GPRS Communication Protocol Between GPS Tracker and Server

Version 2.00

GT30i

GT60

VT300

VT310

VT400

Change Version	Reason of Change	Date
V1.00	Initial Document	2005-6-25
V1.01	Addition of Alarms	2006-10-8
V1.02	Addition of Output Control Addition of Stats in GPRS String	2007-1-26
V1.03	Add command 4107/4207/4126/4130/4131/4132/9016 VT310 integrated Change 4116 Delete 9014	2008-7-10
V1.04	Add 5114 Add AD of VT310	2008-12-2
V1.05	Add Power-cut Alarm Add Buzzer Control for GT60	2009-02-04
V1.06	Add 9001 to get SN and IMEI Add 5101/5115/5199	2009-3-18
V1.07	Add 4136	2009-08-03
V1.45	Change 4136 Add 4902/5503	2009-09-15
V1.46	Wording Correction	2010-06-03
V1.47	Delete GT30/GT30X. Add GT30i	2010-07-15
V2.0	Delete 4107/4207 Modify 4106/4113/4116/9999/Annex 1(base ID, CSQ, journey) Add 4135/4155/4302/4303/4351	2011-2-19
	Add 4150	2011-04-14

I Command Format

Command format of GPRS packets are as follows:

From server to tracker:
@@<L (2 bytes)><ID (7 bytes)><command (2 bytes)><parameter><checksum (2 bytes)>\r\n
From tracker to server:
$$<L (2 bytes)><ID (7 bytes)><command (2 bytes)><data><checksum (2 bytes)>\r\n

Note:
Do NOT input '<' and '>' when writing a command.
All multi-byte data complies with the following sequence: High byte prior to low byte.
The size of a GPRS packet (including data) is about 100 bytes

Item	**Specification**
@@	2 bytes. It means the header of packet from server to tracker. It is in ASCII code (Hex code: 0x40)
$$	2 bytes. It is the header of packet from tracker to server, It is in ASCII code (Hex code: 0x24)
L	2 bytes. It means the length of the whole packet including the header and ending character and it is in hex code
ID	7 bytes, ID must be digit and not over 14 digits, the unused byte will be stuffed by 'f' or '0xff'. It is in the format of hex code. For example, if ID is 13612345678, then it will be shown as follows: 0x13, 0x61, 0x23, 0x45, 0x67, 0x8f, 0xff. If all 7 bytes are 0xff, it is a broadcasting command. ID is in hex code
command	2 bytes. The command code is in hex code. Please refer to the command list below.
data	Min 0 byte and max 100 bytes. See Annex 1 for description of 'data'.
checksum	2 bytes. It indicates CRC-CCITT (default is 0xffff) checksum of all data (not including CRC itself and the ending character). It is in hex code. For example: 24 24 00 11 13 61 23 45 67 8f ff 50 00 05 d8 0d 0a 0x05d8 = CRC-CCITT (24 24 00 11 13 61 23 45 67 8f ff 50 00)
\r\n	2 bytes. It is the ending character and in hex code (0x0d,0x0a in hex code)

II Command List

III Command Details

1. Login – 0x5000

Command:	$$<L><ID><0x5000><checksum><\r\n>
Description:	After tracker is properly setup, it will apply for a GPRS connection by sending this login command every 30 seconds to the server until the server confirms its login.
Example:	24 24 00 11 12 34 56 FF FF FF FF 50 00 8B 9B 0D 0A
Note:	Tracker ID here is 123456 and same for the following examples.

2. Login Confirmation – 0x4000

Command:	@@<L><ID><0x4000><Flag><checksum>\r\n
Description:	Server sends this command back to the tracker to confirm tracker's login.
Note:	Flag (1 byte) = 0x00, login fails and will try again. = 0x01, login succeeded.
Example:	40 40 00 12 12 34 56 FF FF FF FF 40 00 01 A9 9B 0D 0A

3. Track on Demand – 0x4101

Command:	@@<L><ID><0x4101><checksum>\r\n
Description:	Get the current location of the tracker
Example:	40 40 00 11 12 34 56 FF FF FF FF 41 01 67 D9 0D 0A
Response:	$$<L><ID><0x9955><data><checksum>\r\n
Example:	24 24 00 60 12 34 56 FF FF FF FF 99 55 30 33 35 36 34 34 2E 30 30 30 2C 41 2C 32 32 33 32 2E 36 30 38 33 2C 4E 2C 31 31 34 30 34 2E 38 31 33 37 2C 45 2C 30 2E 30 30 2C 2C 30 31 30 38 30 39 2C 2C 2A 31 43 7C 31 31 2E 35 7C 31 39 34 7C 30 30 30 30 7C 30 30 30 30 2C 30 30 30 30 69 62 0D 0A
Note:	See Annex 1 for description of 'data'.

4. Track by Interval – 0x4102

Command:	@@<L><ID><0x4102><Interval(2 bytes in hex code)><checksum>\r\n
Description:	Set time interval for automatic timed report (GPRS tracking).
Note:	Interval is in unit of 10 seconds. =0x00 0x00, stop tracking by interval. Max time interval = 65535*10 seconds.
Example:	40 40 00 13 12 34 56 FF FF FF FF 41 02 00 0A 36 19 0D 0A Above command will set 10 (0x00 0x0A)*10=100s as tracking interval.

Response:	$$<L><ID><0x5100><Flag (1byte)> <Interval (2 bytes)><checksum>\r\n
Note:	Flag =0x00, failure response. =0x01, success response. Once the interval successfully set, the tracker will send the following position report to the server at the interval specified: $$<L><ID><0x9955><data><checksum>\r\n

5. Authorization – 0x4103

Command:	@@<L><ID><0x4103><button no (1 byte)><phone no for SMS><phone no for call><checksum>\r\n
Description:	Set authorized phone number for buttons (inputs)
Note:	**button no(input no)** is in hex code. It supports up to 3 buttons. If button no = 0x01, set authorized phone number for SOS button (input1); = 0x02, set authorized phone number for Button B (input2); = 0x03, set authorized phone number for Button C (input3). **phone no for SMS**: Authorized phone number for receiving SMS. **phone no for call**: Authorized phone number for receiving phone call. **phone no** is 16 bytes in ASCII. If the phone number is less than 16 bytes, the blank byte(s) should be stuffed by '0x00'. For example: If the authorized number is 1234567890, then it should be written as follows: 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x00 0x00 0x00 0x00 0x00 0x00 If all 16 bytes data are 0x00, the authorized number is invalid.
Example:	40 40 00 32 12 34 56 FF FF FF FF 41 03 01 38 38 38 38 38 38 38 38 38 38 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 99 68 0D 0A Above command will set '8888888888' as authorized phone number for SOS button.
Response:	$$<L><ID><0x4103><Flag><checksum>\r\n
Note:	Flag =0x00, failure response. =0x01, success response.

6. Speeding Alarm – 0x4105

Command:	@@<L><ID><0x4105><speed (1 byte in hex code)><checksum>\r\n
Description:	Set speeding alarm for the tracker. When the tracker is over this preset speed limit, SMS alarms will be sent to the authorized phone number for SOS button and GPRS alarms will be sent to the server every 30 seconds until the tracker' speed is lower than this speed limit.
Note:	speed =0x00, cancel speeding alarm; =0x01, speed limit is set to 10km/h;

	=0x02, speed limit is set to 20km/h; ……. =0x0A, speed limit is set to 100km/h; ……. =0x14, speed limit is set to 200km/h; Max speed limit is 200km/h.
Example:	40 40 00 12 12 34 56 FF FF FF FF 41 05 0B C0 14 0D 0A Above command will set speed limit: 110km/h.
Response:	$$<L><ID><0x4105><Flag><checksum>\r\n
Note:	If Flag =0x00, failure response. =0x01, success response.

7. Movement Alarm – 0x4106

Command:	@@<L><ID><0x4106><area (1byte in hex code)><checksum>\r\n
Description:	When the tracker moves out of a preset circle scope, one SMS alarms and one GPRS alarms will be sent to the authorized phone number for SOS button and the server. Radii suggest to be set above 100 meters.
Note:	area =0x00, cancel movement alarm function =0x01, it is set in a circle with current location as center and with radii=30m; =0x02, it is set in a circle with current location as center and with radii =50m; =0x03, it is set in a circle with current location as center and with radii =100m; =0x04, it is set in a circle with current location as center and with radii =200m; =0x05, it is set in a circle with current location as center and with radii =300m; =0x06, it is set in a circle with current location as center and with radii =500m; =0x07, it is set in a circle with current location as center and with radii =1000m; =0x08, it is set in a circle with current location as center and with radii =2000m. If above 08, it should be corresponding radii, Max. FFFFFFFF (4294967295), unit is meter. Only one alarm can be set in either Movement Alarm or Geo-fence Alarm.
Example:	40 40 00 13 40 20 50 20 81 4F FF 41 06 03 E8 12 F4 0D 0A Above command will set a circle with current location as center and with side radii=1000m.
Response:	$$<L><ID><0x4106><Flag><checksum>\r\n
Note:	Flag =0x00, failure response; =0x01, success response.

8. Extended Settings – 0x4108

Command:	@@<L><ID><0x4108><ABCDEFGHIJ><checksum>\r\n

Description:	Set extended functions with details as follows: ABCDEFGHIJ (defaulted as 0x01 0x00 0x00 0x00 0x01 0x00 0x00 0x00 0x00 0x01): A=0x00, turn off the function of replying with an SMS position report after a call is made to the tracker. A=0x01, turn on the function of replying an SMS position report after a call is made to the tracker. B=0x00, location data of NMEA 0183 GPRMC will be interpreted into normal text for easy reading. B=0x01, location data complies with NMEA 0183 GPRMC protocol. C=0x00, turn off the function to automatically hang up an incoming call. C=0x01, turn on the function to automatically hang up an incoming call after 5 rings. D=0x00, turn off the function of sending alarms when the tracker is turned on. D=0x01, turn on the function of sending an SMS alarm to the authorized phone number for SOS and a GPRS alarm to the server when the tracker is turned on. E: reserved and defaulted as 0x01. F=0x00, turn off the function of sending alarms when the tracker enters GPS blind area. F=0x01, turn on the function of sending an SMS alarm to the authorized phone number for SOS and a GPRS alarm to the server when the tracker enters GPS blind area. G=0x00, all LED lights work normally. G=0x01, all LED lights stop flashing when the tracker is working. H: reserved and defaulted as 0x00. I=0x00, turn off the function of sending an SMS alarm when the extra power of the vehicle tracker is cut. I=0x01, turn on the function of sending an SMS alarm to the authorized phone number for SOS when the extra power of the vehicle tracker is cut. J=0x00, turn off the buzzer for the incoming call. J=0x01, turn on the buzzer for the incoming call.
Example:	40 40 00 1B 12 34 56 FF FF FF FF 41 08 01 00 00 00 01 00 00 00 00 01 B0 78 0D 0A
Response:	$$<L><ID><0x4108><Flag><checksum>\r\n
Note:	Flag =0x00, failure response; =0x01, success response.

9. Initialization – 0x4110

Command:	@@<L><ID><0x4110><checksum>\r\n
Description:	Make all settings (except for the password, IP, Port, APN, ID and GPRS interval) back to factory default.
Example:	40 40 00 11 12 34 56 FF FF FF FF 41 10 65 C9 0D 0A
Response:	$$<L><ID><0x4110><Flag><checksum>\r\n
Note:	Flag =0x00, failure response;

	=0x01, success response.

10. Sleep Mode – 0x4113

Command:	@@<L><ID><0x4113><power-saving level (1 byte in hex code)><checksum>\r\n
Description:	Set sleep mode for power saving.
Note:	If power-saving level =0x00, to close sleep function; =0x01, level 1; =0x02, level 2; =0x03, level 3. Description of power-saving level: GPS module will be closed for 64 seconds * X (X=1, 2, 3), if it gets continuous GPS fixed for 32 times or Non-GPS fixed for 128 times. After that, GPS module will periodically work and close.
Example:	40 40 00 12 12 34 56 FF FF FF FF 41 13 01 C8 8B 0D 0A Above command will set sleep mode to level 1.
Response:	$$<L><ID><0x4113><Flag><checksum>\r\n
Note:	Flag =0x00, failure response; =0x01, success response.

11. Output Control (Conditional) – 0x4114 or 0x5114

Description:	This command is to control the outputs of the trackers with a speed limit and used for vehicle trackers (VT300 and VT310) only. Advised Caution in Using this Function
Note:	This function is only achievable when the speed is below 10km/h (0x4114) or 20km/h (0x5114) and meantime GPS is available.
For VT300	
Command:	@@<L><ID><0x4114 or 0x5114><A><checksum>\r\n
Note:	A=0x00, close output (OUT1) - open drain A=0x01, open output (OUT1) - connect to GND
Example:	40 40 00 12 12 34 56 FF FF FF FF 41 14 01 51 1C 0D 0A Above command will open output1.
For VT310	
Command:	@@<L><ID><0x4114 or 0x5114><ABCDE><checksum>\r\n
Note:	A=0x00, close output (OUT1) -open drain A=0x01, open output (OUT1) -connect to GND A=0x02, remain previous status. B=0x00, close output (OUT2) -open drain B=0x01, open output (OUT2) -connect to GND B=0x02, remain previous status.

	C=0x00, close output (OUT3) -open drain C=0x01, open output (OUT3) -connect to GND C=0x02, remain previous status. D=0x00, close output (OUT4) -open drain D=0x01, open output (OUT4) -connect to GND D=0x02, remain previous status. E=0x00, close output (OUT5) -open drain E=0x01, open output (OUT5) -connect to GND E=0x02, remain previous status.
Example:	40 40 00 16 12 34 56 FF FF FF FF 41 14 01 00 01 00 01 89 2E 0D 0A Above command will open output1, output3 and output5 and close output2 and output4.
Response:	$$<L><ID><0x4114 or 0x5114><Flag><checksum>\r\n
Note:	Flag =0x00, failure response; =0x01, success response.

12. Output Control (Immediate) – 0x4115

Description:	This command is to control the outputs of the trackers and used for vehicle trackers (VT300 and VT310) only. Advised Caution in Using this Function
For VT300	
Command:	@@<L><ID><0x4115><A><checksum>\r\n
Note:	A=0x00, close output (OUT1) - open drain A=0x01, open output (OUT1) - connect to GND
Example:	40 40 00 12 12 34 56 FF FF FF FF 41 15 01 62 2D 0D 0A
For VT310	
Command:	@@<L><ID><0x4115><ABCDE><checksum>\r\n
Note:	A=0x00, close output (OUT1) -open drain A=0x01, open output (OUT1) -connect to GND A=0x02, remain previous status. B=0x00, close output (OUT2) -open drain B=0x01, open output (OUT2) -connect to GND B=0x02, remain previous status. C=0x00, close output (OUT3) -open drain C=0x01, open output (OUT3) -connect to GND C=0x02, remain previous status. D=0x00, close output (OUT4) -open drain D=0x01, open output (OUT4) -connect to GND D=0x02, remain previous status. E=0x00, close output (OUT5) -open drain E=0x01, open output (OUT5) -connect to GND E=0x02, remain previous status.

Example:	40 40 00 16 12 34 56 FF FF FF FF 41 15 01 00 01 00 01 CC 8E 0D 0A
Response:	$$<L><ID><0x4115><Flag><checksum>\r\n
Note:	Flag =0x00, failure response; =0x01, success response.

13. Triggered Alarms – 0x4116

Description:	This command is to get alarms when tracker's button (or input) is triggered.
For GT30i and GT60	
Command:	@@<L><ID><0x4116><ABC><checksum>\r\n
Note:	A=SOS Button B=Button B C=Button C When A or B or C (in ASCII) =1 (0x31), alarm when button is pressed =2 (0x32), alarm when button is released =3 (0x33), alarm when button is either pressed or released
Example:	40 40 00 14 12 34 56 FF FF FF FF 41 16 31 32 33 2C 52 0D 0A Above command will enable alarms when SOS button is pressed, Button B is released and Button C is either pressed or released.
For VT300	
Command:	@@<L><ID><0x4116><A><checksum>\r\n
Note:	As the Input of VT300 is linked with SOS button. =1 (0x31), to enable alarm when input is active =2 (0x32), to enable alarm when input is inactive =3 (0x33), to enable alarm when input is either active or inactive
For VT310	
Command:	@@<L><ID><0x4116><ABCDE><checksum>\r\n
Note:	A=Input1 (SOS Button) B=Input2 C=Input3 D=Input4 E=Input5 When A or B or C or D or E (in ASCII) =1 (0x31), to enable alarm when input is active =2 (0x32), to enable alarm when input is inactive =3 (0x33), to enable alarm when input is either active or inactive Input1, Input2 and Input3 are negative triggering; Input4 and Input5 are positive triggering.

Example:	40 40 00 16 12 34 56 FF FF FF FF 41 16 31 32 33 31 32 54 50 0D 0A Above command will enable alarms when Input1 is active, Input2 is inactive, Input3 is either active or inactive, Input4 is active and Input5 is inactive.
Response:	$$<L><ID><0x4116><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

14. Power Down – 0x4126

Command:	@@<L><ID><0x4126><data><checksum>\r\n
Description:	Makes the tracker into power down mode (for power-saving purpose) when it is inactive or stationary for a period of time. In Power Down states, GPS stops working and GSM enters sleep and stop sending out message until it is activated by message, incoming calls, movement or any input changes.
Note:	data is in ASCII code and in unit of minute. = 00 (0x30 0x30), to turn off this function; = [01,99], to set Power Down mode.
Example:	40 40 00 13 12 34 56 FF FF FF FF 41 26 31 35 9D 07 0D 0A Above command will set the tracker to enter Power Down mode after it is inactive for 15 (0x31 0x35) minutes.
Response:	$$<L><ID><0x4126><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

15. Listen-in (Voice Monitoring) – 0x4130

Command:	@@<L><ID><0x4130><data><checksum>\r\n
Description:	Authorize a phone number to make a silence call to the tracker, the track answers the call automatically and allows the caller to listen to what happens around the tracker. There is no voice indication that the call is in progress.
Note:	data is the telephone number for wiretapping and it should be numbers or numbers started with '+'. Max 16 digits. In ASCII code.
Example:	40 40 00 1B 12 34 56 FF FF FF FF 41 30 38 38 38 38 38 38 38 38 38 38 AD 3A 0D 0A Above command will authorize phone number '8888888888' for wiretapping.
Response:	$$<L><ID><0x4130><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

16. Log by Interval – 0x4131

Command:	@@<L><ID><0x4131><data><checksum>\r\n
Description:	Set time interval for logging GPS information. The information is stored within the device memory. When the memory gets full, the newest record will be overwritten on top of the oldest (FIFO - First In, First Out). In that case, only the newest information is stored.
Note:	data is in ASCII code and in unit of second. If data = 0 (0x30), to close this function. = [1,65535], to set interval for logging.
Example:	40 40 00 13 12 34 56 FF FF FF FF 41 31 31 35 5B F4 0D 0A Above command will make the tracker to log every 15 (0x31 0x35) seconds when it gets GPS fix.
Response:	$$<L><ID><0x4131><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

17. Time Zone – 0x4132

Command:	@@<L><ID><0x4132><data><checksum>\r\n
Description:	Corrects time into your local time
Note:	Default GPS time is GMT. data is to set time difference in minutes to GMT data = [-32768,32767]. In ASCII code and in unit of minute This correction is applied to location reports by SMS and SMS alarms, NOT GPRS.
Example:	40 40 00 14 12 34 56 FF FF FF FF 41 32 34 38 30 E5 B5 0D 0A Above command will set 480 minutes as time difference; 40 40 00 15 12 34 56 FF FF FF FF 41 32 2D 34 38 30 41 A1 0D 0A Above command will set -480 minutes as time difference.
Response:	$$<L><ID><0x4132><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

18. Set Sensitivity of Tremble Sensor – 0x4135

Command:	@@<L><ID><0x4135><data><checksum>\r\n
Description:	Sensitivity of tremble sensor is the key parameter for sleep mode, wake up and tow alarm etc.
Note:	data=[1,255], if the data is more smaller, the sensor will be more sensitive, default is 30
Example:	40 40 00 13 40 10 47 20 21 3F FF 41 35 33 30 0E BC 0D 0A

Response:	$$<L><ID><0x4135><Flag><checksum> \r\n
Example:	24 24 00 12 40 10 47 20 21 3F FF 41 35 01 F8 51 0D 0A
Note:	Flag =0x00, failure response; =0x01, success response.

19. Heading Change Report – 0x4136

Command:	@@<L><ID><0x4136><data><checksum>\r\n
Description:	When the heading direction of the tracker changes over the preset degree, a message with location data will be sent back to the server by GPRS. This is to enhance the accuracy and continuous trace when the tracker makes a direction change.
Note:	data=[0,359],in ASCII code;
Example:	40 40 00 13 12 34 56 FF FF FF FF 41 36 31 30 A4 BE 0D 0A Above data is 10 degree. When the tracker turns over 10 degree, a message will be sent back to the server.
Response:	$$<L><ID><0x4136><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

20. Set GPS Antenna Cut Alarm – 0x4150 (For VT400 only)

Command:	@@<L><ID><0x4150><data><checksum> \r\n
Description:	Set GPS antenna cut alarm
Note:	Data： =0，Disable alarm =1，Enable alarm. Default to be able，When GPS antenna is cut, the tracker will send one alarm to the server
Example:	40 40 00 12 12 34 56 FF FF FF FF 41 50 01 90 14 0D 0A
Response:	$$<L><ID><0x4150><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

21. Set GPRS Parameters – 0x4155

Command:	@@<L><ID><0x4155><data><checksum> \r\n
Description:	Set GPRS parameters. Including <mode, IP, port, APN, APN user name and password>.
Note:	Communication mode: =0, Enable GPRS =1, TCP

	=2, UDP
Example:	40 40 00 2E 40 10 47 20 21 3F FF 41 55 31 2C 31 31 33 2E 39 32 2E 31 31 31 2E 32 32 31 2C 38 30 35 32 2C 63 6D 6E 65 74 2C 2C 95 DB 0D 0A Above command will set IP as 113.92.111.221, port as 8052.
Response:	$$<L><ID><0x4155><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

22. Set Geo-fence Alarm– 0x4302

Command:	@@<L><ID><0x4302><data><checksum> \r\n
Description:	Set Geo-fence Alarm. When the tracker moves out of a preset circle scope, one SMS alarms and one GPRS alarms will be sent to the authorized phone number for SOS button and the server.
Note:	Take the tracker's latitude and longitude as center of the circle. Latitude and lonitudes should be in ASCII format as follows: Latitude is ddd.dddddd, '0' is needed to be stuffed if no value available. '-' should be added for south. Longitude is dd.dddddd, '0' is needed to be stuffed if no value available. '-' should be added for west. Radii=[1,4294967295] meter(s) Data: latitude, longitude, radius, in, out =0, invalid =1, valid Only one alarm can be set in either Movement Alarm or Geo-fence Alarm.
Example:	40 40 00 2D 40 20 50 20 81 4F FF 43 02 31 32 2E 31 32 33 34 35 35 2C 31 32 33 2E 31 32 33 34 35 36 2C 31 30 30 2C 31 2C 31 F7 0A 0D 0A Above command will set center's latitude as 12.123455, longitude as 123.123456, radii as 100 meters. Alarm will be created when entering and exiting pre-set scope.
Response:	$$<L><ID><0x4302><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

23. Track by Distance – 0x4303

Command:	@@<L><ID><0x4303><data><checksum> \r\n
Description:	Set distance report as per pre-set interval. Applicable to sending out alarm when the car is moving and stop sending when the car is stationary. Only in GPRS.
Note:	Data: =0,cancle

	=[1,4294967295] meter(s) Distance interval suggest to be set above 300 meters
Example:	40 40 00 14 40 20 50 20 81 4F FF 43 03 33 30 30 9B C5 0D 0A Above command will set interval as 300 meters.
Response:	$$<L><ID><0x4303><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

24. Delete Mileage – 0x4351

Command:	@@<L><ID><0x4351><checksum> \r\n
Description:	Delete total mileage of GPRS packets When mileage is deleted, the server should have corresponding program to avoid calculation mistake.
Note:	If mileage accelerated to 4294967295 meters, it will be deleted automatically.
Example:	40 40 00 11 40 10 47 20 21 3F FF 43 51 40 48 0D 0A
Response:	$$<L><ID><0x4351><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

25. Reboot GPS – 0x4902

Command:	@@<L><ID><0x4902> <checksum>\r\n
Description:	Reboot the GPS module of the tracker.
Example:	40 40 00 11 12 34 56 FF FF FF FF 49 02 71 AC 0D 0A
Response:	$$<L><ID><0x4902><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

26. Heartbeat – 0x5199

Command:	@@<L><ID><0x5199><data><checksum> \r\n
Description:	Set time interval for heartbeat
Note:	data=[0,65535], in ASCII code and in unit of minute
Example:	40 40 00 13 12 34 56 FF FF FF FF 51 99 31 32 24 89 0D 0A Above command will set interval as 12 minutes and the tracker will send heartbeat (0x00) data to the server at every 12 minutes.

Response:	$$<L><ID><0x5199><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

27. Clear Message Queue – 0x5503

Command:	@@<L><ID><0x5503><checksum> \r\n
Description:	Clear all message queue logged when there is no GPRS coverage.
Note:	This command is to clear those data logged when no GPRS connection.
Example:	40 40 00 11 12 34 56 FF FF FF FF 55 03 AC E0 0D 0A
Response:	$$<L><ID><0x5503><Flag><checksum> \r\n
Note:	Flag =0x00, failure response; =0x01, success response.

28. Get SN & IMEI – 0x9001

Command:	@@<L><ID><0x9001><checksum> \r\n
Description:	Get tracker's Serial Number, IMEI and firmware version.
Example:	40 40 00 11 12 34 56 FF FF FF FF 90 01 41 CF 0D 0A
Response	24 24 00 33 12 34 56 FF FF FF FF 90 01 33 30 33 37 38 31 35 30 35 39 2C 33 35 33 33 35 38 30 31 31 30 31 38 31 34 35 2C 56 31 2E 34 35 2D 4E FE D0 0D 0A Here we can see: SN=3037815059 IMEI=353358011018145 Firmware Version= V1.45-N

29. Read Interval – 0x9002

Command:	@@<L><ID><0x9002><checksum>\r\n
Description:	Read preset time interval of automatic timed report (GPRS tracking).
Example	40 40 00 11 12 34 56 FF FF FF FF 90 02 71 AC 0D 0A
Response:	$$<L><ID><0x9002><preset time interval (2 bytes in hex code)><checksum> \r\n
Example:	24 24 00 13 12 34 56 FF FF FF FF 90 02 00 0A 8F D4 0D 0A The preset time interval is 10 (0x00 0x0A)*10=100 seconds.

30. Read Authorization – 0x9003

Command:	@@<L><ID><0x9003><button no (1 byte in hex code)><checksum>\r\n

Description:	To get the authorized phone number.
Note:	button no should be 0x01, 0x02 or 0x03. If button no is 0xff, it is to read all authorized numbers.
Example:	40 40 00 12 12 34 56 FF FF FF FF 90 03 01 99 5C 0D 0A
Response:	$$<L><ID><0x9003><phone no for SMS><phone no for call><checksum>\r\n
Example:	24 24 00 31 12 34 56 FF FF FF FF 90 03 38 38 38 38 38 38 38 38 38 38 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 C8 8A 0D 0A
Note:	phone no is 16 bytes in ASCII. If the phone no is less than 16 bytes, the blank byte(s) read as '0x00'.

31. Read Logged Data – 0x9016

Command:	@@<L><ID><0x9016><device random(1B)><PC random(1B)><Flag(2B)><checksum>\r\n
Description:	To read logged data (logged by preset interval) in memory.
Response:	$$<L><ID><0x9016><device random(1B)><PC random(1B)><waypoints(4B)><data><checksum>\r\n
Note:	device random and PC random are random data, for example, 0x03, 0x2A, etc. waypoints is the total number of waypoints that have been saved in memory. High byte prior to low byte. data is the first record of the logged waypoints which is in GPRMC format. If Flag =0x00 0x00, read the first waypoint. =0x00 0x01, delete the received waypoint from memory on the condition that sent device random(1B)=latest received device random(1B) and read the next waypoint.
Example:	If you first send: 40 40 00 15 12 34 56 FF FF FF FF 90 16 03 15 00 01 AF AB 0D 0A Then device maybe return: 24 24 00 4B 12 34 56 FF FF FF FF 90 16 **2B** 15 00 00 00 59 30 33 34 34 33 33 2E 30 30 30 2C 41 2C 32 32 33 32 2E 35 32 30 39 2C 4E 2C 31 31 34 30 34 2E 36 36 35 39 2C 45 2C 30 2C 30 2C 30 31 30 38 30 39 2C 41 30 7C A0 18 0D 0A Next time you should send: 40 40 00 15 12 34 56 FF FF FF FF 90 16 **2B** 15 00 01 1D 26 0D 0A Where device random (0x2B) must equal to the latest received.

32. Alarms – 0x9999

Command:	$$<L><ID><0x9999><Alarm><data><checksum>\r\n
Description:	When there is an alarm detected described as below, this command will be sent from the tracker to the server
Alarms	1 byte in Hex code and details as follows
Alarm	**Definition**
=0x01	SOS button is pressed / Input 1 active

=0x02	Call B button is pressed / Input 2 active
=0x03	Call C button is pressed / Input 3 active
=0x04	Input 4 active
=0x05	Input 5 active
=0x10	Low battery alarm
=0x11	Speeding alarm
=0x12	Movement alarm or alarm of tracker exiting Geo-fence scope
=0x13	Alarm of tracker entering Geo-fence scope
=0x14	Alarm of tracker being turned on
=0x15	Alarm of tracker entering GPS blind area
=0x16	Alarm of tracker exiting GPS blind area
=0x31	SOS button is released/Input 1 inactive
=0x32	Call B button is released/Input 2 inactive
=0x33	Call C button is released/Input 3 inactive
=0x34	Input 4 inactive
=0x35	Input 5 inactive
=0x50	External power cut alarm
=0x52	Veer report
=0x53	GPS antenna cut alarm
=0x63	Distance report
Example:	24 24 00 61 12 34 56 FF FF FF FF 99 99 03 30 33 35 39 30 31 2E 30 30 30 2C 41 2C 32 32 33 32 2E 36 30 38 33 2C 4E 2C 31 31 34 30 34 2E 38 31 33 37 2C 45 2C 30 2E 30 30 2C 2C 30 31 30 38 30 39 2C 2C 2A 31 32 7C 31 32 2E 32 7C 31 39 34 7C 30 34 30 30 7C 30 30 30 30 2C 30 30 30 30 83 4B 0D 0A It means button C is pressed / Input 3 is active. 24 24 00 7E 40 20 50 20 81 4F FF 99 99 63 30 32 35 39 31 30 2E 30 30 30 2C 56 2C 32 32 33 30 2E 37 36 32 30 2C 4E 2C 31 31 34 30 33 2E 34 30 32 31 2C 45 2C 30 2E 30 30 2C 30 2C 33 30 30 31 31 31 2C 2C 2A 31 44 7C 30 2E 30 7C 31 31 33 7C 32 31 30 30 7C 30 30 30 45 2C 30 30 30 42 7C 30 31 43 43 30 30 30 30 32 37 39 32 30 45 38 39 7C 31 32 7C 30 30 30 30 30 30 30 30 6A FB 0D 0A It means distance report (Tracked by distance)
Note:	See Annex 1 for description of ‘data’.

Annex 1: Description of data

Data consists of: GPRMC | HDOP | Altitude | State | AD| BASE ID | CSQ | Journey

(1) GPRMC includes:

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

For example:

134829.486,A,2232.6083,N,11404.8137,E, 58.31,309.62,010809,12.1,112,230809,,*1A

Details:

Parameter	Description	Example

hhmmss.dd	UTC time
	hh = hours;
	mm = minutes;
	ss = seconds;
	dd = decimal part of seconds
		13:48:29.486

S	GPS status indicator, A = valid, V = invalid	A=Valid

xxmm.dddd	Latitude
	xx = degrees;
	mm = minutes;
	dddd = decimal part of minutes
		22 deg. 32.6083 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. 04.8137 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)	58.31 Knots
h.h	Heading, in unit of degree	309.62 deg.
ddmmyy	Date dd = date; mm = month' yy = year	01,08,09
d.d	Magnetic variation	Normal empty
D	Either character W or character E W = West ,E=East	Normal empty
*****	checksum delimiter: follows the last data field of the sentence	Before * maybe have add one ',' (comma).but GPRMC is end check by '*'
HH	Checksum	1A

(2) '|' is list separator in ASCII (0x7c)

(3) HDOP, in ASCII code, 0.5-99.9. HDOP is blank when the tracking unit has no GPS fix.

(4) Altitude, in decimal string.

(5) State: Status of input and output, in HEX string:

For GT30i/GT60

Bit0~Bit7: Reserved and default as '0'

Bit8: Status of Input1

If Bit8=0: Input1 is invalid; Bit8=1: Input1 is valid (be pressed/connected to negative)

Bit9: Status of Input2

If Bit9=0: Input2 is invalid; Bit9=1: Input2 is valid (be pressed/connected to negative)

Bit10: Status of Input3

If Bit10=0: Input3 is invalid; Bit10=1: Input3 is valid (be pressed/connected to negative)

For VT300

Bit 0: Status of Output1.

If Bit0=0: Out1 is closed; Bit0=1:Out1 is open.

Bit8: Status of Input1

If Bit8=0: Input1 is invalid; Bit8=1: Input1 is valid (be pressed/connected to negative)

Bit1~Bit7 and Bit8~Bit15: Reserved and default as '0'

For VT310

Bit0: Status of Out1

If Bit0=0: Out1 is closed; Bit0=1:Out1 is open.

Bit1: Status of Out2

If Bit1=0: Out2 is closed; Bit1=1:Out2 is open.

Bit2: Status of Out3

If Bit2=0: Out3 is closed; Bit2=1:Out3 is open.

Bit3: Status of Out4

If Bit3=0: Out4 is closed; Bit3=1:Out4 is open.

Bit4: Status of Out5

If Bit4=0: Out5 is closed; Bit4=1:Out5 is open.

Bit5~Bit7: Reserved.

Bit8: Status of Input1

If Bit8=0: Input1 is invalid; Bit8=1: Input1 is valid (be pressed/connected to negative)

Bit9: Status of Input2

If Bit9=0: Input2 is invalid; Bit9=1: Input2 is valid (be pressed/connected to negative)

Bit10: Status of Input3

If Bit10=0: Input3 is invalid; Bit10=1: Input3 is valid (be pressed/connected to negative)

Bit11: Status of Input4

If Bit11=0: Input4 is invalid; Bit11=1: Input4 is valid (be pressed/connected to positive)

Bit12: Status of Input5

If Bit12=0: Input5 is invalid; Bit12=1: Input5 is valid (be pressed/connected to positive)

Bit13~Bit15: Reserved and default as '0'

For VT400

Bit0: Status of Out1

If Bit0=0: Out1 is closed; Bit0=1:Out1 is open.

Bit1: Status of Out2

If Bit1=0: Out2 is closed; Bit1=1:Out2 is open.

Bit2~Bit7: Reserved.

Bit8: Status of Input1

If Bit8=0: Input1 is invalid; Bit8=1: Input1 is valid (be pressed/connected to negative)

Bit9: Status of Input2

If Bit9=0: Input2 is invalid; Bit9=1: Input2 is valid (be pressed/connected to negative)

Bit10~Bit15: Reserved and default as '0'

(6) AD: analog input(default voltage input) in HEX string.

For VT310

AD1,AD2: 10 bit analog input, 0x0000~0x03ff in HEX, separated by ',' (comma).

For VT400

AD1, AD2……AD8: 12 bit analog input, 0x0000~0x0fff in HEX, separated by ',' (comma).

Note: AD1 is the value of external power.

(7)Base ID

ID of the base station included .All with HEX String. MCC MNC LAC CI

Example

01CC000027920F65

(8)CSQ

GSM CSQ. In HEX string.

From 00 to 1F

(9)Journey

In unit of meter. In HEX string.

The total accumulated journey and max FFFFFFFF (is 4294967295) meters.