SHENZHEN CANTRACK TECHNOLOGY CO.,LTD

A/1

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Version Record

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A/0	New	2017-01-03	Fan Qiong
A/1	Refer No.19	2017-05-15	
This protocol is designed for various GPS models depends on functions, so please check accordingly.			
Audit		Pass	

Contents

A Command structure

1. Structure of Sending command from server

*XX,YYYYYYYYYYYYYYY,CMD,HHMMSS,PARA1,PARA2,…#

*	command head
XX	supplier name, ASCII character
,	separator
YYYYYYYYYYYYYYY	15digit IMEI number
CMD	command code
HHMMSS	time：h/m/s
PARA	parameter
#	ending character

Must use capital letter for the initial Letter of command character without any space.

2. device response data structure

General information：

*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#

GPS data：

*XX,YYYYYYYYYYYYYYY,V2,HHMMSS,S,latitude,D,longitude,G,speed,direction,DDMMYY,equ_status #

*HQ,865205030330012,V2,150421,A,2240.55841,N,11358.33462,E,2.06,0,100815,FFFFFBFF#

Confirm data：

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

*HQ,865205030330012,V4,S2,150950,151007,A,2240.55503,N,11358.35174,E,0.85,0,100815,FFFFFBFF #

Heartbeat data：

*XX,YYYYYYYYYYYYYYY, HTBT#

*HQ,865205030330012,HTBT#

or *XX,YYYYYYYYYYYYYYY,XT,V,0,0#

*HQ,865205030330012,XT,V,0,0#

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	speed，range 000.00 ~ 999.99 byte
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 exsample: 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.

B Command function explaination

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：SMS alarm
2：Calling center number as alarm
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,N,K#
N：A defined alarm data
0：Power cut alarm
1：ACC Alarm
2： Low battery alarm
3： Vibrate alarm
4：Removal alarm(G200 Model)
n： undefined other alarm

E：enable, define alarm set switch
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. Remote Diable Fuel or 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 or Electricity

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

For Example (**Disable Fuel Command**):
Command：***HQ,865205030330012,S20,130305,1,1#**
Reply：
*HQ,865205030330012,V4,S20,DONE,130305,050316,A,2212.8745,N,11346.6574,E,14.28,028,220902,F7FFFBFF#

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

*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,YYYYYYYYYYYYYY,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,YYYYYYYYYYYYYY,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
例 1：
Command： *HQ,865205030330012,S26,130305,0#
Reply：
*HQ,865205030330012,V4,S26,130305,050316,CMNET,,,13812341234,1,100,600,8,100#
例 2：
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. Overspeed setting 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 Command 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 interval timeD1

*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. (G01/G02) Fast Locate from GPS server when LBS mode D2

*XX, YYYYYYYYYYYYYYY,D2,HHMMSS,M#

Meaning of M：open gps mode time ，units：second

For Example

Command： *HQ,865205030330012,D2,130305,180#

Reply：

*HQ,865205030330012,V4,D2,130305,050315,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF#

16. 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,14.28,028,22090

2,FFFFFBFF#

17. Change working mode WKMD

*XX, YYYYYYYYYYYYYY,WKMD,HHMMSS,N#

Meaning of " N" as below：

Product Model：G01/G02
0: GPS Real time Tracking mode (GPS Open,10s send 1 position to server)
1: LBS Power saving mode (GPS close, LBS data 600s , send 1 position to server)
2: GPS Intelligent mode (GPS open, 5mins send 1 position to server)
For example：
Command：*HQ,865205030330012,WKMD,130305,1#
Reply：
*HQ,865205030330012,V4,,,235959,110346,A,2241.07727,N,11400.76820,E,0.00,0,150517,FFFFFBFF#

Product Model：TK200A
1:GPS mode(GPS time interval 24 hours wakeup 1 time for 3mins send 1 position)
2:LBS mode(LBS time interval 24 hours wakeup 1 time for 3mins send 1 position)
3:GPS Real time mode (gGPS time interval 3mins to update position)
For example：
Command：*HQ,865205030330012,WKMD ,1#
Reply：
*HQ,865205030330012,V4,WKMD,130305,050315,A,2212.87450,N,11346.65740,E,14.28,028,220902,FFFFFBFF

C General Data Definition：

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：

Bit order	1st byte		2nd byte		3rd byte		4th byte	
0	0		0		0	Door open		
1					0	Vehicle security condition	0	
2	0	Anti-tamper alarm	0	SOS Alarm	0	ACC off	0	overspeeding alarm
3	0	Cut off oil condition	0	Device powered by the backup battery	0	Vibration alarm		
4	0	Vehicle battery remove condition alarm	0	Power cut-off alarm	0	Low battery alarm	0	Fence-in alarm
5	1		1		1		1	
6	1		1		1		1	
7	1		1		1		0	Fence-out alarm

D Y Model data packet format (TK103B only)

code	00	01	02	03	04	05	06	07	08	09	0A	0B
content	0x59	0x026e		0x0166	0x00		0x103556			0x250615		
mean	Record header(Y model)	analog1		analog2	reserve		time			data		

code	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18
content	0x22405587				0x00	0x113583255e					0x001028		
mean	latitude				reserve	longitude、N、E、AV					speed、direction		

code	19	1A	1B	1C	1D	1E	1F
content	0Xffffffff				0xff	0x00	09
mean	vehicle_status				Usr_alarm_flag	reserve	Record number

Explain：

"$"（0x59）：record header，used for record start position ；

Time：0x103556，Standard time 10:35:56，same as China time 18:35:56；

date：0x250615 15,april,2015；

Longitude information：0x22405587，

Latitude information：0x113583255e，（code 0x15）mean：

bit7654，last digit of longitude

bit3，1：east longitude，0：west longitude

bit2，1：north latitude，0：south latitude

bit1，1：A/B,0：V

bit0，undefined

speed、direction：0x001028：speed 001，direction 028

equ_status、 Usr_alarm_flag：use binary represent vehicle status user defined alarm status .

The Meaning same as message（use ASCII represent）.

Record number: record serial number of binary representation ，each send a record automatically add 1.

Fuel level calculation: data will upload two group analog data: analog 1, analog 2 .
5906410400015332810081522405632001135835 09e003000e7e7fbffff0009

The method of fuel calculation on GPS platform: Total fuel level=Tank capacity*(analog 1/analog2)
Example Raw data:
5906410400001533281008152240563200113583509e003000e7e7fbffff0009