



# **SP4600/SP3600 Protocol**

**V2.24**

## Foreword

■ Skypatrol provides this document to describe the communication protocol format between Skypatrol vehicle terminal, mobile terminal (Cell phone), and communication control center, with the aim of providing a basis for engineers to design a uniform control commands for specific products. The Intended audiences of this document are Skypatrol product development engineers.

■ In this document, vehicle terminal's control and connection structure is described. Data packet and command packet formats between vehicle terminal, mobile terminal, communication commands and their scopes are clearly defined. Privilege of different connection approaches (SMS, Cable, and GPRS/Wi-Fi) and their functions are clearly defined.

## Copyright

■ This document is a confidential document. Any individual or organization is strictly prohibited to reproduction, use or disclosure to the third party without permission. Otherwise, we hold the right to investigate the legal responsibility.

Company address:

3055 NW 84th Avenue, Miami FL 33122

Tel: +1.786.331.3300

Fax: +1.786.477.4567

E-mail: [support@skypatrol.com](mailto:support@skypatrol.com)

Website: [www.skypatrol.com](http://www.skypatrol.com)

## Change log

Firmware version	Change
V1.01 to V1.02	<ol style="list-style-type: none"> <li>1,Fix the issue that when parking and GPS from unfix to fix device dose not report.</li> <li>2,Extend ACC detection time.</li> <li>3,Add acceleration magnitude value in event data that related to 2D accelerate meter.</li> <li>4,Modify move to stop duration time to 2 seconds, stop to move duration to 3 seconds, when testing please disable MOT, and set the first parameter of BMS as 2.</li> <li>5,Manual event clearance report will carry ETT.</li> <li>6,Fix over speed event issue.</li> <li>7,OUT1 level will save the last status after rebooting.</li> <li>8,Modify DIS minimum value to 10 meters.</li> <li>9,All the events except over speed in ESM default changed to DISABLE.</li> <li>10,Geo-fence does not change do not test with this version.</li> <li>11,Modify move/stop judgment algorithm of accelerate meter.</li> <li>12,Fix bug that device cannot upgrade the firmware</li> <li>13,Modify parking judgment algorithm, modify BMS, add duration time parameter for stop judgment.</li> <li>14,Modify crossing/speed/time parameter relationship algorithm in Geo-fence.</li> <li>15,Add 1WIRE data process.</li> <li>16,Use level1 optimization process.</li> <li>17,Use level0 optimization process for Geo-fence related feature.</li> <li>18,Modify serial port maximum transmit size to 320 bytes.</li> <li>19,Fix duplicated "/" in ETD content via SMS and Geo-fence data bug.</li> <li>20,Fix wrong date format im event report.</li> <li>21,Fix 1WIRE main data mask is always enabled issued in HEX data string.</li> <li>22,Clear Geo-fence event report when Geo-fence status is changed.</li> <li>23,Under private hour mode only specify event reports position information.</li> <li>24,Remove power saving mode.</li> <li>25,Optimize standard driving library in use only.</li> <li>26,Add acceleration magnitude value in harsh behavior report via SMS.</li> <li>27,Fix bug that causing by remote upgrade.</li> <li>28,All features use level default optimization except Geo-fence.</li> <li>29,Fix CRC verify on serial port data transmission.</li> <li>30,Fix bug in combination event.</li> <li>31,Fix bug in command list profile trigger condition.</li> <li>32,Fix bug that command via serial port only works on second time.</li> <li>33,Fix bug on command GOF.</li> <li>34,Add Geo-fence data ID and data length in Geo-fence event HEX data string.</li> <li>35,Modify workday mask in command PVM to HEX.</li> <li>36,Add device model query command PTY.</li> <li>37,Add feature that GSM module reset automatically if cannot register to network within 10 minutes.</li> <li>38,Add time parameter to command ATH and PTH.</li> <li>39,Modify command EOB, digital output will have different output mode according to event status and event clearance.</li> </ol>

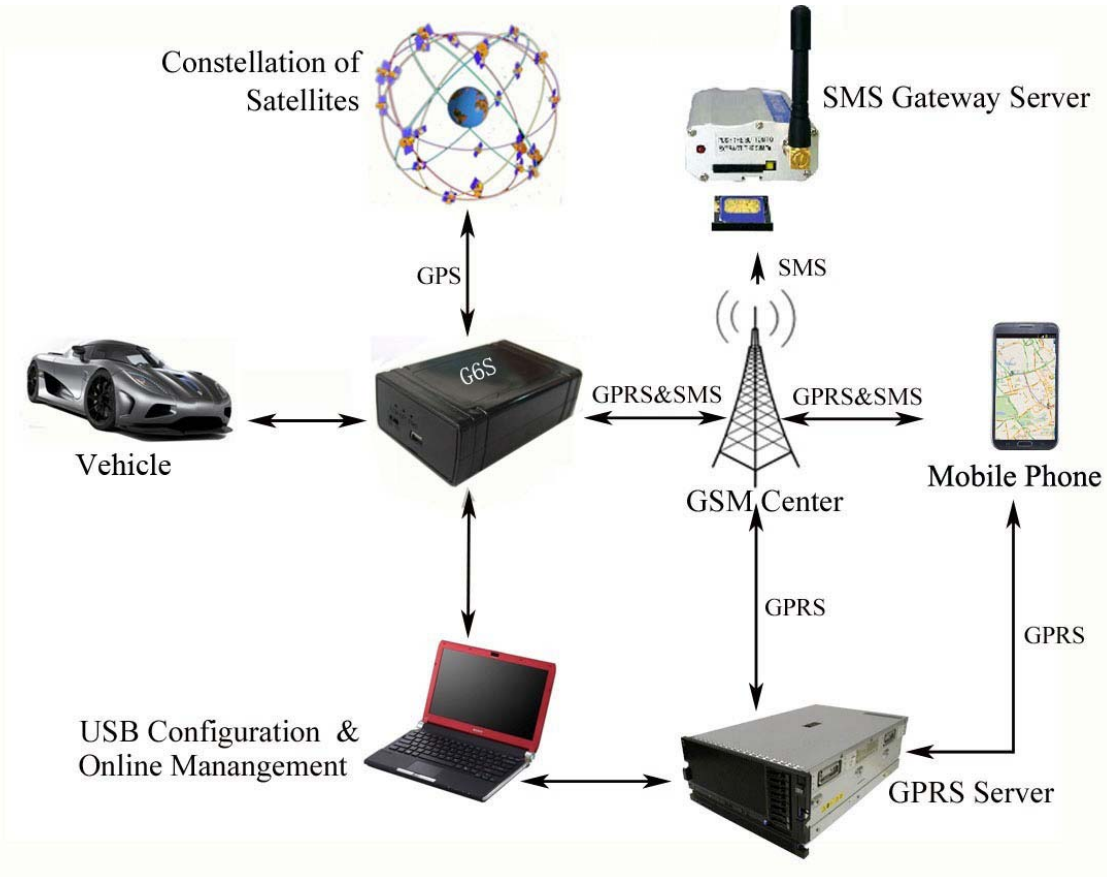
	<p>40,Modify Geo-fence status changing and event report detection to 3 seconds.</p> <p>41,Add parking condition to command DNU.</p> <p>42,Modify minimum value in command DIS to 100 meters.</p> <p>43,Modify command IBP,TMP.</p> <p>44, Modify ETD data field regarding over speed event.</p> <p>45,Fix bug that cannot clear healthy check event status.</p> <p>46,Fix bug that command ETC does not work.</p> <p>47,Fix bug in combination event.</p> <p>48,Fix bug that HEX data string CRC verify error and specific characters conversion.</p> <p>49,Modify 1WIRE iButton data transfer mode and 1WIRE data to command ESM.</p>
V1.03 to V1.04	<p>1,Remove source code and macro that supports older hardware version, current f/w only supports hardware version 1.0.2 (first time trial version) and 1.0.3.</p> <p>2,When 1WIRE feature disabled, do not report 1WIRE data field in data string.</p> <p>3, Fix bug in product test.</p> <p>4,Command PTY authorization set as public.</p> <p>5,Fix bug that detecting wrong signal strength, problem caused by this bug is OTA feature faulty after device running over a long time/switching GSM module frequently/execute command DFP frequently/factory serial port testing.</p> <p>6,Fix bug that offline data lost.</p> <p>7,Fix wrong offline HEX data string length.</p> <p>8,Fix bug when command EUP does not specify digital output, any event type clearance will according command EOB to execute digital output.</p> <p>9,Add 1 more command list profile switching condition: TOW.</p> <p>10,Fix bug that offline replicated data.</p> <p>11,Increase self-test times when device initializing to avoid configuration lost that causes by unstable power supply.</p> <p>12,Add toggle flag to digital output in command IBP, iButton detecting will refer ACC status, trigger digital input only if iButton illegal input.</p>
V1.04 to V1.05	<p>1, Modify GPS time calibrate method.</p> <p>2, Fix issue that after long time working device does not respond.</p>
V1.05 to V1.06	<p>1, Modify TCP connection timeout parameter.</p> <p>2, Modify command EOB.</p> <p>3, Modify digital output mode for iButton.</p> <p>4, Modify MCU sleep mode condition, not related with GSM module sleep and GPS module sleep anymore.</p> <p>5, Add independent watch dog to enhance stability.</p> <p>6, Modify 2D acceleration sensor process, device does not go to “still” status when GPS fixed and speed bigger than 15KM/H.</p> <p>7, Add feature that verifies power supply when device is initializing, if external power less then 7V and backup battery less than 3.5V, device will reboot itself to avoid configuration lost. (Pending)</p> <p>8, Modify mileage calculation method: using fix point distance to calculate mileage.</p> <p>9, Fix bug in GPS processing, if GPS module is OFF and device moving, data will be invalid.</p> <p>10, Modify time calibration method to previous method.</p>
V1.06 to V1.07	<p>1, Add 1 meter offset to mileage calculating every 100 meters.</p> <p>2, Fix bug that enable 1WIRE data report will mess-up fix time report interval.</p> <p>3, Fix bug that when device powers up will report parking event.</p>
V1.07 to V1.08	<p>1, Improve compatibility for GLONASS.</p> <p>2, Modify default setting.</p> <p>3, Fix bug on GSM module driver CMGL processing.</p>

	<p>4, Improve SPI flash offline data processing method.</p> <p>5, Modify on commands: SVR, BSV,EPM, UGP</p>
V1.08 to V2.00	<p>1, Only supports hardware version V1.05 or higher.</p> <p>2, Bootloader version equal or higher than V1.0.3.</p>
V2.00 to V2.01	<p>1, Only supports hardware version V1.05 or higher.</p> <p>2, Modify GPS power saving mode, “stop to move” will wake up GPS instantly.</p> <p>3, Geo fence scan rate changes to 20 ones per second.</p> <p>4, Modify PRO GPS command.</p> <p>5, Fix bug on command MOT.</p>
V2.01 to V2.02	<p>1, Only supports hardware version V1.05 or higher.</p> <p>2, Modify command EPM, add EPM;3 mode, this mode is to set G6S uses external data source to process as GPS data.</p> <p>3, Modify command UGP, add UGP;6 mode, this mode is to print real time packet on debug windows.</p> <p>4, Modify resistor for AD1 input, Geo fence scan rate changes back to 5 ones per second.</p> <p>5, Add option for server ACK via TCP.</p> <p>6, Fix bug on command GOF, UFM.</p>
V2.02 to V2.03	<p>1, Only supports hardware version V1.05 or higher.</p> <p>2, Fix bug on Telit module regarding data generating.</p> <p>3, Fix bug on command APL.</p> <p>4, Fix bug on 1WIRE link.</p> <p>5, Modify command VER, add suffix “-T” and “-U” for indication of differ GPS module.</p>
V2.03 to V2.04	<p>1, Only supports hardware version V1.05 or higher.</p> <p>2, Fix bug on GPS driver.</p> <p>3, Adjust time sync on U-blox module.</p> <p>4, Add license request for GPRS connectivity and command CHC for license status check.</p> <p>5, Add firmware encryption for copyright protection.</p> <p>6, Modify command FWU, user name and password are not requested.</p> <p>7, Fix bug that if SVP set as “O”, Fixed distance and angle do not work.</p> <p>8, Modify command EUP, add “Report to GPRS or SMS”.</p> <p>9, Add command SVT.</p> <p>10, Modify command EPM.</p> <p>11, Add command GFC.</p> <p>12, Add command IBC.</p> <p>13, Modify SMS message, CSQ changes to GSM, ACIN changes to Ext_Pwr.</p> <p>14, Modify command ERL, add “Valid period”.</p> <p>15, Command DFP will not reset setting of command NAM.</p> <p>16, Modify default setting of command OAS.</p> <p>17, Add packet type indicator in data string.</p>
V2.04 to V2.05	<p>1, Add command EUC.</p> <p>2, Renew packet example on chapter 4.3.7 and 4.4.7.</p>
V2.05 to V2.06	<p>1, Add balance notification command BLS.</p> <p>2, Move command DOO to public command list.</p> <p>3, Add GSM Anti-jamming configuration command JMP.</p> <p>4, Command SPO is able to set without enabled over speed event in command ESM.</p> <p>5, Add command FRS.</p> <p>6, Fix bug on iButton ID reading.</p>
V2.06 to V2.07	<p>1, Fix bug on command BLS.</p>

	2, Add command TSP.
V2.07 to V2.08	1, Modify offline data packing method. 2, Fix bug on command ACM, UCM, SWL. 3, Add new command BDU0, BDU1.
V2.08 to V2.09	1, Optimize ADC driver to have more stable voltage measure 2, Fix bug on returned parameter of commands ERL, HTM, VOE, EFM 3, Fix bug on Tow event, and refer GPS speed for this event 4, Assign command NAM to user phone and SMS server to use 5, Fix bug on offline GPRS packet 6, Add command AIR to set AD1 measure scale range 7, Fix bug on combination events 8, Modify command FRS 9, Fix bug on setting profile switching, OTA and profile switching will no able to execute simultaneously 10, Add command SIM to query current SIM card number 11, Add command EPT to change report interval from serial port according to ACC status 12, Fix bug on AGPS
V2.09 to V2.10	1, Fix bug on long SMS 2, Fix bug on offline packet report 3, Optimize GPS position filter 4, Fix bug incoming call freeze when under UGP;3 mode 5, Optimize AGPS 6, Sync with GSM time when GPS invalid
V2.10 to V2.11	1, Show viewable satellites in data packet when GPS is not fixed. 2, Modify command FWU. 3, Allow time adjustment manually. 4, When GPS data is not valid its data in packet will stuffing with 0. 5, Modify command IBP, output actives (low level) when ACC OFF. 6, Add event “illegal ibutton”. 7, Modify command IBO, add command IBE, IBS. 8, Modify command EPM. 9, Add command HUP, command PUP. 10, Add command GAM, command GVR, command. 11, GSM module wakes up when under moving + data transmitting request. 12, Add command ITS 13, Modify command JMP 14, Improve GPS filter algorithm. 15, Improve AGPS. 16, Data verify for 1wire temp sensor. 17, Improve GPS time sync algorithm.
V2.11 to V2.12	1, Fix bug that command GPO is not working for GSM module. 2, Fix bug timeline error when set as “offline data prior”. 3, Fix bug on EPM2. 4, Fix bug on offline packet. 5, Fix bug unable to pickup hotline incoming call when MDT is connected. 6, Modify command PSS0.
V2.12 to V2.13	1, Fix bug about GLONASS time reset to all 0 after power on/power reset.

	<ul style="list-style-type: none"> <li>2, GPS HDOP higher than preset value, speed will be 0.</li> <li>3, Fix bug on MEI in offline packet.</li> <li>4, Modify command PSS1</li> <li>5, Modify SMS notification of OTA upgrade to “Same Firmware” when device current firmware version is latest</li> <li>6, Improve ibutton reading performance.</li> </ul>
V2.13 to V2.14	<ul style="list-style-type: none"> <li>1, Modify command EPM.</li> </ul>
V2.14 to V2.17	<ul style="list-style-type: none"> <li>1.Add RPD command and recover the parameter except specific commands to default value;</li> <li>2.Add CTF command——support to export the current configuration file to the file, and upload via ymodem ;</li> <li>3.Add YGF;6 to support to upload the last exported current configuration file;</li> </ul>
V2.17 to V2.18	<ul style="list-style-type: none"> <li>1.Modify IBO command format;</li> <li>2.Add DOR command: support DO OUT1status saving, and recover to the last status when regain the power;</li> </ul>
V2.18 to V2.23	<ul style="list-style-type: none"> <li>1.Add SPTcommand;</li> <li>2. Add LCS command;</li> <li>3.Add RCS command;</li> <li>4.Add RCP command;</li> </ul>
V2.23 to V2.24	<ul style="list-style-type: none"> <li>1. Add CLScommand;</li> <li>2.Add PSTcommand;</li> <li>3.Modify HBIcommand;</li> <li>4.Add low voltage sleeping event under the situation with battery power supply;</li> <li>5.Modify error of data status of the geo-fence event;</li> </ul>

# 1. General structure



#	Participant	Command authorization	Communication medium		Format
1	Computer	OEM/Administrator	USB cable		ASCII
2	User phone	User	SMS		ASCII
3	SMS server	Administrator	SMS		ASCII
4	GPRS server	Administrator	Command communication via GPRS network	GPRS(TCP/UDP)	ASCII
			Device packet via GPRS network to server	GPRS(TCP/UDP)	ASCII/HEX

Command authorization:

■3 levels of authorization are available for different command list in APPENDIX chapter.

**OEM:** For agent/distributor, all commands are valid for this authorization.

**Admin:** For administrator, by default admin command list and public command list are valid for this authorization.

OEM authorization is able to use command ACM to customize command list for admin authorization.

**User:** For user command list only and only via SMS, by default user command list is valid for this authorization. OEM/Admin authorization is able to use command UCM to customize command list for user.

■Authorization level: OEM > Admin > User



## 2. Connect with computer

■To use commands in this document to configure and interactive with device:

>Connect device with computer via USB cable and run serial communication software.

>Input ^O (Ctrl + O) 3 times in a row, you will find “Please Input Password:[CR][LF]” on software window.

>Input OEM configuration password “0123456789” (default) and press enter, if the Password is correct, you will find “[LF] Cable Port In OEM Mode [CR][LF]” on software window.

>Use commands in this document to configure the device.

## 3. General definition of command

### 3.1. General symbol

*	Command head
,	Command separator
:	Only in device reply message, between command word and its parameter
;	Parameter separator, or separator between command word and parameter
#	Command tail

e.g.:

■Command without parameter (Query command)

Send:

**Command word1,Command word2**

Reply:

**Command word1:Parameter1; Parameter2; Parameter3,Command word2: Parameter1; Parameter2; Parameter3**

■Command with parameter (Configuration tool command)

Send:

**Command word1;Parameter1;Parameter2;Parameter3,Command word2: Parameter1; Parameter2; Parameter3**

Reply:

**Command word1:Parameter1; Parameter2; Parameter3,Command word2: Parameter1; Parameter2; Parameter3**

■SMS server (Admin) and GPRS server command format

Send:

**\*GS06, Command word1;Parameter1;Parameter2;Parameter3,Command word2: Parameter1; Parameter2; Parameter3#**

Reply:

**\*GS06,Device ID, Command word1:Parameter1; Parameter2; Parameter3,Command word2: Parameter1; Parameter2; Parameter3#**

### 3.2. Data conversion

■Under 2 circumstances that the data needs to be converted:

>HEX format with "F8" "1B" in data field except packet head and tail.

>ASCII format with “\* , ; ( #” in data field except head and tail.

### 3.2.1. HEX Format

■If there is "1B" or "F8" in the data field of packet, device will convert them before sending to server.

Conversion method:

Value XOR "1B", to get data "XX", then add "1B" in the front of "XX", to become 1BXX

e.g.: "F8" XOR "1B" equals "E3", "F8" will convert to "1BE3".

Before	F8	1B
After	1BE3	1B00

*Note: Server must reserves the above process when it receives data from device to have the genuine data.*

### 3.2.2. ASCII Format

■If there is symbol "\*" , ; ( #) in the data field of packet, device will convert them before sending to server.

Conversion method:

Add "(" in front of those symbols.

Before	*	,	;	(	#
After	(*	(,	(;	((	(#

*Note: Server must reserves the above process when it receives data from device to have the genuine data.*

## 3.3. Data verify

>Verification adopts "CRC16 – CCITT standard".

>Device verifies the data before data conversion.

>Generate polynomial method:  $X^{16} + X^{12} + X^5 + 1$ .

>Base type: 1021.

>Standard reference: ISO in HDLC, ITU x.25, v. 34 / v. 41 / v. 42, the PPP – FCS.

Note: Do the conversion before CRC

## 3.4. Data packing process of device

>Device generates raw data.

>CRC verifies raw data.

>Data conversion.

>Packing data by adding packet head and packet tail.

Note: For the server processing, must remove packet head/tail ->conversion->parsing as peer protocol

## 4. Regular packet

>SMS server packet length is 230bytes maximum.

>GPRS server packet length is 384bytes maximum.

>If device switches to international roaming status, it will send a regular packet to the server.

>If device switches from GPS unfixed to GPS fixed status, it will send a regular packet to the server.

■Under below circumstances, device will send packet to GPRS server and SMS server proactively:

>According to its configuration (e.g.: fixed time report, fix cornering, fixed distance report).

>Events being triggered.

>Device forwards SMS from another phone number to user/server.

## 4.1. Regular packet format

■5 kinds of packet format:

>First connection packet/Heartbeat packet.

>Regular packet, ASCII format.

>Regular packet, HEX format.

>Device forwards SMS packet from other number, HEX format.

>Serial link packet, HEX format.

Explanation:

#	Proactive report	Packet	Report condition
1	Device to SMS server	Regular packet, ASCII format (Refer chapter4.3)	According to report configuration and event status.
		SMS from other numbers (Format same as device receives)	Device will forward packet directly to user/server without any modification.
2	Device to GPRS server	First connection/heartbeat packet	Heartbeat packet that report periodically or the first packet from device when connection with server successfully.
		Regular packet, ASCII format (Refer chapter4.3)	According to the report configuration and data format set as ASCII.
		Regular packet, HEX format (Refer chapter4.4)	According to the report configuration and data format set as HEX.
		Device forwarding packet	Device will forward SMS packet to user/server according to configuration.
		Serial link packet	Device transfers data from its RS232 port to GPRS server.

## 4.2. Heartbeat packet

■Heartbeat packet will be sent under below circumstances:

>The first packet from device when connection with server is being established successfully (including redial).

>Normally it will report periodically to server, to keep the connection with server alive.

Sample, ASCII format

*GS	06	,	357852034572894	#
Packet head	Protocol version	Separator	IMEI=Device ID, 15 digits	Packet tail

Sample, HEX format

F8	06	00	013FB822050D1D	2D77	F8
Head	Protocol version	Packet type indicator	IMEI	CRC	Tail
1byte	1byte	1byte	7bytes	2bytes	1byte

## 4.3. Device packet, ASCII format

■Event packet format

*GS	06	,	351535053999389	,	235833280213	,	9C	,	<SYS>,<GPS>,<GSM>,<COT>,<ADC>,<DTT>,<IWD>,<ETD>	#
Packet head	Protocol version		IMEI=Device ID, 15 digits		Time and date *Note1		Event type ID *Note2		Data field	Packet tail

■Non-event packet format

*GS	06	,	351535053999389	,	235833280213	,		,	<SYS>,<GPS>,<GSM>,<COT>,<ADC>,<DTT>,<IWD>	#
Packet head	Protocol version		IMEI=Device ID, 15 digits		Time and date *Note1		Null		Data field	Packet tail

e.g.: \*GS06, 351535053999223,235833280213,86

<Packet head and protocol version>,<Device ID>,<Time and date>,<Event type ID>

Note1: By order of “Hour/Minute/Second/Day/Month/Year”, 2bytes for each

If time/date is invalid this field will be “000000000000”.

Note2: HEX format, bit7 is defined as “event status identifier”, “bit6 to bit0” is defines as “event ID”.

0x9c means ACC OFF to ON event.

(Convert it to decimal format and find its specific meaning in the chapter9 “Event list”).

4.3.1. Data field

>Regular packet data field length is customize-able via command ADM.

Format: <Main data type mask>:<Sub data type mask>

<Sub data type mask>: Command SDM is used to customized sub data of each main data type, e.g.:

SDM1;7F to select all sub data of GPS:

GPS: A;8;N23.164351;E113.428515;0;0;37;0.85;0.35

SDM1;4F to select partial sub data of GPS:

GPS: A;8;N23.164351;E113.428515;0;0;;;0.35

<Main data type mask>

Main data type ID	Explanation	Bit as “0”	Bit as “1”
<b>SYS</b>	System data	Not report	Report
<b>GPS</b>	GPS data	Not report	Report
<b>GSM</b>	GSM data	Not report	Report
<b>COT</b>	COT data	Not report	Report
<b>ADC</b>	AD data	Not report	Report
<b>DTT</b>	Device status data	Not report	Report
<b>IWD</b>	1WIRE data	Not report	Report

<b>ETD</b>	Event data	Not report	Report
------------	------------	------------	--------

### 4.3.2. SYS: System data

■e.g.: **SYS:G6S;V1.01;V1.01**

Format:

<System data ID>;<Device name>;<Firmware version>;<Hardware version>

<b>SYS:</b>	<b>G6S;V1.01;V1.01</b>
System data identifier	<Device name>;<Firmware version>;<Hardware version>

■SYS data field length is customize-able via command SDM0

### 4.3.3. GPS: GPS data

■e.g.: **GPS:A;8;N23.164351;E113.428515;0;0;37;0.85;0.35**

Format:

<GPS data identifier> :<GPS fix flag>;<Valid satellite number>;

<Latitude>;<Longitude>;<Speed>;<Azimuth>;<Altitude>;<HDOP>;<VDOP>

<b>GPS:</b>	<b>A;</b>	<b>4;</b>	<b>N23.164351;</b>	<b>E113.428515;</b>	<b>0;</b>	<b>0;</b>	<b>37;</b>	<b>0.85;</b>	<b>0.35</b>
GPS data identifier	GPS fix flag, "A" means fixed, "V" means unfixed	Valid satellite number	Latitude, "N" means north, "S" means south.	Longitude, "E" means east, "W" means west.	Speed	Azimuth	Altitude, range is "-9999 to +9999", unit is meter.	(HDOP) Horizontal Dilution of Precision, range is "0 to 99.99", decimal.	(VDOP) Vertical dilution of precision, range is "0 to 99.99", decimal.

■GPS data field length is customize-able via command SDM1

■GPS sub-data table, command SMD1 to configure.

HEX, 2bytes maximum, each bit represents one kind of GPS sub-data type.

"0": not report this sub-data type.

"1": report this sub-data type.

Bit	Sub-data type	Bit as 0	Bit as 1	Data length, ASCII	Data length, HEX
0	GPS fix flag	Not report	Report	=1byte	1byte
	Valid satellite number			<=2bytes	
1	Latitude	Not report	Report	10bytes	8bytes
	Longitude			11bytes	
2	Speed	Not report	Report	<=3bytes	2bytes
3	Azimuth	Not report	Report	<=3bytes	2bytes
4	Latitude	Not report	Report	<=5 bytes	2bytes
5	HDOP	Not report	Report	<=5 bytes	2bytes
6	VDOP	Not report	Report	<=5 bytes	2bytes
7	Reserved				

## 4.3.4. GSM: GSM data

■e.g.: **GSM:5;4;460;0;2731;BB41;-82;460;0;2731;436E;-81;460;0;2731;436D;-94**

Format:

<GSM data identifier>;<Registration status>;<GSM signal strength>;<MCC1>;<MNC1>;  
<LAC1>;<CID1>;<RSSI1>;<MCC2>;<MNC2>;<LAC2>;<CID2>;<RSSI2>...<MCC7>;<MNC7>;<LAC7>;<CID7>;<RSSI7>

■If GPS is not fixed or invalid, its data field will be replaced by GSM data, GSM data including GSM network registration status/signal strength/base stations information, maximum 7 GSM towers information to carry.

ID	Value	Explanation	Remark
1	<b>GSM:</b>	GSM data identifier	
2	<b>5;</b>	REG, registration status, range is "0 to 5"	Refer APPENDIX
3	<b>4;</b>	Signal strength, range is "0 to 5"	Refer APPENDIX
4	<b>460;</b>	Decimal,3 digits or 5 digits, if invalid this field will be "65535"	Mobile country code
5	<b>0;</b>	Decimal,1 digit or 2 digits or 5 digits, if invalid this field will be "65535"	Mobile network code
6	<b>2731;</b>	LAC1, HEX, range is "0 to FFFF", if invalid this field will be "FFFF"	GSM(main) base station zone code
7	<b>40F4;</b>	CID1,HEX, range is "0 to FFFF", if invalid this field will be "FFFF"	GSM(main) base station identifier
8	<b>-57;</b>	RSSI1,Decimal, Signal strength, unit is dBm	Signal strength
9	<b>460;</b>	MCC2, Decimal, 3 digits or 5 digits, if invalid this field will be "65536"	Mobile country code
10	<b>0;</b>	MNC2, Decimal, 1 digit or 2 digits or 5 digits, if invalid this field will be "65535"	Mobile network code
11	<b>2503;</b>	LAC2, HEX, range is "0 to FFFF", if invalid this field will be "FFFF"	Base station zone code
12	<b>962C;</b>	CID2, HEX, range is "0 to FFFF", if invalid this field will be "FFFF"	Base station identifier
13	<b>-71;</b>	RSSI2, Decimal, Signal strength, unit is dBm	Signal strength
14	<b>460;</b>	MCC3, Decimal, 3 digits or 5 digits, if invalid this field will be "65536"	Mobile country code
15	<b>0;</b>	MNC3,Decimal,1 digit or 2 digits or 5 digits, if invalid this field will be "65535"	Mobile network code
16	<b>2731;</b>	LAC3, HEX, range is "0 to FFFF", if invalid this field will be "FFFF"	Base station zone code
17	<b>40F3;</b>	CID3, HEX, range is "0 to FFFF", if invalid this field will be "FFFF"	Base station identifier
18	<b>-83;</b>	RSSI3, Decimal, signal strength, unit is dBm	Signal strength

Note: if MCC, MNC are "65535", LAC, CID are "FFFF", it indicates device fails to register to GSM network.

## ■APPENDIX

REG value

REG	Explanation	SMS/Voice/GPRS connectivity
<b>0</b>	Fail to register, device is not trying to register to any mobile network	×
<b>1</b>	Register successfully	√
<b>2</b>	Fail to register, but device is trying to register to mobile network again	×
<b>3</b>	Register intention is being rejected by mobile network	×
<b>4</b>	Unknown reason	×
<b>5</b>	Register to roaming network successfully	√

CSQ value

Signal Level	RSSI
0	<= -112dBm
1	<= -97dBm
2	<= -82dBm
3	<= -67dBm
4	<= -52dBm
5	>= -51dBm

■GSM data field length is customize-able via command SDM2

HEX, 2bytes maximum, each Bit represents one kind of GSM sub-data type.

“0” do not report this sub-data type.

“1” report this sub-data type.

Bit	GSM sub-data type	Bit as 0	Bit as 1	Data length, ASCII	Data length, HEX
0	Registration status	Not report	Report	=1byte	=1byte
	CSQ signal level			=1byte	
1	First base station	Not report	Report	<=25bytes	=8bytes
2	Second base station	Not report	Report	<=25bytes	=8bytes
3	Third base station	Not report	Report	<=25bytes	=8bytes
4	Fourth base station	Not report	Report	<=25bytes	=8bytes
5	Fifth base station	Not report	Report	<=25bytes	=8bytes
6	Sixth base station	Not report	Report	<=25bytes	=8bytes
7	Seventh base station	Not report	Report	<=25bytes	=8bytes

#### 4.3.5. COT: COT data

■e.g.: **COT:4294967295;99999-00-00;0F1000;1P4294967295;2P1234;3F1000**

Format:

<COT data identifier>: <Odometer>;<Engine hour>;<IN1Frequency/Pulse data>;<IN2Frequency/Pulse data>;<IN3 Frequency/Pulse data>;<IN4 Frequency/Pulse data>

COT:	4294967295;99999:00:00;0F1000;1P4294967295;2P1234;3F1000
COT data identifier	<p><b>&lt;Odometer&gt;:4294967295</b> Range is “0 to 4294967295”, Unit is “meter” This value represents accumulated mileage of vehicle</p> <p><b>&lt;Engine hour&gt;:99999:00:00</b> Time format:&lt;Hour&gt;:&lt;Minute&gt;:&lt;Second&gt; Range is “0:0:0~99999:0:0”</p> <p><b>Frequency/Pulse data definition:</b> Format:&lt;Digital input&gt;&lt;P/F&gt;&lt;Value&gt;</p> <p>&lt;Digital input&gt;:0 to 3 “0”: IN1 digital input “1”: IN2 digital input “2”: AD1/IN3 digital input “3”: AD2/IN4 digital input</p>

	<p>&lt;P/F&gt;:                  “P”:Pulse                  ”F”:Frequency, unit is “Hz”                  e.g.: ”0F10000”                  ”0” means digital input1                  “F” means Frequency</p>
--	---

■ COT data field length is customize-able via command SDM3

**4.3.6. ADC: Analog to digital Converter data**

■e.g.: ADC:12.60;3.99;10.00;10.00

Format:

<AD data identifier>;< External power supply voltage>;< Backup battery voltage>;

<ADC1 input voltage>;<ADC2 input voltage>

ADC:	12.60;	3.99;	10.00;	10.00
AD data identifier	External power supply voltage value, unit is “V”	Backup battery voltage value, unit is “V”	ADC1 input voltage value, unit is “V”	ADC2 input voltage value, unit is “V”

■ADC data field length is customize-able via command SDM4

HEX, 2 bytes maximum, each bit represents one kind of GSM sub-data type.

“0” do not report this sub-data type,

“1” report this sub-data type.

Bit	Sub-data type	Bit as 0	Bit as 1	Data length, ASCII	Data length, HEX
0	External power supply voltage	Not report	Report	<=5bytes	=2bytes
1	Backup battery voltage	Not report	Report	<=5bytes	=2bytes
2	ADC1 voltage	Not report	Report	<=5bytes	=2bytes
3	ADC2 voltage	Not report	Report	<=5bytes	=2bytes
4	Reserved				
5	Reserved				
6	Reserved				
7	Reserved				

**4.3.7. DTT: Device status data**

e.g.: DTT: FFFFFFFF;FF;FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF;FFFFFFFF;FFFFFFFFFFFFFFFF;FF

Format:

<Device status data identifier>;<Device status>;<I/O status>;<Number 0 to 119 Geo-fence status>;

<Number 120 to 155 Geo-fence status>;<Event status>;<Packet type indicator>

<Device status>

Device status list, HEX, each bit represents one kind of event.

Bit	Explanation		Status 0	Status 1
Bit0	bExtPwr	External power supply	Normal	Lower or higher
Bit1	bInterBat	Backup battery	Normal	Lower or higher
Bit2	bMoving	Moving	Stop	Move



Bit3	bSpdOver	Over speed	Normal	Over
Bit4	bIDiling	Idle	Normal	Idle
Bit5	bTow	Tow	Normal	Tow
Bit6	bAntiJam	GSM jamming	Normal	Jamming
Bit7	bRoaming	Domestic roaming	Normal	Roaming
Bit8	bInterRoam	International roaming	Normal	Roaming
Bit9	bUrgent	Harsh behavior	Normal	Harsh brake/Harsh accelerate/Harsh cornering
Bit10	bAccIDent	AccIDent	Normal	Front collision/Rear collision/Turn over
Bit11	bGeoFence	Geo-fence	Normal	In or out
Bit12	bAdc1	ADC1 input (AD1 set as analog)	Normal	Abnormal (Lower or higher)
Bit13	bAdc2	ADC2 input (AD2 set as analog)	Normal	Abnormal (Lower or higher)
Bit14	bStop	Parking	Parking	Quit parking
Bit15	bWorkStatus	Private hour	Normal	Under private hour

<I/O status>

I/O status list, HEX, each bit represents one kind of event.

Bit	Explanation		Status 0	Status 1
Bit0	bAccOn	ACC status	ACC OFF	ACC ON
Bit1	bIn1	Low level input1	High level or floating	Low level
Bit2	bIn2	Low level input2	High level or floating	Low level
Bit3	bIn3	Digital input3 (AD1 set as digital)	Low level	High level
Bit4	bIn4	Digital input4 (AD2 set as digital)	Low level	High level
Bit5	bOut1	Output1	Low level	High level
Bit6	bOut2	Output2	Low level	High level
Bit7	bOut3	Output3	Low level	High level

<Number 0 to 99 Geo-fence status>

>HEX, range is "0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF", 120bits maximum.

>Each bit represents one Geo-fence, e.g.: bit0 represents Geo-fence 0, bit0 to bit119 represents Geo-fence 0 to 119.

>"0" means device is outside Geo-fence or there is not assigned Geo-fence to this device.

>"1" means device is inside Geo-fence.

<Number 120 to 155 Geo-fence status>

>HEX, range is "0 to FFFFFFFF", 36bits maximum.

>Each bit represents for each Geo-fence, e.g. bit0 represents Geo-fence120, bit0 to bit35 represents Geo-fence 120 to 155.

>"0" means device is outside Geo-fence or there is not assigned Geo-fence to this device.

>"1" means device is inside Geo-fence.

<Event status>

>HEX, range is "0 to FFFFFFFFFFFFFFFF", 64bits maximum.

>"0" means event status 0.

>"1" means event status 1.

■DTT data field length is customize-able via command **SDM5**

<Packet type indicator>

>Indicates the cause of the reported packet.

>HEX, 2bytes

Bit	Definition
0	Undefined
1	Periodical report
2	Fixed distance
3	Fixed angle
4	PRQ request
5	Under moving status, GPS from unfix to fix
6	Under international roaming
7	Renew APN or server settings
8	iButton triggered

**4.3.8. 1WD: 1WIRE data**

■e.g.: IWD:0;0;000133B29;1;1;3400012038C21;100

Format:

<1WIRE data identifier>:<Data ID>;<Data type>;<Data field>;<Data ID>;<Data type>;<Data field>

<Data type>

>”0” means 1WIRE input is iButton

>”1” means 1WIRE input is temperature sensor

<Data field>

>Serial number of iButton or serial number of temperature sensor and current temperature

IWD:	0;	0;	000133B29	1;	1;	3400012038C21	100
1WIRE data identifier	Data ID	Data Type, “0” means iButton	Data field, serial number of iButton	Data ID	Data Type, “1” means temperature sensor	Serial number of temperature sensor	Temperature value

**4.3.9. ETD: ETD data**

■e.g.: ETD:11;30

Format:

<Event data identifier>:<data>...

ETD:	11;	30;
Event data identifier	Meaning varied depending on event	Meaning varied depending on event

Event data will be varied depending on event type

Event name	Format	Explanation
Over speed	ETD:<Speed>	<Speed>: GPS based speed when event is triggered, unit is “km/h”

Geo-fence	ETD:<Time>; <Speed>; <Geo-fence number>; <Status>	<Time>: Local time when Geo-fence event is triggered, 235833280213 format is HHMMSSDDMMYY <Speed>: Speed when Geo-fence event is triggered, unit is “km/h”. <Geo-fence number>: Geo-fence number that is triggered. <Status>: bit1: “1” means inside Geo-fence “0” means outside Geo-fence bit0: “1” means beyond the preset speed range “0” means within the preset speed range  Note: Maximum 5 Geo-fences data to carry																																				
External power supply event /AD1 voltage event /AD2 voltage event	ETD: <voltage value>	<Voltage value>: Voltage value when event is triggered, unit is “V”																																				
Health check report	ETD:<Status>	HEX: <table border="1"> <thead> <tr> <th>Bit</th> <th>Explanation</th> <th>Status 0</th> <th>Status 1</th> </tr> </thead> <tbody> <tr> <td>bit0</td> <td>Socket1 connection status</td> <td>Disconnected</td> <td>Connected</td> </tr> <tr> <td>bit1</td> <td>Socket2 connection status</td> <td>Disconnected</td> <td>Connected</td> </tr> <tr> <td>bit2</td> <td>Socket3 connection status</td> <td>Disconnected</td> <td>Connected</td> </tr> <tr> <td>bit3</td> <td>Socket4 connection status</td> <td>Disconnected</td> <td>Connected</td> </tr> <tr> <td>bit4</td> <td>Socket5 connection status</td> <td>Disconnected</td> <td>Connected</td> </tr> <tr> <td>bit5</td> <td>Motion sensor status</td> <td>Abnormal</td> <td>Normal</td> </tr> <tr> <td>bit6</td> <td>Flash storages status</td> <td>Abnormal</td> <td>Normal</td> </tr> <tr> <td>bit7</td> <td>Vibration sensor</td> <td>Stop</td> <td>Vibrate</td> </tr> </tbody> </table>	Bit	Explanation	Status 0	Status 1	bit0	Socket1 connection status	Disconnected	Connected	bit1	Socket2 connection status	Disconnected	Connected	bit2	Socket3 connection status	Disconnected	Connected	bit3	Socket4 connection status	Disconnected	Connected	bit4	Socket5 connection status	Disconnected	Connected	bit5	Motion sensor status	Abnormal	Normal	bit6	Flash storages status	Abnormal	Normal	bit7	Vibration sensor	Stop	Vibrate
Bit	Explanation	Status 0	Status 1																																			
bit0	Socket1 connection status	Disconnected	Connected																																			
bit1	Socket2 connection status	Disconnected	Connected																																			
bit2	Socket3 connection status	Disconnected	Connected																																			
bit3	Socket4 connection status	Disconnected	Connected																																			
bit4	Socket5 connection status	Disconnected	Connected																																			
bit5	Motion sensor status	Abnormal	Normal																																			
bit6	Flash storages status	Abnormal	Normal																																			
bit7	Vibration sensor	Stop	Vibrate																																			
Harsh brake /Harsh accelerate /Harsh cornering /Front collision /Rear collision /Turnover	ETD:<Parameter1>;<Parameter2>	<Parameter1>: X axis acceleration magnitude value, float string (format %5.2f). <Parameter2>: Y axis acceleration magnitude value, float string (format %5.2f).  X axis: Heading direction, positive value means brake, minus value means acceleration. Y axis: Positive value means left cornering, minus value means right cornering.																																				
1WIRE event: Serial number of iButton /Temperature value	ETD:<Data ID>;<Data type>;<Data field>	<Device ID>: Serial number <Device type>: “0” means iButton, “1” means temperature sensor. <Data field>: Serial number of iButton or temperature sensor serial number and temperature value.																																				

■Event data field length is customize-able via command SDM7

#### 4.4. Device packet, HEX format

■ Event packet format:

<Packet head><Protocol version><Packet type ID><Device ID><Time and date><Event ID><Main data ID mask><SYS><GPS><GSM><COT><ADC><DTT><IWD><ETD><CRC verify><Packet tail>

■ Non-event packet, not carrying ”<Event ID> and <ETD>”

<Packet head><Protocol version><Packet type ID><Device ID><Time and date><Main data ID mask><SYS><GPS><GSM><COT><ADC><DTT><IWD><CRC verify><Packet tail>

Packet format:

Packet head	Protocol version	Packet type ID	HEX, Device ID	Time and date	Event ID	Main data mask	Data field	CRC verify	Packet tail
F8	06	41	013FB822 050D1D	153AA8A6	9C	00FF	<SYS><GPS><GSM> <COT><ADC><DTT> <IWD><ETD>	2D77	F8
1byte	1byte	1byte	7bytes	4bytes	1byte	2bytes	Not fixed	2bytes	1byte

<Packet type ID>

HEX, packet type identifier.

Bit7:

“0” means long format, G6S only supports this format.

“1” means short format.

Bit6:

“0” means non-event packet

“1” means event packet, with data type <ETD>.

“Bit0-Bit5”:

“1” means device packet.

“2” means SMS forwarding packet.

Note: Packet type ID = 0x00 please refer chapter 4.2

<Device ID>

HEX, 7bytes fixed, device IMEI.

<Time and date>

4bytes unsigned integer data, high byte ahead, start from year 2000, Jan.1 00:00:00.

e.g.: HEX data “195A7F9E” converts to decimal is 425361310 seconds, which means 2013-06-64 03:55:10

<Event ID>

HEX, 1byte fixed.

Bit7 represents “Device status flag”.

“Bit6 to Bit0” represents “Event ID”, need to convert from HEX to decimal and find its definition in chapter9 “Event list”. e.g.: “0x9C” represents event “ACC ON to OFF”.

Note: Non-event packet does not carry this field.

<Main data type mask>

HEX, 2bytes fixed.

Each bit represents each type of data, “1” means reporting this type of sub-data, “0” means not reporting this type of sub-data.

e.g.: “0x3B” converts to binary is “0011 1011”, which means only report <SYS><GPS><COT><ADC><DTT>

#### 4.4.1. Data field

■Data field data length is customize-able via command ADM.

Format: “<Data length1><data1><data2><Data length1><data1><data2>...”

Main data mask, HEX, 2bytes

Bit	Main data type	Explanation	Bit definition	
			Bit as 0	Bit as 1
0	SYS	System data	Not report	Report
1	GPS	GPS data	Not report	Report
2	GSM	GSM data	Not report	Report
3	COT	COT data	Not report	Report
4	ADC	Analog to digital converter data	Not report	Report
5	DTT	Device status data	Not report	Report
6	IWD	1WIRE data	Not report	Report
7	ETD	Event data	Not report	Report
8	Reserved	Reserved		
9	Reserved	Reserved		
10	Reserved	Reserved		
11	Reserved	Reserved		
12	Reserved	Reserved		
13	Reserved	Reserved		
14	Reserved	Reserved		
15	Reserved	Reserved		

#### 4.4.2. SYS: System data

Format:

**11 03473653 1556312E3030 265668312E3032**

(In ASCII: G6S V1.00 Vh1.02)

<System data length><Sub-data ID and data length ><Sub-data field>...

11	03 473653			1556312E3030		
SYS data length	0	3	473653	1	5	56312E3030
	Sub-data ID	Sub-data Length	Sub-data field	Sub-data ID	Sub-data Length	Sub-data field
1byte	1byte		Not fixed	1byte		Not fixed

<Sub-data ID and length>

1byte fixed, High 4bits represents sub-data type ID, and low 4bits represents sub-data length

“System data” sub-data type list

Sub-data ID	Sub-data type	Data length, ASCII	Data length, HEX
0	Device name	<=15Bytes	<=15Bytes

1	Firmware version	<=8Bytes	<=8Bytes
2	Hardware version	<=8Bytes	<=8Bytes

#### 4.4.3. GPS: GPS data

Format:

**15 007F 48 016175DD 06C2C8E8 0000 0000 004B 007C 007D**

(In ASCII: GPS:A;8;N23.164381;E113.428712;0;0;75;1.24;1.25)

<GPS data length><GPS sub-data mask><Fix sign and valid satellite number>

<Coordinate><Speed><Azimuth><Altitude><HDOP><VDOP>

Content	Length	Explanation
15	1byte	GPS data length, "15" means 21bytes
007F	2bytes	Sub-data mask, current is SDM1:003F, refer below table for further information
48	1 byte	Fix flag and valid satellite number. Bit0-bit4: Valid satellite number Bit5-Bit6: GPS fix flag, "0" not fixed, "1" 2D fixed, "2" 3D fixed.
016175DD	8bytes	Latitude 4bytes signed integer, HEX, high byte ahead. Positive represents north-latitude, minus represents south-latitude.  E.g.: 0x016175DD, convert to decimal 23164381, divided by 1000000, which means 23.164381 degree north-latitude.
06C2C8E8		Longitude 4bytes signed integer, HEX, high byte ahead. Positive represents east-longitude, minus represents west-longitude  E.g.: 0x06C2C8E8, convert to decimal 113428712, divided by 1000000, which means 113.428712 degree east-longitude  Note: For a minus value in HEX format (highest bit 1) covert to decimal the suggested procedure is: e.g. 0xFCB3EC58 step1: invert each bit, 0 becomes 1, and 1 becomes 0 ~FCB3EC58 = 034C13A7 Step2: plus 1 034C13A7 + 1 = 034C13A8 Step3: 034C13A8h = 55317416d/1000000 = -55.317416 degree
003C	2bytes	Speed 2bytes signed integer, HEX, "0x003C" converts to decimal is "60", which means speed is 60 km/h.
0000	2bytes	Azimuth 2bytes unsigned, HEX
004B	2bytes	Altitude 2bytes signed integer, HEX, high byte ahead. "0x004B" converts to decimal is "75", range is "-9999 to +9999", unit is "meter"

007C	2bytes	<HDOP> Horizontal Dilution Of Precision 2bytes unsigned integer, HEX, high byte ahead. E.g.: 0x007C, convert to decimal 124, divided by 100, which means 1.24 Rang is 0 to 99.99
007D	2bytes	<VDOP> Vertical Dilution Of Precision 2bytes unsigned integer, HEX, high byte ahead. E.g.: 0x007D, convert to decimal 125, divided by 100, which means 1.25 Rang is 0 to 99.99

#### 4.4.4. GSM: GSM data

Format:

1A 0F 14 1CC000 2503 962C 40 1CC000 2731 40F4 56 1CC000 2731 BB42 66

(In ASCII: GSM:1;4;460;0;2503;962C;-64;460;0;2731;40F4;-86;460;0;2731;BB42;-102)

<GSM data length><Sub-data mask><Register status and signal strength><MCC1 and MNC1>

<LAC1><CID1><RSSI1><MCC2 and MNC2><LAC2><CID2><RSSI2><...>

<MCC1 and MNC1 >: Fixed 3bytes, “Bit0-Bit11” represents MNC1, “Bit12-Bit23” represents MCC1.

Content	Length	Explanation
1A	1byte	GSM data field length, "0A" is 10bytes
0F	1byte	Sub-data mask
14	1byte	Register status and signal strength, high 4bits represents network register status, low 4bits represents signal strength.
1CC000	3byte	<MCC1 “mobile country code” and MNC1 “mobile network code”>
2503	2byte	<LAC1> : GSM main base station zone code HEX, converts to decimal is “9475”
962C	2byte	< CID1>: GSM main base station ID HEX, converts to decimal is “38444”
40	1byte	<RSSI1>: GSM signal strength HEX, converts to decimal is “64”, which means strength is “-64dBm”.
1CC000	3byte	<MCC2: GSM mobile country code” and MNC2: mobile network code>
2731	2byte	<LAC2>: GSM main base station zone code HEX, converts to decimal is “10033”
40F4	2byte	< CID2>: GSM main base station ID HEX, converts to decimal is “16628”
56	1byte	<RSSI2>: GSM signal strength HEX, converts to decimal is “86”, which means strength is “-86dBm”.
1CC000	3byte	<MCC3: GSM mobile country code” and MNC3: mobile network code>
2731	2byte	<LAC3>: GSM main base station zone code HEX, converts to decimal is “10033”
BB42	2byte	< CID3>: GSM main base station ID HEX, converts to decimal is “47938”
66	1byte	<RSSI3>: GSM signal strength HEX, converts to decimal is “102”, which means strength is “-102dBm”.

#### 4.4.5. COT: COT data

Format:

**0B 0203E8 1297C2 24200003E8**

(In ASCII format: COT:1000;10:47:30;0P1000)

<COT data length><Sub-data ID and data length><Sub-data field>...

0B	02 03E8			12 97C2			24 2000 03E8			
COT	0	2	03E8	1	2	97C2	2	4	2	000 03E8
data length	Sub-data ID	Sub-data length	Sub-data field	Sub-data ID	Sub-data length	Sub-data field	Sub-data ID	Sub-data length	Packet type	Sub-data field
1byte	1byte		Unfixed	1byte		Unfixed	1byte		High 4 bits	Low 28 bits

<COT data field length>:

“0B” means COT data field length is 11bytes (convert to decimal).

<Sub data ID and length>: 1byte

“Bit4-Bit7”: Sub-data type identifier

“Bit0-bit3”: Sub-data type length

Note: Frequency/Pulse data: High 4bits represents data type, “1” for frequency, “2” for pulse.

Data must convert from HEX to decimal.

e.g.: “53 1000 00FF” means DI4 input (AD2/IN4) frequency is “255 Hz”

“COT data” Sub-data type ID

Sub-data type ID	Sub-data type	Data length, ASCII	Data length, HEX
0	Mileage	<=10Bytes	<=5Bytes
1	Engine hour	<=10Bytes	<=5Bytes
2	DI1 input, frequency/pulse data	<=11Bytes	<=5Bytes
3	DI2 input, frequency/pulse data	<=11Bytes	<=5Bytes
4	DI3 (AD1/IN3) input, frequency/pulse data	<=11Bytes	<=5Bytes
5	DI4 (AD2/IN4) input, frequency/pulse data	<=11Bytes	<=5Bytes

#### Mileage:

HEX, convert to decimal, unit is “meter”. e.g.: “0x03E8” convert to decimal is “1000”, which means 1000 meters.

#### Engine hour:

HEX, convert to decimal, unit is “second”. e.g.: “0x97C2” convert to decimal is “38850”, which means 38850 seconds (10H:47M:30S)

#### 4.4.6. AD: AD data

Format:

**080320120823243208**

<AD data length><ID +Value>...

08	0320		1208		2324		3208	
AD data length	0	320	1	208	2	324	3	208
	Sub-data ID	Sub-data field	Sub-data ID	Sub-data field	Sub-data ID	Sub-data field	Sub-data ID	Sub-data field
1byte	2bytes		2bytes		2bytes		2bytes	



<ID + Value>: HEX, 2bytes

ID: High 4bits, range is “0 to F”, it decides the meaning of “Value“.

id=0: External power supply

id=1: Backup battery

id=2: AD1 input voltage

id=3: AD2 input voltage

para\_value:

**AD\_VAL = HEXtoDEC (para\_val)\*(AD\_MAX – AD\_MIN)/4096 + AD\_MIN**

DECIMAL(para\_val ) means convert “para\_val” to decimal.

Range is AD\_MIN: -10, AD\_MAX: 100, unit is “V”

e.g.: convert “0x320” to decimal 800

Formula:  $800*(100-(-10))/4096+(-10)=800*110/4096-10=11.48$

“AD data” sub-data mask list

Bit	Sub-data type	Status 0	Status 1	Data length, ASCII	Data length, HEX
0	External power	Not report	Report	<=5Bytes	2
1	Backup battery	Not report	Report	<=5Bytes	2
2	ADC1 voltage	Not report	Report	<=5Bytes	2
3	ADC2 voltage	Not report	Report	<=5Bytes	2
4	Reserved				
5	Reserved				
6	Reserved				
7	Reserved				

#### 4.4.7. DTT: Device status data

Format:

0E 0100 11C3 2100 3100 43020000 0001

(In ASCII: DTT:0;C2;0;0;20000;1)

<DTT data length><Sub-data ID and length><sub-data field><Sub-data ID and length><sub-data field>...

0E	01 00			11 C3			21 00		
DTT data	0	1	00	1	1	C3	2	1	00
length	Sub-data ID	Sub-data length	Sub-data field	Sub-data ID	Sub-data length	Sub-data field	Sub-data ID	Sub-data length	Sub-data field
1byte	1byte		Unfixed	1byte		Unfixed	1byte		Unfixed

<DTT data length>: "0E" represents data field length is 14bytes.

<Sub-data ID and length>: 1byte fixed, “Bit4-Bit7” represents sub-data ID, “Bit0-bit3” represents data length.

Sub-data ID:

“0”: Device status

“1”: I/O status

“2”: Number 0 to 119 Geo-fence status

“3”: Number 120 to 155 Geo-fence status

“4”: Event status

“5”: Packet type indicator

“DTT data” sub-data mask, 16 IDs maximum

Bit	Sub-data type	Status 0	Status 1	Data length, ASCII	Data length, HEX
0	Device status	Not report	Report	<=8Bytes	<=5Bytes
1	I/O status	Not report	Report	<=2Bytes	=1Byte
2	Low 120 Geo-fences status	Not report	Report	<=30Bytes	<=15Bytes
3	High 36 Geo-fences status	Not report	Report	<=9Bytes	<=5Bytes
4	Event status	Not report	Report	<=16Bytes	<=9Bytes
5	Packet type indicator	Not report	Report	<=2Bytes	=2Bytes

<Device status>: Refer chapter4.3.7 “Device status list”

<I/O status>: Refer chapter4.3.7 “I/O status list”

<Number “0 to 119” Geo-fence status>

HEX, maximum 120bits, range is “0 to FFFFFFFFFFFFFFFFFFFFFFFFFF”.

Each bit represents each Geo-fence, “bit0 to bit119” represents “Geo-fence0 to Geo-fence119”

”0”: Outside Geo-fence or there is not Geo-fence assigned to device

”1”: Inside Geo-fence

<Number “120 to 155” Geo-fence status>

HEX, range is “0 to 0FFFFFFFF”.

Each bit represents each Geo-fence, “bit0 to bit3j5” represents “Geo-fence120 to Geo-fence155”

”0”: Outside Geo-fence or there is not Geo-fence assigned to device

”1”: Inside Geo-fence

<Event status>

Refer chapter 9 “Event status” table

<Packet type indicator>

>Indicates the cause of the reported packet.

>HEX, 2bytes

Bit	Definition
0	Undefined
1	Periodical report
2	Fixed distance
3	Fixed angle
4	PRQ request
5	Under moving status, GPS from unfix to fix
6	Under international roaming
7	Renew APN or server settings
8	iButton triggered

#### 4.4.8. IWD: 1WIRE data

Format:

iButton: 08 07 00 000000133B29

Temperature sensor: 0A 1B 01 00000012038C 0064

<1WIRE data length><ID and data length><Data type><Data field>...

Non-event data:

F8 06 01 01 44 3B 33 F9 0C 28 19 A8 DD 6E 00 7B 11 03 47 36 53 15 56 32 2E 32 35 26 56 31 2E 30 2E 33 13 00 3F 48 01 66 C3 B0 06 BC 3  
E 40 00 00 00 00 03 E8 00 64 06 02 FF 7F 12 07 AD 08 03 30 11 74 21 74 31 74 08 01 02 11 E1 21 00 31 00 08 07 00 00 00 01 01 7B 0C 86 61  
F8

Event data:

F8 06 41 01 44 3B 33 F9 0C 28 19 A8 DD F1 8E 00 FB 11 03 47 36 53 15 56 32 2E 32 35 26 56 31 2E 30 2E 33 13 00 3F 48 01 66 C3 B0 06 B  
C 3E 40 00 00 00 00 03 E8 00 64 06 02 FF 7F 12 07 AD 08 03 2D 11 74 21 74 31 74 0B 01 02 11 E1 21 00 31 00 42 40 00 08 07 00 00 00 00 1  
2 03 8C 08 07 00 00 00 00 12 03 8C 6F 89 F8

<Data type>: 1byte fixed

“00” represents iButton.

”01” represents temperature sensor

<ID and data length>: 1byte fixed

Bit0 to Bit3 represents data length.

Bit4 to Bit7 represents data ID.

<Data field>:

iButton: Serial number of iButton, 6bytes.

Temperature sensor: Serial number of temperature sensor and temperature value, serial number length 8bytes, temperature length 2bytes.

iButton data:

08	07 00 000000133B29			
1WIRE data length	0	7	00	000000133B29
	ID	Data length	iButton	Serial number
1byte, fixed	1Byte		1Byte	6Bytes

Temperature data:

0A	1B 01 00000012038C 0064				
1WIRE data length	1	B	01	00000012038C	0064
	ID	Data length	Temperature sensor	Serial number	Temp. value
1byte, fixed	1Byte		1Byte	8Bytes	2Bytes

Temperature value: Value/10, unit is Celsius, e.g.: 0x011D equals 28.5 degree Celsius, 0xFEE3 equals -28.5 degree Celsius.

#### 4.4.9. ETD: Event data

■Speed event data

Format:03 02 006D

<Speed event data length><Data ID and length><Data field>

<Data ID and length>: 1byte, “Bit0-Bit3” represents data length, “Bit4-Bit7” represents data type ID.

<Data field>: HEX, “0x006D” converts decimal is “109”, which means current speed is 109km/h.

03	02 006D		
Speed event data length	0	2	00 6D
	ID	Data length	Data field
1byte	1byte		2bytes

	15bytes maximum
--	-----------------

■Geo-fence event data

Format: 1206153AA8A664001A080309010A020B010C03

<Geo-fence event data length><ID and data length><Time><Speed><ID and data length><Geo-fence number><Status><Geo-fence number><Status>.....

Note: Maximum 5 Geo-fences data to carry

<Geo-fence event data length>: HEX, "0x12" converts to decimal is 18, which mean 18bytes.

<ID and data length>: HEX, "0x06", bit0 to bit3 represents identifier; bit4 to bit7 represents data length.

<Time>: HEX, "0x19A52DBA"

<Speed>: Hex, "0x0064" converts to decimal is 100, which means speed is 100km/h.

<ID and data length>: HEX, "0x1A", bit0 to bit3 represents identifier; bit4 to bit7 represents data length.

<Geo-fence number>: HEX, "0x08" converts decimal 8, which mean Geo-fence number 8.

<Status>:

"bit1": "1" means entering Geo-fence, "0" means leaving Geo-fence.

"bit0": "1" means over speed, "0" means normal speed.

12	06 19A52DBA 0064				1A	0803		0901		0A02		0B01		0C03	
Geo-fence event data length	0	6	19A52DBA	0064	1A	08	03	09	01	0A	02	0B	01	0C	03
	I D	Data length	Time	Speed	Data length	Geo-fence number	Status	Geo-fence number	Status	Geo-fence number	Status	Geo-fence number	Status	Geo-fence number	Status
1byte	1byte		4bytes	2bytes	1byte	2bytes		2bytes		2bytes		2bytes		2bytes	
	18bytes														

Note: Maximum 5 Geo-fence numbers and status data.

■Healthy check event data

Format: 020144

<Healthy check event data><ID and data length><Data field>

<Data field>: HEX

Bit	Name	0	1
bit0	Socket0	Disconnected	Connected
bit1	Socket1	Disconnected	Connected
bit2	Socket2	Disconnected	Connected
bit3	Socket3	Disconnected	Connected
bit4	Socket4	Disconnected	Connected
bit5	2D accelerate meter	Abnormal	Normal
bit6	Flash storage	Abnormal	Normal
bit7	Vibration sensor	Still	Vibrate

02	0144		
Healthy check event data	0	1	44
	ID	Data length	Data field

1byte fixed	1byte	1byte
	2bytes, unfixed	

■Harsh/Collision event data

Format: 05 04FF9C00D7

05	04 FF9C 00D7			
Event data	0	4	FF9C	00D7
	ID	Data length	X axis data	Y axis data
1byte fixed	1byte		2bytes	2bytes
	5bytes, unfixed			

X/Y axis data: HEX, acceleration magnitude equals value/1000, unit is g. Which means:

X: "0XFF9C" equals X:-0.099g

Y: "0x00D7" equals Y:0.215g

■1WIRE event data

Format:

iButton: 08 07 00 000000133B29

Temperature sensor: 0A 1B 01 00000012038C 0064

<1WIRE event data length><ID and data length><Data type><Data field>

<ID and data length>: bit0 to bit3 represents data length, bit4 to bit7 represents ID.

<Data type>: "00" means iButton data, "01" means temperature sensor data.

<Data field>:

iButton: serial number of iButton, 6bytes.

Temperature sensor: serial number of sensor, 8bytes and temperature value, 2 bytes.

iButton:

08	07 00 000000133B29			
1WIRE event data length	0	7	00	000000133B29
	ID	Data length	Data type is iButton	Serial number of iButton
1byte fixed	1Byte		1Byte	6Bytes

Temperature sensor:

0A	1B 01 00000012038C 0064				
1WIRE event data length	1	B	01	00000012038C	0064
	ID	Data length	Data type is temperature sensor	Serial number of temperature sensor	value
1byte fixed	1Byte		1Byte	8Bytes	2Bytes

Temperature value: data/10, unit is Celsius, e.g. 0x011D equals 28.5 degree Celsius.

■ADC event (External power/Built-in battery/AD1/AD2)

Format: 03 02 02BE

<ADC event data length><ID and data length><Data field>

<ID and data length>: bit0 to bit3 represents data length, bit4 to bit7 represents ID.

<Data field>: HEX, “0x02BE” means 8.85, unit is volt.

03	02 02BE		
ADC event data length	0	2	02BE
	ID	Data length	Data field
1byte, fixed	1byte		2bytes
	3bytes, unfixed		

- Entering sleeping mode event under the situation of battery with low voltage

## 4.5. SMS forwarding packet

HEX, if device receives SMS from phone number it will process it then forward to GPRS server.

F8	04	02	013FB822050D1D		9A E6	F8
Packet head	Protocol version	Packet type ID Forwarding packet: 02	Device ID	Data field, content of SMS	CRC verify	Packet tail
1byte	1byte	1byte		0 to 156bytes	2byte	1byte

Data field

Type	Phone number type	Phone number length	Phone number	Data length	Data field
“04”: 8bit “08”: U2CODE	“81”: Unknown “91”: International “A1”: Domestic				
1byte	1byte	1byte	2 to 12bytes	1byte	0~140byte

E.g1.: SMS contents ”GUANG ZHOU CHINA”, will be converted and report to server

F8 06 02 01 3F B8 21 FE C8 DF 04 91 0D 68 31 29 46 14 65 F0 10 47 55 41 4E 47 20 5A 48 4F 55 20 43 48 49 4E 41 07 3E F8

E.g2.: SMS contents ” 中国.广州.科学城”, will be converted and report to server

F8 06 02 01 3F B8 21 FE C8 DF 08 91 0D 68 31 29 46 14 65 F0 12 4E 2D 56 FD 00 2E 5E 7F 5D DE 00 2E 79 D1 5B 66 57 CE 87 12 F8

E.g3.: SMS contents ” 中国.广州.科学城 GuangZhou China”, will be converted and report to server

F8 06 02 01 3F B8 21 FE C8 DF 08 91 0D 68 31 29 46 14 65 F0 2E 4E 2D 56 FD 00 2E 5E 7F 5D DE 00 2E 79 D1 5B 66 57 CE 00 47 00 75 00 61 00 6E 00 67 00 5A 00 68 00 6F 00 75 00 43 00 68 00 69 00 6E 00 61 31 6E F8

## 4.6. Serial port communication

### 4.6.1. Device to server

HEX format, 384 bytes maximum downlink, 1024 bytes maximum uplink (with conversion). Maximum uplink receive length 800bytes, maximum 1017 bytes with conversion.

F8	06	03	07	013FB8220 50D1D	153AA8A 6	00FF...		02 03 c4 f6 ...	2D77	F8
Packet head	Protocol version	Data type	Auxiliary data	IMEI number	Date	Fix flag	GPS fix data field	Data on serial port, Converted by device data protocol (1B, F8).	CRC	Packet tail
1byte	1byte	1byte	1byte	7bytes	4bytes	1byte	8bytes		2bytes	1byte

Auxiliary data is according command PKI

Bit	Explanation
Bit7 - Bit3	Serial port number, currently 1 port available, which means it is 0.
Bit2	0: Not carrying device ID, 1: Carrying device ID
Bit1	0: Not carrying date and time, 1: Carrying date and time
Bit0	0: Not carrying position data, 1: Carrying position data

Fix flag	Explanation
0	Position is invalid
1	Position is using GPS
2	Position is using GSM
Others	Invalid

e.g.1:

F8 06 03 07 01 44 3B 33 F9 0C 28 19 A8 FE E8 01 0166C3B0 06BC3E40 41 42 43 44 45 46 47 31 32 33 34 35 36 6101 F8

Payload: ABCDEFG123456

e.g.2:

F8 06 03 07 01 44 3B 33 F9 0C 28 19 A8 FE FC 01 0166C3B0 06BC3E40 D6D0 B9FA 2E B9E3 D6DD 2E BFC6 D1A7 B3C7 2E 47 75 61 6E 67 5A 68 6F 75 2E 43 68 69 6E 61 6CE4 F8

Payload: 中国.广州.科学城.GuangZhou.China

#### 4.6.2. Server to device

F8	06	03	00	02 03 c4 f6 ...	2D77	F8
Packet head	Protocol version	Data type	Serial port number	Data on serial port, Converted by device data protocol (1B, F8).	CRC	Packet tail
1byte	1byte	1byte	1byte	Unfixed	2bytes	1byte

#### 4.6.3. Serial port output format

According to command EPS

Mode	Explanation
0	Disable serial port
1	Transparent, RS232 peripheral device packet interval
2	Transparent, Device packet interval
3	GARMIN

### 4.7. Packet batch process (offline)

#### 4.7.1. ASCII packet

Packet batch process is major on offline data process. It will pack multiple offline packets (sub-packet) as 1 packet. Each sub-packet will use \$ as separator. Format:

**packet head + first sub-packet + \$second sub-packet + \$..... + \$last sub-packet + packet tail**

1024 bytes maximum.

E.g.:

\*GS06,356496042429597,

//Packet head

154812300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20

//first sub-packet has not \$ ahead

\$154822300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20

//from second sub-packet there is \$ ahead

\$154832300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20

\$154842300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 \$154852300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 \$154902300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 \$154912300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 \$154922300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 \$154932300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 \$154942300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 \$154952300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 \$155002300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 \$155012300713,,SYS:G6S;V1.01;,GPS:A;8;N23.164408;E113.428512;0;56;43;1.20  
 # //Packet tail

#### 4.7.2. HEX packet

There are 4 kinds of HEX data packet:

- 1, Heartbeat
- 2, Regular report packet
- 3, SMS forwarding data packet
- 4, Serial link data

1024 bytes maximum

F8	06	04	013FB822050D1D			
Packet head	Protocol version	Packet type 04 means mixed data type packet	Device ID, IMEI	First sub- packet length	First sub- packet type	First sub- packet data field
1byte	1byte	1byte	7byte	2byte	1byte	Unfixed
Second packet length	Second sub- packet type	Second sub- packet data field	Third sub- packet length	Third sub- packet type	Third sub- packet data field	Fourth sub-packet length
2byte	1byte	Unfixed	2byte	1byte	Unfixed	2byte
						F8
Fourth sub- packet type	Fourth sub- packet data field	...	...	...	CRC	Packet tail
1byte	Unfixed	...	...	...	2byte	1byte

E.g.: with 3 kinds of sub-packet

F8	Packet head	1 byte
06	Protocol version	1 byte
04	Mixed data type packet indicator	1 byte
013FB822109948	Device ID, IMEI	7 bytes
0022	First sub- packet length	2 bytes
03	First sub- packet type, 03 means serial link packet	1 byte
07013FB8221099481ABE70F001016176A206C2C7303132333 43536373839300D0A	First sub- packet data field	Unfixed
003C	Second sub- packet length	2 bytes
01	Second sub- packet type, 01 means regular report packet	1 byte



1ABE70F100330E1556322E303627312E302E352D5413003F4 6016176A206C2C730000000000006009604056311860C01801 1E021003100410051	Second sub- packet data field	Unfixed
0022	Third sub- packet length	2 bytes
03	Third sub- packet type, 03 means serial link packet	1 byte
07013FB8221099481ABE70F301016176A206C2C7303339323 33133353431330D0A	Third sub- packet data field	Unfixed
003C	Fourth sub- packet length	2 bytes
01	Fourth sub- packet type, 01 means regular data packet	1 byte
1ABE70FB00330E1556322E303627312E302E352D5413003F4 6016176A206C2C730000000000006009604054F11860C01801 1E02100310041005101	Fourth sub- packet data field	Unfixed
003C	Fifth sub- packet length	2 bytes
01	Fifth sub- packet type, 01 means regular data packet	1 byte
1ABE710500330E1556322E303627312E302E352D5413003F4 6016176A206C2C730000000000006009604055E11860C01801 1E02100310041005101	Firth sub- packet data field	Unfixed
0016	Sixth sub- packet length	2 bytes
02	Sixth sub- packet type, 03 means SMS forwarding packet	1 byte
04910D683129461465F00A30313233343536373839	Sixth sub- packet data field	Unfixed
003C	Seventh sub- packet length	2 bytes
01	Seventh sub- packet type, 01 means regular data packet	1 byte
1ABE710F00330E1556322E303627312E302E352D5413003F4 6016176A206C2C730000000000006009604056111860C01801 1E02100310041005101	Seventh sub- packet data field	Unfixed
003C	Eighth sub- packet length	2 bytes
01	Eighth sub- packet type, 01 means regular data packet	1 byte
1ABE711900330E1556322E303627312E302E352D5413003F4 6016176A206C2C730000000000006009604054F11860C01801 1E02100310041005101	Eighth sub- packet data field	Unfixed
9EBF	CRC	2 bytes
F8	Packet tail	1 byte

## 5. Packet sample

>Device packet to GPRS server, ASCII format:

### ■With GSM data

```
*GS06,356496042329318,000000000000,,SYS:G6S;V1.00;V1.0.1,GSM:5;4;460;0;2503;962C;-59#
```

```
*GS06,356496042329318,000000000000,,SYS:G6S;V1.00;V1.0.1,GSM:5;4;460;0;2503;962C;-59#
```

```
*GS06,356496042329318,000000000000,92,SYS:G6S;V1.00;V1.0.1#
```

### ■With GPS data

\*GS06,356496042329318,031427090613,,SYS:G6S;V1.00;V1.0.1,GPS:A;7;N23.164358;E113.428515;0;0;45;1.10#

\*GS06,356496042329318,031417090613,,SYS:G6S;V1.00;V1.0.1,GPS:A;7;N23.164358;E113.428515;0;0;44;1.10#

#### >Device packet to GPRS server, HEX format:

F8060101443B33F78BE41946E33E003310034736531556312E30302556312E3031123F490161792C06C2C8400000000008B008604031C11  
F40902308C1180210031009846F8

## 6. Command

Command lists for different authorization, please refer APPENDIX1

### 6.1. Command format

#	Communication	Chapter	Operation type	Format
1	Server to Device	5.1.1	TCP/UDP socket to send	*GS00,UNO;+8601234567891#
			SMS server	*GS00,UNO;+8601234567891#
2	Serial port to Device	5.1.2	Configuration software or serial port software	UNO;+8601234567891
3	User phone to Device	5.1.3	Cell phone to send	1234,UNO;+8601234567891

#### 6.1.1 Server to device command format

Server sends:

*GS	06	,	<Command word1>;<Parameter>;<Parameter>, <Command word2>;<Parameter>;<Parameter>	#
Command head	Protocol version	Separator	Command field: Command word and its parameter using “;” as separator. Different command field using “;” as separator	Command tail

Device replies:

*GS	06	,	358696040652862	,	<Command word>;<Parameter>;<Parameter>;<Command word>;<Parameter>;<Parameter>	#
Packet head	Protocol version	Separator	Device ID	Separator	Command field	Packet tail

e.g.:

Send: \*GS00,UNO;13912345678#

Reply: \*GS06,358696040652862,UNO:13912345678#

#### 6.1.2 Serial port to device command format

Send	Reply
<Command word>;<Parameter>;<Parameter>	<Command word>;<Parameter>;<Parameter>
Command field: Separator is “;”	Command field: Separator between command word and parameter using “;” as separator,

	Parameters in identical command word using “;” as separator.
--	--

e.g.:

Send: UNO;13912345678

Reply: UNO:13912345678

**6.1.3 User phone to device command format**

1234	,	<Command word>;<Parameter>;<Parameter>
Password	Separator	Command field Command field Command word and its parameter using “;” as separator. Different command field using “;” as separator

Send: 1234,UPW;1234

Reply: G6S V1.00

UPW:1234

EXT\_PWR=11.94V

BAT=3.90V

#3

**6.1.4 Command combination**

- Multiple commands to send in one message, length 256 maximum.

**Server to device**

Between different command using “;” as separator

e.g.:

Send: \*GS00,UNO;13912345678,UPW;1234#

Reply: \*GS06,0123456789,UNO:13912345678,UPW:1234#

**User phone to device**

Between different commands using “;” as separator

e.g.:

Send:1234,UNO;13912345678,UPW;4567

Reply: G6S V1.00

UNO:13912345678

UPW:1234

EXT\_PWR=11.94V

BAT=3.90V

#3

**Computer to device**

Between different command using “;” as separator

Send:

UNO;13912345678,UPW;1234

Reply:

UNO:13912345678,UPW:1234

## 6.2. OEM command

Format:

Send : \*GS00,UCM;FFFF#

Reply: \*GS06,358696040652862,UCM:FFFF#

### 6.2.1 Reset to factory default (DFP)

Command word	Format	Reply
DFP	DFP	DFP
Explanation	Device configuration will be reset	

### 6.2.2 Set OEM password (OPW)

Command word	Format	Reply
OPW	OPW;0123456789	OPW:0123456789
	OPW	OPW:0123456789
Explanation	<p>OPW;&lt;PASSWORD&gt;</p> <p>This password is for the accessibility of configuration software on computer.</p> <p>Length is 10 digits fixed.</p> <p>Default password: 0123456789</p>	

### 6.2.3 Administrator command mask (ACM)

Command word	Format	Reply
ACM	ACM;1F8	ACM:1F8
	ACM	ACM:1F8
Explanation	<p>ACM;&lt;Mask&gt;</p> <p>Enable commands in OEM command list for administrator, except commands DFP/OPW/ACM.</p> <p>&lt;Mask&gt;:HEX, range is "0 to FFFFFFFFFFFFFFFF"</p> <p>"0": disable this command for administrator</p> <p>"1": enable this command for administrator</p> <p>Refer APPENDIX1 for OEM command list.</p>	
	Factory default: ACM:3FFFFFFFFF8	

### 6.2.4 User command mask (UCM)

Command word	Format	Reply
UCM	UCM;1FFFFFFFFF	UCM:1FFFFFFFFF

	UCM	UCM: 1FFFFFFFFF
Explanation	UCM;<Mask> Enable commands in user command list for user. <Mask>:HEX, range is “0 to FFFFFFFFFFFFFFFF” “0”: disable this command for user ”1”: enable this command for user Refer APPENDIX2 for user command list.	
	Factory default: UCM:1FFFFFFCFF5F	

6.2.5 OTA firmware upgrade file server (OAS)

Command word	Format	Reply
OAS	OAS;update.skypatrol.com;80	OAS: update.skypatrol.com;80
	OAS	OAS: update.skypatrol.com;80
Explanation	OAS;<IP>;<PORT> Set OTA server IP and port, 63 characters maximum. <IP/Domain>: IP of OTA server <Port>: Port of OTA server	
	Factory default: OAS:update.skypatrol.com;80	

6.2.6 OTA firmware file path (OAP)

Command word	Format	Reply
OAP	OAP:/skypatrol/G6S/V105/Release/G6S.txt	OAP:/skypatrol/G6S/V105/Release/G6S.txt
	OAP	OAP:/skypatrol/G6S/V105/Release/G6S.txt
Explanation	OAP;<File path> <File path>: 64bytes maximum, OTA file path on OTA server	
	Factory default: OAP:/skypatrol/G6S/Release/G6S.txt	

6.2.7 APN information list (APL)

Command word	Format	Reply
APL	APL;46000;cmnet;user;pw	APL:46000;cmnet;user;pw

	APL;46000	APL:46000;cmnet;user;pw
Explanation	<p>Device is able to save APN list on device, when SIM card inserted to automatically fulfill APN information.</p> <p>There is 4K byte memory is used for APN list.</p> <p>Device will keep the newest APN in memory.</p> <p>APL;&lt;MCC+MNC&gt;;&lt;APN&gt;;&lt;user name&gt;;&lt;pw&gt;</p> <p>&lt;MCC+MNC&gt;: 3 digits for country code, 2 or 3 digits for carrier code</p> <p>&lt;APN&gt;: APN name, maximum 64 bytes</p> <p>&lt;user name&gt;: User name for APN</p> <p>&lt;pw&gt;: password for APN</p>	
	Factory default: Chinese APN	

### 6.2.8 Heartbeat packet (HBI)

Command word	Format	Reply
HBI	HBI;50	HBI:50
	HBI	HBI:50
Explanation	<p>Function: Set up the heartbeat packet uploading time interval of TCP/UDP sever, keep the sever and device connected..</p> <p>HBI;&lt;Interval&gt;</p> <p>&lt;Interval&gt;: 0:Close the heartbeat packet uploading;</p> <p>Range is “1 to 255”, unit is minute.</p>	
	Factory default:HBI;20	

### 6.2.9 Map hyper link (URL)

Command word	Format	Reply
URL	<p>Static link:</p> <p>URL0;http://maps.google.com/maps?q=%n(,%e&amp;t=m&amp;z=16</p>	URL0:http://maps.google.com/staticmap?zoom=14&size=300x300&markers=%n(,%e&sensor=false
	<p>Dynamic link:</p> <p>URL0;http://maps.google.com/maps?q=%n(,%e&amp;t=m&amp;z=16</p>	URL0;http://maps.google.com/maps?q=%n(,%e&t=m&z=16
Explanation	<p>This command is to set map link in SMS to user</p> <p>URL[ID];&lt;Link&gt;</p> <p>URL0 is to set GPS hyper map link.</p> <p>URL1 is to set GSM hyper map link.</p>	

	<p>URL0 is prior when GPS is fixed.</p> <p>&lt;Link&gt;: Maximum is 126bytes, “)” is used for data conversion.</p> <p>Valid parameter that following “%”, case sensitive</p> <p>“y”: year</p> <p>“m”: month</p> <p>“H”: hour</p> <p>“M”: minute</p> <p>“S”: second</p> <p>“n”: north</p> <p>“e”: east</p> <p>“a”: valid flag</p> <p>“s”: speed</p> <p>“r”: heading</p> <p>“C”: MCC</p> <p>“N”: MNC</p> <p>“A”: LAC</p> <p>“D”: CID</p>
	Factory default:URL0;http://maps.google.com/maps?q=%n,%e&t=m&z=16

## 6.2.10 USB port output mode (UGP)

Command word	Format	Reply
UGP	UGP;3	UGP:3
	UGP	UGP:3

Explanation	UGP;<Parameter>																																	
	<p>To set USB output working mode, range is “0 to 6”.</p> <p>“0”: Normal</p> <p>“1”:GSM Trace</p> <p>“2”:GPS information output</p> <p>“3”:Print device system information</p> <p>“4”:Factory mode</p> <p>“5”:Factory testing mode</p> <p>“6”:Print device reporting data over GPRS</p> <table border="1"> <thead> <tr> <th>Head</th> <th>Payload</th> <th>Coded</th> <th>Example</th> </tr> </thead> <tbody> <tr> <td>SER:</td> <td>Heartbeat</td> <td>ASCII</td> <td></td> </tr> <tr> <td>SER:</td> <td>GPRS packet</td> <td>ASCII</td> <td></td> </tr> <tr> <td>SER:</td> <td>Serial link packet</td> <td>Raw</td> <td></td> </tr> <tr> <td>ADM:</td> <td>SMS server message</td> <td>ASCII</td> <td></td> </tr> <tr> <td>US0:</td> <td>User0 message</td> <td>ASCII</td> <td></td> </tr> <tr> <td>US1:</td> <td>User1 message</td> <td>ASCII</td> <td></td> </tr> <tr> <td>PRQ:</td> <td>SMS from User</td> <td>ASCII</td> <td></td> </tr> </tbody> </table>			Head	Payload	Coded	Example	SER:	Heartbeat	ASCII		SER:	GPRS packet	ASCII		SER:	Serial link packet	Raw		ADM:	SMS server message	ASCII		US0:	User0 message	ASCII		US1:	User1 message	ASCII		PRQ:	SMS from User	ASCII
Head	Payload	Coded	Example																															
SER:	Heartbeat	ASCII																																
SER:	GPRS packet	ASCII																																
SER:	Serial link packet	Raw																																
ADM:	SMS server message	ASCII																																
US0:	User0 message	ASCII																																
US1:	User1 message	ASCII																																
PRQ:	SMS from User	ASCII																																
	Factory default:UGP;0																																	

## 6.2.11 User command white list (CEN)

Command word	Format	Reply
CEN	CEN;PIN;SCN;APN;SVR;BSV;BDU;SVP;SSP;USP;SSN	CEN:PIN;SCN;APN;SVR;BSV;BDU;SVP;SSP;USP;SSN
	UCM	UCM;3FF
Explanation	CEN;<Command word1>;<Command word2>;<Command word3>.....	
	To customize user command white list, 10 command words maximum, command words in this command are available for user from admin command list	
	Factory default:	

## 6.2.12 User command black list (CDS)

Command word	Format	Reply
CDS	CDS;PIN;SCN;APN;SVR;BSV;BDU;SVP;SSP;USP;SSN	CDS:PIN;SCN;APN;SVR;BSV;BDU;SVP;SSP;USP;SSN
	UCM	UCM;0
Explanation	CDS;<Command word1>;<Command word2>;<Command word3>...	
	Opposite to command CEN, this command is used to forbidden commands for user from admin list.	



	CDS;PIN;SCN;APN;SVR;BSV;BDU;SVP;SSP;USP;SSN  CDS;PIN;SCN;APN;SVR;BSV;BDU;SVP;SSP;USP;SSN  UCM  UCM:0
	Factory default:

## 6.2.13 Sub-data type mask (SDM)

Command word	Format	Reply
SDM	SDM1;FFFF	SDM1:7F
	SDM1	SDM1:7F

## Explanation

To set Sub-data type mask.

Format:

SDM[Main data identifier]; <Sub-data type mask>

<Main data identifier>: range is “0 to 15”, refer command AMD “Main data type list”.

<Sub-data mask>:

HEX, range is “0000 to FFFF”.

“0” means not report.

“1” means report.

<1>SYS: System data mask (SDM0)

Bit	Sub-data type	0	1	Length, ASCII	Length, HEX
0	Device name	Not report	Report	<=15bytes	<=15bytes
1	Firmware version	Not report	Report	<=8bytes	<=8bytes
2	Hardware version	Not report	Report	<=8bytes	<=8bytes

<2>GPS: GPS data mask (SDM1)

Bit	Sub-data type	0	1	Length, ASCII	Length, HEX
0	Fix flag	Not report	Report	=1bytes	=1byte
	Valid satellite number			<=2bytes	
1	Latitude	Not report	Report	10bytes	=8bytes
	Longitude			11bytes	
2	Speed	Not report	Report	<=3bytes	=2bytes
3	Azimuth	Not report	Report	<=3bytes	=2bytes
4	Altitude	Not report	Report	<=5	=2bytes
5	HDOP	Not report	Report	<=5	=2bytes
6	VDOP	Not report	Report	<=5	=2bytes
7	Reserved				

<3>GSM: GSM data (SDM2)

Bit	Sub-data type	0	1	Length, ASCII	Length, HEX
0	Register status	Not report	Report	=1bytes	=1bytes
	Signal strength			=1bytes	
1	First station	Not report	Report	<=25bytes	=8bytes
2	Second station	Not report	Report	<=25bytes	=8bytes
3	Third station	Not report	Report	<=25bytes	=8bytes
4	Fourth station	Not report	Report	<=25bytes	=8bytes
5	Fifth station	Not report	Report	<=25bytes	=8bytes
6	Sixth station	Not report	Report	<=25bytes	=8bytes
7	Seventh station	Not report	Report	<=25bytes	=8bytes

<4>COT: COT data (SDM3)

Bit	Sub-data type	0	1	Length, ASCII	Length, HEX
0	Mileage	Not report	Report	<=10bytes	<=5bytes
1	Engine hour	Not report	Report	<=10bytes	<=5bytes
2	IN0 frequency/pulse data	Not report	Report	<=11bytes	<=5bytes
3	IN1 frequency/pulse data	Not report	Report	<=11bytes	<=5bytes
4	IN2 frequency/pulse data	Not report	Report	<=11bytes	<=5bytes
5	IN3 frequency/pulse data	Not report	Report	<=11bytes	<=5bytes

<5>ADC: Analog to digital converter data (SDM4)

Bit	Sub-data type	0	1	Length, ASCII	Length, HEX
0	External power	Not report	Report	<=5bytes	=2bytes
1	Backup battery	Not report	Report	<=5bytes	=2bytes
2	ADC1 voltage	Not report	Report	<=5bytes	=2bytes
3	ADC2 voltage	Not report	Report	<=5bytes	=2bytes
4	Reserved				
5	Reserved				
6	Reserved				
7	Reserved				

<6>DTT: Device status data (SDM5)

Bit	Sub-data type	0	1	Length, ASCII	Length, HEX
0	Device status	Not report	Report	<=8bytes	<=5bytes
1	I/O status	Not report	Report	<=2bytes	=2byte
2	Low 120 Geo-fences status	Not report	Report	<=30bytes	<=16bytes
3	High 36 Geo-fences status	Not report	Report	<=9bytes	<=6bytes
4	Event status	Not report	Report	<=16bytes	<=9bytes
5	Packet type indicator	Not report	Report	<=2bytes	<=2bytes

Factory default:  
SDM:ffff, SDM1:3f,SDM2:2,SDM3:1,SDM4:3,SDM5:ffff,SDM6:ffff,SDM7:ffff  
SDM8:ffff,SDM9:ffff,SDM10:ffff, SDM11:ffff,SDM12:ffff,SDM13:ffff, SDM14:ffff,  
SDM15:ffff

## 6.2.14 Offline data report mode (EFM)

Command word	Format	Reply
EFM	EFM;1;0;1	EFM:1;0;1
	EFM	EFM:1;0;1

Explanation	<p>EFM;&lt;Mode&gt;;&lt;Priority&gt;;&lt;Erase&gt;</p> <p>&lt;Mode&gt;</p> <p>0: Disable offline (GPRS) data saving feature 1: Enable offline (GPRS) data saving feature, If GPRS recovers device will send offline data to server.</p> <p>&lt;Priority&gt;</p> <p>0: Real-time data prior, when GPRS recovers send the real time data first. 1: Offline data prior, when GPRS recovers send the offline data first.</p> <p>&lt;Erase&gt;</p> <p>1: Erase offline data from flash storage. (Need to include former 2 parameters when executing) 0: Do not offline data from flash storage. (Changing former 2 parameters without erasing)</p>
	EFM:1;1

## 6.2.15 Sub-event mask (ESM)

Command word	Format	Reply
ESM	ESM3;FF;FF;FF;FF	ESM3: FF;FF;FF;FF
	ESM	ESM3:FF;FF;FF;FF

Explanation	<p>ESM[Main event ID];&lt;Sub-event mask&gt;;&lt;Sub-event status0 mask&gt;; &lt;Sub-event status1 mask&gt;;&lt;Clear type&gt;</p> <p>[Main event ID]: Range is “0 to 7”, one main event type including 8 sub events.</p> <p>&lt;Sub-event mask&gt;: HEX, range is “0 to FF” “0”: Disable this sub-event “1”: Enable this sub-event</p> <p>&lt;Sub-event status0 mask&gt;: HEX, range is “0 to FF” “0”: Disable sub-event status0 to trigger “1”: Enable sub-event status0 to trigger</p> <p>&lt;Sub-event status1 mask&gt;: HEX, range is “0 to FF” “0”: Disable sub-event status1 to trigger “1”: Enable sub-event status1 to trigger</p> <p>&lt;Clear type&gt;: HEX, range is “0 to FF” “0”: Manually “1”: Automatically</p> <p><i>Note: Definition of Main event, sub-event, status0/1 please refer chapter9 “Event list”</i></p>
	<p>Factory default:</p> <p>ESM:0;0;0;ff</p> <p>ESM1:0;0;0;ff</p> <p>ESM2:0;0;0;ff</p> <p>ESM3:10;10;10;ff</p> <p>ESM4:0;0;0;ff</p> <p>ESM5:0;0;0;ff</p> <p>ESM6:0;0;0;ff</p> <p>ESM7:0;0;0;ff</p>

## 6.2.16 Device reaction for the triggered event (EUP)

Command word	Format	Reply
--------------	--------	-------

EUP	EUP28;4;1;1;1	EUP28;4;1;1;1
	EUP28;4	EUP28;4;1;1;1
Explanation	<p>EUP[Event ID];&lt;Device reaction type ID&gt;;&lt;Interval&gt;;&lt;Times&gt;;&lt;Data string mask mode&gt;</p> <p>[Event ID]: range is “0 to 63”</p> <p>&lt;Device reaction type ID&gt;: range is “0 to 7”</p> <p>0: I/O reaction</p> <p>1: Report to User0</p> <p>2: Report to User1</p> <p>3: Report to SMS server (Admin)</p> <p>4: Report to GPRS Sever</p> <p>5: Report to GPRS server preferred, if GPRS connection lost report offline data to SMS server via SMS channel.</p> <p>6: Reserved</p> <p>7: Reserved</p> <p>&lt;Interval&gt;: Range is “1 to 30”, unit is “minute”</p> <p>&lt;Times&gt;: Range is “0 to 5”, “0” means to disable</p> <p>&lt;Data string mask mode&gt;: Range is “0 to 7 (ADM0 to ADM7)”, only available for action type “report”, please refer command ADM</p>	
	Factory default:	

## 6.2.17 I/O port reaction for the triggered event (EOB)

Command word	Format	Reply
EOB	EOB28;0;4;2	EOB28;0;4;2
	EOB28	EOB28;0;4;2
Explanation	<p>EOB[Event ID];&lt;Digital output channel ID&gt;;&lt;Event status0 mode&gt;;&lt;Event status1 mode&gt;</p> <p>[Event ID]: range is “0 to 63”, please refer chapter9 “Event list”.</p> <p>&lt;Digital output channel ID&gt;: range is “0 to 2”</p> <p>“0”: OUT1</p> <p>“1”: OUT2</p> <p>“2”: OUT3</p> <p>&lt;Event status0 mode&gt;: define which output mode to be activated under status0, range is “0 to 7”.</p> <p>&lt;Event status1 mode&gt;: define which output mode to be activated under status1, range is “0 to 7”.</p> <p>e.g.:</p> <p>EOB28;0;4;5;0</p> <p>DOM0;4;500;500;5;0;1</p> <p>DOM0;5;500;500;5;0;1</p>	

	DOM0;1  Which means ACC OFF event will active mode4 on output0 ACC ON event will active mode5 on output0
	Factory default: EOB:0;0;0

## 6.2.18 Event combination (ERL)

Command word	Format	Reply
ERL	ERL0;15;24;1;25;1	ERL0:15;24;1;25;1
	ERL0	ERL0:15;24;1;25;1
Explanation	<p>Event combination functionality (ERL), binding multiple events (up to 5, AND logic) together as combination event to trigger specific reaction of device</p> <p>Format:</p> <p>ERL[Combination event ID]:&lt;Valid period&gt;;&lt;Event ID&gt;;&lt;Event status&gt;;&lt;Event ID&gt;;&lt;Event status&gt;...</p> <p>[Combination event ID]: range is "0 to 7", corresponding to event number "56 to 63" in chapter9 "Event list"</p> <p>command responding to "EUP56 to EUP63", e.g.: ERL0;25;1;24;1 means EUP56</p> <p>&lt;Valid period&gt;: All events in combination event must be satisfied during this period, otherwise combination event will not be activated.</p> <p>&lt;Event ID&gt;: range is "0 to 55"</p> <p>&lt;Event status&gt;: range is "0 to 1"</p> <p>"0": Status 0 in "Event list"</p> <p>"1": Status 1 in "Event list"</p> <p>Note:</p> <p>&lt;Event ID&gt;;&lt;Event status&gt; must be paired, 5 pairs maximum.</p> <p>If need to trigger I/O reaction, command EOB is related with this command.</p>	
	Factory default: ERL (0~7) :0;127;0;127;0;127;0;127;0;127;0	

## 6.2.19 Report data string mask mode (ADM)

Command word	Format	Reply
ADM	ADM0;47	ADM0:47
	ADM1	ADM1:47

## Explanation

This command is to customize data type in packet that to be reported to server, up to 8 profiles are available, SMS server is forced to used ADM0 while GPRS server is forced to used ADM1

ADM[ID];<Main data ID mask>

[ID]: data type ID, range is “0 to 7”.

Profile ID	Command word
0	ADM0
1	ADM1
2	ADM2
3	ADM3
4	ADM4
5	ADM5
6	ADM6
7	ADM7

<Main data mask>:

HEX, range is “0 to FFFF”.

“0”: Not report this kind of data

“1”: Report this kind of data

Main data ID mask

Main data mask (Bit)	Main data ID	Explanation	0	1
0	SYS	System data	Not report	Report
1	GPS	GPS data	Not report	Report
2	GSM	GSM data	Not report	Report
3	COT	COT data	Not report	Report
4	ADC	ADC data	Not report	Report
5	DTT	Device status data	Not report	Report
6	IWD	1 WIRE data	Not report	Report
7	ETD	Event data	Not report	Report
8	Reserved	Reserved		
9	Reserved	Reserved		
10	Reserved	Reserved		
11	Reserved	Reserved		
12	Reserved	Reserved		
13	Reserved	Reserved		
14	Reserved	Reserved		
15	Reserved	Reserved		

Note:

Command ADM0 is specific for non-event report to SMS server, data string maximum length is 230bytes.

Command ADM1 is specific for non-event report to GPRS server, data string length is 384bytes.

“Bit0” and “Bit1” are fixed as “1”, which means data string must including GPS or GSM information. Packet including GSM data is according to report setting SVR/SSP/USP, e.g. G mode when GPS preferred, otherwise use GSM data, A



	mode GPS and GSM both will be reported to server.
	<p>Factory default:</p> <p>ADM0:47</p> <p>ADM1:47</p> <p>ADM2:47</p> <p>ADM3:47</p> <p>ADM4:47</p> <p>ADM5:47</p> <p>ADM6:47</p> <p>ADM7:47</p>

## 6.2.20 Digital output configuration (DOM)

Command word	Format	Reply
DOM	DOM0;2;0	DOM0:2;0
	DOM0;2	DOM0:2;0

Explanation	<p>DOM[ID];&lt;Mode&gt;;&lt;Parameter1&gt;;&lt;Parameter2&gt;;&lt;Parameter3&gt;;&lt;Parameter4&gt;;&lt;Parameter5&gt;</p> <p>[ID]:DO output channel ID, range is “0 to 2”  0: OUT1  1: OUT2  2: OUT3</p> <p>&lt;Mode&gt;: Range is “0 to 7” (Mode “0”/Mode “1” have no parameter)</p> <p>&lt;Parameter1&gt;;&lt;Parameter2&gt;;&lt;Parameter3&gt;;&lt;Parameter4&gt;;&lt;Parameter5&gt;:</p> <p>To configure digital output channel, number of parameters varies with different mode.</p> <p>Mode “0”:  Output low level.</p> <p>Mode “1”:  Output high level.</p> <p>Mode “2”:  Output rising edge.</p> <p>&lt;Parameter1&gt;: Duration time, unit is “ms”</p> <p>Mode “3”:  Output falling edge.</p> <p>&lt;Parameter2&gt;: Duration time, unit is “ms”</p> <p>Mode “4”:  Output square wave. unit is “ms”  &lt;Parameter1&gt;: High level duration  &lt;Parameter2&gt;: Low level duration  &lt;Parameter3&gt;: Output time, “0” means continuous output</p>
-------------	--

	<p>&lt;Parameter4&gt;: Start level, “0” means low level, “1” means high level</p> <p>&lt;Parameter5&gt;: End level, “0” means low level, “1” means high level</p> <p>Mode “5”:</p> <p>Output square wave. unit is “ms”</p> <p>Parameters the same as Mode “4”.</p> <p>Mode “6”:</p> <p>Output square wave. unit is “ms”</p> <p>Parameters the same as Mode “4”.</p> <p>Mode “7”:</p> <p>Output square wave. unit is “ms”</p> <p>Parameters the same as Mode “4”.</p> <p>Parameter1 and parameter2 is from “0 to 99999999”, parameter3 is “0 to 65535”.</p>
	<p>Factory default:</p> <p>DOM0:2;0</p> <p>DOM0:3;0</p> <p>DOM0:4;0;0;0;0</p> <p>DOM0:5;0;0;0;0</p> <p>DOM0:6;0;0;0;0</p> <p>DOM0:7;0;0;0;0</p>

6.2.21 Set AD PIN working mode (AIM)

Command word	Format	Reply
AIM	AIM;0;0	AIM:0;0
	AIM	AIM:0;0
Explanation	<p>AIM;&lt;Mode1&gt;;&lt;Mode2&gt;</p> <p>&lt;Mode1&gt;: AD1/IN3</p> <p>&lt;Mode2&gt;: AD2/IN4</p> <p>“0”: Analog input</p> <p>“1”: Digital input</p>	

	<p>Note:</p> <p>If AD1/IN3 set as digital input, it has another identifier “IN3”.</p> <p>If AD2/IN4 set as digital input, it has another identifier “IN4”.</p> <p>Default both set as analog, AIM:0;0</p>
--	---

## 6.2.22 Digital input configuration (DIM)

Command word	Format	Reply
DIM	DIM0;0	DIM0:0
	DIM	DIM0:0
Explanation	<p>DIM[ID];&lt;Mode&gt;;&lt;Parameter1&gt;;&lt;Parameter2&gt;;&lt;Parameter3&gt;</p> <p>[ID]: Digital input channel ID, range is “0 to 3”</p> <p>“0”: IN1, digital input channel1</p> <p>“1”: IN2, digital input channel2</p> <p>“2”: IN3, digital input channel3, valid only when AD1/IN3 set as digital.</p> <p>“3”: IN4, digital input channel4, valid only when AD2/IN4 set as digital.</p> <p>&lt;Mode&gt;: Range is “0 to 7”.</p> <p>&lt;Parameter1&gt;;&lt;Parameter2&gt;;&lt;Parameter3&gt;:</p> <p>To configure digital input channel, number of parameters varies with different mode.</p> <p>Mode “0”:</p> <p>Voltage level sampling, level changes will trigger event. (Not parameter)</p> <p>Mode “1”:</p> <p>Frequency counter, pulse frequency sampling, if input frequency outside the range will trigger event. (2 parameters)</p> <p>&lt;Parameter1&gt;: Frequency lower limit</p> <p>&lt;Parameter2&gt;: Frequency upper limit</p> <p>Mode “2”:</p> <p>Pulse counter, counting number of input pulse. (3 parameters)</p> <p>&lt;Parameter1&gt;: Set initial value of counter</p> <p>&lt;Parameter2&gt;: Set counter value threshold, surpass this value will trigger event.</p> <p>&lt;Parameter3&gt;: Reset counter value to zero when reach threshold, “0” is not reset, “1” is reset.</p> <p>Mode “3”:</p> <p>Low level. (1 parameter)</p> <p>&lt;Parameter1&gt;:</p> <p>Set low level duration time, unit is “ms”, surpass this value will trigger event.</p> <p>Mode “4”:</p>	

	<p>High level. (1 parameter)          &lt;Parameter1&gt;:          Set low level duration time, unit is “ms”, surpass this value will trigger event.</p> <p>Mode “5”:          Rising edge (3 parameters)          &lt;Parameter1&gt;: Set initial value of counter          &lt;Parameter2&gt;: Set counter value threshold, surpass this value will trigger event.          &lt;Paramete3&gt;: Reset counter value to zero when reach threshold, “0” is not reset, “1” is reset.</p> <p>Mode “6”:          Failing edge (3 parameters)          &lt;Parameter1&gt;: Set initial value of counter          &lt;Parameter2&gt;: Set counter value threshold, surpass this value will trigger event.          &lt;Paramete3&gt;: Reset counter value to zero when reach threshold, “0” is not reset, “1” is reset.</p> <p>Mode “7”:          Edge (3 parameters).          &lt;Parameter1&gt;: Set initial value of counter          &lt;Parameter2&gt;: Set counter value threshold, surpass this value will trigger event.          &lt;Paramete3&gt;: Reset counter value to zero when reach threshold, “0” is not reset, “1” is reset.</p> <p>e.g.:          DIM1;0          It means IN2 mode set as 0, if input level changes will trigger event.</p> <p>DIM1;1;500;1000          It means IN2 mode set as 1, if input frequency outside “500 to 1000” will trigger event.</p> <p>Note: Level mode is recommended</p>
	Default: DIM:0

### 6.2.23 Analog input configuration (ADS)

Command word	Format	Reply
ADS	ADS0;1;8	ADS0:1;8
	ADS	ADS0:1;8
Explanation	ADS[ID];<Sample interval>;<Sample times> [ID]: 0 or 1; “0”: AD1/IN3, valid only when set as analog. “1”: AD2/IN4, valid only when set as analog.	

	<p>&lt;Sample interval&gt;:AD sampling interval, unit is “second”, range is “0 to 65535”</p> <p>&lt;Sample times&gt;: Times of each AD sampling, output is average value of sample times, range is “0 to 256”</p>
	<p>Factory default: ADS0;1;8,ADS1;1;8</p>

6.2.24 Set serial port communication (EPS)

Command word	Format	Reply																																																																
EPS	EPS;4;0;1;0	EPS:4;0;1;0																																																																
	EPS	EPS:4;0;1;0																																																																
Explanation	EPS;<Baud rate index>;<Data bit>;<Stop bit>;<Verify bit>																																																																	
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Baud rate index</th> <th>Data bit</th> <th>Stop bit</th> <th>Verify bit</th> </tr> <tr> <th>Index</th> <th>Rate</th> <td>0:8 bit mode</td> <td>0:0.5 stop bit</td> <td>0: Not verify</td> </tr> </thead> <tbody> <tr> <td>0</td> <td>600</td> <td>1:9 bit mode</td> <td>1:1 stop bit</td> <td>1: Even verify</td> </tr> <tr> <td>1</td> <td>1200</td> <td></td> <td>2:1.5 stop bit</td> <td>2: Odd verify</td> </tr> <tr> <td>2</td> <td>2400</td> <td></td> <td>3:2 stop bit</td> <td></td> </tr> <tr> <td>3</td> <td>4800</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>9600</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>14400</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>19200</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>38400</td> <td></td> <td></td> <td></td> </tr> <tr> <td>8</td> <td>56000</td> <td></td> <td></td> <td></td> </tr> <tr> <td>9</td> <td>57600</td> <td></td> <td></td> <td></td> </tr> <tr> <td>10</td> <td>115200</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Baud rate index		Data bit	Stop bit	Verify bit	Index	Rate	0:8 bit mode	0:0.5 stop bit	0: Not verify	0	600	1:9 bit mode	1:1 stop bit	1: Even verify	1	1200		2:1.5 stop bit	2: Odd verify	2	2400		3:2 stop bit		3	4800				4	9600				5	14400				6	19200				7	38400				8	56000				9	57600				10	115200		
Baud rate index		Data bit	Stop bit	Verify bit																																																														
Index	Rate	0:8 bit mode	0:0.5 stop bit	0: Not verify																																																														
0	600	1:9 bit mode	1:1 stop bit	1: Even verify																																																														
1	1200		2:1.5 stop bit	2: Odd verify																																																														
2	2400		3:2 stop bit																																																															
3	4800																																																																	
4	9600																																																																	
5	14400																																																																	
6	19200																																																																	
7	38400																																																																	
8	56000																																																																	
9	57600																																																																	
10	115200																																																																	
	Factory default: EPS:4;0;1;0																																																																	

6.2.25 Serial port mode configuration (EPM)

Command word	Format	Reply
EPM	EPM;0	EPM:0
	EPM;2;100	EPM;2;100
	EPM	EPM;2;100
Explanation	<p>EPM;&lt;Mode&gt;;&lt;Interval&gt;</p> <p>&lt;Mode&gt;: range is “0 to 6”.</p> <p>“0”: Disable serial port outputs</p> <p>“1”: Transparent data mode</p> <p>“2”: Transparent data mode with configurable packet interval</p> <p>“3”: GARMIN protocol mode</p> <p>“4”: GPS data input, under this mode device will use external GPS input as source instead of its original.</p> <p>“5”: MDT mode, this mode must be selected when serial link connects with MDT</p>	

	<p>“6”: For idata protocol based peripheral device.</p> <p>&lt;Interval&gt;: Only valid when &lt;Mode&gt; is “2”, unit is ms, range is “5 to 65535”.</p> <p>Default: EPM;1</p>
--	--

## 6.2.26 Harsh behavior configuration (BMS)

Command word	Format	Reply
BMS	BMS;2;10;45;35;40;30	BMS:2;10;45;35;40;30
	BMS	BMS:2;10;45;35;40;30
Explanation	<p>BMS;&lt;moving_para&gt;;&lt;harsh_brake_para&gt;;&lt;harsh_accelerate_para&gt;;&lt;harsh_corner_left_para&gt;;&lt;harsh_corner_right_para&gt;</p> <p>&lt;moving_para&gt;: Device motion status acceleration magnitude threshold, range is “1 to 200”, unit is 0.01g.</p> <p>&lt;harsh_brake_para&gt;: Device harsh brake acceleration magnitude threshold, range is “1 to 200”, unit is 0.01g.</p> <p>&lt;harsh_accelerate_para&gt;: Device harsh accelerates acceleration magnitude threshold, range is “1 to 200”, unit is 0.01g.</p> <p>&lt;harsh_corner_left_para&gt;: Device harsh left cornering acceleration magnitude threshold, range is “1 to 200”, unit is 0.01g.</p> <p>&lt;harsh_corner_right_para&gt; Device harsh right cornering acceleration magnitude threshold, range is “1 to 200”, unit is 0.01g.</p> <p>Default: BMS:2;10;45;35;40;30</p>	

## 6.2.27 Accident detection configuration (AMS)

Command word	Format	Reply
AMS	AMS;150;90	AMS:150;90
	AMS	AMS:150;90

Explanation	AMS;<crash_para>;<trun_over_para>
	<crash_para>: Crash (collision) acceleration magnitude threshold, range is “1 to 200”, unit is 0.01g. Note: Sensor itself will judge front or rear collision, side collision will be considered as rear. <trun_over_para>: Turn over acceleration magnitude threshold, range is “1 to 200”, unit is 0.01g.
	Default: AMS:150;90

6.2.28 Geo-fence mask (UFM)

Command word	Format	Reply
UFM	UFM;FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	UFM:FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
	UFM	UFM:FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
Explanation	UFM;<use_mask>	
	<use_mask>: User Geo-fence mask, 156 Geo-fences in total (0 - 155), Bit0 – Bit27, Bit28 – Bit159. “0”: Disable this geo fence for user “1”: Enable this geo fence for user	
	Default: UFM:1	

6.2.29 A-GPS configuration (AGS)

Command word	Format	Reply
AGS	AGS;yangbing7710@139.com;Moouaq	AGS:yangbing7710@139.com;Moouaq
	AGS	AGS:yangbing7710@139.com;Moouaq
Explanation	This command is to set username and password to connect with AGPS server.	
	<Username>:48 characters maximum. <Password>:12 characters maximum	
	Default: AGS;yangbing7710@139.com;Moouaq	

6.2.30 Set AD1/IN3 voltage level (AIR)

Command word	Format	Reply
AIR	AIR;0	AIR:0
	AIR	AIR:0



Explanation	AIR;<Mode> “0”: Define input as “0 to 12V” “1”: Define input as “0 to 32V”
	Default: AIR:0

## 6.2.31 Serial port data string configuration (PKI)

Command word	Format	Reply
PKI	PKI;1;1;1	PKI:1;1;1
	PKI	PKI:1;1;1
Explanation	This command is to data type carrying in serial port packet. PKI;<Device ID>;<Time flag>;<Position information>	
	<Device ID>: “0” not carrying device ID, “1” carrying device ID <Time flag>: “0” not carrying time flag, “1” carrying time flag <Position information>: “0” not carrying position, “1” carrying position Default: PKI:1;1;1	

## 6.2.32 Power saving mode configuration (PSS)

Command word	Format	Reply							
PSS	PSS0;0	PSS0:0							
	PSS0	PSS0:0							
Explanation	PSS<Module>;<Toggle>;<Para1>;<Para2>;<Para3>								
	<table border="1"> <thead> <tr> <th>Value</th> <th>Explanation</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>GSM module</td> </tr> <tr> <td>1</td> <td>GPS module</td> </tr> <tr> <td>2</td> <td>2D accelerate sensor</td> </tr> </tbody> </table> <p>&lt;Toggle&gt;: “0” disable power saving “1” enable power saving</p> <p>■GSM module: PSS0;1;&lt;para1&gt;;&lt;para2&gt;;&lt;para3&gt; &lt;para1&gt;: Unregistered duration time threshold, unit is minute, range is “1 to 255” &lt;para2&gt;: No data transmission duration time threshold, unit is minute, range is “1 to 255” &lt;para3&gt;: Awake interval, unit is minute, range is “1 to 255”</p> <p>■GPS module PSS1;1;&lt;para1&gt;;&lt;para2&gt; &lt;para1&gt;: GPS un-fixed duration time threshold, unit is minute, range is “1 to 255”</p>		Value	Explanation	0	GSM module	1	GPS module	2
Value	Explanation								
0	GSM module								
1	GPS module								
2	2D accelerate sensor								

	<p>&lt;para2&gt;: Awake interval, unit is minute, range is “1 to 65535”</p> <p>■2D accelerate sensor module</p> <p>PSS2;&lt;Toggle&gt;</p> <p>If GSM unregistered duration surpasses threshold time or no data transmission duration surpasses threshold time, power saving will be activated. Under power saving if device detects data transmit request and able to establish socket connection before, it will wake up instantly; otherwise device wakes up according to awaken interval.</p> <p>If GPS un-fixed duration surpasses threshold time or under parking status, power saving will be activated.</p> <p>Before activation if GPS un-fixed, device will wakes up according to awake interval, otherwise it will wake up when vehicle leaves parking status.</p> <p>If GSM and GPS both under power saving, MCU will go to power saving as well.</p>
	<p>Default:</p> <p>PSS0;0</p> <p>PSS1;1;5;10</p> <p>PSS2;0</p>

## 6.2.33 Toggle GSM/GPS module power saving (GPO)

Command word	Format	Reply
GPO	GPO;1;1	GPO:1;1
	GPO	GPO:1;1
Explanation	<p>This command is to control module working status.</p> <p>Format:</p> <p>GPO;&lt;Toggle GSM&gt;;&lt;Toggle GPS&gt;</p> <p>&lt;Toggle GSM&gt;:</p> <p>0: disable GSM power saving</p> <p>1: enable GSM power saving</p> <p>&lt;Toggle GPS&gt;:</p> <p>0: disable GPS power saving</p> <p>1: enable GPS power saving</p>	
	<p>Default: GPO;1;1</p>	

## 6.2.34 Load command list profile from computer to device (YSF)

Command word	Format	Reply
YSF	YSF;1	YSF:1

Explanation	Download command list profile (.txt) from computer to device, complying Ymodem protocol Format: YSF;<ID>  <ID>: range is “0 to 5” 0: OEM default 1 to 5: for user customized  Note: Profile file size must be less than 4095bytes, each command in profile must end with <LF><LR>, file name must be less than 31 characters.
	Default: Null

## 6.2.35 Save command list profile from device to computer (YGF)

Command word	Format	Reply
YGF	YGF;l	YGF:l
Explanation	Download command list profile from device to computer, complying Ymodem protocol Format: YGF;<ID> <ID>: range is “0 to 5” 0: OEM default 1 to 5: for user customized	
	Default: Null	

## 6.2.36 Load device existing command list profile (YCF)

Command word	Format	Reply
YCF	YCF;l	YCF:l
Explanation	Execute existing command list profile form device Format: YCF;<ID> <ID>: range is “0 to 5” 0: OEM default 1 to 5: for user customized	
	Default: Null	

## 6.2.37 Switch configuration profile on condition (FRL)

Command word	Format	Reply
FRL	FRL1;7;7	FRL1:7;7
	FRL1	FRL1:7;7

Explanation	This command is to set when <b>all selected</b> conditions are satisfied, device will automatically switch among configuration profiles.				
	Format: FRL[ID];<condition mask>;<status mask>				
	<ID>: range is 0 to 5, "0" is system reserved.				
	<condition mask>: range is "0x00 to 0xFFFF"				
	0: condition does not need to be satisfied.				
	1: condition need to be satisfied				
	<status mask>: range is "0x00 to 0xFFFF"				
	0: status0 need to be satisfied.				
	1: status1 need to be satisfied.				
	Condition and their status0/status1:				
	Byte	Bit	Condition	Status0	Status1
	1	Bit0	bExtPwr External power	Normal	Abnormal
		Bit1	bInterBat Backup battery	Normal	Abnormal
		Bit2	bRoaming Domestic roaming	Quit roaming	Roaming
		Bit3	bInterRoam International roaming	Quit roaming	Roaming
		Bit4	bGeoFence Geo-fence	Normal	In or Out
		Bit5	bStop Parking	Parking	Quit parking
		Bit6	bWorkStatus Private hour	Inactive	Active
		Bit7	bAccOn ACC	ON to OFF	OFF to ON
	2	Bit8	bIn1 Digital input IN1	High level or Null	Low level
		Bit9	bIn2 Digital input IN2	High level or Null	Low level
		Bit10	bIn3 Digital input 3	Low level	High level
		Bit11			
		Bit12			
		Bit13			
		Bit14			
		Bit15			
Note: Selected conditions must be satisfied at the same time to trigger switching between command list profile.					
Default: Null					

## 6.2.38 Output port speed condition (DOP)

Command word	Format	Reply
DOP	DOP;40;40;40	DOP:40;40;40
	DOP	DOP:40;40;40

Explanation	GPS speed must be smaller than preset speed to activate output, if GPS speed invalid, output will be active immediately. Format DOP;<Out1>;<Out2>;<Out3> Explanation <Out1>: OUT1 activate speed threshold. <Out2>: OUT2 activate speed threshold. <Out3>: OUT3 activate speed threshold.
	Default: DOP;40;40;40

## 6.2.39 GSM Anti-Jamming configuration (JMP)

Command word	Format	Reply
JMP	JMP;30;10;120	JMP:30;10;120
	JMP	JMP:30;10;120
Explanation	This command is to set GSM jamming condition. Format: JMP;<RSSI threshold>;<Enter jamming Counter>;<Leave jamming Counter>  <RSSI threshold>: GSM signal strength threshold to decide being jammed or not, range “20 to 50”. <Enter jamming counter>: device will compare current RSSI with <RSSI threshold>, if bigger than <RSSI threshold>, counter will accumulate 1, otherwise not. When the counter value over <enter jamming counter>, device considers itself being jammed, range “5 to 600”. <Leave jamming counter>: device will compare current RSSI with <RSSI threshold>, if small than <RSSI threshold>, counter will accumulate 1, otherwise not. When the counter value over <Leave jamming counter>, device considers itself not being jammed, range “30 to 250”. Note: RSSI update rate is 1Hz.	
	Default: JMP:30;10;120	

## 6.2.40 Switch configuration profile on condition (FRS)

Command word	Format	Reply
FRS	FRS1;7;7	FRS1:7;7

Explanation	<p>This command is to set when <b>anyone of the selected</b> condition is satisfied, device will automatically switch among configuration profiles.</p> <p>Format: FRS&lt;File ID&gt;;&lt;Condition mask&gt;;&lt;Condition status bit&gt;</p> <p>&lt;File ID&gt;: Range “1 to 5”.</p> <p>&lt;Condition mask&gt;: “0” Disable its corresponding condition. “1” Enable its corresponding condition</p> <p>&lt;Condition status bit&gt;: “0” relate to value “0” of corresponding bit “1” relate to value “1” of corresponding bit</p> <p>Note: Condition only supports “or” gate. e.g.: FRL1;7;7 First “7” means Bit2 &amp; Bit1 &amp; Bit0 need to be related Second “7” means any event from “domestic roaming &amp; backup battery abnormal &amp; external power supply abnormal” is satisfied, configuration file #1 will be executed.</p> <p>Note: This feature is invalid at the first 30 seconds of tracker firmware initialization.</p>
	Default:

## 6.2.41 Discard GPS position by HDOP (HOP)

Command word	Format	Reply
HOP	HOP;0 HOP;1;3	HOP:0 HOP:1;3.00
	HOP	HOP:1;3.00
Explanation	<p>This command is to set HDOP threshold to discard inaccurate GPS positions.</p> <p>Format: HOP;&lt;Para1&gt;;&lt;Para2&gt; &lt;Para1&gt;: “0” disable HDOP filter “1” enable HDOP filter, &lt;Para2&gt; is invalid in this case &lt;Para2&gt;: HDOP threshold, GPS position HDOP bigger than this value will be discarded, range 2 – 10.</p>	
	Factory default: HDOP;1;3	

## 6.2.42 Enable AT mode of GSM module (GAM)

Command word	Format	Reply
--------------	--------	-------

GAM	GAM;1	GAM:1
	GAM	GAM:1
Explanation	Format: GAM;<mode>	
	<Mode>: 1: enable AT command mode, you can interact with GSM module with AT command. 0: disable AT command mode.	

## 6.2.43 Send AT command to GSM module (GAT)

Command word	Format	Reply
GAT	GAT;<AT command>	
Explanation	Format: GAT;<AT command>	
	<AT command>; Specify a certain AT command here, tracker will print log accordingly if command is correct, otherwise will return "GSM is off".	

## 6.2.44 Generate and export the current configuration file CTF

Command word	Format	Reply
CTF	<b>Function:</b> Generate and export the current configuration file <b>Format:</b> CTF	<b>Reply:</b> Reply: CTF, and use Hyper Terminal with Ymodem protocol to receive the exported configuration file.
Explanation		

## 6.2.45 DO OUT1 status saving start command DOR

Command word	Format	Reply
DOR	Setup: DOR;1 Inquiry: DOR	Reply: DOR:1 Reply: DOR:1
Explanation	Function: Set up DO OUT1 status saving, when regains the power, it resumes to last status. This function is only valid to high level and low level. Format: DOR;<Mode> Parameter definition: <Mode>: 0: Close; 1: Open Factory default: DOR;0	

## 6.2.46 Set up time interval command for regularly visit GICUS sever SPT

Command word	Format	Reply
--------------	--------	-------

SPT	Setup: SPT;1H Inquiry: SPT	Reply: SPT:1H Inquiry: SPT:1H
Explanation	Function: Set up time interval command for regularly visit GICUS sever; Format: SPT;<Time Interval> Parameter definition: <Time interval>: Set up as 30~900S,15~59M,1~720H; Factory default: SPT;24H	

## 6.2.47 GICUS sever IP/domain name, port setup command RCS

Command word	Format	Reply
RCS	Setup: RCS; gicus.skypatrol.com;8080 Or RCS; 183.233.129.45;5555 Inquiry: RCS	Reply: RCS:gicus.skypatrol.com;8080 Or RCS: 183.233.129.45;5555 Reply: RCS:gicus.skypatrol.com;8080
Explanation	Function: Set up GICUSsever IP/domain name, port; Format: RCS;< IP/domain name>;<port> Parameter definition: < IP/domain name>: IP or domain name, the maximum length of parameter is 64 byte; <Port>: GICUS sever port Factory default: RCS; gicus.skypatrol.com;8080	

## 6.2.48 GICUS sever visiting page path setup command RCP

Command word	Format	Reply
RCP	setup: RCP;/Dev.php? Inquiry: RCP	Reply: RCP;/Dev.php? Reply: RCP;/Dev.php?
Explanation	Function: Set up the device visiting GICUS sever page path; Format: RCP;<Page path>? Parameter definition: <Page path>: The device visiting GICUS sever page path, the parameter maximum length is 64 byte; Factory default: RCP;/Dev.php?	

## 6.2.49 Immediate visiting GICUS sever command LCS

Command word	Format	Reply
LCS	Setup: LCS Inquiry: No	Reply: LCS Reply: No
Explanation	Function: Immediately visit GICUS sever; Format: LCS Parameter definition: No	



Factory parameter: No.
------------------------

Condition status bit list					
Byte	Bit	Definition		Status 0	Status 1
1	Bit0	bExtPwr	External power	Normal	Abnormal
	Bit1	bInterBat	Backup battery	Normal	Abnormal
	Bit2	bRoaming	Domestic roaming	Normal	Roaming
	Bit3	bInterRoam	International roaming	Normal	International
	Bit4	bGeoFence	Geo-fence	Normal	Geo-fence event
	Bit5	bStop	Parking	Parking	Quit parking
	Bit6	bWorkStatus	Private hour	Normal	Under private hour
	Bit7	bAccOn	ACC	OFF	ON
2	Bit8	bIn1	Digital input1	High or floating	Low
	Bit9	bIn2	Digital input2	High or floating	Low
	Bit10	bIn3	Digital input3 (AD3)	Low	High
	Bit11	bTow	Tow	Normal	Tow
	Bit12	Reserved			
	Bit13	Reserved			
	Bit14	Reserved			
	Bit15	Reserved			

### 6.3. Configuration command

2 kinds of command format to send depends on different authorization:

GPRS/SMS server format to send: \*GS00,UNO;13912345678#

Device reply: \*GS06,358696040652862,UNO:13912345678#

User format to send: 1234,UPW;1234

Device reply: G6S V1.000

UPW:1234

EXT\_PWR=13.04V

BAT=3.41V

#224

#### 6.3.1 Auto-unlock PIN of SIM card (PIN)

Command word	Format	Reply
PIN	PIN;1234	PIN:1234
	PIN	PIN:1234
Explanation	This command is to set PIN number of SIM card to automatically unlock SIM card.  PIN;<Password>  Length 4 to 8 digits	

	Factory default: PIN;1234
--	---------------------------

## 6.3.2 SMS service center number (SCN)

Command word	Format	Reply
SCN	SCN;+8613800200500	SCN:+8613800200500
	SCN	SCN:+8613800200500
Explanation	<p>This command is to change SMS center number</p> <p>SCN;&lt;Number&gt;</p> <p>20 digits, must with "+country code" in front of phone number, default no need to set this number. Change to another SIM card device will automatically read renew SCN setting.</p> <p>Note: "+" is a must for country code.</p>	
	Default: SCN	

## 6.3.3 Set APN (APN)

Command word	Format	Reply
APN	APN;cmnet;usr;pw	APN;cmnet;usr;pw
	APN	APN:cmnet
Explanation	<p>This command is a must for GPRS connectivity.</p> <p>&lt;APN&gt;: 1 to 64 characters</p> <p>&lt;user name&gt;: 0 to 32 characters</p> <p>&lt;password&gt;: 0 to 32 characters</p> <p>If there is not username and password for APN, command could be:</p> <p>APN;&lt;APN&gt;</p> <p>Note: Device already save some APN information, it the SIM card is recognized it will fulfill APN automatically</p>	
	Default: Null	

## 6.3.4 Set GPRS main server (SVR)

Command word	Format	Reply
--------------	--------	-------

SVR	Set as TCP socket: SVR;114.142.154.28;3032;;0;0 or SVR;www.anytracking.net;3032;;0;0  Set as UDP socket SVR;114.142.154.28;;3032;1;1 or SVR;www.anytracking.net;;3032;1;1  Delete main server: SVR;	Set as TCP socket: SVR:114.142.154.28;3032;;0;0 or SVR:www.anytracking.net;3032;;0;0  Set as UDP socket SVR:114.142.154.28;;3032;1;1 or SVR:www.anytracking.net;;3032;1;1  Reply: SVR:
	SVR	SVR:114.142.154.28;3032;;0;0
Explanation	This command is to set GPRS server. SVR;<Ip address>;<Tcp Port>;<Udp Port>;<Mode>;<Enable ACK>  <Ip address>:IP or domain name, 64 characters maximum <Tcp Port>:TCP port <Udp Port>:UDP port  <Mode>: “0”:TCP mode “1”:UDP mode “2”:TCP channel for command, UDP channel for data report  <Enable ACK>: “0”:Disable “1”:Enabled for UDP, this is default setting “2”:Enabled for UDP and TCP both.  Note: <Enable ACK>: “1”: data is sent via UDP channel from device , server must responds with any data in 15 seconds, otherwise device will consider UDP connection is dead and save data to its internal flash storage.  Factory default:	

## 6.3.5 Set GPRS backup server (BSV)

Command word	Format	Reply
--------------	--------	-------

BSV	Set as TCP socket: BSV;114.142.154.28;3032;;0;0 or BSV;www.anytracking.net;3032;;0;0  Set as UDP socket BSV;114.142.154.28;;3032;1;1 or BSV;www.anytracking.net;;3032;1;1  Delete main server: BSV;	Set as TCP socket: BSV:114.142.154.28;3032;;0;0 or BSV:www.anytracking.net;3032;;0;0  Set as UDP socket BSV:114.142.154.28;;3032;1;1 or BSV:www.anytracking.net;;3032;1;1  Reply: BSV:
BSV	BSV:114.142.154.28;3032;;0;0	
Explanation	This command is to set backup GPRS server when main server is unavailable.  BSV;<Ip address>;<Tcp Port>;<Udp Port>;<Mode>;<Enable ACK> <Ip address>:IP or domain name, 64 characters maximum <Tcp Port>:TCP port <Udp Port>:UDP port  <Mode>: “0”:TCP mode “1”:UDP mode “2”:TCP channel for command, UDP channel for data report  <Enable ACK>: “0”:Disable “1”:Enabled for UDP, this is default setting “2”:Enabled for UDP and TCP both.  Note: <Enable ACK>, data is sent via UDP channel from device , server must respond with any data in 15 seconds, otherwise device will consider UDP connection is dead and save data to its flash storage.  Factory default:	

## 6.3.6 Records batch process (BDU)

Command word	Format	Reply
BDU	BDU;1 BDU1;20	BDU:1 BDU1:20
	BDU BDU1	BDU:1 BDU1:20

Explanation	<p>This command is to pack multiple position as a packet and report to server to save GPRS data flow, but it will affect the real time report to server. Once the pre set value is met (regular packet/serial port packet) device will report immediately, and reset the counter.</p> <p>BDU;&lt;Parameter&gt;</p> <p>This is to set regular packet threshold</p> <p>BDU1;&lt;Parameter&gt;</p> <p>This is to set serial port packet threshold</p> <p>&lt;Parameter&gt;: range is “1 to 255”.</p> <p>“1” means each position packet will be reported to server immediately.</p> <p>e.g.:</p> <p>BDU:10 means device waits for 10 regular position packets to pack as 1 packet to report</p> <p>BDU1;30 means device waits for 30 packets from serial link to pack as 1 packet to report</p> <p>Note:</p> <p>1, Either BDU or BDU1 is met, device will report instantly.</p> <p>2, Event report always immediately</p>
	<p>Default:</p> <p>BDU;1</p> <p>BDU1;1</p>

6.3.7 GPRS server report interval mode (SVP)

Command word	Format	Reply
SVP	SVP;1;15S;G;B	SVP:1;15S;G;B
	SVP;1	SVP:1;15S;G;B
Explanation	<p>This command is set report interval of mode0 (static) and mode1 (dynamic)</p> <p>SVP;&lt;Mode&gt;;&lt;Interval&gt;;&lt;Report mode&gt;;&lt;Data format&gt;</p> <p>&lt;Mode&gt;:</p> <p>“0”: Report mode0</p> <p>“1”: Report mode1, valid only when command DNU is enabled.</p> <p>&lt;Interval&gt;: range is “5 to 900 seconds”, “15 to 59 minutes”, “1 to 720 hours”</p> <p>&lt;Report mode&gt;:</p> <p>“O”: Disable</p> <p>“G”: GPS information prior</p> <p>“A”: GPS and GSM information</p>	

	<p>&lt;Data format&gt;:</p> <p>“O”: Device will not generate data (record)</p> <p>“B”: HEX</p> <p>“T”: ASCII</p>
	<p>Default:</p> <p>SVP:0;30S;G;B,</p> <p>SVP:1;600S;G;B</p>

## 6.3.8 SMS server report interval mode (SSP)

Command word	Format	Reply
SSP	SSP;1;12H;G;T	SSP:1;12H;G;T
	SSP	SSP:1;12H;G;T
Explanation	<p>This command is to set mode0 and mode1 report interval for SMS server</p> <p>SSP;&lt;Mode&gt;;&lt;Interval&gt;;&lt;Report mode&gt;;&lt;Data format&gt;</p> <p>&lt;Mode&gt;:</p> <p>“0”: Report mode0</p> <p>“1”: Report mode1, valid only when command DNU is enabled.</p> <p>&lt;Interval&gt;: range is “5 to 900 seconds”, “15 to 59 minutes”, “1 to 720 hours”</p> <p>&lt;Report mode&gt;:</p> <p>“O”: Disable</p> <p>“G”: GPS information prior, otherwise use GSM tower position instead, GSM tower uses HEX format.</p> <p>“A”: GPS and GSM information</p> <p>&lt;Data format&gt;:</p> <p>“O”: Device will not generate data</p> <p>“T”: Text</p>	
	<p>Default:</p> <p>SSP:0;30M;O;T</p> <p>SSP:1;30M;O;T</p>	

6.3.9 User report interval (USP)

Command word	Format	Reply
USP	USP;1;12H;G;W	USP:1;12H;G;W
	USP;0	USP:0;12H;G;W
Explanation	<p>This command is to set mode0 and mode1 report interval to user0 and user1.</p> <p>USP[ID]; &lt;Mode&gt;;&lt;Interval&gt;;&lt;Report mode&gt;;&lt;Data format&gt;</p> <p>[ID]:                      “0”: User0                      “1”: User1</p> <p>&lt;Mode&gt;:                      “0”: Report mode0                      “1”: Report mode1, valid only when command DNU is enabled.</p> <p>&lt;Interval&gt;: range is “5 to 900 seconds”, “15 to 59 minutes”, “1 to 720 hours”</p> <p>&lt;Report mode&gt;:                      “O”: Disable                      “G”: GPS information prior, otherwise use GSM tower position instead, GSM tower uses HEX format.                      “L”: Periodical voice call (Voice monitoring)</p> <p>&lt;Data format&gt;:                      “O”: Device will not generate data                      “T”: Text                      “W”: Map hyper link</p> <p>Note: If &lt;Data format&gt; set as “W”, device that has GPS fixed will send URL0, GPS unfixed will send URL1 (GSM), otherwise will send text format.</p> <p>Default:                      USP:0;24H;G;T                      USP:1;24H;O;T                      USP1:0;24H;G;T                      USP1:1;24H;O;T</p>	

6.3.10 SMS server number configuration (SSN)

Command word	Format	Reply
--------------	--------	-------

SSN	SSN;13912345678 or SSN;+8613912345678  SSN;	SSN:13912345678 or SSN:+8613912345678  SSN:
	SSN	SSN:+8613912345678
Explanation	This command is to set phone number as SMS server which has administrator permission to access command list. SSN;<Phone number>  Range is "0 to 20" digits	
	Default: SSN:	

## 6.3.11 Set SMS forwarding (SMT)

Command word	Format	Reply
SMT	Forward to SMS server SMT 0;+8613926442537;A Forward to user0 SMT0;+8613926442537;U;0 Forward to user1 SMT:+8613926442537;U;1 Forward to GPRS server SMT0;+8613926442537;G	Reply SMT:+8613926442537;A  SMT:+8613926442537;U;0  SMT:+8613926442537;U;1  SMT:+8613926442537;G
	SMT0	SMT0: +8613926442537;U;0
Explanation	SMT[ID];<Parameter1>;<Parameter2>;<Parameter3>  Device will forward SMS that from number <Parameter1> to <Parameter2> [ID]: range is "0 to 2"  <Parameter1>: Incoming phone number  <Parameter2>: Forward to here "U": User "A": SMS server "G": GPRS server <Parameter3>: When <Parameter2> set as "U" "0": User0 "1": User1	
	Default:	



## 6.3.12 Motion sensor configuration (STP)

Command word	Format	Reply
STP	STP;1800	STP:1800
	STP	STP:1800
Explanation	<p>This command is to set threshold duration from stop status to parking status</p> <p>STP;&lt;Duration time&gt;</p> <p>&lt;Duration time&gt;: Range is "1 to 1800", unit is "second". If device keep stop over this threshold value, vehicle will be considered as parking</p>	
	Default:STP;600	

## 6.3.13 Reboot device (RST)

Command word	Format	Reply
RST	RST	RST
Explanation	<p>Device will reboot without replying</p> <p>When device receives RST command it is under data transmitting status it will wait 60 seconds most before executing this command.</p>	

## 6.3.14 Time zone configuration (TZN)

Command word	Format	Reply
TZN	TZN;8:00	TZN:8:00
	TZN	TZN:8:00
Explanation	<p>This command is to set your local time zone, and display local time in your SMS.</p> <p>TZN;&lt;Hour&gt;:&lt;Minute&gt;</p> <p>Range is "-13:00 to 13:00", Minus represents west zone, positive represents east zone</p>	
	Default:TZN:0:00	

## 6.3.15 Daylight saving configuration (DST)

Command word	Format	Reply
--------------	--------	-------

DST	Format1: DST;03.27;10.01;00:00 Format2: DST;03.F5;10.A0;00:00	Format1: DST;03.27;10.01;00:00 Format2: DST;03.F5;10.A0;00:00
	DST	DST;03.F5;10.A0;00:00
Explanation	<p>This command is to set daylight saving feature</p> <p>DST;&lt;Parameter1&gt;;&lt;Parameter2&gt;;&lt;Parameter3&gt;</p> <p>Set daylight-saving time.</p> <p>&lt;Parameter&gt;: start date and second parameter is finish date. Start and finish time is decided by the third parameter. This function only based on the user's cell phone.</p> <p>Format 1 "DST;03.27;10.01;00:00" Para1-"03.27": Daylight saving time start date. format is "month month. day day". "03.27" represents March 27.</p> <p>&lt;Parameter2&gt;: "10.01": Daylight saving time end date. format is "month month. day day". "10.01" represents October 1st.</p> <p>&lt;Parameter3&gt;: "00:00":start and end time (hour/min/sec), format is "hour hour: minute minute"."00:00" represents time is "00:00"</p> <p>Format 2 "DST;03.F5;10.A0;00:00":</p> <p>&lt;Parameter1&gt;: "03.F5": Daylight saving time start date, format is "month month. week day of week". Week can be set "A B C D F". "A" for the first week, "B" for the second week, and so on, the fifth week or last week can use the "F" to represent. Day of week can be set to "0 1 2.....6". Beginning on Sunday ("0" represent Sunday) to Saturday ("6" represent Saturday). "03.F5" represents Friday on the last week of march.</p> <p>&lt;Parameter2&gt;: "10.A0": Daylight saving time end date, format is same as para1. "10.A0" represents Sunday on the first week of October</p> <p>&lt;Parameter3&gt;: "00.00":start and end time (hour/min/sec), format is "hour hour: minute minute"."00:00" represents time is "00:00"</p> <p>Default: DST;00.00;00.00;00:00</p> <hr/> <p>Default: DST;0</p>	

6.3.16 Enable daylight saving feature (STO)

Command word	Format	Reply
STO	STO;1	STO:1
	STO	STO:1
Explanation	<p>This command is to toggle daylight saving feature.</p> <p>STO;&lt;Parameter&gt;</p> <p>1: Enable 0: Disable</p> <p>Default: STO:0</p>	

## 6.3.17 Power supply event (PTH)

Command word	Format	Reply
PTH	PTH;45;35	PTH:45;35
	PTH	PTH:45;35
Explanation	<p>This command is to set threshold value for power supply event.</p> <p>PTH;&lt;Parameter1&gt;;&lt;Parameter2&gt;&lt;Duration time&gt;</p> <p>Low voltage event for external power and backup battery.</p> <p>&lt;Parameter1&gt;: External power threshold, range is “0 to 999”, unit is 100mV.</p> <p>&lt;Parameter2&gt;: Backup battery threshold, range is “0 to 999”, unit is 100mV.</p> <p>&lt;Duration time&gt;: unit is second, range is “0 to 255”</p>	
	Default: PTH:0;0	

## 6.3.18 Report interval mode switching condition (DNU)

Command word	Format	Reply
DNU	DNU;1	DNU:1
	DNU	DNU:1
Explanation	<p>This command is to set conditions to switch between mode0 and mode1</p> <p>DNU;&lt;Parameter&gt;</p> <p>HEX, Range is “0 to FF”</p> <p>Bit0:Stop            Bit1:Domestic roaming            Bit2:International roaming            Bit3:Using backup battery            Bit4:ACC OFF</p> <p>”0”: Disable            “1”:Enable</p> <p>DNU;0 means device always stick to mode0 interval only.</p>	
	Default: DNU;0	

## 6.3.19 Fixed distance report and corner turning report (DIS)

Command word	Format	Reply
DIS	DIS;0;7	DIS:0;7
	DIS	DIS:0;7
Explanation	<p>This command is to set threshold value for cornering and distance report</p> <p>DIS;&lt;Distance&gt;&lt;Angle&gt;</p> <p>Device will report once fixed distance or cornering angle is satisfied</p> <p>&lt;Distance&gt;: range is “0 to 255”, unit is “0.1km”.</p> <p>&lt;Angle&gt;: range is “3 to 20”, unit is “degree”</p>	
	Default:DIS;0;7	

## 6.3.20 Analog input event condition (ATH)

Command word	Format	Reply
ATH	ATH;80;250;3	ATH:80;250;3
	ATH	ATH:80;250;3
Explanation	<p>This command is to set input voltage outside the range, power supply event will be triggered.</p> <p>ATH[ID];&lt;Lower limit&gt;;&lt;Upper limit&gt;;&lt;Duration&gt;</p> <p>&lt;ID&gt;:AD channel, range is “0 or 1”</p> <p>0: AD1, valid only when AD1 set as analog.</p> <p>1: AD2, valid only when AD2 set as analog.</p> <p>&lt;Lower limit&gt;: range is “0 to 999”, unit is 100mV.</p> <p>&lt;Upper limit&gt;: range is “0 to 999”, unit is 100mV.</p> <p>&lt;Duration time&gt;: unit is second, range is 0 to 255.</p>	
	<p>Default:</p> <p>ATH0;0;10;3</p> <p>ATH1;0;10;3</p>	

## 6.3.21 Voice functionality configuration (VOE)

Command word	Format	Reply
VOE	VOE;1;1	VOE:1;1
	VOE	VOE:1;1

Explanation	<p>This command is to toggle voice feature VOE;&lt;Voice call mode&gt;;&lt;SOS mode&gt;;&lt;SOS I/O port ID&gt;</p> <p>&lt;Voice call mode&gt;: “0”: Disable call in and out “1”: Enable call in and out</p> <p>&lt;SOS mode&gt;: “0”: Disable voice SOS “1”: Enable voice SOS (conversation mode) “2”: Enable voice SOS (Listening only)</p> <p>&lt;SOS I/O input ID&gt;: Assign SOS input channel, range is “0 to 1”.</p> <p>Note1: If &lt;Voice call mode&gt; set as “0”, only admin/user PRQ functionality available.</p> <p>Note2: If &lt;Voice call mode&gt; set as “0”, &gt;Incoming phone number in white list, If it is PRQ authorization, device will hang up. If it is monitoring authorization, device will pick up. If its hot line authorization, device will pick up. &gt;Incoming phone number is admin (SMS server), device will pick up in 15 seconds.</p>
	Default: VOE:1;0;

## 6.3.22 Phone number white list (PWL)

Command word	Format	Reply
PWL	PWL;S;1;14714821165 PWL;R;1	PWL;S;1;14714821165 PWL;R;1;14714821165
	PWL;R;1-8	PWL;R;1;;2;;3;;4;;5;;6;;7;;8;
Explanation	<p>This command is to save phone number as white list number and assign different authorization to them PWL;S;&lt;Index&gt;;&lt;Phone number list&gt;;&lt;...&gt;</p> <p>Delete all the numbers in white list: PWL;S;</p> <p>Delete first number in white list PWL;S;1;</p> <p>Add first and second number to white list PWL;S;1;180XXXXXXXX;2;13512345678”</p> <p>Query white list PWL;R;&lt;Index&gt;</p>	

	<p>&lt;Index&gt;:  2 Formats:  Format1: Index number; Index number...  Format2: Start index- End index</p> <p>Note:  &gt;Single command only available to query 8 numbers in a time.  &gt;"X" means any number will be ok.  &gt;Index number range is "1 to 16", start must small than end  &gt;If one number has monitoring and hotline authorization both, then only monitoring authorization is valid.</p> <p>e.g.:  Query first to eighth numbers in white list:  PWL;R;1-8  Query first and second numbers in white list  PWL;R;1;2</p>
--	--

## 6.3.23 Query current position authorization list (QWL)

Command word	Format	Reply
QWL	QWL;1-3;7	QWL:1,2,3;7
	QWL;	QWL:
Explanation	This is to enable phone number from white list for current position query purpose, device will reject the call and reply a SMS with current position.  QWL;<Index>  Explanation: <Index>: Assign numbers to have "Query current position authorization" from white list. e.g.: Assign number 1,2,3,7 from white list QWL;1-3;7 or QWL;1;2;3;7	
	Default: QWL	

## 6.3.24 Voice monitoring authorization list (MWL)

Command word	Format	Reply
MWL	MWL;1-3;7	MWL:1;2;3;7

Explanation	<p>This command is to enable phone number from white list to have voice monitoring permission, device will pick up the call and enable its microphone for voice monitor purpose.</p> <p>MWL; &lt;Index&gt;</p> <p>Explanation:</p> <p>&lt;Index&gt;: Assign numbers to have “Voice monitoring authorization” from white list.</p> <p>e.g.: Assign number 1,2,3,7 from white list</p> <p>MWL;1,2,3;7</p> <p>or</p> <p>MWL;1,2,3;7</p>
	Default: MWL;

## 6.3.25 Hot line authorization (HWL)

Command word	Format	Reply
HWL	HWL;1-3;7	HWL:1,2,3;7
Explanation	<p>This command is to enable phone number in white list to have permission for voice conversation, device will pick up the call and enable microphone &amp; speaker for conversation.</p> <p>HWL;&lt;Index&gt;</p> <p>Explanation:</p> <p>&lt;Index&gt;: Assign numbers to have “Hot line authorization” from white list</p> <p>e.g.: Assign number 1,2,3,7</p> <p>HWL;1-3;7</p> <p>or</p> <p>HWL;1;2;3;7</p>	
	Default: HWL	

## 6.3.26 SOS authorization list (SWL)

Command word	Format	Reply
SWL	SWL;1;2	SWL:1;2
Explanation	<p>This command is enable phone number is white list to have permission to trigger SOS call event</p> <p>SWL; &lt; SOS main index&gt;;&lt; SOS slave index&gt;</p> <p>Maximum 2 phones number from white list can set as SOS number.</p> <p>SOS event happens, device will dial main SOS number first, if not pick up will try slave, then user1 number.</p>	
	Explanation:	

	< Index>: Assign number 1,2 to have “SOS authorization” from white list SWL;1,2
	Default: SWL

6.3.27 Geo-fence configuration (GFS)

Command word	Format	Reply														
GFS	GFS0;1;1;25.31;113.0;1000 GFS0;P;0;25.31;113.0;1;1000 GFS0;S;10;100 GFS0;T;7F;12:00-14:00	GFS0;1;1;25.31;113.0;1000 GFS0;P;0;25.31;113.0;1;1000 GFS0;S;10;100 GFS0;T;7F;12:00-14:00														
	GFS0 GFS0;P;0 GFS0;P;1 GFS0;S GFS0;T	GFS0;1;8001;25.310000;113.000000;1000  GFS0;P;0;25.310000;113.000000  GFS0;P;1;1000  GFS0;S;10;100  GFS0;T;7F;12:00-14:00;00:00-00:00;00:00-00:00														
Explanation	<p>■It supports circular, rectangle, and polygon Geo-fence</p> <p>GFS[ID];&lt;vertex_cnt&gt;&lt;flag&gt;&lt;para....&gt;</p> <p>Explanation:</p> <p>&lt;ID&gt;: Geo-fence ID, range is “0 to 155”.</p> <p>“0 to 27” represents 28 Geo-fences that support circle/ rectangle/ polygon.</p> <p>“28 to 155” represents 128 Geo-fences that support circle shape only</p> <p>&lt;vertex_cnt&gt;: number of vertex,</p> <p>”0”: Delete this Geo-fence</p> <p>“1”: Set as circle shape.</p> <p>“2”: Set as rectangle shape.</p> <p>“3 or bigger value” Set as polygon shape</p> <p>Flag to configure Geo-fence attribution:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Bit0</td> <td>Enable entering detection</td> </tr> <tr> <td>Bit1</td> <td>Enable leaving detection</td> </tr> <tr> <td>Bit2</td> <td>Enable inside speed range detection</td> </tr> <tr> <td>Bit3</td> <td>Enable outside speed range detection</td> </tr> <tr> <td>Bit4</td> <td>Enable valid time period</td> </tr> <tr> <td>Bit5</td> <td>Reserved</td> </tr> <tr> <td>Bit6</td> <td>Reserved</td> </tr> </table>		Bit0	Enable entering detection	Bit1	Enable leaving detection	Bit2	Enable inside speed range detection	Bit3	Enable outside speed range detection	Bit4	Enable valid time period	Bit5	Reserved	Bit6	Reserved
Bit0	Enable entering detection															
Bit1	Enable leaving detection															
Bit2	Enable inside speed range detection															
Bit3	Enable outside speed range detection															
Bit4	Enable valid time period															
Bit5	Reserved															
Bit6	Reserved															



Bit7	Reserved
Bit8	Reserved
Bit9	Reserved
Bit10	Reserved
Bit11	Reserved
Bit12	Reserved
Bit13	Time validation flag
Bit14	Speed validation flag
Bit15	Geo-fence validation flag

“Bit0 to Bit1”: one of them must be “1”. System will force “Bit0” as “1” when set “Bit0 and Bit1” as “00”.

“Bit3 to Bit2”:

“00”: Represents detecting device in or out of Geo-fence, not refer speed.

“01”: Represents only inside the preset speed range, device to detect in or out of Geo-fence.

“10”: Represents only outside the preset speed range, device to detect in or out of Geo-fence.

“11”: System will treat it as “00”.

“Bit4”:

“0”: Disable valid time period

“1” Enable only in time period, device to detect in or out of Geo-fence

*Note: Only if time and speed condition being satisfied, device will report Geo-fence event, otherwise device just detect current status.*

“Bit5 to Bit12”:

Reserved.

“Bit13”: Time validation flag, “1” such condition is enabled

“Bit14”: Speed validation flag, “1” such condition is enabled.

“Bit15”: Geo-fence validation flag, “1” such condition is enabled.

<Para...>” Parameter of circle or rectangle Geo-fence, if <vertex\_cnt> value is “1” or “2”, Geo-fence has parameter to set:

For circle Geo-fence, <Para...> is <center latitude, center longitude, radius>.

For rectangle Geo-fence, <Para...> is <vertex1 latitude, vertex1 longitude, vertex2 latitude, vertex2 longitude...>

#### **Query Geo-fence configuration:**

GFS[ID]

#### **Set Geo-fence**

GFS[ID];P;para\_ID;para\_val<;para\_ID;para\_val>...

Explanation:

para\_ID: Geo-fence ID

**For circle**, “0” means center latitude and longitude, “1” means radius.

**For rectangle**, “0” means vertex1 latitude and longitude, “1” means vertex2 latitude and longitude.

**Polygon:** “0 to 31” means latitude and longitude of each vertex.

para\_val:

If it means GPS coordinate, format is latitude; longitude, south latitude and west longitude will be minus value.

If it means radius, format is radius, unit is meter.

Latitude range is less than +-90, longitude not more than +-180.

Radius is more than 200 meters, integer value.

To distinguish para\_ID and para\_val, para\_ID length not more than 2, para\_val more than 3.

**Query Geo-fence configuration**

GFS[ID];P;para\_ID<;para\_ID>...

**Set speed parameter:**

GFS[ID];S<;min\_speed><;max\_speed>

*GFS[ID];S* is to query

*GFS[ID];S;* is to delete

<min\_speed>: Lower limit of speed range, “0” means disabled.

<max\_speed>: Upper limit of speed range, “0” means disabled.

If speed parameter is valid, “Bit14” of Geo-fence attribution will be “1”.

Null speed parameter, or upper limit and lower limit both “0”, need to set “Bit14” of Geo-fence attribution as “0”.

GFS[ID];T<;workday\_mask><;time\_period1><; time\_period2><; time\_period3>

Explanation:

<workday\_mask>: Day of work mask.

Bit0	Sunday
Bit1	Monday
Bit2	Tuesday
Bit3	Wednesday
Bit4	Thursday
Bit5	Friday
Bit6	Saturday
Bit7	Reserved

0: Disable this day of week

1: Enable this day of week

<time\_period1>: First period, format is “hh:mm-hh:mm”

<time\_period2>: Second period, format is “hh:mm-hh:mm”

<time\_period3>: Third period, format is “hh:mm-hh:mm”

Note: End time must be ahead start time

6.3.28 Enable Geo-fence (GOF)

Command word	Format	Reply
--------------	--------	-------

GOF	GOF;108000001	GOF:108000001
	GOF	GOF:108000001
Explanation	<p>This command is to toggle specify geo fence detection.</p> <p>GOF&lt;;enable_mask&gt; &lt;enable_mask&gt;: HEX, length is 20 bytes.</p> <p>28 Geo-fences (Round/Rectangular/Polygon), corresponding with bit0 to bit27, 128 Geo-fences, corresponding with bit28 to bit155,</p> <p>0:Disable this Geo-fence 1:Enable this Geo-fence e.g. enable Geo fence #0,#27,#28 GOF;108000001</p>	

## 6.3.29 Enable driving behavior detection (BMO)

Command word	Format	Reply
BMO	BMO;1;1;1;1	BMO:1;1;1
	BMO	BMO:1;1;1
Explanation	<p>This command is to toggle harsh event, motion event detection.</p> <p>BMO; &lt;moving_enable&gt;;&lt;harsh_braker_enable&gt;;&lt;harsh_accel_enable&gt;;&lt;harsh_corner_enable&gt;</p> <p>&lt;moving_enable&gt; “0”: Disable moving detection. “1”: Enable moving detection.</p> <p>&lt;harsh_braker_enable&gt; “0”: Disable harsh brake detection. “1”: Enable harsh brake detection.</p> <p>&lt;harsh_accel_enable&gt; “0”: Disable harsh accelerate detection. “1”: Enable harsh accelerate detection.</p> <p>&lt;harsh_corner_enable&gt; “0”: Disable harsh cornering detection. “1”: Enable harsh cornering detection.</p> <p>Default: BMO;1;1;1;1</p>	

## 6.3.30 Enable accident detection (AMO)

Command word	Format	Reply
--------------	--------	-------

AMO	AMO;1;1	AMO:1;1
	AMO	AMO:1;1
Explanation	<p>This command is to toggle accident &amp; turn over event.</p> <p>AMO; &lt;crash_enable&gt;;&lt;turn_over_enable&gt;</p> <p>&lt;crash_enable&gt;</p> <p>“0”: Disable rear collision detection.                      “1”: Enable rear collision detection.</p> <p><i>Note: Sensor will judge front/rear by itself.</i></p> <p>&lt;turn_over_enable&gt;</p> <p>“0”: Disable turn over detection.                      “1”: Enable turn over detection.</p>	
	Default: AMO;1;1	

6.3.31 Device install direction (BDS)

Command word	Format	Reply
BDS	BDS;1	BDS:1
	BDS	BDS:1
Explanation	<p>Device must be installed as certain direction to have proper sensor functionality.</p> <p>BDS;&lt;direction&gt;</p> <div style="text-align: center;"> </div> <p>&lt;Direction&gt;: range is “0 to 3”</p> <p>Note: Please face the side with GPS antenna to the sky</p>	
	Default: BDS;0	

6.3.32 Enable odometer counter (MGE)

Command word	Format	Reply
--------------	--------	-------

MGE	MGE;1	MGE:1
	MGE	MGE:1
Explanation	This command is toggle mileage feature	
	MGE;<mode> <mode> “0”: Disable “1”: Enable	
	Default: MGE:0	

## 6.3.33 Odometer initial mileage (MGS)

Command word	Format	Reply
MGS	MGS;1000	MGS:1000
	MGS	MGS:1000
Explanation	This command is set initial value of mileage, device will accumulate mileage based on this value and report to server	
	MGS;<data> <data>: Decimal, range is “0 to 4294967295”, unit is “meter”	

## 6.3.34 Over speed mode configure (SPO)

Command word	Format	Reply
SPO	SPO;0	SPO:0
	SPO	SPO:0
Explanation	This command is set over speed mode	
	SPO;<Mode> <Mode>: 0: disable over speed event report 1: speed enters the range of <Max><Mini> 2: speed leaves the range of <Max><Mini> 3: speed enters or leaves the range of <Max><Mini>	
	Default: SPO:0	

## 6.3.35 Over speed configuration (SPS)

Command word	Format	Reply
SPS	SPS;100;1;10	SPS:100;1;10

	SPO	SPO:100;1;10
Explanation	<p>This command is to set speed range for over speed event.</p> <p>SPS;&lt;Max&gt;;&lt;Mini&gt;;&lt;Duration time&gt;</p> <p>&lt;Max&gt;:Upper speed value, unit is “km/h”</p> <p>&lt;Mini&gt;:Lower speed value, unit is “km/h”</p> <p>&lt;Duration time&gt;: If current speed match with over speed condition and last for this long, over speed event report will be triggered.</p> <p>Range is “1 to 65535”, unit is “second”</p>	
	Default:SPS:100;1;10	

## 6.3.36 Enable idle detection (ILO)

Command word	Format	Reply
ILO	ILO;1	ILO:1
	ILO	ILO:1
Explanation	<p>This command is to toggle idle status detection.</p> <p>ILO;&lt;Mode&gt;</p> <p>&lt;Mode&gt;:</p> <p>“0”:disable</p> <p>“1”:enable</p>	
	Default: ILO;0	

## 6.3.37 Idle status configuration (ILS)

Command word	Format	Reply
ILS	ILS;100;100	ILS:100:100
	ILS	ILS:100:100
Explanation	<p>ILS;&lt;Stop time&gt;;&lt;Move time&gt;</p> <p>&lt;Stop time&gt;: range is “1 to 65535”, unit is “second”, if device keep stop for this long (IG on), will be considered as idle.</p> <p>&lt;Move time&gt;: range is “1 to 65535”, unit is “second”, if device moving again or IG off duration over this value, will be considered as Quit idle</p>	
	Default:ILS;100;100	

## 6.3.38 Enable engine hour counter (ETO)

Command word	Format	Reply
ETO	ETO;1	ETO:1

	ETO	ETO:1
Explanation	This command is to toggle engine hour counter	
	ETO;<Mode> <Mode>: “0”: Disable “1”: Enable	
	Default: ETO;0	

## 6.3.39 Set engine hour counter (ETS)

Command word	Format	Reply
ETS	ETS;88888:0:0;1	ETS;88888:0:0;1
	ETS	ETS:88888:0:0;1
Explanation	This command is to set initial engine hour, device will accumulate based on this value. ETS;<Hour>;<Minute>;<Second>  <Hour>: 5 digits maximum <Minute>: 2 digits maximum <Second>: 2 digit maximum  Range is “0:0:0 to 99999:0:0”, the <Engine hour counter> in IG ON report will accumulate base on this value.  <I/O port> To assign which port as engine status input port. “0”: AD1, only valid when “AD1/IN3” set as digital “1”: AD2, only valid when “AD2/IN4” set as digital below conditions must be satisfied: >AIM set as digital >DIM mode0	

## 6.3.40 Health check report (HTM)

Command word	Format	Reply
HTM	HTM;1;1	HTM:1;1
	HTM	HTM:1;1
Explanation	This command is to set health check packet report interval to GPRS server.  HTM;<Mode> HTM;<Mode>;<Time>  Query health check report: Send (GPRS/SMS server): *GS00,HTM;0# Reply:	

\*GS06,356496042331108,HTM:0#  
 \*GS06,356496042331108,030005170613,87,SYS:G6S,GPS:A;6;N23.164422;E113.428712,COT:.,ADC:13.00;3.40;0.00;0.00,DTT:84;C0;0;0,ETD:64#

Set report every 12 hours automatically:

Send:

\*GS00,HTM;1;12#

Reply:

\*GS06,356496042331108,HTM:1:12#

<Mode>:

0:Query current device health only

1: Set periodical report

<Time>: Report interval, only valid when mode set as “1”, range is “0 to 255”, unit is hour, “0” means do not report.

Report type: defined as “event”, set by command EUP

Data field: set by command ADM

<ETD>, HEX, 1byte

Bit	Content	0	1
bit0	Socket1 Connection status	Disconnected	Connected
bit1	Socket2 Connection status	Disconnected	Connected
bit2	Socket3 Connection status	Disconnected	Connected
bit3	Socket4 Connection status	Disconnected	Connected
bit4	Socket5 Connection status	Disconnected	Connected
bit5	2D sensor status	Abnormal	Normal
bit6	Flash storage status	Abnormal	Normal
bit7	Vibration sensor status	Still	Move

Explanation:

MOT\_MOV: Move

MOT\_STA: Still

FSH\_OK:Flash storage status

FSH\_ERR:Flash error

2D\_OK:2D normal

2D\_ERR:2D abnormal

SOC\_OK:Socket connection is ok

SOC\_ERR:Socket connection error

Note:

Query health check information: Isolated from each connectivity type.

Periodical health check information report: EUP7 is enabled and EMS is allowed.

Default: HTM;0;0



Command word	Format	Reply
AGP	AGP;1	AGP:1
	AGP	AGP:1
Explanation	This command is to toggle Assisted GPS feature AGP;<mode>	
	<mode>: “0”: disable A-GPS “1”:enable A-GPS  Factory default: AGP;0	

## 6.3.42 Save current configuration as profile (SCF)

Command word	Format	Reply
SCF	SCF;1	SCF:1
	SCF	SCF:1
Explanation	Save current global setting to device, 3 profile slots available.	
	Format: SCF;<Mode>  <Mode>: Range is “0 to 2”  Default:	

## 6.3.43 Load pre-saved configuration profile (RCF)

Command word	Format	Reply
RCF	RCF;1	RCF:1
Explanation	Recover global setting from device flash, it will cost some time and device will reboot when finished.	
	Format: RCF;<Mode>  <Mode>: Range is “0 to 2”	

## 6.3.44 Private hour mode configuration (PVM)

Command word	Format	Reply
PVM	PVM;1111100;00:00-08:30;11:30-13:30;17:30-23:59	PVM;1111100;00:00-08:30;11:30-13:30;17:30-23:59
	PVM	PVM:1111100;00:00-08:30;11:30-13:30;17:30-23:59

PVM;<mode><diid><workdaymask><hh1:mm1-hh2:mm2><hh1:mm1-hh2:mm2><hh1:mm1-hh2:mm2>

4 kinds of private mode, each mode has different trigger condition and report different to server:

Mode	Name	Trigger condition	Report data string
0	Disable		As usual
1	Full manual	If digital input is “true”, device will switch to “Full manual” private mode, otherwise as usual	Not report GPS/GSM position, Report device status (DTT)
2	Half manual	If digital input is “true”, and under private hour range, device will switch to “Half manual” private mode, otherwise as usual	Not report GPS/GSM position, Report device status (DTT)
3	Automatically	According to private hour range setting only, device will switch to “Automatically” private mode, otherwise as usual	Not report GPS/GSM position, Report device status (DTT)
4	Automatically private activity	According to private hour range setting only, device will switch to “Automatically” private mode, otherwise as usual	Report as usual, Report device status (DTT)

Note:

4 digital input channels, range is “0 to 3”, first 2 are low level trigger, last 2 are high level trigger.

Workday mask, “1” is working day, “0” is private day.

```

1   1   1   1   1   0   0
Mon  Tue  Wed  Thu  Fri  Sat  Sun
    
```

<mode>

0: Disable private hour mode

Command format: PVM;0

1: Full manual

Command format: PVM;1;<diid>

<diid>: Digital input channel, range is “0 to 3”

2: Half-manual

Command format: PVM;2;<diid>;<workdaymask>;<hh1:mm1-hh2:mm2>..

<diid>: Digital input channel, range is “0 to 3”

<workdaymask>: Working day mask

<hh1:mm1-hh2:mm2>: Private hour period on daily basis, 3 periods valid, at least set 1 period.

	<p>3: Automatically</p> <p>Command format: PVM;3;&lt;workdaymask&gt;;&lt;hh1:mm1-hh2:mm2&gt;..</p> <p>&lt;workdaymask&gt;: Working day mask</p> <p>&lt;hh1:mm1-hh2:mm2&gt;: Private hour period on daily basis, 3 periods valid, at least set 1 period.</p> <p>4: Private activity monitoring</p> <p>Command format: PVM;4;&lt;workdaymask&gt;;&lt;hh1:mm1-hh2:mm2&gt;..</p> <p>&lt;workdaymask&gt;: Working day mask</p> <p>&lt;hh1:mm1-hh2:mm2&gt;: Private hour period on daily basis, 3 periods valid, at least set 1 period.</p> <p>Default: PVM;0</p>
--	---

## 6.3.45 Private hour mode digital output configuration (POB)

Command word	Format	Reply
POB	POB;1;1;4;5	POB:1;1;4;5
	POB	POB:1;1;4;5
Explanation	<p>This command is to configure digital output for private mode or private activity.</p> <p>Disable: POB;0</p> <p>Enable: POB;1;&lt;DOID&gt;;&lt;DOMode&gt;;&lt;Interval&gt;</p> <p>&lt;DOID&gt;: Digital output channel ID, range is “0 to 2”</p> <p>&lt;DOMode&gt;: Digital output wave shape mode, range is “0 to 7”</p> <p>&lt;Interval&gt;: Output interval, range is “0 to 65535”, unit is second</p> <p>Default: POB;0</p>	

## 6.3.46 1WIRE working mode (IBO)

Command word	Format	Reply
IBO	IBO;0	IBO:0
	IBO	IBO:0
Explanation	<p>This command is to set what is current 1wire accessory connecting</p> <p>Format: IBO;&lt;mode&gt;</p> <p>&lt;mode&gt;:</p> <p>0: Disable 1WIRE feature</p> <p>1: Use ibutton key</p> <p>2: Use DS18B20</p> <p>3: Use ibutton key and DS18B20mode together</p> <p>&lt;Ibutton relevant mode&gt;: when &lt;Mode&gt; as “1” or “3”, it has this data segment</p> <p>0: No relevant mode</p>	

	1: Fixed relevant OUT1,OUT2,OUT3
	Factory Default: IBO;0

6.3.47 Set ibutton permit list (IBI)

Command word	Format	Reply
IBI	IBI;000000133b29	IBI:000000133b29
	IBI	IBI:000000133b29
Explanation	<p>This command is to save ibutton id numbers as permit ibutton to start vehicle, 16 IDs maximum (0 to 15), ID “0” is specified for master ibutton.</p> <p>Note: If the master ibutton physical touch with probe, device will enter permit ibutton input mode, the following touch of ibuttons will be saved to permit list.</p> <p>But in 5 minutes no any more input device will quit permit ibutton input mode automatically.</p> <p>Format:                      IBO&lt;id&gt;;&lt;number&gt;                      &lt;id&gt;: 0 to 15                      &lt;number&gt;: Serial number of ibutton, 12bytes maximum</p>	

6.3.48 Set ibutton working mode (IBP)

Command word	Format	Reply
IBP	IBP;0;0;0;0	IBP:0;0;0;0
	IBP	IBP:0;0;0;0
Explanation	<p>This command is to set ibutton working mode.</p> <p>IBP;&lt;Toggle permit ibutton verification&gt;;&lt;Toggle digital output&gt;;&lt;doid&gt;;&lt;domode&gt;</p> <p>&lt;Toggle permit ibutton verification&gt;:                      “0” Disable, any ibutton input is able to start, device will report current GPS (LBS) position and ibutton ID to server, digital output is disabled.                      “1” Enable, device will compare input ibutton ID with permit list, if it matches vehicle is able to start, digital output is disabled. If not match device will report current GPS (LBS) position and illegal ID to server, meanwhile digital output active or not as peer &lt;Toggle digital output&gt;.</p> <p>&lt;Toggle digital output&gt;:                      “0” Disable digital output                      “1” Enable digital output</p> <p>&lt;doid&gt;: Digital output channel, range is “0 to 2”.</p>	

	<p>&lt;domode&gt;: Digital output level, “0” represents low level, “1” represents high level. e.g.: if set as “0” when ACC on and there is illegal ibutton input, digital output will perform low level.</p>
	Default: IBP;0;0;0;0

## 6.3.49 Set 1WIRE temperature alarm range (TMP)

Command word	Format	Reply
TMP	TMP;100;-10;5	TMP:100;-10;5
	TMP	TMP:100;-10;5
Explanation	<p>This command is to set out of temperature range alarm to server</p> <p>Format: TMP;&lt;High_Temp&gt;;&lt;Low_Temp&gt;</p> <p>&lt;High_Temp&gt;: Upper limit, unit is Celsius, range is “-99.9 to 999.9”.</p> <p>&lt;Low_Temp&gt;: Lower limit, unit is Celsius, range is “-99.9 to 999.9”</p> <p>&lt;Duration time&gt;: Temperature stays inside range surpasses this value will trigger event, unit is second, range is 1 to 65535.</p>	
	Default: TMP;100;-100;10	

## 6.3.50 Server shift configuration (SVT)

Command word	Format	Reply
SVT	SVT;1800;15	SVT:1800;15
	SVT	SVT:1800;15

Explanation	<p>This command is to set backup server timeout.</p> <p>Format</p> <p>SVT;&lt;shift timer&gt;;&lt;ACK timeout&gt;</p> <p>Explanation</p> <p>&lt;Shift timer&gt;: When timer is up, device will try to reconnect with main server, unit is second, range is “60 to 65535”.</p> <p>&lt;ACK timeout&gt;: Timeout threshold for server ACK packet, unit is second, range is “15 to 60”.</p>
	Default: SVT;1800;15

## 6.3.51 Set ibutton key special mode (IBE)

Command word	Format	Reply
IBE	IBE;1	IBE:1
	IBE	IBE:1
Explanation	<p>This command is to toggle ibutton key special mode.</p> <p>Format</p> <p>IBE;&lt;Mode&gt;</p> <p>&lt;Mode&gt;:</p> <p>“0”: disable ibutton key verification (bypass mode)</p> <p>“1”: enable ibutton key verification</p>	
	Default: IBE;1	

## 6.3.52 Define ibutton key special mode (IBS)

Command word	Format	Reply
IBS	IBS;1;4;4;5;20	IBS:1;4;4;5;20
	IBS	IBS:1;4;4;5;20
Explanation	<p>This command is to set digital output mode for each output.</p> <p>Format</p> <p>IBS;&lt;output1 level for relay&gt;;&lt;output2 level for LED when acc on&gt;;&lt;output3 level for buzzer when acc on&gt;;&lt;output3 level for buzzer when ibutton key presents&gt;;&lt;delay time to cut ignition after engine off&gt;.</p> <p>&lt;output1 level for relay&gt;:</p> <p>“0” output1 performs low level.</p> <p>“1” output1 performs high level.</p> <p>&lt;output2 level for LED when acc on&gt;:</p> <p>Range from 0 to 7, refer command DOM1.</p> <p>&lt;output3 level for buzzer when acc on&gt;:</p> <p>Range from 0 to 7, refer command DOM2.</p>	

	<p>&lt;output3 level for buzzer when ibutton key presents&gt; Range from 0 to 7, refer command DOM3.</p> <p>&lt;delay time to cut ignition after engine off&gt; Range from 0 to 7, refer command DOM3.</p> <p>ibutton special mode explanation: 1, set as special mode by command IBO;3 2, set command IBE, command IBS. 3, set wave shape by command DOM1, DOM2. 4, set 1wire event by command ESM, command EUP. 5, set input by command AIM, command ETS.</p>
	Default: IBS:0;4;4;5;20

6.3.53 Input event to activate serial port output (ITS)

Command word	Format	Reply
ITS	ITS1;1;1;0;ABCDEF09876543210D0A	ITS1:1;1;0;ABCDEF09876543210D0A
	ITS0	ITS1:1;1;1;Hello
	<p>This command is to set serial port to send a customized string when input event being triggered.</p> <p>Format: ITS[ID];&lt;interval&gt;&lt;times&gt;&lt;format&gt;&lt;string&gt;</p> <p>[ID]: specify input event. 0: input1 event 1: input2 event 2: input3 event 3: input4 event</p> <p>&lt;interval&gt;: interval between multiple times output, range is 0 to 30, unit is minutes. &lt;times&gt;: specify how many times to repeat sending the customized string on serial port, range is 0 to 5, value 0 means disabled. &lt;format&gt;: define the string coding format. 0: HEX, number count in &lt;string&gt; should be even 1: ASCII</p> <p>&lt;string&gt;: content of output on serial port, maximum length is 31 bytes.</p>	
	<p>Default: ITS0;1;0;0 ITS1;1;0;0 ITS2;1;0;0 ITS3;1;0;0</p>	

6.3.54 Set USSD server (SUR)

Command word	Format	Reply
--------------	--------	-------

SUR	SUR; *126*118*725*	SUR: *126*118*725*
	SUR	SUR: *126*118*725*
Explanation	This command is to set USSD server address. Format: SVR;<USSD server address>  <USSD server address>: Maximum 32 bytes	
	Default: Null	

## 6.3.55 USSD server report interval mode (SUP)

Command word	Format	Reply
SUP	SUP;1;60S;G;T	SUP:1;60S;G;T
	SUP	SUP:1;15S;G;T
Explanation	This command is set report interval of mode0 (static) and mode1 (dynamic)  SUP;<Mode>;<Interval>;<Report mode>;<Data format>  <Mode>: “0”: Report mode0 “1”: Report mode1, valid only when command DNU is enabled.  <Interval>: range is “60 to 900 seconds”, “15 to 59 minutes”, “1 to 720 hours”  <Report mode>: “O”: Disable “G”: GPS information prior “A”: GPS and GSM information both  <Data format>:  “O”: Device will not generate data (record)  “T”: ASCII	
	Default: SUP:0;60S;G;B, SUP:1;600S;G;B	

## 6.4. Public command

## 6.4.1 Set user phone number (UNO)

Command word	Format	Reply
UNO	UNO0;+8613912345678	UNO0:+8613912345678
	UNO1;+8613912345678	UNO1:+8613912345678



	Delete user number: UNO0; UNO1;	Reply: UNO0: UNO1:
Explanation	This command is set up 2 users phone number 2 user numbers are available: UNO0 and UNO1. With the correct password, any phone number is able to use this command.	
	Default:  UNO0:  UNO1:	

## 6.4.2 Set user command password (UPW)

Command word	Format	Reply
UPW	Set user0 password: UPW0;1234 Set user1 password: UPW1;2234	UPW0:1234 UPW1:2234
Explanation	Fix 4 digits, range is "0000 to 9999" UPW0: Set user0 password UPW1: Set user1 password	
	Default:  UPW0;1234  UPW1;1234	

## 6.4.3 Motion sensor configuration (MOT)

Command word	Format	Reply
MOT	MOT;0	MOT:0
	MOT	MOT:0
Explanation	This command is to configure vibration sensor. MOT;<Parameter>  <Parameter>: 0: Disable motion sensor, all kinds of report that relates with motion sensor will be disabled as well. If set as "0", device will be treated as "moving" all the time. 1: Enable motion sensor, high sensitivity. 2: Enable motion sensor, low sensitivity.	
	Default:MOT:1	

## 6.4.4 User command shortcut (USC)

Command word	Format	Reply
USC	USC USC1;B;NAM(,VER	USC;A; PRQ USC1:B;NAM(,VER
Explanation	<p>USC[ID];&lt;Parameter1&gt;;&lt;Command&gt;</p> <p>[ID]: range is “0 to 9”</p> <p>&lt;Parameter1&gt;: English letter without case sensitive</p> <p>&lt;Command&gt;:</p> <p>If in the command there is character need to be converted, please refer chapter 3.2.2</p> <p>Short command length is 50bytes maximum, reply message length is 70bytes maximum.</p> <p>Up to 10 short commands is supported (USC0 to USC9).</p> <p>e.g.: set “B” as short command for PRQ/STP,</p> <p>send: USC;A;PRQ(,STP(;600</p> <p>then command “password,A” equals commands PRQ and STP</p> <p>Note: Only support user authorization commands to set as short command.</p> <p>Factory default:</p>	

## 6.4.5 Firmware upgrade command (FWU)

Command word	Format	Reply
FWU	FWU	FWU
Explanation	<p>This is for over the air firmware upgrade.</p> <p>Upgrade firmware on local, please refer chapter6.5</p>	

## 6.4.6 Abort ongoing upgrade process (FCL)

Command word	Format	Reply
FCL	FCL	
Explanation	<p>This command only effective when device is downloading firmware file from server.</p>	

## 6.4.7 Rollback to previous firmware version (FRC)

Command word	Format	Reply
FRC	FRC	FRC:1 FRC:0
Explanation	<p>0: Roll back to previous version failed</p> <p>1: Roll back to previous version succeeded</p>	

## 6.4.8 Audio configuration (AGN)

Command word	Format	Reply
AGN	AGN0;7;7	AGN0:7;7
	AGN	AGN0:7;7
Explanation	AGN[ID];<MIC gain>;<Speaker gain> [ID]: Fix as "0" <MIC gain>: range is "0 to 7" <Speaker gain>: range is "0 to 7"	

## 6.4.9 Device call back (CAL)

Command word	Format	Reply
CAL	CAL;13812345678;1	CAL:13812345678;1
Explanation	By sending this command device will call the phone number accordingly CAL;<Phone number to call>;<Mode> <Mode>: "0": Conversation mode "1": Listening only	

## 6.4.10 Rename event for user report (ENM)

Command word	Format	Reply
ENM	ENM25;ALARM:IO2_OFF;ALARM:IO2_ON	ENM25:ALARM:IO2_OFF;ALARM:IO2_ON
	ENM25	ENM25:ALARM:IO2_OFF;ALARM:IO2_ON
Explanation	This command is to customize event name in the SMS message to user phone number. ENM[Event ID];<Event status0 name>;<Event status1 name> [Event ID]: range is "0 to 63" <Event status0 name>: 15 bytes maximum <Event status1 name>: 15 bytes maximum Note: Combination event rename only can set on field <Event status0 name>.	

## 6.4.11 Reset event report (ETC)

Command word	Format	Reply
ETC	ETC	ETC
Explanation	To clear device reaction of event. Format1: ETC;<Event ID>;<Device reaction type> <Event ID>: range is "0 to 63", please refer chapter9 "Event list" <Device reaction type>:	

	<p>U: Clear event report for user0 and user1.</p> <p>S: Clear event report for SMS server or GPRS server.</p> <p>O: Clear I/O output reaction.</p> <p>A: Clear all types of device reaction, if this command is sent via user authority, then it is invalid for SMS server and GPRS server.</p> <p>Format2:</p> <p>ETC</p> <p>User0 sends this command, all events report, Non-report reaction (e.g.: I/O output) times to user will be cleared.</p> <p>User1 sends this command, all events report, Non-report reaction (e.g.: I/O output) times to user will be cleared.</p> <p>Administrator (SMS server) sends this command, all events report, Non-report reaction (e.g.: I/O output) to administrator will be cleared.</p> <p>GPRS server sends this command, all events report, Non-report reaction (e.g.: I/O output) to server will be cleared.</p> <p>Factory default:</p>
--	--

## 6.4.12 Query event report status (ETT)

Command word	Format	Reply
ETC	ETT	ETT:<Parameter>
Explanation	<p>To know what event is causing report or I/O reaction</p> <p>&lt;Parameter&gt;:</p> <p>HEX, each bit represents one event ID</p> <p>Factory default:</p>	

## 6.4.13 Query engine hour time (ERT)

Command word	Format	Reply
ERT	ERT	ERT:88888:00:00
Explanation	<p>Query engine accumulated running time.</p> <p><b>ERT;&lt;Hour&gt;:&lt;Minute&gt;:&lt;Second&gt;</b></p> <p>&lt;Hour&gt;: 5 digits maximum</p> <p>&lt;Minute&gt;: 2 digits maximum</p> <p>&lt;Second&gt;:2 digits maximum</p> <p>Range is "0:0:0 to 99999:00:00"</p>	

## 6.4.14 Query I/O output type and data (FPD)

Command word	Format	Reply
FPD	FPD	FPD:0F1000;1P2000
Explanation	<p>&lt;Data&gt;:&lt;Input channel ID&gt;;&lt;Type&gt;;&lt;Data&gt;.....</p> <p>Refer chapter4.3.5 command COT</p>	

## 6.4.15 Query current position (PRQ)

Command word	Format	Reply
PRQ	PRQ	PRQ

Explanation	Device will reply this command by report current position. Factory default:
-------------	--

## 6.4.16 Query UTC time (TIM)

Command word	Format	Reply
<b>TIM</b>	TIM	TIM:
Explanation	Format: TIM;yy.mm.dd-hh:mm:ss Device will update time as per GPS network time when fixed, otherwise this field will be 000000000000.	

## 6.4.17 Query device name (NAM)

Command word	Format	Reply
<b>NAM</b>	NAM;G6S	NAM:G6S
Explanation	15bytes maximum, Reset to factory default will not reset device name	

## 6.4.18 Query device firmware version and hardware version (VER)

Command word	Format	Reply
<b>VER</b>	VER	VER:V1.13-U;V1.05
Explanation	Hardware version, 8bytes -U: GPS module is U-blox -T: GPS module is Telit. Firmware version, 5bytes	

## 6.4.19 Query IMEI (MEI)

Command word	Format	Reply
<b>MEI</b>	MEI	MEI:123456789012345
Explanation	The IMEI number is used by a GSM network to Identify valid devices, 15 digits.	

## 6.4.20 Query IMSI number of SIM card (MSI)

Command word	Format	Reply
<b>MSI</b>	MSI	MSI: 460079148126057
Explanation	An IMSI is usually presented as a 15 digit long number, The first 3 digits are the mobile country code (MCC), which are followed by the mobile network code (MNC), either 2 digits (European standard) or 3 digits (North American standard). The length of the MNC depends on the value of the MCC. The remaining digits are the mobile subscription Identification number (MSIN) within the network's customer base.	

## 6.4.21 Query ICCID number of SIM card (CID)

Command word	Format	Reply
<b>CID</b>	CID	CID:898600D1191149037057
Explanation	Each SIM is internationally Identifier by its integrated circuit card identifier (ICCID). ICCID are stored in the SIM cards	

	and are also engraved or printed on the SIM card body during a process called personalization.
--	--

## 6.4.22 Query GSM signal strength (CSQ)

Command word	Format	Reply
<b>CSQ</b>	CSQ	CSQ:5
Explanation	5: GSM signal strength, range is "0 to 5"	

## 6.4.23 Query GSM network status (REG)

Command word	Format	Reply
<b>REG</b>	REG	REG:1
Explanation	0:Fail to register, device is not trying to register to any mobile network 1:Register successfully 2:Fail to register, but device is trying to register to mobile network 3:Register intention is being rejected by mobile network 4:Unknown reason 5:Register to roaming network successfully	

## 6.4.24 Reset SMS counter(SCC)

Command word	Format	Reply
<b>SCC</b>	SCC	SCC
Explanation	SMS counter will be reset to zero	

## 6.4.25 Query SMS counter (SCR)

Command word	Format	Reply
<b>SCR</b>	SCR	SCR:10;100
Explanation	Parameter1:"10": SMS number device received Parameter2:"100": SMS number device that consumed Factory default both are zero	

## 6.4.26 Query GSM information (GSM)

Command word	Format	Reply
<b>GSM</b>	GSM	GSM: 5;4;460;0;2731;BB41;-82;460;0;2731;436E;-81;460;0;2731;436D;-94
Explanation	Refer GSM data in ASCII format	

## 6.4.27 GPS Query GPS information (GPS)

Command word	Format	Reply
<b>GPS</b>	GPS	GPS: A;4;N23.164351;E113.428515;0;0;35.7;0.85;0.35
Explanation	Refer GPS data in ASCII format	

## 6.4.28 Query Analogy-Digital Converter (ADC)

Command word	Format	Reply

ADC	ADC	ADC: 12.60; 3.99; 0.00; 0.00
Explanation	Refer AD data in ASCII format	

## 6.4.29 Query first GPS fixed time (GFT)

Command word	Format	Reply
GFT	GFT	GFT:50
Explanation	Range is “1 to 65535”, unit is “second”	

## 6.4.30 Query device status (STT)

Command word	Format	Reply
STT	STT	STT:4000;80
Explanation	STT:<Device status>;<IO status> Refer chapter4.3.7 “Device status list”	

## 6.4.31 Query Geo-fence status (GTT)

Command word	Format	Reply
GTT	GTT	GTT:FF;1F
Explanation	<p>This command is to query current status for each geo fence.</p> <p>GTT:&lt;Geo-fence status&gt;;&lt;Geo-fence event report&gt;</p> <p>&lt;Geo-fence status&gt;: HEX, data length is 156 bits, ranges is “0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF”.</p> <p>The first 28 Geo-fences are assigned to “bit0 to bit27”, The rest of 128 circle Geo-fences are assigned to “bit28 to bit155”.</p> <p>Each bit represents one Geo-fence, e.g.: bit0 represents Geo-fence0. “0” means device is outside Geo-fence or there is not assigned Geo-fence. “1” means device is inside Geo-fence.</p> <p>&lt;Geo-fence event report&gt;: HEX, data length is 156bits, ranges is “0 to FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF”.</p> <p>The first 28 Geo-fences are assigned to “bit0 to bit27”, The rest of 128 round Geo-fences are assigned to “bit28 to bit155”.</p> <p>Each bit represents one Geo-fence, e.g.: bit0 represents Geo-fence0. “0” means device is not reporting Geo-fence event. “1” means device is reporting Geo-fence event.</p>	

## 6.4.32 Query mileage (MGR)

Command word	Format	Reply
MGR	MGR	MGR:1000
Explanation	Query the current odometer mileage value, unit is “meter”	

## 6.4.33 Toggle GSM anti-jamming feature (JAM)

Command word	Format	Reply
JAM	JAM;0	JAM:0
	JAM	JAM:0
Explanation	This command is to toggle anti jamming feature JAM;<Mode>  <Mode> 0: Disable anti-jamming 1: Enable anti-jamming	

## 6.4.34 Toggle Tow detection feature (TOW)

Command word	Format	Reply
TOW	TOW;0	TOW:0
	TOW	TOW:0
Explanation	This command is to toggle tow event detection TOW;<Mode>  <Mode> 0: Disable Tow detection 1: Enable Tow detection	

## 6.4.35 Query current command list profile (CFN)

Command word	Format	Reply
CFN	CFN	CFN;<command list profile number>
Explanation	Query which profile is link with command FRL CFN;<command list profile number> <command list profile number>: range is "0 to 5"	

## 6.4.36 Query device model (PTY)

Command word	Format	Reply
PTY	PTY	PTY:G6S
Explanation	Query current device model name PTY:G6S	

## 6.4.37 Query licensed status (CHC)

Command word	Format	Reply
CHC	CHC	CHC;1
Explanation	Query current licensed status Format CHC:<Licensed status> Explanation <Licensed status>:	



	“1”: Licensed “0”: No licensed
--	-----------------------------------

## 6.4.38 Reset iButton ID (IBC)

Command word	Format	Reply
IBC	IBC	IBC
Explanation	This command is to deleted all iButton IDs.	

## 6.4.39 Reset Geo fence (GFC)

Command word	Format	Reply
GFC	GFC	GFC
Explanation	This command is to deleted all saved Geo fences	

## 6.4.40 Reset all events action (EUC)

Command word	Format	Reply
EUC	EUC	EUC
Explanation	This command is to reset all event actions configuration.	

## 6.4.41 Balance notification (BLS)

Command word	Format	Reply
BLS	BLS;*125#;1W;10 BLS	BLS:*125#;1W;10 BLS:*125#;1W;10
Explanation	<p>This command is to set periodical balance notification and low balance event.</p> <p>Format: BLS;&lt;USSD command&gt;;&lt;Interval&gt;;&lt;Balance threshold&gt;</p> <p>&lt;USSD command&gt;: Varied with different carriers, maximum 14 bytes.</p> <p>&lt;Interval&gt;: range “0D to 366D”, “0W to 48W”, “0M to 12M”. D=day, W=week, M=month</p> <p>&lt;Balance threshold&gt;: range “0 to 65535”, Low than this value device will report via GPRS or SMS periodically according to its command EUP setting, “0” means device will report current balance periodically according to &lt;Interval&gt;.</p> <p>Query current balance: BLS;&lt;USSD command&gt;</p> <p>Disable balance notification: BLS;</p> <p>Default: BLS;;0M;0</p>	

## 6.4.42 Digital output specify wave shape (DOO)

Command word	Format	Reply
DOO	DOO1;0	DOO1:0

Explanation	<p>This command is to set wave shape mode when output being activated.</p> <p>Format:</p> <p>DOO[ID];&lt;Mode&gt;</p> <p>&lt;ID&gt;: Digital output channel ID, range is “0 to 2”.</p> <p>“0”: OUT1</p> <p>“1”: OUT2</p> <p>“2”: OUT3</p> <p>&lt;Mode&gt;:</p> <p>Set output mode, refer command DOM, range is “0 to 7”</p>
-------------	---

## 6.4.43 Define separator in USSD (TSP)

Command word	Format	Reply
TSP	TSP;0	TSP:0
	TSP	TSP:0
Explanation	<p>This command is used to define Thousand separator in USSD balance check message for correct balance display.</p> <p>Format:</p> <p>TSP;&lt;Mode&gt;</p> <p>&lt;Mode&gt;:</p> <p>“0”: No thousand separator</p> <p>“1”: Thousand separator is COMMA</p> <p>“2”: Thousand separator is PERIOD</p> <p>“3”: Thousand separator is SPACE</p>	
	Default: TSP;0	

## 6.4.44 Query SIM card number (SIM)

Command word	Format	Reply
SIM	SIM	SIM: 1471482111
	SIM	SIM: 1471482111
Explanation	<p>This command is to query phone number of tracker SIM card if this feature is supported by SIM card, otherwise the returned value will be:</p> <p>SIM:</p>	

## 6.4.45 Set serial link report interval by ACC (EPT)

Command word	Format	Reply
EPT	EPT;30;3600	EPT:30;3600
	EPT	EPT:30;3600
Explanation	<p>This command is to set packet report interval from serial port according to ACC status.</p> <p>Format:</p> <p>EPT;&lt;ACC ON interval&gt;;&lt;ACC OFF interval&gt;</p> <p>&lt;ACC ON interval&gt;: Tracker will only extract packet from its RS232 serial port periodically, e.g. &lt;30&gt; means when ACC ON tracker accepts packet that from serial port every 30 seconds.</p> <p>Unit is second, range is 0 – 999999, 0 means tracker will accept all packet from serial port.</p> <p>&lt;ACC OFF interval&gt;: Tracker will only extract packet from its RS232 serial port periodically, e.g. &lt;3600&gt; means when ACC OFF tracker accepts packet that from serial port every 3600 seconds.</p> <p>Unit is second, range is 0 – 999999, 0 means tracker will accept all packet from serial port.</p>	
	EPT;0;0	

## 6.4.46 Hang up the ongoing call (HUP)

Command word	Format	Reply
HUP	HUP	HUP
Explanation	<p>If device receives such command it will hang up ongoing call anyway.</p>	

## 6.4.47 Pickup the incoming call (PUP)

Command word	Format	Reply
PUP	PUP	PUP
	<p>This command is to pick up the incoming call number that is not in the white list.</p>	

## 6.4.48 Set ECALL feature (ECL)

Command word	Format	Reply																		
ECL	Query current ecall phone number: ECL;0	ECL:0																		
	Set ecall phone number: ECL;0;+4930367009373	ECL;0;+4930367009373																		
	Query VIN number: ECL;1	ECL:1;VIN10245789540124																		
	Set VIN number: (“I”, “O”, “Q”) ECL;1;VIN VIN10245789540124	ECL:1;VIN VIN10245789540124																		
	Query triggered ECALL events ECL;2	ECL:2;FF																		
	Set events to triggered ECALL ECL;2;FF	ECL:2;FF																		
	ECALL events, bitwise <table border="1" data-bbox="316 1086 1497 1473"> <thead> <tr> <th>BIT</th> <th>Event name</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Turn over</td> </tr> <tr> <td>1</td> <td>Collision</td> </tr> <tr> <td>2</td> <td>Input1</td> </tr> <tr> <td>3</td> <td>Input2</td> </tr> <tr> <td>4</td> <td>Input3</td> </tr> <tr> <td>5</td> <td>Input4</td> </tr> <tr> <td>6</td> <td>Reserved</td> </tr> <tr> <td>7</td> <td>Reserved</td> </tr> </tbody> </table>			BIT	Event name	0	Turn over	1	Collision	2	Input1	3	Input2	4	Input3	5	Input4	6	Reserved	7
BIT	Event name																			
0	Turn over																			
1	Collision																			
2	Input1																			
3	Input2																			
4	Input3																			
5	Input4																			
6	Reserved																			
7	Reserved																			
Default: ECL;0;+4930367009373																				

## 6.4.49 Query model and version of GSM module (GVR)

Command word	Format	Reply
TSP	GVR	GVR:AGS2-W,REVISION 00.020
Explanation	Format: GVR:AGS2-W,REVISION 00.020  Model: AGS2-W Version; REVISION 00.020	

## 6.4.50 Recover the parameter except the specific command to default value RPD

Command word	Format	Reply
RPD	Setup: RPD	Reply: RPD
Explanation	Function: Recover others command except NAM,HVR,SVR,BSV,PIN,SCN,and APN to default value. Factory default: No	

## 6.4.51 Enable ACC ON as the device moving condition ACO

Command word	Format	Reply
ACO	Setup: ACO;0 Inquiry: ACO	Setup reply: ACO:0 Inquiry reply: ACO;0
Explanation	Function: When the 2D sensor is damaged, it can enable ACC on as the device moving condition. Format: ACO;<Mode> <Format> 0: Forbidden ACC ON as the one of the conditions for device moving. 1: Enable ACC ON as the one of the conditions for device moving. 1.Whether the ID of 2D sensor can be read or not as the standard to judge if the 2D sensor is damaged or not. 2.When the 2D sensor is damaged, towing and Idling can be affected too. 3.ACO command has no effect on the device with undamaged 2D sensor. Factory default: ACO;0	

## 6.4.52 Send command to make the device entering sleeping mode CSL

Command word	Format	Reply
CLS	Setup: CLS;1	Reply: CLS:1
Explanation	Function: Send command to make the device entering sleeping moe; Format: CSL;<Mode> <Mode>: 0: Null. When the device connected with external power, this command can not execute; When the device disconnected with external power, GPRS cannot send this command. 1: Enable the device entering sleeping mode; When the device connected with external power, this command is invalid; When send this command, GPO can be GPO automatically;0;0,when connect with external power, it will detect CLS is 0 or 1, if it is 1, GPO will recover as its original status, and then clear CLS to 0; Among the period of sending CLS;1, it executes the command GPO setup, then it will clear CLS to 0; Factory default: No.	

## 6.5. Firmware upgrade

During over the air firmware upgrade process, it will not affect device current working status, and firmware download supports “pause and resume”. Device receives upgrade command, it will download firmware from server over GPRS, when firmware download finished device will reboot itself to initial upgrade process. If new firmware is faulty device will restore to original firmware automatically.

### ■Command over GPRS:

FWU, start firmware upgrade process: \*GS06,FWU#

Confirm reply: \*GS06,356496042429803,FWU#

Upgrade success reply: \*GS06,356496042429803,FWU:1#

Upgrade fail reply: \*GS06,356496042429803,FWU:0#

FCL, abort upgrade process: \*GS06,FCL#

Confirm reply: \*GS06,356496042429803,FCL:1#

Upgrade success reply: \*GS06,356496042429803,FCL:0#

Upgrade fail reply: \*GS06,356496042429803,FWU:0#

FRC, restore to original version: \*GS06,FRC#

Confirm reply: \*GS06,356496042429803,FRC:1#

Cannot execute: \*GS06,356496042429803,FRC:0#

### ■Command over SMS:

FWU, start firmware upgrade process: 1234,FWU

Confirm reply:

G6S V2.19

FWU

EXT\_PWR=0.00V

BAT=0.01V

#27

Upgrade success reply:

G6S V2.19

Upgrade Success!

EXT\_PWR=0.00V

BAT=0.01V

#28

Upgrade fail reply:

G6S V2.19

Upgrade UnSuccess!

EXT\_PWR=0.00V

BAT=0.01V

#28

FCL, abort upgrade process: 1234,FCL

Confirm reply:

G6S V2.19

FCL:1

EXT\_PWR=0.00V

BAT=0.01V

#27

Cannot execute:

G6S V2.19

FCL:0

EXT\_PWR=0.00V

BAT=0.01V

#27

Upgrade success reply:

G6S V2.19

Upgrade UnSuccess!

EXT\_PWR=0.00V

BAT=0.01V

#28

FRC, restore to original version: 1234,FCL

Confirm reply:

G6S V2.19

FCL:1

EXT\_PWR=0.00V

BAT=0.01V

#27

Cannot execute:

G6S V2.19

FCL:0

EXT\_PWR=0.00V

BAT=0.01V

#27

## 7. User SMS report format

■Device report to user phone proactively 3 circumstance:

>Report mode as hyper link, refer chapter6.1.

>Report mode as ASCII, refer chapter6.2.

>Event is being triggered, refer chapter6.3.

### 7.1. Periodical hyper link report

There are 2 kinds of map hyper link available, static and dynamic, it depends on the setting of command USP, e.g.:

Static link:

[http://maps.google.com/staticmap?zoom=14&size=300x300&markers=%n\(,%e&sensor=false](http://maps.google.com/staticmap?zoom=14&size=300x300&markers=%n(,%e&sensor=false)

Dynamic link:

[URL0:http://maps.google.com/maps?q=%n\(,%e&t=m&z=16](http://maps.google.com/maps?q=%n(,%e&t=m&z=16)



GPS is fixed

Content of message	Explanation
G6S V1.00	<i>Device name/Firmware version</i>
LTM 2013-06-06 14:17:12	<i>Date/Time</i>
<a href="http://maps.google.com/maps?q...">http://maps.google.com/maps?q...</a>	<i>Google map hyper link</i>
ETD:6/ACC ON	<i>Event ID/User defined event name/Data</i>
GSM -52dBm	<i>GSM network signal strength</i>
EXT_PWR=12.08V	<i>External power voltage</i>
BAT=3.86V	<i>Built-in battery voltage</i>
#30	<i>Consumed messages</i>

GPS is not fixed

## 7.2. Periodical report, Text

GPS is fixed

Content of message	Explanation
G6S V1.00	<i>Device name/Firmware version</i>
LTM 2013-06-06 09:41:22	<i>Date/Time</i>
GPS 1.55/0.50/3/4	<i>HDOP/ALTITUDE in meter/Fixed satellite number/Time of first fixed</i>
N23.164302	<i>N means north/S means south</i>
E113.428456	<i>E means east/W means west</i>
SPD:0km/h 0	<i>Speed/Heading</i>
GSM -52dBm	<i>GSM signal strength</i>
EXT_PWR=12.13V	<i>External power voltage</i>
BAT=3.96V	<i>Built-in battery voltage</i>
#27	<i>Consumed messages</i>

GPS is not fixed, using LBS instead

Content of message	Explanation

G6S V1.00	<i>Device name/Firmware version</i>
LTM 2013-02-28 23:51:09	<i>Date/Time</i>
MCC/MNC/LAC/CID/RSSI	<i>Base station information type</i>
460/0/2503/962C/-53dBm	<i>Main station, MNC/MNC/Local area code/Station ID/signal strength</i>
460/0/2731/40F4/-60dBm	<i>Neighbor station 1</i>
460/0/2703/4050/-70dBm	<i>Neighbor station 2</i>
GSM -58dB	<i>GSM network signal strength</i>
EXT_PWR=5.13V	<i>External power voltage</i>
BAT=4.17V	<i>Built-in battery voltage</i>
#20	<i>Consumed messages</i>

### 7.3. Event SMS report

If assign event is triggered, device will send notify SMS to user according to the setting.

“T” mode

1, GPS is fixed

Content of message	Explanation
G6S V1.00	<i>Device name/Firmware version</i>
LTM 2013-02-28 23:51:09	<i>Date/Time</i>
GPS 1.55/0.50/3/4	<i>HDOP/ALTITUDE in meter/Fixed satellite number/Time of first fixed</i>
N23.164302	<i>N means north/S means south</i>
E113.428456	<i>E means east/W means west</i>
SPD:0km/h 0	<i>Speed/Heading</i>
ETD:6/ACC ON	<i>Event ID/User defined event name/Data</i>
GSM -52dBm	<i>GSM network signal strength</i>
EXT_PWR=12.13V	<i>External power voltage</i>
BAT=3.96V	<i>Built-in battery voltage</i>
#28	<i>Consumed messages</i>

2. GPS is not fixed, using LBS instead

Content of message	Explanation
--------------------	-------------

G6S V1.00	<i>Device name/Firmware version</i>
LTM 2013-02-28 23:51:09	<i>Date/Time</i>
MCC/MNC/LAC/CID/RSSI	<i>Base station information type</i>
460/0/2503/962C/-53dBm	<i>Main station, MNC/MNC/Local area code/Station ID/signal strength</i>
460/0/2731/40F4/-60dBm	<i>Neighbor station 1</i>
460/0/2703/4050/-70dBm	<i>Neighbor station 2</i>
ETD:6/ACC ON	<i>Event ID/User defined event name/Data</i>
GSM -52dBm	<i>GSM network signal strength</i>
EXT_PWR=12.13V	<i>External power voltage</i>
BAT=3.96V	<i>Built-in battery voltage</i>
#28	<i>Consumed messages</i>

“W” mode

Content of message	Explanation
G6S V1.00	<i>Device name/Firmware version</i>
LTM 2013-06-06 14:17:12	<i>Date/Time</i>
<a href="http://maps.google.com/maps?q...">http://maps.google.com/maps?q...</a>	<i>Google map hyper link</i>
ETD:6/ACC ON	<i>Event ID/User defined event name/Data</i>
GSM -52dBm	<i>GSM network signal strength</i>
EXT_PWR=12.08V	<i>External power voltage</i>
BAT=3.86V	<i>Built-in battery voltage</i>
#301	<i>Consumed messages</i>

## 8. First time usage

■Necessary command for first time usage.

### 8.1. Command

Mode	Command word	Explanation
Admin	SSN	Admin number (SMS server number), to set phone number as admin number
	APN	Set APN, for GPRS connectivity
	SVR	GPRS server IP and port, for GPRS server report
User	UNO	User number, for end user authorization
	UPW	User command password, change the default user command password.

## 9. Event list

Main event	Sub-	Eve	Event	Event status	Device reaction
------------	------	-----	-------	--------------	-----------------

ID	Definition	event ID	nt ID	definition	identifier		0	1	2	3	4	5	6	7
					0	1	I/O port action	Report to user 0	Report to user 1	Report to SMS server (Admin)	Report to GPRS server	Report to GPRS server or Admin	Reserved	Reserved
0	Main event 0	0	0	<b>Tow</b>	Tow to normal	Normal to tow	√	√	√	√	√	√		
		1	1	<b>Idle</b>	Idle to normal	Normal to Idle	√	√	√	√	√	√		
		2	2	<b>Parking</b>	Parking	Quit parking	√	√	√	√	√	√		
		3	3	<b>Over speed</b>	Over speed to normal	Normal to over speed	√	√	√	√	√	√		
		4	4	<b>GSM jamming</b>	GSM jamming to normal	Normal to GSM jamming	√	√	√	√	√	√		
		5	5	<b>Geo-fence</b>	Null	In or out	√	√	√	√	√	√		
		6	6	<b>First time position report</b>	Null	First time position report	√	√	√	√	√	√		
		7	7	<b>Health check report</b>	Null	Null		√	√	√	√	√		
1	Main event 1	0	8	<b>Harsh brake</b>	Null	Harsh brake	√	√	√	√	√	√		
		1	9	<b>Harsh accelerate</b>	Null	Harsh accelerate	√	√	√	√	√	√		
		2	10	<b>Harsh cornering</b>	Null	Harsh cornering	√	√	√	√	√	√		
		3	11	<b>Front collision</b>	Null	Front collision	√	√	√	√	√	√		
		4	12	<b>Rear collision</b>	Null	Rear collision	√	√	√	√	√	√		
		5	13	<b>Turn over</b>	Null	Turn over	√	√	√	√	√	√		
		6	14	<b>1WIRE</b>	Temperature	Temperature		√	√	√	√	√		

					inside range/ legal ibutton input	outside range /illegal ibutton input									
		7	15	<b>Balance low</b>	Null	Enable	√	√	√	√	√	√			
2	Main event 2	0	16	<b>External power</b>	Abnormal to normal	Normal to abnormal	√	√	√	√	√	√			
		1	17	<b>Backup battery</b>	Abnormal to normal	Normal to abnormal	√	√	√	√	√	√			
		2	18	<b>AD1</b>	Abnormal to normal	Normal to abnormal	√	√	√	√	√	√			
		3	19	<b>AD2</b>	Abnormal to normal	Normal to abnormal	√	√	√	√	√	√			
		4	20	Entering the sleeping mode under the situation of Battery with low voltage	Reserve	Entering sleeping mode	√	√	√	√	√	√			
		5	21	Reserved											
		6	22	Reserved											
		7	23	Reserved											
		3	Main event 3	0	24	<b>IO1</b>	Low to high	High to low	√	√	√	√	√	√	
1	25			<b>IO2</b>	Low to high	High to low	√	√	√	√	√	√			
2	26			<b>IO3</b>	High to low	Low to high	√	√	√	√	√	√			
3	27			<b>IO4</b>	High to low	Low to high	√	√	√	√	√	√			
4	28			<b>ACC</b>	ON to	OFF to	√	√	√	√	√	√			

					OFF	ON								
		5	29	Reserved	Reserve d	Reserve d								
		6	30	Reserved	Reserve d	Reserve d								
		7	31	Reserved	Reserve d	Reserve d								
4		...	...	...Reserv ed	...	...								
5		...	...	...	...	...								
6		...	...	...	...	...								
7	Main event 7	Comb 0	56				√	√	√	√	√	√		
		Comb 1	57				√	√	√	√	√	√		
		Comb 2	58				√	√	√	√	√	√		
		Comb 3	59				√	√	√	√	√	√		
		Comb 4	60				√	√	√	√	√	√		
		Comb 5	61				√	√	√	√	√	√		
		Comb 6	62				√	√	√	√	√	√		
		Comb 7	63				√	√	√	√	√	√		

■Name field explanation:

Name	Data type	Related command	Explanation
Main event ID	Decimal	ESM	
Sub-event ID	HEX	ESM	Sub-event mask
Event ID	Decimal	EUP,EOB	
Reaction ID	Decimal	EUP	Single event to trigger

**APPENDIX1. OEM command and authorization**

OEM command						
ID	Command word	Explanation	Default	User	Admin	OEM
1.	DFP	Factory default		×	×	√
2.	OPW	Set OEM password		×	×	√
3.	ACM	Administrator command mask		×	×	√
4.	UCM	User command mask		×	√	√
5.	OAS	Set FOTA server		×	√	√

6.	OAP	FOTA firmware file path		×	√	√
7.	APL	APL list		×	√	√
8.	HBI	Set heartbeat packet		×	√	√
9.	URL	Set map hyper link		×	√	√
10.	UGP	Set UGP		×	√	√
11.	CEN	Enable command		×	√	√
12.	CDS	Disable command		×	√	√
13.	SDM	Sub-data report mask		×	√	√
14.	EFM	Set offline data report mode		×	√	√
15.	ESM	Sub-event mask		×	√	√
16.	EUP	Set device reaction		×	√	√
17.	EOB	Combination event parameter		×	√	√
18.	ERL	Combination event		×	√	√
19.	ADM	Main data type report mask		×	√	√
20.	DOM	Set output port mode		×	√	√
21.	AIM	Set AD/IN mode		×	√	√
22.	DIM	Digital input configuration		×	√	√
23.	ADS	Analog input configuration		×	√	√
24.	EPS	Serial port configuration		×	√	√
25.	EPM	Set serial port mode		×	√	√
26.	BMS	Harsh behavior configuration		×	√	√
27.	AMS	Accident configuration		×	√	√
28.	UFM	Set Geo-fence mask		×	√	√
29.	AGS	Set AGPS information		×	√	√
30.	AIR	Set AD1/IN3 input range		×	√	√
31.	PKI	Serial port configuration		×	√	√
32.	PSS	Power saving mode		×	√	√
33.	GPO	Toggle GSM/GPS module		×	√	√
34.	YSF	Load command list profile from computer to device		×	√	√
35.	YGF	Save command list profile from device to computer		×	√	√
36.	YCF	Load device existing command list profile		×	√	√
37.	FRL	Switching configuration profile on condition (OR)		×	√	√
38.	DOP	Output port speed condition		×	√	√
39.	JMP	GSM anti jamming configuration		×	√	√
40.	FRS	Switching configuration profile on condition (AND)		×	√	√
41.	HOP	Discard GPS position by HDOP		×	√	√
42.	GAM	Enable AT mode of GSM module		×	√	√
43.	GAT	Send AT command to GSM module		×	√	√
44.	CTF	Generate and export the current configuration file CTF		×	√	√
45.	DOR	DO OUT1 status saving start command DOR		×	√	√
46.	SPT	Set up time interval command for regularly visit GICUS sever SPT		×	√	√
47.	RCS	GICUS sever IP/domain name, port setup command		×	√	√

		RCS				
48.	RCP	GICUS sever visiting page path setup command RCP		×	√	√
49	LCS	Immediate visiting GICUS sever command LCS		×	√	√

**APPENDIX2. Configuration command and authorization**

Configuration command						
ID	Command word	Explanation	Default parameter	User	Admin	OEM
1.	PIN	Set SIM card PIN number		√	√	√
2.	SCN	Set SMS center number		√	√	√
3.	APN	Set APN		√	√	√
4.	SVR	Set main server parameter		√	√	√
5.	BSV	Set backup sever parameter		√	√	√
6.	BDU	Set record batch report		√	√	√
7.	SVP	Set GPRS server report interval mode		√	√	√
8.	SSP	Set SMS server (admin) report interval mode		√	√	√
9.	USP	Set user report interval mode		√	√	√
10.	SSN	Set SMS server phone number		√	√	√
11.	SMT	Set SMS forwarding		√	√	√
12.	STP	Configure motion sensor parameter		√	√	√
13.	RST	Reboot device		√	√	√
14.	TZN	Set time zone		√	√	√
15.	DST	Configure daylight saving parameter		√	√	√
16.	STO	Set daylight saving		√	√	√
17.	PTH	Power supply alarm		√	√	√
18.	DNU	Set Report interval mode switching condition		√	√	√
19.	DIS	Fixed distance report and cornering report		√	√	√
20.	ATH	Analog input event condition		√	√	√
21.	VOE	Voice functionality configuration		√	√	√
22.	PWL	Phone number white list		√	√	√
23.	QWL	Query position permitted phone number white list		√	√	√
24.	MWL	Stealthy voice monitoring white list		√	√	√
25.	HWL	Hot line number white list		√	√	√
26.	SWL	SOS phone number white list		√	√	√
27.	GFS	Geo-fence status		√	√	√
28.	GOF	Set Geo-fence		√	√	√
29.	BMO	Set driving behavior detection		√	√	√
30.	AMO	Set accident detection		√	√	√
31.	BDS	Set device installation direction		√	√	√
32.	MGE	Set odometer counter		√	√	√
33.	MGS	Set odometer initial mileage		√	√	√
34.	SPO	Set Over speed report condition		√	√	√
35.	SPS	Over speed configuration		√	√	√
36.	ILO	Set Idle status detection		√	√	√



37.	ILS	Idle status configuration		√	√	√
38.	ETO	Set engine hour counter		√	√	√
39.	ETS	Engine initial hour counter value		√	√	√
40.	HTM	Device healthy check report		√	√	√
41.	AGP	Set Assist GPS		√	√	√
42.	SCF	Save current configuration as profile to device		√	√	√
43.	RCF	Load configuration profile		√	√	√
44.	PVM	Private hour mode configuration		√	√	√
45.	POB	Private hour mode output mode configuration		√	√	√
46.	IBO	Set 1-WIRE working mode		√	√	√
47.	IBI	Set iButton permit list		√	√	√
48.	IBP	Set iButton working mode		√	√	√
49.	TMP	Set 1-WIRE temperature alarm range		√	√	√
50.	SVT	Server timeout configuration		√	√	√
51.	IBE	Set ibutton key special mode		√	√	√
52.	IBS	Define ibutton key special mode		√	√	√
53.	ITS	Input event to activate serial port output		√	√	√
54.	SUR	Set USSD server		√	√	√
55.	SUP	USSD server report interval mode		√	√	√

**APPENDIX3. Public command and authorization**

Public command						
ID	Command word	Explanation	Default parameter	User	Admin	OEM
1.	UNO	Set user phone number		√	√	√
2.	UPW	Set user command password		√	√	√
3.	MOT	Configure motion sensor parameter		√	√	√
4.	USC	Set user short command		√	√	√
5.	FWU	Upgrade command		√	√	√
6.	FCL	Abort the ongoing FOTA process		√	√	√
7.	FRC	Reverse to previous version		√	√	√
8.	AGN	Set audio parameter		√	√	√
9.	CAL	Set device dial-back phone number		√	√	√
10.	ENM	Rename event for user SMS		√	√	√
11.	ETC	Clear event status		√	√	√
12.	ERT	Query engine running time		√	√	√
13.	FPD	Query output port type and data		√	√	√
14.	PRQ	Query current position		√	√	√
15.	TIM	Query current GMT time		√	√	√
16.	NAM	Query product name		√	√	√
17.	VER	Query device hardware/software version		√	√	√
18.	MEI	Query IMEI number		√	√	√
19.	MSI	Query IMSI of SIM card		√	√	√
20.	CID	Query CCID of SIM card		√	√	√
21.	CSQ	Query GSM signal strength		√	√	√

22.	REG	Query GSM registration status		√	√	√
23.	SCC	Clear SMS counter		√	√	√
24.	SCR	Query SMS counter		√	√	√
25.	GSM	Query GSM information		√	√	√
26.	GPS	Query GPS information		√	√	√
27.	ADC	Query ADC information		√	√	√
28.	GFT	Query GFT information		√	√	√
29.	STT	Query device status		√	√	√
30.	GTT	Query Geo-fence status		√	√	√
31.	MGR	Query mileage		√	√	√
32.	ETT	Query event status bit		√	√	√
33.	JAM	Enable anti-jamming feature		√	√	√
34.	TOW	Enable Tow detection feature		√	√	√
35.	CFN	Query current configuration profile number		√	√	√
36.	PTY	Query device model		√	√	√
37.	CHC	Query licensed status		√	√	√
38.	IBC	Reset iButton ID		√	√	√
39.	GFC	Reset Geo fence		√	√	√
40.	EUC	Reset all events action		√	√	√
41.	BLS	Balance notification		√	√	√
42.	DOO	Digital output specify wave shape		√	√	√
43.	TSP	Define separator in USSD		√	√	√
44.	SIM	Query current SIM phone number		√	√	√
45.	EPT	Set serial port report interval by ACC		√	√	√
46.	HUP	Hang up the ongoing call		√	√	√
47.	PUP	Pick up the incoming call		√	√	√
48.	ECL	Set ECALL feature		√	√	√
49.	GVR	Query model and version of GSM module		√	√	√
50.	RPD	Recover the parameter except the specific command to default value		√	√	√
51.	ACO	Enable ACC ON as the device moving condition		√	√	√
52.	CSL	Send command to make the device entering sleeping mode		√	√	√

**APPENDIX4. Device LED Behavior**

<b>GSM LED: Green</b>	<b>GPS LED: Yellow</b>	<b>Power LED: Red</b>
-----------------------	------------------------	-----------------------

<p><b>Socket connected:</b></p> <p>Flash once</p> <p><b>GSM registered:</b></p> <p>Flash 2 times</p> <p><b>GSM unregistered:</b></p> <p>Flash 3 times</p> <p><b>SIM card error:</b></p> <p>Flash 4 times</p> <p><b>Serial port communication error:</b> Flash 5 times</p> <p><b>GSM module OFF:</b></p> <p>LED off</p>	<p><b>GPS fixed:</b></p> <p>Flash once</p> <p><b>GPS unfixed:</b></p> <p>Flash 2 times</p> <p><b>GPS communication error:</b></p> <p>Flash 3 times</p> <p><b>GPS module OFF:</b></p> <p>LED off</p>	<p><b>External power supply:</b></p> <p>Flash once</p> <p><b>Backup battery power supply:</b></p> <p>Flash 2 times</p> <p><b>Backup battery low voltage:</b></p> <p>Flash 3 times</p> <p><b>Under iButton ID config mode:</b></p> <p>Keep glowing</p> <p><b>iButton ID config successfully:</b></p> <p>Flashing once per second</p>
--	---	---

e.g.: GPS fixed, GPS LED will flash once, and wait for 3 seconds to flash once more.