LTS-100DS original GPRS communication protocol

*** When changing the protocol, we must pay attention to the compatibility between the previous software and other platforms ***

1. Heartbeat packet：

*XX,YYYYYYYYYY,V6,HHMMSS,S,latitude,D,longitude,G,speed,direction, DDMMYY,vehicle_status, net_mcc,net_mnc,net_lac,net_cellid, ICCID#

Where: * command header

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

, Separator

YYYYYYYYYY vehicle serial number. 10 digits

V1 data type, V1 heartbeat packet, V2 address request, V5 has mileage data and voltage, V6 has ICCID and VIN

HHMMSS time: hour / minute / second upload time is 0 time zone time, that is, GPS chip data output time

S: data valid bit (A/V), A means GPS data is valid positioning data, V means GPS data is invalid positioning data.

latitude: latitude, format DDFF.FFFF, DD: latitude degree (00 ~ 90), FF.FFFF: latitude minute (00.0000 ~ 59.9999), four decimal places are reserved.

D: Latitude mark (N: North latitude, S: South latitude).

longitude: longitude, format DDDFF.FFFF, DDD: longitude degree (000 ~ 180), FF.FFFF: longitude minute (00.0000 ~ 59.9999), four decimal places are reserved.

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

speed: speed, range 000.00 ~ 999.99 knots, with two decimal places reserved.

direction: azimuth, true north is 0 degree, resolution is 1 degree, clockwise.

DDMMYY: day / month / year

vehicle_status: vehicle status, a total of four bytes, indicating the status of vehicle components, vehicle component status, and alarm status. Use ASCII characters to represent the hexadecimal value. The following is the specific meaning of each bit of each byte in the variable. Bit means use negative logic, that is, bit = 0 is valid. See table in Appendix 1 at the back 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 in meters

Terminator

Examples are as follows：

*HQ,8168000008,V1,043602,A,2234.9273,N,11354.3980,E,000.06,

000,100715,FBFFBBFF,460,00,10342,4283#

Examples of mileage and external power supply voltage data are as follows：

*HQ,8168000008,V5,043602,A,2234.9273,N,11354.3980,E,000.06,

000,100715,FBFFBBFF,460,00,10342,4283,1000#

Examples with ICCID and VIN data are as follows：

*HQ,8168000008,V6,043602,A,2234.9273,N,11354.3980,E,000.06,

000,100715,FBFFBBFF,460,00,10342,4283,898602A20915080068

21, LS5A3CBDXEB089680#

2. Normal 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 machine serial number					Time			date		

Serial number	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18
content	22349273				F6	113543980E					014028		
meaning	Latitude value				Backup battery capacity	Longitude value, N, E, AV					Speed, direction		

Serial number	19~1C	1D~20	21~22	23	24~25	26~27	28	29~2A	2B~	33
content	0xFFFFFFBFF	0x00000000	0x01cc	0x00	0x2688	0x10bb	0x1E	0x2866	…	00
meaning	vehicle_status	Milage	mcc	mnc	lac	Cell id	rx	lac	…	Record number

Note: "$" (0x24): record head, used to identify the start position of the record in the center;

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

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

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

Standby power: (different protocols, two power calculation levels)

Level 1-100% is expressed in hexadecimal, 0x64 means: 100% power

When the power is less than 10%, it is represented by F1-F9 (different between two types of power).

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

The meaning of the last byte (serial number 0x15):

bit7654, last bit of 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 positioning)

bit0, undefined

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

vehicle_status: Vehicle status and user-defined alarm status in binary. It has the same meaning as the heartbeat packet.

milage：0x00989680，0x00989680 = 10000000 meters = 10000 KM

mcc: mobile country code

mnc: mobile network code

lac: base station area code

cell id: base station code

rx: signal value

Fixed three groups of base stations, not enough

Record number: The record serial number in binary format, which is automatically incremented by one each time a record is sent.

Examples are as follows：

2420180000060616562609180000000049000000000C000000FFFF

BBFF0000000001CC00286611001828661286172866128715 01

Appendix 1 Table

Bit order	Reserve		Vehicle parts status		Vehicle parts status		Alarm status	
	First byte		Second byte		Third byte		Fourth byte	
0	1	Reserve	1	Reserve	0	Door open	1	Reserve
1	0	movement alarm	0	Vibration alarm	0	Vehicle fortification	0	Light alarm
2	0	Supplementary data	1	Reserve	0	ACC off	0	Overspeed alarm
3	0	The vehicle is out of power	1	The host is powered by a backup battery	0	unlock	1	Illegal ignition alarm
4	1	Car Battery removal alarm	1	Reserve	1	Reserve	1	Illegal door open alarm
5	1	Reserve	1	Reserve	0	engine	1	Low battery alarm
6	1	Reserve	1	Reserve	1	Reserve	1	Low battery alarm
7	1	Reserve	1	Reserve	1	Reserve	1	Reserve

3. The server sends the command part

3.1 Central Send Command Structure：

*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 machine will check whether the manufacturer's name matches, if not, it will not be regarded as a central order. You can press the emergency button to make the vehicle-mounted unit send alarm information, and get the manufacturer name from the alarm information (you need to set up the vehicle-mounted unit first).

, Separator

YYYYYYYYYY vehicle serial number, the vehicle will ignore it, and can be filled with ASCII characters within 10 digits, such as: 000.

CMD command number

HHMMSS time: hour / minute / second,

PARA command parameters

Terminator

English letters in command characters are always capitalized, and spaces cannot be inserted.

3.2 Vehicle-mounted machine 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

YYYYYYYYYY vehicle serial number.

V4 packet type

CMD confirmed central order.

hhmmss time value in confirmed command

HHMMSS vehicle time, standard time, there is an 8-hour time difference from Beijing time.

S: data valid bit (A / V), A means GPS data is valid positioning data, V means GPS data is invalid positioning data.

latitude: latitude, format DDFF.FFFF, DD: latitude degree (00 ~ 90), FF.FFFF: latitude minute (00.0000 ~ 59.9999), four decimal places are reserved.

D: Latitude mark (N: North latitude, S: South latitude).

longitude: longitude, format DDDFF.FFFF, DDD: longitude degree (000 ~ 180), FF.FFFF: longitude minute (00.0000 ~ 59.9999), four decimal places are reserved.

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

speed: speed, range 000.00 ~ 999.99 knots, with two decimal places reserved.

The information field may be empty, that is, longitude, G ,, direction ,, indicating that the speed is 0.

direction: azimuth, true north is 0 degree, resolution is 1 degree, clockwise.

The information field may be empty, such as longitude, G, speed ,, MMDDYY, which means the angle is 0.

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

3.3 Central Send Command Set

Set the device data upload interval command D1

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

Set the ignition upload interval to 30 seconds

Device Reply：

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

1) The server receives the location data packet and issues a confirmation instruction R12
Example: *HQ,8168000005,R12,062108#

2） Arming and disarming instructions SCF
Arming：*HQ,8168000005,SCF,061837,0,0#
Device reply：*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#
Device reply：*HQ,8168000005,V4,SCF,1,061939,062057,
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFBBFF,460,00,10342,3721#

3） Set the master number command S71
Issued by the server：*HQ,8168000005,S71,062328,01,18688993050#
Device Reply：*HQ,8168000005,V4,S71,01,062328, 062355,
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

4）Set SOS number instruction S71
Issued by the server：*HQ,8168000005,S71,063012,02,18600000001,18600000002#
Device Reply：*HQ,8168000005,V4,S71,02,063012, 063055,
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

5）Clear alarm instruction R7
Issued by the server：*HQ,8168000005,R7,063012#

6）Reply via SMS command
The server sends SMS instructions：admin123456 13888888888
Device Reply：*HQ,8168000005,V4,SMS,SET OK#

7）Timing (intelligent) working mode setting instruction TIM
Give instructions in the platform background ：*HQ,8168000005,TIM,061837,5#
Set the device to work once every 5 minutes,Value range: 3-720

Device Reply：*HQ,8168000005,V4,TIM,061855,061905,
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

8）Normal (high power consumption) working mode setting instruction NOR
Give instructions in the platform background：*HQ,8168000005,NOR,061837#

Device Reply：*HQ,8168000005,V4,NOR,061855,061905,
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

9）Power saving mode setting instruction SAV

Give instructions in the platform background：*HQ,8168000005,SAV,061837#

Device Reply：*HQ,8168000005,V4,SAV,061855,061905,
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

10） Voice-activated recording instructions VOX

Give instructions in the platform background：*HQ,8168000005,VOX,061837,1#

1 turn on voice-activated recording, 0 is turn off voice-activated recording

Device Reply：*HQ,8168000005,V4,VOX,061855,061905,
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

11） Roll call instructions DM

Give instructions in the platform background：*HQ,8168000005,DM,061837#

Device Reply：*HQ,8168000005,V4,DM,061855,061905,
A,2235.0086,N,11354.3668,E,000.00,000,160716,FFFFB9FF,460,00,10342,3721#

Server address request:

*HQ,8168000005,V2,064645,A,2235.0139,N,11354.3648,E,000.07,000,080316,FFF7BBFF,460,00,10342,3721#

Server return address:

*HQ,8168000005,I1,064836,10,1,64,004700500053003a5e7f4e1c77016df157335e025b9d5b89533a59275b9d8def0036003553f765b067ef57ce79d162805de54e1a56ed897f5317003800377c73#

GPS: 87 meters northwest of Dolly Industrial Zone, Futian District, Shenzhen, Guangdong

3.4

The vehicle-mounted unit will actively send general information (V1) to the center in the following cases

3.4.1Heartbeat packet data, gprs connection status, send one by default every 5 minutes.

3.4.2Terminal connection package, upload a V1 message when the terminal connects to the server.