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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,YYYYYYYYYYYYYYYY,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,FFFFBFF#

Confirm data :

*XX,YYYYYYYYYYYYYYYY,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
YYYYYYYYYYYYYYYY	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: protocol 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, $10 * 1.852 = 18.52 \text{ km/h}$.

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
YYYYYYYYYYYYYYYYY	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,FFFFFFBFF#

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,YYYYYYYYYYYYYYYY,V5,HHMMSS,Wifi_Number,Wifi_Info,
Battery_Info,DDMMYY,equ_status#
*          command head
XX         Supplier name,ASCII character
,          separator
YYYYYYYYYYYYYYYY      IMEI number
CMD        comamnd code
HHMMSS     device time
Wifi_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,YYYYYYYYYYYYYYYY,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,14.28,028,22090
2,FFFFFBFF#
```

2. Set Center number command S2

```
*XX,YYYYYYYYYYYYYYYY,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,14.28,028,22090
2,FFFFFBFF#
```

3. Set Admin number command S3

*XX,YYYYYYYYYYYYYYYY,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,YYYYYYYYYYYYYYYY,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,YYYYYYYYYYYYYYYY,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 Diabie Fuel or Electricity:

C=0 : represent Dynamic Diabie Fuel or Electricity, Once detected engine instantaneous operation to Diabie Fuel or Electricity for 5 seconds, compel the engine to stop.

C=1 or other number: represent [static](#) Diabie Fuel or Electricity. No need detect engine status, relay always close to Diabie 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 or Electricity

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,YYYYYYYYYYYYYYY,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,YYYYYYYYYYYYYYYY,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,FFFFFFBFF#

9. Set APN S24

*XX,YYYYYYYYYYYYYYYY,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,FFFFFFBFF#

10. Factory default settings S25

*XX,YYYYYYYYYYYYYYYY,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,FFFFFFBFF#

11. Read device's state S26

(down load) *XX,YYYYYYYYYYYYYYYY,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,YYYYYYYYYYYYYYYY,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,YYYYYYYYYYYYYYYY,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,14.28,028,2209
02,FFFFFFBFF#

13. Check LBS S80

*XX,YYYYYYYYYYYYYYYY,S80,HHMMSS, Base_Number#
Terminal return :
*XX,YYYYYYYYYYYYYYYY,V4,S80,hhmmss,HHMMSS,MCC,MNC,Base_Number,LAC1,C
ell_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 ,009350,004032,009
350,004031#

14. Set GPRS time interval D1

*XX,YYYYYYYYYYYYYYYY,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,14.28,028,22090
2,FFFFFFBFF#

15. Restart command R1

*XX, YYYYYYYYYYYYYYYY,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,FFFFFFBFF#

16. Enable/Disable angle change update location

*XX, YYYYYYYYYYYYYYYY,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,FFFFFFBFF

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	1 st byte		2 nd byte		3 rd byte		4 th byte	
0	0	Temperature alarm	0	GPS signal status	0	Door open	0	Fuel alarm
1	1	reserved	1	reserved	0	Vehicle condition Arm	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 alarm battery	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"?



as shown below table : **Different model has different features**

Bit order	1 st byte	2 nd byte	3 rd byte	4 th byte
0	0 Temperature alarm	0 GPS signal status	0 Door open	0 Fuel alarm
1	1 reserved	1 reserved	0 Vehicle Am 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 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 deceleration alarm
7	1 reserved	1 reserved	0 Removed speed sensor	0 Fence-out alarm