

## Communication Protocol V-A 1.1

### I Command Format

Command format are as follows:

Format 1:

FACID,<password(Max: 16bytes)>,<command>,<data>;

Format 2:

FACID,<password(Max: 16bytes)>,<command>,<data>;<command>,<data>;<and so on>

Note:

Do NOT input '<' and '>' when writing a command.

The semicolon at the end of command can be omitted.

Use format 2, you can set multiple parameters in one step, this function is very useful.

The yellow part means more <command>,<data>; you can input.

Item	Specification
FACID	5 bytes. It means the header of the command format.
password	Max 16 bytes. Only the right password can be used in command format. If less than 16 bytes, device will complement on right side automatically.
command	Please refer to the command list below.
data	The parameters of command. Each parameter is divided by comma.
;	1 byte, it is the ending character and in hex code (0x3B in hex code).

### II Command List

Num.	Command	Definition
1	DEFAULT	Go back to default settings
2	RESTART	Restart device
3	PASSWORD	Change password
4	AUTHORIZE	Set authorized numbers
5	LOC	Track by Interval
6	GPRS	Upload GPRS data
7	TIME ZONE	Set time zone
8	SMS	SMS format
9	SDCARD	Write/Read SD card
10	QUERY	Query the status of device
11	OV	Over-speed alarm
12	VIB	Vibration alarm
13	MOVE	Movement alarm
14	GEOFENCE	Geo-fence alarm
15	CONFIG	Config the mode of device

### III Command Details

#### 1. DEFAULT

Command:	FACID,123456,DEFAULT;
Description:	Set all settings to be default settings.
Note:	Default password is 123456 and same for the following examples.

#### 2. RESTART

Command:	FACID,123456,RESTART;
Description:	Restart the device, but doesn't change any settings.
Note:	Nothing!

#### 3. PASSWORD

Command:	FACID,123456,PASSWORD,V= ;
Description:	Change the old password "123456" to
Note:	New password equals or less than 16 bytes.

#### 4. AUTHORIZE

Command:	FACID,123456,AUTHORIZE, 1= ,2= ,3= ,4= ,5= ;
Description:	Set the authorized numbers. 1=  first authorized number 2=  second authorized number ...
Note:	Number means phone number Max five authorized numbers Just want to set two authorized number: FACID,123456,AUTHORIZE,1= ,4= ; Set the second authorized number and delete the first authorized number: FACID,123456,AUTHORIZE,1=,2= ;

#### 5. LOC

Command:	FACID,123456,LOC,I= ,T= ,L= ;
Description:	Sent the GPS data to authorized numbers or sever automatically. I=  Interval(must greater than zero, unit is sec.) T=  Times(0~999, 999 means infinite) L=  Distance(condition to sent GPS data, unit is meter)
Note:	when set L=100 , device will not sent GPS data if the distance from latest location to last location is less than 100 m.

#### 6. GPRS

Command:	FACID,123456,GPRS,ADDR= ,PORT= ,NAME= ,PASS= ,APN= , ID= ,MODE= ,HBE= ,HBN= ,HBI= ,HBT= ,HBR= ;
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Description:	<p>Set the parameters relate to GPRS.</p> <p>ADDR=  IP or website of server</p> <p>PORT=  port of server</p> <p>NAME=  available name</p> <p>PASS=  correct password</p> <p>APN=  access point name</p> <p>ID=  identifier</p> <p>MODE=1/0  use UDP/TCP protocol</p> <p>HBE=1/0  activate/deactivate heart-beat packet</p> <p>HBN=  text content of heart-beat packet</p> <p>HBI=  interval time of heat-beat packet</p> <p>HBT=  total times of heat-beat packet</p> <p>HBR=1/0   restart device or not</p>
Note:	Heart-beat packet" is used to keep the GPRS connection constantly

## 7. TIME ZONE

Command:	FACID,123456,TIME_ZONE,V= [REDACTED];
Description:	Set time zone of local place.
Note:	Nothing!

## 8. SMS

Command:	FACID,123456,SMS,TEXT/LINK/FAST;
Description:	<p>Set format of SMS.</p> <p>TEXT  default format</p> <p>LINK  Google link format</p> <p>FAST  Tracker reply a SMS with position-info at once</p>
Note:	Nothing!

## 9. SDCARD

Command:	FACID,123456,SDCARD,LOG=[REDACTED],READ=[REDACTED],TEST;
Description:	<p>LOG=1/0  write GPS data to SD card or not</p> <p>READ=1/0  read GPS data from SD card or not</p> <p>TEST  test the SD card is right or not</p>
Note:	Nothing!

## 10. QUERY

Command:	FACID,123456,QUERY,STATUS/LINK;
Description:	<p>STATUS  inquires the parameters of device</p> <p>LINK  to get a SMS with Google link</p>
Note:	Nothing!

## 11. OV

Command:	FACID,123456,OV,L=[REDACTED];
Description:	Set the limited speed.
Note:	Unit is Km/h.

## 12. VIB

Command:	FACID,123456,VIB,L= ;
Description:	Set the vibration alarm. L=  0~10(0 is to turn off function, 1~10 means the sensitivity of vibration-sensor, 1 is min and 10 is max)
Note:	Nothing!

### 13. MOVE

Command:	FACID,123456,MOVE,L= ;
Description:	When the tracker moves out of or moves in a preset circle scope, it will send an alarm to authorized numbers or server. L=  the radius of a preset circle scope
Note:	The center of circle scope is the latest point, if there is no latest point, the center is none.

### 14. GEOFENCE

Command:	FACID,123456,GEOFENCE,1=114.000000e/22.600000n,2=113.800000e/22.400000n;
Description:	When the tracker moves out of or moves in a preset square scope, it will send an alarm to authorized numbers or server. 1=  top left corner of the Geo-fence 2=  bottom right corner of the Geo-fence
Note:	Nothing!

### 15. CONFIG

Command1:	FACID,123456, CONFIG, poweren=1,poweron=10:30,poweroff=10:40;
Description:	Set the Pet mode, tracker will work from 10:30 to 10:40 everyday, in other time tracker will not work. poweren=1/0  enable/disenable Pet mode poweron=  working start time poweroff=  working stop time
Note:	Start time and stop time should be in right range.
Command2:	FACID,123456, CONFIG,gpssave=1;
Description:	Set the power saving mode, power saving mode means when tracker has no work to do, it will close the GPS module and LED to save power. gpssave=1/0  enable/disenable power saving mode
Note:	Nothing!
Command3:	FACID,123456,CONFIG,gpsautosearch=60;
Description:	Set the auto-search interval when tracker has nothing to do. gpsautosearch=  60~9999999 (unit is sec.)
Note:	Default auto-search interval is 600 seconds.

## IV GPRS Data

Data format: `<Header><GPRMC>,<Flag>,<Alarm>,<State>,<Check Sum>`

Note: Data does not include "<" and ">".

For example:

Server receives a GPRS packet from tracker as below:

**In ASCII code:**

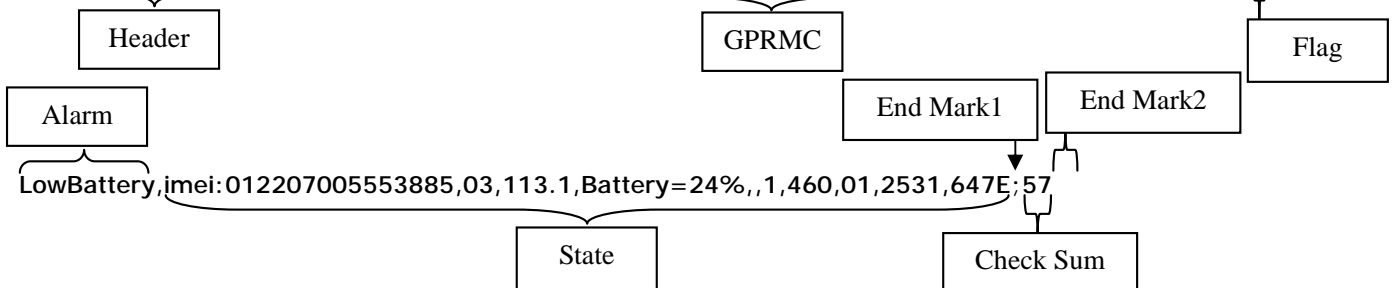
```
STX,102110830074542,$GPRMC,114229.000,A,2238.2024,N,11401.9619,E,0.00,0.00,310811,,,A*64,F,Low
Battery,imei:012207005553885,03,113.1,Battery=24%,,1,460,01,2531,647E;57
```

**In hex code:**

```
53 54 58 2C 31 30 32 31 31 30 38 33 30 30 37 34 35 34 32 2C 24 47 50 52 4D 43 2C 31 31 34 32 32 39 2E
30 30 30 2C 41 2C 32 32 33 38 2E 32 30 32 34 2C 4E 2C 31 31 34 30 31 2E 39 36 31 39 2C 45 2C 30 2E 30
30 2C 30 2E 30 30 2C 33 31 30 38 31 31 2C 2C 2C 41 2A 36 34 2C 46 2C 4C 6F 77 42 61 74 74 65 72 79 2C
69 6D 65 69 3A 30 31 32 32 30 37 30 30 35 35 35 33 38 38 35 2C 30 33 2C 31 31 33 2E 31 2C 42 61 74 74
65 72 79 3D 32 34 25 2C 2C 31 2C 34 36 30 2C 30 31 2C 32 35 33 31 2C 36 34 37 45 3B 35 37 0D 0A
```

GPRS packet analysis:

```
STX,102110830074542,$GPRMC,114229.000,A,2238.2024,N,11401.9619,E,0.00,0.00,310811,,,A*64,F,
```



(1) Header includes:

`<STX><ID>`

Example: STX,102110830074542,

Note:

Parameter	Description	Example in hex code (Spaces as separator)
STX	Fixed character	53 54 58
ID	Identifier of device, max: 16 bytes	31 30 32 31 31 30 38 33 30 30 37 34 35 34 32

(2) GPRMC includes:

`$GPRMC,hhmmss.ddd,S,xxmm.dddd,<N|S>,yyymm.dddd,<E|W>,s.s,h.h,ddmmyy,d.d,<E|W>,D*HH`

Example: \$GPRMC,114229.000,A,2238.2024,N,11401.9619,E,0.00,0.00,310811,,,A\*64,

Note:

Parameter	Description	Example in ASCII code
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hhmmss.ddd	UTC time hh = hours; mm = minutes; ss = seconds; ddd = decimal part of seconds	11:42:29.000
S	GPS status indicator, A = valid, V = invalid	A=Valid
xxmm.dddd	Latitude: xx = degrees; mm = minutes; dddd = decimal part of minutes	22 deg. 38.2024 min.
<N S>	Either character N or character S N = North, S = South	N = North
yyymm.dddd	Longitude: yyy = degrees; mm = minutes; dddd = decimal part of minutes	114 deg. 01.9619 min.
<E W>	Either character E or character W E = East, W = West	E = East
s.s	Speed, in unit of knot. (1 knot = 1.852 km)	0.00 Knots
h.h	Heading, in unit of degree	0.00 deg.
ddmmyy	Date dd = date; mm = month; yy = year	310811
d.d	Magnetic variation	Normally blank
<E W>	Either character W or character E W = West ,E=East	Normally blank
D	Mode, either character A or D or E or N	A
*	checksum delimiter	In case there would be one more comma (,) prior to *, GPRMC is still to be ended by `**`.
HH	Checksum	57

(3) Flag: GPS status indicator, **F** = valid, **L** = invalid.

(4) Alarm includes:

**<Alarm>**

Example: Help

Alarm table as below:

Alarm name	Description
Move in	Device moves in a preset circle scope.
Move out	Device moves out of a preset circle scope.
Geo in	Device moves in a preset square scope.

Geo out	Device moves out of a preset square scope.
OverSpeed	Device's speed is more than the limited speed.
LowSpeed	Device's speed is less than the limited speed.
Help	SOS button is pressed for 3 seconds.
VIB	Device detects enough strength of vibration.
LowBattery	Device has no enough power.

(4) State includes:

`<IMEI>,<Num>,<Altitude>,<Battery>,,<Charger Flag>,<MCC>,<MNC>,<LAC>,<Cell ID>`

Example: imei:012207005553885,03,113.1,Battery=24%,,1,460,01,2531,647E

Note:

Parameter	Description	Example in ASCII code
IMEI	International Mobile Equipment Identity	imei:012207005553885
Num	Number of valid satellite when getting the latest GPS data	03
Altitude	Value of altitude, unit is m.	113.1
Battery	Percentage of surplus battery	Battery=24%
Charger Flag	The status of charging, 1 means device is charging now.	1
MCC	Mobile Country Code	460
MNC	Mobile Network Code	01
LAC	Location Area Code	2531,647E

(5) `<End Mark1>` is the end of data, it is fixed:

`3B` (in hex code)

`;` (in ASCII code)

(6) `<Check Sum>` is the sum of all data before in hex code, if the sum is more than 1 byte, use the low byte.

Example:

`35 37` (in hex code)

`57` (in ASCII code)

(7) `<End Mark2>` is the end of packet, it is fixed:

`0D 0A` (in hex code)