Terminal communication protocol and data format

Modify record

Version	Function Description	Modifier	Modified time
V1.0.0			

Content

1. Protocol Basis

1.1 Communication method

The communication method adopted in this agreement shall comply with the relevant provisions of JT/T 794. The communication protocol uses TCP, the platform acts as the server, and the terminal acts as the client.

1.2 Data type

The data types used in the protocol message are shown in Table 1:

Table 1: Data Type

Data Type	Description and requirements
BYTE	Unsigned single-byte integer (bytes, 8 bits)
WORD	Unsigned double-byte integer (bytes, 16 bits)
DWORD	Unsigned four-byte integer (double word, 32 bits)
BYTE[n]	n bytes
BCD[n]	8421 code, n bytes
STRING	GBK encode, if no data, empty

1.3 Transport rule

The protocol uses large byte mode (bir-endian) network byte order to transfer words and double words. The transmission agreement is as follow:

• The transmission convention of byte (BYTE): in the form of byte stream.

• Word (WORD) transmission convention: transmit the high 8 bits first, then the low 8 bits;

• Double-byte (DWORD) transmission convention： transmit the high 24 bits first, then the high 16 bits, at last the low 8 bits.

1.4 Composition of the message

1.4.1 Message Structure

Each message consists of an identifier bit, a message header, a message body, and a check code. The message structure is as shown in Figure 1:

Figure 1 message structure diagram

Identification Bit	Header	Message Body	Check Code	Identification Bit

1.4.2 Identification Bit

Use 0x7e to represent, if 0x7e appears in the check code, header and message body, then it is to be escaped. The escape rules are defined as follows:

0x7e←→0x7d follows by a 0x02

0x7d←→0x7d follows by a 0x01

The escape process is as follows:

When sending message: message encapsulation→ calculate and fill the check code→ escape;

When receiving message: escape restore→ validate check code→ message parse.

e.g.:

Sending a data package of 0x30 0x7e 0x08 0x7d 0x55, the package is encapsulated as follows: 0x7e 0x30 7d 0x02 0x08 0x7d 0x01 0x55 0x7e.

1.4.3 Header

The header content is shown in table 2:

Table 2: Header content

Start Byte	Field	Data Type	Descriptions And Requirements
0	Message ID	WORD	Distinguish different message types
2	Message Body Attribute	WORD	The structure of the message body attribute is shown in Figure 2
4	Terminal Number	BCD[6]	Each terminal must have a unique terminal number, and the platform identifies each terminal according to the number. The highest bit of the number is fixed to the number 0, and the last 11 bits can be set by the SIM

			card number of the terminal or generated according to specific rules, but to ensure that the number can not be repeated.
10	Message serial number	WORD	Loop accumulates from 0 according to sending sequence
12	Message packet encapsulation		If the relevant identifier in the message body attribute determines that the message is subcontracted, then the item has content, otherwise it does not.

The message body attribute format structure diagram is shown in figure 2:

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Reserve		Sub-pack age													

Figure 2 message body attribute format structure diagram

Data encryption method:

• bit 10~bit 12 is data encryption identification bit

• When all the three bits are 0, indicates that the message body is not encrypted

• When the tenth bit is 1, indicates the message body is encrypted by the RSA algorithm

• Others reserved

Sub-package:

When the 13th bit in the message body attribute is 1, it indicates that the message body is a long message, which is sub-packaged to send. The specific sub-packaged information is determined by the packet encapsulation item. If the 13th bit is 0, there is no message packet encapsulation field in the message header.

The message package encapsulation item is shown in table 3:

Table 3: contents of message package items

Start Byte	Field	Data Type	Descriptions And Requirements
0	Total number of packet	WORD	The total number of packet after sub-package
2	Packet no	WORD	Starting from 1

1.4.4 Check code

The check code refers to the XOR of the next byte from the beginning of the message header, and the result is XORed with the next byte until the first byte of the check code, occupying 1 byte.

2. Detailed message format

2.1 Terminal general response【0001】

Sender: terminal

Message ID: 0x0001

Message body: data format is shown in Table 4

Table 4: Terminal general response message body data format

Start Byte	Field	Data Type	Descriptions And Requirements
0	Response serial number	WORD	The serial number of the corresponding platform message
2	Response ID	WORD	The ID of the corresponding platform message
4	Result	BYTE	0: success/confirm; 1: failure; 2: incorrect information; 3: not support

Response ID: No response required

Description: This message is used for the terminal to send a general response to the platform. The platform uses the terminal general response message to confirm whether the information has been delivered successfully.

2.2 Platform general response【8001】

Sender: platform

Message ID: 0x8001.

Message body: data format is shown in Table 5

Table 5: Platform general response message body data format

Start Byte	Field	Data Type	Descriptions And Requirements
0	Response serial number	WORD	The serial number of the corresponding terminal message
2	Response ID	WORD	The ID of the corresponding terminal message
4	Result	BYTE	0: success/confirm; 1: failure; 2: incorrect information; 3: not support; 4: alarm processing confirmation

Response ID: No response required

Description: This message is used for the general response of the platform to the terminal to actively upload the message. The terminal confirms whether the information is successfully uploaded through the platform genera response message.

2.3 Terminal heartbeat【0002】

Sender: terminal

Message ID: 0x0002

Message body: Empty.

Response ID: 0x8001

Description: The terminal heartbeat is used to maintain the TCP connection of terminal and platform. The terminal sends a heartbeat message to the platform according to the set heartbeat sending interval to ensure that the TCP is always in the connected state.

2.4 Terminal registration【0100】

Sender: terminal

Message ID: 0x0100

Message body: The data format is shown in Table 6.

Table 6: Terminal registration message body data format

Start Byte	Field	Data Type	Descriptions And Requirements
0	Provincial ID	WORD	Indicates the province where the terminal is installed. 0 is reserved and the default value is taken by the platform. The provincial ID uses the first two of the six administrative codes specified in GB/T 2260.
2	City And county ID	WORD	Indicates the city where the terminal is installed. 0 is reserved and the default value is taken by the platform. The city and county IDs adopt the last four of the six administrative code specified in GB/T 2260.
4	Manufacturer ID	BYTE[5]	Five bytes , the manufacturer code of Terminal device
9	Terminal type	BYTE[8]	Eight bytes, this terminal model is defined by the manufacturer. If the number of digits is less than eight digits, the space is added. (Note: 20 bytes are required in the

			supplementary explanation, and 0x00 is added if the digits not enough)
17	Terminal ID	BYTE[7]	Seven bytes, consisting of uppercase letters and numbers. This terminal ID is defined by the manufacturer. If the number of digits is insufficient, the following complements 0x00.
24	Color of the license plate	BYTE	The license plate color, according to the provisions of 5.4.12 of JT/T 415-2006, When the license hasn't registered, set the value as '0'.
25	License plate	STRING	Indicates the license plate issued by the public security traffic management department. (When the license plate color is 0, indicates vehicle VIN)

Response ID: 0x8100

Response ID: 0x8100

Note: If a new terminal wants to connect to the platform and implement the corresponding business functions, you must first add the corresponding terminal in the platform database and configure the vehicle data. When the terminal connects to the platform for the first time, the terminal needs to initiate a terminal registration request to the platform. After the registration is successful, the subsequent connection terminal does not need to send a registration request to the platform. Only after the registration is successful, the terminal can send other service data to the platform, otherwise the platform will not respond, or the TCP connection will be disconnected.

2.5 Terminal registration response【8100】

Sender: platform

Message ID: 0x8100

Message body: The data format is shown in Table 7.

Table 7: Terminal registration response message body data format

Start Byte	Field	Data Type	Descriptions And Requirements
0	Response serial number	WORD	The serial number of the corresponding terminal registration message
2	Response ID	BYTE	0: success; 1: vehicle has already been registered; 2: there's no specified vehicle in database; 3: terminal has already been registered; 4: there's no specified terminal in database

4	Result	STRING	The field is only display after success

Response ID: No response required

Description: This message is the response of the terminal registration [0x0100]. If the vehicle information registered by the terminal has been added to the platform database, the registration is successful and the terminal generates an authentication code. After receiving the response, the terminal needs to save the authentication code for authentication verification. Only when the authentication code sent by the terminal is the same as the authentication code returned by the platform registration, the authentication is passed, otherwise the authentication fails. If the vehicle information registered by the terminal is incorrect, the platform will return the corresponding result.

2.6 Terminal logout【0003】

Sender: terminal

Message ID: 0x0003

Message body: empty

Response ID: 0x8001

Note: If the information registered by the terminal is modified, or the authentication fails, the terminal needs to send this message to the platform to log out and re-register. After the logout is successful, the terminal needs to re-register to send other data.

2.7 Terminal authentication【0102】

Sender: terminal

Message ID: 0x0102

Message body: The data format is shown in Table 8.

Table 8 Terminal authentication message body data format

Start Byte	Field	Data Type	Descriptions And Requirements
0	Authentication code	STRING	The authentication code returned by the platform registration response

Response ID: 0x8001

Note: If the terminal is successfully registered, the terminal needs to initiate an authentication request to the platform each time it connects to the platform. After the platform successfully responds to the authentication, other service data can be sent.

2.8 Set terminal parameters 【8103】

Sender: platform

Message ID: 0x8103

Message body: The data format is shown in Table 9.

Table 9 Terminal parameter message body data format

Starting byte	Field	Data type	Descriptions and requirements
0	Total number of parameters	BYTE	
1	Number of package parameters		Parameter item format is shown in table 10

Table 10 Terminal parameter data format

Starting byte	Data type	Descriptions and requirements
Parameter ID	DWORD	Parameter ID definition and description are shown in Table 11
Length of parameter	BYTE	
Parameter value		If it is muti-valued parameter, a number of parameters of a same ID are used in the message, such as dispatch center phone number

Table 11 Definition and description of terminal parameters

Parameter ID	Data type	Descriptions and requirements
0x0001	DWORD	Terminal's heartbeat sending interval, unit is second (s), range is 60-1800, more than this range, it will fail.
0x0010	STRING	APN, wireless communication dials access point. Up to 26 characters. Exceed 26 characters, the first 26 characters take.
0x0013	STRING	IP address of the main server, format: "010.111.056.234". If the format is incorrect, the setting will fail.
0x0018	DWORD	Server TCP port, range: 0 to 65535
0x0027	DWORD	Interval for reporting location information when the device is sleeping, the unit is second (s), range: 3-10800 seconds, if setting beyond the range, it will fail.

0x0029	DWORD	The default reporting interval for location information, in seconds (s), range: 3-10800 seconds, if setting out of range it will fail
0x0055	DWORD	Maximum speed in kilometers per hour (km / h), range: 0 to 255
0x0056	DWORD	Overspeed duration in seconds (s), range: 0 to 255
0x0080	DWORD	Vehicle odometer reading, 1 / 10km
0x0081	DWORD	Provincial ID where the vehicle is located, ranging from 0 to 65535
0x0082	DWORD	City ID where the vehicle is located, ranging from 0 to 65535
0x0083	STRING	Registration number of motor vehicle issued by public security traffic management department. Up to 12 characters. If the setting exceeds 12 characters, the first 12 characters will be taken; the terminal with less than 12 characters will automatically fill in the 12 characters with spaces.
0x0084	BYTE	The license plate color, according to 5.4.12 in JT/T415-2006

Response ID: 0x0001

Note: Send this message through the platform to set related parameters of terminal. After receiving the message, the terminal first determines the validity of the parameters and returns a general response, and then performs related parameter settings and operations, such as connecting to a new server and re-registering.

2.9 Check terminal parameter【8104】

Sender: Platform

Message ID: 0x8104

Message body: empty

Response ID: 0x0104

Description: Send this message through the platform to check related parameters of terminal.

2.10 Response of checking terminal parameter【0104】

Sender: Terminal

Message ID: 0x0104

Message body: The data format is shown in Table 12.

Table 12 Response message body data format of checking terminal parameter

Starting byte	Field	Data type	Descriptions and requirements
0	Response serial number	WORD	Check message serial number of corresponding terminal parameter
2	Number of response parameter	BYTE	
3	Parameter item list		Parameter item format and definition is shown in table 11

Response ID: No response required

Note: This message is the terminal's response to the query of terminal parameters issued by the platform.

2.11 Terminal control【8105】

Sender: Platform

Message ID: 0x8105

Message body: The data format is shown in Table 13.

Table 13: Terminal control message body data format

Starting byte	Field	Data type	Descriptions and requirements
0	Command	BYTE	Command instruction is shown in table 14
1	Command parameter	STRING	Command parameter format see below for details, each field is separated by a half angle ';', each STRING field is processed with GBK encoding before the message is composed

Table 14: Terminal control command instruction

Command	Command parameter	Descriptions and requirements
4	null	Terminal factory reset
Ox64	null	Cut off fuel
0x65	null	Supply fuel

Response ID: 0x0001

Note: Send the message through the platform to control the terminal. For example, after receiving the terminal reset command, the terminal first returns a general response, and then performs a reset and restart operation.

2.12 Location data uploading【0200】

Sender: Terminal

Message ID: 0x0200

Message body: Consists of a list of basic location information and location additional information items. The basic location information is required, and the location additional information item list is optional. It can be combined by each location additional information item or not, and it is determined according to the length field in the message header. The message structure is shown in Figure 3.

Figure 3 structure of location report message

Basic location information (shown in table 16)	List of additional location information items (shown in table 19)

Table 16: Location basic information data format

Starting byte	Field	Data type	Descriptions and requirements
0	Alarm flags	DWORD	Definition of alarm flags bit is shown in table 18
4	Status	DWORD	Definition of status bit is shown in table 17
8	Latitude	DWORD	Unit is degree, times the sixth power of 10, accurate to one millionth
12	Longitude	DWORD	Unit is degree, times the sixth power of 10, accurate to one millionth
16	Altitude	WORD	Altitude, unit is meter (m)
18	Speed	WORD	1/10km/h
20	Direction	WORD	0-359, due north is 0, clockwise
21	Time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time, The time involved later in this standard is in this time zone)

Table 17: Definition of status bit

Bit	Status
0	0: ACC off; 1: ACC on
1	0: Not positioning; 1: Positioning

2	0: North latitude; 1: South latitude
3	0: East longitude; 1: West longitude
4-9	Reserved, default is 0
10	0: vehicle oil-electric is normal; 1: vehicle oil-electric disconnect
11-31	Reserved, default is 0

Table 18: Definition of alarm flags bit

Bit	Definition	Descriptions
0	Reserved, default is 0	
1	1: Over-speed alarm	The flag is maintained until the alarm condition is released
2-6	Reserved, default is 0	
7	1: The terminal main power is under voltage	The flag is maintained until the alarm condition is released
8	1: The terminal main power is power down	The flag is maintained until the alarm condition is released
9-31	Reserved, default is 0	

Table 19: Location additional information item format

Field	Data type	Descriptions and requirements
Additional information ID	BYTE	1-255
Length of additional information	BYTE	
Additional information		Definition of additional information is shown in table 20

Table 20: Definition of additional information

Additional information ID	Length of additional information	Descriptions and requirements
0x01	4	Mileage, DWORD, 1/10km, corresponding to the odometer reading on the car
0x30	1	BYTE, signal strength of wireless communication network
0x31	1	BYTE, GNSS positioning satellites

0xEB	n	[Length 1+Command 1+Content 1]+…+[Length N+Command N+Content N] This ID is a custom additional information extension command. For the content format, see Appendix A.

Response ID: 0x8001

Note: This message is used for terminal location, status and alarm uploading. According to the set upload time, upload regularly. If the terminal status changes or an alarm is triggered, it will upload an location information immediately to inform the platform of the terminal's current operating status and let the platform display it in real time.

2.13 Location information query【8201】

Sender: Platform

Message ID: 0x8201.

Message body: empty

Response ID: 0x0201

Description: This message is used to actively query the current location and status information of the terminal through the platform.

2.14 Location information query response【0201】

Sender: terminal

Message ID: 0x0201.

Message body: Data format is shown is table 21.

Table 21: Location information query response message body data format

Starting byte	Field	Data type	Descriptions and requirements
0	Response serial number	WORD	Serial number of corresponding location information query message
2	Location information upload		For the data format, please refer to position information upload 2.12

Response ID: No response

Note: This message is the terminal's response to the platform location information query message, and returns the terminal's current location and status information.

2.15 Positioning data batch upload【0704】- Blind area data upload

Sender: terminal

Message ID: 0x0704.

Message body: Data format is shown is Table 22.

Table 21: Positioning data batch upload data format

Starting byte	Field	Data type	Descriptions and requirements
0	Numbers of data item	WORD	Including numbers of location uploading data item, >0
2	Type of location data	BYTE	1: Blind area data upload
3	Location upload data item		Definition is shown in table 23

Table 23: Location upload data item data format

Starting byte	Field	Data type	Illustration
0	Length of location upload data body	WORD	Length of location upload data body, n
2	Location upload data body	BYTE[n]	Definition is shown in 2.12 location information upload

Response ID: 0x8001

Note: Due to network and other reasons, the location information cannot be uploaded normally after the terminal is disconnected, these information should be stored in the device, After the network is connected, these information will upload to the platform in batch automatically.

2.16 Send text information through platform【8300】

Sender: Platform

Message ID: 0x8300.

Message body: Data format is shown is Table 24.

Table 24: Text information data format

Starting byte	Field	Data type	Descriptions and requirements
0	Flags	BYTE	Definition of text information flags bit is shown in table 25
1	Text information	STRING	The maximum is 1024 bytes, ASCII encoding, See Appendix B for the list of currently supported text extension command

Table 25: Definition of text information flags bit

Bit	Flags
0	1: Emergency
1-7	Reserved

Response ID: 0x0001

Note: This message is currently mainly used to extend the protocol commands by text. As long as the platform supports the delivery of text messages, the protocol can be flexibly extended without modification of the platform, and only the corresponding text command information can be issued.

2.17 Report text message 【6006】

Sender: terminal
Message ID: 0x6006
Message body: Data format is shown is Table 26.

Table 26: Report text message body data format

Starting byte	Field	Data type	Descriptions and requirements
0	Text message encoding method	BYTE	=0x00 ASCII encoding =0x01 UNICODE encoding method
1	Text information	STRING	

Response ID: 0x8001

Note: This message is used by the terminal to actively report the content of the text message to the platform, or to deliver relevant text information to the platform, and the processing result is returned in text format. After receiving the change message, the platform displays it through the corresponding window.

3. Application logic

3.1 Registration process

Every time the TCP connection is successful, if the terminal is registered, it will go through the authentication process; if the terminal is not registered, it will send a registration request to the platform:

If there is no ACK response from TCP, the network will be disconnected and reconnected within 3 minutes;

If TCP has an ACK response but no platform registration response, it will be retransmitted every 10 seconds. If there is no response after the 10th retransmission, a logout request is sent, and the network is disconnected and reconnected after a delay of 8 seconds.

If the platform returns the correct registration response, the registration is successful.

3.2 Authentication process

Each time the TCP connection is successful and the device is registered, an authentication request will be sent to the platform:

If there is no ACK response from TCP, the network will be disconnected and reconnected within 3 minutes;

If TCP has an ACK response but no platform authentication response, it will be retransmitted every 10 seconds. If there is no response after the 10th retransmission, the registration flags will be cleared, and the network will be disconnected and reconnected immediately.

If the platform returns the correct registration response, the registration is successful.

3.3 Heartbeat logic

TCP is connected, the device is authenticated, and heartbeat data will be sent regularly according to the set heartbeat time:

If there is no ACK response from TCP, the network will be disconnected and reconnected within 3 minutes;

If TCP has an ACK response but no platform heartbeat response, it will be retransmitted every 8 seconds. No response after the 6th retransmission, the network was disconnected and reconnected.

3.4 Location data uploading process

3.4.1 Location data type

3.4.1.1 Upload regularly according to the set interval time

3.4.1.2 Inflection data upload

3.4.1.3 Event trigger, upload immediately

      Change of positioning status

      ACC status change

      From motion state to static state

3.4.1.4 The alarm is triggered and sent immediately

      Power down alarm, low voltage alarm

      Over-speed alarm

      Pseudo base station alarm

3.5 Blind area logic

3.5.1 Blind area storage logic

3.6.1.1 Unregistered platform, no blind area data is stored; not positioning and no alarm, no blind area data is stored.

3.6.1.2 Platform is registered successfully, the network is abnormally and not online, if have location data, this blind area data will be stored.

3.6.1.3 Before disconnecting the network or actively restarting the device, if there is location data in the sending buffer, store the buffered data in the blind zone.

3.5.2 Blind area sending logic

After the device online, if there is blind area data, blind area transmission will be started, and multiple data will be sent in one packet (maximum 6). After receiving the blind area response, it will

continue to send if there is still a blind area data; if there is no response, it will be retransmitted every 10 seconds. If there is no response after 6 retransmissions, clear the blind area data.

No files are stored in the blind area, only stored in the RAM without restarting, lost after power off.

The total number of blind area data is 300. After reaching the maximum number, the blind area data will not be stored and the existing blind area data will not be overwritten.

3.6 GPS logic

3.6.1 GPS from non-positioning to positioning, it needs to continue to positioning for 5 seconds, the positioning mark is positioning.

3.6.2 GPS from positioning to non-positioning, the duration is 10 seconds, during this time the program is processed as positioning, only after 10 becomes non-positioning.

3.6.3 GPS latitude and longitude does not save the file.

3.6.4 After entering the static mode, turn off the power of the GPS module.

3.6.5 In motion mode, restart GPS module after 5 minutes without positioning.

3.6.6 After GPS positioning, the refresh conditions of latitude and longitude.

    3.6.6.1 There is vibration, refresh.

    3.6.6.2 G-sensor abnormal.

    3.6.6.3 No vibration, and the speed is less than 5km/h, no refresh.

3.7 Inflection logic

3.7.1 The change of turning angle is more than 20°, the relative mileage is more than 20m, the speed is more than 5km/h for 5 consecutive seconds, and the Inflection data uploaded once.

3.7.2 Speed range 15km/h-40km/h, turning angle change more than 20°, upload one inflection data.

3.7.3 Speed range 40km/h-80km/h, the change of turning angle is more than 15°, upload one inflection data.

3.7.4 Speed range more than 80km/h, the change of turning angle more than 10°, upload one inflection data.

3.8 Fuel cut off logic

3.8.1 Not Associated to ACC.

3.8.2 Associated speed and positioning.

 3.8.2.1 The terminal is not positioned, and the fuel cut off command will not be executed for the time being, and will be executed after positioning.

 3.8.2.2 Terminal positioning, the speed is more than 20km/h, the fuel cut off command will not be executed temporarily, and it will be executed after the speed is less than 20km/h.

3.8.3 When the terminal is in motion mode, the fuel will remain restored. After the fuel cutting off, if the terminal enters the static mode, the fuel will be restored. After the terminal enters the motion mode, the fuel will be disconnected again.

3.8.4 Receiving the command to cut off fuel in static mode, the terminal cuts off fuel in one second and restore fuel in one second, the fuel will be restored after 15 seconds, and after the terminal enters the motion mode, the fuel will be disconnected again.

3.8.5 Receiving the command to restore the fuel in the static mode,the terminal cuts off fuel in one second and restore fuel in one second, and then restore fuel.

3.8.6 The fuel status is normal by default.

4. Appendix

4.1 Appendix A: Content format of location data additional information extension 0xEB

Field	Data type	Description & Requirement
Length	WORD	2 bytes, length includes command length and data length
Command	WORD	2 bytes
Data	BYTE[n]	The data content depends on different commands, details refer to the command content format.

Command content format:

Name	Length	Command	Data
Occupied bytes	**N+2**	**2**	**N**
Multi-base station information	0x0024	0x00A9	Country code, operator code, base station number, [area code 1, tower number 1, signal strength 1,.......area code 6, tower number 6, signal strength 6] Country code: occupies 2 bytes, HEX notation, such as 0x01CC means 460. Operator code: occupies 1 byte, HEX notation, such as 0x00. Number of base stations: occupies 1 byte, HEX notation, such as 0x06, supports up to 6 base stations Area code: occupies 2 bytes, HEX notation, the high bit is in front, the low bit is in the back, such as 0x262C Signal tower code: occupies 2 bytes, HEX notation, the high bit is in front, the low bit is in the back, such as 0x04BA Signal strength: occupies 1 byte, HEX notation, such as 0x58, original value Note: If there is no base station information, fill in 0 for the corresponding area code, tower code and signal strength
SIM ICCID number	0x000C	0x00B2	10-byte SIM card ICCID number, BCD notation
Extended alarm status bit	0x0006	0x0089	State [31~0] The default is 0xFFFFFFFF bit0:1 backup power off; 0 backup power on bit30:1 normal; 0 pseudo base station detected bit31:1 normal; 0 pseudo base station alarm

4.2 Appendix B: Text Extension Commands

Description of Text extension command format:

T+Order+Data+xor+W

Field	Description	Length	Remarks
T	Start Character	4 bytes	Fixed character '<EXT', ASCII
Order	Command code	2 bytes	ASCII
Data	Command content	Indefinite length	ASCII
xor	XOR check	2 bytes	XOR check of all bytes before T to xor, HEX->ASCII
W	End Character	1 byte	Fixed character '>', ASCII

Such as: <EXT1002000>

After receiving the text extension instruction issued by the platform, the terminal returns the setting or query result through the text information reporting command 0x6006.

Order	Function Description	Data Description	Example
00	query	Query various parameters and status	<EXT00000>Query version <EXT00100>Query working status
10	Set over-speed alarm detection time	xxx, 3 bytes, ASCII representation, unit is second. This command is used to set the terminal over-speed alarm detection time.	<EXT1002000> means to set the terminal over-speed alarm detection time to 20 seconds
87	Start upgrade request	No data. This command is used to manually trigger the terminal to send an upgrade request.	<EXT8700>
93	Power saving mode switch setting	s, 1 byte, ASCII representation. This command is used to set whether to turn off the GPS module in static mode to reduce power consumption. s=0 means to turn on power saving mode s=1 means turn off power saving mode s=? means query switch status	<EXT93000> Turn on power saving mode; <EXT93100> Turn off the power saving mode; <EXT93?00> Query the status of the power saving mode switch.
CB	Base station data upload switch setting	s, 1 byte, ASCII code representation. This command is used to set whether the extended content of the location data	<EXTCB000> Turn off base station data upload; <EXTCB100> Open the base

		additional information includes base station information. s=0 means to close the base station data upload s=1 means open base station data upload s=2 means query switch status	station data upload; <EXTCB200> Query the status of the base station upload switch.
D8	Extended commands with sub-commands, see the following table	xxxxlldata xxxx: 4 bytes, representing subcommands, HEX ASCII code representation, such as: 000A ll: 2 bytes, indicating the length of the following data, the ASCII code of HEX, such as ll=10, indicating that the data content length is 16 bytes data: data content, HEX ASCII code representation, data generally does not exceed 100 bytes	<EXTD8xxxxll………00>

Function description	Subcommands (xxxx)	Length (ll)HEX	Data format description	Remark
Set the acceleration sensor vibration detection threshold	8007	08	xxxxxxxx, 8 bytes, ASCII code representation of HEX,	Unit mg, range 30-1000mg, such as 00000064 means 100mg,
Query the vibration detection threshold of the acceleration sensor	0007	00	NA	Return query results in terminal text format
Set Inflection data uploading switch	0071	01	s, 1 byte, ASCII code representation s=0 means to close the inflection data uploading s=1 means to turn on the inflection data uploading	
Query the status of the inflection data uploading switch	8071	00	NA	Return query result in terminal text format

4.3 Appendix C SMS Command

General parameter SMS setting command format:

<SPBSJ*Parameter 1*Parameter 2………….*Parameter n>

Start character: <
Mark: SPBSJ
Parameters: each parameter is separated by *, the following is the description of the parameter table
End character: >
General parameter SMS query command format:
<CKBSJ>
The terminal returns the message content of the corresponding general parameter item.

Parameter item	Function description	Content format	Remarks
P	SMS password	Composed of letters and numbers, 6 characters in length	The fixed password is: *P:BSJGPS Only the password is correct, the other parameter can be set
A	APN	APN, USR, PWD APN is the name of the access point, with a maximum of 26 characters USR is the user name of the access point, with a maximum of 15 characters PWD is the access point password, maximum 15 characters	For example: *A:CMNET,test,123 Indicates that the access point is CMNET, the user name is test, and the password is 123
T	TCP connection IP and port	xxx.xxx.xxx.xxx,port xxx.xxx.xxx.xxx is the IP, add 0 to the front of each item with less than 3 digits port is the port item	For example: *T:123.065.111.010,12345 123.065.111.010 is the IP 12345 is the port
G	Main domain name and port	service:port service is the server domain name, with a maximum length of 40 characters port is the port item	For example：www.163.com:6605 www.163.com is the domain name 6605 is the port
E	Terminal upgrade IP	xxx.xxx.xxx.xxx,port xxx.xxx.xxx.xxx is the IP item, add 0 before each item with less than 3 digits port is the port item	For example： *E:123.065.111.010,12345

		Generally it is a mobile phone number or terminal bar-code number, the length is more than or equal to 11, and less than or equal to 16	For example: *N:13812345678
N	Terminal number	Generally it is a mobile phone number or terminal bar-code number, the length is more than or equal to 11, and less than or equal to 16	For example: *N:13812345678
O	Location information upload interval in sleeping	The unit is second (s), the range is 3-10800 seconds, and the setting fails when exceeding the range.	For example: *O:300
C	Default upload interval of location information	The unit is second (s), the range is 3-10800 seconds, and the setting fails when exceeding the range.	For example: *C:30
H	Terminal heartbeat sending interval	The unit is second (s), the range is 60-1800 seconds, and the setting fails when exceeding the range.	For example: *H:180
I	Terminal ID	Fixed length 7 bytes	For example: *I:1234567
1H	Power saving mode switch	x=0 turns on power saving mode, x=1 turns off power saving mode	For example: *1H:1
3Z	Inflection data uploading switch	x=0 turns on the inflection data uploading switch, x=1 turns off the inflection data uploading switch	For example: *3Z:0
g	Acceleration sensor vibration detection threshold	Unit mg, range 30-1000mg	For example: *g:60

Vehicle registration parameter SMS setting command format:

<spbsj*parameter 1*parameter 2………….*parameter n>

Start character: <

Identification: spbsj

Parameters: each parameter is separated by *, the following is the description of the parameter table

End character: >

Format of vehicle registration parameter SMS query command:

<ckbsj>

The terminal returns the SMS content of the corresponding vehicle registration parameter item.

Parameter	Function	Content format	Remarks

item	description		
p	SMS password item	Composed of letters and numbers, 6 characters in length	The fixed password item is: *p:spbsj Only the password item is correct, The other parameter can be set
y	Terminal license plate number	Fixed 24 bytes, fill space after insufficient, BG encoding	For example: *y:D4C142423533304220202020, Represents Guangdong BA530B
h	Terminal province ID	Fixed 4 bytes, add 0 before it is insufficient	For example: *h:0044 means the province ID is 44
i	Terminal city ID	Fixed 4 bytes, add 0 before it is insufficient	For example: *i:0300 means the city ID is 300
x	Terminal license plate color	1 blue, 2 yellow, 3 black, 4 white, 9 others	For example: *x:1
s	Overspeed detection parameters	Fixed 5 bytes, 3 bytes speed limit value (km/h) + 2 bytes duration (seconds)	For example: *s:08005 means the speed limit is 80KM/H for 5 seconds