

# GPRS COMMUNICATION PROTOCOL

## 1. Heartbeat package:

\*XX,YYYYYYYYYY,V1,HHMMSS,S,latitude,D,longitude,G,speed,direction,DDMMYY,vehicle\_status,net\_mcc,net\_mnc,net\_lac,net\_cellid #

Which is : \* command header

XX manufacturer name, such as: TH, DC, XY, etc.

, separator

YYYYYYYYYY car machine serial number. 10 digits

V1 data type, V1 heartbeat packet, V2 address request

HHMMSS time: hour/minute/second Upload time is 0 time zone time, ie GPS chip data output time

S: Data valid bit (A/V), A indicates that the GPS data is valid positioning data, and V indicates that the GPS data is invalid positioning data.

Latitude: latitude, format DDFF.FFFF, DD: degree of latitude (00 ~ 90), FF.FFFF: latitude (00.0000 ~ 59.9999), retaining four decimal places.

D: Latitude mark (N: north latitude, S: south latitude).

Longitude: longitude, format DDDFF.FFFF, DDD: degree of longitude (000 ~ 180), FF.FFFF: longitude (00.0000 ~ 59.9999), retaining four decimal places.

G: Longitude mark (E: East longitude, W: West longitude).

Speed: Speed, range 000.00 ~ 999.99, retaining two decimal places.

Direction: azimuth, 0 degrees north, resolution 1 degree, clockwise.

DDMMYY: day/month/year

Vehicle\_status: Vehicle status, a total of four bytes, indicating the status of the vehicle-mounted components, vehicle component status, and alarm status. The hexadecimal value is represented by ASCII characters. The following is the specific meaning of each bit of each byte in the variable. The bit indicates that negative logic is used, that is, bit=0 is valid. See Appendix 1 Table of the document

Net\_mcc: mobile country code

Net\_mnc: mobile network code

Net\_lac: base station area code

Net\_cellid: base station code

Mile: mileage unit is meter

#OVER

Example

\*HQ,8168000008,V1,043602,A,2234.9273,N,11354.3980,E,000.06,0  
00,100715,FBFFBBFF,460,00,10342,4283#

## 2. Normal data package

Encoding format HEX:

Number	00	01	02	03	04	05	06	07	08	09	0A	0B
content	\$	8168000008					043204			100715		
meaning	Record head	Car serial number					time			date		

Number	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18
content	22349273				06	113543980E					014028		
meaning	Latitude value				Backup battery	Longitude value、N、E、AV					Speed, direction		

Number	19~1C	1D~20	21~24	25~26	27	28~29	2A~2B	2C
content	0xFFFF FBFF	0x0098 9680	0x00000000	0x01cc	0x00	0x2688	0x10bb	00
meaning	vehicle_status	mileage	Reserved bit	mcc	mnc	lac	Cell id	Record number

Description: "\$" (0x24): Recording head, used to identify the starting position of the record,  
**and the packet length is fixed at 45 bytes;**

Time: 043204, standard time 4:32:4, equivalent to 12:32:4 Beijing time;

Date: 100715, day and month format, July 10, 2015;

Latitude value: 22349273, 22 degrees 34.9373 minutes, the format is ddmm.mmmm (the leading digit is less than 0)

Longitude value: 113543980E, 113 degrees 54.3980 minutes, the format is dddmm.mmmm (the leading digit is less than 0)

Last byte (Number0x15) meaning:

Bit7:6:5:4, the last longitude

Bit3, 1: East longitude, 0: West longitude

Bit2,1: north latitude, 0: south latitude

Bit1,1:A (GPS positioning), 0:V (GPS is not positioned)

Bit0, undefined

Speed, direction: 0x014028: speed 014 knots, direction 028

Vehicle\_status: Vehicle status and user-defined alarm status in binary. The meaning is the same as the heartbeat package.

Miles statistics: 0x00989680, 0x00989680 = 10000000 meters = 10,000 kilometers

Reserved bits:

Mcc: mobile country code

Mnc: mobile network code

Lac: base station area code

Cell id: base station code

Record number: The number of records in binary representation, plus 1 for each record sent.

Example:

2481680000080436021007152234927306113543980E000000FBFF

BBFF00000000000000000000000000001CC00286610BB00

**Appendix 1 Table**

R a n k	save		Vehicle component status		Vehicle component status		Alarm status	
	First byte		second byte		Third byte		forth byte	
0	1	save	1	save	1	save	1	save
1	0	Displacement alarm	0	Vibration alarm	0	Vehicle fortification	0	SOS (robbery)
2	0	Supplementary data	1	save	0	ACC off	0	Speed alarm

3	0	The vehicle is in a fuel-off state	0	Host power down by backup battery	1	unlock	0	Collision alarm
4	0	Broken main power alarm	1	save	1	save	1	save
5	1	save	1	save	1	save	1	save
6	1	save	1	save	1	save	1	save
7	1	save	1	save	1	save	1	save

### 3. Collision packet

#### Encoding format HEX

Number	00	01	02	03	04	05	06	07	08	09	0A	0B
content	%	8168000008					043204			100715		
meaning	Record head	Car serial number					time			date		

Number	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18
content	22349273				06	113543980E					014028		
meaning	Latitude value				batte ry powe r	Longitude value、 N、 E、 AV					Speed, direction		

Number	19~21	22	1E~3B							69
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conten t						&
meani ng	XYZ Accelerati on	speed	.....	XYZ Accelera tion	speed	over

Description: "%" (0x25): Record head, used to identify the starting position of the record, and the packet **length is fixed 112 bytes**;

Time: 043204, standard time4 points 32 minutes and 4 seconds, equivalent to Beijing time12 points 32 minutes and 4 seconds;

Date: 100715, day and month format, July 10, 2015;

Latitude value: 22349273, 22 degrees 34.9373 minutes, the format is ddmm.mmmm (the leading digit is less than 0)

Longitude value: 113543980E, 113 degrees 54.3980 minutes, the format is dddmm.mmmm (the leading digit is less than 0)

10 seconds before and after acceleration value: 4 bytes per S is the X axis, 4 bytes for the Y axis, the last 4 bytes for the Z axis, the last byte is the speed for 20 groups, hexadecimal representation, high byte In the first, the low byte is after, the floating point is expressed, the speed is hexadecimal

9A99D9409A99D9C00000C84222

0x9A99D940 = 6.8mg 0x9A99D9C0 = - 6.8mg 0x0000C842

Speed value of 10 seconds before and after: 0x22 = 34km/h

End character: "&" (0x26).

## 4. The server sends the command part

### 1.the center sends the commandstructure:

\*XX,YYYYYYYYYY,CMD,HHMMSS,PARA1,PARA2,...#

Where: \* command header

XX manufacturer name, two fixed ASCII characters, such as: TH, DC, XY, etc.

The in-vehicle device will check if the manufacturer's name matches, and if it does not match, it is not considered a central order. The emergency button can be pressed to cause the vehicle-mounted device to send an alarm message, and the manufacturer's name is obtained from the alarm information (the vehicle-mounted device must be set first).

, separator

YYYYYYYYYYCar serial number, the car opportunity is ignored, can be filled with ASCII characters within 10 digits such as: 000.

CMD command number

HHMMSStime: hour/minute/second,

PARA command parameters

# End character

The English letters in the command characters are always in uppercase and cannot be inserted

into spaces.

## 2. the vehicle information return information structure:

\*XX,YYYYYYYYY,V4,CMD,hhmmss,HHMMSS,S,latitude,D,longitude,G,speed,direction,DDMMYY,v  
ehicle\_status,net\_mcc,net\_mnc,net\_lac,net\_cellid #

Where: \* command header

XX manufacturer name, such as: TH, DC, XY, etc.

, separator

YYYYYYYYYCar serial number.

V4 packet type

CMD confirmed central command.

Hhmmss is confirmed by the time value in the command

HHMMSS on-board time, standard time, and 8 hours difference with Beijing time.

S: Data valid bit (A/V), A indicates that the GPS data is valid positioning data, and V indicates that the GPS data is invalid positioning data.

Latitude: latitude, format DDFF.FFFF, DD: degree of latitude (00 ~ 90), FF.FFFF: latitude (00.0000 ~ 59.9999), save four decimal places.

D: Latitude mark (N: north latitude, S: south latitude).

Longitude: longitude, format DDDFF.FFFF, DDD: degree of longitude (000 ~ 180), FF.FFFF: longitude (00.0000 ~ 59.9999), save four decimal places.

G: Longitude mark (E: East longitude, W: West longitude).

Speed: speed, range 000.00 ~ 999.99, save two decimal places.

The information field may be empty, ie longitude, G, direction, indicating that the speed is zero.

Direction: azimuth, 0 degrees north, resolution 1 degree, clockwise.

The information field may be empty such as longitude, G, speed, and MMDDYY, indicating that the angle is zero.

DDMMYY: day/month/year

Vehicle\_status: vehicle status

Net\_mcc: mobile country code

Net\_mnc: mobile network code

Net\_lac: base station area code

Net\_cellid: base station code

# End character

## 3. the center sends a command set

1) Set the device data upload interval command D1

Example: \*HQ,8168000005,D1,062108,30,1#

Set the ignition upload time interval to 30 seconds

Device returns:

\*HQ,8168000005,V4,D1,062108,062225,A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFF  
BBFF,460,00,10342,3721#

2) The server receives the location data packet and sends a confirmation command R12.

Example: \*HQ,8168000005,R12,062108#

3) Power off S20

Oil-discharge command: \*HQ, 8168000005, S20, 061158, 1, 1#

Equipment return: \*HQ, 8168000005, V4, S20, DONE, 061158, 061202,  
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

Restore oil and gas instructions: \*HQ, 8168000005, S20, 061713, 0, 0#

Equipment return: \*HQ, 8168000005, V4, S20, OK, 061713, 061730,  
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

4) Arming and disarming command SCF

Fortification: \*HQ, 8168000005, SCF, 061837, 0, 0#

Equipment return: \*HQ, 8168000005, V4, SCF, 0,061837, 061955,  
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

Disarming: \*HQ, 8168000005, SCF, 061939, 1, 1#

Equipment return: \*HQ, 8168000005, V4, SCF, 1,061939, 062057,  
A, 2235.0086, N, 11354.3668, E, 000.00, 000, 160716, FFFFBBFF, 460, 00, 10342, 3721#

5) Set the master number command S71

The server delivers: \*HQ, 8168000005, S71, 062328, 01, 18688993050#

Equipment return: \*HQ, 8168000005, V4, S71, 01, 062328, 062355,  
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

6) Set the SOS number command S71

The server delivers: \*HQ, 8168000005, S71, 063012, 02, 18600000001, 18600000002#

Equipment return: \*HQ, 8168000005, V4, S71, 02,063012, 063055,  
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

7) Clear alarm command R7 (answer)

The server delivers: \*HQ, 8168000005, R7, 063012#

8) Collision level setting command CRASH //Only collision level No vibration level setting

The server delivers: \*HQ, 8168000005, CRASH, 061837, 1#

Level 1~5 has a total of 5 levels. The higher the level, the greater the collision level for collision



alarms.

Equipment return: \*HQ, 8168000005, V4, CRASH, 061837, 061855,  
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

9) SMS command transparent reply

The server sends a text message command: admin123456 13888888888

Device return: \*HQ, 8168000005, V4, SMS, SET OK#

**Server address request:**

\*HQ,8168000005,V2,064645,A,2235.0139,N,11354.3648,E,000.07,000,080316,FFF7BBFF,4  
60,00,10342,3721#

**Server return address:**

\*HQ,8168000005,I1,064836,10,1,64,004700500053003a5e7f4e1c77016df157335e025b9d  
5b89533a59275b9d8def0036003553f765b067ef57ce79d162805de54e1a56ed897f5317003800  
377c73#

GPS: Shenzhen, Guangdong, China

#### **4. The vehicle will actively send general information (V1) to the center under the following conditions**

- 1, heartbeat packet data, gprs connection status, default 5 minutes to send a
2. The terminal connects the package, and uploads a V1 message when the terminal connects to the server.