

# GPRS communication protocol

**\*Change the agreement must pay attention to the compatibility of previous software and other platforms\***

## 1. Heartbeat package:

\*XX,YYYYYYYYYYY,V5,HHMMSS,S,latitude,D,longitude,G,speed,direction,DDMMYY,vehicle\_status,net\_mcc,net\_mnc,net\_lac,net\_cellid, VIN#

Note: \* command header

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

, separator

YYYYYYYYYYY car machine serial number. 10 digits

V1 data type, V1 heartbeat packet V2 address request **V5 with mileage data and voltage V6 with ICCID**

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

# Terminator

Examples are as follows:

\*HQ,8168000008,V1,043602,A,2234.9273,N,11354.3980,E,000.06,000,100715,FBFFBBF

F,460,00,10342,4283#

The example with mileage and external power supply voltage data is as follows:

\*HQ,8168000008,V5,043602,A,2234.9273,N,11354.3980,E,000.06,000,100715,FBFFBBF

F,460,00,10342,4283,1000,125#

The example with ICCID data is as follows:

\*HQ,8168000008,V6,043602,A,2234.9273,N,11354.3980,E,000.06,000,100715,FBFFBBF

F,460,00,10342,4283,898602A2091508006821#

## 2. Normal data packet

Encoding format HEX:

Serial 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		

Serial number	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18
Content	22349273				06	113543980E					014028		
Meaning	Latitude value				Backup battery power	Longitude value, N, E, AV					speed, direction		

Serial number	19~1C	1D~20	21~24	25~26	27	28~29	2A~2B	2C
Content	0xFFFF BFF	0x009896 80	0x000000 00	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 length of the data packet is fixed at 45 bytes;

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

Date: 100715, July 10, 2015;

Latitude value: 22349273, 22 degrees 34.9373

Longitude value: 113543980E, 113 degrees 54.3980, last byte (serial number 0x15)

Meaning:

Bit7654, 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.

Mileage 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 serial number of the record, which is automatically incremented by one for each record sent.

Examples are as follows:

2481680000080436021007152234927306113543980E000000FBFFBBFF00000000000000  
0001CC00286610BB00

Appendix 1 Table

Bit order	Reserved		on-board component status		vehicle component status		alarm status	
		First byt		second byte		third byte		fourth byte
0	1	Reserved	1	Reserved	0	Door open	1	Reserved
1	0	Displacement alarm	0	Vibration alarm	0	Vehicle fortification	0	Light alarm
2	0	Supplementary data	1	Reserved	0	ACC off	0	Overspeed alarm
3	0	The vehicle is in the off-oil state	0	The main unit is powered down by the backup battery	0	Unlocked	0	Illegal ignition alarm
4	0	Battery removal alarm	1	Reserved	1	Reserved	0	Illegal door opening alarm
5	1	Reserved	1	Reserved	0	Engine	1	Reserved
6	1	Reserved	1	Reserved	1	Reserved	1	Reserved
7	1	Reserved	1	Reserved	1	Reserved	1	Reserved

### 3. The server sends the command part

## First, the center sends the command structure:

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

Note: \* 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

YYYYYYYYYYY car machine serial number, car opportunities are ignored, can be filled with ASCII characters within 10 digits such as: 000.

CMD command number

HHMMSS time: hour/minute/second,

PARA command parameters

# Terminator

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

## Second, the vehicle information return information structure:

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

Where: \* command header

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

, separator

YYYYYYYYYYY car machine serial number.

V4 packet type

CMD confirmed center 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), 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.

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  
# Terminator

### Third, 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 interval to 30 seconds

Device returns:

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

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

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