

Version: V02
Level: C

WanWayTech

GPS Tracker Communication Protocol

Important Revision History

2016/03/26 ----- Increase the number of base station information packet protocol (0x24)
2016/04/12 ----- Pseudo base stations alarm, tamper alarm.
2017/07/01 ----- Supplementary off petrol and electricity Description

Table of Contents

A. Communication protocol.....	3
Two terms, definitions.....	3
III. Basic rules	4
IV. packet format	6
4.1. Start bit	6
4.2. packet length	6
4.3. Protocol No.....	6
4.4. Information content	6
4.5. Information Serial Number	6
4.6 Error checking	6
4.7. Stop bit.....	6
v. Detailed terminal transmits a packet to the server	7
5.1. Login information packet.....	7
5.2. Positioning packet (GPS, LBS merger packet).....	10
5.3 Alarm package (GPS, LBS, combined status information packet).....	13
5.4. Heartbeat packet (status information packet)	19
5.5 Positioning packet (LBS ONLY)	22
vi. The server sends the data packet to the terminal	25
6.1. The server sends	25
6.2. Terminal returns	26
6.3. off petrol and electricity	26
6.4. restore oil and electricity	27
6.5. Adding SOS number	28
6.6. Delete SOS number.....	28
6.7. Set the center number.....	28
6.8. Delete center number	28
6.9. Turn vibration alarm	29
6.10. off vibration alarm	29
6.11. Turn speed alarm	29
6.12 Close speed alarm.....	29
6.13. Turn off alarm.....	30
6.14. Close power alarm	30
6.15. Displacement open alarm	30
6.16. Close alarm displacement.....	31

6.17. Turn on low battery alarm	31
6.18 Close the low battery alarm	31
6.19. open fence alarm.....	31
6.20. Close fence alarm	32
6.21 The control device reboot	32
6.22. Turn SOS Call the police.....	32
6.23 Close SOS Call the police.	32
6.24. Send inquiry address information in the server.....	33
6.25. GPS, phone number lookup address information packet (0X2A).....	33
VII. A CRC-ITU attached table lookup algorithm C language code fragment.....	37
viii. Annex B protocol packet fragments exemplary	38
ix. C attached complete packet format.....	41

GPS Talks

A. Communication protocol

Introduction

This document defines the on-board GPS locator description of location-based services platform application layer interface protocol. Related interface protocol applies only to the interaction between the platform and positioning terminal.

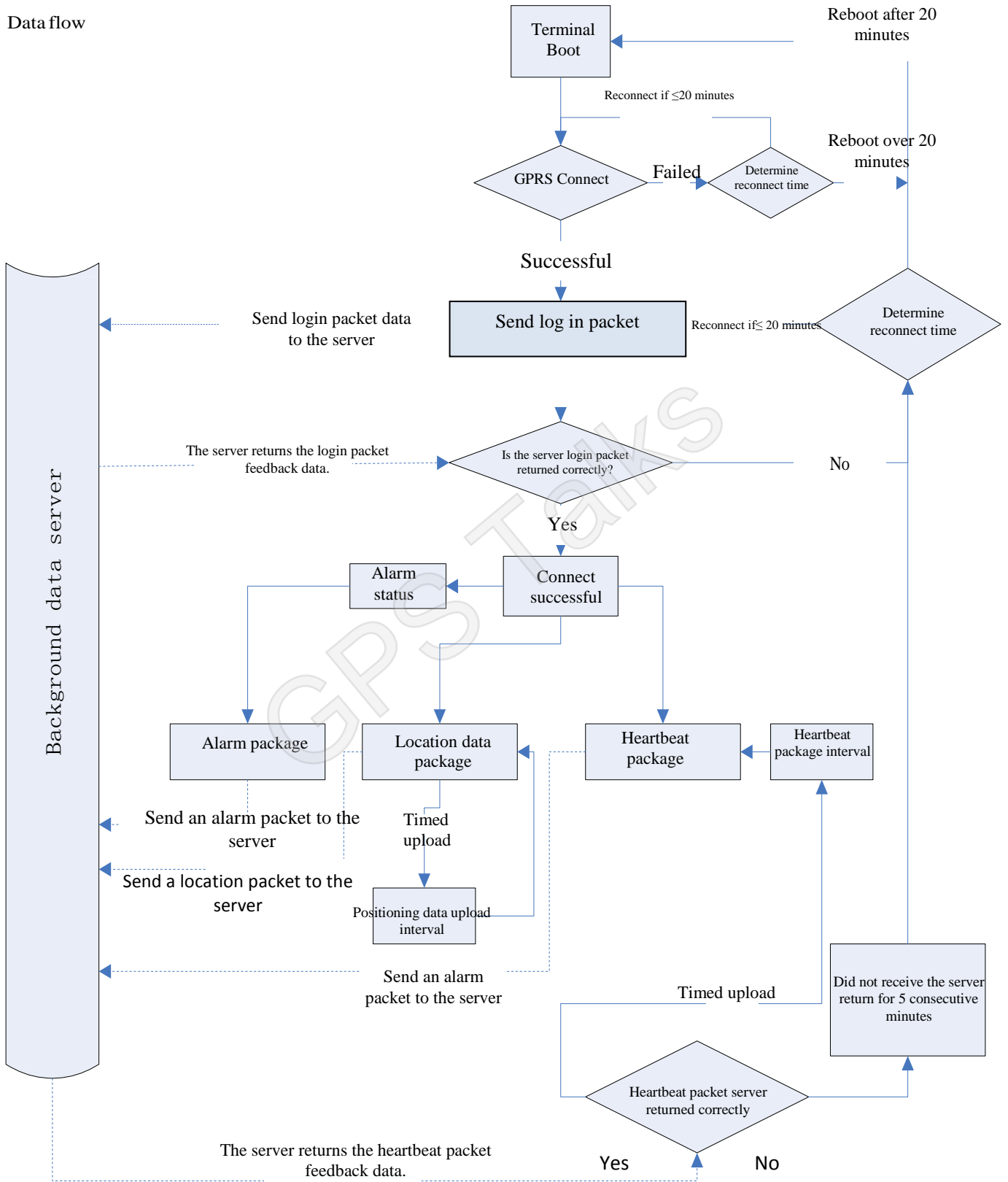
Two terms, definitions

Terms, abbreviations	English meaning	Chinese meaning
CMPP	China Mobile Peer to Peer	China Mobile Point to Point Protocol
GPS	Global Positioning System	Global Positioning System
GSM	Global System for Mobile Communication	Global System for Mobile Communications
GPRS	General Packet Radio Service	General Packet Radio Service
TCP	Transport Control Protocol	Transmission Control Protocol
LBS	Location Based Services	Assisted positioning service
IMEI	International Mobile Equipment Identity	International Mobile Equipment Identity
MCC	Mobile Country Code	Mobile users Country Code
MNC	Mobile Network Code	Mobile network numbers
LAC	Location Area Code	Location Area Code
Cell ID	Cell Tower ID	Mobile station
UDP	User Datagram Protocol	User Datagram Protocol
SOS	Save Our Ship / Save Our Souls	SOS distress signal
CRC	Cyclic Redundancy Check	Cyclic Redundancy Check
NITZ	Network Identity and Time Zone,	Time zone
GIS	Geographic Information System	Geographic Information System

III. Basic rules

1. GPRS connection is established successfully and sends the first packet server login information received in 5 seconds the server response data packet connection is considered normal, starts sending location information (GPS, LBS packet), after 3 minutes send status information packet, to confirm the timing of normal communication.
2. When GPRS connection establishment fails, the terminal cannot send the packet landing. When the connection fails three times GPRS terminal starts scheduled reboot function, time of 20 minutes. If the terminal connection is established successfully with the server within 20 minutes, and the server receives login information packets sent by the terminal to make a response to the packet, the scheduled restart is disabled; the terminal does not restart, or restart the terminal automatically after 20 minutes.
3. Back server receives login information packets sent by the terminal to the terminal in response to the data packet, if the terminal transmits the packet landing or status packets, no more than 5 seconds the server returns the packet received is considered abnormal current connection, start GPS positioning data transmission function up to disconnect the current GPRS connection, re-establish a new GPRS connection and send login information packet.
4. The connection is determined to be abnormal, repeated three times to establish a login status information packet or a packet transmitted after the connection are not received server response data packet, the terminal starts scheduled reboot function, the timing for 10 minutes, within 10 minutes if terminal and the server connection is established successfully and receive packets from the server in response to the timing reboot function is turned off, the terminal does not restart, or restart the terminal automatically after 10 minutes.
5. After establishing the connection is normal, the GPS terminal information changes, the timing of sending GPS, the LBS combined packets to the server, the server may set the default protocol by sending commands.
6. To ensure the validity of the connection, the fixed time interval sends status information to the server, the server returns a response acknowledgment packet.
7. The server terminal for IMEI No registered number, please reply in response to the login request and response heartbeat packet, not disconnected directly. (If you do not reply directly or disconnected, will lead to the terminal constantly rewiring, GPRS serious traffic consumption).

Data flow



IV. Packet Format

Asynchronous communication transmission mode and bytes. Total packet

length: (10 + N) Byte

format	Length (Byte)
Start bit	2
Packet length	1 (2)
Agreement no	1
information	N
Information Serial	2
Error checking	2
Stop bits	2

4.1. Start bit

Fixed value, unified hexadecimal 0x78 0x78 (length of a packet) or 0x79 0x79 (packet length 2)

4.2. Packet length

Protocol number = length + + content sequence number + error check, a total of (5 + N) Byte, since the information content of variable length fields.

4.3. Protocol No.

Types of	value
Login information	0x01
Positioning data (UTC)	0x22
status information	0x13
String information	0x21
LBS information (see	0x2
Alarm data (UTC)	0x26
Time zone	0x27
GPS, phone number lookup address	0x2A
WIFI packets	0x2C
Transmission instruction	0x80

4.4. Information content

In different applications, corresponding to the respective "protocol number", to determine the specific content.

4.5. Information Serial Number

The first power-transmission data after the GPRS (packet including status and GPS, LBS isochronous packet) with sequence number '1', then each transmits data (packet including status and GPS, LBS packet) sequence number automatically incremented .

4.6 Error checking

Terminal or the server is available to receive information check code determines whether an error occurred. To prevent data corruption during transmission, provided the added error checking to prevent misuse of data, thus increasing the safety and efficiency of the system. Using the error check code CRC-ITU check method.

CRC-ITU body from the value of the protocol "Packet Length" that part of the data to the "sequence number" (including the "Packet Length", "serial number information") is. If the recipient received information to calculate the CRC error is ignored, discard the packet.

4.7. Stop Bits

Fixed value, unified hexadecimal 0x0D 0x0A.

V. Detailed terminal transmits a packet to the server

Common explained individually transmitted packets and return the server

5.1. Login information packet

5.1.1 The terminal transmits packets to the server

Login packet to the server is used to confirm normal connection establishment, terminal ID submitted to the server.

format		length
Login information packet (18 Byte)	Start bit	2
	Packet	1
	Agreeme	1
	Terminal	8
	Type	2
	Time ge	2
	Informationmber	2
	Error	2
	Stop bits	2

5.1.1.1. Start bit

See Packet Format 4.1

5.1.1.2. Packet length

See packet format 4.2

5.1.1.3. Protocol No.

See packet format 4.3

5.1.1.4. Terminal ID

Such as: 123456789012345,

The terminal ID: 0x01 0x23 0x45 0x67 0x89 0x01 0x23 0x45

5.1.1.5. Type Identifier

Type identifier is two bytes. This terminal type is determined according to the identification code. Two representatives of the first three bytes of aircraft, after a representative branch R001 models

It represents 0X00 0X01

GW518_TY (tire pressure) expressed 0X05 0X18

5.1.1.6. Time zone Language

A nibble bit15-bit4	15	Time zone to expand the value of 100
	1413121115	

	54		
Nibble bit4-	3	What time zone	
	2	No definitions	
	1	Language	1
	0	Language	0

Bit3 0 ----- Eastern time zone

1 ----- West time zone

When: Extended position: 0X32 0X00 represent the East eight districts, GMT + 8: 00 calculation method: $8 * 100 = 800$, to hexadecimal, 0X0320

Extended bit: 0X4D 0XD8 represent 12 districts west and 3/4 time zone, GMT-12: 45 calculation method: $12.45 * 100 = 1246$, turn hex, 0X04,0XDD.

An algorithm is here that the calculated value of the cycle time zone and then left split four time zones east, west, language selection position, in order to save four bytes.

5.1.1.7. Information Serial Number

See packet format 4.5

5.1.1.8. Error checking

See packet format 4.6

5.1.1.9. Stop Bits

See Packet Format 4.7

5.1.2 Server response packet

	Explanation	length
Login informat ion packet	Start bit	2
	Packet	1
	Agreement	1
	Information	2
	Error	2
	Stop bits	2

Server response packet to the terminal number and the same protocol :(terminal a data packet to the packet number in response to the protocol)

5.1.2.1. Start bit

See Packet Format 4.1

5.1.2.2. Packet length

See packet format 4.2

5.1.2.3. Protocol No.

See packet format 4.3

5.1.2.4. Information Serial Number

See packet format 4.5

5.1.2.5. Error checking

See packet format 4.6

5.1.2.6. Stop Bits

See Packet Format 4.7

GPS Talks

5.2. Positioning packet (GPS, LBS merger packet)

5.2.1 The terminal transmits the positioning data packet to the server

format		Length (Byte)	
information	Start bit	2	
	Packet length	1	
	Agreement No.	1	
	GPS information	Date Time	6
		Number of stars	1
		latitude	4
		longitude	4
		speed	1
		Course, state	2
		LBS information	MCC
	MNC		1
	LAC		2
	Cell ID		3
	ACC	1	
	Data reporting mode	1	
	Real-time GPS pass up	1	
	Mileage statistics	4	
serial number	2		
Error checking	2		
End position	2		

5.2.1.1. Start bit

See Packet Format 4.1

5.2.1.2. Packet length

See packet format 4.2

5.2.1.3. Protocol No.

See packet format 4.3

5.2.1.4. Date Time

format	Length (Byte)	Examples
yea	1	0x0A
month	1	0x03
da	1	0x17
Tim	1	0x0F
Minute	1	0x32
second	1	0x17

Such as: at 15:23 on March 2010 Day 50

Method: 10 (decimal) = 0A (16 hex)

3 (10 hex) = 03 (hex) 23 (hex 10) =
 17 (hex) 15 (hex 10) = 0F (hex) 50
 (hex 10) = 32 (hexadecimal Ltd.) 23
 (10 hex) = 17 (hex)

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

5.2.1.5. The length of the GPS information, the number of satellite positioning participation

Two 1Byte hexadecimal character display, the first character GPS information length, the second character is a number of positioning satellites participating Example: When the value 0xCB GPS information indicates a length of 12, the number 11 is engaged in the positioning satellite stars.

(C = 12Bit length, B = 11 satellites)

5.2.1.6. Latitude

4 bytes, the data represents the latitude value of the positioning. Values range from 0 to 162,000,000, represents 0 to 90 degrees of the range, the conversion method is as follows:

The latitude and longitude values output from the GPS module into a unit to be converted into decimal; and then the conversion is multiplied by the decimal 30,000, converts the multiplication result into hexadecimal can.

As 22°32.7658' = (22X60 + 32.7658) X30000 = 40582974, then converted to hexadecimal 40582974 (decimal) = 26B3F3E (16 hex) is the last 0x02 0x6B 0x3F 0x3E.

5.2.1.7. Longitude

4 bytes, longitude value of the positioning data. Values range from 0 to 324,000,000, represents a range of 0 degrees to 180 degrees. Consistent conversion method and conversion method latitude

5.2.1.8. Speed

It occupies one byte, represents the GPS speed, a value in the range of 0x00 ~ 0xFF represents the range of 0 to 255 km / h. Such as: 0x00 represents 0 km / h.

Representative 0x10 16 km / h

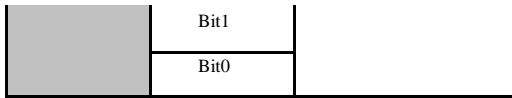
255 km 0xFF Representative /

h

5.2.1.9. State heading

It occupies 2 bytes and indicates the running direction of the GPS, represents the range of 0 to 360, units: degrees to 0 degrees north, clockwise.

BYTE_1	Bit7	0
	Bit6	0
	Bit5	Real-time GPS / fixed differential Place
	Bit4	No GPS fix
	Bit3	East longitude, longitude
	Bit2	Latitude north latitude
	Bit1	course
Bit0		
BYTE_2	Bit7	
	Bit6	
	Bit5	
	Bit4	
	Bit3	
Bit2		



Note: The data packet status information are the moment the status bits packet time recorded. Such as: value 0x15 0x4C, into binary is 00010101 01001100, BYTE_1 Bit7

	0	
BYTE_1 Bit6	0	
BYTE_1 Bit5	0 (Real-Time GPS)	
BYTE_1 Bit4	1 (GPS positioned)	
BYTE_1 Bit3	0 (longitude)	
BYTE_1 Bit2	1 (latitude)	
BYTE_1 Bit1	0	
BYTE_1 Bit0	1	
BYTE_2 Bit7	0	
BYTE_2 Bit6	1	
BYTE_2 Bit5	0	Heading 332 ° (0101001100 binary to decimal 332)
BYTE_2 Bit4	0	
BYTE_2 Bit3	1	
BYTE_2 Bit2	1	
BYTE_2 Bit1	0	
BYTE_2 Bit0	0	

That means the GPS positioning, real-time GPS, latitude, longitude, heading 332 °

5.2.1.10. MCC

Mobile users Country Code Mobile Country Code (MCC)

Such as: China's mobile country code is: China's mobile country code 460 (decimal) 0x01 0xCC (decimal 460 converted to hexadecimal, hexadecimal less than four on the left side fill 0)

Here ranges: 0x0000 ~ 0x03E7

5.2.1.11. MNC

Mobile network numbers Mobile Network Code (MNC) such as:

China Mobile is 0x00.

5.2.1.12. LA

C

Location Area Code Location Area Code (LAC) is included in the LAI, consisting of two bytes, coded in hexadecimal. The available range is 0x0001-0xFFFFE, 0x0000 and 0xFFFF code group cannot be used (see, 03.03.04.08 and 11.11 GSM specification).

5.2.1.13. Cell ID

Mobile station Cell Tower ID (Cell ID), a value in the range of 0x000000 ~ 0xFFFFF

5.2.1.14. ACC

ACC ACC state low as 00, ACC high as 01

5.2.1.15. Data report mode, but are currently no effect

5.2.1.16. Mileage statistics Four byte into a decimal outcome of

5.2.1.17. Information Serial Number

GPS real-time real-time
upload 0x01 0x00 pass up
pass up

5.2.1.18. Information Serial Number

See packet format 4.5

5.2.1.19. Error checking

See packet format 4.6

5.2.1.20. Stop Bits

See Packet Format 4.7

5.3 Alarm package (GPS, LBS, combined status information packet)

5.3.1 The terminal transmits alarm data packet to the server

format		Length (Byte)	
information	Start bit	2	
	Packet length	1	
	Agreement No.	1	
	Date Time	6	
	GPS information	Number of GPS satellites	1
		latitude	4
		longitude	4
		speed	1
		Course, state	2
	LBS information	LBS length	1
		MCC	2
		MNC	1
		LAC	2
		Cell ID	3
	status information	Terminal information content	1
		Voltage level	1
		GSM signal strength	1
		Alarm / language / expansion port status	2
serial number	2		
Error checking	2		
End position	2		

Alarm package is based on the positioning of the package increases state information (alarm information) composition, encoding protocol packet format is based on the positioning state information added composition

5.3.1.1. Start bit

See Packet Format 4.1

5.3.1.2. Packet length

See packet format 4.2

5.3.1.3. Protocol No.

See packet format 4.3

5.3.1.4. Date Time

See packet format positioning 5.2.1.4

5.3.1.5. The length of the GPS information, the number of satellite positioning participation

See packet format positioning 5.2.1.5

5.3.1.6. Latitude

See packet format positioning 5.2.1.6

5.3.1.7. Longitude

See packet format positioning 5.2.1.7

5.3.1.8. Speed

See packet format positioning 5.2.1.8

5.3.1.9. State heading

See packet format positioning 5.2.1.9

5.3.1.10. MCC

See packet format positioning 5.2.1.10

5.3.1.11. MNC

See packet format positioning 5.2.1.11

5.3.1.12. LAC

See packet format positioning 5.2.1.12

5.3.1.13. Cell ID

See packet format positioning 5.2.1.13

5.3.1.14. Terminal Information

1 byte, used to indicate various status information of the mobile phone.

Place		Code	Meaning
BYTE	Bit7	1:	Oil electrically disconnected
		0:	oil and electricity is turned on
	Bit6	1:	GPS positioning has been
		0:	GPS positioning is not
	Bit3 ~ Bit5	100:	SOS distress (not support)
		011:	low battery alarm
		010:	power failure alarm
		001:	vibration alarm
		000:	Normal
	Bit2	1:	Received power charging
		0:	No power charging
	Bit1	1:	ACC high
		0:	ACC low
	Bit0	1:	fortification
0:		Disarm	

Such as: 0x44, corresponding to binary is 01000100

Represents a status of a terminal: ON electric oil, GPS has been positioned, the alarm is not normal, the power has been turned charged, the ACC is low, disarmed

5.3.1.15. Voltage rating

It ranges from 0 to 6, marked by the low to high voltage magnitude. 0: No electricity (off)

1: very low power consumption (not enough to call and send text messages, etc.)

2: the lighting is low (low battery alarm) 3:
 Low battery (normal use) 4: 5 power: Power
 High 6: very high power

Such as: 0x02 low power alarm sends location

5.3.1.16. GSM signal strength level

0x00: no signal; 0x01: very
 weak signal 0x02: weak
 signals 0x03: good signal
 0x04: strong signal

Such as: 0x03 GSM signal good

5.3.1.17. Alarm / Language

0x00 (anterior) 0x01 (posterior)

Anterior: Terminal alarm state (alarm pack suitable for fence function item and need) bit: Bit terminal current
 language

Byte 1	0x00: Normal
	0x01: SOS distress
	0x02: Power failure alarm
	0x03: vibration alarm
	0x04: into the fence alarm
	0x05: a fence alarm
	0x06 speed alarm
	0x09 displacement alarm
	0x0A into GPS blind area alarm
	0x0B out GPS blind area alarm
	0x0C start the alarm
	0x0E foreign low battery alarm
	0x0F foreign lows protection alarm
	0X11 off alarm
	0X13 (demolition alarm)
	0X14 door alarm
0X15 low-power shutdown	
0X30 (GSM nuisance alarms)	
0x02 0x01	
Byte 2	Chinese English

Such as:

No alarm Chinese: 0x00 0x01; no alarm English: 0x00 0x02



To increase the reliability of alarm information, the alarm message is repeated labeling, in most cases the alarm message is consistent with the upper terminal information inconsistency follows:

A, low battery alarm message terminal

B, the alarm / alarm language information out of the fence

5.3.1.18. Information Serial Number

See packet format 4.5

5.3.1.19. Error checking

See packet format 4.6

5.3.1.20. Stop Bits

See Packet Format 4.7

Note: The data packet status information are the moment the status bits packet time recorded.

5.3.2 Server sends alarm data packet to the terminal replies

format	Length (Byte)	
information	Start bit	2
	Packet length	1
	Agreement.No.	1
	serial number	2
	Error checking	2
	End position	2

Alarm package is increased state information (alarm information) composed of a packet on the basis of the positioning, the positioning encoding protocol packet format is also added in a composition on the basis of the status information.

5.3.2.1. Start bit

See Packet Format 4.1

5.3.2.2. Packet length

See packet format 4.2

5.3.2.3. Protocol No.

See packet format 4.3

5.3.2.4. Information Serial Number

See packet format 4.5

5.3.2.5. Error checking

See packet format 4.6

5.3.2.6. Stop Bits

See Packet Format 4.7

5.3.3 Server sends reply packet to address alarm data terminal

5.3.3.1. Chinese Chinese reply reply

packet as follows:

The server transmits the packet to the command terminal (15 + M + N Byte)		Start bit	2
		Data bit length	1
		Agreement.No.	1
	information	Instruction length	1
		Server flag	4

	Instruction content	ALARMSMS	8
		&&	2
		Address Content	M
		&&	2
		telephonenumber	twenty one
		##	2
	Information Serial Number		2
	Check Digit		2
	Stop bits		2

Chinese request reply protocol number Address: 0X17.

Instruction content: ALARMSMS && && contents of the telephone number address (all 0) ## (ALARMSMS, &&, ## is a fixed character string) to Chinese address content UNICODE Encoding issued.

Chinese reply address information Example:

```

7878 // start bit
85 //Data length
17 // No reply protocol
7E // length instruction transmits content information length i.e.
00000001 // server flag
414C41524D534D53 // ALARMSMS
2626 && // delimiter
624059044F4D7F6E0028 // Chinese position is sent to UNICODE
004C004200530029003A
5E7F4E1C77015E7F5DDE
5E0282B190FD533AFF17
FF15FF144E6190530028
004E00320033002E0033
00390035002C00450031
00310032002E00390038
0038002996448FD1 2626
&& // delimiter
00000000000000000000000000000000 //telephone number
2323 // ## content information terminator
0106 //serial number
3825 //Check Digit
0D0A // stop bits
    
```

5.3.3.2. English reply

Considering the case where English or other foreign longer address, one data bit is not enough, to 2 bytes. Note: wherein the bit length for the data back to the address information corresponding to only two protocol number.

The server transmits the packet to the command terminal (15 + M + N Byte)	Start bit		2	
	Data bit length		2	
	Agreement No.		1	
	information	Instruction length		2
		Server flag		4
		Instruction content	ALARMSMS	8

			&&	2
			Address Content	M
			&&	2
			telephone number	twenty one
			##	2
Information Serial Number				2
Check Digit				2
Stop bits				2

English address request reply protocol number: 0X97

Instruction content: ALARMSMS && && contents of the telephone number address (all 0) ## (ALARMSMS, &&, ## is fixed string)

Examples reply address information in English Example:

```

7979          // start bit          Changed from the previous 78,787,979
00D2         //Data length
97           // No reply protocol

00CA         // length instruction transmits content information length i.e.
00000001    // server flag
414C41524D534D53 // ALARMSMS 2626
              && // delimiter
0053004F00530028004C // English position to send UNICODE
0029003A005300680069
006D0069006E00200046
0061006900720079006C
0061006E006400200057
00650073007400200052
0064002C004800750069
006300680065006E0067
002C004800750069007A
0068006F0075002C0047
00750061006E00670064
006F006E00670028004E
00320033002E00310031
0031002C004500310031
0034002E003400310031
0029004E006500610072
00620079 2626
              && // delimiter
000000000000000000000000000000000000000000000000 //telephone number
2323         // ## content information terminator
0007         //serial number
72b5        //Check Digit
0D0A        // stop bits
    
```

Note: Some internet alarm function does not need to reply-address information, internet alarm terminal after receiving reply packets do not require to resolve the address, not Responses need to address the type of alarm is as follows:

1. 2. The low battery alarm blind speed alarm 3.GPS

5.4. Heartbeat packet (status information packet)

Heartbeat packet is data packet to maintain the connection terminal and the server

5.4.1. Heartbeat packets are sent to the terminal server

format		Length (Byte)	
information	Start bit	2	
	Packet length	1	
	Agreement No.	1	
	status information	Terminal information content	1
		Voltage level	1
		GSM signal strength	1
		Language / expansion port status	2
	serial number	2	
	Error checking	2	
End position	2		

5.4.1.1. Start bit

See Packet Format 4.1

5.4.1.2. Packet length

See packet format 4.2

5.4.1.3. Protocol No.

0x13

5.4.1.4. Terminal Information

1 byte, used to indicate various status information of the mobile phone.

Place		Code Meaning
BYTE	Bit7	1: Oil electrically disconnected
		0: oil and electricity is turned on
	Bit6	1: GPS positioning has been
		0: GPS positioning is not
	Bit3 ~ Bit5	100: SOS distress (not supported)
		011: low battery alarm
		010: power failure alarm
		001: vibration alarm
Bit2	000: Normal	
	1: Received power charging	
	0: No power charging	

	Bit1	1: ACC high
		0: ACC low
	Bit0	1: fortification
		0: Disarm

Such as: 0x44, corresponding to binary is 01000100

It represents a status of a terminal: ON electric oil, GPS positioning has been charged power, the ACC is low, disarmed

5.4.1.5. Voltage rating

It ranges from 0 to 6, marked by the low to high voltage magnitude. 0: No electricity (off)

1: low power (insufficient phone text messaging, etc.) 2: lighting is low (low battery alarm) 3: Low battery (normal use) 4: 5 power: Power High 6: very high power

Such as: 0x02 low power alarm sends location

5.4.1.6. GSM signal strength level

0x00: no signal; 0x01: 0x02 extremely weak signal: weak signals 0x03: 0x04 good signal: The signal strength: good 0x03 GSM signal

5.4.1.7. Language / expansion port status

0x00 (anterior) 0x01 (posterior) anterior:

After termination extension port status bits:

Bit terminal current language

Anterior	
Posterior	0x02 0x01
	ChineseEnglish

Such as:

No alarm Chinese: 0x00 0x01 No alarm

English: 0x00 0x02

5.4.1.8. Information Serial Number

See packet format 4.5

5.4.1.9. Errorchecking

See packet format 4.6

5.4.1.10. Stop Bits

See Packet Format 4.7

5.4.2 Server response packet

format		length
Heartbeat packet (18 Byte)	Start bit	2
	Packet length	1
	Agreement No.	1
	Information Serial Number	2
	Error checking	2
	Stop bits	2

Server response packet to the terminal number and the same protocol :(terminal a data packet to the packet number in response to the protocol)

5.4.2.1. Start bit

See Packet Format 4.1

5.4.2.2. Packet length

See packet format 4.2

5.4.2.3. Protocol No.

0x13

5.4.2.4. Information Serial Number

See packet format 4.5

5.4.2.5. Error checking

See packet format 4.6

5.4.2.6. Stop Bits

See Packet Format 4.7

5.4.3 Data example

Examples of terminal sends							
78 78 08 13 4B 04 03 00 01 00 11 06 1F 0D 0A							
Explanation							
<u>0x780x78</u>	<u>0x08</u>	<u>0x13</u>	<u>0x4B0x040x03</u>	<u>0x000x01</u>	<u>0x000x11</u>	<u>0x060x1F</u>	<u>0x0D 0x0A</u>
Start bit	Protocol number length	information	Reserved bits (language)	serial number	Error checking	Stop bits	
Examples of server reply							
78 78 05 13 00 11 F9 70 0D 0A							
Explanation							
<u>0x780x78</u>	<u>0x05</u>	<u>0x13</u>	<u>0x000x11</u>	<u>0xF90x70</u>	<u>0x0D0x0A</u>		
Start bit	length	Agreement No.	serial number	Error checking	Stop bits		

5.5 Positioning packet (LBS ONLY)

5.5.1 The terminal transmits the positioning data packet to the server

format		Length (Byte)		
L B S I n f o r m a t i o n	Start bit	2		
	Packet length	1		
	Agreement No.	1		
	Date Time	6		
	The base station information	TA	1	
		MCC	2	
		MNC	1	
		CellNum	1	
		The base station 1	LAC	2
			Cell ID	3
			RSSI	1
		Base station 2	LAC	2
			Cell ID	3
			RSSI	1
		The base station 3	LAC	2
			Cell ID	3
	RSSI		1	
	Base station 4	LAC	2	
		Cell ID	3	
		RSSI	1	
	The base station 5	LAC	2	
		Cell ID	3	
		RSSI	1	
	Reserve	1		
Reserve	1			
Reserve	1			
serial number	2			
Error checking	2			
End position	2			

5.5.1.1. Start bit

See Packet Format 4.1

5.5.1.2. Packet length

See packet format 4.2

5.5.1.3. Protocol No.

See packet format 4.3 0x24

5.5.1.4. Date Time

format	length	Examples

	(Byte)	
year	1	0x0A
month	1	0x03
day	1	0x17
Time	1	0x0F
Minute	1	0x32
second	1	0x17

Such as: at 15:23 on March 2010 Day 50 minutes 23 second ds

Method: 10 (decimal) = 0A (16 hex)

3 (10 hex) = 03 (hex) 23 (hex 10) =

17 (hex) 15 (hex 10) = 0F (hex) 50

(hex 10) = 32 (hexadecimal Ltd.) 23

(10 hex) = 17 (hex)

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

5.5.1.5. MCC

Mobile users Country Code Mobile Country Code (MCC)

Such as: China's mobile country code is: China's mobile country code 460 (decimal) 0x01 0xCC (decimal 460 converted to hexadecimal, hexadecimal less than four on the left side fill 0)

Here ranges: 0x0000 ~ 0x03E7

5.5.1.6. MNC

Mobile network numbers Mobile Network Code (MNC) such as:

China Mobile is 0x00.

5.5.1.7. LAC

Location Area Code Location Area Code (LAC) is included in the LAI, consisting of two bytes, coded in hexadecimal. The available range is 0x0001-0xFFFFE, 0x0000 and 0xFFFF code group can not be used (see, 03.03,04,08 and 11.11 GSM specification).

5.5.1.8. Cell ID

Mobile station Cell Tower ID (Cell ID), a value in the range of 0x000000 ~ 0xFFFFF

5.5.1.9. RSSI

Primary cell signal strength values range 0x00 ~ 0xFF, actual signal strength is negative, its absolute value uploading. See Glossary - RSSI.

5.5.1.9. TerminalInformation

1 byte, used to indicate various status information of the mobile phone.

Place		Code Meaning
BYTE	Bit7	1: Oil electrically disconnected
		0: oil and electricity is turned on

	Bit6	1: GPS positioning has been
		0: GPS positioning is not
	Bit3 ~ Bit5	100: SOS distress (not supported)
		011: low battery alarm
		010: power failure alarm
		001: vibration alarm
	Bit2	1: Received power charging
		0: No power charging
	Bit1	1: ACC high
		0: ACC low
	Bit0	1: fortification
		0: Disarm

Such as: 0x44, corresponding to binary is 01000100

It represents a status of a terminal: ON electric oil, GPS positioning has been charged power, the ACC is low, disarmed

5.5.1.10. GSM signal strength level

0x00: no signal; 0x01: 0x02
 extremely weak signal: weak
 signals 0x03: 0x04 good signal:
 The signal strength: good 0x03
 GSM signal

5.5.1.11. Information Serial Number

GPS real-time real-time
 upload 0x01 0x00 pass up
 pass up

5.5.1.12. Information Serial Number

See packet format 4.5

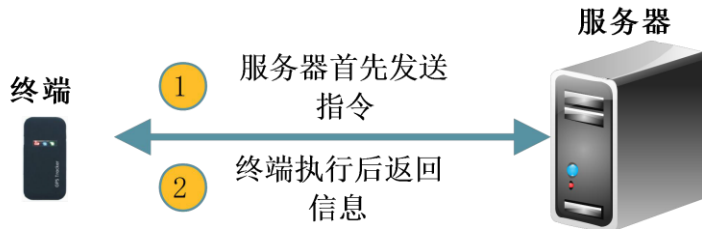
5.5.1.13. Error checking

See packet format 4.6

5.5.1.14. Stop Bits

See Packet Format 4.7

VI. The server sends the data packet to the terminal



6.1. The server sends

format		Length (Byte)
Start bit		2
Packet length		1
Agreement No.		1
information	Instructionlength	1
	Server flag	4
	Instruction content	M
	Language	2
Information Serial Number		2
Errorchecking		2
Stop bits		2

6.1.1. Start bit

See Packet Format 4.1

6.1.2 packet length

See packet format 4.2

6.1.3. Protocol No.

Terminal transmission protocol number used: 0x80

6.1.4 Instruction Length

Content server flag bit instruction length +

Such as: units of length in bytes, 0x0A, i.e. a flag bit instruction + the content occupies 10 bytes

6.1.5 The server flag

Leaving the server identification, the terminal will receive the binary data is returned as the return package

6.1.6. Instruction content

To ASCII string representation of the contents of the instruction is compatible with SMS commands

6.1.7. Language

The current terminal Chinese

language site.: 0x00 0x01 English:

0x00 0x02

6.1.8. Serial number information

See packet format 4.5

6.1.9 Error check

See packet format 4.6

6.1.10. Stop Bits

See Packet Format 4.7

6.2. The terminal returns

format		Length (Byte)	Examples
Start bit		2	0x79 0x79
Packet length		2	0x00 0x09
Agreement No.		1	0x21
information	Server flag	4	0x00 0x00 0x00 0x01
	Content-Encoding	1	
	content	M	
Information Serial Number		2	0x00 0x01
Error checking		2	0xD9 0xDC
Stop bits		2	0x0D 0x0A

6.2.1 start bit

Fixed value 0x79 0x79

6.2.2 packet length

2 bytes

6.2.3 Protocol No.

use 0x21

6.2.4 server flag

Leaving the server identification, the terminal will receive the binary data is returned as the return package

6.2.5 Content-Encoding

0x01 ASC II coding

0x02 UTF16-BE coding

6.2.6 Content

Data transmission needs.

6.2.7 Information Serial Number

See packet format 4.5

6.2.8 Error check

See packet format 4.6

6.2.9 Stop Bits

See Packet Format 4.7

6.3. Off petrol and electricity

Functional Description: Cutting oil vehicle electrical control circuit

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

The server sends
RELAY, 1 #
Terminal returns
Successful return

DYD = Success!
Failure to return

6.4. Restore oil and electricity

Functional Description: An electrical control circuit of the vehicle is turned on oil

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

The server sends
RELAY, 0 #
Terminal returns
Successful return
Failure to return

Description:

The following are the various reply off petrol and electricity, in order to determine the character search to Success success.

RELAY, ERROR: 104 Command Error

[Redacted]

RELAY, ERROR: 103

command parameter error
[Redacted]

RELAY, FAIL! ACC ON, GPS has Not FIXED or speed> 20KM / H, relay delay !! oil fails to be powered off!, The ACC is turned on, GPS positioning is not greater than or speed 20KM / H, the fuel cut operation delay!

RELAY, The oil has been cut already !! off petrol and electricity failure!
Already in electricity off the state oil!

RELAY, The oil has been Resume already !! restore oil and electricity failed! Oil is already in electricity restored state!

Cut off the fuel supply: Success Speed:! 0 km / h off petrol and electricity success.
[Redacted]

Restore fuel supply: Success restore oil and electricity success!
[Redacted]

RELAY, Restore fuel supply:!! Success restore oil and electricity success
[Redacted]

RELAY, Cut off the fuel supply: Success Speed: 0 km / h electric tour ends successfully.!

6.5. Adding SOS numbers

Functional Description: Add receiving alarm messages and phone number of SOS in the examples and the return transmission ASCII string conversion generates an instruction content

The server sends

SOS, A, NUM1, NUM2, NUM3 #

Terminal returns

Successful return

OK SOS1:! NUM1SOS2: NUM2SOS3NUM3

Failure to return

ERROR: XXX

6.6. Delete SOS numbers

Functional Description: Remove SOS number and telephone to receive the alarm messages transmitted in the examples and the return instruction contents generated ASCII string conversion

The server sends

SOS, D, NUM1, NUM2, NUM3 #

Terminal returns

Successful return

OK SOS1:! NUM1SOS2: NUM2SOS3NUM3

Failure to return

ERROR: XXX

6.7. Set the center number

Functional Description: Is provided to control the oil off power transmission center number in the examples and the return instruction contents generated ASCII string conversion

The server sends

CENTER, A, NUM #

Terminal returns

Successful return

OK

Failure to return

ERROR: XXX

6.8. Delete center number

Functional Description: Examples of the transmission and returns the string in the center can control the number of deleted fuel cut electrical generation instruction converting ASCII content

The server sends

CENTER, D #

Terminal returns

Successful return

```
OK
Failure to return
ERROR: XXX
```

6.9. Vibrate alert

Functional Description: Vibrate alert

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

```
The server sends
SENALM, ON, Alarm #

Terminal returns

Successful return

OK
Failure to return
ERROR: XXX
NOTE: Alarm 0: internet; 1: + internet message; 2: + SMS + internet call; 3 + internet call;
```

6.10 Close vibration alarm

Functional Description: Off vibration alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

```
The server sends
SENALM, OFF #

Terminal returns

Successful return

OK
Failure to return
ERROR: XXX
```

6.11. Turn speed alarm

Functional Description: Open speed alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

```
The server sends
SPEED, ON, TIME, SPEED, Alarm #

Terminal returns

Successful return

OK
Failure to return
ERROR: XXX
NOTE: Alarm 0: internet; 1: + internet message;
```

6.12 Close speed alarm

Functional Description: Close speed alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

```
The server sends
SPEED, OFF #
```

Terminal returns
Successful return
OK
Failure to return
ERROR: XXX

6.13. Turn off alarm

Functional Description: Turn off alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

The server sends
POWERALM, ON, Alarm #

Terminal returns

Successful return

OK

Failure to return

ERROR: XXX

NOTE: Alarm 0: internet; 1: + internet message; 2: + SMS + internet call; 3 + internet call;

6.14. Close power alarm

Functional Description: Shut off the alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

The server sends
POWERALM, OFF #

Terminal returns

Successful return

OK

Failure to return

ERROR: XXX

6.15. Displacement open alarm

Functional Description: Open displacement alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

The server sends
MOVING, NO, Radial displacement, Alarm #

Terminal returns

Successful return

OK

Failure to return

ERROR: XXX

NOTE: Alarm 0: internet; 1: + internet message; 2: + SMS + internet call; 3 + internet call; radial displacement: 100 ~ 1000

6.16. Close alarm displacement

Functional Description: Close displacement alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

```
The server sends
MOVING, OFF #

Terminal returns

Successful return

OK

Failure to return
ERROR: XXX
```

6.17. Turn on low battery alarm

Functional Description: Open low battery alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

```
The server sends
BATARM, ON, Alarm #

Terminal returns

Successful return

OK

Failure to return
ERROR: XXX

NOTE: Alarm 0: internet; 1: + internet message;
```

6.18 Close the low battery alarm

Functional Description: Off Low battery alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

```
The server sends
BATARM, OFF #

Terminal returns

Successful return

OK

Failure to return
ERROR: XXX
```

6.19. Turn fence alarm

Functional Description: Open the electronic fence

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

```
The server sends
FENCE, ON, 0, center latitude, longitude circle, the radius of the fence, X, e.g. Alarm #:
FENCE, ON, 0, N1.2971, E103.822349,61, IN, 0 #

Terminal returns

Successful return
```


OK

Failure to return

ERROR: XXX

NOTE: Alarm 0: internet; 1: + internet message;

X = IN / OUT; IN: nominated bar alarm, OUT: a fence alarm, empty showing entrance / exit fence will alarm; default entry / exit fence will alarm;

6.20. Close fence alarm

Functional Description: Open the electronic fence

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

The server sends

FENCE, OFF #

Terminal returns

Successful return

OK

Failure to return

ERROR: XXX

6.21. The control device reboot

Functional Description: After 1 minute, the device is restarted

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

The server sends

RESET #

Terminal returns

Successful return

The terminal will restart after 1 minute!

Failure to return

ERROR: XXX

6.22. Turn sos alarm

Functional Description: Sos help button is pressed, an alarm will be issued sos sending instance and returns a string ASCII conversion generation instruction content

The server sends

KEYALM, ON, Alarm #

Terminal returns

Successful return

Failure to return

ERROR: XXX

NOTE: Alarm 0: internet; 1: + internet message; 2: + SMS + internet telephone

6.23. Close alarm sos

Functional Description: Close sos alarm

Examples of the transmission and returns the string in the ASCII conversion generation instruction content

The server sends

KEYALM, OFF #
Terminal returns
Successful return
Failure to return
ERROR: XXX

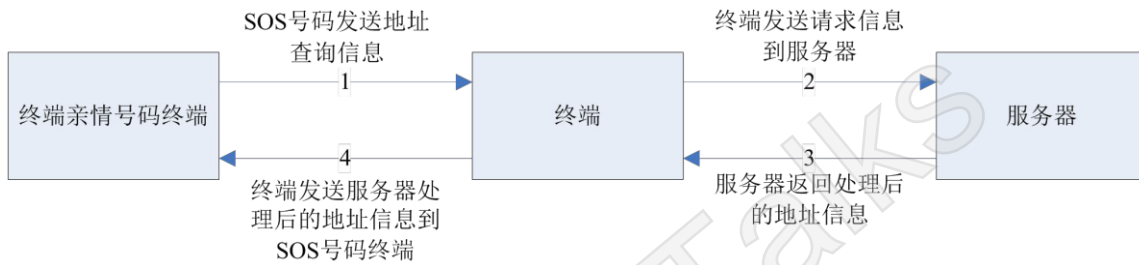
6.24. Send query information in the server address

Examples of the transmission and returns the string in the conversion instruction from the content server to generate ASCII

ADDRESS, the contents of the address, phone number

Note: The contents of the address issued following Chinese UNICODE encoding.

6.25. GPS, phone number lookup address information packet (0X2A)



6.25.1 The terminal information transmission server

The terminal receives

Basically the same format with the previously mentioned GPS information content, add the phone number of an inquiry address.

format		Length (Byte)	
Start bit		2	
Packet length		1	
Agreement No.		1	
Date Time		6	
information	GPS information	GPS information length, the number of satellite positioning participation 1	
		latitude	4
		longitude	4
		speed	1
		Course, state	2
	telephone number	twenty one	
Language		2	
Information Serial Number		2	
Error checking		2	
Stop bits		2	

6.7.1.1. Start bit

See Packet Format 4.1

6.7.1.2. Packet length

See packet format 4.2

Such as: units of length in bytes, 0x2E, it means that the instruction content occupies 46 bytes

6.7.1.3. Protocol No.

use 0x2A .

6.7.1.4. Date Time

See packet format positioning 5.2.1.4

6.7.1.5. GPS information length, the number of satellite positioning participation

See packet format positioning 5.2.1.5

6.7.1.6. Latitude

See packet format positioning 5.2.1.6

6.7.1.7. Longitude

See packet format positioning 5.2.1.7

6.7.1.8. Speed

See packet format positioning 5.2.1.8

6.7.1.9. Heading

See packet format positioning 5.2.1.9

6.7.1.10. Phone number

SOS phone number address lookup request by ASCII conversion, less than 21 right side up 0

6.7.1.11. Language

The current terminal Chinese

language site: 0x00 0x01

English: 0x00 0x02

6.7.1.12. Information Serial Number

See packet format 4.5

6.7.1.13. Error checking

See packet format 4.6

6.7.1.14. Stop Bits

See Packet Format 4.7

6.25.2 The server response

Chinese or English request reply address according to the extended instruction address, the reply packet is inconsistent.

6.25.2.1. Chinese reply

Chinese reply packet as follows:

format			Length (Byte)	
The server transmits the packet to the command terminal (15 + M + N Byte)	Start bit		2	
	Data bit length		1	
	Agreement No.		1	
	information	Instructionlength		1
		Server flag		4
		Instructioncontent	ADDRESS	7
			&&	2
			Address Content	M
			&&	2
			telephone number	twenty one
##			2	

	Information Serial Number	2
	Check Digit	2
	Stop bits	2

Chinese request reply protocol number Address: 0X17.

Instruction content: ADDRESS && && contents of the address telephone number ## (ADDRESS, &&, ## is a fixed character string) to Chinese address content UNICODE Encoding issued.

Chinese reply address information Example:

```

7878 // start bit
84 //Data length
17 // No reply protocol
7E // length instruction transmits content information length i.e.
00000001 // server flag
41444452455353 // ADDRESS
2626 && // delimiter
624059044F4D7F6E0028 // Chinese position is sent to UNICODE
004C004200530029003A
5E7F4E1C77015E7F5DDE
5E0282B190FD533AFF17
FF15FF144E6190530028
004E00320033002E0033
00390035002C00450031
00310032002E00390038
0038002996448FD1 2626
&& // delimiter
3133373130383139313335000000000000000000 //telephone number
2323 // ## content information terminator
0106 //serial number
3825 //Check Digit
0D0A // stop bits
    
```

6.25.2.2. English reply

Considering the case where English or other foreign longer address, one data bit is not enough, to 2 bytes. Note: wherein the bit length for the data back to the address information corresponding to only two protocol number.

format		Length (Byte)	
The server transmits the packet to the command terminal (15 + M + N Byte)	Start bit	2	
	Data bit length	2	
	Agreement No.	1	
	information	Instruction length	2
		Server flag	4
		Instruction conten ADDRESS	7

			&&	2
			Address Content	M
			&&	2
			telephone number	twenty one
			##	2
Information Serial Number			2	
Check Digit			2	
Stop bits			2	

English address request reply protocol number: 0X97

Instruction content: ADDRESS && && contents of the address telephone number ## (ADDRESS, &&, ## is fixed string)

Examples reply address information in English Example:

```

7878          // start bit
00D1          //Data length
97            // No reply protocol
00CA          // length instruction transmits content information length i.e.
00000001     // server flag
4144452455353 // ADDRESS 2626
              && // delimiter
0053004F00530028004C // English position to send UNICODE
0029003A005300680069
006D0069006E00200046
0061006900720079006C
0061006E006400200057
00650073007400200052
0064002C004800750069
006300680065006E0067
002C004800750069007A
0068006F0075002C0047
00750061006E00670064
006F006E00670028004E
00320033002E00310031
0031002C004500310031
0034002E003400310031
0029004E006500610072
00620079 2626
              && // delimiter
313235323031333739303737343035310000000000 //telephone number
2323          // ## content information terminator
0007          //serial number
72b5          //Check Digit
0D0A          // stop bits
  
```

VII. A CRC-ITU attached table lookup algorithm C language code fragment

CRC-ITU Lookups C Language code fragment static const

U16 crctab16 [] = {

```

0X0000, 0X1189, 0X2312, 0X329B, 0X4624, 0X57AD, 0X6536, 0X74BF, 0X8C48, 0X9DC1,
0XAF5A, 0XBED3, 0XCA6C, 0XDBE5, 0XE97E, 0XF8F7, 0X1081, 0X0108, 0X3393, 0X221A,
0X56A5, 0X472C, 0X75B7, 0X643E, 0X9CC9, 0X8D40, 0XBFDB, 0XAE52, 0XDAED,
0XCB64, 0XF9FF, 0XE876, 0X2102, 0X308B, 0X0210, 0X1399, 0X6726, 0X76AF, 0X4434,
0X55BD, 0XAD4A, 0XBCC3, 0X8E58, 0X9FD1, 0XEB6E, 0XFAE7, 0XC87C, 0XD9F5,
0X3183, 0X200A, 0X1291, 0X0318, 0X77A7, 0X662E, 0X54B5, 0X453C, 0XBDCB, 0XAC42,
0X9ED9, 0X8F50, 0XFBEF, 0XEA66, 0XD8FD, 0XC974, 0X4204, 0X538D, 0X6116, 0X709F,
0X0420, 0X15A9, 0X2732, 0X36BB, 0XCE4C, 0XDFC5, 0XED5E, 0XFCD7, 0X8868, 0X99E1,
0XAB7A, 0XBAF3, 0X5285, 0X430C, 0X7197, 0X601E, 0X14A1, 0X0528, 0X37B3, 0X263A,
0XDECD, 0XCF44, 0XFDDF, 0XEC56, 0X98E9, 0X8960, 0XBBFB, 0XAA72, 0X6306, 0X728F,
0X4014, 0X519D, 0X2522, 0X34AB, 0X0630, 0X17B9, 0XEF4E, 0XFEC7, 0XCC5C, 0XDDD5,
0XA96A, 0XB8E3, 0X8A78, 0X9BF1, 0X7387, 0X620E, 0X5095, 0X411C, 0X35A3, 0X242A,
0X16B1, 0X0738, 0XFFCF, 0XEE46, 0XDCDD, 0XCD54, 0XB9EB, 0XA862, 0X9AF9, 0X8B70,
0X8408, 0X9581, 0XA71A, 0XB693, 0XC22C, 0XD3A5, 0XE13E, 0XF0B7, 0X0840, 0X19C9,
0X2B52, 0X3ADB, 0X4E64, 0X5FED, 0X6D76, 0X7CFF, 0X9489, 0X8500, 0XB79B, 0XA612,
0XD2AD, 0XC324, 0XF1BF, 0XE036, 0X18C1, 0X0948, 0X3BD3, 0X2A5A, 0X5EE5, 0X4F6C,
0X7DF7, 0X6C7E, 0XA50A, 0XB483, 0X8618, 0X9791, 0XE32E, 0XF2A7, 0XC03C, 0XD1B5,
0X2942, 0X38CB, 0X0A50, 0X1BD9, 0X6F66, 0X7EEF, 0X4C74, 0X5DFD, 0XB58B, 0XA402,
0X9699, 0X8710, 0XF3AF, 0XE226, 0XD0BD, 0XC134, 0X39C3, 0X284A, 0X1AD1, 0X0B58,
0X7FE7, 0X6E6E, 0X5CF5, 0X4D7C, 0XC60C, 0XD785, 0XE51E, 0XF497, 0X8028, 0X91A1,
0XA33A, 0XB2B3, 0X4A44, 0X5BCD, 0X6956, 0X78DF, 0X0C60, 0X1DE9, 0X2F72, 0X3EFB,
0XD68D, 0XC704, 0XF59F, 0XE416, 0X90A9, 0X8120, 0XB3BB, 0XA232, 0X5AC5, 0X4B4C,
0X79D7, 0X685E, 0X1CE1, 0X0D68, 0X3FF3, 0X2E7A, 0XE70E, 0XF687, 0XC41C, 0XD595,
0XA12A, 0XB0A3, 0X8238, 0X93B1, 0X6B46, 0X7ACF, 0X4854, 0X59DD, 0X2D62, 0X3CEB,
0X0E70, 0X1FF9, 0XF78F, 0XE606, 0XD49D, 0XC514, 0XB1AB, 0XA022, 0X92B9, 0X8330,
0X7BC7, 0X6A4E, 0X58D5, 0X495C, 0X3DE3, 0X2C6A, 0X1EF1, 0X0F78,};

```

// 16-bit CRC is calculated for a given length of the data. U16 GetCrc16 (const

U8 * pData, int nLength) {

U16 fcs = 0xffff;

// Initialize

while (nLength > 0) {

fcs = (fcs >> 8) ^ crctab16 [(fcs ^ * pData) & 0xff]; nLength--; pData++;}

return ~ fcs;

// Negate

}

VIII. Annex B exemplary protocol packet fragments

The following data is intercepted from the data communication between the terminal and the server, hexadecimal display, issue indicates that the terminal is issued, receives a returned by the server: Log package: Issue: 78 78 0D 01 03 53 41 35 32 15 03 62 00 02 2D 06 0D 0A

Receive: 78 78 05 01 00 02 EB 47 0D 0A GPS data pack(06 use GPSLBS The combined information packet): Issue: 78 78 1F 12 0B 08 1D 11 2E 10 CF 02 7A
C7 EB 0C 46 58 49 00 14 8F 01 CC 00 28 7D 00 1F B8 00 03 80 81 0D 0A

Stateful packet:

Issued: 78 78 0A 13 44 01 04 00 01 00 05 08 45 0D 0A

Receive: 78 78 05 13 00 05 AF D5 0D 0A

Online off oil and electricity:

Receive: 78 78 15 80 0F 00 01 A9 58 44 59 44 2C 30 30 30 30 30 23 00 A0 DC F1 0D 0A

Issued: 78 78 18 15 10 00 01 A9 58 44 59 44 3D 53 75 63 63 65 73 73 21 00 02 00 18 91 77 0D 0A

Server issued DYD, 000000 #

Reply: DYD = Success!

Command issued in the case of oil and electricity has been disconnected: receiving: 78 78 15 80 0F 00 01 A9 61 44 59 44 2C 30 30 30 30 30 23 00 A0 3E 10 0D 0A

Issued: 78 78 53 15 4B 00 01 A9 61 41 6C 72 65 61 64 79 20 69 6E 20 74 68 65 20 73 74 61 74 65 20 6F 66 20 66 75 65 6C 20 73 75 70 70 6C 79 20

63 75 74 20 6F 66 66 2C 74 68 65 20 63 6F 6D 6D 61 6E 64 20 69 73 20 6E 6F 74 20 72 75 6E 6E 69 6E 67 21 00 02 00 1C F3 0D 0D 0A

Server issued DYD, 000000 #

Reply: Already in the state of fuel supply cut off, the command is not running!

Online restore oil and electricity:

Receive: 78 78 16 80 10 00 01 A9 63 48 46 59 44 2C 30 30 30 30 30 23 00 A0 7B DC 0D 0A

Issued: 78 78 19 15 11 00 01 A9 63 48 46 59 44 3D 53 75 63 63 65 73 73 21 00 02 00 1E F8 93 0D 0A

Server issued: HFYD, 000000 #

Reply: HFYD = Success!

Issued instructions have been restored at power up oil: receiving: 78 78 16 80 10 00 01 A9 64 48 46 59 44 2C 30 30 30 30 30 23 00 A0 8B 1B 0D 0A

Issued: 78 78 55 15 4D 00 01 A9 64 41 6C 72 65 61 64 79 20 69 6E 20 74 68 65 20 73 74 61 74 65 20 6F 66 20 66 75 65 6C 20 73 75 70 70 6C 79 20

74 6F 20 72 65 73 75 6D 65 2C 74 68 65 20 63 6F 6D 6D 61 6E 64 20 69 73 20 6E 6F 74 20 72 75 6E 6E 69 6E 67 21 00 02 00 1F DB BF 0D 0A

Server issued: HFYD, 000000 #

Reply: Already in the state of fuel supply to resume, the command is not running!

Online inquiry location:

Receive: 78 78 16 80 10 00 01 A9 67 44 57 58 58 2C 30 30 30 30 30 23 00 A0 06 2D 0D

0A

Issued: 78 78 64 15 5C 00 01 A9 67 44 57 58 58 3D 4C 61 74 3A 4E 32 33 2E 31 31 31 36 38 32 2C 4C 6F 6E 3A 45 31 31 34 2E 34 30 39 32 31 37 2C
43 6F 75 72 73 65 3A 30 2E 30 30 2C 53 70 65 65 64 3A 30 2E 33 35 31 38 2C 44 61 74 65 54 69 6D 65 3A 31 31 2D 31 31 2D 31 35 20 20 31 31 3A
35 33 3A 34 33 00 02 00 23 07 AE 0D 0A

Fat content on the terminal: DWXX = Lat: N23.111682, Lon: E114.409217, Course: 0.00, Speed: 0.3518, DateTime: 11-11-15 11:53:43

Terminal to obtain address information from the
server: Chinese:

Issued: 78 78 2E 1A 0B 0B 0F 0E 21 17 CF 02 7A C8 87 0C 46 57 E3 00 14 02 36 36 33 36 36 00 03 00 04 00 00 00 00 00 00 00 00 00 01
00 34 AD E9 0D 0A

Receive: 78 78 94 17 8E 00 00 01 41 44 44 52 45 53 53 26 26 4F 4D 7F 6E 00 3A 5E 7F 4E 1C 77 01 60 E0 5D DE 5E 02 4E 91 5C 71 89 7F 8D EF
00 2E 65 87 53 4E 4E 00 8D EF 00 2E 79 BB 60 E0 5D DE 5B 89 4F 17 4F 1A 8B A1 5E 08 4E 8B 52 A1 62 40 7E A6 00 33 00 32 7C 73 00 2E 79 BB
60 E0 5D DE 5E 02 59 16 55 46 62 95 8D 44 67 0D 52 A1 4E 2D 5F C3 7E A6 00 33 00 32 7C 73 00 2E 26 26 36 36 33 36 36 00 03 00 04 00 00 00
00 00 00 00 00 00 23 23 00 01 E4 2A 0D 0A

Send contents server: Location: Huizhou, Guangdong Province Yunshan Road all the way from the Mandarin, Huizhou, the Public Accounting Firm about. 32 Meters away from the Huizhou City Foreign
Investment Service Center about 32 Metric phone number is: 66366

English:

Issued: 78 78 2E 1A 0B 0B 0F 0E 1E 08 CF 02 7A C8 A2 0C 46 57 D7 00 14 02 36 36 33 36 36 00 03 00 04 00 00 00 00 00 00 00 00 00 00 02
00 32 04 3A 0D 0A

Receive: 78 78 00 E9 97 00 E2 00 00 01 41 44 44 52 45 53 53 26 26 00 50 00 72 00 65 00 63 00 69 00 73 00 65 00 6C 00 79 00 20 00 4C 00 6F 00
63 00 61 00 74 00 69 00 6E 00 67 00 3A 00 31 00 30 53 F7 00 20 00 59 00 75 00 6E 00 73 00 68 00 61 00 6E 00 20 00 57 00 65 00 73 00 74 00 20 00
52 00 64 00 2C 00 48 00 75 00 69 00 63 00 68 00 65 00 6E 00 67 00 2C 00 48 00 75 00 69 00 7A 00 68 00 6F 00 75 00 2C 00 47 00 75 00 61 00 6E 00
67 00 64 00 6F 00 6E 00 67 00 2C 00 35 00 31 00 36 00 30 00 30 00 33 00 28 00 4E 00 32 00 33 00 2E 00 31 00 31 00 31 00 37 00 37 00 2C 00 45 00
31 00 31 00 34 00 2E 00 34 00 30 00 39 00 32 00 32 00 29 26 26 36 36 33 36 36 00 03 00 04 00 00 00 00 00 00 00 00 00 00 23 23 00 01 AF 4D
0D 0A

Send contents server : Precisely Locating: 10 number Yunshan West
Rd, Huicheng, Huizhou, Guangdong, 516003 (N23.11177, E114.40922)
Phone number: 66366
Alarm package Process:
Chinese SMS:

Issued: 78 78 25 16 0B 0B 0F 0E 24 1D CF 02 7A C8 87 0C 46 57 E6 00 14 02 09 01 CC 00 28 7D 00 1F 72 65 06 04 01 01 00 36 56 A4 0D 0A

Receive: 78 78 05 16 00 36 95 70 0D 0A

Receive: 78 78 BE 17 B8 00 00 01 41 4C 41 52 4D 53 4D 53 26 26 7D 27 60 25 54 7C 53 EB 00 3A 5E 7F 4E 1C 77 01 60 E0 5D DE 5E 02 4E 91
5C 71 89 7F 8D EF 00 2E 65 87 53 4E 4E 00 8D EF 00 2E 79 BB 4E 2D 88 4C 00 41 00 54 00 4D 7E A6 00 33 00 31 7C 73 00 2E 79 BB 4E 2D 88 4C
6C 5F 53 17 65 2F 88 4C 7E A6 00 33 00 31 7C 73 00 2E 00 2C 00

IX. C attached complete packet format

A. Data packets sent by the terminal to the server

Login information packet (18 Byte)						
Initiation protocol	packet length	information length	terminal ID number	SEQ ID NO	Parity	Stop
2	1	1	8	2	2	2

GPS information packet (26 + N Byte)													
Start bit	Packet length	Agreement No.	Date Time	GPS information						Reserve expansion bit	Information Serial Number	Check Digit	Stop bits
				GPS information									
				GPS information length, participation The number of satellite positioning	latitude	longitude	speed	Course, like state					
2	1	1	6	1	4	4	1	2	N	2	2	2	

LBS information packet (23 + N Byte)											
Start bit	Packet length	Agreement No.	Date Time	LBS information				Reserve expansion bit	Information Serial Number	Check Digit	Stop bits
				MCC	MNC	LAC	Cell ID				
				2	1	1	6				

LBS complete information packet (42 + N Byte)																					
Start bit	Packet length	Agreement No.	Date Time	LBS information												Reserve expansion bit	Information Serial Number	Check Digit	Stop bits		
				MCC	MNC	LAC	MCI	MCISNNCI	NCISNNCI	NCISNNCI	NCISNNCI	NCISNNCI	NCISNNCI	NCISNNCI	NCISNNCI						
				1	1	2	2	3	3	4	4	5	5	6	6						
2	1	1	6	2	1	2	2	1	2	1	2	1	2	1	2	1	2	N	2	2	2

GPS, LBS packet (34 + M + N Byte)																						
Start bit	Packet length	Agreement No.	Date Time	GPS information											LBS information			Reserve expansion bit	Information Serial Number	Check Digit	Stop bits	
				GPS information											MCC	MNC	LAC					Cell ID
				GPS information length, engaged in the positioning of	latitude	longitude	speed	Course, state	Reserve expansion bit													
2	1	1	6	1	4	4	1	2	M	2	1	2	3	M	2	2	2					

Status Packet (13 + N Byte)										
Start bit	Protocol packet length	number	information				Reserve expansion bit (language)	Information sequence number	Check Digit	Stop bits
			Terminal information content	Voltage, etc. level	GSM signal strength level					
2	1	1	1	1	1	2	2	2	2	

Satellite SNR information (11 + M + N Byte)									
Protocol number	Start bit	Packet length	information				Sequence number reserved for expansion	check stop bit	
			Participation in satellite positioning						
			1	2	3	4			
2	1	1	1	M	N	2	2	2	

Terminal response command (15 + M + N Byte) sent by the server									
Protocol number	Start bit	Packet length	String content					Sequence number	check stop bit
			String content						
			Flag bit instruction	length instruction content	Reserved extension	bit (Language)			
2	1	1	1	4	M	2	2	2	

GPS, LBS, status information packet (40 + M + N + L Byte)									
Starting packaging	Technology Association	information						Yuxi	xiaoting

GPS Tracker communication protocol

Bit length	degree	Yee No.	Date Time	GPS information						LBS information					status information			Stay extension bit (language)	Message sequence number	Check Bit	Stopping
				GPS information length, the number of satellite positioning	latitude	longitude	speed	Course	Reserve expansion bit	LBS length	MCC	MNC	LAC	Cell ID	Reserve expansion bit	terminal information content	Modem level				
2	1	1	6	1	4	4	1	2	M	1	2	1	2	3	N	1	1	12	2	2	2

B. Packet sent to the terminal server

Response (10 Byte) after the server receives the terminal status packet transmitted from the start bit					
length packet	sequence number	check Protocol number	number stop bit		
2	1	1	2	2	2

The server transmits the packet to the command terminal (15 + M + N Byte)										
Protocol number	start bit packet	length	information					Sequence number	check stop	bit
			Flag bit instruction	length instruction	content serv	er extension bit Reser	ved			
2	1	1	1	4	M	N	2	2	2	

Instruction List

NO.	Function Item	Instruction format	Remarks / Example
1	Address Lookup	123 or DW	
2	Status Inquiry	STATUS #	
3	Versions Query	VERSION #	
4	Query parameter settings	PARAM #	
5	Restart instruction	RESET #	
6	Add to SOS number	SOS, A, number 1, number 2, number 3 #	
7	delete SOS number	SOS, D, number 1, number 2, number 3 #	
8	Inquire SOS number	SOS #	
9	change IP Set up	SERVER, 0, IP, port, 0 #	SERVER, 0,120.24.248.12,8005,0 #
10	Change domain settings	SERVER, 1, Domain name, port, 0 #	SERVER, 1, GW.CARHERE.NET, 8005,0 #

GPS Talks