sample Period	<=2	0|1 – 12(×2s)	0
Reserved	0		
Validity Mode	1	0|1	0
Reserved	0		

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

✧ *<Ignition Detection>*: ID of the ignition detection port.

✧ *<Input ID 1~3>*: 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 interruptible input port debouncing.

✧ *<No ignition >*:A numeric to indicate whether no ignition signal is connected.

- ● 0: Ignition signal is connected
- ● 1: ignition signal is not connected

✧ *<Validity Time>*: The validity time of the input port, 0 means not to check the validity time.

✧ *<Validity Mode>*: The mode of *<Sample Period>* of the non-interruptible input port.

- ● 0: Check once when the *<Sample Period>* time arrived.
- ● 1: Check every 2 seconds during the whole *<Sample Period>*.

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

➢ **+ACK:GTDIS,**

Example: +ACK:GTDIS,060100,135790246811220,,0005,20090214093254,11F0$			
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	$	$

3.2.7. 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. Otherwise, the device will restore the initial status of 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=gv300,1,F,A,3,1,0,8,3,,,,,0006$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
IOB ID	1	0 – 3	
Input Mask	1	0 – F	0
Trigger Mask	1	0 – F	0
Input Sample Period	<=2	0|1 – 12(×2s)	0
Output ID	1	0 – 3	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: ignition detection
  ● bit1: digital input 1
  ● bit2: digital input 2
  ● bit3: digital input 3
✧ <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: ignition detection
- ● bit1: digital input 1
- ● bit2: digital input 2
- ● bit3: digital input 3

✧ *<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,060100,135790246811220,,1,0006,20090214093254,11F0$

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' '-' '_'	
IOB ID	1	0 – 3	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

3.2.8. External Power Supply Monitoring

The command **AT+GTEPS** is used to configure the parameters of external power supply monitoring. The device will measure and monitor the voltage of the external power supply. If the voltage of the external power supply matches the predefined alarm condition, the device will report an alarm message **+RESP:GTEPS** to the backend server to notify the status of the external power supply.

To make sure this function works in all situations, please switch on the internal backup battery in case that the voltage of the external power supply may drop very low.

➢ **AT+GTEPS=**

Example: AT+GTEPS=gv300,2,250,12000,3,2,1,1,0,0,1,,,,0007$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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 – 3	
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 external power supply monitoring.
  ● 0: Disable the external power supply monitoring.
  ● 1: Enable the external power supply monitoring. If the current voltage is within the range of (*<Min Threshold>*, *<Max Threshold>*), the +**RESP:GTEPS** alarm will be triggered.
  ● 2: Enable the external power supply monitoring. If the current voltage is outside the range of (*<Min Threshold>*, *<Max Threshold>*), the +**RESP:GTEPS** alarm will be triggered.
✧ *<Min Threshold>*: The lower limit to the voltage of the external power supply to trigger the alarm.
✧ *<Max Threshold>*: The upper limit to the voltage of the external power supply to trigger the alarm.
✧ *<Sample Period>*: The sampling period to measure the external power supply.
✧ *<Debounce Time>*: The time for debouncing to avoid exceptional voltage drop of the external power supply.

✧ <*Output ID*>: Specify the ID of the output port (1 to 3) to output specified wave shape when the +**RESP:GTEPS** alarm is triggered. If set to 0, no output wave.

✧ <*Sync with FRI*>: Besides the +**RESP:GTEPS** alarm report, the device can also send the voltage of external power supply periodically along with the fixed report message.
  - 0: Do not report external power supply voltage with fixed report message.
  - 1: Report external power supply voltage with fixed report message.

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

➢ **+ACK:GTEPS,**

Example:
+ACK:GTEPS,060100,135790246811220,,0007,20090214093254,11F0$

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	$	$

3.2.9. Analog Input Port Setting

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

Before using analog input 1, <*Pin15 Mode*> in **AT+GTCFG** command must be set to 0.
Make sure there is analog signal connected to the corresponding analog input port before you enable this function to that port.

➢ **AT+GTAIS=**

Example:
AT+GTAIS=gv300,1,0,250,2700,2,,1,1,0,0,1,,,2,1,250,2700,2,,1,1,0,0,1,,,,,,0008$

Parameter	Length(byte)	Range/Format	Default
Password	4~6	'0'~'9' 'a'~'z' 'A'~'Z'	gv300
Analog Input ID1	1	1	1
Mode	1	0|1|2|3|4|5	0

Min Threshold	<=5	0～2700|0～16000 mV	
Max Threshold	<=5	0～2700|0～16000 mV	
Sample Rate	<=2	0|1～12(×2s)	0
Reserved	0,TBD		
Output ID	1	0～3	
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		
Reserved	0		
Analog Input ID2	1	2	2
Mode	1	0|1|2|3|4|5	0
Min Threshold	<=4	25～2700|250～16000 mV	
Max Threshold	<=4	25～2700|250～16000 mV	
Sample Rate	<=2	0|1～12(×2s)	0
Reserved	0,TBD		
Output ID	1	0～3	
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		
Fuel Data Debounce	<=3	0 – 150	10
Fuel Sensor Delay	<=3	0 – 600 sec	30
Fuel Lost Alarm	<=2	0 – 50	10
Fuel Sensor Sample Count	<=3	0 – 150	20
Change Threshold	<=2	0 – 50 %	0
Serial Number	4	0000～FFFF	
Tail Character	1	$	$

- ✧ *<Analog Input ID 1～2>*: The analog input port ID.
- ✧ *<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: Connect with special fuel level sensor to support fuel level reporting and monitoring.
    Warning: when the selected mode is 3, please do not choose the wave shape 1 as the specified output port's wave.
  - ● 4: No alarm mode, the range of the voltage will be ignored, and no alarm will be triggered.
  - ● 5: Voltage processed mode, the range of the voltage will be ignored, and no alarm will be triggerd, but the voltage will be processed before be reported.
- ✧ *<Min Threshold>*: If *<Mode>* set to 1 or 2, this is the lower limit to the voltage of the analog input port to trigger the alarm.
- ✧ *<Max Threshold>*: If *<Mode>* set to 1 or 2, this is 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 3) 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. If the analog input port is used to work with a fuel sensor and the *<Sync with FRI>* is enabled, the device will report the fuel level together with the fixed report message.
- ✧ *<Fuel Data Debounce>*: Number of the data abandoned when calculates the fuel level.
- ✧ *<Fuel Sensor Delay>*: After ignition on, the fuel sensor will need delay this time long before it can report correct fuel level.
- ✧ *<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.**
- ✧ *<Fuel Sensor Sample Count>*: This parameter defines the total number of sample readings from the fuel sensor for calculating the current fuel level. And it must bigger than *< Fuel Data Debounce >*
- ✧ *<Change Threshold>*: This parameter defines the threshold of the value changed.

The acknowledgment message of **AT+GTAIS** command:
- ➢ **+ACK:GTAIS,**

Example:

+ACK:GTAIS,060100,135790246811220,,0008,20090214093254,11F0$			
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	$	$

3.2.10. Fixed Report Information

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

➢ **AT**+**GTFRI**=

Example:			
AT+GTFRI=gv300,0,,,,,,,,,,,,,,,,,0009$			
AT+GTFRI=gv300,1,1,,1,1000,2300,180,30,,,,,600,,,,0009$			
AT+GTFRI=gv300,2,1,,1,1000,2300,,,500,,,,,,,,0009$			
AT+GTFRI=gv300,3,1,,1,1000,2300,,,,1000,,,,,,,,0009$			
AT+GTFRI=gv300,4,1,,1,1000,2300,,60,,300,,,,,,,,0009$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0 – 5	0
Discard No Fix	<=2	0|1	1
Reserved	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
Reserved	0		
Corner Report	<=3	0 – 180	0
IGF Report Interval	<=5	0|5-86400sec	600
ERI Mask	8	00000000−FFFFFFFF	00000000
Reserved	0		
Reserved	0		
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 or Mileage Report. Simultaneously observe both time interval and path length between two adjacent reports.   Report device position if the calculated time interval per current time against the last report time is greater than the *<Send Interval>*, or the length of path between the current position and the last position is greater than the *<Mileage>* setting. This function need connect the vehicle ignition signal to the specified digital input port of the device.

Note: If the engine is off, the positional report message is sent to the backend server periodically according to the parameter *<IGF Report Interval>*.

✧ *<Discard No Fix>*: Disable/enable reporting when there is no GPS fixing
  ● 0: Enable reporting
  ● 1: Disable reporting

✧ *<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, otherwise it will send via TCP short connect.If *<GPS On Need>* is set to 1, the engine is on and send interval less than 60s, the GPS never close. If*<GPS On Need>* is set to 0, the engine is on, the GPS never close.

✧ *<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 and 4. Unit: meter.

✧ *<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. Its value range is 0|5 – 86400 and the unit is second.If *<GPS On Need>* is set to 1, the engine is off and *<Power Saving Mode>* is set 0 and *<IGF report interval>* less than 60s, the GPS never close. If *<GPS On Need>* is set to 0, the engine is off and *< Power Saving Mode>*is set to 2 and *<IGF report interval>* less than 60s, the GPS never close.

✧ *<ERI Mask>*: When the serial port is connected with peripherals, and the bit for this

peripheral is set, the device will report **+RESP:GTERI** instead of **+RESP:GTFRI**. This mask is used to configure whether to report the data from peripherals by **+RESP:GTERI**.

- ● Bit 0 for digital fuel data.
- ● Bit 1 for AC100.
- ● Bit 2 for reserved.
- ● Bit 3 for percentage of the fuel level detected by the fuel sensor
- ● Bit 4 for volume of the fuel remaining in the fuel tank

Note:

Bit 3 and bit 4 are related to **AT+GTFSC**,If none of the calibration table had set or *<Num of Node>* is 0, the percertage and the volume will show reserved in message **+RESP:GTERI**.

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

➢ **+ACK:GTFRI,**

Example:
+ACK:GTFRI,060100,135790246811220,,0009,20090214093254,11F0$

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	$	$

3.2.11. 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 geo fencing 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=gv300,0,3,121.412248,31.187891,1000,600,1,1,0,0,0,0,,,000A$

Parameter	Length(byte)	Range/Format	Default

Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
GEO ID	<=2	0 – 19	
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	
Latitude	<=10	(–)xx.xxxxxx	
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0|5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<GEO ID>*: ID of the Geo-Fence. Total 20 zones, 0 to19, 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.
✧ *< Trigger Mode >*:
- 0:Disable auto trigger mode
- 21: Auto parking fence.Automatically set Geo Fence after ignition off. In this mode, the device will automatically set a Geo-Fence with the current location as the center point of the Geo-Fence when ignition is off. This Geo-Fence will only report exiting alarm. The Geo-Fence will be cancelled after exiting
- 22: Manual parking fence.Manually enable Geo-Fence after ignition off. In this mode, the device will automatically set a Geo-Fence with the current location as the center point of the Geo-Fence when ignition is off. This Geo-Fence will only report exiting alarm. When the device exits this Geo-Fence, it will cancel this Geo-Fence and disable the trigger mode at the same time. If the driver wants to use this trigger mode again, he has to manually set the trigger mode again

✧ *<Trigger Report>*: Whether to report +**RESP:GTGES** message when the specified trigger mode is triggered and when the Geo-Fence is cancelled.
- 0:Disable report +**RESP: GTGES.**
- 1:Enable report +**RESP: GTGES**.

✧ *<Start Time>*: Start to monitor the device that enters the geo-fence or departs from the geo-fence. The valid format is "HHMM". The value range of "HH" is "00"–"23". The value range of "MM" is "00"–"59"

✧ *<End Time>*: End monitoring the device that enters the geo-fence or departs from the geo-fence. The valid format and range are the same as *<Start Time>*.

The acknowledgment message of **AT+GTGEO** command:
➤ **+ACK:GTGEO,**

Example:		
+ACK:GTGEO,060100,135790246811220,,0,000A,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' '-' '_'	
GEO ID	<=2	0 – 19	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

3.2.12. 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=gv300,1,5,0,120,1,0,5,10,4,10,4,,,,,,,,,,000B$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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 – 3	
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 – 9	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.If *<Tow Interval>* less than 60s,the GPS never close.

✧ *<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 chapter 3.2.5.

✧ *<Tow Output Duration>*: Please refer to the parameter *<Duration>* in chapter 3.2.5.

✧ *<Tow Output Toggle Times>*: Please refer to the parameter *<Toggle Times>* in chapter 3.2.5.

✧ *<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,060100,135790246811220,,000B,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	$	$

3.2.13. 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=gv300,1,80,120,60,300,1,1,0,0,,,,,,,,,,,000C$** **AT+GTSPD=gv300,2,80,120,60,300,1,1,0,0,,,,,,,,,,,000C$**			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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	30 – 3600sec	300
Output ID	1	0 – 3	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.

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

➢ **+ACK:GTSPD,**

Example: +ACK:GTSPD,060100,135790246811220,,000C,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	$	$

3.2.14. 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. The volumes for both the microphone and speaker during the SOS phone call are configurable.

➢ **AT+GTSOS=**

Example: AT+GTSOS=gv300,1,1,+8613812341234,1,1,0,0,,,,,000D$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0 – 4	0
Digital Input ID	1	0|1 – 3	0
SOS Number	<=20		
Output ID	1	0 – 3	
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 SMS gateway 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,060100,135790246811220,,000D,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	$	$

3.2.15. Voice Monitoring

The command **AT+GTMON** is used to set stealthy voice monitoring. It supports both outgoing call and incoming call. When this functions is triggered according to the working mode, the device will send the message +**RESP:GTMON** to the backend server via SMS be default

➢ **AT+GTMON=**

Example: AT+GTMON=gv300,1,+8613812341234,5,0,2,,,,000E$			
Parameter	**Length(byte**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0–3	0
Stealthy Phone Number	<=20		
Stealthy Microphone	2	0 – 10	5
Stealthy Speaker	1	0 – 7	0
Send Alarm Message	1	0|1|2	2
Output ID	1	0 – 3	0
Output Status	1	0|1	
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.

✧ *<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.

✧ *<Send Alarm Message>*: Specify the sending method of the monitoring alarm.
- ● 0: Do not send the +**RESP:GTMON** message, only make the monitoring phone call.
- ● 1: Follow the *<Report Mode>* in command **AT+GTSRI**. If set to send alarm through GPRS, the alarm message may send after the monitoring phone call as the phone call will block the GPRS sending.
- ● 2: Send monitoring alarm through SMS to the backend server.

✧ <Output ID>: The ID of the output port to output the wave shape 1 when a call is answered.

✧ <Output Status>: Please refer to the parameter <Output1–4 Status> in chapter 3.2.5.

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

➢ **+ACK:GTMON,**

Example:
+ACK:GTMON,060100,135790246811220,,000E,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	$	$

Note:

For modes 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.

3.2.16. 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=gv300,1,2,1,,,,,1,1,0,0,,,,,000F$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0|1	0
Time to Stationary	2	1 – 30 min	2
Time to Movement	1	1 – 5 min	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 3	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 3) 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,060100,135790246811220,,000F,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	$	$

3.2.17. 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 *<Behavior duration>* 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=gv300,1,,,100,21,6,,60,21,6,,,21,15,,1,1,8,3,,,,,0010$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300

Enable	1	0|1	0
Behavior Duration	1	3-5	3
Reserved	0		
High Speed	<=3	100 – 400km/h	100
ΔVhb	<=3	0 – 100km/h	0
ΔVha	<=3	0 – 100km/h	0
Reserved	0		
Medium Speed	<=3	60 – 100km/h	60
ΔVmb	<=3	0 – 100km/h	0
ΔVma	<=3	0 – 100/km/h	0
Reserved	0		
Reserved	0		
ΔVlb	<=3	0 – 100/km/h	0
ΔVla	<=3	0 – 100/km/h	0
Reserved	0		
Output ID	1	0 – 3	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	$	$

✧ *<Enable>*: Enable or disable this function.
  - 0: Disable this function
  - 1: Enable this function
✧ *<Behavior Duratione>*: The speed changes within *<Behavior Duration>*.
✧ *h 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.

◇ *<ΔVhb>*: 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.

◇ *<ΔVha>*: 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.

◇ *<ΔVmb>*: 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.

◇ *<ΔVma>*: 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.

◇ *<ΔVlb>*: 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.

◇ *<ΔVla>*: 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 3) 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,060100,135790246811220,,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. 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=gv300,-,3,30,0,20090917203500,,,,,0011$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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,060100,135790246811220,,0011,20090214093254,11F0$			
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	$	$

3.2.19. 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**, **+RESP:GTJDR** and **+RESP:GTJDS**. 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=gv300,1,1F,0900,1200,1300,1730,,,3,1,1,0,0,,,,,0012$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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 – 3	0
Output ID	1	0 – 3	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. The working parameter of the specified input must be set by **AT+GTDIS** first. If using interruptible digital input, please connect slide button instead of tact button to that input for this function.

◆ *<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,060100,135790246811220,,0012,20090214093254,11F0$			
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	$	$

3.2.20. 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=gv300,1,,1,0130,,1,1,,60,60,,0013$			
AT+GTDOG=gv300,2,30,,,,1,2,,60,60,,0013$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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|1|2	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 this ignition to last ignition on reset time is greater than the specified value, the device will automatically reboot upon ignition on. The device will reboot automatically at the second ignition of the first use whatever the time interval between the first ignition on.
✧ *<Interval>*: The interval to reboot the device in day, the first time to reboot the device will ignore this interval.
✧ *<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 1 and 2 are supported.
✧ *<GSM Interval>*: The internal 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 do not reboot the device.

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

➢ **+ACK:GTDOG,**

Example:
+ACK:GTDOG,060100,135790246811220,,0013,20090214093254,11F0$

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	$	$

3.2.21. 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=gv300,1,0000,,,,,,0014$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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,060100,135790246811220,,0014,20090214093254,11F0$			
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	$	$

3.2.22. 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=gv300,A,,,,,,0015$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Sub Command	2	0 – 12	
AT Command | Configuration Mask	3|16	"SRI"| 000000000000000 – FFFFFFFFFFFFFFFF	
Output Direction	1	0-2	
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	

Tail Character	1	$	$

✦ *<Sub Command>*: Valid value is 0-12.
- 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** or +**RESP: GTALM or +RESP: GTALS** or +**RESP: GTALC**.
- 3: *REBOOT*. Reboot the terminal.
- 4: *RESET*. Reset all parameters to factory setting. Parameters configured by **AT+GTBSI**, **AT+GTSRI, AT+GTCFG, AT+GTTMA** and **AT+GTPIN** 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.
- 10: **CAN**. Get CAN information via message +**RESP:GTCAN**. Only the working mode of **AT+GTURT** or **AT+GTMUT** is 12, and +**RESP:GTCAN** report is valid.
- 11: **UVN**. Get the version number information of UFSxxx fuel sensor via message +**RESP:GTUVN**. Only the working mode of **AT+GTURT** is 4 and the < Digital Fuel Sensor Type> is 4, and +**RESP:GT UVN** report is valid.
- 12: **CVN**. Get the version number information of CAN100 via message +**RESP:GTCVN**. Only the working mode of AT+GTURT or AT+GTMUT is 12, and +RESP:GTCVN report is valid.

✦ *<AT Command / Configuration Mask>*:
- AT Command: If *<Sub Command>* is set to 2 and you want to get single AT command configuration, the parameter *<AT Command>*including AT Command that we defined which save by NVRAM. For example, if you want to get configuration of **AT+GTFRI**, Please set AT+GTRTO=gv300,2,FRI,,,,,0015$**,** through +**RESP:GTALS** to get it**.**
- Configuration Mask: If *<Sub Command>* is set to 2, according to choose the *configuration Mask*, you will get configuration information which you want to get via message +**RESP:GTALC** and the configuration Mask must is 16 bytes. If it's less than 16 bytes, it should add '0' in the high bytes of the configuration Mask.

Configuration Mask Table:

Bit	Item to Mask
Bit63	Reserved
Bit62	Reserved
⋮	Reserved
Bit 50	UDF
Bit 49	CMD
Bit 48	Reserved
Bit 47	FTP
Bit 46	CAN
Bit 45	CMS
Bit 44	PEO
Bit 43	RMD
Bit 42	FSC
Bit 41	TMP
Bit 40	UDT
Bit 39	MUT
Bit 38	Reserved
Bit 37	SPA
Bit 36	BZA
Bit 35	Reserved
Bit 34	Reserved
Bit 33	PDS
Bit 32	ACD
Bit 31	IDA
Bit 30	EFS
Bit 29	SSR
Bit 28	JBS
Bit 27	FFC
Bit 26	Reserved

Bit 25	HRM
Bit 24	WLT
Bit 23	JDC
Bit 22	URT
Bit 21	HBM
Bit 20	HMC
Bit 19	IDL
Bit 18	AIS
Bit 17	DOG
Bit 16	OWH
Bit 15	PIN
Bit 14	MON
Bit 13	SOS
Bit 12	SPD
Bit 11	GEO
Bit 10	FRI
Bit 9	TMZ
Bit 8	IOB
Bit 7	OUT
Bit 6	DIS
Bit 5	EPS
Bit 4	TOW
Bit 3	CFG
Bit 2	Reserved
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=gv300,4,FRI,,,,,000F\$**".A special usage is to delete the saved buffer messages with command "**AT**+**GTRTO=gv300,4,BUF,,,,,000F\$**".Configuration of commands **AT+GTBSI**, **AT+GTSRI**, **AT+GTQSS**, **AT+GTCFG**,

AT+GTTMA ,AT+GTDAT, AT+GTPIN and AT+GTTAP can not be reset by this command.

✧ < *Output Direction* >: If <*Output Direction*> set to 0, the message output to the backend server. If <*Output Direction*> set to 1, the message will output to the main serial port. If <*Output Direction*> set to 2, the message will output to the serial port This field work except <*Sub Command*> 2(READ),3(REBOOT),4(RESET),5(PWROFF).

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

➢ **+ACK:GTRTO,**

Example:			
+ACK:GTRTO,060100,135790246811220,,IOS,0015,20090214093254,11F1$			
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' '-' '_'	
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**.

3.2.23. Serial Port Setting

The 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=gv300,1,5,8,1,0,0,0,0,,0018$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Working Mode	1	0 – 9|12|14	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|1	0
Reserved (Optional)	0		
Reserved (Optional)	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

◇ *<Working Mode>*: Configure the working mode of UART.
- 0: Disable UART.
- 1: Use UART to transfer data via **AT+GTDAT**.
- 2: Used for Garmin function.
- 3: Use specific RFID card reader to communicate with UART of GV300. before use this function, you must configure digital input port setting by **AT+GTDIS** command. The GV300 will report the card ID received from the card reader to the backend server with message +**RESP:GTIDA**
- 4: Used for digital fuel sensor.two reserved parameter used for as follow.

Digital Fuel Sensor Type	1	0 – 4|6	0
Reserved	0		

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 sensors.
- 6: Used for transfer data from auxiliary serial port to backend server when receive a special byte define in *<Terminator character>*, two reserved parameter used for as follow. When there received data over 1280 bytes, it also assemble responses and send to server.

Format	1		0
Terminator character	2	0x00-0xFF	0D

- 7: Used for transparent transfer with length and the data in +**RESP:GTDTT**(short format) is encapsulated in hexadecimal ASCII format code, two reserved parameter used for as follow.

Interval	<=4	1-3600sec	

Length	<=4	1-640	

- 8: Used for transparent transfer with length and the data in +**RESP:GTDTT** short format） is encapsulated in pure HEX code, two reserved parameter used for as follow.

Interval	<=4	1-3600sec	
Length	<=4	1-1280	

- 9: Used for camera.
- 12: Used for CANBUS device connected to a vehicle. Two reserved parameters are used as follow. In this mode, the baudrate must be set to 9600.

CANBUS Device Type	1	0 - 0	0
Reserved	0		

- 14: Used for transferring specified reports via satellite terminal when GSM is not available, and in this mode, it is necessary to set 9600 baud rate, none parity, 1 start bit and 1 stop bit. Here are the lists of the supported report.

Report Format	Item
SOS	SOS,TOW,DIS,IOB,SPD,RTL,DOG,IGL,HBM,GEO
FRI	FRI
IGN	IGN,IGF
STT	STT
GIN	GIN,GOT

✧ < *Baudrate Index* >: The index of the supported baudrate of the 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 UART and its' value may be 7 and 8.

✧ *<Stop Bits>*: Stop Bits of the UART 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 UART 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 the sleep mode to reduce the power consumption. When the device enters into the sleep mode, the response to the serial port will be very slow unless being waked up. This parameter is used to enable or disable the sleep mode of the device.
  - 0: disable the device sleep mode.
  - 1: enable the device sleep mode.
  - 2: disable the device sleep mode and disable the serial sleep mode. Support hardware version 1.07 and above.

  If the device sleep mode is enabled, the external device must have the ability to wakeup the device from the sleep mode by the digital input specified by parameter*<Input ID of Wakeup>*. If the working mode of **AT+GTURT** is 12, this parameter should be set to 2.

✧ *<Input ID of Wakeup>*: The ID of the digital input of GV300 used to wakeup the device from the low power mode for serial port communication, if someone want to use RFID function, he must set the *<Input ID of Wakeup>* as 1.
  - 0: Do not use digital input 1 to wakeup the device. The digital input 1 is used normal interrupt port.
  - 1:The RFID use digital input 1 to wakeup the device. The parameter of the digital input 1 should be set by command **AT+GTDIS**.

✧ *<Digital Fuel Sensor Type>*: The type of digital fuel sensor connects with serial port.
  - 0: EPSILON ES2 or ES4.
  - 1: LLS 20160.
  - 2: DUT-E
  - 3: QFS100
  - 4: UFSxxx
  - 5: Reserved
  - 6: DUT-E SUM

✧ *<Format>*:When <Working Mode> is 6 that used for transfer data from auxiliary serial port to backend server <format>.
  - 0: short format.
  - 1: long Format.

◇ < *Interval* >: when <Working Mode> is 7 or 8, The time in second before send the data in UART buffer when no more data is received..

◇ <*Terminator character*>: When auxiliary serial port receive this character, wrapped before <*Terminator character*> into message +**RESP:GTDTT** and send to backend server.this parameter use When <Working Mode> is 6.

◇ < *Length*>: when <Working Mode> is 7 or 8, The maximum length of data in the message +RESP:GTDTT.

◇ <*CANBUS device Type*>: The type of CANBUS device connecting with serial port.
  - 0: CAN100.

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

➢ **+ACK:GTURT,**

Example:
+ACK:GTURT,040100,135790246811220,,0018,20090214093254,11F0$

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	$	$

3.2.24. 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.

Before using this command, you should use **AT+GTURT** command to set the correct parameter of the second serial port first.

➢ **AT+GTDAT=**

Example:
AT+GTDAT=gv300,0,,data to the backend server,,,,,0017$
AT+GTDAT=gv300,1,,data to the serial port,,,,,0017$

AT+GTDAT=gv300,2,,data to the backend server,,,,,0011$				
AT+GTDAT=gv300,3,,data to the serial port,,,,,0017$				
Parameter	**Length(byte)**	**Range/Format**	**Default**	
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300	
Command Type	1	0|1|2|3		
Reserved	0			
Data	<=1280	ASCII Code		
Need Ack	1	0|1		
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 serial port.
- 2: means to send message to the backend server with +**RESP:GTDAT** (**Long Format**).
- 3: means to send the pure data directly to the serial port without CRLF.

✧ *<Data>*: Data to be transferred between the backend server and the equipment connected to the second serial port of the device.

NOTE**:** The max length of data from the main serial port and the backend server is 200, and from the serial port is 1280.

✧ *<Need Ack>*: Need report ' +**ACK:GTDAT**' or not
- 0: No need of ack report.
- 1: Need report ack.

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

➢ **+ACK:GTDAT,**

Example:				
+ACK:GTDAT,060100,135790246811220,,0017,20090214093254,11F0$				
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	$	$

3.2.25. Hour Meter Counter

The command **AT+GTHMC** is used to measure the accumulated 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, +RESP:GTIGN** or **+RESP:GTIGF** message, *<hour meter counter>* will be involved into these reports.

➢ **AT+GTHMC=**

Example: AT+GTHMC=gv300,1,12345:12:34,,,,,,,,,,,0018$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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 ignition is on at the first time, the *<Hour Meter Count>* which is reported in +**RESP:GTFRI**, +**RESP:GTIGN** or +**RESP:GTIGF** will be increased based on this value.

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

➢ **+ACK:GTHMC,**

Example:			
+ACK:GTHMC,060100,135790246811220,,0018,20090214093254,11F0$			
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	$	$

3.2.26. Jamming Detection

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

➢ **AT+GTJDC=**

Example:			
AT+GTJDC=gv300,1,20,,5,10,10,,3,1,0,0,,0019$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0|1|2	0
Signal Threshold	<=2	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 – 3	0
Output Status	1	0|1	
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 Jamming detection function.
  - ● 1: Enable Jamming detection 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 quiting 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 – 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	$	$

3.2.27. 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=gv300,3,1,2,13813888888,13913999999,,,,,0018$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Call Filter	1	0|1|2|3|4|5|6|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 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 *<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,060100,135790246811220,,0018,20090214093254,11F0$			
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	$	$

Note:

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

3.2.28. Frequency Change of Fixed Report Information

The command **AT+GTFFC** is used to change the parameters of fixed report when certain event occurs to match the request of different report interval according to the need. When the event disappears, the device will resume its previous settings.

The device supports up to 5 sets of parameter for different events. Priority is assigned among these events. Only the parameters for the highest priority event are applied if more than one event occurs at the same time.

➢ **AT+GTFFC=**

Example: **AT+GTFFC=gv300,0,1,0,30,500,500,300,,,,,0000$**			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Priority	1	0-4	0
Mode	1	0-3	0
FRI Mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			
Reserved			

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

✧ *<Priority>*: Priority to the event which triggers the parameter change for fixed report. 0 is the highest priority.

✧ *<Mode>*: Specify the trigger event to change the fixed report parameters.
   - 0: Disable the parameters in the specified priority.
   - 1: Change the fixed report parameter when the device enters into any of the defined Geo-Fence.
   - 2: Change the fixed report parameter when the device enters into GSM known roaming state. （ref. GTRMD）

   3: Change the fixed report parameter when the device enters into GSM unknown roaming state.

✧ *<FRI Mode>*: When the specified event occurs, the working mode of the fixed report will be changed according to this parameter.
   - 0: Do not change the working mode
   - 1: Change the working mode to 'Timing Report'.
   - 2: Change the working mode to 'Distance Report'.
   - 3: Change the working mode to 'Mileage Report'.
   - 4: Change the working mode to 'Optimum Report'.
   - 5: Change the working mode to 'Fixed Time or Mileage Report'.

✧ *<FRI IGN Report Interval>*: Period to send the position information when ignition is on. The value range is 5 – 86400 and the unit is second.

✧ *<FRI Report Distance>*: The specified distance to send the position information when change to fixed distance report. Unit: meter.

✧ *<FRI Report Mileage>*: The specified path length to send the position information when change to fixed mileage report or optimum report. Unit: meter.

✧ *<FRI IGF Report Interval>*: Period to fix and send the position information when ignition is off if *<Power Saving Mode>* in **AT+GTCFG** is set to0|2. The value range is 0|5 – 86400 and the unit is second.

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

➢ **+ACK:GTFFC,**

Example:			
+ACK:GTFFC,060100,135790246811220,,0009,20090214093254,11F0$			
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	$	$

3.2.29. Jamming Behavior Setting

The command **AT+GTJBS** is used for the Jamming Behavior Setting function. It has 2 types for Jamming Behavior Setting configuration mode and Jamming Behavior Setting Reset mode. The output1 is used in "cut fuel" and the output2 is used in "siren".

3.2.29.1. Jamming Behavior Setting Configure mode

> **AT+GTJBS=**

Example: AT+GTJBS=gv300,1,,60,30,1800,1,30,0,0,5,,,001A$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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
Cut fuel Timer(T3)	5	1 – 65535(sec)	1800
Check Speed	1	0|1	1
Speed Limit	3	0 – 999km/h	30
Output 1 init state	1	0|1	0
Need Judge Motion Sensor	1	0|1	0
GPS Fix Fail Timeout Timer	3	1 – 100(min)	5
Enable Siren	1	0|1	1
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Mode>*: Working mode.
- ● 0: Disable JBS function.
- ● 1: Jamming Behavior Setting Configure mode.

✧ *<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.

✧ *<Cut fuel Timer (T3)>*: it pointed to cut fuel length of time.

✧ *<Check Speed>*: the device enters into jamming state, whether need to check speed.

- ● 0: Disable to check speed.
- ● 1: Enable to check speed.

✧ *<Speed Limit>*: the speed limit of cutting fuel.

✧ *<Output 1 Init State>*: Set the initial state of output 1.

✧ *<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.

✧ *<GPS Fix Fail Timeout Timer>*: it pointed to GPS timeout length of time.

✧ *<Enable Siren>*: it expresses that current JBS mashcine state whether use the digital output 2 to control siren.

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	$		$

3.2.29.2. Jamming Behavior Setting Reset mode

> **AT+GTJBS=**

Example:
AT+GTJBS=gv300,2,,,,,001A$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
mode	1	2	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Mode>*: Working mode.
  ● 2: Jamming Behavior Setting Reset mode.

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	$	$

3.2.30. 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=gv300,1,2,1,5,,,,,000F$			
Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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 – 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	$	$

3.2.31. AC100 Devices Setting

The command **AT+GTACD** is used to configure the parameters of AC100 devices, which include I-button and temperature sensors. When the iButton is access, a specified wave shape can be configured to the specified output port. Temperature sensor can be configured how long to read a real-time temperature. TEMPERATURE sensor information report in message +**RESP:GTERI**, iButton information report in message +**RESP:GTIDA**.

➢ **AT+GTACD**

Example: AT+GTACD=gv300,1,2,0,10,3,10,,,,,0005$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
iButton Timer	<=2	0|1 – 10(s)	0
Output ID	1	0-3	0
Output status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle	<=3	0 – 255	0
Temperature Timer	<=3	0|10– 255(s)	0
Reserved			
Reserved			
Reserved			

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

✧ < *iButton Timer*>: Interval of search the iButton ID.
   Note: The number of iButton ID is opposite order with number that print in iButton. We use the ID structure is < 1 byte family id> + < 6 byte serial number> + <1 byte CRC>. So the first byte of ID number is iButton's family id.

✧ <*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,060100,135790246811220,,0005,20090214093254,11F0$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=10	'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. Extend Digital Fuel Sensor

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

➢ **AT+GTEFS=**

Example:			
AT+GTEFS=gv300,,,,15,10,,0,5,,,,,,,FFFF$			
Parameter	**Length(byte)**	**Range/Format**	**Default**

Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Reserved	0		
Reserved	0		
Ex Full Value	<= 5	0 – 65535	9999
Ex Fuel Sensor Delay	<=3	0 – 600 sec	30
Ex Fuel Lost Alarm	<=2	0 – 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
Report Sensor Data	1	0 | 1	0
Ex Detect Frequency IGF	<=2	30-1800s	300
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ <Ex Full Value>: The value got form the sensor when the fuel tank is full.
   Note: Now only UFSxxx,DUT-E and DUT-E SUM need set this value, while the other sensor will ignore this value. The unit for UFSxxx is 0.1mm,and the unit for DUT-E and DUT-E SUM is 0.1L.

✧ <Ex Fuel Sensor Delay>: After ignition on, the fuel sensor will need delay this time long before it can report correct fuel level.

✧ <Ex Fuel Lost Alarm>: If the difference between the current fuel level 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 GV300 device will not send command to the fuel sensor, and the sensor must be set as periodical data output, QFS100 and UFSxxx can not support this function.

✧ < Ex Detect Frequency>: If < Ex Unsolicited Enable > is disable, the GV300 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

✧ *<Report Sensor Data>*: A numeric to indicate whether to report raw data from fuel sensor to the backend server with +RESP:GTFSD. Only report the raw data of UFSxxx now.
- 0: Do not report raw data from fuel sensor.
- 1: Report raw data from fuel sensor.

✧ *< Ex Detect Frequency IGF>*: If *< Ex Unsolicited Enable >* is disable, the GV300 device will send READ command to the fuel sensor and read the data as this frequency while ignition is off.

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

➤ **+ACK:GTEFS,**

<table>
<tr><td colspan="4">Example:
+ACK:GTEFS,060100,135790246811220,,0008,20090214093254,11F0$</td></tr>
<tr><th>Parameter</th><th>Length(byte)</th><th>Range/Format</th><th>Default</th></tr>
<tr><td>Protocol Version</td><td>6</td><td>XX0000 – XXFFFF,
X∈{'A' – 'Z','0' – '9'}</td><td></td></tr>
<tr><td>Unique ID</td><td>15</td><td>IMEI</td><td></td></tr>
<tr><td>Device Name</td><td><=10</td><td>'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'</td><td></td></tr>
<tr><td>Serial Number</td><td>4</td><td>0000 – FFFF</td><td></td></tr>
<tr><td>Send Time</td><td>14</td><td>YYYYMMDDHHMMSS</td><td></td></tr>
<tr><td>Count Number</td><td>4</td><td>0000 – FFFF</td><td></td></tr>
<tr><td>Tail Character</td><td>1</td><td>$</td><td>$</td></tr>
</table>

3.2.33. ID Authentication

The command **AT+GTIDA** is used to protect against unauthorized use. 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 realy 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 of the id num, 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=gv300,1,1,2,D2C4FBC5,87654321,45,3,,,,,1,1,0,0,,,,,FFFF$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0|1|2	0
Start Index	<=2	1 – 250	
End Index	<=2	1 – 250	
ID Number List	<=8*20	'0' – '9','a' – 'f', 'A' – 'F'	
Timeout after Ignition off	<=3	0 | 15 – 600sec	30
Report mode	1	0|1|2|3	0
ID Validity Time	<=3	15 – 600sec	30
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 3	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, only authorized ID cards can unlock the vehicle.
- 2: Enable this function, any ID card can unlock the vehicle.

✧ *<Start Index>*, *<End Index>*: The index range of the white list to which the ID 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 ID 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 is off, it is still authorized for a little time. In this period, you don't need the authentication, and 0 means locking the vehicle when ignition is off.

✧ < Report mode >:
  - 0: Don't report
  - 1: Report the ID which is authorized.
  - 2: Report the ID which is unauthorized.
  - 3: Report the both

✧ <ID Validity Time>: It will remain authorized for this period of time when the ID is valid.

✧ <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,06020A,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	$	$

3.2.34. Preserve special device logical state Setting

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=gv300,1,1F,,,,,,,FFFF$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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 >*:
- 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
- Bit 6: State of digital input.
- Bit 7: State of SPD
- Bit 8: State of SSR
- Bit 9: State of main power

The acknowledgment message of AT+GTPDS command:

➢ **+ACK:GTPDS,**

Example:
+ACK:GTPDS,040100,135790246811220,,000D,20090214093254,FFFF$

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	$	$

3.2.35. Buzzer Alarm Definition

This command is used to set the buzzer alarm, there are four kinds of alarms, each alarm output different sound with the buzzer, and all the alarms are settable in this command, before we use those alarms, we should configure the output ID which connect with the buzzer and enable it.

Here are the events which can trigger the buzzer alarm defined by this command.

1. Over speed alarm. Please refer to the command AT+GTSPA.
2. Not logged in the garmin.If we connect the device with a garmin, buzzer beep if the driver ignition on the vehicle but didn't login on in garmin unless he finished the login or ignition off.More information refer to the Reference document.

➢ **AT+GTBZA=**

Example:
AT+GTBZA=gv300,2,,,,1,2,10,,,0,6,10,,,0,10,10,,,0,20,10,,,,,,,,,0000$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Output ID	1	0|2|3	0
Reserved	0		
Reserved	0		
Reserved	0		
Alarm 1 Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		

Reserved	0		
Alarm 2 Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 3 Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 4 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		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Output ID>*: The output port which connected with the buzzer.

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

➢ **+ACK:GTBZA,**

Example:
+ACK:GTBZA,040100,135790246811220,,000D,20090214093254,FFFF$

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	$	$

3.2.36. Over Speed Alarm

This command is used to set the speed thresholds and binding one alarm type for the buzzer alarm, and if the current speed meets one of the thresholds, the buzzer will make a sound with the alarm type.

➢ **AT+GTSPA**

Example: **AT+GTSPA=gv300,1,20,,2,1,,,40,,2,2,,,60,,2,3,,,80,,2,4,,,,,,,,,000C$**			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0|1|2	0
Speed Threshold 1	<=3	0 – 400km/h	50
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		
Speed Threshold 2	<=3	0 – 400km/h	70
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		

Speed Threshold 3	<=3	0 – 400km/h	90
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		
Speed Threshold 4	<=3	0 – 400km/h	110
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	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
  ● 0: Disable
  ● 1: Strict mode, in this mode will check the speed and trigger the buzzer alarm during speed up or down.
  ● 2: Warning mode, in this mode will only check the speed and trigger the buzzer alarm during speed up.
✧ *<Speed Threshold>*: The speed threshold.
✧ *<Validity>*: If the speed meets the alarm condition and maintains a period of time defined by *<Validity>*, the buzzer alarm will be triggered.
✧ *<Alarm Type>*: The alarm type for each speed threshold, 0 means no buzzer alarm.

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

➢ **+ACK:GTSPA,**

Example:

+ACK:GTSPA,040100,135790246811220,,000D,20090214093254,FFFF$			
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	$	$

3.2.37. Main Serial Port Setting

This command **AT+GTMUT** is used to configure the parameters of the main serial port.

➢ **AT+GTMUT=**

Example: AT+GTMUT=gv300,0,12,8,1,0,0,,,,,,,0018$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Working Mode	2	0|1|5|11|12	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 Control	1	0|1	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✦ *<Working Mode>*: Configure the working mode of UART.
- 0: As Default communication port.
- 1: Use UART to transfer data via **AT+GTDAT**.
- 2-4: Reserved.
- 5: Reserved.
- 6-10: Reserved.
- 11: Use UART to transfer data via AT+GTDAT and for the basic command.
- 12: Used for CANBUS devices, in this mode,the baudrate must be set to 9600.

NOTE: if the working mode of **AT+GTMUT** is the same as **AT+GTURT**, only the main serial port can work, and only under mode 0 ,11 and mode 12, the device can receive all the AT commands.

✦ *<Baud Rate Index>*: The index of the supported baud rate of the serial port. All supported baud rates are listed below.

Baud rate Index	Baud rate
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 UART and its' value may be 7 and 8.
✦ *<Stop Bits>*: Stop Bits of the UART and its' value may be 1, 2 and 3.
- 1: 1 Stop Bits.
- 2: 2 Stop Bits.
- 3: 1.5 Stop Bits.
✦ *<Parity Bits>*: Parity Bits of the UART 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 Control>*: 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. If the working mode of **AT+GTMUT** is 12, this parameter should be set to 1 (Disable the lower power mode).

- 0: Enable the low power mode
- 1: Disable the lower power mode.

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

➢ **+ACK:GTMUT,**

Example:
+ACK:GTMUT,040100,135790246811220,,0018,20090214093254,11F0$

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	$	$

3.2.38. 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=gv300,0,1,28131A4103000056,,,-20,50,,,2,10,,,1,1,0,0,,,,,000C$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
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 – 3	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	$	$

✧ *<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 – XXFFFF, 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	$	$

3.2.39. Uart Data Transfer

The command **AT+GTUDT** is used to transfer data to the serial port. Data to the serial port is wrapped into message **+RESP:GTUDT** and sent to the serial port.

➢ **AT+GTUDT=**

Example: AT+GTUDT= gv300,0,,0,0,,1,,00087FFF,,,,,,, 0000$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0|1	0
Reserved	0		
IGN Send Interval	<=3	0|5-250	0
IGF Send Enable	1	0|1	0
Reserved	0		

Event Mask	8	00000000-FFFFFFFF	1
Reserved	0		
Report Composition Mask	8	00000000-FFFFFFFF	00087FFF
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Mode>*: Transfer data to report message **+RESP:GTUDT** to the serial port.
   ● 0: disable transfer data.
   ● 1: enable transfer data.
✧ *<IGN Send Interval>*: Period to send the related information when the ignition is on. The value range is 0|5-250 and the unit is second, 0 is set to disable.
✧ *<IGF Send Enable>*:   Period to send the related information when the ignition is off, with the frequency of *<IGF Report Interval>* of **AT+GTFRI**, and *<Mode>* of **AT+GTFRI** is enable.
   ● 0: is set to disable.
   ● 1: is set to enable.
✧ *<Event Mask>*: Bitwise mask to configure which event triggered will send **+RESP: GTUDT** to the serial port.
   ● Bit 0 for activated GEO.
   ● Bit 1 for activated PEO.
   ● Bit 2-31 Reserved.
✧ *< Report Composition Mask >*: Bitwise mask to configure which information should be sent to the serial port.
   ● Bit 0 for Protocol Version, Firmware Version
   ● Bit 1 for Hardware Version
   ● Bit 2 for Unique ID
   ● Bit 3 for Device Name
   ● Bit 4 for speed
   ● Bit 5 for Azimuth
   ● Bit 6 for altitude
   ● Bit 7 for MCC, MNC, LAC, Cell ID, Reserved.
   ● Bit 8 for mileage, Reserved.
   ● Bit 9 for HMC, Reserved.

- Bit 10 for GSV, External GPS Antenna
- Bit 11 for GEO State
- Bit 12 for analog input
- Bit 13 for digital input ,motion status
- Bit 14 for Extern power VCC, backup battery level, charging.
- Bit 15 for GEO Status Mask
- Bit 16 for PEO State
- Bit 17 for PEO Status Mask
- Bit 18 Reserved.
- Bit 19 for send time
- Bit 20-31 Reserved.

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

➢ **+ACK:GTUDT,**

Example:
+ACK:GTUDT,060100,135790246811220,,0004,20090214093254,11F0$

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	$	$

3.2.40. Fuel Sensor Calibration Table

This command is used to set the fuel sensor's calibration table.

➢ **AT+GTFSC=**

Example:
AT+GTFSC=gv300,,0,21,1,,,3,16000,0,10000,50,250,100,,,,,,,,,FFFF$

Parameter	Length(byte)	Range/Format	Default
Password	4~6	'0'~'9' 'a'~'z' 'A'~'Z'	gv300
Reserved			

Table ID	1	0 – 4	1
Sensor Type	<= 2	0-4|6|20 – 21	20
Enable	1	0|1	0
Max Tank Volume	<= 5	0 –10000	100
Reserved			
Num of Node	<= 2	0|2 – 11	0
Node 1 Value	< = 5	0～99999	
Node 1 Percentage	<= 2	0 – 100	
⋮			
Node N Value	< = 5	0～99999	
Node N Percentage	<= 2	0 – 100	
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Serial Number	4	0000～FFFF	
Tail Character	1	$	$

✧ *<Table ID>*: the ID of the calibration table to set this time

✧ *<Sensor Type>*: The sensor type of this table

- 0: EPSILON ES2 or ES4.
- 1: LLS 20160.
- 2: DUT-E
- 3: QFS100
- 4： UFSxxx
- 6： DUT-E SUM
- 20: ADC1
- 21:ADC2

✧ *<Enable>*: Enable or disable this table, and if this table is disabled, the calculation of fuel level will be liner.

✧ *<Max Tank Volume>*: max volume of tank. The unit is L.

✧ *<Num of Node>*: Num of the node in the table below

✧ *<Node N Value>*: Value of this node.

✧ *<Node N Percentage>*: the percentage according to the value of this node, this item must be ascending order and begin with 0% and end with 100%

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

➢ **+ACK:GTFSC,**

Example:			
+ACK:GTFSC,060100,135790246811220,,0004,20090214093254,11F0$			
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	$	$

3.2.41. Roaming Detection Configuration

The command **AT+GTRMD** is used to configure the GSM Roaming detection parameters.

➢ **AT+GTRMD=**

Example:			
AT+GTRMD=gv300,0,,,,,1,2,46000F,46002F,,,1,1,,,,2,2,,,,1f,,,1f,,,,,0,0,0,0,,,0001$ AT+GTRMD=gv300,1,,,,,1,3,46000,46002,46003,,,2,2,46007,,,1,1,46001,,,3fff,,,2ff,,,,,0,0,0,0,,,0002$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Home Operator Start	1	1-10	

Home Operator End	1	1-10	
Home Operator List	<=6*10		
Reserved	0		
Reserved	0		
Roaming Operator Start	1	1-100	
Roaming Operator End	1	1-100	
Roaming Operator List	<=6*100		
Reserved	0		
Reserved	0		
Black Operator Start	1	1-20	
Black Operator End	1	1-20	
Black Operator List	<=6*20		
Reserved	0		
Reserved	0		
Known Roaming Event Mask	<=6	000000 – FFFFFF	3FFF
Reserved	0		
Reserved	0		
Unknown Roaming Event Mask	<=6	000000 – FFFFFF	3FFF
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0～255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✦ *<Mode>*: Working mode.
  ● 0: Disable this function.
  ● 1: Enable this function.
✦ *<Operator Start>*: A numeric to indicate the first index of the white operator number to input. For example, if it is **1**, it will update the white operator list from the **1**st one. If it is empty, it should not include white number list later.
✦ *<Operator End>*: A numeric to indicate the last index of the white operator number to input. For example, if it is **2**, it will update the white operator list until the **2**nd one. If it is empty, it should not include white number list later.
✦ *<Home Operator List>*: A PLMN operator white number list. The numbers include MCC and MNC, consisting of 3-digi number each, or the last digi of MNC can be omitted (e.g. '46001F' or '46001' is the PLMN of 'CHINA UNICOM'). The operators in this list will be treated as not in 'Home' state. And two close operator numbers are separated with '**,**'. The number of the operator in the list is up to the parameter <Operator Start> and <Operator End>. For example, if <Operator Start> is **1** and is <Operator End> **2**, the operator list should include **2** operator numbers (also accept empty) and the two numbers are separated by with '**,**'. Using type of 'MCCFF' is able to cover a whole country, for example '460FF' coverd whole country mobile network in China.
✦ *<Roaming Operator List >*: It mostly likes the <Home Operator List>, the different is the operators in this list will be treated as the 'Known roaming' state.
✦ *< Black Operator List >*: It mostly likes the <Home Operator List>, the different is the operators in this list will be treated as 'Blocking report' state. In this state device works in normal but all report will be buffered for no sending.
  Operators that are not in <Home Operator List>,<Roaming Operator List> and <Black Operator List > will be treated as 'Unknown Roaming' state.
✦ *<Known Roaming Event Mask>*: Bitwise mask to configure which event report should be sent to the backend server when GSM roam state is detected. If the roaming state is a 'Known Roaming', the <Known Roaming Event Mask> will be acting; else the <Unknown Roaming Event Mask> will be acting.
  ● 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**

- Bit 14 for the UFSxxx fault code report +**RESP:GTEXP**
- Reserved
- Others is Reserved

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

✧ *<Unknown Roaming Event Mask>*: It mostly likes the *<Known Roaming Event Mask>*.

✧ *<Output ID>*, *<Output Status>*, *<Duration>* and *<Toggle Times>*: When this function is enabled and Roaming is detected, the specified wave will be output to the specified output.

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

➢ **+ACK:GTRMD,**

Example: **+ACK:GTRMD, 060228,135790246811220,,0000,20090214093254,11F0$**			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z', '0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=10	'0' – '9' 'a' – 'z' 'A' – 'Z'	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

*Note***:**

   It is restricted via Manage Tool (but not for sending via GPRS) that only no more than 180 bytes of an AT command string could be accepted by device.
As GTRMD contains large configuration information in PLMN code list, make good use of <Start index>, <End index> to avoid over 180 bytes. Also a color alert will occur on Command Text Box with yellow if it happened while using Manage Tool.

3.2.42. Polygon Geo-Fence

The command **AT+GTPEO** is used to configure the parameters of Polygon Geo-Fence. (Geo-Fence is a virtual perimeter on a geographic area using a location-based service, so that

when the geo-fencing 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+GTPEO=**

Example: AT+GTPEO=gv300,0,0,3,121.412240,31.187801, 121.412248,31.187891,121.412258,31.187991,,600,1,1,0,0,,,,,000B$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	Gv300
GEO ID	1	0 – 19	0
Mode	1	0 – 3	0
Start point	2	0|1-10	0
End point	2	0|1-10	0
Longitude	<=11	(–)xxx.xxxxxx	
Latitude	<=10	(–)xx.xxxxxx	
Check Interval	<=5	0|5 – 86400sec	0
Output ID	1	0 – 3	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 twenty zones, 0 to 19, are supported.

✦ *<Mode>*: The working mode of the polygon Geo-Fence to report the message 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.

✧ <*Start Point*>: The start point of the polygon GEO-Fence of a set of points.

✧ <*End Point*>: The end point of the polygon GEO-Fence of a set of points.

✧ <*Longitude*>: The longitude of a point which is defined as the endpoint of the polygon Geo-Fence region. The format is "(–)xxx.xxxxxx" and the value range is from "–180.000000" to "180.000000". The unit is degree. West longitude is 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 endpoint of the polygon Geo-Fence region. The format is "(–)xx.xxxxxx" and the value range is from "–90.000000" to "90.000000". The unit is degree. South Latitude is defined as negative starting with minus " – " and north Latitude is defined as positive without "+".

Note: If need more groups of <*longitude*>and <*latitude*>, please use<*start point*> and <*end point*> to adjust, marked <*longitude*> and <*latitude*> means repeat**.**

✧ <*Check Interval*>: The interval of GPS checking for the Geo-Fence alarm.

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

➢ **+ACK:GTPEO,**

Example:			
+ACK:GTPEO,040100,135790246811220,,0,000B,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' '-' '_'	
GEO ID	1	0 – 19	
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

3.2.43. Camera Support

3.2.43.1. Camera Setting Command

AT+GTCMS is used for setting camera parameters

➢ **AT+GTCMS=**

Example: AT+GTCMS=gv300,0,3,5,150,2,1,0003,,,2,1,1,20,,,,,FFFF$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Camera ID	1	0-3	
Number	<=2	1-10	1
Interval	<=2	1-60s	5
Photo Compression Ratio	<=3	20-250	150
Photo Resolution	1	1-3	2
Digital Input ID	1	0|1-3	0
Attribute Mask	<=4	0000 - FFFF	0x0003
Server Type	1	0|1	0
Reserved	0		
Output ID	1	0 – 3	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	$	$

✧ *<Number>*: Take picture numbers in one continuous shooting.

✧ *<Interval>*: The interval between two pictures in one continuous shooting.

✧ *<Photo Compression Ratio>*: The compression ratio of picture. Pictures' quality would be better with smaller compression ratio.

✧ *<Photo Resolution>*: The resolution of picture.
- ● 1: 160*120
- ● 2: 320*240
- ● 3: 640*480

✧ *<Digital Input ID>*: The input ID used for trigger photographing.

✧ *<Attribute Mask>*: The *<Attribute Mask>* in message +**RESP:GTPHL** and +**RESP:GTPHD**

in HEX format.

Bit	Item to Mask
Bit 15	Reserved
⫶	Reserved
Bit 2	Reserved
Bit 1	*<Photo Time>*
Bit 0	*<Camera ID>*

✧ *<Server Type>*: The server that picture is transferred to.
   - 0: Backend server
   - 1: FTP server

Notes: The output settings are used for outputing special wave when the camera is photographing, trying to photograph and transmiting data between camera and GV300 device.

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

➢ **+ACK:GTCMS,**

Example:			
+ACK:GTCMS,208504,862170019025640,,FFFF,20131018074736,003B$			
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	$	$

3.2.43.2. Take Picture Command

AT+GTTAP is used for real-time photographing

➢ **AT+GTTAP=**

Example:			
AT+GTTAP=gv300,0,,,1,,,,,FFFF$			
Parameter	**Length(byte)**	**Range/Format**	**Default**

Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Camera ID	1	0-3	
Reserved	0		
Reserved	0		
Photo Resolution	1	1-3	2
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

Notes: When using **AT+GTTAP** to take picture, the basic settings of camera such as *<Photo Compression Ratio>*, *<Attribute Mask>*, *<Output ID>*, *<Output Status>*, *<Duration>* and *<Toggle Times>* the same as **AT+GTCMS** set.

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

➢ **+ACK:GTTAP,**

Example:		
+ACK:GTTAP,208504,862170019025640,,FFFF,20131018075847,0057$			
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	$	$

3.2.44. CANBUS Device Configuration

This command **AT+GTCAN** is used to set the CANBUS device configuration for reporting

CANBUS device information (+**RESP:GTCAN**) which mainly contains VIN, vehicle speed, engine speed, engine coolant temperature and some other information.

➢ **AT+ GTCAN**

Example: AT+GTCAN=gv300,1,30,60,FFFFFFFF,,,,,,FFFF$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Mode	1	0|1	0
CAN Report Interval	<=5	0|5 – 86400sec	0
CAN Report Interval IGF	<=5	0|5 – 86400sec	0
CAN Report Mask	8	0 - FFFFFFFF	C00FFFFF
Additional Event	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Mode>*: The mode
   ● 0: Disable CAN function.
   ● 1: Enable CAN function.
✧ <CAN *Report Interval*>: Period to send +**RESP: GTCAN** report message to the backend server when ignition is on. Its value range is 0|5 – 86400 and the unit is second. 0 means not reporting the message +**RESP: GTCAN**.
✧ <CAN *Report Interval IGF*>: Period to send +**RESP: GTCAN** report message to the backend server when ignition is off. Its value range is 0|5 – 86400 and the unit is second. 0 means not reporting the message +**RESP: GTCAN** in ignition off state.
✧ *<Additional Event>*: The choice whether to send +**RESP: GTCAN** report message by additional event.
   ● 0: Ignore all event.
   ● 1: By ignition On/Off event.
✧ <CAN *Report Mask*>: Bitwise report mask to configure the composition of CAN report message.
   NOTE:
   The Bit 31 *<GSM Information>* and Bit 30 *<GPS Information>* in this *<CAN Report Mask>* control the composition of +**RESP:GTCAN** only in ASCII format, not in HEX format. The *<+CAN mask>* in **AT+GTHRM** control the GSM information and GPS information in

+**RESP:GTCAN** in HEX format.

The Bit 22 <Total Distance Impulses > control the composition of CAN DATA only in HEX format.

Bit	Item to Mask	Description
Bit 31	*<GSM Information>*	Including *<MCC>*, *<MNC>*, *<LAC>*, *<Cell ID>* and the *<reserved>* parameter "00"
Bit 30	*<GPS Information>*	Including*<GPSAccuracy>*,*<Speed>*,*< Azimuth>*,*<Altitude>*,*<Longitude>*,*<Latitude>*,*<G PS UTC Time>*
Bit 29	Reserved	
Bit 28	Reserved	
Bit 27	Reserved	
Bit 26	Reserved	
Bit 25	Reserved	
Bit 24	Reserved	
Bit 23	Reserved	
Bit 22	<Total Distance Impulses>	Vehicle total distance Impulses(if distance from dashboard is not available)
Bit 21	<Total Vehicle Engine Overspeed time>	The total time when vehicle engine speed was greater than the limit defined in CAN100 configuration.
Bit 20	<Total Vehicle Overspeed Time>	The total time when vehicle speed was greater than the limit defined in CAN100 configuration.
Bit 19	*<Doors>*	A decimal 8-bit number, each bit contains information of one door
Bit 18	*<Lights>*	A decimal 8-bit number, each bit contains information of particular light
Bit 17	*<Detailed Information/Indicators>*	A decimal number, each bit contains information of one indicator
Bit 16	*<Tachograph Information>*	Two bytes, the higher byte describes driver 2 (the one, whose card is inserted in tachograph slot 2), the lower byte – driver 1
Bit 15	*<Axle Weight>*	Vehicle axle weight
Bit 14	*<Total Idle fuel Used>*	Number of liters of fuel used since vehicle manufacture or device installation

Bit 13	*<Total Engine Idle Time>*	Time of engine running during idling status (vehicle stopped) since vehicle manufacture or device installation
Bit 12	*<Total Driving Time>*	Time of engine running during driving (non-zero speed) since vehicle manufacture or device installation
Bit 11	*<Total Engine Hours>*	Time of engine running since vehicle manufacture or device installation
Bit 10	*<Accelerator Pedal Pressure>*	Accelerator pedal pressure
Bit 9	*<Range>*	The number of kilometers to drive on remaining fuel
Bit 8	*<Fuel Level>*	The level of fuel in vehicle's tank (in Liters or Percents)
Bit 7	*<Fuel Consumption >*	The fuel consumption
Bit 6	*<Engine Coolant Temperature>*	Engine coolant temperature
Bit 5	*<Engine RPM>*	Revolutions per minute of the engine
Bit 4	*<Vehicle Speed>*	Vehicle road speed
Bit 3	*<Total Fuel Used>*	Number of liters of fuel used since vehicle manufacture or device installation
Bit 2	*<Total Distance>*	Vehicle total distance
Bit 1	*<Ignition Key>*	Ignition status
Bit 0	*<VIN>*	Vehicle identification number

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

➢ **+ACK: GTCAN,**

Example:			
+ACK: GTCAN, 1F0101,135790246811220,,000D,20090214093254,FFFF$			
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	$	$

3.2.45. UFSxxx FOTA Upgrade

The command AT+ GTUFS is used to upgrade the firmware in UFSxxx fuel sensor over the air.

➢ **AT+GTUFS=**

Example: AT+GTUFS=gv300,3,30,0,,,http://220.178.67.210:8208/GV300/deltabin/csb_des_07_build1116.bin,,,,,0001$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Retry Times	1	0 – 3	0
Timeout	2	10-30min	10
Protocol Type	1	0	0
Server User Name	<=6	'_','a-z','A-Z'	
Server Password	<=6	'_','a-z','A-Z'	
Server URL	100	Legal URL	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Retry Times>*: Specifies the maximum time of retrying to download the update package upon downloading failure.

✧ *<Timeout>*: Specifies the expiration timeout of one single downloading. If the downloading expires, it is considered to be a failure.

✧ *<Protocol Type>*: The protocol used to download the package.
  ● 0: HTTP. Only HTTP is supported now.

✧ *<Server User Name>*: If the file server uses authentication, specify the user name here.

✧ *<Server Password>*: If the file server uses authentication, specify the password here.

✧ *<Server URL>*: Specifies the URL to download the package.

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

➢ **+ACK: GTUFS,**

Example:
+ACK: GTUFS,040100,135790246811220,,0018,20090214093254,11F0$

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	$	$

3.2.46. FTP Server Information

The command **AT+ GTFTP** is used to configure the FTP server information where and how to upload pictures. When the terminal is configured correctly, and the *<Server Type>* in command **AT+ GTCMS** is 1, it should be able to transfer pictures to FTP server.

➢ **AT+ GTFTP =**

Example:
AT+GTFTP=gv300,116.228.146.250,21,SW_RD/Projects/,,,1,,,,,,000B$

Parameter	Length(byte)	Range/Format	Default
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Server Address	<=60		
Server Port	<=5	0 – 65535	0
Full Name	<=60		
User Name	<=10		
Login Password	<=10		
Transfer Mode	1	0|1	0
Oper Type	1	0|1	0
Report FTP	1	0|1	0
File Name Prefix	<=20		

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

✧ *<Server Address>*: The IP address or the domain name of the FTP server.

✧ *<Server Port>*: The server port of the FTP server.

✧ *<Full Name>:* The file path to save a picture

✧ *<User Name>:* The user name to login the FTP server.

✧ *<Login Password>:* The password to login the FTP server.

✧ *<Transfer Mode>:* The mode to transfer picture.

    ● 0: passive mode.

    ● 1: active mode.

✧ *<Oper Type>:* The transfer mode to transfer picture after transfer fails.

    ● 0: Resume transferring the failed piture.

    ● 1: Restart transferring the failed piture as new.

✧ *<Report FTP>:* Whether to report +RESP:GTFTP to the backend server after transferring a file.

    ● 0: Disable the function.

    ● 1: Enable the function.

✧ *<File Name Prefix>:* The file name prefix of a picture.

3.2.47. Store Command String

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

➢ **AT+GTCMD=**

Example:
AT+GTCMD=gv300,1,1,AT+GTRTO=gv300,0,,,,,,000B$,,,,,0005$

Parameter	Length (byte)	Range/Format	Default
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gv300
Mode	1	0-1	0
Store Cmd ID	3	0 – 31	
Command String	200	AT command	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

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

✧ *<Mode>:* The working mode of the store command string.
- ● 0: Delete the stored command.
- ● 1: Add the stored command.

✧ *<Store Cmd ID>*: A numeric to identify the stored command.

✧ *<Command String>*: the whole content of the stored command.

The acknowledgement message of AT+GTCMD

➢ **+ACK:GTCMD**

Example:
+ACK:GTCMD,210101,135790246811220,,0005,20100310172830,11F0$

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

3.2.48. User Defined Function

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

➢ **AT+GTUDF=**

Example:
AT+GTUDF=gv300,1,1,FFFFFFFF,30,,,1F,1,,,,,0005$

Parameter	Length (byte)	Range/Format	Default
Password	4 – 6	'0' – '9', 'a' – 'z', 'A' – 'Z'	gv300
Mode	1	0-2	0
Group ID	<=2	0 – 31	
Input ID Mask	<=16	0-FFFFFFFFFFFFFFFF	
Debounce Time	<=5	0-86400(s)	0
Inzizo Mask	<=5	0-FFFFF	0
Outzizo Mask	<=5	0-FFFFF	0

Stocmd ID Mask	<=8	0-FFFFFFFF	
Stocmd Ack	1	0|1	0
Reserved			
Reserved			
Reserved			
Reserved			
Serial Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Mode>:* The working mode of the user defined fuction.
- ● 0: Disable the group.
- ● 1: Enable the group.
- ● 2: Delete the group.

✧ *<Group ID>*: A numeric to identify the group of input events and stored commands to be executed.

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

Bit0(00000001): select id1

Bit1(00000002): select id2

Bit2(00000004): select id3

Bit3(00000008): select id4

For example:

Bit(00000003): select id1,id2

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

ID	Bit	Item to Mask
1	Bit 0	Power on finished
2	Bit 1	Ignition on
3	Bit 2	Ignition off
4	Bit 3	The GPRS network is attached
5	Bit 4	The GPRS network is not attached
6	Bit 5	The GSM network registered
7	Bit 6	The GSM network not registered
8	Bit 7	Network roaming
9	Bit 8	Network non-roaming
10	Bit 9	SIM card is locked
11	Bit 10	GPS is opened
12	Bit 11	GPS is closed
13	Bit 12	The device is stationary
14	Bit 13	The device is moving
15	Bit 14	External charge inserted
16	Bit 15	No external charge.

17	Bit 16	The device is charging
18	Bit 17	The device is not charging
19	Bit 18	Digital input 2 is low
20	Bit 19	Digital input 2 is high
21	Bit 20	Digital input 1 is low
22	Bit 21	Digital input 1 is high
23	Bit 22	SIM card is inserted
24	Bit 23	SIM card is not inserted
25	Bit 24	GPS external antenna is inserted
26	Bit 25	GPS external antenna is not inserted
27	Bit 26	Inside the speed range
28	Bit 27	Outside the speed range
29	Bit 28	Messages need to be sent
30	Bit 29	No messages need to be sent
31	Bit 30	Digital input 3 is low
32	Bit 31	Digital input 3 is high
33	Bit 32	External battery inserted
34	Bit 33	No external battery

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

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

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

| 19 | **Bit 18** | Inside the Geo 18 |
| 20 | **Bit 19** | Inside the Geo 19 |

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

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

✧ *<Stocmd ID Mask>:* The bitwise of the stored commands which will be executed after the state of the group becomes TRUE (i.e. all cared input events happen.).

✧ *<Stocmd Ack>*: A numeric to indicate whether to return acknowledgement message after the stored commands are executed.

- 0: Do not send acknowledgement message when executing the stored command.
- 1: Send acknowledgement message when executing the stored command.

Note:

The maximum number of the stored commands to be executed in a group is five.

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

➢ **+ACK:GTUDF**

Example:			
+ACK:GTUDF,210101,135790246811220,,0005,20100310172830,11F0$			
Parameter	**Length (byte)**	**Range/Format**	**Default**
Protocol Version	6	XX0000 – XXFFFF, X∈{ 'A'-'Z','0'-'9'}	

Unique ID	15	IMEI	
Device Name	20		
Serial Number	4	0000 – FFFF	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

3.3. 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 Composition 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: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 location message for ignition on and ignition off.

➤ **+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,060100,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,200902 14013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTDIS,060100,135790246811220,,,20,1,1,4.3,92,70.0,121.354335,31.222073,2009021 4013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTIOB,060100,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,2009021 4013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTSPD,060100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,2009021 4013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTSOS,060100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,2009021 4013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTRTL,060100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,200902 14013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTDOG,060100,135790246811220,,,01,1,1,4.3,92,70.0,121.354335,31.222073,200902 14013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTIGL,060100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,2009021 4013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTHBM,060100,135790246811220,,,10,1,1,4.3,92,70.0,121.354335,31.222073,200902 14013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

+RESP:GTHBM,060100,135790246811220,,,11,1,1,24.3,92,70.0,121.354335,31.222073,20090 214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Reserved			
Report ID/Report Type	2	X(0-4)X(0-5)	
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 – 3.

● The ID of the bound IO which triggers the report message **+RESP:GTIOB**. The range is 0 – 3.

● The ID of the digital input port which triggers the reboot message **+RESP:GTDOG**. The valid value is 1 or 2.

● 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 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

    4: Reboot message for GSM watchdog reboot

    5: Reboot message for GPRS watchdog reboot

- In the message of ignition on and ignition off message **+RESP:GTIGL**

    0:the engine is ignition on.

    1: the engine is ignition off.

- In the message of harsh behavior monitoring message **+RESP:GTHBM**

    0: Harsh braking behavior

    1: Harsh acceleration behavior

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,060100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,2009021 4013254,0460,0000,18d8,6141,00,2000.0,12345:12:34,,,80,210100,,,,20090214093254,11F0$

+RESP:GTFRI,060100,135790246811220,,,00,2,1,4.3,92,70.0,121.354335,31.222073,2009021 4013254,0460,0000,18d8,6141,00,0,4.3,92,70.0,121.354335,31.222073,20090101000000,0460,0 000,18d8,6141,00,2000.0,12345:12:34,,,80,210100,,,,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' '-' '_'	
External Power VCC	<=5	0 – 32000 mV	
Report ID/Report Type	2	X(1-5)X(0-6)	
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	
Analog Input 1	<=5	0～16000 mV	F0 – F100	
Analog Input 2	<=5	25～16000 mV	F0 – F100	
Backup Battery Percentage	<=3	0 – 100	
Device Status	6	000000 – FFFFFF	
Reserved	0		
Reserved	0		

Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

✦ *<External Power VCC>*: The voltage of the external power supply. If using command **AT**+**GTEPS** to set the device report the external power supply voltage periodically with fixed report, the device will send the current voltage along with +**RESP:GTFRI** message to the backend server. If not set, this field will be empty.

✦ *<Report ID/Report Type>*: Indicate the working mode of the fixed report and the type of the message.

Report ID has five 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 seven meanings as below.

- 0: the normal fixed report.
- 1: corner report which indicates that the device just turns around a corner.
- 2: FRI report frequency change which indicates that the terminal enter into Geo-Fence status or roaming status..
- 3: corner report when FRI report frequency changed.
- 4: mileage report when fixed report is mode 5
- 5: reserved.
- 6: mileage report when fixed report is mode 5 and FFC works

✦ *<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 empty.

✦ *<Analog1 Input 1～2>*: The voltage of the analog input 1 and 2 or the fuel level measured from the fuel sensor connected to the corresponding analog input port. If using command **AT**+**GTAIS** to set the device report the analog input 1 or 2 periodically with fixed report, the device will send the current voltage of the analog input 1 or 2 or the fuel level with the format of "FXX" along with +**RESP:GTFRI** message to the backend server. If not set, this field will be empty.

✦ *<Backup Battery Percentage>*: The current volume of the backup battery in percentage.

✦ *<Device Status>*: The state of the device. The left two bits indicate the current motion state of the device, the middle two bits indicate the input ports status, the right two bits indicate the

output ports status.

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

The input ports status: A bitwise hex integer to represents the logical status of the digital input. From the lowest bit to the highest bit, each bit represents ignition detection and one of the digital inputs 1 – 3 respectively. For each bit, 0 means disable status, 1 means enable status.

The output ports status: 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 – 3 respectively. For each bit, 0 means disable status, 1 means enable status.

➢ +RESP:GTERI,

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

Example:
/*1wire bus connect no device*/
+**RESP:GTERI,06020B,862170010196747,,00000000,,10,1,2,1.8,0,-2.5,117.198440,31.845219
,20120802061037,0460,0000,5663,0358,00,0.0,,,,0,410000,20120802061040,0012$**

/*1wire bus connect only one device*/
+**RESP:GTERI,060209,862170011501234,,00000002,,10,1,1,0.0,0,43.6,117.198435,31.845227
,20120728025538,0460,0000,5663,0358,00,0.0,,,,0,220100,2,1,FD0000034129ED28,2,01A2,20
120728025540,0010$**

/*1wire bus connect two devices*/
+**RESP:GTERI,060209,862170011501234,,00000002,,10,1,0,3.2,0,64.7,117.198613,31.845190
,20120728025304,0460,0000,5663,0358,00,0.0,,,,0,210100,2,2,3C00000340FD1128,2,019E,FD
0000034129ED28,2,01AC,20120728025310,000A$**

/*Digital fuel sensor*/
+**RESP:GTERI,06020A,862170010196747,,00000003,,10,1,4,0.1,0,102.6,117.198663,31.8450
33,20120725122922,0460,0000,5663,39BF,00,0.0,,,,0,410000,1,008B,0,20120725122928,004A
$**

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' '-' '_'	
ERI Mask	8	00000000 – FFFFFFFF	
External Power Supply	<=5	0 – 32000 mV	
Report ID/Report Type	2	X(1-5)X(0-6)	
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	
Analog Input 1	<=5	0～16000 mV	F0 – F100	
Analog Input 2	<=5	25～16000 mV	F0 – F100	
Backup Battery Percentage	<=3	0 – 100	
Device Status	6	000000 – FFFFFF	
UART Device Type	<= 2	0 - 99	
Digital Fuel Sensor Data (Optional)	<= 20		

Reserved (Optional)	0		
Reserved (Optional)	0		
Reserved (Optional)	0		
Reserved (Optional)	0		
Main UART Device	<= 2	0 - 99	
Reserved (Optional)	0		
Reserved (Optional)	0		
Reserved (Optional)	0		
Reserved (Optional)	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<UART Device Type>*: Type of device which connected to the second serial port.
- ● 0: No device connect
- ● 1: Digital fuel sensor, the following four reserved fields are used as follow.

Sensor Number	<=3	0 – 100	
Sensor Type (Optional)	<= 2	0 –4 | 6|20 – 21	
Percentage (Optional)	<= 5	0 –100.0	
Volume (Optional)	<= 5	0 –10000.0	

- ● 2: AC100 1wire bus, the following four reserved fields are used as follow.

AC100 Device Number (Optional)	<= 2	0 - 19	
1wire Device ID (Optional)	16		
1wire Device Type (Optional)	2		
1wire Device Data (Optional)	<= 40		

✧ *<Digital 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 digital fuel sensor.

✧ *<Main UART Device >*: Type of device which is connected to the main serial port.
- ● 0: No device is connected
- ● 1: Reserved

✧ <Sensor Number (optional)>: Total number of the fuel sensor, controlled by bit 3 or bit 4 of the <ERI Mask>, and if the number is more than 0, the red part and the blue parts will show.

✧ <Sensor Type (optional)>: The type of the fuel sensor.

✧ <Percentage (optional)>: Percentage of the fuel remaining in the fuel tank, controlled by bit3 of the <ERI Mask>.

✧ <Volume (optional)>: Volume of the fuel remaining in the fuel tank, controlled by bit 4 of the <ERI Mask>.

✧ < *AC100 Devices Number*>: if bit 1 of <*ERI_mask*> in **AT+GTFRI** is enabled, the red part and the blue parts will show, and 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 be 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 <*ERI Mask*> .

➢ **+RESP:GTEPS,**
If the external power supply monitoring is enabled by the command **AT+GTEPS,** the device will send the message **+RESP:GTEPS** to the backend server when the voltage of the external power supply enters the alarm range.

➢ **+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.

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

Example:
+RESP:GTEPS,060100,135790246811220,,13500,00,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$** **+RESP:GTAIS,060100,135790246811220,,1980,11,1,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X ∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
External Power/Analog	<=5	0 – 32000 mV /0-16000 mV	

Input VCC			
Report ID/Report Type	2	X(0-2)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	$	$

✧ < External Power/Analog Input VCC>: The value of the external power supply voltage or the analog input voltage. When the voltage of the analog input meets the alarm condition as set by command **AT**+**GTEPS** or **AT**+**GTAIS**, the device will send the current analog input voltage with +**RESP:GTEPS** or +**RESP:GTAIS** 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:GTEPS. The value is 0.

● The ID of analog input port which triggers report message +RESP:GTAIS. The range is 1-2.

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 enabled 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,060100,135790246811220,,+8613800000000,1,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$

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

According to the *<Mode>* of the command **AT+GTIDA**, the reporting mode of **+RESP:GTIDA** is different.

if *<Mode>* is set to 1 or 2, **+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,06020A,862170013895931,,,D2C4FBC5,1,1,1,0.8,0,22.2,117.198630,31.8452 29,20120802121626,0460,0000,5663,2BB9,00,0.0,,,,,20120802121627,008E$

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' '-' '_'	
Reserved			
ID	<=20	'0' – '9' 'A' – 'F'	
ID Report Type	1	0|1	
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	
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 or IDA function is disabled.

➢ **+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.

Example:
+RESP:GTGEO,060100,135790246811220,,,00,1,1,4.3,92,70.0,121.354335,31.222073,200902 14013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Reserved			
Report ID/Report Type	<=3	X(0-13)X(0-1)	
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 meaning of this parameter as below,
  - Report ID: The ID of Geo Fence in HEX format, the range is 0 to 13.
  - Report Type: 0, Exit from the Geo-Fence; 1, Enter the Geo-Fence.

➤ **+RESP:GTGES**

Report **+RESP:GTGES** According Trigger Mode and Trigger Report in **AT+GTGEO** after ignition off.

Example:
+RESP:GTGES,060100,135790246811220,gv300,,00,0,100,30,11,1,1,24.3,92,70.0,121.354335, 31.222073,20090214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Reserved			
Report ID/Report Type	<=3	X(0-13)X(0-1)	
Trigger Mode	<=3	0|21|22	
Radius	<=7	50 – 6000000m	
Check Interval	<=5	0|5 – 86400sec	
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	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Report ID/Report Type >*: The meaning of this parameter as below,

- Report ID: The ID of Geo Fence in HEX format, the range is 0 to 13.
- Report Type: 0, Current Parking -Fence is inactive; 1, Current Parking -Fence is active.

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

➢

+RESP:GTGOT, If Geo-Fence is configured and enabled, the device will send the message **+RESP:GTGOT** to the backend server according to settings when the device leaves the Polygon Geo-Fence.

Example:
+RESP:GTGIN,060100,135790246811220,,,,100,0,1,1,4.3,92,70.0,121.354335,31.222073,2009
0214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$.
+RESP:GTGOT,060100,135790246811220,,,,100,0,1,1,4.3,92,70.0,121.354335,31.222073,200
90214013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

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

		X∈ {'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
Reserved			
Reserved			
Area Type	1	0|1	
Area Mask	8	00000000-000FFFFF	
Reserved			
Reserved			
Reserved			
Reserved			
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	$	$

✧ *< Area Mask >*:   Area mask means report text belongs to single Polygon or overlap.

- Bit 0:   for Polygon ID 0.
- Bit 1:   for Polygon ID 1.

- ...
- Bit 19: for Polygon ID 19.

For example, Area Mask were 03, means the overlap of Polygon ID 0 and Polygon ID 1.

✧ < *Area Type* >:   This text belongs to Polygon or circle area, 0 means Polygon

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,060100,135790246811220,,16,898600810906F8048812,16,0,1,12000,,4.40,0,0,0,0,20090214013254,0,1300,2000,00,00,+0800,0,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=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	
External Power Supply	1	0|1	
External Power VCC	<=5	0 – 32000mV	
Reserved	0		
Backup Battery VCC	<=4	0.00 – 4.50 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	
Pin15 Mode	1	0|1	
Analog Input VCC1	<=5	0~16000mV	
Analog Input VCC2	<=5	0~16000mV	

Digital Input	2	00 – 0F	
Digital Output	2	00 – 07	
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.

✧ *<External Power Supply>*: Whether the external power supply is connected.
- 0: Not connected
- 1: Connected

✧ *<External Power Supply VCC>*: The voltage of the external 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.

✧ <*Pin15 Mode*>: The current working mode of pin 15.

✧ <*Analog Input VCC1*>: The voltage of the analog input 1.

✧ <*Analog Input VCC2*>: The voltage of the analog input 2.

✧ <*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 ignition detection and one of the digital inputs 1 – 3 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 – 3 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,060100,135790246811220,,0,,,0000,,0,20090214013254,20090214093254,11F0$

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' '-' '_'	
GPS On Need	1	0|1	
Reserved	0		
Reserved	0		
Report Composition Mask	4	0000 – FFFF	
Reserved	0		

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 Composition Mask>*: Refer to *<Report Composition Mask>* of **AT+GTCFG** 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 TCP short connect even if the report mode is force on SMS.

➢ **+RESP:GTALL,**

Example:
+RESP:GTALL,06020F,862170010196747,,BSI,cmnet,,,,,,,SRI,2,,1,116.228.146.250,8140,0.0.0.0,0,,0,0,0,0,,,CFG,gv300,gv300,0,0.0.0,,003F,0,,3FFF,0,0,0,300,0,1,0,0,001F,0,TOW,0,10,1,300,0,0,0,0,2,3,2,,,,,,,,,DIS,0,1,,0,1,0,0,,2,0,0,,3,0,,,,,,,OUT,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,1,0,,1,0000,0000,180,30,1000,1000,,0,300,00000000,,,,GEO,0,0,,,50,0,0,0,0,0,0,0,,,1,0,,,50,0,0,0,0,0,0,0,,,2,0,,,50,0,0,0,0,0,0,0,,,3,0,,,50,0,0,0,0,0,0,0,,,4,0,,,50,0,0,0,0,0,0,0,,,5,0,,,50,0,0,0,0,0,0,0,,,6,0,,,50,0,0,0,0,0,0,0,,,7,0,,,50,0,0,0,0,0,0,0,,,8,0,,,50,0,0,0,0,0,0,0,,,9,0,,,50,0,0,0,0,0,0,0,,,10,0,,,50,0,0,0,0,0,0,0,,,11,0,,,50,0,0,0,0,0,0,0,,,12,0,,,50,0,0,0,0,0,0,0,,,13,0,,,50,0,0,0,0,0,0,0,,,14,0,,,50,0,0,0,0,0,0,0,,,15,0,,,50,0,0,0,0,0,0,0,,,16,0,,,50,0,0,0,0,0,0,0,,,17,0,,,50,0,0,0,0,0,0,0,,,18,0,,,50,0,0,0,0,0,0,0,,,19,0,,,50,0,0,0,0,0,0,0,,,SPD,4,0,15,15,30,0,0,0,0,,,,,,,,,,,SOS,0,0,,0,0,0,0,5,4,,,MON,0,,5,0,2,,,,PIN,1,1234,,,,,,OWH,0,1f,0900,1200,1300,1800,,,0,0,0,0,0,,,,,DOG,2,10,30,0200,,1,0,,5,5,,AIS,1,4,1000,2000,1,,0,0,0,0,1,,,2,4,1000,2000,1,,0,0,0,0,1,,,30,10,20,,IDL,0,2,1,,,,0,0,0,0,,,,,URT,0,12,8,1,0,0,0,0,,JDC,0,10,40,,,,,0,0,0,0,,WLT,0,,,,,,,,,,,,,,,HRM,,,7f,1fedffff,1fedffff,ff7f,ff,,,,FFC,0,0,0,30,500,500,300,,,,1,0,0,30,500,500,300,,,,2,0,0,30,500,500,300,,,,3,0,0,30,500,500,300,,,,4,0,0,30,500,500,300,,,,JBS,0,,10,10,1800,1,30,0,0,5,,,SSR,0,2,1,5,,,,,EFS,,,9999,30,10,,0,10,,,,,,,IDA,0,,30,0,,,,,1,0,0,0,,,,,ACD,0,0,0,0,0,0,,,,,PDS,0,0,,,,,,BZA,2,,,,1,2,10,,,0,6,10,,,0,10,10,,,0,20,10,,,,,,,,SPA,1,20,,2,1,,,40,,2,2,,,60,,2,3,,,80,,2,4,,,,,,,,,MUT,0,12,8,1,0,0,,,,,,,FSC,   ,,0,21,1,,,3,16000,0,10000,50,250,100,,,,,,,,,PEO,0,0,0,0,,,,,,,,,,,,,,,,,,,0,0,0,0,,,,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,,,,PEO,5,0,0,0,,,,,,,,,,,,,,,,,,0,0,0,0,,,,6,0,0,0,,,,,,,,,,,,,,,,0,0,0,0,,,,7,0,0,0,,,,,,,,,,,,,,,,0,0,0,0,,,,8,0,0,0,,,,,,,,,,,,,,,,0,0,0,0,,,,9,0,0,0,,,,,,,,,,,,,,,,0,0,0,0,,,,PEO,10,0,0,0,,,,,,,,,,,,,,0,0,0,0,,,,11,0,0,0,,,,,,,,,,,,,,,,,0,0,0,0,,,,12,0,0,0,,,,,,,,,,,,,,,0,0,0,0,,,,13,0,0,0,,,,,,,,,,,,,,,,0,0,0,0,,,,14,0,0,0,,,,,,,,,,,,,,,,,,0,0,0,0,,,,PEO,15,0,0,0,,,,,,,,,,,,,,,,0,0,0,0,,,,16,0,0,0,,,,,,,,,,,,,,,,0,0,0,0,,,,17,0,0,0,,,,

,,,,,,,,,,,,,,0,0,0,0,0,,,,,18,0,0,0,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,19,0,0,0,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,CMS,0,1,5,150,2,0,0003,,,0,0,0,0,,,,,CAN,1,30,60,FFFFFFFF,,,,,,FTP,220.178.67.210,10020,FTP,penny,123456,0,1,0,1,,,20121023073234,003E$

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' '-' '_'	
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 – 7	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|2	0
Protocol Format	1	0|1	0
SMS ACK Enable	1	0|1	0
Reserved	0		
Reserved	0		

CFG	3	CFG	CFG
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	gv300
ODO Enable	1	0|1	0
ODO Initial Mileage	<=9	0.0 – 4294967.0Km	0.0
GPS On Need	1	0|1	0
Reserved	0		
Report Composition Mask	4	0000 – FFFF	003F
Power Saving Mode	1	0 – 2	1
Reserved	0		
Event Mask	4	0000 – FFFF	3FFFF
Pin15 Mode	1	0|1	0
LED On	1	0|1	0
Info Report Enable	1	0|1	0
Info Report Interval	<=5	30 – 86400sec	300
Location By Call	1	0|1|2|3	0
Echo Suppression	1	1|2	1
Backup Battery Charge Mode	1	0|1	0
Agps Mode	1	0|1	0
GSM Report	4	0000 – FFFF	000F
GPS Lost Time	2	0 – 30min	0
TOW	3	TOW	TOW
Tow Enable	1	0|1	0
Engine Off to Tow	<=2	5 – 15min	10
Fake Tow Delay	<=2	0 – 10min	1
Tow Interval	<=5	30 – 86400sec	300
Tow Output ID	1	0 – 3	0
Tow Output Status	1	0|1	0
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		
EPS	3	EPS	EPS
Mode	1	0|1|2	0
Min Threshold	<=5	250 – 32000 mV	250
Max Threshold	<=5	250 – 32000 mV	250
Sample Period	<=2	0|1 – 12(×2s)	0
Debounce Time	1	0 – 5(×1s)	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
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		
DIS	3	DIS	DIS
Ignition Detection	1	0	0
Sample Period	<=2	0|1 – 12(×2s)	1
Reserved	0		

Reserved	0		
Input ID 1	1	1	1
Enable	1	0|1	0
Debounce Time	<=2	0 – 20(×10ms)	0
Validity Time	<=2	0|1 – 12(×2s)	0
Input ID 2	1	2	2
Enable	1	0|1	0
Debounce Time	<=2	0 – 20(×10ms)	0
Validity Time	<=2	0|1 – 12(×2s)	0
Input ID 3	1	3	3
Sample Period	<=2	0|1 – 12(×2s)	0
Reserved			
Validity Mode	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
OUT	3	OUT	OUT
DOS Report	1	0-7	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
IOB	3	IOB	IOB
IOB ID0	1	0	0
Input Mask	1	0 – F	0
Trigger Mask	1	0 – F	0
Input Sample Period	<=2	0|1 – 12(×2s)	0

Output ID	1	0 – 3	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		
IOB ID1	1	1	1
Input Mask	1	0 – F	0
Trigger Mask	1	0 – F	0
Input Sample Period	<=2	0|1 – 12(×2s)	0
Output ID	1	0 – 3	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		
IOB ID2	1	2	2
Input Mask	1	0 – F	0
Trigger Mask	1	0 – F	0
Input Sample Period	<=2	0|1 – 12(×2s)	0
Output ID	1	0 – 3	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			
IOB ID3	1	3	3
Input Mask	1	0 – F	0
Trigger Mask	1	0 – F	0
Input Sample Period	<=2	0|1 – 12(×2s)	0
Output ID	1	0 – 3	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			
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	0
Discard No Fix	<=2	0|1	1
Reserved	0		
Period Enable	1	0|1	1
Begin Time	4	HHMM	0000
End Time	4	HHMM	0000
Check Interval	<=5	0|30 – 86400sec	180
Send Interval	<=5	0|5 – 86400sec	30

Distance	<=5	300 – 65535m	1000
Mileage	<=5	300 – 65535m	1000
Reserved	0		
Corner Report	<=3	0 – 180	0
IGF Report Interval	<=5	0|5-86400sec	600
ERI Mask	8	00000000-FFFFFFFF	00000000
Reserved	0		
Reserved	0		
Reserved	0		
GEO	3	GEO	GEO
GEO ID0	1	0	0
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0	5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID1	1	1	1
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0	5 – 86400sec	0

Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID2	1	2	2
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID3	1	3	3
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0

Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID4	1	4	4
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID5	1	5	5
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0

Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID6	1	6	6
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0	5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID7	1	7	7
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0	5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0

Reserved	0		
Reserved	0		
GEO ID8	1	8	8
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID9	1	9	9
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		

GEO ID10	2	10	10
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID11	2	11	11
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID12	2	12	12
Mode	1	0 – 3	0

Longitude	<=11	(−)xxx.xxxxxx	0.000000
Latitude	<=10	(−)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID13	2	13	13
Mode	1	0 – 3	0
Longitude	<=11	(−)xxx.xxxxxx	0.000000
Latitude	<=10	(−)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID14	2	14	14
Mode	1	0 – 3	0
Longitude	<=11	(−)xxx.xxxxxx	0.000000
Latitude	<=10	(−)xx.xxxxxx	0.000000

Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID15	2	15	15
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID16	2	16	16
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0

Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID17	2	17	17
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID18	2	18	18
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0

Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
GEO ID19	2	19	19
Mode	1	0 – 3	0
Longitude	<=11	(−)xxx.xxxxxx	0.000000
Latitude	<=10	(−)xx.xxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Reserved	0		
Reserved	0		
SPD	3	SPD	SPD
Mode	1	0|1|2|3|4	0
Min Speed	<=3	0 – 400km/h	0
Max Speed	<=3	0 – 400km/h	0
Validity	<=4	15 – 3600sec	60
Send Interval	<=4	30 – 3600sec	30
Output ID	1	0 – 3	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		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SOS	3	SOS	SOS
Mode	1	0 – 4	0
Digital Input ID	1	0|1– 3	0
SOS Number	<=20		
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255($\times$100ms)	0
Toggle Times	<=3	0 – 255	0
SOS Microphone	2	0 – 10	5
SOS Speaker	1	0 – 7	4
Reserved	0		
Reserved	0		
MON	3	MON	MON
Mode	1	0 – 3	0
Stealthy Phone Number	<=20		
Stealthy Microphone	2	0 – 10	5
Stealthy Speaker	1	0 – 7	0
Send Alarm Message	1	0|1|2	2
Output ID	1	0 – 3	0

Output Status	1	0|1	
Reserved	0		
PIN	3	PIN	PIN
Enable Auto-unlock PIN	1	0|1	1
PIN	1	'0' – '9'	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
OWH	3	OWH	OWH
Mode	1	0|1|2|3	0
Day of Work	<=2	0 – 7F	1F
Working Hours Start1	4	HHMM	0900
Working Hours End1	4	HHMM	1200
Working Hours Start2	4	HHMM	1300
Working Hours End2	4	HHMM	1800
Reserved	0		
Reserved	0		
Digital Input ID	1	0 – 3	0
Digital Output ID	1	0 – 3	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		
DOG	3	DOG	DOG
Mode	1	0|1|2	0

Ignition Frequency	<=3	10 – 120min	60
Interval	<=2	1 – 30	30
Time	4	HHMM	0200
Reserved	0		
Report Before Reboot	1	0|1	1
Input ID	1	0|1|2	0
Reserved	0		
GSM Interval	4	0 | 5-1440 min	60
PDP Interval	4	0 | 5-1440 min	60
Reserved	0		
AIS	3	AIS	AIS
Analog Input ID1	1	1	1
Mode	1	0|1|2|3|4|5	0
Min Threshold	<=5	0～2700|0~16000mV	0
Max Threshold	<=5	0～2700|0~16000mV	0
Sample Period	<=2	0|1 – 12(×2s)	0
Reserved	0		
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Sync with FRI	1	0|1	0
Reserved	0		
Reserved	0		
Analog Input ID2	1	2	2
Mode	1	0|1|2|3|4|5	0
Min Threshold	<=5	25～2700|250~16000mV	250
Max Threshold	<=5	25～2700|250~16000mV	250
Sample Period	<=2	0|1 – 12(×2s)	0
Reserved	0		

Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Sync with FRI	1	0|1	0
Reserved	0		
Fuel Data Debounce	<=3	0 – 150	10
Fuel Sensor Delay	<=3	0 – 600 sec	30
Fuel Lost Alarm	<=2	0 – 50	10
Fuel Sensor Sample Count	<=3	0 – 150	20
Change Threshold	<=2	0 – 50 %	0
IDL	3	IDL	IDL
Mode	1	0|1	0
Time to Stationary	2	1 – 30 min	2
Time to Movement	1	1 – 5 min	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 3	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		
HMC	3	HMC	HMC
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		
HBM	3	HBM	HBM
HBM Enable	1	0|1	0
Behavior Duration	1	3-5	3
Reserved	0		
High Speed	<=3	100 – 400km/h	100
ΔVhb	<=3	0 – 100km/h	0
ΔVha	<=3	0 – 100km/h	0
Reserved	0		
Medium Speed	<=3	100 – 400km/h	60
ΔVmb	<=3	0 – 100km/h	0
ΔVma	<=3	0 – 100km/h	0
Reserved	0		
Reserved	0		
ΔVlb	<=3	0 – 100km/h	0
ΔVla	<=3	0 – 100km/h	0
Reserved	0		
Output ID	1	0 – 3	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		
URT	3	URT	URT
Working Mode	1	0 – 9|12|14	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
Digital Fuel Sensor Type	1	0 – 4|6	0
Format	1		0
Interval	4	1-3600sec	
Terminator Character	2	0x00-0xFF	0D
Length	4	1-640|1280	
JDC	3	JDC	JDC
Mode	1	0|1|2	0
Signal Threshold	<=2	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 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255($\times$100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		

WLT	3	WLT	WLT
Call Filter	1	0|1|2|3	
Start Index	<=2	1 – 10	
End Index	<=2	1 – 10	
Phone Number List	<=20*10		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
HRM	3	HRM	HRM
Reserved	0		
Reserved	0		
ACK Mask	1	'0' – '9' 'a' – 'f' 'A' – 'F'	7F
Response Mask	4	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFFFFFF
Event Mask	4	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFFFFFF
Information Mask	2	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFF
HBD Mask	1	'0' – '9' 'a' – 'f' 'A' – 'F'	FF
DAT Mask	<=8	00000000 – FFFFFFFF	FF
Reserved	0		
Reserved	0		
Reserved	0		
FFC	3	FFC	FFC
Priority	1	0	0
Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			

Reserved			
Reserved			
Reserved			
Priority	1	1	1
Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			
Reserved			
Reserved			
Priority	1	2	2
Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			
Reserved			
Reserved			
Priority	1	3	3
Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500

FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			
Reserved			
Reserved			
Priority	1	4	4
Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			
Reserved			
Reserved			
JBS	3	JBS	JBS
Mode	1	0|1	0
Reserved	0		
Siren up Timer(T1)	5	1 – 65535(sec)	60
Siren down Timer(T2)	5	1 – 65535(sec)	30
Cut fuel Timer(T3)	5	1 – 65535(sec)	1800
Check Speed	1	0|1	1
Speed Limit	3	0 – 999km/h	30
Output 1 init state	1	0|1	0
Need Judge Motion Sensor	1	0|1	0
GPS Fix Fail Timeout Timer	3	1 – 100(min)	5
Reserved	0		

Reserved	0		
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	<= 5	0 – 43200 min	0
Reserved	0		
Reserved	0		
Reserved	0		
EFS	3	EFS	EFS
Reserved	0		
Reserved	0		
Ex Full Value	<= 5	0 – 65535	9999
Ex Fuel Sensor Delay	<=3	0 – 600 sec	30
Ex Fuel Lost Alarm	<=2	0 – 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
Ex Detect Frequency IGF	<=2	1-30 min	5
Reserved	0		
Reserved	0		
Reserved	0		
IDA	3	IDA	IDA
Enable	1	0|1	0
ID number 1	<=2		
⋮			
ID number 250	<=3		
Timeout after Ignition off	<=3	0 | 15 – 600sec	30

Report mode	1	0|1|2|3	0
ID Validity Time	<=3	15 – 600sec	30
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	1-3	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		
ACD	3	ACD	ACD
I-button Timer	<=2	1 – 10(s)	0
Output ID	1	0-3	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			
PDS	3	PDS	PDS
Mode	1	0|1|2	0
Mask	4	0000-FFFF	0
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
BZA	3	BZA	BZA
Output ID	1	0|2|3	0
Reserved	0		
Reserved	0		
Reserved	0		
Alarm 1 Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 2 Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 3 Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 4 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		
SPA	3	SPA	SPA
Mode	1	0|12	0
Speed Threshold 1	<=3	0 – 400km/h	50
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		
Speed Threshold 2	<=3	0 – 400km/h	70
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		
Speed Threshold 3	<=3	0 – 400km/h	90
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		
Speed Threshold 4	<=3	0 – 400km/h	110
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
MUT	3	MUT	MUT
Working Mode	1	0|1|5|11	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 Control	1	0|1	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FSC	3	FSC	FSC
Reserved			
Table ID	1	0 – 4	1
Sensor Type	<= 2	20 – 21	20
Enable	1	0|1	0
Reserved			
Reserved			
Num of Node	<= 2	0|2 – 11	0
Node 1 Value	< = 5	0～99999	
Node 1 Percentage	<= 2	0 – 100	
⋮			

Node N Value	< = 5	0～99999	
Node N Percentage	<= 2	0 – 100	
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
PEO	3	PEO	PEO
GEO ID	1	0 – 19	0
Mode	1	0 – 3	0
Start Point	2	1-10	1
End Point	2	3-10	3
Longitude	<=11	(–)xxx.xxxxxx	
Latitude	<=10	(–)xx.xxxxxx	
…			
Longitude	<=11	(–)xxx.xxxxxx	
Latitude	<=10	(–)xx.xxxxxx	
Check Interval	<=5	0|5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
Reserved	0		
Reserved	0		
CMS	3	CMS	CMS

Camera ID	1	0-3	
Number	<=2	1-10	1
Interval	<=2	1-60s	5
Photo Compression Ratio	<=3	20-250	150
Photo Resolution	1	1-3	2
Digital Input ID	1	0|1-3	0
Attribute Mask	<=4	0000 - FFFF	0x0003
Reserved	0		
Reserved	0		
Output ID	1	0 – 3	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		
CAN	3	CAN	CAN
Mode	1	0|1	1
CAN Report Interval	<=5	0|30 – 86400sec	0
CAN Report Interval IGF	<=5	0|30 – 86400sec	0
CAN Report Mask	8	0 - FFFFFFFF	COOFFFFF
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FTP	3	FTP	FTP
Server Address	<=60		
Server Port	<=5	0 – 65535	21

Full Name	<=60		
User Name	<=10		
Login Password	<=10		0
Transfer Mode	1	0|1	0
Oper Type	1	0|1	0
Report FTP	1	0|1	0
File Name Prefix	<=20		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
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,060211,862170013894694,,15,1,BSI,cmnet,,,,,,,,SRI,3,,1,116.228.146.250,8186,192.0.0.0,0,,0,0,0,0,,,CFG,gv300,gv300,0,0.0.0,,003F,1,,3FFF,0,0,0,300,0,1,0,0,001F,0,TOW,0,10,1,300,0,0,0,0,2,3,2,,,,,,,,,EPS,0,0,0,0,0,0,0,0,0,0,0,,,,DIS,0,1,,0,1,0,0,0,2,0,0,0,3,0,,0,,,,,OUT,0,,,,,,,IOB,0,0,0,0,0,0,0,0,,,,,1,0,0,0,0,0,0,0,,,,,2,0,0,0,0,0,0,0,,,,,3,0,0,0,0,0,0,0,,,,,TMZ,+0000,0,,,,,FRI,0,1,,1,0000,0000,180,30,1000,1000,,0,600,00000000,,,,20130508122835,0009$

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' '-' '_'	
Total Packets	1	4	
Current Packet	1	1 – 4	

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 contains from BSI to FRI, the second from GEO to DOG, the third from AIS to EFS, the forth to seventh is IDA, and the eighth from ACD to PDS, the ninth from BZA to FSC, the tenth is RMD, the eleventh to fourteenth is PEO, and the last message is from CMS to FTP.

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,06020F,862170010196747,,,3FFFFFFFFF,,,BSI,cmnet,,,,,,,SRI,2,,1,116.228.1
46.250,8140,0.0.0.0,0,,0,0,0,0,,,CFG,gv300,gv300,0,0.0.0,,003F,0,,3FFF,0,0,0,300,0,1,0,0,001F,
0,TOW,0,10,1,300,0,0,0,0,2,3,2,,,,,,,,DIS,0,1,,0,1,0,0,,2,0,0,,3,0,,,,,,OUT,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,1,0,,1,
0000,0000,180,30,1000,1000,,0,300,00000000,,,,GEO,0,0,,,50,0,0,0,0,0,0,0,,,1,0,,,50,0,0,0,0,0,0,
0,,,2,0,,,50,0,0,0,0,0,0,0,,,3,0,,,50,0,0,0,0,0,0,0,,,4,0,,,50,0,0,0,0,0,0,0,,,5,0,,,50,0,0,0,0,0,0,0,,,6,0,,,
,50,0,0,0,0,0,0,0,,,7,0,,,50,0,0,0,0,0,0,0,,,8,0,,,50,0,0,0,0,0,0,0,,,9,0,,,50,0,0,0,0,0,0,0,,,10,0,,,50,0,
0,0,0,0,0,0,,,11,0,,,50,0,0,0,0,0,0,0,,,12,0,,,50,0,0,0,0,0,0,0,,,13,0,,,50,0,0,0,0,0,0,0,,,14,0,,,50,0,0,
0,0,0,0,0,,,15,0,,,50,0,0,0,0,0,0,0,,,16,0,,,50,0,0,0,0,0,0,0,,,17,0,,,50,0,0,0,0,0,0,0,,,18,0,,,50,0,0,0,
0,0,0,0,,,19,0,,,50,0,0,0,0,0,0,0,,,SPD,4,0,15,15,30,0,0,0,0,,,,,,,,,,,SOS,0,0,,0,0,0,0,5,4,,,MON,0,,
5,0,2,,,,PIN,1,1234,,,,,OWH,0,1f,0900,1200,1300,1800,,0,0,0,0,0,,,,,DOG,2,10,30,0200,,1,0,,5,
5,,AIS,1,4,1000,2000,1,,0,0,0,0,1,,,2,4,1000,2000,1,,0,0,0,0,1,,,30,10,20,,IDL,0,2,1,,,,,0,0,0,0,,,,,
HMC,1,12:12:12,,,,,,,,HBM,1,,,100,21,6,,60,21,6,,,21,15,,1,1,8,3,,,,,URT,0,12,8,1,0,0,0,0,,JDC,
0,10,40,,,,,0,0,0,0,,WLT,0,,,,,,,,,,,,,,HRM,,,7f,1fedfff,1fedfff,ff7f,ff,7F,,,,FFC,0,0,0,30,500,500,3
00,,,,,1,0,0,30,500,500,300,,,,,2,0,0,30,500,500,300,,,,,3,0,0,30,500,500,300,,,,,4,0,0,30,500,500,3
00,,,,,JBS,0,,10,10,1800,1,30,0,0,5,,,SSR,0,2,1,5,,,,,EFS,,,,30,10,,0,10,,,,,,,IDA,0,,,,,,,,,,,,,,,,,,,30,
0,,,,,1,0,0,0,,,,,ACD,0,0,0,0,0,0,,,,,PDS,0,0,,,,,,BZA,2,,,,1,2,10,,,0,6,10,,,0,10,10,,,0,20,10,,,,,,,,,S
PA,1,20,,2,1,,,40,,2,2,,,60,,2,3,,,80,,2,4,,,,,,,,,MUT,0,12,8,1,0,0,,,,,,,FSC,,,0,21,1,,,3,16000,0,1000
0,50,250,100,,,,,,,,,PEO,0,0,0,0,,,,,,,,,,,,,,,,0,0,0,0,,,,,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,,,,,PEO,5,0,0,

0,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,6,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,7,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,8,0,0,0, ,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,9,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,PEO,10,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,11 ,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,12,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,13,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,, 14,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,PEO,15,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,16,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0, 0,0,0,,,,,17,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,18,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0,0,0,0,0,,,,,19,0,0,0,,,,,,,,,,,,,,,,,,,,,,,,,,0, 0,0,0,0,,,,,,CMS,0,2,5,150,3,1,0003,,,2,1,1,20,,,,,CAN,1,30,60,FFFFFFFF,,,,,,FTP,220.178.67.21 0,10020,FTP,penny,123456,0,1,0,1,,,20121023073234,003E$

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' '-' '_'	
Configuration Mask	<=16	0000000000000000 – FFFFFFFFFFFFFFFF	
Next Packet	1	0-1	0
Current Packet	1	1-15	1
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 – 7	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|2	0
Protocol Format	1	0|1	0
SMS ACK Enable	1	0|1	0
Reserved	0		
Reserved	0		
CFG	3	CFG	CFG
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	gv300
ODO Enable	1	0|1	0
ODO Initial Mileage	<=9	0.0 – 4294967.0Km	0.0
GPS On Need	1	0|1	0
Reserved	0		
Report Composition Mask	4	0000 – FFFF	003F
Power Saving Mode	1	0 – 2	1
Reserved	0		
Event Mask	4	0000 – FFFF	3FFFF
Pin15 Mode	1	0|1	0
LED On	1	0|1	0
Info Report Enable	1	0|1	0
Info Report Interval	<=5	30 – 86400sec	300
Location By Call	1	0|1|2|3	0
Echo Suppression	1	1|2	1
Backup Battery Charge Mode	1	0|1	0
Agps Mode	1	0|1	0
GSM Report	4	0000 – FFFF	000F
GPS Lost Time	2	0 – 30min	0
TOW	3	TOW	TOW

Tow Enable	1	0|1	0
Engine Off to Tow	<=2	5 – 15min	10
Fake Tow Delay	<=2	0 – 10min	1
Tow Interval	<=5	30 – 86400sec	300
Tow Output ID	1	0 – 3	0
Tow Output Status	1	0|1	0
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		
EPS	3	EPS	EPS
Mode	1	0|1|2	0
Min Threshold	<=5	250 – 32000 mV	250
Max Threshold	<=5	250 – 32000 mV	250
Sample Period	<=2	0|1 – 12(×2s)	0
Debounce Time	1	0 – 5(×1s)	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
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		
DIS	3	DIS	DIS
Ignition Detection	1	0	0
Sample Period	<=2	0|1 – 12(×2s)	1
Reserved	0		
Reserved	0		
Input ID 1	1	1	1
Enable	1	0|1	0
Debounce Time	<=2	0 – 20(×10ms)	0
Validity Time	<=2	0|1 – 12(×2s)	0
Input ID 2	1	2	2
Enable	1	0|1	0
Debounce Time	<=2	0 – 20(×10ms)	0
Validity Time	<=2	0|1 – 12(×2s)	0
Input ID 3	1	3	3
Sample Period	<=2	0|1 – 12(×2s)	0
Reserved			
Validity Mode	1	0|1	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
OUT	3	OUT	OUT
DOS Report	1	0−7	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		

Reserved	0		
Reserved	0		
IOB	3	IOB	IOB
IOB ID0	1	0	0
Input Mask	1	0 – F	0
Trigger Mask	1	0 – F	0
Input Sample Period	<=2	0|1 – 12(×2s)	0
Output ID	1	0 – 3	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		
IOB ID1	1	1	1
Input Mask	1	0 – F	0
Trigger Mask	1	0 – F	0
Input Sample Period	<=2	0|1 – 12(×2s)	0
Output ID	1	0 – 3	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		
IOB ID2	1	2	2
Input Mask	1	0 – F	0
Trigger Mask	1	0 – F	0

Input Sample Period	<=2	0|1 – 12(×2s)	0
Output ID	1	0 – 3	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			
IOB ID3	1	3	3
Input Mask	1	0 – F	0
Trigger Mask	1	0 – F	0
Input Sample Period	<=2	0|1 – 12(×2s)	0
Output ID	1	0 – 3	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			
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	0

Discard No Fix	<=2	0|1	1
Reserved	0		
Period Enable	1	0|1	1
Begin Time	4	HHMM	0000
End Time	4	HHMM	0000
Check Interval	<=5	0|30 – 86400sec	180
Send Interval	<=5	0|5 – 86400sec	30
Distance	<=5	300 – 65535m	1000
Mileage	<=5	300 – 65535m	1000
Reserved	0		
Corner Report	<=3	0 – 180	0
IGF Report Interval	<=5	0|5-86400sec	600
ERI Mask	8	00000000-FFFFFFFF	00000000
Reserved	0		
Reserved	0		
Reserved	0		
GEO	3	GEO	GEO
GEO ID0	1	0	0
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000

End Time	4	HHMM	0000
GEO ID1	1	1	1
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0	5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID2	1	2	2
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0	5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID3	1	3	3

Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID4	1	4	4
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID5	1	5	5
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000

Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID6	1	6	6
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID7	1	7	7
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50

Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID8	1	8	8
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID9	1	9	9
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0

Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID10	2	10	10
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID11	2	11	11
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0

Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID12	2	12	12
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID13	2	13	13
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0

Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID14	2	14	14
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID15	2	15	15
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000

End Time	4	HHMM	0000
GEO ID16	2	16	16
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID17	2	17	17
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID18	2	18	18

Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
GEO ID19	2	19	19
Mode	1	0 – 3	0
Longitude	<=11	(–)xxx.xxxxxx	0.000000
Latitude	<=10	(–)xx.xxxxxx	0.000000
Radius	<=7	50 – 6000000m	50
Check Interval	<=5	0 | 5 – 86400sec	0
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Trigger Mode	<=2	0|21|22	0
Trigger Report	1	0|1	0
Start Time	4	HHMM	0000
End Time	4	HHMM	0000
SPD	3	SPD	SPD
Mode	1	0|1|2|3|4	0
Min Speed	<=3	0 – 400km/h	0

Max Speed	<=3	0 – 400km/h	0
Validity	<=4	15 – 3600sec	60
Send Interval	<=4	30 – 3600sec	30
Output ID	1	0 – 3	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		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
SOS	3	SOS	SOS
Mode	1	0 – 4	0
Digital Input ID	1	0|1 – 3	0
SOS Number	<=20		
Output ID	1	0 – 3	0
Output Status	1	0|1	0
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		

MON	3	MON	MON
Mode	1	0 – 3	0
Stealthy Phone Number	<=20		
Stealthy Microphone	2	0 – 10	5
Stealthy Speaker	1	0 – 7	0
Send Alarm Message	1	0|1|2	2
Output ID	1	0 – 3	0
Output Status	1	0|1	
Reserved	0		
PIN	3	PIN	PIN
Enable Auto-unlock PIN	1	0|1	1
PIN	1	'0' – '9'	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
OWH	3	OWH	OWH
Mode	1	0|1|2|3	0
Day of Work	<=2	0 – 7F	1F
Working Hours Start1	4	HHMM	0900
Working Hours End1	4	HHMM	1200
Working Hours Start2	4	HHMM	1300
Working Hours End2	4	HHMM	1800
Reserved	0		
Reserved	0		
Digital Input ID	1	0 – 3	0
Digital Output ID	1	0 – 3	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		
DOG	3	DOG	DOG
Mode	1	0|1|2	0
Ignition Frequency	<=3	10 – 120min	60
Interval	<=2	1 – 30	30
Time	4	HHMM	0200
Reserved	0		
Report Before Reboot	1	0|1	1
Input ID	1	0|1|2	0
Reserved	0		
GSM Interval	4	0	5-1440 min	60
PDP Interval	4	0	5-1440 min	60
Reserved	0		
AIS	3	AIS	AIS
Analog Input ID1	1	1	1
Mode	1	0|1|2|3|4|5	0
Min Threshold	<=5	0～2700|0~16000mV	0
Max Threshold	<=5	0～2700|0~16000mV	0
Sample Period	<=2	0|1 – 12(×2s)	0
Reserved	0		
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Sync with FRI	1	0|1	0
Reserved	0		

Reserved	0		
Analog Input ID2	1	2	2
Mode	1	0|1|2|3|4|5	0
Min Threshold	<=5	25~2700|250~16000mV	250
Max Threshold	<=5	25~2700|250~16000mV	250
Sample Period	<=2	0|1 – 12(×2s)	0
Reserved	0		
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Sync with FRI	1	0|1	0
Reserved	0		
Fuel Data Debounce	<=3	0 – 150	10
Fuel Sensor Delay	<=3	0 – 600 sec	30
Fuel Lost Alarm	<=2	0 – 50	10
Fuel Sensor Sample Count	<=3	0 – 150	20
Change Threshold	<=2	0 – 50 %	0
IDL	3	IDL	IDL
Mode	1	0|1	0
Time to Stationary	2	1 – 30 min	2
Time to Movement	1	1 – 5 min	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	0 – 3	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		
HMC	3	HMC	HMC
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		
HBM	3	HBM	HBM
HBM Enable	1	0|1	0
Behavior Duration	1	3-5	3
Reserved	0		
High Speed	<=3	100 – 400km/h	100
ΔVhb	<=3	0 – 100km/h	0
ΔVha	<=3	0 – 100km/h	0
Reserved	0		
Medium Speed	<=3	100 – 400km/h	60
ΔVmb	<=3	0 – 100km/h	0
ΔVma	<=3	0 – 100km/h	0
Reserved	0		
Reserved	0		
ΔVlb	<=3	0 – 100km/h	0
ΔVla	<=3	0 – 100km/h	0

Reserved	0		
Output ID	1	0 – 3	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		
URT	3	URT	URT
Working Mode	1	0 – 9|12|14	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
Digital Fuel Sensor Type	1	0 – 4|6	0
Format	1		0
Interval	4	1-3600sec	
Terminator Character	2	0x00-0xFF	0D
Length	4	1-640|1280	
JDC	3	JDC	JDC
Mode	1	0|1|2	0
Signal Threshold	<=2	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	<=4	0 – 3600 sec	10

Threshold			
Reserved	0		
Output ID	1	0 – 3	0
Output Status	1	0|1	0
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
WLT	3	WLT	WLT
Call Filter	1	0|1|2|3	
Start Index	<=2	1 – 10	
End Index	<=2	1 – 10	
Phone Number List	<=20*10		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
HRM	3	HRM	HRM
Reserved	0		
Reserved	0		
ACK Mask	1	'0' – '9' 'a' – 'f' 'A' – 'F'	7F
Response Mask	4	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFFFFFF
Event Mask	4	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFFFFFF
Information Mask	2	'0' – '9' 'a' – 'f' 'A' – 'F'	FFFF
HBD Mask	1	'0' – '9' 'a' – 'f' 'A' – 'F'	FF
DAT Mask	<=8	00000000 – FFFFFFFF	7F
Reserved	0		
Reserved	0		
Reserved	0		
FFC	3	FFC	FFC
Priority	1	0	0

Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			
Reserved			
Reserved			
Priority	1	1	1
Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			
Reserved			
Reserved			
Priority	1	2	2
Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			

Reserved			
Reserved			
Priority	1	3	3
Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			
Reserved			
Reserved			
Priority	1	4	4
Mode	1	0-3	0
FRI mode	1	0-5	0
FRI IGN Report Interval	<=5	5-86400s	30
FRI Report Distance	<=5	50-65535m	500
FRI Report Mileage	<=5	50-65535m	500
FRI IGF Report Interval	<=5	0|5-86400s	300
Reserved			
Reserved			
Reserved			
Reserved			
JBS	3	JBS	JBS
Mode	1	0|1	0
Reserved	0		
Siren up Timer(T1)	5	1 – 65535(sec)	60
Siren down Timer(T2)	5	1 – 65535(sec)	30
Cut fuel Timer(T3)	5	1 – 65535(sec)	1800

Check Speed	1	0|1	1
Speed Limit	3	0 – 999km/h	30
Output 1 init state	1	0|1	0
Need Judge Motion Sensor	1	0|1	0
GPS Fix Fail Timeout Timer	3	1 – 100(min)	5
Reserved	0		
Reserved	0		
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	<=5	0 – 43200 min	0
Reserved	0		
Reserved	0		
Reserved	0		
EFS	3	EFS	EFS
Reserved	0		
Reserved	0		
Ex Full Value	<= 5	0 – 65535	9999
Ex Fuel Sensor Delay	<=3	0 – 600 sec	30
Ex Fuel Lost Alarm	<=2	0 – 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		
IDA	3	IDA	IDA
Enable	1	0|1	0
ID number 1	<=2		
⋮			
ID number 250	<=3		
Timeout After Ignition off	<=3	0 | 15 – 600sec	30
Report Mode	1	0|1|2|3	0
ID Validity Time	<=3	15 – 600sec	30
Reserved	0		
Reserved	0		
Reserved	0		
Output ID	1	1-3	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		
ACD	3	ACD	ACD
I-button Timer	<=2	1 – 10(s)	0
Output ID	1	0-3	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			
PDS	3	PDS	PDS
Mode	1	0|1|2	0
Mask	4	0000-FFFF	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
BZA	3	BZA	BZA
Output ID	1	0|2|3	0
Reserved	0		
Reserved	0		
Reserved	0		
Alarm 1 Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 2 Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		
Reserved	0		
Alarm 3 Output Status	1	0|1	
Duration	<=3	0 – 255(×100ms)	0
Toggle Times	<=3	0 – 255	0
Reserved	0		

Reserved	0		
Alarm 4 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		
SPA	3	SPA	SPA
Mode	1	0|12	0
Speed Threshold 1	<=3	0 – 400km/h	50
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		
Speed Threshold 2	<=3	0 – 400km/h	70
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		
Speed Threshold 3	<=3	0 – 400km/h	90
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0

Reserved	0		
Reserved	0		
Speed Threshold 4	<=3	0 – 400km/h	110
Reserved	0		
Validity	<=4	0 – 3600sec	60
Alarm Type	1	0|1 – 4	0
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
MUT	3	MUT	MUT
Working Mode	1	0|1|5|11	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 Control	1	0|1	1
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FSC	3	FSC	FSC
Reserved			
Table ID	1	0 – 4	1

Sensor Type	<= 2	20 – 21	20
Enable	1	0|1	0
Reserved			
Reserved			
Num of Node	<= 2	0|2 – 11	0
Node 1 Value	< = 5	0～99999	
Node 1 Percentage	<= 2	0 – 100	
⋮			
Node N Value	< = 5	0～99999	
Node N Percentage	<= 2	0 – 100	
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
Reserved			
PEO	3	PEO	PEO
GEO ID	1	0 – 19	0
Mode	1	0 – 3	0
Start Point	2	1-10	1
End Point	2	3-10	3
Longitude	<=11	(–)xxx.xxxxxx	
Latitude	<=10	(–)xx.xxxxxx	
…			
Longitude	<=11	(–)xxx.xxxxxx	
Latitude	<=10	(–)xx.xxxxxx	
Check Interval	<=5	0|5 – 86400sec	0
Output ID	1	0 – 3	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		
CMS	3	CMS	CMS
Camera ID	1	0-3	
Number	<=2	1-10	1
Interval	<=2	1-60s	5
Photo Compression Ratio	<=3	20-250	150
Photo Resolution	1	1-3	2
Digital Input ID	1	0|1-3	0
Attribute Mask	<=4	0000 - FFFF	0x0003
Reserved	0		
Reserved	0		
Output ID	1	0 – 3	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		
CAN	3	CAN	CAN
Mode	1	0|1	1
CAN Report Interval	<=5	0|30 – 86400sec	0
CAN Report Interval IGF	<=5	0|30 – 86400sec	0
CAN Report Mask	8	0 - FFFFFFFF	COOFFFFF

Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
FTP	3	FTP	FTP
Server Address	<=60		
Server Port	<=5	0 – 65535	21
Full Name	<=60		
User Name	<=10		
Login Password	<=10		0
Transfer Mode	1	0|1	0
Oper Type	1	0|1	0
Report FTP	1	0|1	0
File Name Prefix	<=20		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

✦ <*Next Packet*>: Releated information packet is complete or not.
  ● 0: There is completely information packet.
  ● 1: There is not completely information packet.
✦ <*Current Packet*>: the index of packet. It start form 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,060100,135790246811220,,898600810906F8048812,20090214093254,11F0$

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' '-' '_'	
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,060100,135790246811220,,16,0,20090214093254,11F0$** |

Parameter	**Length(byte)**	**Range/Format**	**Default**
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=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,060100,135790246811220,,GV300,0100,0101,20090214093254,11F0$**

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' '-' '_'	
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,060100,135790246811220,,1,12000,,4.40,0,0,20090214093254,11F0$**

Parameter	Length(byte)	Range/Format	Default

Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'0' – '9' 'a' – 'z' 'A' – 'Z' '-' '_'	
External Power Supply	1	0|1	
External Power VCC	<=5	0 – 32000mV	
Reserved	0		
Backup Battery VCC	<=4	0.00 – 4.50 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,060100,135790246811220,,0,1200,1300,00,00,20090214093254,11F0$			
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' '-' '_'	
Pin15 Mode	1	0|1	
Analog Input VCC1	<=4	0 – 16000 mV	
Analog Input VCC2	<=4	25 – 16000 mV	
Digital Input	2	00 – 0F	
Digital Output	2	00 – 07	
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,060100,135790246811220,,+0800,0,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=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,040406,862170010903183,,,,,cmnet,,,898602a5121106029714,20,0,0358,10.19
4.113.168,211.138.180.2,211.136.17.108,,,,,20120716051300,0181$**

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' '-' '_'	

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:GTALS

After the device receives the command **AT+GTRTO** to get sub AT command configuration information, it will send the configuration information to the backend server by the message **+RESP:GTALS**. Different AT Command get different configuration information.For example, get FRI configuration,**AT+GTRTO=gv300,2,FRI,,,,,0015$**

➢ **+RESP:GTALS,**

Example:
+RESP:GTALS,06020E,862170010822169,gv300,FRI,1,0,,0,0000,0000,180,30,1000,1000,,40,60,00000000,,,,20121205072258,00C3$

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' '-' '_'	
Sub AT Command	3	'a' – 'z' 'A' – 'Z' ' '	
Mode	1	0 – 4	
Discard No Fix	<=2	0|1	
Reserved	0		
Period Enable	1	0|1	
Start Time	4	HHMM	
End Time	4	HHMM	
Check Interval	<=5	30 – 86400sec	
Send Interval	<=5	5 – 86400sec	
Distance	<=5	50 – 65535m	
Mileage	<=5	50 – 65535m	
Reserved	0		
Corner Report	<=3	0 – 180	
IGF Report Interval	<=5	0|5-86400sec	
ERI Mask	8	00000000−FFFFFFFF	
Reserved	0		
Reserved	0		

Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

3.3.3.13. +RESP:GTGSV

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

➢ **+RESP:GTGSV,**

Example:
+RESP:GTGSV,020107,359464036001111,,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 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device name	20		
SV count	2	0-24	
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	$	$

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

✧ <*SV id*>: Satellite id, when No satellites, zero as special number to fit.

✧ <*SV power*>: Satellite power, when No satellites, zero as specifl number to fit.

3.3.3.14. +RESP: GTUVN

After the device receives the command **AT+GTRTO** to get the version number of the UFSxxx fuel sensor, it will send the information to the backend server by the message **+RESP:GTUVN**.

➢ **+RESP: GTUVN,**

Example: +RESP:GTUVN,060502,869158008709145,gv300,2,02,B,,,,,20150323013012,2153$			
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' '-' '_'	
Sensor Protocol Version	1		
Sensor SW Version	2		
Sensor HW Version	1		
Reserved			
Reserved			
Reserved			
Reserved			
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ <Sensor Protocol Version>: The protocol version of the UFSxxx fuel sensor.
✧ < Sensor SW Version >: The SW version of the UFSxxx fuel sensor.
✧ < Sensor HW Version >: The HW version of the UFSxxx fuel sensor.

3.3.3.15. +RESP: GTCVN

After the device receives the command **AT+GTRTO** to get the version number of the CAN100, it will send the information to the backend server by the message +**RESP:GTCVN**.

➢ **+RESP: GTCVN,**

Example: +RESP:GTCVN,060502,869158008709145,gv300,2.2.1d,,,,,20150323013841,2166$			
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' '-' '_'	
CAN100 SW Version	<=7	'0' – '9' 'a' – 'z'	

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

✧ *<CAN100 SW Version>*: The SW version of the CAN100 device.

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:GTJDR**: Jamming indication

+**RESP:GTJDS**: Jamming indication

+**RESP:GTGSM**: The report for the information of the service cell and the neighbour cells.

+**RESP:GTGSS**: GPS signal status

+**RESP:GTSTR**: Vehicle enters into start status

+**RESP:GTSTP:** Vehicle enters into stop status

+**RESP:GTLSP:** Vehicle enters into long stop status.

+**RESP:GTFLA**: Unusual fuel consumption alarm

+**RESP:GTDOS:** Output status change with wave shape 1

+**RESP:GTTMP**: Temperature alarm.

+**RESP:GTRMD:** The report for entering or leaving GSM roam state.

+**RESP:GTPHL:** Reporting location information before report photo data.

+**RESP:GTFTP:** Reporting location information after transferring a file to FTP server.

+**RESP:GTEXP:** Reporting information about UFSxxx fault code.

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:GTJDR**, +**RESP:GTGSS**, +**RESP:GTSTR,** +**RESP:GTSTP**, +**RESP:GTLSP**, +**RESP:GTFLA,**+**RESP:GTDOS** and +**RESP:GTTMP** event reports, the last known GPS information and the current GSM network information are involved.

➢ +**RESP:GTPNA,**
➢ +**RESP:GTPFA,**
➢ +**RESP:GTPDP,**

Example:
+**RESP:GTPNA,060100,135790246811220,,20090214093254,11F0$**
+**RESP:GTPFA,060100,135790246811220,,20090214093254,11F0$**
+**RESP:GTPDP,060100,135790246811220,,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' '-' '_'	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

➢ +**RESP:GTMPN,**
➢ +**RESP:GTMPF,**
➢ +**RESP:GTBTC,**

Example:
+**RESP:GTMPN,060100,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,200902140 13254,0460,0000,18d8,6141,00,20090214093254,11F0$**
+**RESP:GTMPF,060100,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013 254,0460,0000,18d8,6141,00,20090214093254,11F0$**
+**RESP:GTBTC,060100,135790246811220,,0,4.3,92,70.0,121.354335,31.222073,20090214013 254,0460,0000,18d8,6141,00,20090214093254,11F0$**

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' '-' '_'	
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 1 in the **AT+GTJDC** command, when jamming is detected, the device will report +**RESP:GTJDR** message.

➢ **+RESP:GTJDR,**

Example:
+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 – XXFFFF, 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,,2,0,4.3,92,70.0,121.354335,31.222073,2009021401 3254,0460,0000,18d8,6141,00,20090214093254,11F0$			
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,060100,135790246811220,,,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 – XXFFFF, 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,060100,135790246811220,,3.53,0,4.3,92,70.0,121.354335,31.222073,2009021
4013254,0460,0000,18d8,6141,00,20090214093254,11F0$**

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	0.00 – 4.50 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,060100,135790246811220,,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
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,060100,135790246811220,,0,0,4.3,92,70.0,121.354335,31.222073,2009021401 3254,0460,0000,18d8,6141,00,20090214093254,11F0$

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' '-' '_'	
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,060100,135790246811220,,+8613812341234,15,0,0,4.3,92,70.0,121.354335, 31.222073,20090214013254,0460,0000,18d8,6141,00,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X∈{'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 – 10	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.

➢ **+RESP:GTIGN,**

Example:			
+RESP:GTIGN,060100,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,20090214013254,0460,0000,18d8,6141,00, 12345:12:34,2000.0,20090214093254,11F0$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=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	
Hour Meter Count	11	HHHHH:MM:SS	
Mileage	<=9	0.0 – 4294967.0 km	
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,060100,135790246811220,,1200,0,4.3,92,70.0,121.354335,31.222073,2009021 4013254,0460,0000,18d8,6141,00, 12345:12:34,2000.0,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=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	
Hour Meter Count	11	HHHHH:MM:SS	
Mileage	<=9	0.0 – 4294967.0 km	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

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

✧ *<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,060100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,2009021401 3254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

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

Example:
+RESP:GTIDF,060100,135790246811220,,22,300,0,4.3,92,70.0,121.354335,31.222073,200902 14013254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

Parameter	Length(byte)	Range/Format	Default
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=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,080100,135790246811220,FRI,0460,0000,1878,0871,20,,0460,0000,1878,015
2,16,,,,,,,,,,,,,,,,,,,,,,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|TOW|FRI|GIR|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	2	00	
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.

   "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.

✧ *<MCC(i)>* : MCC of the neighbor cell *i* (*i* is the index of the neighbor cell).

✧ *<MNC(i)>* : MNC of the neighbor cell *i*.

✧ *<LAC(i)>* : LAC in hex format of the neighbor cell *i*.

✧ *<Cell ID(i)>* : Cell ID in hex format of the neighbor cell *i*.

✧ *<RX Level(i)>* : The signal strength of the neighbor cell *i*. This parameter is a 6-bit coded in 1 dB steps:

    0:        -110 dBm

    1 to 62:   -109 to -48 dBm

    63:      -47 dBm

✧ *<MCC>*: MCC of the service cell.

✧ *<MNC>*: MNC of the service cell.

✧ *<LAC>*: LAC in hex format of the service cell.

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

✧ *<RX Level>*: 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 *<LAC(i)>*, *<Cell ID(i)>* means the terminal doesn't know the value.

3. This message cannot be sent via SMS.

➢ **+RESP:GTGSS**

Example:
+RESP:GTGSS,060100,135790246811220,,1,9,11,,0,4.3,92,70.0,121.354335,31.222073,20090
214013254,0460,0000,18d8,6141,00,20090214093254,11F0$

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' '-' '_'	
GPS Signal Status	1	0 | 1	
Satellite Number	2	0 - 24	
Device State	2	11|12|21|22|41|42|16	
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	$	$

✧ *<GPS Signal Status>*: 0 means lost GPS signal or no successful GPS fix, 1 means GPS signal recovered and successful GPS fix.

✧ *<Satellite Number>*: The number of the in sight satellites when fix successful, if fix failed，
The parameter is reserved.

✧ <Device *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:GTSTR,**
➢ **+RESP:GTSTP,**
➢ **+RESP:GTLSP,**

Example:
+RESP:GTSTR,060100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,2009021401
3254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
+RESP:GTSTP,060100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,2009021401
3254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$
+RESP:GTLSP,060100,135790246811220,,,,0,4.3,92,70.0,121.354335,31.222073,2009021401
3254,0460,0000,18d8,6141,00,2000.0,20090214093254,11F0$

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

Device Name	<=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:GTFLA**

Example:
+RESP:GTFLA,060100,135790246811220,,2,92,70,0,4.3,92,70.0,121.354335,31.222073,2009
0214013254,0460,0000,18d8,6141,00,20090214093254,11F0$

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' '-' '_'	
Input ID	1	0|1|2	
Ignition Off Fuel Level	<=4	0 - 100	
Current Fuel Level	<=4	0 - 100	

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	$	$

✧ *< 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.

✧ *<Current Fuel Level >*: The current fuel level which the fuel be stolen alert be triggered.

➢ **+RESP:GTDOS**

Example:
+RESP:GTDOS,06020F,862170010190559,,2,0.0,57.7,117.201371,31.833041,2012101508513 7,0460,0000,5663,5A02,,2,1,20121015085153,0149$

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' '-' '_'	
Wave1 output id	1	1-3	
Wave1 ouptut active	1	0|1	
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	$	$

✧ <*Wave1 output id*>: ID of the output With wave shape 1

✧ <*Wave1 output active*>: The output status with wave shape 1

➢ **+RESP:GTTMP**

Example:
**+RESP:GTTMP,06021E,862170013894694,,,0,01,1,0,0.0,0,39.0,117.201299,31.833024,20130
627054006,0460,0000,5678,2D7E,00,0.0,,0,0,01,01,,,,28131A4103000056,,28,20130627054009
,0028$**

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		
External Power VCC	<=5	0 – 32000 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	
Analog Input VCC1	<=5	0 – 16000 mV	
Analog Input VCC2	<=5	0 – 16000 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	$	$

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

Report ID: The ID of temperature alarm. The range is 0-3.

Report type: 0 means outside of the predefined temperature range. 1 means 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.

If the device changes GSM roam state, the message will report current roam state.

The message will be defined to a event message.

➢ **+RESP:GTRMD,**

Example:
+RESP:GTRMD,060228,862170011507322,,1,0,0.0,0,83.9,117.201281,31.833017,2013091707 1326,0460,0000,5678,2079,00,20130917071330,00A4$

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'	
Roaming state	1	0-3	
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	$	$

✧ < Roam state >:
- 0 Home
- 1 Known Roaming
- 2 Unknow Roaming
- 3 Blocking Report

➢ **+RESP:GTPHL,**

This message is used for reporting location information before report photo data, and only sended via GPRS even if the report mode is force on SMS.

Example:
+RESP:GTPHL,208504,862170019025640,,0,,20131018075847,0,0.0,0,69.4,117.201431,31.833073,20131018075848,0460,0000,5678,2D7E,00,,,,,20131018075849,0058$

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' '-' '_'	
Camera ID	1	0-3	
Reserved	0		
Photo Time	14	YYYYMMDDHHMMSS	
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 Characters	1	$	$

➢ **+RESP:GTFTP,**

Example:
+RESP:GTFTP,068905,862170011507322,,1,862170011507322_20140606080837.jpg,0,1.3,0, 87.6,117.201577,31.832981,20140606080843,0460,0000,5678,2D7E,00,20140606080903,002B $

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' '-' '_'	
Reserved	0		
File Name	<=40	'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	$	$

✧ *<File Name>*: The name of the file transferred to FTP server.

> **+RESP:GTEXP,**

This message is used for reporting the HW fault code about UFSxxx sensor.

Example:
+RESP:GTEXP,060307,862170016824169,gv300,,,3,1,0,0.0,66,61.2,117.201416,31.833084,20140619065342,0460,0001,5504,582B,00,20140619065345,0514$

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''-''_'	
Reserved			
Reserved			
Reserved Parameters	<=3		
HW Fault Code	2	0 – FFFF	
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	$	$

✧ *<HW Fault Code>*: The fault code of UFSxxx sensor.

- Bit 0: Ultrasonic probe is not connected, or ultrasonic extension cable is broken.
- Bit 1: Ultrasonic echo unstable, check whether the ultrasonic probe is off.
- Bit 2: System voltage error, check whether the car.voltage is low
- Bit 3: System abnormalities reset.
- Bit 4: The value of analog output is abnormal.
- Bit 5: The current fuel level is in the blind zone.
- Bit 6 - 15: Reserved.

3.3.5. Data Report

The following reports are triggered when certain data need to send.

+RESP:GTPHD: Reporting photo data.

+RESP: GTFSD: Reporting fuel sensor data.

➢ **+RESP:GTPHD,**

This mseeage is used for reporting photo data and only sended via GPRS even if the report mode is force on SMS.

Example:
+RESP:GTPHD,208504,862170019025640,,0,,20131018075847,20,20,8,AP/V/9k=,,,,,20131018 075950,006C$

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' '-' '_'	
Camera ID	1	0-3	
Reserved	0		
Photo Time	14	YYYYMMDDHHMMSS	
Total Frames	<=3		
Current Frame Index	<=3		
Photo Data Length	<=3		
Photo Data	<=684		
Reserved	0		

Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Characters	1	$	$

✧ *<Total Frames>*: The total frames of one picture.

✧ *<Current Frame Index>*: The index of frames.

✧ *<Photo Data Length>*: Length of picture data in current frame.

➢ **+RESP: GTFSD,**

This message is used for reporting fuel sensor data .

Example:
+RESP:GTFSD,060401,862170016790444,,39,*QL,407D,01,00000,0132,0014,00000,0229#,,,,,2 0141021021206,0018$

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' '-' '_'	
Data Length	2		
Sensor Data	<=128	ASCII Code	
Reserved	0		
Reserved	0		
Reserved	0		
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Characters	1	$	$

✧ *<Data Length>*: The length of *<Sensor Data>*.

✧ *<Sensor Data>*: The fuel data from fuel sensor. Start with '*' and end with '#'.

3.3.6. 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 buffer reports are saved to the built-in non-volatile memory in case the device is reset. The terminal can buffer up to 10000 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 is forcing on SMS, the buffered message will not be sent until the report mode is changed to TCP or UDP.
✧ 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,020100,135790246811220,,0,0,1,1,4.3,92,70.0,121.354335,31.222073,200902140 13254,0460,0000,18d8,6141,00,,20090214093254,11F0$

3.3.7. Transparent Data Transmission

The device supports to transparently transfer data between the backend server and the peripheral device connected to its second serial port. GV300 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 GV300.

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.

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 GV300 and GV300 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,04031B,135790246811220,,data,20111222122137,0017$

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' '-' '_'	
Data to the Backend Server	<=1280	ASCII Code	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

➢ **+RESP:GTDAT (Long Format)**

Example:
+RESP:GTDAT,04031B,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|11	
Reserved	0		
Reserved	0		
Data to the Backend Server	<=1280	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** and <Working Mode> of **AT+GTMUT** .

- 0: Disable the second serial port.
- 1: AT+GTDAT from second serial port or from the main port,and now, AT+GTURT <working mode> shoule be DAT mode or AT+GTMUT <Working Mode> should be DAT mode 1.
- 2-10: Reserved.
- 11: AT+GTDAT from main serial port, and now ,AT+GTMUT <working mode> should be DAT mode 11.

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

Example:
data to the serial port

3.3.8. The data transmission of the specified terminator character or with length

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 GV300.

Data to the backend server

➢ **+RESP:GTDTT(Short Format)**

Example:
+RESP:GTDTT,06020E,359464040000411,,8,12345678,20121225024543,003D$

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' '-' '_'	
Reserved	0		
Reserved	0		
Data_type	1	0-1	
Data Length	<=4	1-1280	
Data to the Backend Server	<=1280		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

➢ **+RESP:GTDTT (Long Format)**

Example:
+RESP:GTDTT,06020E,359464040000411,,6,,,8,12345678,0,,,,0,0,,0460,0000,5678,5D7B,00,,,,, 20121225025048,0048$

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' '-' '_'	

Reserved	0		
Reserved	0		
Data_type	1	0-1	
Data Length	4	1-1280	
Data to the Backend Server	<=1280		
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	$	$

✧ <*Data type*>:0 means binary data, 1 means binary data written in hexadecimal ASCII format.

✧ <*Data Length*>: it expresses the length of < *Data to the Backend Server*>.

✧ <*Data to the Backend Server*>:when AT+GTURT <*mode*> is 7, It is hexadecimal data, and when <*mode*> is 6 or 8, it is pure HEX data as what we input through UART.

3.3.9. Report Google Maps Hyperlink

If *<Location By Call>* in command **AT+GTCFG** is set to 2 or 3, the device will send its current location position to the incoming call via SMS with Google Maps hyperlink.

➢ **Google Maps hyperlink**

Example:
gv300:
<http://maps.google.com/maps?q=31.222073,121.354335
F1 D2009/01/01T00:00:00 B0 I1 V0.0>

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	
Battery Percentage	<=6	B0-B99	
Ignition Status	2	I0|I1	
Speed	<=6	V0.0 – S999.9 km /h	

✧ *<GPS Fix>*: The accuracy of the location information. F0 means no GPS fix.
✧ *<Battery Percentage>*: The percentage of the backup battery.
✧ *<Ignition Status>*: The status of ignition,0 means igniton off, 1 means ignition on.
✧ *<Speed>*: The current speed. Unit: km/h.

3.3.10. Uart Data Transfer

If the parameter *<Mode>* in **AT+ GTUDT** is enabled, the device will send the message **+RESP:GTUDT** to the serial port according to send interval. If the GEO-Fence event happened, the device will also send the message **+RESP:GTUDT** to the serial port.

➢ **+RESP:GTUDT,**

Example:
+RESP:GTUDT,06021E,0B50,0102,,862170010190559,,0,,1,1,0.0,0,41.8,117.021458,31.832807,20130609060028,0460,0000,5678,2D7E,00,0.0,,,,1,12,,,,00,00,21,0,0.00,0,,,,,20130609060032

,060D$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Firmware Version			
Hardware Version			
Reserved			
Unique ID	15	IMEI	
Device Name			
Report Type	1	0|1|2	
Report ID	<=2	0-99	
Number	1	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	
Reserved			
HMC	11	HHHHH:MM:SS	
Reserved			
External GPS Antenna	1	0|1|3	
GSV Number	<=2	00-FF	
GEO-Fence State	1	0|1	

Analog Input VCC1	<=5	0~16000mV	F0 – F100	
Analog Input VCC2	<=5	25~16000mV	F0 – F100	
Digital Input	2	00 – 0F	
Digital Output	2	00 – 07	
Motion Status	1	0x11|0x12|0x16|0x1A|0x41|0x42|0x21|0x22	
External Power VCC	<=5	0 – 32000 mV	
Backup Battery Level	<=4	0.00 – 4.50 V	
Charging	1	0|1	
GEO Status Mask	5	00000 – FFFFF	
PEO-Fence State	1	0|1	
PEO Status Mask	5	00000 – FFFFF	
Reserved	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ <Report Type>: 0 is normal timer message, 1 means GEO-Fence event triggered, 2 means PEO-Fence event triggered.

✧ <Report ID>: GEO-Fence event triggered ID / PEO-Fence event triggered ID. It's in HEX format.

✧ <GEO-Fence State>: The activated GEO-Fence state, 0 is out GEO-Fence, 1 is in GEO-Fence.

✧ <GEO Status Mask>: GEO status mask, bit 0 to bit 19 marks the status of GEO 0 to 19, and 0 means out of the GEO or the stauts unkwon, while 1 means in the GEO fence.

✧ <PEO-Fence State>: The activated PEO-Fence state, 0 is out PEO-Fence, 1 is in PEO-Fence.

✧ <PEO Status Mask>: PEO status mask, bit 0 to bit 19 marked the status of PEO 0 to 19, and 0 means out of the PEO or the stauts unkwon, 1 means in the PEO-Fence fence.

3.3.11. CANBUS Device Information Report

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

➢ **+RESP:GTCAN,**

Example:

+RESP:GTCAN,1F0101,135790246854321,1G1JC5444R7252367,,0,1fff,1G1JC5444R725236 7,1,0,FFFFDFFF,8045,181,140,30,0,20,1,2,29008200,10,20,30,20130628044803,010F$

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	
CANBUS Device State	1	0|1	
CANBUS Report Mask	<=8	0 - FFFFFFFF	
VIN	17	'0' - '9' 'A' - 'Z' except 'I', 'O', 'Q'	
Ignition Key	1	0|1|2	
Total Distance	<=12	H(0– 99999999)/I(0 – 2147483647)	
Total Fuel Used	<=9	0.00 – 999999.99l	
Engine RPM	<=5	0 – 16383 rpm	
Vehicle Speed	<=3	0 - 455Km/h	
Engine Coolant Temperature	<=4	-40 – +215 ℃	
Fuel Consumption	<=5	0.0 – 999.9L/100km | Inf | NaN	
Fuel Level	<=7	L(0.00–9999.99)/P(0.00 – 100.00)	
Range	<=8	0 – 99999999	
Accelerator Pedal Pressure	<=3	0 – 100%	
Total Engine Hours	<=8	0.00 – 99999.99h	
Total Driving Time	<=8	0.00 – 99999.99h	
Total Engine Idle Time	<=8	0 .00– 99999.99h	
Total Idle Fuel Used	<=9	0.00 –999999.99l	
Axle Weight	<=5	0 – 65535kg	
Tachograph Information	4	00-FFFF	

Detailed Information/Indicators	4	00-FFFF	
Lights	2	0-FF	
Doors	2	0-FF	
Total Vehicle Overspeed Time	<=8	0.00 – 99999.99h	
Total Vehicle Engine Overspeed Time	<=8	0.00 – 99999.99h	
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	
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ *<Report Type>*: A numeric to indicate the report type.
- 0: Periodically report.
- 1: Real time request report.
- 2: Ignition on/off report.

✧ *<CANBUS Device State>*: A numeric to indicate the communication state with the external CANBUS device.
- 0: Abnormal. It fails to receive data from the external CANBUS device.
- 1: Normal. It is OK to receive data from the external CANBUS device.

✧ *<CANBUS Report Mask>*: It refers to the *<CAN Report Mask>* in **AT+GTCAN**.

✧ *< VIN >* Reserved in CAN100 device.

✧ *< Ignition Key>*
- ● 0: ignition off.
- ● 1: ignition on.
- ● 2: engine on.

✧ *<Total distance>*: Vehicle total distance. The number is always growing. The unit is hectometer (H) or distance impulse (I) (if distance from dashboard is not available).

✧ *<Total fuel used>*: Number of liters of fuel used since vehicle manufacture or device installation. The unit is liter.

✧ *<Fuel Level>*: The level of fuel in vehicle tank. The unit is liter (L) or percent (P).

✧ *<Range>*: The number of hectometer to drive on remaining fuel. The unit is hectometer.

✧ *<Vehicle Speed>*: The vehicle speed based on wheel. The unit is km/h.

✧ *<Engine RPM>*: The revolutions per minute. The unit is rpm.

✧ *<Accelerator Pedal Pressure>*: The unit is percent.

✧ *<Engine coolant temperature>*: The unit is Celsius. Negative value is preceded by negative sign (-), i.e."-2".WWhen positive, no extra character is inserted, i.e."20".

✧ *<Fuel Consumption>*: The fuel consumption. The consumption is calculated depending onvalues read from vehicle.
Note: The CAN100 device cannot get this value and the value is invalid.

✧ *<Total Engine Hours>*: Time of engine running since vehicle manufacture or device installation. The unit is hour.

✧ *<Total Driving Time>*: Time of engine running (non-zero speed) since vehicle manufacture or device installation. The unit is hour.

✧ *<Total Engine Idle Time>*: Time of engine running during idling status (vehicle stopped) since vehicle manufacture or device installation. The unit is hour.

✧ *<Total idle fuel used>*: Number of liters of fuel used since vehicle manufacture or device installation. The unit is liter.

✧ *<Axle Weight>*: Vehicle axle weight. The unit is kg.

✧ *< Tachograph Information >*: Two bytes, the high byte describes driver 2, while the lower byte describes driver 1.

Each byte format:

V	R	W1	W0	C	T2	T1	T0

V : validity mark (0 – valid driver data, 1 – no valid data)

R : reserved

C : driver card (1 – card inserted, 0 – no card inserted)

T2-T0: driver time related states:
- ● 0: normal/no limits reached.
- ● 1: 15 min before 41 h.
- ● 2: 41 h reached.
- ● 3: 15 min before 9 h.
- ● 4: 9 h reached.
- ● 5: 15 minute before 16 h (not having 8h rest during the last 24h).
- ● 6: 16 h reached.

- 7: other limit.

W1-W0: driver work state

- 0: rest - sleeping.
- 1: driver available – short break.
- 2: work – loading, unloading, working in an office.
- 3: drive – behind wheel.

< Detailed Information/Indicators >: one byte, each bit contains information of one indicator.

- Bit 0: FL – fuel low indicator (1 – indicator on, 0 – off).
- Bit 1: DS – driver seatbelt indicator (1 – indicator on, 0 – off).
- Bit 2: AC – air conditioning (1 – on, 0 - off).
- Bit 3: CC – cruise control (1 – active, 0 - disabled).
- Bit 4: B – brake pedal (1 – pressed; 0 – released).
- Bit 5: C – clutch pedal (1 – pressed; 0 – released).
- Bit 6: H – handbrake (1 – pulled-up, 0 – released).
- Bit 7: CL – central lock (1 – locked, 0 – unlocked).
- Bit 8: R – reverse gear (1 – on, 0 – off).
- Bit 9: RL – running lights (1 – on, 0 – off).
- Bit 10: LB – low beams (1 – on, 0 – off).
- Bit 11: HB – high beams (1 – on, 0 – off).
- Bit 12: RFL – rear fog lights (1 – on, 0 – off).
- Bit 13: FFL – front fog lights (1 – on, 0 – off).
- Bit 14: D – doors (1 – any door opened, 0 – all doors closed).
- Bit 15: T – trunk (1 – opened, 0 – closed).

✧ *< Lights >*: One byte, each bit contains information of particular light.

- Bit 0: Running Lights (1 – on, 0 – off).
- Bit 1: Low Beam (1 – on, 0 – off).
- Bit 2: High Beam (1 – on, 0 – off).
- Bit 3: Front Fog Light (1 – on, 0 – off).
- Bit 4: Rear Fog Light (1 – on, 0 – off).
- Bit 5: Hazard Lights (1 – on, 0 – off).
- Bit 6: Reserved.
- Bit 7: Reserved.

✧ *< Doors >*: One byte, each bit contains information of one door.

- Bit 0: Driver Door (1 – opened, 0 – closed).
- Bit 1: Passenger Door (1 – opened, 0 – closed).
- Bit 2: Rear Left Door (1 – opened, 0 – closed)
- Bit 3: Rear Right Door (1 – opened, 0 – closed).
- Bit 4: Trunk (1 – opened, 0 – closed).
- Bit 5: Hood (1 – opened, 0 – closed).
- Bit 6: Reserved.
- Bit 7: Reserved.

✧ *<Total Vehicle Overspeed Time>*: The total time, when vehicle speed was greater than the limit defined in CAN100's configuration.

✧ *<Total Vehicle Engine Overspeed Time>*: The total time, when vehicle engine speed was

greater than the limit defined in CAN100's configuration.

3.3.12. UFSxxx FOTA Upgrade Report

The device will send the message +**RESP: GTUFS** to the backend server during the upgrade process .

➢ +**RESP: GTUFS,**

Example:
+**RESP: GTUFS,060307,862170011507322,,200,1,20140723021417,0014$**

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' '-' '_'	
Code	3		
Reserved (Optional)	0		
Send Time	14	YYYYMMDDHHMMSS	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ <*Code*>: Information code.
- 100: Confirm ok. Start upgrade.
- 101: Mode error,UART does not work for UFSxxx. Stop upgrade.
- 102: Low Power.Stop upgrade.
- 200: Start download package.
- 201: Download package success.
- 202: Downloading package fails.
- 300: Start upgrade.
- 301: Upgrade successful. The reserved parameter used as follows.

New Version	2		0

- 302: Upgrade fails.

✧ <New Version>:The version of the new firmware in the UFSxxx sensor.

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,060100,135790246811220,,20100214093254,11F0$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Unique ID	15	IMEI	
Device Name	<=20	'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,060100,11F0$			
+SACK:GTHBD,,11F0$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Protocol Version	6	XX0000 – XXFFFF, X∈{'A' – 'Z','0' – '9'}	
Count Number	4	0000 – FFFF	
Tail Character	1	$	$

✧ <*Protocol Version*>: The device type and the protocol version that the backend server supported. This field is optional. The backend server could just send an empty field to decrease the length of the heartbeat data acknowledgement.

✧ <*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>*, *<+HBD Mask>*, *<+DAT Mask>* and *<+CAN 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=gv300,,,FF,FFFFFFFF,FFFFFFFF,FF7F,FF,7F,,,,0018$			
Parameter	**Length(byte)**	**Range/Format**	**Default**
Password	4 – 6	'0' – '9' 'a' – 'z' 'A' – 'Z'	gv300
Reserved	0		
Reserved	0		
+ACK Mask	2	00 – FF	FF
+RSP Mask	8	00000000 – FFFFFFFF	01FFDFFF
+EVT Mask	8	00000000 – FFFFFFFF	01FFDFFF
+INF Mask	<=8	00000000 – FFFFFFFF	FF7F
+HBD Mask	2	00 – FF	FF
+DAT Mask	<=8	00000000 – FFFFFFFF	7F
+CAN Mask	8	00000000 – FFFFFFFF	7FF
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	*<CAN DATA>*
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	Reserved
Bit 15	*<Analog Input2 Voltage>*
Bit 14	*<Analog Input1 Voltage>*
Bit 13	*<Analog Input Mode>*
Bit 12	*<External Power Supply Voltage>*
Bit 11	*<Battery Level>*
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>*

✧ *<CAN DATA>*: Please refer to +**RESP:GTCAN** report in hex format . *<CAN DATA>* include fields from *<CANBUS Device State>* to *<Total Vehicle Engine Overspeed Time>*. You can analysis this fields as same as +**RESP:GTCAN** report.

✧ *<+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	*<CAN DATA>*
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	Reserved

Bit 15	<Analog Input2 Voltage>
Bit 14	<Analog Input1 Voltage>
Bit 13	<Analog Input Mode>
Bit 12	<External Power Supply Voltage>
Bit 11	<Battery Level>
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:GTGIR**
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	<Expand INF Mask>
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>*

✧ *<Expand INF Mask>*: Component mask of the information report message. Bit 0 to Bit 15 indicate which group of items is included when reporting message other than +**RESP: GTINF**.

Bit	Item to Mask
Bit 15	Reserved
Bit 14	Reserved
Bit 13	Reserved
Bit 12	Reserved
Bit 11	Reserved
Bit 10	Reserved
Bit 9	Reserved
Bit 8	Reserved
Bit 7	Reserved
Bit 6	Reserved
Bit 5	Reserved
Bit 4	Reserved
Bit 3	Reserved
Bit 2	+**RESP:GTCVN**
Bit 1	+**RESP:GTUVN**
Bit 0	+**RESP:GTGSV**

✧ *<+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>*

✧ *<+DAT Mask>*: Component mask of data report message.

Bit	Item to Mask
Bit 31	Reserved
⋮	Reserved
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>*

✧ *<+CAN Mask>*: Component mask of the CANBUS Information packet in HEX format.

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	Reserved
Bit 23	Reserved

Bit 22	Reserved
Bit 21	Reserved
Bit 20	Reserved
Bit 19	Reserved
Bit 18	Reserved
Bit 17	Reserved
Bit 16	Reserved
Bit 15	Reserved
Bit 14	Reserved
Bit 13	Reserved
Bit 12	Reserved
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>*

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

➢ **+ACK:GTHRM,**

Example:
+ACK:GTHRM,040100,135790246811220,,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	$	$

4.2. Acknowledgement +ACK

➢ **+ACK,**

Example:
2B 41 43 4B 22 FB 22 06 02 06 06 02 67 76 32 30 30 00 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	06	06
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+GTCFG	4
AT+GTTOW	5
AT+GTEPS	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+GTAIS	26
AT+GTJDC	27
AT+GTIDL	28
AT+GTHBM	29
AT+GTHMC	30
AT+GTURT	32
AT+GTWLT	34
AT+GTHRM	35

AT+GTFFC	36
AT+GTJBS	37
AT+GTSSR	38
AT+GTEFS	41
AT+GTIDA	43
AT+GTACD	44
AT+GTPDS	45
AT+GTBZA	47
AT+GTSPA	48
AT+GTMUT	49
AT+GTUDT	50
AT+GTTMP	51
AT+GTFSC	52
AT+GTRMD	53
AT+GTPEO	54
AT+GTCMS	55
AT+GTTAP	56
AT+GTCAN	57
Reserved	58
AT+GTUFS	59
AT+GTFTP	60
AT+GTCMD	61
AT+GTUDF	62

✧ <*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	3	0	0			
HEX	67	76	33	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:GTSPD**, **+RESP:GTRTL**, **+RESP:GTDOG** , **+RESP:GTIGL,** **+RESP:GTHBM** and **+RESP:GTEPS** use this format.

➢ **+RSP,**

Example:

2B 52 53 50 0B FF FF FF BF 00 67 06 02 06 06 02 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 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 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	06	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
Battery Level	1	0~100	
External Power Supply Voltage	2		
Analog Input Mode	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		

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	
CAN DATA	<=99		
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
Reserved	0
+RESP:GTTOW	1
Reserved	2
+RESP:GTLBC	3
+RESP:GTEPS	4

+RESP:GTDIS	5
+RESP:GTIOB	6
+RESP:GTFRI	7
+RESP:GTGEO	8
+RESP:GTSPD	9
+RESP:GTSOS	10
+RESP:GTRTL	11
+RESP:GTDOG	12
Reserved	13
+RESP:GTAIS	14
+RESP:GTHBM	15
+RESP:GTIGL	16
+RESP:GTIDA	17
+RESP:GTERI	18
Reserved	19
+RESP:GTGIN	20
+RESP:GTGOT	21

✧ *<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	3	0	0			
HEX	67	76	33	30	30	00	00	00

✧ *<Analog Input Mode>*: The mode of the analog input ports, the high byte is reserved, the low 4 bits of the low byte are for the analog input 1 and the high 4 bits are for the analog input 2.

✧ *<Digital Input Status>*: The mask of digital input1, digital input2, digital input3 and digital input4 status consist of the byte.

✧

Input status mask	ID
Ignition Detection	0x01
Digital Input1	0x02
Digital Input2	0x04
Digital Input3	0x08

✧ *<Digital Output Status>*: The mask of digital output1, digital output2, digital output3 and relay output status consist of the byte.

Input status mask	ID
Digital Output1	0x01
Digital Output2	0x02
Digital Output3	0x04

✧ *<External GPS Antenna Status / Satellites>*: The last 2 bits of the high nibble is for *<External GPS Antenna Status>* and the low nibble is for *<Satellites>*.

✧ *<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.

Longitude 121.390847	121390847		
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.

Latitude 31.164503	31164503		
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	0D

✧ <*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	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	00	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
HEX	00	00	00	00	00	00

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

RFID	0			
HEX	00	00	00	00

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

➢ **+RSP,**

Example:
2B 52 53 50 03 FF FF FF FF 00 6E 06 02 06 06 02 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 00 00 00 41 07 00 70 13 91 69 76 33 9F 01 01 00 00 04 00 00 00 18 07 3C 48 90 01 DB 89 20 07 DC 06 19 03 29 2C 04 60 00 00 18 77 08 73 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DC 06 19 03 29 2D 00 F5 F7 DE 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	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 Input Mode	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		
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	
CAN DATA	<=99		
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 02154450293	02	15	44	50	29	3
HEX	02	15	44	50	29	3F

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

➢ +**RSP,**

Example:

2B 52 53 50 0A FF FF FF FF 00 68 06 02 06 06 02 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 03 00 21 05 10 54 01 02 00 00 03 00 2B FF E9 07 3C 46 BE 01 DB 88 EA 07 DC 06 19 05 12 1B 04 60 00 00 18 77 08 73 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DC 06 19 05 12 1C 01 66 98 F5 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	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 Input Mode	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		
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	HHHHHHHHHHMMSS	
RFID	4	4294967295	
CAN DATA	<=99		
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 micphone volume and low nibble express current speaker volume.

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

➢ **+RSP,**

Example:

2B 52 53 50 0B FF FF FF BF 00 67 06 02 06 06 02 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 0C 00 41 18 00 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 00 00 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	06	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
Battery Level	1	0~100	
External Power Supply Voltage	2		
Analog Input Mode	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		
Report ID / Report Type	1	00	00
ID Length	1	1-20	
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	

CAN DATA	<=99		
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 12 01 FE DF FF 00 00 00 02 00 79 06 02 06 06 02 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 00 00 21 10 10 02 01 28 ED 29 41 03 00 00 FD 01 02 01 9D 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 04 60 00 00 56 78 2D 7E 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DE 04 06 04 0E 27 00 36 AA 83 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+RSP	+RSP
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
ERI Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1		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 Input Mode	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		
Report ID / Report Type	1		
UART Device Type	1	0 - 99	
Digit Fuel Sensor Data (Optional)	2	0000 – FFFF	
Reserved (Optional)	1		
Reserved (Optional)	1		
Reserved (Optional)	1		
Reserved (Optional)	1		
Reserved (Optional)	1		
Main UART Device	1	0 - 99	
Reserved (Optional)	1		
Reserved (Optional)	1		
Reserved (Optional)	1		
Reserved (Optional)	1		
Reserved (Optional)	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	
CAN DATA	<=99		
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: Digital fuel sensor, the following five reserved fields are used as follow.

Sensor Number (Optional)	1	0 –99	
Sensor Type (Optional)	1	0 –4 | 6|20 – 21	
Reserved (Optional)	1	0x00	
Percentage (Optional)	2	0 –100	
Volume (Optional)	2	0 –10000	

- ● 2: AC100 1wire bus, the following five reserved fields are used as follow.

AC100 Devices Number (Optional)	1	0 - 19	
1wire Device ID (Optional)	8		
1wire Device Type (Optional)	1	00 – FF	
Device Data Length (Optional)	1	00 – FF	
1wire Device Data (optional)	<= 20		

✧ *<Digit Fuel Sensor Data>*: if bit 0 of *<ERI_mask>* in **AT+GTFRI** is enabled, the yellow part will show and it include the data get from digital fuel sensor.

✧ *<Main UART Device >*: Type of device which is connected to the main serial port.
- ● 0: No device is connected

✧ <Sensor Number (optional)>: Total number of the fuel sensor, controlled by bit 3 or bit 4 of the <ERI Mask>, and if the number is more than 0, the red part and the blue parts will show.

♦ <Sensor Type (optional)>: The type of the fuel sensor.

♦ <Percentage (optional)>: Percentage of the fuel remaining in the fuel tank, controlled by bit3 of the <ERI Mask>.

♦ <Volume (optional)>: Volume of the fuel remaining in the fuel tank, controlled by bit 4 of the <ERI Mask>.

♦ < *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 be 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. 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 <*ERI Mask*>.

+**RESP:GTGEO** in HEX use this format**:**

➢ **+RSP,**

Example:
2B 52 53 50 08 FF FF FF BF 00 67 06 02 06 06 02 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 01 00 41 18 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 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	06	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
Battery Level	1	0~100	
External Power Supply	2		

Voltage			
Analog Input Mode	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		
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	
CAN DATA	<=99		

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

✧ *<Report ID/Report Type>*: Use bit 0 for Report Type, bit 1 – 3 as high 3 bits of Report ID, and bit 4 – 7 as low 4 bits of Report ID.
- Report ID: The ID of Geo Fence in HEX format, the range is 0 to 19.
- Report Type: 0, Exit from the Geo-Fence; 1, Enter the Geo-Fence.

Location report message for +**RESP:GTGIN,** +**RESP:GTGOT** use below format.
➢ +**RSP,**

> **Example:**
>
> **2B 52 53 50 14 01 FE DF FF 00 6B 06 02 28 0C 51 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 00 00 01 11 17 00 00 00 00 04 01 01 00 00 00 00 00 00 59 06 FC 59 97 01 E5 BB 22 07 DD 09 1D 09 0A 36 04 60 00 00 56 63 5A 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DD 09 1D 09 0A 37 00 16 63 91 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	06	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
Battery Level	1	0~100	
External Power Supply Voltage	2		
Analog Input Mode	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		
Area Type	1	0-1	
Mask Group	1	01-1F	
Area Mask Group 1	8	0000000000000001-000000 00000FFFFF	
Area Mask Group 2	8	0000000000000001-000000 00000FFFFF	
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	

Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ *<Mask Group>*: The bitwise mask for confirm the reported *<Area Mask Group>*, bit 0 for *Area Mask Group 1* and bit 1 for *Area Mask Group 2*. If the special bit set as 1, means reported, and 0 means not reported.

✧ *<Area Mask Group 1>*: The bitwise mask for trigger condition composition of the corresponding PEO ID. Each bit, from bit 0 to bit 24, represents the logical status of the corresponding PEO ID to trigger the entering or exiting event.1 means that the event of the PEO ID set has triggered and 0 means not. In a group, if no id has triggered, the bitwise mask will be a null.

4.4. Information Report +INF

Information report messages include **+RESP:GTINF**, **+RESP:GTGPS**, **+RESP:GTCID**, **+RESP:GTCSQ**, **+RESP:GTVER**, **+RESP:GTBAT**, **+RESP:GTIOS,** **+RESP:GTUVN** and **+RESP:GTTMZ**. 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 00 00 67 76 32 30 30 00 00 00 06 02 06 06 02 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 0D 0D 09 0F 1B 11 0B 19 00 1A 16 1D 0D 19 00 1A 16 1D 0D 02 13 04 11 05 11 07 00 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	
Expand INF Mask	2	0000 - FFFF	
Length	2		
Unique ID	8	IMEI/Device Name	
Device Type	1	06	+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	+RESP: GTIOS
Analog Input1 Voltage	2		
Analog Input2 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	
Pin15 mode	1		
Motion Status	1	0x11 | 0x12 0x21 | 0x22 0x41 | 0x42 0x16 | 0x1A	+RESP: GTGPS
Reserved	1	00	
External GPS Antenna Status | Satellites in View	1		
GPS on Need / Power Saving Enable / OWH Mode / Outside Working Hour / AGPS	1		
Last Fix UTC Time	7	YYYYMMDDHHMMSS	
Reserved	1	00	
FRI Discard No Fix	1	0|1	
ResponseReport 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
External Power Supply VCC	2	0	
Backup Battery VCC	2	0 – 4500mV	
Backup Battery Level	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: GTGIR**
Cell Number	1		
MCC	2		
MNC	2		
LAC	2		
Cell ID	2		
......	2		
MCC	2		
MNC	2		
LAC	2		
Cell ID	2		
Reserved	1		
RX Level	1		
SV Count	1		**+RESP: GTGSV**
SV id	1		
SV Power	1		
…...			
SV id	1		
SV Power	1		
Sensor Protocol Version	1		**+RESP: GTUVN**
Sensor SW Version	2		
Sensor HW Version	1		
CAN100 SW Version Length	1	0-10	**+RESP: GTCVN**
CAN100 SW Version	<=10		
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 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
+RESP:GTGSV	11
+RESP:GTUVN	12
+RESP:GTCVN	13

✧ *<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	3	0	0			
HEX	67	76	33	30	30	00	00	00

✧ *<GPS on Need / Power Saving Enable / OWH Mode / Outside Working Hour / GPS Antenna Status>*: The highest bit, bit 7 is for *<GPS on Need>*, bit 5 and bit 6 is for *<Power Saving Enable>*, bit 4 and bit 3 are for *<OWH Mode>*, bit 2 is for *<Outside Working Hour>*. Bit 0 is for *<AGPS>*. *<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 whether the backup battery is working. 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.

"INF"   This cell information is for INF requirement.
"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
INF	0
SOS	1
RTL	2
LBC	3
TOW	4
FRI	5
GIR	6
ERI	7

✣ *<Cell Number>*: *<Cell Number>* express number of the IMSI**.** The IMSI consist of MCC, MNC, LAC, Cell ID.

✣ *<Sensor Protocol Version>*: The protocol version of the UFSxxx fuel sensor. The value is ASCII format.

✣ *<Sensor SW Version>*: The SW version of the UFSxxx fuel sensor. The value is ASCII format.

✣ *<Sensor HW Version>*: The HW version of the UFSxxx fuel sensor. The value is ASCII

format.

✧ *<CAN100 SW Version Length>*: the length of CAN100 SW Version.The value is pure HEX format.

✧ *<CAN100 SW Version>*: The Software Version of CAN100 device. The value is the string of CAN100 software version. It does not include '\0'. The value is ASCII format.

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:GTSTR**, **+RESP:GTSTP,** **+RESP:GTLSP,** **+RESP:GTANT** use this format.

➢ **+EVT,**

Example:
2B 45 56 54 09 FF FF FF FF 00 66 06 02 06 06 02 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 00 01 00 21 06 01 00 00 00 01 00 2B FF FC 07 3C 47 71 01 DB 88 70 07 DC 06 19 05 17 18 04 60 00 00 18 77 08 73 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DC 06 19 05 17 1A 01 6C 6A 9E 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/Device Name	
Battery Level	1	0~100	
External Power Supply Voltage	2		
Analog Input Mode	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		
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	
CAN DATA	<=99		
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
Reserved	5
+RESP:GTBPL	6
+RESP:GTBTC	7
+RESP:GTSTC	8
+RESP:GTSTT	9
+RESP:GTANT	10
+RESP:GTMON	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:GTGSS	21
+RESP:GTFLA	22
+RESP:GTSTR	23
+RESP:GTSTP	24
+RESP:GTDOS	27
+RESP:GTGES	28
+RESP:GTLSP	29
+RESP:GTTMP	30
+RESP:GTDTT	31
+RESP:GTJDS	32
+RESP:GTRMD	33
+RESP:GTPHL	34
+RESP:GTEXP	35

Reserved	36
+RESP:GTUFS	37
+RESP:GTFTP	38

✧ *<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	3	0	0			
HEX	67	76	33	30	30	00	00	00

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

➢ +**EVT,**

Example:

2B 45 56 54 0A FF FF FF BF 00 69 06 02 06 06 02 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 00 0C 00 41 10 00 00 01 00 00 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 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	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 Input Mode	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		
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	
CAN DATA	<=99		
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 20 01 FE FF FF 00 69 06 02 1F 0B 13 67 76 33 30 30 41 31 31 46 00 00 00 00 00 00 00 00 00 01 11 10 01 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 04 60 00 00 56 78 20 79 00 00 00 00 00 00 00 0B 05 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DD 0A 0A 11 16 21 00 3F 30 DE 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 Input Mode	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	
CAN DATA	<=99		
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:GTMON** uses this format.

➢ **+EVT,**

Example:

2B 45 56 54 0B FF FF FF FF 00 6E 06 02 06 06 02 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 00 01 00 22 08 70 15 00 03 87 88 7F 50 01 00 00 00 07 00 2B 00 16 07 3C 47 F8 01 DB 87 EA 07 DC 06 19 05 24 22 04 60 00 00 18 77 08 73 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DC 06 19 05 24 23 01 86 EB EB 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 Input Mode	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		
Number Length / Number Type	1		
Phone Number	<=10		

Microphone / Speaker			
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ *<Microphone / Speaker>*: The bit 4 is for *<Microphone>* to show the volume level of the microphone, the lower nibble is for *<Speaker>* to show the volume level of the speaker.

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 0E FF FF FF FF 00 6A 06 02 06 06 02 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 00 00 00 12 08 00 00 05 88 01 00 00 00 03 00 2B 00 1F 07 3C 47 AD 01 DB 87 F5 07 DC 06 19 05 28 20 04 60 00 00 18 77 08 73 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DC 06 19 05 28 23 01 8D 43 90 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 Input Mode	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		
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	
CAN DATA	<=99		
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 FF 00 69 06 02 06 06 02 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 00 00 00 11 00 00 CA 01 01 00 00 00 08 00 2B 00 3F 07 3C 47 34 01 DB 87 CF 07 DC 06 19 05 28 30 04 60 00 00 18 77 08 73 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0 000 00 00 07 DC 06 19 05 2B 22 01 9A 1C CE 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 Input Mode	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		
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	
CAN DATA	<=99		
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 6A 06 02 06 06 02 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 00 0C 00 41 10 00 00 00 00 01 00 00 00 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 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	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 Input Mode	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		
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMS	

		S	
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 06 02 06 06 02 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 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 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	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 Input Mode	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		
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	
CAN DATA	<=99		
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:GTGSS** uses this format.

➢ +**EVT,**

Example:

2B 45 56 54 15 FF FF FF BF 00 67 06 02 06 06 02 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 01 00 00 00 00 00 00 0C 00 41 10 00 00 01 00 00 00 00 00 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 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	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 Input Mode	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		
GPS Signal Status	1	0 | 1	
Reserved	4	00000000	
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ <*GPS Signal Status*>: 0 means lost GPS signal or no successful GPS fix, 1 means GPS signal recovered and successful GPS fix.

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

➢ +**EVT,**

Example:
2B 45 56 54 16 FF FF FF BF 00 67 06 02 06 06 02 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 01 00 00 00 00 00 00 0C 00 41 10 00 00 01 00 00 00 00 00 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 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	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 Input Mode	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		
Input ID	1	0|1|2	
Ignition Off Fuel Level	1	0 - 100	
Current Fuel Level	1	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	
CAN DATA	<=99		
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.

✧ <*Ignition off Fuel Level*>: The fuel level saved before last ignition off.

✧ <*Ignition on Fuel Level*>: The fuel level after current ignition on.

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

➢ +**EVT,**

Example:

2B 45 56 54 1B 01 FE DF FF 00 68 06 02 06 06 02 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 00 00 01 41 10 01 01 01 00 00 00 00 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 77 08 73 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DB 01 01 00 02 1C 00 0D 80 F6 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 Input Mode	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		
Wave1 output id	1	1-3	
Wave1 ouptut 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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

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

➢ +**EVT,**

Example:
2B 45 56 54 1C 01 FE DF FF 00 70 06 02 0F 08 23 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 00 00 11 17 00 00 00 00 00 00 01 F4 00 00 01 68 01 00 00 00 00 00 00 00 32 06 FC 59 DC 01 E5 BB CD 07 DC 0C 1A 09 20 18 04 60 00 00 56 63 5A 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DC 0C 1A 09 20 21 00 1B 42 F0 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	2		

Voltage			
Analog Input Mode	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		
Trigger GEO ID	2	0-19	
Trigger GEO Enable	1	0|1	
Trigger Mode	1	0|21|22	
Radius	4	50 – 6000000m	
Check Interval	4	0|5 – 86400sec	
Number	1	1	
GPS Accuracy	1	0|1	
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ *<Trigger GEO ID>*: The ID of Geo-Fence, The range is 0 – 19.

✧ *<Trigger GEO Enable>*:   Current Parking-Fence is active or inactive.

● 0 Current Parking -Fence is inactive.

● 1 Current Parking -Fence is active.

Event message **+RESP:GTTMP** uses this format.

➢ **+EVT,**

Example:

2B 45 56 54 1E 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 64 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 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 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	06	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
Battery Level	1	0~100	

External Power Supply Voltage	2		
Analog Input Mode	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		
Temperature Alarm ID	1	0 – 3	
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℃	
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✦ <Temperature Alarm ID>: The ID of temperature alarm.
✦ <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 ID>: The ID of the temperature sensor.
✦ <Temperature Sensor device DATA>: The current temperature the sensor detected.

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

➢ +**EVT,**

Example:
2B 45 56 54 1F FF FF FF BF 00 67 06 02 06 06 02 23 5C 1F 03 43 23 1B 00 00 00 00 00 00 00 00 00 0C 00 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 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 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	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 Input Mode	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		
Reserved	1	00	00
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	
CAN DATA	<=99		
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:GTRMD** uses this format.

➢ **+EVT,**

Example:

2B 45 56 54 14 01 FE DF FF 00 66 0E 02 28 0C 01 67 76 33 32 30 41 31 32 5D 00 00 00 00 00 00 00 00 11 1A 01 00 00 00 00 00 00 00 56 06 FC 59 D8 01 E5 BB 8A 07 DD 08 1C 01 03 1D 04 60 00 00 56 78 20 79 00 00 00 00 00 00 00 64 02 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DD 08 1C 09 1C 1A 18 3D B7 41 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 Input Mode	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		
Roam State	1	0-3	
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	

Tail Characters	2	0x0D 0x0A	0x0D 0x0A

Event report message +**RESP:GTPHL** uses this format, and it only sended via GPRS even if the report mode is force on SMS.

> **+EVT,**

Example:

2B 42 56 54 22 01 FE DF FF 00 72 20 85 05 03 01 61 78 31 30 30 30 00 00 00 00 00 00 00 00 00 00 00 00 00 00 11 14 00 03 00 08 00 07 DD 0A 19 0C 1A 0D 01 00 00 00 00 00 00 00 22 06 FC 5A 15 01 E5 BB C7 07 DD 0A 19 0C 0A 1B 04 60 00 00 56 78 2D 7E 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DD 0A 19 0C 1A 0D 00 47 B9 DA 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	0x20	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
Battery Level	1	0~100	
External Power Supply Voltage	2		
Analog Input Mode	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		
Attribute Mask	2	0000 – FFFF	

Attribute Length	2		
Camera ID	1	0-3	
Photo Time	7	YYYYMMDDHHMMSS	
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ *<Attribute Length>*: The total length of attribute parameters which including *<Camera ID>* and *<Photo Time>*.

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

➢ +**EVT,**

Example:

2B 45 56 54 23 01 FE DF FF 00 6A 06 03 07 0D 05 67 76 33 30 30 00 00 00 00 00 00 00 00 00 00 01 00 21 1B 00 00 33 31 01 00 00 00 00 00 42 00 3D 06 FC 5A 08 01 E5 BB FC 07 DE 06 13 07 02 1E 04 60 00 01 55 04 67 F3 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DE 06 13 07 02 20 05 21 CE 98 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	0x20	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
Battery Level	1	0~100	
External Power Supply Voltage	2		
Analog Input Mode	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		
Reserved	1		
Reserved	1		
Reserved Parameters	1		
HW Fault Code	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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

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

➢ +**EVT,**

Example:			
2B 45 56 54 25 01 FE DF FF 00 69 06 04 01 0E 04 67 76 33 30 30 41 31 34 00 00 00 00 00 00 00 00 00 01 00 21 16 00 65 00 01 00 00 00 00 00 00 00 30 06 FC 5A 0C 01 E5 BB F5 07 DE 0A 16 05 3A 1C 04 60 00 00 56 78 2D 7E 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DE 0A 16 05 3A 1D 00 D2 0B 90 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 Input Mode	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		
Code	2		
Reserved	1	00	00
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

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

> +**EVT,**

Example:

2B 45 56 54 26 01 FE DF FF 00 7F 06 04 01 0E 04 67 76 33 30 30 41 31 34 00 00 00 00 00 00 00 00 01 00 21 10 01 6A 6F 6E 65 79 5F 32 30 31 31 30 31 30 31 30 30 32 32 31 39 2E 6A 70 67 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 04 60 00 00 56 63 5A 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 07 DB 01 01 00 16 20 00 16 2A 33 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	0x20	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	

Battery Level	1	0~100	
External Power Supply Voltage	2		
Analog Input Mode	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		
File Name	<=40		
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	
CAN DATA	<=99		
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Characters	2	0x0D 0x0A	0x0D 0x0A

✧ < *File Name*>: The file name of picture. The value is the string of file name.it ends by '\0'.The value is ASCII format.

4.6. Data Report +DAT

Data report message **+RESP:GTPHD and +RESP:GTFSD** uses this format, and **+RESP:GTPHD** only sended via GPRS even if the report mode is force on SMS.

➢ **+DAT,**

Example:
2B 44 41 54 01 00 00 00 7F 01 78 20 85 05 03 01 61 78 31 30 30 30 00 00 00 03 00 08 00 07 DD 0A 19 0C 1A 0D 06 06 00 05 18 FF D6 FF D9 07 DD 0A 19 0C 1E 18 00 4E AE 96 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+DAT	+DAT
Message Type	1		
Report Mask	4	00000000 – FFFFFFFF	
Length	2		
Device Type	1	0x20	0x20
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI/Device Name	
Attribute Mask	2	0000 – FFFF	**+RESP:GTPHD**
Attribute Length	2		
Camera ID	1	0-3	
Photo Time	7	YYYYMMDDHHMMSS	
Total Frames	1		
Current Frame Index	1		

Photo Data Length	2		
Photo Data	<=512		
Data Length	2		**+RESP:GTFSD**
Sensor Data	<=128		
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 data report message.

Command	**ID**
+RESP:GTPHD	1
+RESP:GTFSD	2

✥ *<Report Mask>*: It refer to the *<+DAT Mask>* in **AT+GTHRM**.
✥ *<Attribute Length>*: The total length of attribute parameters which including *<Camera ID>* and *<Photo Time>*.
✥ *<Data Length>*: The length of *<Sensor Data>*.
✥ *<Sensor Data>*: The fuel data from fuel sensor.

4.7. Heartbeat Data +HBD

➢ **+HBD,**

Example:
2B 48 42 44 EB 1E 06 02 06 06 02 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	06	06
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	3	0	0			
HEX	67	76	33	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 .

4.8. 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.

4.9. CANBUS Device Information Report

CANBUS device information report message **+RESP:GTCAN** uses this format.
➢ **+CAN,**

Example:

2B 43 41 4E 01 00 00 00 FD 00 81 1F 01 04 03 01 56 15 5D 02 14 01 09 03 31 47 31 4A 43 35 34 34 34 34 52 37 32 35 32 33 36 37 00 00 30 1F FF 31 47 31 4A 43 35 34 34 34 52 37 32 35 32 33 36 37 01 2E 53 FF FF DF FF 38 93 00 B6 00 0E 00 B1 00 50 00 00 00 00 00 00 00 00 01 4A 00 33 06 FC 5A 22 01 E5 BB F1 07 DD 0B 0E 01 33 27 04 60 00 01 55 04 58 2B 00 07 DD 0B 0E 01 33 28 2A 3E EC 58 0D 0A

Parameter	Length(byte)	Range/Format	Default
Message Header	4	+CAN	+CAN
Message Type	1		
Report Mask	4	0x00000000 – 0xFFFFFFFF	
Length	2		
Device Type	1	06	06
Protocol Version	2	0000 – FFFF	
Firmware Version	2	0000 – FFFF	
Unique ID	8	IMEI	
Report Type	1	0|1|2	
CANBUS Device State	1	0|1	
CANBUS Report Mask	4	0x00000000 - 0xFFFFFFFF	
VIN	17		
Ignition Key	1	0|1|2	
Total Distance	4	0– 2147483648	
Total Fuel Used	5	0.00 – 999999.99	
Engine RPM	2	0 – 16383 rpm	
Vehicle Speed	2	0 - 400Km/h	
Engine Coolant Temperature	2	-40 – +215 ℃	
Fuel Consumption	3	0.0 – 999.9L/100km | Inf | NaN	
Fuel Level (Liters)	5	L(0.00 – 999999.99)	
Fuel Level(Percents)	5	P(0.00 – 99.99)	
Range	4	0 – 99999999	
Accelerator Pedal Pressure	2	0 – 100	
Total Engine Hours	5	0.00 – 99999.99h	

Total Driving Time	5	0.00 – 99999.99h	
Total Engine Idle Time	5	0.00 – 99999.99h	
Total Idle Fuel Used	5	0.00 –999999.99l	
Axle Weight	2	0 – 65535kg	
Tachograph Information	2	00-FFFF	
Detailed Information/Indicators	2	00-FFFF	
Lights	1	0x00-0xFF	
Doors	1	0x00-0xFF	0
Total Vehicle Overspeed Time	5	0 – 99999.99h	
Total Vehicle Engine Overspeed Time	5	0 – 99999.99h	
Total Distance Impulses	4	0– 2147483648	
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
Send Time	7	YYYYMMDDHHMMSS	
Count Number	2	0000 – FFFF	
Checksum	2	0000 – FFFF	
Tail Character	2	0x0D 0x0A	0x0D 0x0A

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

Command	ID
+RESP:GTCAN	1

✧ *<Report Mask>*: It refers to the *<+CAN Mask>* in **AT+GTHRM.**

✧ *<Length>*: The whole length of the message from header to the tail characters.

✧ *<Unique ID>*: If the Bit 1 of *<+CAN Mask>* is 0, IMEI of the device is 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 *<+CAN Mask>* is 1, use the device name as the unique ID of the device. The device name refers 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 are set as 0.

IMEI	g	v	3	0	0			
HEX	67	76	33	30	30	00	00	00

✧

✧ *<Report Type>*: A numeric to indicate the report type.
   - 0: Periodically report.
   - 1: Real time request report.
   - 2: Ignition on/off report.

✧ *<CANBUS Device State>*: A numeric to indicate the communication state with the external CANBUS device.
   - 0: Abnormal. It fails to receive data from the external CANBUS device.
   - 1: Normal. It is OK to receive data from the external CANBUS device.

✧ *<CANBUS Report Mask>*: It refers to the *<CAN Report Mask>* in **AT+GTCAN**.

✧ *< VIN >*: Reserved in CAN100 device.

✧ <Total Distance>: Vehicle Distance. The number is always growing. this unit is hectometer. If it is 0, the distance is not available.

✧ *<Total Fuel Used>*: Total 5 bytes. The first 4 bytes are for the integer part of the total fuel used and the last byte is for the fraction part. The fraction part only has 2 digits.

✧ *<Engine Coolant Temperature>*: The engine coolant temperature of vehicle. Total 2 bytes. If this value is negative, it is represented in 2's complement format.

✧ *<Fuel Level (liters)>*: Total 5 bytes. The first 4 bytes are for the integer part of the fuel level (liters) and the last byte is for the fraction part. The fraction part only has 2 digits. This field controls by Bit6 in *<CANBUS Report Mask>*.

✧ *<Fuel Level (percents)>*: Total 5 bytes. The first 4 bytes are for the integer part of the fuel level (percents) and the last byte is for the fraction part. The fraction part only has 2 digits. This field controls by Bit6 in *<CANBUS Report Mask>*.

✧ *<Fuel Consumption>*: Total 3 bytes. The first 2 bytes are for the integer part of the fuel

consumption and the last byte is for the fraction part. The fraction part only has 1 digit.

Note: The CAN100 device cannot get this value and the value is invalid.

✧ *<Total Engine Hours>*: Total 5 bytes. The first 4 bytes are for the integer part of the total engine hours and the last byte is for the fraction part. The fraction part only has 2 digits.

✧ *<Total Driving Time>*: Total 5 bytes. The first 4 bytes are for the integer part of the total driving time and the last byte is for the fraction part. The fraction part only has 2 digits.

✧ *<Total Engine Idle Time>*: Total 5 bytes. The first 4 bytes are for the integer part of the total engine idle time and the last byte is for the fraction part. The fraction part only has 2 digits.

✧ *<Total Idle Fuel Used>*: Total 5 bytes. The first 4 bytes are for the integer part of the total idle fuel used and the last byte is for the fraction part. The fraction part only has 2 digits.

✧ *<Tachograph Information>*: Two bytes, the high byte describes driver 2, and the lower byte describes driver 1.

Each byte format:

V	R	W1	W0	C	T2	T1	T0

V : validity mark (0 – valid driver data, 1 – no valid data)

R : reserved

C : driver card (1 – card inserted, 0 – no card inserted)

T2-T0: driver time related states:

- 0: normal/no limits reached.
- 1: 15 min before 41 h.
- 2: 41 h reached.
- 3: 15 min before 9 h.
- 4: 9 h reached.
- 5: 15 minute before 16 h (not having 8h rest during the last 24h).
- 6: 16 h reached.
- 7: other limit.

W1-W0: driver work state

- 0: normal/no limits reached.
- 1: rest - sleeping.
- 2: driver available – short break.
- 3: drive – behind wheel.

<Detailed Information/Indicators>:Total 2 bytes, each bit contains information of one indicator.

- Bit 0: FL – fuel low indicator (1 – indicator on, 0 – off).
- Bit 1: DS – driver seatbelt indicator (1 – indicator on, 0 – off).
- Bit 2: AC – air conditioning (1 – on, 0 - off).
- Bit 3: CC – cruise control (1 – active, 0 - disabled).
- Bit 4: B – brake pedal (1 – pressed; 0 – released).
- Bit 5: C – clutch pedal (1 – pressed; 0 – released).
- Bit 6: H – handbrake (1 – pulled-up, 0 – released).
- Bit 7: CL – central lock (1 – locked, 0 – unlocked).
- Bit 8: R – reverse gear (1 – on, 0 – off).
- Bit 9: RL – running lights (1 – on, 0 – off).
- Bit 10: LB – low beams (1 – on, 0 – off).
- Bit 11: HB – high beams (1 – on, 0 – off).

- Bit 12: RFL – rear fog lights (1 – on, 0 – off).
- Bit 13: FFL – front fog lights (1 – on, 0 – off).
- Bit 14: D – doors (1 – any door opened, 0 – all doors closed).
- Bit 15: T – trunk (1 – opened, 0 – closed).

✧ *<Lights>*: One byte, each bit contains information of particular light.
- Bit 0: Running Lights (1 – on, 0 – off).
- Bit 1: Low Beam (1 – on, 0 – off).
- Bit 2: High Beam (1 – on, 0 – off).
- Bit 3: Front Fog Light (1 – on, 0 – off).
- Bit 4: Rear Fog Light (1 – on, 0 – off).
- Bit 5: Hazard Lights (1 – on, 0 – off).
- Bit 6: Reserved.
- Bit 7: Reserved.

✧ *<Doors>*: One byte, each bit contains information of one door.
- Bit 0: Driver Door (1 – opened, 0 – closed).
- Bit 1: Passenger Door (1 – opened, 0 – closed).
- Bit 2: Rear Left Door (1 – opened, 0 – closed)
- Bit 3: Rear Right Door (1 – opened, 0 – closed).
- Bit 4: Trunk (1 – opened, 0 – closed).
- Bit 5: Hood (1 – opened, 0 – closed).
- Bit 6: Reserved.
- Bit 7: Reserved.

✧ *<Total Vehicle Overspeed Time>*: Total 5 bytes. The first 4 bytes are for the integer part of the total vehicle overspeed time and the last byte is for the fraction part. The fraction part only has 2 digits.

✧ *<Total Vehicle Engine Overspeed Time>*: Total 5 bytes. The first 4 bytes are for the integer part of the total vehicle engine overspeed time and the last byte is for the fraction part. The fraction part only has 2 digits.

✧ <Total Distance Impulses>: Vehicle Distance in impulses. The number is always growing. this unit is imp. If it is 0, the distance in imp is not available.

✧ *<Send Time>: The local time to send* the *acknowled*gement 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

Appendix: Message Index

✧ Command and ACK

AT+GTPIN

+ACK:GTPIN

AT+GTRTO

+ACK:GTRTO

AT+GTURT

+ACK:GTURT

AT+GTDAT

+ACK:GTDAT

AT+GTHMC

+ACK:GTHMC

AT+GTJDC

+ACK:GTJDC

AT+GTWLT

+ACK:GTWLT

AT+GTFFC

+ACK:GTFFC

AT+GTJBS

+ACK:GTJBS

AT+GTSSR

+ACK:GTSSR

AT+GTIDA

+ACK:GTIDA

AT+GTPDS

+ACK:GTPDS

AT+GTACD

+ACK:GTACD

AT+GTEFS

+ACK:GTEFS

AT+GTIDA

+ACK:GTIDA

AT+GTBZA

+ACK:GTBZA

AT+GTSPA

+ACK:GTSPA

AT+GTMUT

+ACK:GTMUT

AT+GTTMP

+ACK:GTTMP

AT+GTUDT

+ACK:GTUDT

AT+GTFSC

+ACK:GTFSC

AT+GTPEO

+ACK:GTPEO

AT+GTRMD
+ACK:GTRMD
AT+GTCMS
+ACK:GTCMS
AT+GTTAP
+ACK:GTTAP
AT+GTCAN
+ACK:GTCAN
AT+GTFTP
+ACK:GTFTP
AT+GTUFS
+ACK:GTUFS
AT+GTCMD
+ACK:GTCMD
AT+GTUDF
+ACK:GTUDF

✦ Position Related Report
+RESP:GTTOW
+RESP:GTEPS
+RESP:GTDIS
+RESP:GTIOB
+RESP:GTFRI
+RESP:GTGEO
+RESP:GTSPD
+RESP:GTSOS
+RESP:GTRTL
+RESP:GTLBC
+RESP:GTDOG
+RESP:GTAIS
+RESP:GTIGL
+RESP:GTHBM
+RESP:GTIDA
+RESP:GTGES
+RESP:GTGIN
+RESP:GTGOT

✦ Device Information Report
+RESP:GTINF

✦ Report for Querying

+RESP:GTGPS
+RESP:GTALL
+RESP:GTCID
+RESP:GTCSQ
+RESP:GTVER
+RESP:GTBAT
+RESP:GTIOS
+RESP:GTTMZ
+RESP:GTAIF
+RESP:GTALS
+RESP:GTALC
+RESP:GTGSV
+RESP:GTUVN
+RESP:GTCVN

✧ Event Report
+RESP:GTPNA
+RESP:GTPFA
+RESP:GTMPN
+RESP:GTMPF
+RESP:GTBTC
+RESP:GTSTC
+RESP:GTBPL
+RESP:GTSTT
+RESP:GTANT
+RESP:GTMON
+RESP:GTPDP
+RESP:GTIGN
+RESP:GTIGF
+RESP:GTIDN
+RESP:GTIDF
+RESP:GTJDR
+RESP:GTJDS
+RESP:GTGSM
+RESP:GTGSS
+RESP:GTSTR
+RESP:GTSTP
+RESP:GTLSP
+RESP:GTDOS
+RESP:GTTMP
+RESP:GTRMD
+RESP:GTPHL
+RESP:GTUFS

+RESP:GTFTP
+RESP:GTEXP

✧ Transparent Data Transmission
  +RESP:GTDAT (Short Format)
✧ +RESP:GTDAT (Long Format)
✧ +RESP:GTDTT(Short Format)
✧ +RESP:GTDTT(Long Format)
✧ +RESP:GTUDT
✧ +RESP:GTPHD

✧ Canbus Device Information Report
  +RESP:GTCAN

✧ Heartbeat
  +ACK:GTHBD
  +SACK:GTHBD

✧ Server Acknowledgement
  +SACK

✧ Hex format report message
  +ACK
  +RSP
  +EVT
  +INF
  +HBD
  +DAT
  +CAN