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Data Type

| | |
|---|---|
| V1 | GPS Packet |
| V4 | Confirmation |

# A Command structure

## 1. Heartbeat data

Heartbeat data：
Device send data: *HQ,135790246811220,HTBT#
Device response: *HQ,135790246811220,HTBT#

## 2 . GPS data (V1)

Format:
*XX,YYYYYYYYYYYYYYY,V1,HHMMSS,S,latitude,D,longitude,G,speed,direction,DDMMYY,equ _status #

*HQ,865205030330012,V1,145452,A,2240.55181,N,11358.32389,E,0.00,0,100815,FFFFFBFF#

Confirm data：

*XX,YYYYYYYYYYYYYYY,V4,CMD,hhmmss,HHMMSS,S,latitude,D,longitude,G,speed,direction,DDMMYY,equ_status #

V1 GPS data format：

| | |
|---|---|
| * | command head |
| XX | Supplier name,ASCII character |
| , | separator |
| YYYYYYYYYYYYYYY | 15digit IMEI number |
| V1/V2/V3/V4 | comamnd code |
| CMD | to be confirmed command |
| hhmmss | time value of confirmed command |
| HHMMSS | Time |
| S | data valid byte （A/V/B）, |

A represent valid data signal, V represent invalid data signal, B represent Beidou valid data signal

| | |
|---|---|
| Latitude | latitude, format DDMM.MMMMM |
| D | latitude symbol（N：north, S：south） |
| Longitude | Longitude, format DDDMM.MMMMM |
| G | Longitude symbol（E：East, W：west） |
| Speed | range 000.00 ~ 999.99 byte （must be 3 digits XXX, if speed is 60km/h, so it need reserve a "space" in front of 60 value） |
| Direction | direction,true north is 0 degree,resolution 1 dgree, clockwise |
| DDMMYY | date/month/year |
| equ_status | （refer < General data definition >） |
| # | ending |

PS: prococol calculate method is decimal system. Calculate by knot. It require transformation when analyze speed in your platform. So can not calculate by km/h directly. For example: if it show 10 in your platform, the real speed is 10 knot/h, 10*1.852=18.52km/h.

V3 data（LBS data）

*XX,YYYYYYYYYYYYYYY,V3,HHMMSS,Base_Info,Battery_Info,Failure_Info,Cont,DDMMYY,equ_status#

| | |
|---|---|
| * | command head |
| XX | Supplier name,ASCII character |
| , | separator |
| YYYYYYYYYYYYYYY | 15digit IMEI number |
| CMD | comamnd code |
| HHMMSS | terminal time |

Base_Info：Base station information format asbelow:

MCC,MNC,Base_Number,LAC1,Cell_ID1,RS1,dBm1, LAC2,Cell_ID2,RS2,dBm2,…

| | |
|---|---|
| MCC | country code, china is 460 |
| MNC | network code, china mobile 00, China Union 01 |
| Base_Number | Cell ID quantity, 00-99 |
| LAC | Base station area code |
| Cell_ID | Cell ID number |
| RS | signal strength, the data show empty if no signal |
| dBm | receiving signal strength, the data show empty if no signal |
| Battery_Info | battery info, 0x0000-0x0299 hexadecimal represent battery voltage |
| Failure_Info | reboot info, 0-9 |
| Cont | ending of data for extend protocol "X" represent DDMMYY |
| equ_status | （refer<General data definition >） |
| # | End |

*HQ,865205030330012,V3,000201,46000,07,009350,004022,132,-88,009350,004032,140,,009350,004031,139,,009350,004023,133,,009350,004033,127,,009350,004021,124,,010351,003942,118,,0256,0,X,010915,FFFFFBFF#

Explain：

1. the data represent receiving 7 Cell ID signal, battery voltage 0x256/0x400=598/1024=0.584*5.6V =3.27V, battery level is 3.27V/3.6V*100%=90.8% without reboot.

2. Battery percentage nominal voltage is 3.6V, battery percentage top and button limitation 1%-100%, if the upload voltage over than battery percentage top and button limitation, it regards to parse the data based on battery percentage top and button limitation.

V5 Data packet (WIFI data , For special GPS model support WIFI Tracking Only)
*XX,YYYYYYYYYYYYYYY,V5,HHMMSS,Wifi_Number, Wifi_Info,
Battery_Info,DDMMYY,equ_status#

| | |
|---|---|
| * | command head |
| XX | Supplier name,ASCII character |
| , | separator |
| YYYYYYYYYYYYYYY | IMEI number |
| CMD | comamnd code |
| HHMMSS | device time |
| Wif_Number | wifi quantity, 0-8 |
| Wifi_Info： | front 12 digits represent MAC address, the later 2 digits represent signal strength of WIFI |
| Battery_Info | battery info, 0x0000-0x0299 hexadecimal represent battery voltage |
| equ_status | （refer<General data definition >） |
| DDMMYY | day/month/year |
| # | end |

*HQ, 135790246811220,V5 ,8,11223344556677,11223344556677,11223344556677,
11223344556677,11223344556677,11223344556677,11223344556677,11223344556677,
0256,010815, FFFFFBFF#

# B Server send GPRS Command to device

Except special declare, server need response to sender.

## 1. Change Password S1

*XX,YYYYYYYYYYYYYYY,S1,HHMMSS,old_password,new_password#

For Example
Command： *HQ,865205030330012,S1,130305,123456,000000#
Reply：
*HQ,865205030330012,V4,S1,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 2. Set Center number command S2

*XX,YYYYYYYYYYYYYYY,S2,HHMMSS,cnum_address#
For Example
Command： *HQ,865205030330012,S2,130305,13812341234#
Reply：
*HQ,865205030330012,V4,S2,130305,050315,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 3. Set Admin number command S3

*XX,YYYYYYYYYYYYYYY,S3,HHMMSS,admin_address1,admin_address2…admin_address5#
Maximum 5 numbers to be set
For Example
Command： *HQ,865205030330012,S3,130305,13812341234#
Reply：
*HQ,865205030330012,V4,S3,130305,050315,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 4. Set Alarm Mode S18

*XX,YYYYYYYYYYYYYYY,S18,HHMMSS,S#

S：alarm mode
0：close SMS and Calling alarm
1：GPRS alarm
2：SMS+GPRS alarm
3: SMS+GPRS alarm +Calling center number
For Example
Command: *HQ,865205030330012,S18,130305,2#
Reply：
*HQ,865205030330012,V4,S18,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 5. Alarm Type Setting S19

*XX,YYYYYYYYYYYYYYY,S19,HHMMSS,B,E#
B： defined alarm data
0：Power cut alarm
1：ACC Alarm
2： Low battery alarm
3： Vibrate alarm
4：Removal alarm(G200 Model)
5：undefined
6： Fuel alarm
7： Door alarm
8： Arm/Disarm
29： Voice listen mode
n： undefined

E：Enable or disable alarm function
1： Open alarm
0： Close alarm
For Example （Open ACC SMS alarm）
Command: *HQ,865205030330012,S19,130305,1,1#
Reply：
*HQ,865205030330012,V4,S19,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 6. Cut or Resume Fuel/Electricity S20

For example data : *XX,YYYYYYYYYY,S20,HHMMSS,C,time1,time2,…time30#

C: represent final way to Diable Fuel or Electricity:

C=0：represent Dynamic Diable Fuel or Electricity, Once detected engine instantaneous operation to Diable Fuel or Electricity for 5 seconds, compel the engine to stop.
C=1 or other number: represent static Diable Fuel or Electricity. No need detect engine status, relay always close to Diable Fuel or Electricity.

time：represent action duration, value range from 1 ~ 30, unit: second, beyond the scope of the time are all calculate as 5 .
time1=0 is enable fuel or Electricity
time1≠0 is disable fuel orElectricity

Terminal will return confirm command to server after perform cammand Disable fuel or Recovery Fuel.

For Example (**Disable Fuel Command**):

Command：***HQ,865205033365775,S20,092353,1,3,10,3,5,5,7#**

Reply：

*HQ,865205030330012,V4,S20,DONE,130305,050316,A,2212.8745,N,11346.6574,E,14.28,028,220902,F7FFFBFF#

*HQ,865205033365775,S20,092353,1,3,10,3,5,5,7#

For Example (**Enable fuel Command**):

Comamnd：***HQ, 865205030330012,S20,130305,1,0#**

Reply：

*HQ,865205030330012,V4,S20,OK,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,F7FFFBFF#

## 7. Set Geo-fence alarm S21

Attentions: minimum fence range must over than 200meters

*XX,YYYYYYYYYYYYYY,S21,HHMMSS, radius_value,C#

radius_value：unit: meter if radius_value =0, means close fence alarm.

C：Geo-fence alarm mode

C=1： Out fence alarm

C=2： In fence alarm

C=3： Out and In fence alarm

For Example

Command： *HQ,865205030330012,S21,130305,1000,1#

Reply：

*HQ,865205030330012,V4,S21,DONE130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

Reply：

*HQ,865205030330012,V4,S21,ERROR,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 8. Set IP Port S23

*XX,YYYYYYYYYYYYYYY,S23,HHMMSS,IP_addr,Port#
IP_addr： GPS tracking system IP address
Port： GPS tracking system server Port
For Example
Command： *HQ,865205030330012,S23,130305,116,205,4,25,8800#
Reply：
*HQ,865205030330012,V4,S23,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 9. Set APN S24

*XX,YYYYYYYYYYYYYYY,S24,HHMMSS,APN,APN_name,APN_password#
If there is no APN account, the password is blank.
For Example
Command： *HQ,865205030330012,S24,130305,CMNET,,#
Reply：
*HQ,865205030330012,V4,S24,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 10. Factory default settings S25

*XX, YYYYYYYYYYYYYYY,S25,HHMMSS#
For Example
Command： *HQ,865205030330012,S25,130305#
Reply：
*HQ,865205030330012,V4,S25,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 11. Read device's state S26

（down load）*XX,YYYYYYYYYYYYYYY,S26 ,HHMMSS,W#
W：Check the type of data
W=0：check basic data
W=1：check software version
W=2：check other data
*XX,YYYYYYYYYYYYYYY,V4,S26 ,HHMMSS,APN,Cnum_address,GPS_status,GSM_status,itv_time,timezone_value,Voltage#
The command is used to read the terminal state：
APN：Telecom company APN
Cnum_address： centernum number
GPS_status： 0：not located；1：located；-1：sleeping or fault
GSM_status： GSM signal value
itv_time： update data packet, units：second

timezone_value： timezone
Voltage： battery percentage
Example 1：
Command： *HQ,865205030330012,S26,130305,0#
Reply：
*HQ,865205030330012,V4,S26,130305,050316,CMNET,,,13812341234,1,100,600,8,100#
example2：
Command： *HQ,865205030330012,S26,130305,1#
Reply：
*HQ,865205030330012,V4,S26,130305,050316,GW61D_ZDR_TK102_V2.6.2,2016/07/28 21:16#

## 12. Set Overspeed alarm S33

*XX,YYYYYYYYYYYYYYY,S33,HHMMSS, speed #
speed：Set speed limit， units :km/H， if speed=0,that close overspeed alarm
For Example
Command： *HQ,865205030330012,S33,130305,80#
Reply：
*HQ,865205030330012,V4,S33,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 13. Check LBS S80

*XX,YYYYYYYYYYYYYYY,S80,HHMMSS, Base_Number#
Terminal return：
*XX,YYYYYYYYYYYYYYY,V4,S80,hhmmss,HHMMSS,MCC,MNC,Base_Number,LAC1,Cell_ID1…LAC7,Cell_ID7#
Base_Number：00-99， represent current CELL ID quantity， not more than 7 quantity, the 1st one represent terminal registered Cell ID.
For Example
Command： *HQ,865205030330012,S80,140305,3#
Reply：
*HQ,865205030330012,V4,S80,130305,050316,460,000,03,009350,004022 ,009350,004032,009350,004031#

## 14. Set GPRS time interval D1

*XX,YYYYYYYYYYYYYYY,D1,HHMMSS,interval#
interval：terminal upload data of interval time to server， units：second
For Example
Command： *HQ,865205030330012,D1,130305,600#
Reply：
*HQ,865205030330012,V4,D1,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 15. Restart command R1

*XX, YYYYYYYYYYYYYYY,R1,HHMMSS#
For Example
Command： *HQ,865205030330012,R1,130305#
Reply：
*HQ,865205030330012,V4,R1,130305,050316,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

## 16. Enable/Disable angle change update location

*XX, YYYYYYYYYYYYYYY,ANGSPD, HHMMSS,E#

E definition：

1：enable
0：disable

example：
Command：*HQ,135790246811220,ANGSPD,130305,1#
reply：
*HQ,135790246811220,V4,ANGSPD,130305,050315,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF

# C Alarm & Status：

**equ_status** Vehicle status: total 4 bytes, means vehicle status and alarm status etc. Use ASCII character represents Hexadecimal values, the following is the exact meaning of single bit of variate each byte, bit represents adopt negative logic, namely bit=0 is valid.
Important: Need convert to Binary format to get the Bit value; Check the converted data as arrow from end to front

as shown below table： Different model has different features

| Bit order | 1st byte | | 2nd byte | | 3rd byte | | 4th byte | |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | Temperature alarm | 0 | GPS signal status | 0 | Door open | 0 | Fuel alarm |
| 1 | 1 | reserved | 1 | reserved | 0 | Vehicle Arm condition | 0 | Movement alarm |
| 2 | 0 | Removal alarm | 0 | SOS Alarm | 0 | ACC off | 0 | Over speed alarm |
| 3 | 0 | Cut off oil condition | 0 | Working based on interval battery | 0 | Vibration alarm | 0 | Pre-overspeed alarm |
| 4 | 0 | Power cut-off alarm | 0 | External Power disconnected status | 0 | Low battery alarm | 0 | Fence-in alarm |
| 5 | 1 | reserved | 0 | GPS antenna removed | 0 | Harsh Turning alarm | 0 | Fatigue Driving |
| 6 | 1 | reserved | 1 | reserved | 0 | Rapid acceleration alarm | 0 | Rapid deacceleration alarm |
| 7 | 1 | reserved | 1 | reserved | 0 | Removed speed sensor | 0 | Fence-out alarm |

## How to parse status packet “FFFF FFFF”?


程序员
FFFF FFFF
HEX FFFF FFFF
1
No. 22 is ACC
1:ACC ON
DEC 4,294,967,295
OCT 37 777 777 777
BIN 1111 1111 1111 1111 1111 1111 1111 1111
2
QWORD
MS
M˅
Lsh
Rsh
Or
Xor
Not
And
Mod
CE
C
A
B
7
8
9
C
D
4
5
6
E
F
1
2
3
(
)
±
0

as shown below table： Different model has different features

| Bit order | 1st byte | | 2nd byte | | 3rd byte | | 4th byte | |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | Temperature alarm | 0 | GPS signal status | 0 | Door open | 0 | Fuel alarm |
| 1 | 1 | reserved | 1 | reserved | 0 | Vehicle Arm condition | 0 | Movement alarm |
| 2 | 0 | Removal alarm | 0 | SOS Alarm | 0 | ACC off 22th bit | 0 | Over speed alarm |
| 3 | 0 | Cut off oil condition | 0 | Working based on interval battery | 0 | Vibration alarm | 0 | Pre-overspeed alarm |
| 4 | 0 | Power cut-off alarm 4th Bit | 0 | Extemal Power disconnected status | 0 | Low battery alarm | 0 | Fence-in alarm |
| 5 | 1 | reserved | 0 | GPS antenna removed | 0 | Harsh Turning alarm | 0 | Fatigue Driving |
| 6 | 1 | reserved | 1 | reserved | 0 | Rapid acceleration alarm | 0 | Rapid deacceleration alarm |
| 7 | 1 | reserved | 1 | reserved | 0 | Removed speed sensor | 0 | Fence-out alarm |