

# GPS Tracker Transport Protocol

## version:V1.8\_C

Release at 2018-3-23

### **Very important tips:**

All the data in this agreement will follow[Factory letter\*device ID\*content-length\*command letter\*command data]format, among them manufacturer identification has two bytes, content-length are fixed four bytes ASSII code,high-order ahead,low order behind.For example,FFFF means the length is 65535.

## **I. The structure of commands send by tracker**

### **1.Link maintenance**

(1)

tracker sends:

[CS\*YYYYYYYYYY\*LEN\*LK]

eg:[SG\*8800000015\*0002\*LK]

**Server must reply:**

[CS\*YYYYYYYYYY\*LEN\*LK]

eg:[SG\*8800000015\*0002\*LK]

Explain:The links send data constantly every 5 minutes, if the tracker do not receive the data,then it will reconnect every 5 minutes.

(2)

tracker sends:

[CS\*YYYYYYYYYY\*LEN\*LK, steps, rolls performed on foot, percentage of battery]

eg:[SG\*8800000015\*000D\*LK, 50, 100, 100]

**Server must reply:**

[CS\*YYYYYYYYYY\*LEN\*LK]

eg:[SG\*8800000015\*0002\*LK]

Explain:The links send data constantly every 5 minutes, if the tracker do not receive the data,then it will reconnect every 5 minutes.

Two of the above situation will be exist.

**Very important tip: The server must reply all LK data!Otherwise the device will not send any other data and keep resent the LK data every 5 minutes.**

### **2.Upload positioning data**

tracker sends:

[CS\*YYYYYYYYYY\*LEN\*UD\_type, positioning data(see Annex I)]

Type:

UD:that means the device is using 2G GSM network.

UD\_WCDMA:that means the device is using 3G WCDMA network.

UD\_LTE:that means the device is using 4G LTE network.

eg:

[3G\*2716343644\*0083\*UD\_LTE, 050218, 060013, A, 43. 720963, N, 123. 2604950, E, 0. 00, 244. 2, 0. 0, 19, 40, 56, 0, 0, 00000000, 2, 255, 460, 0, 18264, 22511, 125, 18264, 22512, 115, 0, 3. 4]

### **3.Blind spot re-upload data**

tracker sends:

[CS\*YYYYYYYYYY\*LEN\*UD2, positioning data(see Annex I)]

eg:

[3G\*2716343644\*0083\*UD, 050218, 060013, A, 43. 720963, N, 123. 2604950, E, 0. 00, 244. 2, 0. 0, 19, 40, 56, 0, 0, 00000000, 2, 255, 460, 0, 18264, 22511, 125, 18264, 22512, 115, 0, 3. 4]

**Server no need reply.**

Explain:Re-upload the data which produced in off-line state.

#### **4.Upload alarm data**

[CS\*YYYYYYYYYY\*LEN\*AL\_type, positioning data(see Annex I)]

Type:

UD:that means the device is using 2G GSM network.

UD\_WCDMA:that means the device is using 3G WCDMA network.

UD\_LTE:that means the device is using 4G LTE network.

eg:

[3G\*2716343644\*0083\*AL\_LTE, 050218, 060013, A, 43. 720963, N, 123. 2604950, E, 0. 00, 244. 2, 0. 0, 19, 40, 56, 0, 0, 00100008, 2, 255, 460, 0, 18264, 22511, 125, 18264, 22512, 115, 0, 3. 4]

**Server must reply:**

[CS\*YYYYYYYYYY\*LEN\*AL]

eg:[SG\*8800000015\*0002\*AL]

Explain:Tracker sends alarm information to platform,if tracker do not receive a reply,then it will upload the data timing until receive the alarm affirm.

## **II. Server sends command**

### **1.Set upload interval of data**

Server sends:

[CS\*YYYYYYYYYY\*LEN\*UPLOAD, time interval]

eg:[SG\*8800000015\*0009\*UPLOAD, 10]

**Tracker will return:**

[CS\*YYYYYYYYYY\*LEN\*UPLOAD]

eg:[SG\*8800000015\*0006\*UPLOAD]

Explain:Set the timing upload time interval of tracker.unit is seconds

### **2.Set master control number**

server sends:

[CS\*YYYYYYYYYY\*LEN\*CENTER, master number]

eg:[SG\*8800000015\*0012\*CENTER, 00000000000]

Tracker will return:

[CS\*YYYYYYYYYY\*LEN\*CENTER]

eg:[SG\*8800000015\*0006\*CENTER]

Explain:Set master control number,all SMS command will through this mobile number.

### 3. Set assistant master mobile number

server sends:

```
[CS*YYYYYYYYYY*LEN*SLAVE,assistant master mobile number]
```

eg: [SG\*8800000015\*0011\*SLAVE, 00000000000]

Tracker will return:

```
[CS*YYYYYYYYYY*LEN*SLAVE]
```

eg: [SG\*8800000015\*0005\*SLAVE]

Explain: Set assistant master mobile number, through this mobile number to send message command..

### 4. Monitor

server sends:

```
[CS*YYYYYYYYYY*LEN*MONITOR]
```

eg: [SG\*8800000015\*0007\*MONITOR]

Tracker will return:

```
[CS*YYYYYYYYYY*LEN*MONITOR]
```

eg: [SG\*8800000015\*0007\*MONITOR]

Explain: The tracker will callback the master mobile number automatically.

### 5. Set SOS mobile number

(1) set the first SOS mobile number

server sends:

```
[CS*YYYYYYYYYY*LEN*SOS1,phone number]
```

eg: [SG\*8800000015\*0010\*SOS1, 00000000000]

Tracker will return:

```
[CS*YYYYYYYYYY*LEN*SOS1]
```

eg: [SG\*8800000015\*0004\*SOS1]

(2) set the second SOS mobile number

server sends:

```
[CS*YYYYYYYYYY*LEN*SOS2,phone number]
```

eg: [SG\*8800000015\*0010\*SOS2, 00000000000]

Tracker will return:

```
[CS*YYYYYYYYYY*LEN*SOS2]
```

eg: [SG\*8800000015\*0004\*SOS2]

(3) set the third SOS mobile number

server sends:

```
[CS*YYYYYYYYYY*LEN*SOS3,mobile number]
```

eg: [SG\*8800000015\*0010\*SOS3, 00000000000]

Tracker will return:

```
[CS*YYYYYYYYYY*LEN*SOS3]
```

eg: [SG\*8800000015\*0004\*SOS3]

(4) set the three SOS mobile number at the same time

server sends:

[CS\*YYYYYYYYYY\*LEN\*SOS, phone number, phone number, phone number]  
eg: [SG\*8800000015\*0027\*SOS, 00000000000, 00000000000, 00000000000]

Tracker will return:

[CS\*YYYYYYYYYY\*LEN\*SOS]  
eg: [SG\*8800000015\*0003\*SOS]

Explain: Set SOS mobile number, send message or call this mobile number when an alarm occurs.

## 6. Remote upgrade

server sends:

[CS\*YYYYYYYYYY\*LEN\*UPGRADE, URLaddress]  
eg: [SG\*8800000015\*0039\*UPGRADE, http://www.reachfar-gps.com/g29\_updata/test/jt\_a  
ds.bin]

Tracker will return:

[CS\*YYYYYYYYYY\*LEN\*UP]  
eg: [SG\*8800000015\*0007\*UPGRADE]

Explain: Control terminal remote update.

## 7. Set IP port

server sends:

[CS\*YYYYYYYYYY\*LEN\*IP, IP or domain names, port]  
eg: [SG\*8800000015\*0014\*IP, 113.81.229.9, 5900]

Tracker have not return:

There is no reply from the tracker of this command, disconnect the link and link new server.

## 8. Restore factory settings

server sends:

[CS\*YYYYYYYYYY\*LEN\*FACTORY]  
eg: [SG\*8800000015\*0007\*FACTORY]

Tracker will returns:

[CS\*YYYYYYYYYY\*LEN\*FACTORY]  
eg: [SG\*8800000015\*0007\*FACTORY]

Explain: Tracker restore factory settings.

## 9. Set language and timezone

server sends:

[CS\*YYYYYYYYYY\*LEN\*LZ, language, timezone]  
eg: [SG\*8800000015\*0006\*LZ, 1, 8]

Tracker will return:

[CS\*YYYYYYYYYY\*LEN\*LZ]  
eg: [SG\*8800000015\*0002\*LZ]

Explain: Set tracker's language and timezone.

Language: 0: English,

1:Chinese

Timezone: digital letter, such as 8 or -4, depend on the user's time zone.

#### 10. SOS message alarm on-off

server sends:

[CS\*YYYYYYYYYY\*LEN\*SOS SMS, 0]

eg: [SG\*5678901234\*0008\*SOS SMS, 0]

Tracker will return:

[CS\*YYYYYYYYYY\*LEN\*SOS SMS]

eg: [SG\*5678901234\*0006\*SOS SMS]

Explain: Set whether send message to SOS mobile number when produce SOS alarm.

(0:turn off , 1:turn on)

#### 11. Low battery alarm on-off

server sends:

[CS\*YYYYYYYYYY\*LEN\*LOWBAT, 0]

eg: [SG\*5678901234\*0008\*LOWBAT, 1]

Tracker will return:

[CS\*YYYYYYYYYY\*LEN\*LOWBAT]

eg: [SG\*5678901234\*0006\*LOWBAT]

Explain: Set whether send message to master mobile number when produce low battery alarm. (0:turn of , 1:turn on)

#### 12. APN Setting

server sends:

[CS\*YYYYYYYYYY\*LEN\*APN, APN name, user name, password, user data]

eg: [SG\*5678901234\*0011\*APN, cmnet, , , 46000]

Tracker will return:

[CS\*YYYYYYYYYY\*LEN\*APN]

eg: [SG\*5678901234\*0003\*APN]

Explain: Set tracker's APN parameter.

#### 13. Version query

server sends:

[CS\*YYYYYYYYYY\*LEN\*VERNO]

eg: [SG\*8800000015\*0005\*VERNO]

tracker returns:

[CS\*YYYYYYYYYY\*LEN\*VERNO, version nubmer]

eg: [SG\*8800000015\*0028\*VERNO, G29\_BASE\_V1.00\_2014.04.23\_17.46.49]

Explain:Query tracker's version.

#### 14. Restart

server sends:

[CS\*YYYYYYYYYY\*LEN\*RESET]

eg: [SG\*5678901234\*0005\*RESET]  
tracker returns:  
[CS\*YYYYYYYYYY\*LEN\*RESET]  
eg: [SG\*5678901234\*0005\*RESET]  
Explain: Restart tracker.

### 15. Positioning command

server sends:  
[CS\*YYYYYYYYYY\*LEN\*CR]  
eg: [SG\*5678901234\*0002\*CR]  
Tracker will return:  
[CS\*YYYYYYYYYY\*LEN\*CR]  
eg: [SG\*5678901234\*0002\*CR]  
Explain: Wake up tracker' s GPS module, upload GPS location every 30s, keep in 3 minuses,

### 16. Power off command

server sends:  
[CS\*YYYYYYYYYY\*LEN\*POWEROFF]  
eg: [SG\*5678901234\*0008\*POWEROFF]  
tracker returns:  
[CS\*YYYYYYYYYY\*LEN\*POWEROFF]  
eg: [SG\*5678901234\*0008\*POWEROFF]  
Explain: Power off function.

### 17. GPS/GSM indicator light

server sends:  
[CS\*YYYYYYYYYY\*LEN\*LED, 0]  
eg: [SG\*5678901234\*0005\*LED, 0]  
tracker returns:  
[CS\*YYYYYYYYYY\*LEN\*LED]  
eg: [SG\*5678901234\*0003\*LED]  
Explain: 0 means the LED light never flash  
1 means the LED light will flash when power on /off , or search GSM and GPS signal.

[SG\*25678901234\*0005\*LIG, 0]

### 18. Sensor Light Control

server sends:  
[CS\*YYYYYYYYYY\*LEN\*LSN, 0]  
eg: [SG\*5678901234\*0005\*LSN, 0]  
Tracker will return:

[CS\*YYYYYYYYYY\*LEN\*LSN]  
eg:[SG\*5678901234\*0003\*LSN]  
Explain:0 turn off  
1 turn on

## 19. Ring tone to finding the device

Server sends:  
[CS\*YYYYYYYYYY\*LEN\*BON,1 or 0]  
eg:[SG\*5678901234\*0005\*BON,1]  
Tracker will return:  
[CS\*YYYYYYYYYY\*LEN\*BON]  
eg:[SG\*5678901234\*0003\*BON]  
Explanation: The device will ring.  
0:means turn off the ring.  
1:means turn on the ring .

## 20. WiFi Fence

Server sends  
[CS\*YYYYYYYYYY\*LEN\*WIFIFENCE,1,WiFi1 MAC code, 2,WiFi2 MAC code,3,WiFi3 MAC code]  
eg:  
[SG\*5678901234\*0045\*WIFIFENCE,1,80:89:17:18:a3:5c,2,ec:26:ca:ce:4d:ff,3,ec:88:8f:52:a9:56]  
Tracker will return:  
[CS\*YYYYYYYYYY\*LEN\*WIFIFENCE]  
eg:  
[SG\*5678901234\*0009\*WIFIFENCE]  
PS:The trackers only detect 2.4G wifi,so the user only set 2.4G wifi for wifi fence ,otherwise the wifi fence will not work.

## 21. Step counting function

Server sends  
[3G\*YYYYYYYYYY\*LEN\*PEDO,0 or1]  
eg:[3G\*5678901234\*0004\*PEDO,0]  
Tracker will return:  
[3G\*YYYYYYYYYY\*LEN\*PEDO]  
eg:[3G\*5678901234\*0004\*PEDO]  
Explain:turn on the step counting function,1 for on, 0 for off.

## 22. Set the step counting time

Server sends  
[3G\*YYYYYYYYYY\*LEN\*WALKTIME,time1,time2,time3]  
eg:[3G\*5678901234\*002A\*WALKTIME,8:10-9:30,10:10-11:30,12:10-13:30]



Tracker will return:

[3G\*YYYYYYYYYY\*LEN\*WALKTIME]

eg: [SG\*5678901234\*0008\*WALKTIME]

Explain: set the step counting time.

### III. Appendix

#### Appendix I: Positioning data explanation

Name	Example (ASII code)	Explanation
Date	120414	(day/month/year) April 12, 2014
Time	101930	(hour/ minute /seconds) 10pm 19minutes 30seconds with stander time
GPS data effective	A	A:valid V:Invalid
Latitude	22.564025	According to DD.DDDDDD format definition, the latitude value is :22.564025.
Latitude logo	N	N means northern latitude, S means southern latitude.
Longitude	113.242329	According to DD.DDDDDD format definition, the longitude value is:113.242329.
Longitude logo	E	E means east longitude, W means west longitude.
Speed	5.21	5.21 km/hr .
Direction	152	In 152 degrees.
Elevation	100	Unit to be meters
Quantity of satellites	9	Indicate quantity of GPS satellites
GSM signal intensity	100	Means current GSM signal intensity(0-100)
Battery life	90	Means the percentage of the battery
Plan the steps	1000	The steps are 1000
Rolls performed on foot	50	Roll 50 times
Tracker state	00000000	Express as hexadecimal character, the meaning as below: High 16bit means alarm , low 16bit means status. Bit (0 start) meaning (1 effective) 0 low battery status 1 2 3 Wear GPS watch status 16 SOS alarm 17 low battery alarm 18 out of the fence alarm 19 enter into the fence alarm 20 remove bracelet alarm 22 fall alarm

Quantity of base station	4	Report quantity of base station,0 means not report base station information.
Link base station	1	GSM time delay
MCC country code	460	460 means China
MNC network number	02	02 means china mobile
Area code for link the location of base station	10133	Area code
Link base station serial number	5173	Base station serial number
Link base station signal intensity	100	Signal intensity
Nearby base station 1 location area code	10133	Area code
Nearby base station 1 serial number	5173	Base station serial number
Nearby base station 1 signal intensity	100	Signal intensity
Nearby base station 2 location area code	10133	Area code
Nearby base station 2 serial number	5173	Base station serial number
Nearby base station 2 signal intensity	100	Signal intensity
Nearby base station 3 location area code	10133	Area code
Nearby base station 3 serial number	5173	Base station serial number
Nearby base station 3 signal intensity	100	Signal intensity
...	...	...
Wifi information	5	Wifi number(at most 5), sort by signal intensity.
Wifi lname	rrr	The 1 <sup>st</sup> information name
Wifi 1 MAC address	1c:fa:68:13:a5:b4	The 1 <sup>st</sup> wifi MAC address
Wifi 1 signal intensity	-61	The 1 <sup>st</sup> wifi signal intensity
Wifi lname	abc	The 2 <sup>nd</sup> wifi name
Wifi 1 MAC address	1c:fa:68:13:a5:b5	The 2 <sup>nd</sup> wifi MAC address
Wifi 1 signal intensity	-87	The 2 <sup>nd</sup> wifi signal intensity
positioning accuracy	4.4441	m ,that accuracy only for reference. ...

# Communication protocol (supplementary)

Version: V2.0\_20180519

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3g Or 4g_ Non-CDMA project.....	错误！未定义书签。
4g_CDMA project:.....	错误！未定义书签。
三. Appendix.....	错误！未定义书签。
Appendix 2: 4g_CDMA location data explanation.....	错误！未定义书签。

All data in the protocol is in the format of [vendor\*device ID\*content length\*content], where the vendor identifier is fixed to two bytes, and the content length is fixed to four bytes of ASCII code, the high position is in the front position, for example: 00A2 indicates a length of 162.

## 1. 3G Or 4G\_ Non-CDMA upload command

Tracker sends:

[3G\*YYYYYYYYYY\*LEN\*UD\_ type, location data (see Appendix I)]

UD\_ type: UD\_WCDMA, UD\_TDSCDMA, UD\_LTE,

WCDMA and TDSCDMA are 3G, such as China Unicom

UD\_LTE is 4G, such as China Mobile

## 2. 4G\_CDMA upload command

[3G\*YYYYYYYYYY\*LEN\*UD\_ type, location data (see Appendix II)]

UD\_CDMA is a CDMA system, such as: China Telecom

CDMA base station information includes: SID, NID, BID

The latitude and longitude position of the base station is determined by the base station code of cdma, and it is necessary to know the three base station data of Sid, Nid, and Bid, which are indispensable.

The SID is the system identification code, and each prefecture-level city has only one sid and is unique.

The NID is a network identification code that is managed by each local network, that is, by a local branch office. Each prefecture-level city may have 1 to 3 nids.

BID represents a certain cell in the network and can be understood as a base station.

## 3. 3G 或 4G\_Non-CDMA uploading command

The terminal sends:

[3G\*YYYYYYYYYY\*LEN\*AL\_ type, location data (see Appendix I)]

AL\_ type: AL\_WCDMA, AL\_TDSCDMA, AL\_LTE,

WCDMA and TDSCDMA are 3G, such as China Unicom

AL\_LTE is 4G, such as China Mobile

## 4. 4G\_CDMA alarm upload

[3G\*YYYYYYYYYY\*LEN\*AL\_ type, location data (see Appendix II)]

AL\_CDMA is a CDMA system, such as: China Telecom

CDMA base station information includes: SID, NID, BID

The latitude and longitude position of the base station is determined by the base station code of cdma, and it is necessary to know the three base station data of Sid, Nid, and Bid, which are indispensable.

The SID is the system identification code, and each prefecture-level city has only one sid and is unique.

The NID is a network identification code that is managed by each local network, that is, by a local branch office. Each prefecture-level city may have 1 to 3 nids. BID represents a certain cell in the network and can be understood as a base station.

## 5. Multiple friends (3g/4g project)

3g or 4g\_ non-CDMA projects

The terminal sends:

[3G\*YYYYYYYY\*LEN\*ppmf\_type, watch current time, position data (see Appendix 1)]

Ppmf\_type: ppmf\_WCDMA, ppmf\_TDSCDMA, ppmf\_LTE,

WCDMA and TDSCDMA are 3G, such as China Unicom

ppmf\_LTE is 4G, such as China Mobile

Example:

[3G\*8800000015\*00D6\*ppmf\_wcdma, 091046, 180916, 085033, A, 22. 570193, N, 113. 8621950, E, 0. 48, 60. 3, 0. 0, 9, 100, 100, 0, 0, 00000010, 7, 255, 460, 1, 9529, 21809, 160, 9529 , 21405, 133, 9529, 63555, 133, 9529, 63554, 124, 9529, 21242, 119, 9529, 21151, 118, 9529, 63574, 116, 0, 23. 2]

Platform response:

Situation 1: Successful friends

[3G\*8800000015\*LEN\*ppmf\_wcdma, ID]

Example:

[3G\*8800000015\*000A\*ppmf\_wcdma, 1452123526]

Situation 2: Dating friend failed

[3G\*8800000015\*LEN\*X]

4g\_CDMA project:

[3G\*YYYYYYYY\*LEN\*ppmf\_type, current time of the watch, position data (see Appendix II)]

ppmf\_CDMA is a CDMA system, such as: China Telecom

CDMA base station information includes: SID, NID, BID

The latitude and longitude position of the base station is determined by the base station code of cdma, and it is necessary to know the three base station data of Sid, Nid, and Bid, which are indispensable.

The SID is the system identification code, and each prefecture-level city has only one sid and is unique.

The NID is a network identification code that is managed by each local network, that is, by a local branch office. Each prefecture-level city may have 1 to 3 nids.

BID represents a certain cell in the network and can be understood as a base station.

## Appendix 2: 4g\_CDMA location data instructions

Item	Example (ASII	Explanation
------	---------------	-------------

	code)	
Date	120414	(D-M-Y)2014, April 12th
Time	101930	(H-M-S) 10:19:30
Located or not	A	A: Yes V: No
latitude	22.564025	Defined as the format of DD.DDDDDD, the value of latitude is: 22.564025.
Latitude Mark	N	N is North, S is South.
longitude	113.242329	Defined as the format of DDD.DDDDDD, its longitude value is :113.242329.
Longitude mark	E	E is East, W is west
Speed	5.21	5.21km/hour.
Direction	152	Direction is 152 degree.
elevation	100	Unit is meter
Satellite number	9	GPS satellite number is 9
GSM signal strength	100	Means current GSM signal strength (0-100)
Battery	90	Means current battery status in percentage
Steps	1000	Step number is 1000
Roll times	50	Rolled for 50 times
State of the terminal	00000000 (hexadecimal)	Expressed as a binary string 0000 0000 0000 0000 0000 0000 0000 0000 The meaning is as follows: The upper 16bit high indicates the alarm, and the lower 16bit indicates the status. Bit bit (0 start) Meaning (1 valid) 0 low power state 3 4 watch is running at rest 16 SOS alarm 17 low power alarm 20 bracelet removal alarm 21 fall alarm 22 heart rate abnormal alarm
Base station number	1	<b>Report base station number,0 means not report to base station</b>
Base station connection	1	GSM delay
MCC country code	460	460 stands by China
MNC Net code	02	02 Stand by China Mobile
SID	10133	Zone code
NID	5173	Base station number
BID	100	Signal strength
Wifi info amount	5	Wifi spots number ( at most 5 spots), in signal strength order.
Wifi 1 name	rrr	The first is wifi info name

Wifi 1 MAC address	1c:fa:68:13:a5:b4	The first wifi MAC address
Wifi 1 signal strength	-61	The first wifi signal strength
Wifi 1 name	abc	The second wifi name
Wifi 1 MAC address	1c:fa:68:13:a5:b5	The second wifi MAC address
Wifi 1 signal strength	-87	The second wifi signal strength
...	...	...
Accuracy	12.421	Accuracy of positioning