



Version: V1.3

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# GPS Tracker Communication Protocol

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## 1. Commucation introduction

### 1.1 Introduction

It defines the instructions of GPS vehicle tracker platform. The reference interface protocol is only applicable for the platform and server transfer.

### 1.2 Compatibility

Applicable platform version is the versions after GT02A and it is not compatible for early versions.

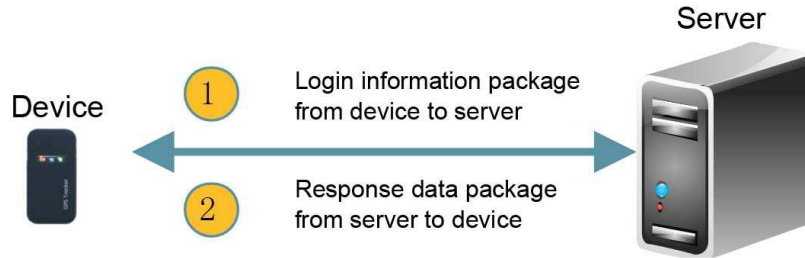
## 2. Terms/Meanings

| Terms/ Abbreviation | Meanings                                |
|---------------------|---|
| CMPP                | China Mobile Peer to Peer               |
| GPS                 | Global Positioning System               |
| GSM                 | Global System for Mobile Communication  |
| GPRS                | General Packet Radio Service            |
| TCP                 | Transport Control Protocol              |
| LBS                 | Location Based Services                 |
| IMEI                | International Mobile Equipment Identity |
| MCC                 | Mobile Country Code                     |
| MNC                 | Mobile Network Code                     |
| LAC                 | Location Area Code                      |
| Cell ID             | Cell Tower ID                           |
| UDP                 | User Datagram Protocol                  |
| SOS                 | Save Our Ship/Save Our Souls            |
| CRC                 | Cyclic Redundancy Check                 |
| NITZ                | Network Identity and Time Zone,         |
| GIS                 | Geographic Information System           |

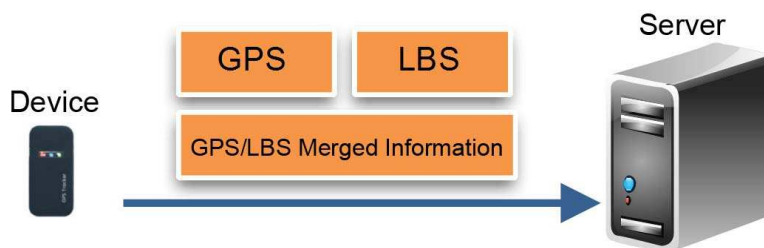


### 3. Basic Rules

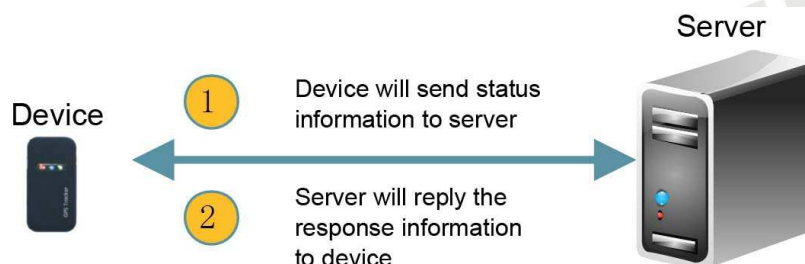
3.1. After power on, device will send login information package by default and wait confirmation from the server.



3.2. After the establishment of the normal connection and changing the GPS information, device will send GPS/LBS Merged Information or GPS information package and LBS information package to the server at scheduled time intervals. The server can set default protocol via commands.



3.3. To ensure the effectiveness of the connection, the device will send state information to server during fixed interval and the server will reply the response information package to confirm.





## 4. Data package format

Communication transfer is asynchronous mode in byte. It transfers serial data stream of every uncertain length data package between device and server.

Data package length: (10+N) Byte

| Format       | Start Bit | Package Length | Protocol number | Information content | Information serial number | error checking | Stop Bit |
|--------------|-----------|----------------|-----------------|---------------------|---------------------------|----------------|----------|
| Length(Byte) | 2         | 1              | 1               | N                   | 2                         | 2              | 2        |

### 4.1 Start Bit

Fixed value, hexadecimal number 0x78 0x78.

### 4.2 Package Length

Length= protocol number + Information content+ 3.5 Information serial number + error checking, (5+N) Byte in all, as the information Content is uncertain length data.

### 4.3 Protocol number

Refer to different “information content” and correspond to the protocol number.

| Type                              | Value |
|-----------------------------------|-------|
| Login Information                 | 0x01  |
| GPS Information                   | 0x10  |
| LBS Information                   | 0x11  |
| GPS/LBS Merged Information        | 0x12  |
| Status Information                | 0x13  |
| Satellite SNR Information         | 0x14  |
| Information About Strings         | 0x15  |
| GPS/LBS/Status Merged Information | 0x16  |
| Server send command to device     | 0x80  |

### 4.4 Information serial number:

After turning on the device, it will send the first item of GPRS data (including heartbeat package and GPS/LBS data package); the serial number of this item is “1”. After that, the serial number will be added on by 1 automatically at every sending process (including heartbeat package and GPS/LBS data package).

### 4.5 Information content

Connect to different application. Correspond to the “protocol number” and confirm the specific content.



#### 4.5.1.1 Login Information Package

| Format | Information Content |
|--------|---------------------|
|        | Device ID           |
| Length | 8                   |

Login Information Package is used to confirm whether the connection is normal and submit device ID to server.

#### 4.5.1.2 Device ID

It uses 15 digits IMEI number of device as the device ID.

For example, the IMEI number is 123456789012345, and the device ID is 0x01 0x23 0x45 0x67 0x89 0x01 0x23 0x45.

#### 4.5.1.3 Server Response

e. g. :

Device->Server (here the device ID is 123456789012345)

0x78 0x78   0x0D   0x01   0x01 0x23 0x45 0x67 0x89 0x01 0x23 0x45   0x00 0x01   0x8C 0xDD   0x0D 0x0A  
Start Bit Length Protocol NO.   Device ID   Serial NO. CRC Verify Stop Bit  
Server->Device: (the response protocol NO. is the same with the protocol NO. Sending by device)

0x78 0x78   0x05   0x01   0x00 0x01   0xD9 0xDC   0x0D 0x0A  
Start Bit Length Protocol NO.   Serial NO.   CRC Verify   Stop Bit



## 4.5.2 GPS information package

| Format        | Content   |  |          |           |       |                |                      |
|---------------|-----------|--|----------|-----------|-------|----------------|----------------------|
|               | Date&Time | GPS information  |          |           |       |                | Reserved extend byte |
|               |           | GPS info length/ Number of satellites involved in locating | Latitude | Longitude | Speed | Status/ Course |                      |
| Length (Byte) | 6         | 1  | 4        | 4         | 1     | 2              | N                    |

### 4.5.2.1 Date&Time

| Format       | Year | Month | Day | Hour | Minute | Second |
|--------------|------|-------|-----|------|--------|--------|
| Length(Byte) | 1    | 1     | 1   | 1    | 1      | 1      |

For example: 15:50:23 on March 23,2010.

The value is 0x0A 0x03 0x17 0x0F 0x32 0x17

### 4.5.2.2 GPS info length/ Number of satellites involved in locating

1 byte converts to binary 8 bit, the first 4 bit means GPS info length, the late 4 bit means number of satellite involved in locating.

Note: The length includes 1 byte occupied by itself.

For example: 0x9C means GPS information length is 9 bytes, the number of satellite involved in locating is 12.

### 4.5.2.3 Latitude

Occupy 4 bytes, representing the latitude value. Number range is from 0 to 162000000, which represents the range form 0°to 90°.Unit: 1/500 second

Conversion method:

A Convert the latitude (degrees, minutes) data from GPS module into a new form which represents the value only in minutes;

B Multiply the converted value by 30000, and then transform the result to hexadecimal number

For example  $22^{\circ} 32.7658'$  ,  $(22 \times 60 + 32.7658) \times 30000 = 40582974$ , then convert it to hexadecimal number 0x02 0x6B 0x3F 0x3E

### 4.5.2.4 Longitude

Occupy 4 bytes, representing the longitude value of location data. Number ranges from 0 to 324000000, representing the range form 0°to 180°.Unit: 1/500 seconds, Conversion method is the same as latitude's.

### 4.5.2.5 Speed

Occupy 1 bytes, representing the speed of the device; ranges from 0 to 255,Unit: kilometer/hour.



#### 4.5.2.6 Status/Course

Occupy 2 bytes; representing the moving direction of the device; ranges from 0-360; unit: degree, regards due north as 0 degree; clockwise.

One byte is composed of eight binary. In the first byte, the first six binary represents status. The last two binary and the whole eight binary in the second byte (10 binary in total) represents course

| The first byte |               |                         |                    |                               |                               | The second byte |   |   |   |   |   |   |   |   |   |
|----------------|---------------|-------------------------|--------------------|-------------------------------|-------------------------------|-----------------|---|---|---|---|---|---|---|---|---|
| 8              | 7             | 6                       | 5                  | 4                             | 3                             | 2               | 1 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| No definition  | No definition | Real time/Different GPS | GPS located or not | East longitude/West longitude | South latitude/North latitude | Course          |   |   |   |   |   |   |   |   |   |

0: South latitude

1: North latitude

0: East longitude

1: West longitude

0: GPS has not located

1: GPS has located

0: Real time GPS

1: Different GPS

Note: The status information refers to the status in a certain time

For example: 0x05 0x4C convert to binary 00001010 1001100, representing GPS has located、real time GPS、north longitude、east latitude、Course 332°

#### 4.5.2.7 Reserved bit

It is blank at present, reserved for extendibility.

#### 4.5.2.8 Server response

No need to respond server.





### 4.5.3 LBS information

| Format       | Content   |                 |     |     |         |                      |
|--------------|-----------|-----------------|-----|-----|---------|----------------------|
|              | Date&Time | LBS information |     |     |         | Reserved extend byte |
|              |           | MCC             | MNC | LAC | Cell ID |                      |
| Length(Byte) | 6         | 2               | 1   | 2   | 3       | N                    |

#### 4.5.3.1 Date& Time

The same as corresponding format in part of GPS information

#### 4.5.3.2 MCC

Affiliated country code of mobile user is Mobile Country Code (MCC). MMC of China is 460(decimal)

Value ranges from 0x0000 to 0x03E7

MMC of China is 0x01 0xCC (460 decimal convert to hex)

#### 4.5.3.3 MNC

China Mobile Network Code (MNC) is 0x00

#### 4.5.3.4 LAC

Location Area Code (LAC) is included in LAI. It is composed of 2 bytes with hex code, ranges from 0x0001—0xFFFF(not include 0x0001 and 0xFFFF). One location area can contain one or more areas.

#### 4.5.3.5 Cell ID

Cell Tower ID (Cell ID) ranges from 0x000000 to 0xFFFFF

#### 4.5.3.6 Reserved bit

It is blank at present, reserved for extendibility.

#### 4.5.3.7 Server response

No need to response server



#### 4.5.4 GPS/LBS combined information

| Format           | Content       |   |                                      |   |                       |                           |                     |          |         |     |            |                     |
|------------------|---------------|---|--------------------------------------|---|-----------------------|---------------------------|---------------------|----------|---------|-----|------------|---------------------|
|                  | Data<br>&Time | GPS info  |                                      |   |                       |                           |                     | LBS info |         |     |            | Rese<br>rved<br>bit |
|                  |               | GPS info<br>length/<br>Number<br>of<br>satellites<br>involved<br>in<br>locating | L<br>a<br>t<br>i<br>t<br>u<br>d<br>e | L<br>o<br>n<br>g<br>i<br>t<br>u<br>d<br>e | S<br>p<br>e<br>e<br>d | Cou<br>rse/<br>Stat<br>us | Rese<br>rved<br>bit | MC<br>C  | MN<br>C | LAC | Cell<br>ID |                     |
| Length<br>(Byte) | 6             | 1   | 4                                    | 4   | 1                     | 2                         | M                   | 2        | 1       | 2   | 3          | N                   |

As for each parameter, please refer to previous explanation.

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### 4.5.5 GPS/LBS/Status combined information

| Format        | Content    |  |          |           |       |                |              |            |     |     |     |         |              |                            |                |                             |
|---------------|------------|--|----------|-----------|-------|----------------|--------------|------------|-----|-----|-----|---------|--------------|----------------------------|----------------|-----------------------------|
|               | Date& Time | GPS info   |          |           |       |                |              | LBS info   |     |     |     |         |              | Status info                |                |                             |
|               |            | GPS info length/ Number of satellites involved in locating | Latitude | Longitude | Speed | Course/ Status | Reserved bit | LBS length | MCC | MNC | LAC | Cell ID | Reserved bit | device information content | voltage degree | GS M signal strength degree |
| Length( Byte) | 6          | 1  | 4        | 4         | 1     | 2              | M            | 1          | 2   | 1   | 2   | 3       | N            | 1                          | 1              | 1                           |

As for each parameter, please refer to previous explanation.

It combines GPS info/ LBS info and status info. What need to notice is that LBS info here has been increased length (includes 1 byte occupied by itself).Server should make a response when receive package of GPS/Status combined info.

Server responds blank data package after receiving the data package from device.

Note: The serial number of data package must be the same as the one sent by device response.

For example: Server responds package to device is as follows:

|                  |             |              |                  |                  |                  |
|------------------|-------------|--------------|------------------|------------------|------------------|
| <u>0x78 0x78</u> | <u>0x05</u> | <u>0x16</u>  | <u>0x00 0x11</u> | <u>0xF9 0x70</u> | <u>0x0D 0x0A</u> |
| Start bit        | length      | Protocol NO. | Serial No.       | CRC check        | End bit          |



## 4.5.6 Status information

| Format       | Content            |                |                            |                      |
|--------------|--------------------|----------------|----------------------------|----------------------|
|              | Device information | Voltage degree | GSM signal strength degree | Reserved extent byte |
| Length(Byte) | 1                  | 1              | 1                          | N                    |

### 4.5.6.1 Device information

Occupy 1 byte, representing each information of the device. Regard 1 byte as 8bits, the lowest bit is 0, the highest is 7. In the process of the data transmitting, the high one comes first and the low one follows. Each bit represents the detailed meaning as follows:

| High bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Low bit |
|----------|---|---|---|---|---|---|---|---|---------|
|----------|---|---|---|---|---|---|---|---|---------|

|                                |   |
|--------------------------------|---|
| Zereth bit                     | 0: Not fortified<br>1: Fortified  |
| First bit                      | 0: Low ACC<br>1: High ACC   |
| Second bit                     | 0: Not charged<br>1: Charged  |
| Third bit/Fourth bit/Fifth bit | 000: Normal<br>001: Vibration alarm<br>010: Cut-off alarm<br>011: Low-power alarm<br>100: SOS |
| Sixth bit                      | 0: GPS has not located<br>1: GPS has located  |
| Seventh bit                    | 0: Petrol/Electricity on<br>1: Petrol/Electricity off   |

Note: The status information refers to the status in a certain time

For example: 0x4B converts to binary 01001011, which means fortified/high ACC/not charged/vibration alarm/GPS has located/petrol/electricity on.

### 4.5.6.2 Voltage degree

Decimal, range from 0-6

- 0: Lowest power and power off
- 1: No enough power to dial a call or send messages.
- 2: Low power and alarm
- 3: Lower power but can work normally
- 3~6: Work in good condition

### 4.5.6.3 GSM signal strength degree:



0x00: No signal  
0x01: Weaker signal  
0x02: Weak signal  
0x03: Good signal  
0x04: Strong signal

#### 4.5.6.4 Server response

Server responds blank data package after receiving the data package of device.

Note: The serial number of data package must be the same as the one sent by device response.

For example: The status package sent from device to server is as follows:

|                  |             |              |                       |                  |                  |                  |
|------------------|-------------|--------------|-----------------------|------------------|------------------|------------------|
| <u>0x78 0x78</u> | <u>0x08</u> | <u>0x13</u>  | <u>0x4B 0x04 0x03</u> | <u>0x00 0x11</u> | <u>0x06 0x1F</u> | <u>0x0D 0x0A</u> |
| start bit        | length      | Protocol NO. | information content   | serial NO.       | CRC check        | end bit          |

Server will respond to device as follows:

|                  |             |              |                  |                  |                  |
|------------------|-------------|--------------|------------------|------------------|------------------|
| <u>0x78 0x78</u> | <u>0x05</u> | <u>0x13</u>  | <u>0x00 0x11</u> | <u>0xF9 0x70</u> | <u>0x0D 0x0A</u> |
| Start bit        | length      | Protocol NO. | Serial NO.       | CRC check        | End bit          |

#### 4.5.6.5 Reserved bit

It is blank at present, reserved for extendibility



## 4.5.7 Satellite SNR information

This package is sent after the device receiving the command from server

| Format       | Content                                   |               |   |   |       |   |                      |
|--------------|---|---------------|---|---|-------|---|----------------------|
|              | Number of satellites involved in locating | Satellite SNR |   |   |       |   | Reserved extend byte |
|              |   | 1             | 2 | 3 | ..... | n |                      |
| Length(Byte) | 1   | n             |   |   |       |   | N                    |

### 4.5.7.1 Number of satellite involved in locating

For example: 12 satellites is 0x0C

### 4.5.7.2 Satellite SNR

Range: 0x00~0x63(means 0~99dBHZ)

Every satellite occupies one byte.

### 4.5.7.3 Reserved bit

It is blank at present, reserved for extendibility.

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#### 4.5.8 Command from server to device

| Format       | Content of information |                     |              |
|--------------|------------------------|---------------------|--------------|
|              | Content-length         | Information content | Reserved bit |
| Length(Byte) | 1                      | M                   | N            |

Protocol NO.: 0x80

The response command sending from device to server, whose data package format is the same as the format of "command sending from server to device", but protocol NO. is different, with "0x15".

##### 4.5.8.1 Command length

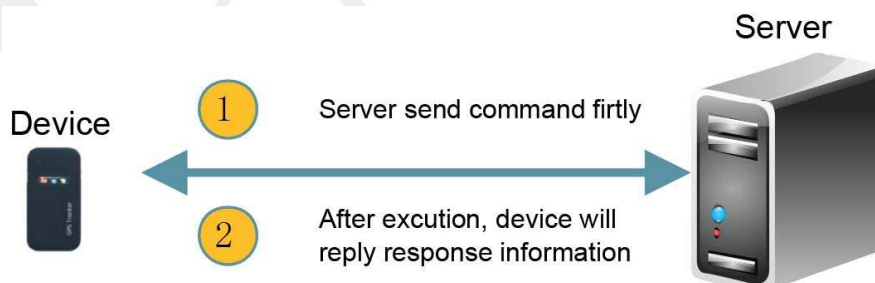
Show with byte, 0x0A, means command content occupy 10 bytes

##### 4.5.8.2 Server flag

Left to the server for identification, device will return back the data binary received in feedback package

##### 4.5.8.2 Command content

Show with ASC II character string, command content is compatible with sms command.



##### 4.5.8.2.1 Check position information

Command format:

DWXX,000000#

Function description:

Command of acquiring position information.. Both cellphone user and sms server can acquire position information with this command.

If successful, it will reply: DWXX=Lat: <South/North latitude>, Course: <>, speed: <>, Date& time: <>

If failed, it will reply: DWXX=Command Error!

e.g:



Lat:N23d5.1708m,Lon: E114d23.6212m,Course:120,Speed:53.02;DateTime:08-09-12  
14:52:36

Meaning: North Lat 23° 5.1708', East Lon114° 23.6212', Course:120°, speed:  
53.02 Km/h, Date&time: 14:52:36 12<sup>th</sup> Sep 2008

Note: If device failed in location, it will reply: Lat:,Lon:, Course:,Speed:,DateTime:-:

#### 4.5.8.2.1 Tele-cutoff( petro cutoff/ electricity cutoff)

SMS Command content:

DYD,000000#

Function description: Cut the petro or electricity supply

Response sms:

If successful, replying with: DYD=Success!

If failed, replying with: DYD=Unvalued Fix  
or DYD=Speed Limit, Speed 40km/h

#### 4.5.8.2.2 Restore petro and oil

Command content:

HFYD,000000#

Function description: Restore the petrol or electricity supplying

Response sms:

If successful, relying with: HFYD=Success!

If failed, replying with: HFYD=Fail!

#### 4.5.8.3 Reserved bit

Reservered for extending, current it is blank





## 4.5.9 Instruction about login data package and status package

1. If GPRS connection successful, the device will send first login data package to server. Receiving feedback package in 5 seconds will be considered as normal, it starts sending position sata(GPS,LBE information package), 3 minutes later status package follows immediately, to confirm the normal communication timely.
2. If the GPRS connection failed,device can not send login data package.When GPRS connection fails for 3 times, device will activate timed-restarting function. ( Note: The restart process will activate once after 20 minutes. If device connect with server and receiving feedback data package to login data successfully in 20 minutes, the timed-restarting function will be disabled automatically.)
3. If there is no feedback package sent from server in 5 seconds, after device sends login data or status data package, it will be considered as failure to connect. In this case, device will activate the GPS data backup function,disconnect the current GPRS connection, reconnect to the server and send login data package.
4. If connection is considers as abnormal, reconnect to send login data package or status data package but not receiving feedback data package in 3 times, device will activate timed-restarting function. (Note: The restart process will activate once after 10 minutes. If device connect with server and receiving feedback data package in this 10 minutes, the timed-restarting function will be disabled automatically.)
5. Server will not reply feedback data package to device which has not been registered.
6. If the device has not been inserted by sim card, or the GPRS service of this sim card has not been activated, the device will restart automatically once after 21 minutes.



## 5. Trouble shooting

Device or server can judge the accuracy of data received with identifying code. Sometimes, because of the electronic noise or other interference, data will be changed a little in the transit process. In this case, identifying code can make sure the core or associated core do nothing with such kind of wrong data, which will strengthen the security and efficiency of system. This identifying code adopts CRC-ITU identifying method.

## 6. End bit

Defaulted value, by hex 0x0D 0x0A.

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## 7. Appendix Complete format of information package

### A. Data package from device to server

| Login data package (18 Byte) |                |                 |           |                           |                 |         |
|------------------------------|----------------|-----------------|-----------|---------------------------|-----------------|---------|
| Info header                  | Content-length | Protocol number | Device ID | Information serial number | Identifying bit | End bit |
| 2                            | 1              | 1               | 8         | 2                         | 2               | 2       |

| GPS packge(26+N Byte) |                               |                                    |                     |   |                  |                   |           |                   |                  |                                     |                            |            |
|-----------------------|-------------------------------|------------------------------------|---------------------|---|------------------|-------------------|-----------|-------------------|------------------|-------------------------------------|----------------------------|------------|
| Info<br>head<br>er    | dat<br>a<br>bit<br>len<br>gth | Pr<br>ot<br>oc<br>ol<br>nu<br>mber | Information content |   |                  |                   |           |                   |                  | Inform<br>ation<br>serial<br>number | Iden<br>tify<br>ing<br>bit | End<br>bit |
|                       |                               |                                    | Date<br>&time       | GPS information   |                  |                   |           |                   | Reserv<br>ed bit |                                     |                            |            |
|                       |                               |                                    |                     | GPS information<br>length, Number of<br>Satellites<br>involved in<br>locating | lat<br>itu<br>de | Lon<br>git<br>ude | Spe<br>ed | Course,<br>status |                  |                                     |                            |            |
| 2                     | 1                             | 1                                  | 6                   | 1   | 4                | 4                 | 1         | 2                 | N                | 2                                   | 2                          | 2          |

| LBS package (23+N Byte)    |   |  |                           |                 |     |     |         |   |                         |  |                            |            |
|----------------------------|---|--|---------------------------|-----------------|-----|-----|---------|---|-------------------------|--|----------------------------|------------|
| In<br>fo<br>he<br>ad<br>er | D<br>a<br>t<br>a<br>b<br>i<br>t<br>l<br>e<br>n<br>g<br>t<br>h | P<br>r<br>o<br>t<br>o<br>c<br>o<br>l<br>n<br>u<br>m<br>b<br>e<br>r | Information content       |                 |     |     |         |   | Res<br>erv<br>ed<br>bit | Info<br>rmat<br>ion<br>sria<br>l<br>num<br>ber | Iden<br>tify<br>ing<br>bit | End<br>bit |
|                            |   |  | Dat<br>e<br>&<br>tim<br>e | LBS information |     |     |         |   |                         |  |                            |            |
|                            |   |  |                           | MCC             | MNC | LAC | Cell ID |   |                         |  |                            |            |
| 2                          | 1   | 1  | 6                         | 2               | 1   | 2   | 3       | N | 2                       | 2  | 2                          |            |

| GPS、LBS Information package (34+M+N Byte) |                                       |                                |                     |  |                                      |                   |               |                        |                         |             |             |             |                         |   |                         |            |                            |
|---|---------------------------------------|--------------------------------|---------------------|--|--------------------------------------|-------------------|---------------|------------------------|-------------------------|-------------|-------------|-------------|-------------------------|---|-------------------------|------------|----------------------------|
| In<br>fo<br>he<br>ad<br>er                | Da<br>ta<br>bi<br>t<br>le<br>ng<br>th | Pro<br>toc<br>ol<br>num<br>ber | Information content |  |                                      |                   |               |                        |                         |             |             |             |                         | Infor<br>matio<br>n<br>seria<br>l<br>numbe<br>r | Ident<br>ifyin<br>g bit | End<br>bit |                            |
|   |                                       |                                | Dat<br>e&t<br>ime   | GPS information  |                                      |                   |               |                        | LBS information         |             |             |             | Res<br>erv<br>ed<br>bit |   |                         |            |                            |
|   |                                       |                                |                     | GPS<br>informati<br>on<br>length,<br>Number of<br>Satellite<br>s<br>involved<br>in<br>locating | L<br>a<br>t<br>i<br>t<br>u<br>d<br>e | Lon<br>git<br>ude | Sp<br>ee<br>d | Course<br>, statu<br>s | Res<br>erv<br>ed<br>bit | M<br>C<br>C | M<br>N<br>C | L<br>A<br>C |                         |   |                         |            | C<br>e<br>l<br>l<br>I<br>D |
| 2   | 1                                     | 1                              | 6                   | 1  | 4                                    | 4                 | 1             | 2                      | M                       | 2           | 1           | 2           | 3                       | N   | 2                       | 2          | 2                          |

| Status package (13+N Byte) |                 |                 |                            |                |                            |   |              |                           |                 |
|----------------------------|-----------------|-----------------|----------------------------|----------------|----------------------------|---|--------------|---------------------------|-----------------|
| Info header                | Data bit length | Protocol number | Information content        |                |                            |   | Reserved bit | Information serial number | Identifying bit |
|                            |                 |                 | Device information content | Voltage degree | GSM signal strength degree |   |              |                           |                 |
| 2                          | 1               | 1               | 1                          | 1              | 1                          | N | 2            | 2                         | 2               |



| Satellite SNR information (11+M+N Byte) |                 |                 |   |               |   |         |                           |                 |         |              |
|---|-----------------|-----------------|---|---------------|---|---------|---------------------------|-----------------|---------|--------------|
| Info header                             | Data bit length | Protocol number | Information content                       |               |   |         | Information serial number | Identifying bit | End bit |              |
|   |                 |                 | Number of Satellites involved in locating | Satellite SNR |   |         |                           |                 |         | Reserved bit |
|   |                 |                 |   | 1             | 2 | 3.....n |                           |                 |         |              |
| 2                                       | 1               | 1               | 1   | M             |   |         | N                         | 2               | 2       |              |

| Feedback information from device to server (15+M+N Byte) |                 |                 |                          |             |                 |              |                           |               |         |
|--|-----------------|-----------------|--------------------------|-------------|-----------------|--------------|---------------------------|---------------|---------|
| Info header  | Data bit length | Protocol number | Character string content |             |                 |              | Information serial number | Varifying bit | end bit |
|  |                 |                 | Command length           | Server flag | Command content | Reserved bit |                           |               |         |
| 2  | 1               | 1               | 1                        | 4           | M               | N            | 2                         | 2             | 2       |

| GPS、LBS status package (40+M+N+L Byte) |                 |                 |   |          |           |       |                |              |            |                 |     |     |         |              |                            |                    |                            |              |                        |                 |         |   |
|--|-----------------|-----------------|---|----------|-----------|-------|----------------|--------------|------------|-----------------|-----|-----|---------|--------------|----------------------------|--------------------|----------------------------|--------------|------------------------|-----------------|---------|---|
| Info header                            | Data bit length | Protocol number | Information content   |          |           |       |                |              |            |                 |     |     |         |              |                            |                    |                            | Reserved bit | Information Serial NO. | Identifying bit | End bit |   |
|  |                 |                 | GPS information   |          |           |       |                |              |            | LBS information |     |     |         |              |                            | Status information |                            |              |                        |                 |         |   |
|  |                 |                 | GPS information length<br>Number of Satellites involved in locating | latitude | Longitude | Speed | Course, status | Reserved bit | LBS length | MCC             | MNC | LAC | Cell ID | Reserved bit | Device information content | Votage degree      | GSM signal strength degree |              |                        |                 |         |   |
|  |                 |                 |   |          |           |       |                |              |            |                 |     |     |         |              |                            |                    |                            |              |                        |                 |         |   |
| 2                                      | 1               | 1               | 6   | 1        | 4         | 4     | 1              | 2            | M          | 1               | 2   | 1   | 2       | 3            | N                          | 1                  | 1                          | 1            | L                      | 2               | 2       | 2 |

## B. Data package from server to device

| Feedback package sending from server to device after receiving status package (10 Byte) |                 |                 |                           |  |                 |         |
|---|-----------------|-----------------|---------------------------|--|-----------------|---------|
| Info header   | Data bit length | Protocol number | Information serial number |  | Identifying bit | End bit |
| 2   | 1               | 1               | 2                         |  | 2               | 2       |

| Command package sending from server to terminal (15+M+N Byte) |                    |                    |                     |                |                    |                 |                              |                    |            |
|---|--------------------|--------------------|---------------------|----------------|--------------------|-----------------|------------------------------|--------------------|------------|
| Info<br>head<br>er  | Data bit<br>length | Protocol<br>number | Information content |                |                    |                 | Information serial<br>number | Identifying<br>bit | End<br>bit |
|   |                    |                    | Content<br>length   | Server<br>flag | Command<br>content | Reserved<br>bit |                              |                    |            |
|   |                    |                    |                     |                |                    |                 |                              |                    |            |
| 2   | 1                  | 1                  | 1                   | 4              | M                  | N               | 2                            | 2                  | 2          |