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Road transport vehicle satellite positioning system

Compatible Vehicle Terminal Communication Protocol Technical Specification

GNSS system for operating vehicles

— General specifications for the communication protocol and data format of BD compatible vehicle terminal

directory

foreword

This specification is for JT/T 808-2011Supplementation and improvement of "Terminal Communication Protocol and Data Format of Satellite Positioning System for Road Transport Vehicles", and JT/T 808-2011 In comparison, the main technical changes except editorial modifications are as follows:

— — MODIFY the description of 5.2 "Maintenance of Connection" in Communication Connection;

— — Modified the process description of 7.8.1 “Collecting Driver Identity Information Data” in Protocol Classification;

— — Added the process description of 7.12 "Subcontracting Message" in Protocol Classification;

— — In the data format, the original 8.4 Terminal Registration, 8.8 Setting Terminal Parameters, 8.12 Location Information Reporting, and 8.23 Text Messages have been modified. 8.28 Setting circular area, 8.36 Driving record data collection command, 8.37 Driving record data upload, 8.38 Driving record parameter download command, 8.40 Driver identity information collection and reporting, 8.41 Multimedia event information upload, 8.42 Multimedia data upload, 8.43 Multimedia data upload response, 8.46 Stored multimedia data retrieval response, 8.49 Data downlink transparent transmission, 8.50 Data uplink transparent transmission and other chapters;

— — Added data format, 8.4 Subcontracting Request for Supplementary Transmission, 8.11 Querying Specified Terminal Parameters, 8.14 Querying Terminal Properties, 8.15 Query terminal attribute response, 8.16 Send terminal upgrade package, 8.17 Terminal upgrade result notification, 8.22 Manual confirmation alarm message, 8.47 Report driver identity information request, 8.49 Positioning data batch upload, 8.50 CAN bus data upload, 8.55 Camera immediate shooting command response , 12 commands such as 8.60 Single Stored Multimedia Data Retrieval and Upload Command, and adjusted the number of affected chapters and tables;

— — Revised the contents of Table A.2 Peripheral Type Number Table and Table A.3 Command Type Table in Appendix A;

— — Added Appendix A, A.3.4 Querying Slave Version Number Information, A.3.5 Slave Self-Check, A.3.6 Slave Firmware Update, A.3.7 Query peripheral properties, A.4.1 Road transport permit IC card authentication request, A.4.2 Road transport permit IC card reading result notification, A.4.3 Card pull out notification, A.4.4 Active trigger reading IC card and other terminal hosts and Communication protocol commands of peripherals;

— — Modified the contents corresponding to the above modifications in Appendix B Message Comparison Table.

Road transport vehicle satellite positioning system

Terminal communication protocol and data format

1 Scope

This specification specifies the communication protocol and data format between the Beidou-compatible vehicle terminal (hereinafter referred to as the terminal) and the supervision/monitoring platform (hereinafter referred to as the platform) of the road transportation vehicle satellite positioning system, including protocol basis, communication connection, message processing, and protocol classification. with description and data format.

This specification applies to the communication between the Beidou-compatible vehicle terminal and the platform of the road transportation vehicle satellite positioning system.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 2260 Administrative division code of the People's Republic of China

GB/T 19056 car driving recorder

JT/T 415-2006 Cataloging and coding rules for road transport e-government platform

JT/T 794 Technical requirements for on-board terminals of satellite positioning systems for road transport vehicles

3 Terms and Definitions, Abbreviations

3.1 Terms and Definitions

The following terms and definitions apply to this document.

3.1.1

abnormal data communication link

The wireless communication link is disconnected, or temporarily suspended (eg, during a call).

3.1.2

register register

The terminal sends a message to the platform that it is installed on a certain vehicle.

3.1.3

unregister unregister

The terminal sends a message to the platform for removal from the mounted vehicle.

3.1.4

authentication authentication

When the terminal connects to the platform, it sends a message to the platform so that the platform can verify its identity.

3.1.5

location reporting strategy

Timed, distanced reporting or a combination of both.

3.1.6

location reporting program

Rules for determining the interval for periodic reporting based on relevant conditions.

3.1.7

Additional points report while turning

The terminal sends a position information report message when judging that the vehicle turns. The sampling frequency is not lower than1Hz, the rate of change of the azimuth angle of the vehicle is not lower than15°/s, and lasts at least3sabove.

3.1.8

answering strategy

Rules for the terminal to answer incoming calls automatically or manually.

3.1.9

SMS text alarm SMS text alarm

When the terminal alarms, text information is sent by SMS.

3.1.10

event item

The event item is preset by the platform to the terminal, and consists of the event code and the event name. When the driver encounters the corresponding event, he operates the terminal and triggers the event report to be sent to the platform.

3.2 Abbreviations

The following abbreviations apply to this document.

APN - access point name GZIP - a GNU free software file compression program (GNUzip) LCD - liquid crystal display

RSA - an asymmetric cryptographic algorithm (developed by Ron Rivest, Adi Shamirh, Len Adleman, named after from the names of the three)

SMS - short message service (short message service) TCP - transmission control protocol (transmission control protocol)

TTS - text to speech UDP - user datagram protocol

VSS - vehicle speed sensor

4 Protocol Basics

4.1 Communication method

The communication method adopted by the protocol should conform to theJT/T 794The relevant provisions in the communication protocol adoptTCP or UDP, the platform acts as the server, and the terminal acts as the client. When the data communication link is abnormal, the terminal can useSMS Communicate by message.

4.2 Data Types

The data types used in the protocol messages are shown in the table1:

surface 1 type of data

type of data	description and requirements
BYTE	unsigned single-byte integer (byte, 8-bit)
WORD	Unsigned Double Byte Integer (Word, 16-bit)
DWORD	Unsigned four-byte integer (double word, 32 bits)
BYTE[n]	n bytes
BCD[n]	8421 code, n bytes
STRING	GBK encoding, empty if there is no data

4.3 Transmission Rules

The protocol adopts big endian mode (big-endian)to pass words and doublewords in network byte order.

The agreement is as follows:

— — bytes (BYTE)The transmission convention of: according to the way of byte stream transmission;

- - Character(WORD)The transmission convention of: first transmit the high-order eight bits, and then transmit the low-order eight bits;

-- double word (DWORD)The transmission convention: first transmit hightwenty fourbit, then pass a high16bit, and then pass the upper eight bits,

The lower eight bits are passed at the end.

4.4 Composition of messages

4.4.1 Message Structure

Each message consists of an identification bit, a message header, a message body and a check code. The message structure diagram is shown in the figure. 1 shown:

identification bit	header	message body	check code	identification bit

picture 1 message structure

4.4.2 Identification bit

use 0x7e Indicates that if the check code, message header and message body appear 0x7e, then escaping processing is required, and the escaping rules are defined as follows:

0x7e <————> 0x7d followed by a 0x02;

0x7d <————> 0x7d is followed by a 0x01.

The escape process is as follows:

When sending a message: message encapsulation -> calculate and fill the check code -> escape; when

receiving a message: escape and restore -> verify the check code -> parse the message.

Example:

Send a packet with the content of 0x30 0x7e 0x08 0x7d 0x55, then encapsulate as follows: 0x7e 0x30 7d 0x02 0x08 0x7d 0x01 0x55 0x7e.

4.4.3 Message Header

The content of the message header is detailed in the table 2:

surface 2 message header content

start byte	field	type of data	description and requirements
0	message id	WORD	
2	message body properties	WORD	The structure diagram of the message body attribute format is shown in Figure 2
4	Terminal phone number	BCD[6]	It is converted according to the mobile phone number of the terminal itself after installation. Insufficient phone number12 digit, then add numbers in front, and supplement numbers for mainland mobile phone numbers 0, Hong Kong, Macao and Taiwan are supplemented according to their area codes.
10	message serial number	WORD	Circular accumulation starting from 0 according to the sending order
12	Message Packet Encapsulation Item		If the relevant flag bit in the message body attribute determines the packet processing of the message, then the item has content, otherwise there is no item

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

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Reserve		subcontract	Data encryption method			message body length									

picture 2 Message Body Attribute Format Structure Diagram

Data encryption method:

— —bit10~bit12 For the data encryption flag;

- When all three are 0, indicating that the message body is not encrypted;

- when the first 10 bit is 1, indicating that the message body has passed through RSA algorithm encryption;

— — other reservations.

Subcontracting:

When the message body attribute in the first 13 bit is 1 When it means that the message body is a long message, it is processed by subcontracting, and the specific subcontracting information

The information is determined by the encapsulation item of the message packet; if the first 13 bit is 0, there is no message packet encapsulation item field in the message header.

The contents of the message package encapsulation items are shown in the table 3:

surface 3 Contents of message package encapsulation items

start byte	field	type of data	description and requirements
0	total number of message packets	WORD	The total number of packets after the message is sub-packaged
2	package serial number	WORD	from 1

4.4.4 Check Code

The check code refers to starting from the message header, XORing with the next byte until the previous byte of the check code, occupying one byte.

5 Communication connections

5.1 Connection establishment

The daily data connection between the terminal and the platform can be TCP or UDP method, the terminal should establish a connection with the platform as soon as possible after reset, and immediately send a terminal authentication message to the platform for authentication after the connection is established.

5.2 Maintenance of the connection

After the connection is established and the terminal authentication is successful, in the absence of normal data packet transmission, the terminal should periodically send a terminal heartbeat message to the platform. After receiving it, the platform sends a platform general response message to the terminal. The sending period is specified by the terminal parameters.

5.3 Disconnection

Platform and terminal can be based on TCP The protocol actively disconnects, and both parties should actively judge TCP Whether the connection is disconnected. Platform judgmentTCP How to disconnect:

- - according to TCP The protocol determines that the terminal is actively disconnected;

— — Terminals with the same identity establish a new connection, indicating that the original connection has been disconnected;

— — The message from the terminal, such as the heartbeat of the terminal, is not received within a certain period of time. Terminal judgmentTCP How to disconnect:

- - according to TCP The protocol determines that the platform is actively disconnected;

— — the data communication link is disconnected;

— — The data communication link is normal, and no response is received after the number of retransmissions.

6 Message processing

6.1 TCP and UDP message handling

6.1.1 Messages sent by the platform

All messages sent by the platform require the terminal to respond. The responses are divided into general responses and special responses, which are determined by each specific functional protocol. After the sender waits for the response to time out, it should resend the message. The response timeout time and the number of retransmissions are specified by the platform parameters. The calculation formula of the response timeout time after each retransmission is shown in the formula (1):

$$T_{N+1}=T_N \times(N+1) \quad \text{.....(1)}$$

where:

T_{N+1}- the response timeout after each retransmission;

T_N- the previous response timeout time;

N——Number of retransmissions.

6.1.2 Messages sent by the terminal

6.1.2.1 The data communication link is normal

When the data communication link is normal, all messages sent by the terminal require the platform to respond. The responses are divided into general responses and special responses, which are determined by each specific functional protocol. After the terminal waits for the response timeout, it should retransmit the message. The response timeout time and the number of retransmissions are specified by the terminal parameters, and the response timeout time after each retransmission is according to the formula (1)Calculation. For the key alarm message sent by the terminal, if no response is received after the number of retransmissions, it should be saved. The saved critical alarm messages are sent in the future before other messages are sent.

6.1.2.2 Abnormal data communication link

When the data communication link is abnormal, the terminal should save the location information report message to be sent. The saved message is sent as soon as the data communication link returns to normal.

6.2 SMS message processing

The terminal communication mode is switched to GSM network SMS message mode, using PDU Eight-bit encoding method, for lengths exceeding 140 bytes of the message, should follow GSM Short Message Service Specifications for Networks GSM 03.40 Subcontract processing.

SMS The mechanism for replying, retransmitting and saving messages is the same as 6.1, but the response timeout time and the number of retransmissions should be in accordance with the table 10 Medium parameter ID0x0006 and 0x0007 related set value processing.

7 Protocol Classification

7.1 Overview

The protocols are described below by functional classification. Unless otherwise specified, the defaultTCP way of communication. See the appendix for the communication protocol between the vehicle terminal and the external deviceA. Message name and message in the protocolID See the appendix for the message comparison table B.

7.2 Terminal management protocol

7.2.1 Terminal registration/deregistration

When the terminal is not registered, it should be registered first. After the registration is successful, the terminal will obtain the authentication code and save it. The authentication code is used when the terminal logs in. Before the vehicle needs to remove or replace the terminal, the terminal should perform a logout operation to cancel the corresponding relationship between the terminal and the vehicle.

If the terminal chooses to send the terminal registration and terminal deregistration messages by SMS, the platform shall reply to the terminal registration by sending the terminal registration response by SMS, and reply to the terminal cancellation by sending the platform general response by SMS.

7.2.2 Terminal Authentication

After the terminal is registered, it should be authenticated immediately after establishing a connection with the platform. The terminal shall not send other messages until the authentication is successful.

The terminal performs authentication by sending a terminal authentication message, and the platform replies with a platform general response message.

7.2.3 Set/Query Terminal Parameters

The platform sets terminal parameters by sending a set terminal parameter message, and the terminal replies with a terminal general response message. The platform queries terminal parameters by sending a query terminal parameter message, and the terminal replies with a query terminal parameter response message. Terminals under different network standards should support some unique parameters of their respective networks.

7.2.4 Terminal Control

The platform controls the terminal by sending terminal control messages, and the terminal replies to the terminal general response message.

7.3 Location and alarm protocols

7.3.1 Location information reporting

The terminal periodically sends the location information report message according to the parameter setting.

According to the parameter control, the terminal can send a position information report message when it judges that the vehicle turns.

7.3.2 Location information query

The platform queries the current location information of the designated vehicle terminal by sending a location information query message, and the terminal replies with a location information query response message.

7.3.3 Temporary position tracking control

The platform starts/stops location tracking by sending a temporary location tracking control message. Location tracking requires the terminal to report periodically before stopping, and report at the time interval specified by the message. The terminal replies with a terminal general response message.

7.3.4 Terminal Alarm

When the terminal judges that the alarm condition is met, it sends a location information report message, and sets the corresponding alarm flag in the location report message. The platform can perform alarm processing by replying to the platform general response message.

For each alarm type, see the description in the message body of the location information report. The alarm flag is maintained until the alarm condition is released. After the alarm condition is released, a position information report message should be sent immediately to clear the corresponding alarm flag.

7.4 Informational Protocols

7.4.1 Text message delivery

The platform sends messages by sending text messages to notify drivers in a specified way. The terminal replies with a terminal general response message.

7.4.2 Event Settings and Reporting

The platform sends the event list to the terminal for storage by sending the event setting message. After encountering the corresponding event, the driver can enter the event list interface to select, and the terminal sends an event report message to the platform after selection.

The event setting message requires the terminal to reply to the terminal general response message.

The event report message requires the platform to reply to the platform general response message.

7.4.3 Questions

The platform sends the questions with candidate answers to the terminal by sending the question delivery message, and the terminal displays it immediately. After the driver selects, the terminal sends a question answering message to the platform.

To ask a question to deliver a message, the terminal needs to reply to the terminal general response message.

7.4.4 Information on demand

The platform sends the information-on-demand menu setting message to the terminal for storage, and the driver can

Select on-demand/cancel the corresponding information service through the menu. After selection, the terminal sends an information on-demand/cancel message to the platform.

After the information service is on-demand, it will regularly receive information service messages from the platform, such as news, weather forecast, etc. The information on demand menu setting message requires the terminal to reply to the terminal general response message.

Information on demand/cancellation message requires the platform to reply to the platform's general response message. The information service message requires the terminal to reply to the terminal general response message.

7.5 Telephony Protocols

7.5.1 Call back

By sending a call-back message, the platform asks the terminal to call back according to the specified phone number, and specifies whether to use the monitoring mode (the terminal does not turn on the speaker).

The phone call back message requires the terminal to reply to the terminal general answer message.

7.5.2 Set up phonebook

The platform sets the phone book for the terminal by sending the message of setting the phone book, which requires the terminal to reply to the general answer message of the terminal.

7.6 Vehicle Control Protocols

By sending vehicle control messages, the platform requires the terminal to control the vehicle according to the specified operation. The terminal will reply the terminal general response message immediately after receiving it. Afterwards, the terminal controls the vehicle, and replies to the vehicle control response message according to the result.

7.7 Vehicle Management Agreement

The platform performs area and line settings for the terminal by sending messages such as setting circular area, setting rectangular area, setting polygon area, and setting route. The terminal judges whether the alarm conditions are met according to the attributes of the area and the line. The alarm includes overspeed alarm, entry and exit area/route alarm, and insufficient/too long travel time in the road section. The corresponding additional location information should be included in the location information report message.

area or route ID The value range is 1~0XFFFFFFFF. If setID Same type of area or route as already in the terminal ID Repeat, the existing ones are updated.

The platform can also delete the areas and routes saved on the terminal through messages such as deleting circular areas, deleting rectangular areas, deleting polygonal areas, and deleting routes.

Setting/deleting area and route messages requires the terminal to reply to the terminal general response message.

7.8 Information Collection Protocols

7.8.1 Collect driver identity information data

When the driver starts to drive, insert the IC card qualification certificate into the card reader module of the terminal. After the card reader module detects the entry of the card through the induction switch, it sends the authentication request to the terminal through the interface, and the terminal sends the authentication request through the transparent transmission instruction. The data is forwarded to the IC card certification center of the road transport permit, and the certification result returned by the certification center is transparently transmitted to the card reader module. The card reader module reads the IC card qualification certificate information according to the authentication result and uploads the result information to the authentication center (success and failure information) and the home monitoring center (only the successful information is read) through the terminal.

When the driver finishes driving, he pulls out the IC card. After the card reader module detects the card leaving through the induction switch, the relevant information is uploaded to the authentication center and the home monitoring center through the terminal.

7.8.2 Collecting Electronic Waybill Data

The terminal collects the electronic waybill data upload platform.

7.8.3 Collect driving record data

The platform requests the terminal to upload the specified data by sending the command message of the data collection of the driving record, and the message requires the terminal to reply to the message of uploading the data of the driving record.

7.8.4 Download driving record parameters

The platform requests the terminal to upload the specified data by sending the driving record parameter download command message, which requires the terminal to reply to the terminal general response message.

7.9 Multimedia Protocols

7.9.1 Upload of multimedia event information

When the terminal takes the initiative to shoot or record due to a specific event, it should actively upload a multimedia event message after the event occurs, which requires the platform to reply with a general response message.

7.9.2 Multimedia data upload

The terminal sends a multimedia data upload message to upload the multimedia data. Each complete multimedia data needs to be attached with the location information reporting message body during recording, which is called location multimedia data. The platform determines the receiving timeout period according to the total number of packets. After receiving all the data packets or reaching the timeout period, the platform sends a multimedia data upload response message to the terminal, which confirms the receipt of all the data packets or requests the terminal to retransmit the specified data packets.

7.9.3 The camera shoots immediately

The platform issues a shooting command to the terminal by sending the camera immediate shooting command message, which requires the terminal to reply to the terminal general response message. If real-time upload is specified, the terminal will upload the camera image/video after shooting, otherwise, the image/video will be stored.

7.9.4 Start recording

The platform issues a recording command to the terminal by sending a recording start command message, which requires the terminal to reply to the terminal general response message. If real-time upload is specified, the terminal will upload the audio data after recording, otherwise, the audio data will be stored.

7.9.5 Retrieval Terminal Stores Multimedia Data and Extracts

The platform obtains the situation of the terminal storing the multimedia data by sending the stored multimedia data retrieval message, which requires the terminal to reply to the stored multimedia data retrieval response message.

According to the retrieval result, the platform can request the terminal to upload the specified multimedia data by sending a stored multimedia data upload message, which requires the terminal to reply to the terminal general response message.

7.10 Generic data transfer classes

The messages that are not defined in the protocol but need to be transmitted in actual use can use data uplink transparent transmission messages and data downlink transparent transmission messages to exchange uplink and downlink data.

terminal can use GZIP The compression algorithm compresses longer messages, and uses data compression to report message uploads.

7.11 Cryptographic Protocols

If encrypted communication is required between the platform and the terminal, the RSA Public key cryptosystem. platform by sending platformRSA The public key message informs the terminal of its own RSA public key, the terminal replies to the terminal RSA public key messages and vice versa.

7.12 Subcontracting messages

When the message is sent by sub-package, the sub-package message should use the serial number that increases continuously. Response to packetized messages, if there is no special response command, the receiver can use a general response to all packetized messages, or use a general response to each packetized message, and use the result field (success/failure) to inform Whether the sender receives all packetized messages correctly. When all the subpackage messages are not received correctly, the receiver can use the supplementary subpackage request command to request the sender to retransmit the missing subpackage messages. The sender should use the original message to retransmit the sub-packets in the retransmission ID list once, and the retransmitted sub-packets are exactly the same as the original sub-packet message.

8 Data formats

8.1 Terminal general response

information ID:0x0001. The data format of the terminal general response

message body is shown in the table4.

surface 4 Terminal general response message body data format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The serial number of the corresponding platform message
2	Reply ID	WORD	The ID of the corresponding platform message
4	result	BYTE	0: success/confirmation; 1: failure; 2: message error; 3: not supported

8.2 Platform general response

information ID:0x8001. The data format of the platform's general response

message body is shown in the table5.

surface 5 Platform general response message body data format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The serial number of the corresponding terminal message
2	Reply ID	WORD	The ID of the corresponding terminal message
4	result	BYTE	0: success/confirmation; 1: failure; 2: message error; 3: not supported; 4: alarm processing confirmation;

8.3 Terminal Heartbeat

information ID:0x0002. The message body of the

terminal heartbeat data is empty.

8.4 Retransmit subcontracting request

Message ID: 0x8003.

See Table 6 for the data format of the message body of the retransmission subcontracting request.

surface 6 The data format of the message body of the retransmission subcontracting request

start byte	field	type of data	description and requirements
0	original message serial number	WORD	Corresponds to the message serial number of the first packet of the original message that requires retransmission
4	Total number of retransmitted packets	BYTE	n
5	List of retransmitted packet IDs	BYTE[2*n]	The sequence numbers of the retransmission packets are arranged in sequence, such as "packet ID1 packet ID2...packet IDn".

Note: The response to this message should use the original message to retransmit the subpackage in the retransmission ID list once, which is exactly the same as the original subpackage message.

8.5 Terminal Registration

Message ID: 0x0100.

The data format of the terminal registration message body is shown in Table 7.

surface 7 Terminal registration message body data format

start byte	field	type of data	description and requirements
0	Province ID	WORD	Indicates the province where the terminal installation vehicle is located, 0 is reserved, and the platform takes the default value. The provincial ID adopts the first two digits of the six digits of the administrative division code specified in GB/T 2260.
2	City and county ID	WORD	Indicates the city and county where the terminal installation vehicle is located, 0 is reserved, and the platform takes the default value. The city and county ID adopts the last four digits of the six digits of the administrative division code stipulated in GB/T 2260.
4	Manufacturer ID	BYTE[5]	5 bytes, terminal manufacturer code
9	Terminal model	BYTE[20]	20 bytes, the terminal model is defined by the manufacturer, if the number of digits is insufficient, "0X00" will be added afterward.
29	Terminal ID	BYTE[7]	7 bytes, consisting of uppercase letters and numbers, the terminal ID is defined by the manufacturer, if the number of digits is insufficient, "0X00" will be added afterward.
36	license plate color	BYTE	License plate color, according to 5.4.12 of JT/T415-2006. When the card is not played, the value is 0.
37	vehicle identification	STRING	When the color of the license plate is 0, it means the vehicle VIN; otherwise, it means the motor vehicle number plate issued by the public security traffic management department.

8.6 Terminal registration response

Message ID: 0x8100.

The data format of the terminal registration response message body is shown in Table 8.

surface 8Terminal registration response message body data format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The serial number of the corresponding terminal registration message
2	result	BYTE	0: Successful; 1: The vehicle has been registered; 2: The vehicle is not in the database 3: The terminal has been registered; 4: The terminal is not in the database ;

3	Authentication code	STRING	This field is only available after success

8.7 Terminal logout

information ID:0x0003. The terminal

logout message body is empty.

8.8 Terminal Authentication

Message ID: 0x0102.

The data format of the terminal authentication message body is shown in Table 9.

surface 9 Terminal authentication message body data format

start byte	field	type of data	description and requirements
0	Authentication code	STRING	After the terminal reconnects, report the authentication code

8.9 Setting Terminal Parameters

Message ID: 0x8103.

See Table 10 for the message body data format for setting terminal parameters.

surface 10 Terminal parameter message body data format

start byte	field	type of data	description and requirements
0	Total number of parameters	BYTE	
1	parameter list		The format of the parameter item is shown in Table 11

surface 11 Terminal parameter item data format

field	type of data	description and requirements
parameter ID	DWORD	Parameter ID definitions and descriptions are shown in Table 12
parameter length	BYTE	
parameter value		If it is a multi-value parameter, multiple parameter items with the same ID are used in the message, such as the phone number of the dispatch center

surface 12 Terminal parameter setting Definition and description of each parameter item

parameter ID	type of data	description and requirements
0x0001	DWORD	Terminal heartbeat sending interval, in seconds (s)
0x0002	DWORD	TCP message response timeout, in seconds (s)
0x0003	DWORD	Number of TCP message retransmissions
0x0004	DWORD	UDP message response timeout, in seconds (s)

parameter ID	type of data	description and requirements
0x0005	DWORD	UDP message retransmission times
0x0006	DWORD	SMS message response timeout, in seconds (s)
0x0007	DWORD	SMS message retransmissions
0x0008-0x000F		Reserve
0x0010	STRING	The main server APN, the wireless communication dial-up access point. If the network standard is CDMA, this place is the PPP dial-up number
0x0011	STRING	Primary server wireless communication dial-up user name
0x0012	STRING	Main server wireless communication dial-up password
0x0013	STRING	Primary server address, IP or domain name
0x0014	STRING	Backup server APN, wireless communication dial-up access point
0x0015	STRING	Backup server wireless communication dial-up user name
0x0016	STRING	Backup server wireless communication dial-up password
0x0017	STRING	Backup server address, IP or domain name
0x0018	DWORD	Server TCP port
0x0019	DWORD	Server UDP port
0x001A	STRING	IP address or domain name of the main server for road transport certificate IC card authentication
0x001B	DWORD	Road Transport Permit IC Card Authentication Main Server TCP Port
0x001C	DWORD	Road Transport Permit IC Card Authentication Main Server UDP Port
0x001D	STRING	Road transport permit IC card authentication backup server IP address or domain name, the port is the same as the main server
0x001E-0x001F		Reserve
0x0020	DWORD	Location reporting strategy, 0: regular reporting; 1: fixed-distance reporting; 2: regular and fixed-distance reporting
0x0021	DWORD	Location reporting scheme, 0: according to ACC status; 1: according to login status and ACC status, first judge login status, if logged in, then according to ACC status
0x0022	DWORD	The time interval for reporting that the driver is not logged in, in seconds (s), >0
0x0023-0x0026	DWORD	Reserve
0x0027	DWORD	Report time interval when sleeping, the unit is second (s), > 0
0x0028	DWORD	The time interval for reporting emergency alarm, the unit is second (s), >0
0x0029	DWORD	Default time reporting interval, in seconds (s), >0

parameter ID	type of data	description and requirements
0x002A-0x002B	DWORD	Reserve
0x002C	DWORD	Default distance reporting interval, in meters (m), >0
0x002D	DWORD	The driver does not log in to report the distance interval, the unit is meters (m), > 0
0x002E	DWORD	Report distance interval when sleeping, the unit is meters (m), > 0
0x002F	DWORD	Report distance interval during emergency alarm, the unit is meters (m), > 0
0x0030	DWORD	Inflection point supplementary pass angle, <180
0x0031	WORD	The radius of the electronic fence (the illegal displacement threshold), in meters
0x00032-0x003F		Reserve
0x0040	STRING	Monitoring platform phone number
0x0041	STRING	Reset phone number, you can use this phone number to call the terminal to reset the terminal
0x0042	STRING	Factory reset phone number, you can use this phone number to call the terminal to restore the factory settings
0x0043	STRING	Monitoring Platform SMS Phone Number
0x0044	STRING	Receiving terminal SMS text alarm number
0x0045	DWORD	Terminal phone answering strategy, 0: automatic answering; 1: automatic answering when ACC is ON, manual answering when it is OFF
0x0046	DWORD	The longest call time each time, in seconds (s) , 0 is not allowed to call, 0xFFFFFFFF is not limited
0x0047	DWORD	The longest talk time in the current month, in seconds (s) , 0 is not allowed to call, 0xFFFFFFFF is not limited
0x0048	STRING	Monitor phone number
0x0049	STRING	Supervision platform privileged SMS number
0x004A-0x004F		Reserve
0x0050	DWORD	Alarm mask word, corresponding to the alarm flag in the location information report message, if the corresponding bit is 1, the corresponding alarm is masked
0x0051	DWORD	Alarm sending text SMS switch, corresponding to the alarm flag in the position information report message, if the corresponding bit is 1, the text SMS will be sent when the corresponding alarm occurs
0x0052	DWORD	Alarm shooting switch, corresponding to the alarm flag in the position information report message, the corresponding bit is 1, the camera will shoot when the corresponding alarm
0x0053	DWORD	The alarm shooting storage flag corresponds to the alarm flag in the location information report message. If the corresponding bit is 1, the photos taken during the corresponding alarm will be stored, otherwise, they will be uploaded in real time.
0x0054	DWORD	The key flag corresponds to the alarm flag in the location information report message. If the corresponding bit is 1, the corresponding alarm is a key alarm.

parameter ID	type of data	description and requirements
0x0055	DWORD	Maximum speed in kilometers per hour (km/h)
0x0056	DWORD	Overspeed duration, in seconds (s)
0x0057	DWORD	Continuous driving time threshold, in seconds (s)
0x0058	DWORD	The cumulative driving time threshold of the day, in seconds (s)
0x0059	DWORD	Minimum rest time, in seconds (s)
0x005A	DWORD	Maximum parking time, in seconds (s)
0x005B	WORD	Overspeed alarm warning difference, the unit is 1/10Km/h
0x005C	WORD	Fatigue driving warning difference, the unit is second (s), >0
0x005D	WORD	Collision alarm parameter settings: b7-b0: Collision time, unit 4ms; b15-b8: Collision acceleration, the unit is 0.1g, the setting range is: 0-79, the default is 10.
0x005E	WORD	Rollover alarm parameter settings: Rollover angle, the unit is 1 degree, the default is 30 degrees.
0x005F-0x0063		Reserve
0x0064	DWORD	Timing photo control, see Table 13
0x0065	DWORD	Fixed distance photo control, see Table 14
0x0066-0x006F		Reserve
0x0070	DWORD	Image/video quality, 1-10, 1 is best
0x0071	DWORD	Brightness, 0-255
0x0072	DWORD	Contrast, 0-127
0x0073	DWORD	Saturation, 0-127
0x0074	DWORD	Chroma, 0-255
0x0075-0x007F		
0x0080	DWORD	Vehicle odometer reading, 1/10km
0x0081	WORD	The ID of the province where the vehicle is located
0x0082	WORD	ID of the city where the vehicle is located
0x0083	STRING	Motor vehicle license plate issued by public security traffic management department
0x0084	BYTE	License plate color, according to 5.4.12 of JT/T415-2006

parameter ID	type of data	description and requirements
0x0090	BYTE	GNSS positioning mode, defined as follows: bit0, 0: disable GPS positioning, 1: enable GPS positioning; bit1, 0: disable Beidou positioning, 1: enable Beidou positioning; bit2, 0: disable GLONASS positioning, 1: enable GLONASS positioning; bit3, 0: disable Galileo positioning, 1: Enable Galileo positioning.
0x0091	BYTE	GNSS baud rate, defined as follows: 0x00: 4800; 0x01: 9600; 0x02: 19200; 0x03: 38400; 0x04: 57600; 0x05: 115200.
0x0092	BYTE	The detailed positioning data output frequency of the GNSS module is defined as follows: 0x00: 500ms; 0x01: 1000ms (default value); 0x02: 2000ms; 0x03: 3000ms; 0x04: 4000ms.
0x0093	DWORD	The frequency of GNSS module detailed positioning data collection, the unit is second, the default is 1.
0x0094	BYTE	GNSS module detailed positioning data upload method: 0x00, local storage, do not upload (default); 0x01, upload by time interval; 0x02, upload by distance interval; 0x0B, upload according to the cumulative time, and automatically stop uploading when the transmission time is reached; 0x0C, upload according to the cumulative distance, and automatically stop uploading when the distance is reached; 0x0D, upload according to the cumulative number, and automatically stop uploading when the number of uploads is reached.
0x0095	DWORD	GNSS module detailed positioning data upload settings: When the upload method is 0x01, the unit is seconds; When the upload method is 0x02, the unit is meters; When the upload method is 0x0B, the unit is seconds; When the upload method is 0x0C, the unit is meters; When the upload method is 0x0D, the unit is bar.
0x0100	DWORD	CAN bus channel 1 acquisition time interval (ms), 0 means no acquisition
0x0101	WORD	CAN bus channel 1 upload time interval (s), 0 means no upload
0x0102	DWORD	CAN bus channel 2 acquisition time interval (ms), 0 means no acquisition
0x0103	WORD	CAN bus channel 2 upload time interval (s), 0 means no upload
0x0110	BYTE[8]	CAN bus ID separate acquisition settings: bit63-bit32 indicates the ID collection time interval (ms), 0 indicates no collection; bit31 indicates the CAN channel number, 0: CAN1, 1: CAN2; bit30 indicates the frame type, 0: standard frame, 1: extended frame; bit29 represents the data acquisition mode, 0: raw data, 1: the calculated value of the acquisition interval; bit28-bit0 represents the CAN bus ID.
0x0111-0x01FF	BYTE[8]	Separate acquisition settings for other CAN bus IDs

parameter ID	type of data	description and requirements
0xF000-0xFFFF		Custom

surface 13 Timing photo control bit definition

bit	definition	description and requirements
0	Camera channel 1 timing photo switch mark	0: not allowed; 1: allowed
1	Camera channel 2 timing photo switch mark	0: not allowed; 1: allowed
2	Camera channel 3 timing photo switch mark	0: not allowed; 1: allowed
3	Camera channel 4 timing photo switch mark	0: not allowed; 1: allowed
4	Camera channel 5 timing photo switch mark	0: not allowed; 1: allowed
5-7	Reserve	
8	Camera channel 1 timing photo storage mark	0: Store; 1: Upload
9	Camera channel 2 timing photo storage mark	0: Store; 1: Upload
10	Camera channel 3 timing photo storage mark	0: Store; 1: Upload
11	Camera channel 4 timing photo storage mark	0: Store; 1: Upload
12	Camera channel 5 timing photo storage mark	0: Store; 1: Upload
13-15	Reserve	
16	Timing time unit	0: seconds, when the value is less than 5 seconds, the terminal will process it as 5 seconds; 1: minutes.
17-31	time interval	Execute after receiving parameter settings or restarting

surface 14 Definition of fixed-distance camera control bits

bit	definition	description and requirements
0	Camera channel 1 fixed-distance camera switch mark	0: not allowed; 1: allowed
1	Camera channel 2 fixed distance camera switch mark	0: not allowed; 1: allowed
2	Camera channel 3 fixed distance camera switch mark	0: not allowed; 1: allowed
3	Camera channel 4 fixed distance camera switch mark	0: not allowed; 1: allowed
4	Camera channel 5 fixed distance camera switch mark	0: not allowed; 1: allowed
5-7	Reserve	
8	Camera channel 1 fixed-distance photo storage mark	0: Store; 1: Upload
9	Camera channel 2 fixed-distance photo storage mark	0: Store; 1: Upload

10	Camera channel 3 fixed-distance photo storage mark	0: Store; 1: Upload
11	Camera channel 4 fixed-distance photo storage mark	0: Store; 1: Upload
12	Camera channel 5 fixed-distance photo storage mark	0: Store; 1: Upload
13-15	Reserve	
16	distance unit	0: meters, when the value is less than 100 meters, the terminal will be treated as 100 meters; 1: kilometers.
17-31	fixed distance interval	Execute after receiving parameter settings or restarting

8.10 Query terminal parameters

information ID:0x8104. The message body of

query terminal parameters is empty.

8.11 Query the specified terminal parameters

Message ID: 0x8106.

See Table 15 for the data format of the message body for querying the specified terminal parameters, and the terminal responds with the 0x0104 command.

surface 15 Query the data format of the message body of the specified terminal parameter

start byte	field	type of data	description and requirements
0	Total number of parameters	BYTE	The total number of parameters is n
1	List of parameter IDs	BYTE[4*n]	The parameters are arranged in order, such as "parameter ID1 parameter ID2...parameter IDn".

8.12 Query terminal parameter response

Message ID: 0x0104.

See Table 16 for the body data format of the query terminal parameter response message.

surface 16Query terminal parameter response message body data format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The serial number of the corresponding terminal parameter query message
2	number of response parameters	BYTE	
3	parameter list		The format and definition of parameter items are shown in Table 10

8.13 Terminal Control

Message ID: 0x8105.

The data format of the terminal control message body is shown in Table 17.

surface 17 Terminal Control Message Body Data Format

start byte	field	type of data	description and requirements
0	Command word	BYTE	The description of the terminal control command words is shown in Table 18
1	Command parameters	STRING	The command parameter format is described in the following description. Each field uses Separated by half-width ";", each STRING field is first processed by GBK encoding and then formed into a message

surface 18 Terminal control command word description

Command word	Command parameters	description and requirements
1	See Table 19 for the command parameter format	Wireless upgrades. Parameters are separated by semicolons. The instructions are as follows: "URL address; dial point Name; Dial-up User Name; Dial-up Password; Address; TCP Port; UDP Port; Manufacturer ID; Hardware Version; Firmware Version;
2	See Table 19 for the command parameter format	The control terminal connects to the specified server. Parameters are separated by semicolons. The control instructions are as follows: "connection control; supervision platform authentication code; dial-up point name; dial-up user name; dial-up password; address; TCP port; UDP port; time limit for connecting to the specified server" , if a parameter has no value, then Empty, if the connection control value is 1, there will be no subsequent parameters
3	none	Terminal shutdown
4	none	terminal reset
5	none	Terminal reset to factory settings
6	none	Turn off data communication
7	none	Turn off all wireless communications

surface 19 Command parameter format

field	type of data	description and requirements
connection control	BYTE	0: Switch to the designated monitoring platform server. After connecting to the server, it will enter the emergency state. In this state, only the monitoring platform that issued the control command can send control commands including short messages; 1: Switch back to the original default monitoring platform server and return to normal.
dial point name	STRING	Generally it is the server APN, the wireless communication dial-up access point, if the network standard is CDMA, the value Dial up numbers for PPP connections
Dial-up username	STRING	Server wireless communication dial-up username
dial password	STRING	Server wireless communication dial-up password
address	STRING	Server address, IP or domain name
TCP port	WORD	Server TCP port
UDP port	WORD	Server UDP port

Manufacturer ID	BYTE[5]	Terminal Manufacturer Code
Regulatory platform authentication code	STRING	The authentication code issued by the supervision platform is only used for authentication after the terminal is connected to the supervision platform. The terminal is connected back to the original monitoring platform and the original authentication code is used.
hardware version	STRING	The hardware version number of the terminal, determined by the manufacturer
Firmware version	STRING	The firmware version number of the terminal, which is determined by the manufacturer
URL address	STRING	full URL address
Connect to the specified service timer	WORD	Unit: minutes (min), a value other than 0 means that the terminal should connect back to the original address before the validity period expires after the terminal receives the instruction to upgrade or connect to the designated server. If the value is 0, it means that the specified server is always connected

8.14 Querying Terminal Properties

information ID:0x8107. The message body of the query terminal attribute is empty.

8.15 Query terminal attribute response

Message ID: 0x0107.

See Table 20 for the data format of the message body of the query terminal attribute response message.

surface 20 Query terminal attribute response message body data format

start byte	field	type of data	description and requirements
0	terminal type	WORD	bit0, 0: not applicable to passenger vehicles, 1: applicable to passenger vehicles; bit1, 0: not applicable to dangerous goods vehicles, 1: applicable to dangerous goods vehicles; bit2, 0: not applicable to ordinary freight vehicles, 1: applicable to ordinary freight vehicles bit3, 0: Not suitable for rental vehicles, 1: Suitable for rental vehicles; bit6, 0: DVR is not supported, 1: DVR is supported; bit7, 0: All-in-one machine, 1: Split machine.
2	Manufacturer ID	BYTE[5]	5 bytes, terminal manufacturer code.
7	Terminal model	BYTE[20]	20 bytes, the terminal model is defined by the manufacturer, and "0X00" is added when the number of digits is insufficient.
27	Terminal ID	BYTE[7]	7 bytes, consisting of uppercase letters and numbers, the terminal ID is defined by the manufacturer, if the number of digits is insufficient, "0X00" will be added afterward.
42	Terminal SIM card ICCID	BCD[10]	Terminal SIM card ICCID number
52	Terminal hardware version number length	BYTE	n
53	Terminal hardware version number	STRING	
53+n	Terminal firmware version number length	BYTE	m
54+n	Terminal firmware version number	STRING	

54+n+m	GNSS module properties	BYTE	bit0, 0: GPS positioning is not supported, 1: GPS positioning is supported; bit1, 0: Beidou positioning is not supported, 1: Beidou positioning is supported; bit2, 0: GLONASS positioning is not supported, 1: GLONASS positioning is supported bit3, 0: No support Galileo positioning, 1: Support Galileo positioning ; .
55+n+m	Communication Module Properties	BYTE	bit0, 0: do not support GPRS communication, 1: support GPRS communication; bit1, 0: do not support CDMA communication, 1: support CDMA communication; bit2, 0: do not support TD-SCDMA communication, 1: support TD-SCDMA communication bit3, 0: Does not support WCDMA communication, 1: Supports WCDMA communication; bit4, 0: Does not support CDMA2000 communication, 1: Supports CDMA2000 communication bit5, 0: Does not support TD-LTE communication, 1: Supports TD-LTE communication; bit7, 0: No other communication methods are supported, 1: Other communication methods are supported ; . .

8.16 Issue terminal upgrade package

Message ID: 0x8108.

See Table 21 for the data format of the message body of the delivered terminal upgrade package. Use the generic reply to the command terminal to confirm whether the upgrade package data is received correctly.

surface twenty one The data format of the message body of the terminal upgrade package delivered

start byte	field	type of data	description and requirements
0	upgrade type	BYTE	0: Terminal, 12: IC card reader for road transport permit, 52: Beidou satellite positioning module
1	Manufacturer ID	BYTE[5]	Manufacturer number
6	version number length	BYTE	n
7	version number	STRING	
7+n	Upgrade packet length	DWORD	The unit is BYTE
11+n	upgrade package		

8.17 Notification of terminal upgrade result

Message ID: 0x0108.

The terminal uses this command to notify the monitoring center after the upgrade is completed and reconnected. See Table 22 for the data format of the terminal upgrade result notification message body.

surface twenty two Terminal upgrade result notification message body data format

start byte	field	type of data	description and requirements
0	upgrade type	BYTE	0: Terminal, 12: IC card reader for road transport permit, 52: Beidou satellite positioning module
1	Upgrade result	BYTE	0: success, 1: failure, 2: cancel

8.18 Location information reporting

Message ID: 0x0200.

The location information report message body consists of a list of location basic information and location additional information items. The message structure diagram is shown in Figure 3.

Show:

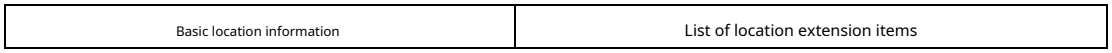

Figure 3 Location report message structure diagram

The list of location additional information items is composed of each location additional information item, or not, according to the length field in the message header. Certainly.

See Table 23 for the data format of the basic location information.

surface twenty three Location Basic Information Data Format

start byte	field	type of data	description and requirements
0	alarm sign	DWORD	The definition of the alarm flag is shown in Table 24
4	state	DWORD	Status bits are defined in Table 25
8	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
12	longitude	DWORD	Longitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
16	Elevation	WORD	Altitude, in meters (m)
18	speed	WORD	1/10km/h
20	direction	WORD	0-359, true north is 0, clockwise
twenty one	time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time, the time involved in this standard is in this time zone)

surface twenty fourDefinition of alarm flags

bit	definition	Handling instructions
0	1: Emergency alarm, trigger after touching the alarm switch	Cleared after receiving response
1	1: Overspeed alarm	The flag is maintained until the alarm condition is released
2	1: Fatigue driving	The flag is maintained until the alarm condition is released
3	1: Danger warning	Cleared after receiving response
4	1: GNSS module failure	The flag is maintained until the alarm condition is released
5	1: GNSS antenna not connected or cut off	The flag is maintained until the alarm condition is released
6	1: GNSS antenna short circuit	The flag is maintained until the alarm condition is released
7	1: Undervoltage of the terminal main power supply	The flag is maintained until the alarm condition is released
8	1: The main power supply of the terminal is powered off	The flag is maintained until the alarm condition is released

bit	definition	Handling instructions
9	1: Terminal LCD or display failure	The flag is maintained until the alarm condition is released
10	1: TTS module failure	The flag is maintained until the alarm condition is released
11	1: Camera failure	The flag is maintained until the alarm condition is released
12	1: The IC card module of the road transport certificate is faulty	The flag is maintained until the alarm condition is released
13	1: Overspeed warning	The flag is maintained until the alarm condition is released
14	1: Fatigue driving warning	The flag is maintained until the alarm condition is released
15-17	Reserve	
18	1: Cumulative driving overtime on the day	The flag is maintained until the alarm condition is released
19	1: Overtime parking	The flag is maintained until the alarm condition is released
20	1: In and out of the area	Cleared after receiving response
twenty one	1: In and out route	Cleared after receiving response
twenty two	1: Insufficient/too long driving time on the road section	Cleared after receiving response
twenty three	1: Route deviation alarm	The flag is maintained until the alarm condition is released
twenty four	1: Vehicle VSS failure	The flag is maintained until the alarm condition is released
25	1: The vehicle oil level is abnormal	The flag is maintained until the alarm condition is released
26	1: Vehicle stolen (via vehicle immobilizer)	The flag is maintained until the alarm condition is released
27	1: Illegal ignition of the vehicle	Cleared after receiving response
28	1: Illegal displacement of the vehicle	Cleared after receiving response
29	1: Collision warning	The flag is maintained until the alarm condition is released
30	1: Rollover warning	The flag is maintained until the alarm condition is released
31	1: Illegal door opening alarm (when the terminal does not set the area, no Judging to open the door illegally)	Cleared after receiving response

Note: The location information must be reported immediately when an alarm or warning occurs.

surface 25 Status Bit Definition

bit	state
0	0: ACC off; 1: ACC on
1	0: not positioned; 1: positioned
2	0: north latitude; 1: south latitude

twenty three

bit	state
3	0: East longitude; 1: West longitude
4	0: Operation status; 1: Out of service status
5	0: The latitude and longitude are not encrypted by the security plugin; 1: The latitude and longitude have been encrypted by the security plugin
6-7	Reserve
8-9	00: Empty; 01: Half-loaded; 10: Reserved; 11: Full-load (It can be used to indicate the empty and full load status of passenger cars, heavy vehicles and trucks, manual input or sensor acquisition)
10	0: The vehicle oil circuit is normal; 1: The vehicle oil circuit is disconnected
11	0: The vehicle circuit is normal; 1: The vehicle circuit is disconnected
12	0: Door unlocked; 1: Door locked
13	0: Door 1 closed; 1: Door 1 open (front door)
14	0: Door 2 closed; 1: Door 2 open (middle door)
15	0: Door 3 closed; 1: Door 3 open (back door)
16	0: Door 4 closed; 1: Door 4 open (driver's door)
17	0: Door 5 closed; 1: Door 5 open (custom)
18	0: GPS satellites are not used for positioning; 1: GPS satellites are used for positioning
19	0: Not using Beidou satellites for positioning; 1: Using Beidou satellites for positioning
20	0: GLONASS satellites are not used for positioning; 1: GLONASS satellites are used for positioning
twenty one	0: Do not use Galileo satellites for positioning; 1: Use Galileo satellites for positioning
22-31	Reserve

Note: If the status changes, the location information must be reported immediately

The format of the location additional information item is shown in the table 26.

surface 26 Location extension item format

field	type of data	description and requirements
Additional information ID	BYTE	1-255
Additional information length	BYTE	
Additional Information		Additional information is defined in Table 27

surface 27 Additional Information Definition

Additional information ID	Additional information length	description and requirements
0x01	4	Mileage, DWORD, 1/10km, corresponding to the reading on the odometer
0x02	2	Fuel quantity, WORD, 1/10L, corresponding to the reading of the fuel gauge on the vehicle
0x03	2	The speed obtained by the driving record function, WORD, 1/10km/h
0x04	2	The ID of the alarm event that needs to be manually confirmed, WORD, counts from 1
0x05-0x10		Reserve
0x11	1 or 5	See Table 28 for additional information on overspeed alarms
0x12	6	See Table 29 for additional information on entry and exit zone/route alarms
0x13	7	See Table 30 for additional information on the warning of insufficient/too long driving time on the road section
0x14-0x24		Reserve
0x25	4	Extended vehicle signal status bits, see Table 31 for definitions
0x2A	2	IO status bits, see Table 32 for definitions
0x2B	4	Analog, bit0-15, AD0; bit16-31, AD1.
0x30	1	BYTE, wireless communication network signal strength
0x31	1	BYTE, the number of GNSS positioning satellites
0xE0	Follow-up message length	Subsequent custom message length
0xE1-0xFF		custom area

surface 28 Overspeed alarm additional information message body data format

start byte	field	type of data	description and requirements
0	Location type	BYTE	0: no specific location; 1: circular area; 2: Rectangular area; 3: polygon area; 4: Road Section
1	Area or segment ID	DWORD	If the location type is 0, this field is absent

surface 29 Entry and exit area/route alarm additional information message body data format

start byte	field	type of data	description and requirements
0	Location type	BYTE	1: circular area; 2: Rectangular area; 3: polygon area; 4: Route
1	Area or Line ID	DWORD	
5	direction	BYTE	0: enter; 1: out

surface 30 Route travel time is insufficient/too long alarm additional information message body data format

start byte	field	type of data	description and requirements

0	Segment ID	DWORD	
4	Road segment travel time	WORD	The unit is second (s)
6	result	BYTE	0: not enough; 1: too long

surface 31 Extended Vehicle Signal Status Bits

bit	definition
0	1: low beam signal
1	1: High beam signal
2	1: Right turn signal signal
3	1: Left turn signal signal
4	1: Brake signal
5	1: Reverse gear signal
6	1: Fog light signal
7	1: Position light
8	1: Speaker signal
9	1: Air conditioner status
10	1: Neutral signal
11	1: The retarder works
12	1: ABS work
13	1: The heater works
14	1: clutch status
15-31	Reserve

surface 32IO status bit

bit	definition
0	1: Deep sleep state
1	1: Sleep state
2-15	Reserve

8.19 Location information query

information ID:0x8201.

The location information query message body is empty.

8.20 Location information query response

Message ID: 0x0201.

The data format of the location information query response message body is shown in Table 33.

surface 33 Location information query response message body data format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The serial number of the corresponding location information query message
2	location information report		For location information reporting, see 8.12

8.21 Temporary position tracking control

Message ID: 0x8202.

See Table 34 for the data format of the temporary location tracking control message body.

surface 34 Temporary location tracking control message body data format

start byte	field	type of data	description and requirements
0	time interval	WORD	The unit is seconds (s), 0 stops tracking. Stop tracking without a successor field
2	Location Tracking Validity Period	DWORD	The unit is seconds (s). After receiving the location tracking control message, the terminal sends the , message according to the time interval in the message before the expiration time of the validity period. send position report

8.22 Manual acknowledgment of alarm messages

Message ID: 0x8203

The data format of manual confirmation alarm message body is shown in the table 35.

surface 35 Manual confirmation alarm message data format

start byte	field	type of data	instruction
0	Alarm message serial number	WORD	Serial number of alarm messages that need manual confirmation, 0 means all messages of this alarm type
2	Manual acknowledgment of alarm types	DWORD	See Table 36 for definitions

surface 36 Manual acknowledgment of alarm type definitions

bit	definition
0	1: Confirm emergency alarm;
1-2	Reserve
3	1: Confirm the danger warning;

4-19	Reserve
20	1: Confirm the alarm in and out of the area;
twenty one	1: Confirm the incoming and outgoing route alarm;
twenty two	1: Confirm that the driving time of the road section is insufficient/process alarm;
23-26	Reserve
27	1: Confirm the illegal ignition of the vehicle and alarm;
28	1: Confirm the illegal displacement of the vehicle and alarm;
29-31	Reserve

8.23 Text message delivery

Message ID: 0x8300.

See Table 37 for the data format of the text message delivery message body.

surface 37 Text message delivery message body data format

start byte	field	type of data	description and requirements
0	logo	BYTE	The meaning of the text information flag is shown in Table 38
1	text message	STRING	Up to 1024 bytes, GBK encoded

surface 38 The meaning of the text information flag

bit	logo
0	1: Emergency
1	Reserve
2	1: Display on the terminal monitor
3	1: Terminal TTS broadcast and read
4	1: Advertising screen display
5	0: center navigation information, 1: CAN fault code information
6-7	Reserve

8.24 Event Settings

Message ID: 0x8301.

The event setting message body data format is shown in Table 39.

surface 39 Event settings message body data format

start byte	field	type of data	description and requirements

0	set type	BYTE	0: Delete all existing events of the terminal, without subsequent bytes after the command; 1: Update events; 2: Append event; 3: Modify the event; 4: Delete certain events, after which there is no need to include event content in event items
1	set total	BYTE	
2	Event item list		The data format of the event item composition is shown in Table 40

surface 40 Event item composition data format

start byte	field	type of data	description and requirements
0	Event ID	BYTE	If the terminal already has an event with the same ID, it will be overwritten
1	Event content length	BYTE	Subsequent event content field byte length
2	event content	STRING	Event content, GBK encoded

8.25 Incident reporting

Message ID: 0x0301.

The event report message body data format is shown in Table 41.

surface 41 Event report message body data format

start byte	field	type of data	description and requirements
0	Event ID	BYTE	

8.26 Issue of questions

Message ID: 0x8302.

The data format of the message body for question delivery is shown in Table 42.

surface 42 Question delivery message body data format

start byte	field	type of data	description and requirements
0	logo	BYTE	For the definition of the question issuing flag, see Table 43
1	Question content length	BYTE	question field byte length
2	problem	STRING	Question text, GBK encoded, length N
2+N	Candidate answer list		The composition of the candidate answer message is shown in Table 44

surface 43 Question delivery flag definition

bit	logo
0	1: Emergency

1	Reserve
2	Reserve
3	1: Terminal TTS broadcast and read
4	1: Advertising screen display
5-7	Reserve

surface 44 Question and issue candidate answer message composition

start byte	field	type of data	description and requirements
0	Answer ID	BYTE	
1	answer content length	WORD	Answer content field byte length
3	answer content	STRING	Answer content, GBK encoded

8.27 Question and answer

Message ID: 0x0302.

See Table 45 for the data format of the question-response message body.

surface 45 Question response message body data format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The serial number of the message issued by the corresponding question
2	Answer ID	BYTE	The answer ID attached to the question distribution

8.28 Information on demand menu setting

Message ID: 0x8303.

See Table 46 for the message body data format set in the information on demand menu.

surface 46 Information on demand menu to set the message body data format

start byte	field	type of data	description and requirements
0	set type	BYTE	0: delete all terminal information items; 1: Update menu; 2: Additional menu; 3: Modify the menu
1	Total number of information items	BYTE	
2	list of information items		Information on demand information item composition data format see Table 47

surface 47 Information on demand information item composition data format

start byte	field	type of data	description and requirements

0	type of information	BYTE	If the terminal already has an information item of the same type, it will be overwritten
1	message name length	WORD	Message name field byte length
3	message name	STRING	Processed by GBK encoding

8.29 Information on demand/cancellation

Message ID: 0x0303.

See Table 48 for the message body data format for message on-demand/cancellation.

surface 48 Message on-demand/cancel message body data format

start byte	field	type of data	description and requirements
0	type of information	BYTE	
1	On-demand/cancel flag	BYTE	0: Cancel; 1: On-demand

8.30 Information Services

Message ID: 0x8304.

See Table 49 for the information service message body data format.

surface 49 Information service message body data format

start byte	field	type of data	description and requirements
0	type of information	BYTE	
1	message length	WORD	
3	information	STRING	GBK encoded

8.31 Call back

Message ID: 0x8400.

See Table 50 for the data format of the phone callback message body.

surface 50 Phone Callback Message Body Data Format

start byte	field	type of data	description and requirements
0	logo	BYTE	0: Normal call; 1: Monitor
1	telephone number	STRING	Up to 20 bytes

8.32 Setting up the phonebook

Message ID: 0x8401.

See Table 51 for setting the phonebook message body data format.

surface 51 Set the phonebook message body data format

start byte	field	type of data	description and requirements

0	set type	BYTE	0: delete all stored contacts on the terminal; 1: Indicates to update the phone book (delete all contacts in the terminal and append the contacts in the message); 2: Indicates additional phone book; 3: Indicates to modify the phone book (indexed by contacts)
1	total number of contacts	BYTE	
2	Contact item		See Table 52 for the data format of the phonebook contact item

surface 52 Phonebook Contact Item Data Format

start byte	field	type of data	description and requirements
0	logo	BYTE	1: Incoming; 2: Outgoing; 3: Incoming/Outgoing
1	number length	BYTE	
2	telephone number	STRING	length n
2+n	Contact length	BYTE	
3+n	contact	STRING	GBK encoded

8.33 Vehicle Control

Message ID: 0x8500

The data format of the vehicle control message body is shown in Table 53.

surface 53 Vehicle Control Message Body Data Format

start byte	field	type of data	description and requirements
0	control sign	BYTE	The data format of the control instruction flag bit is shown in Table 54

surface 54 Control instruction flag bit data format

bit	logo
0	0: Door unlocked; 1: Door locked
1-7	Reserve

8.34 Vehicle control response

Message ID: 0x0500.

The data format of the vehicle control response message body is shown in Table 55.

surface 55 Vehicle Control Response Message Body Data Format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The serial number of the corresponding vehicle control message
2	Location information report message body		Determine whether the control is successful or not according to the corresponding status bit

8.35 Setting the circular area

Message ID: 0x8600.

See Table 56 for setting the data format of the circular area message body.

Note: This message protocol supports the periodic time range. If you want to limit the daily 8:30-18:00, the start/end time is set to: 00-00-00-08-30-00/00-00-00-18 -00-00, others and so on.

surface 56 Set the data format of the circular area message body

start byte	field	type of data	description and requirements
0	set properties	BYTE	0: update area; 1: Additional area; 2: Modify the area
1	total area	BYTE	
2	area item		The data format of the area item content of the circular area is shown in Table 57

surface 57 Area item content data format for circular area

start byte	field	type of data	description and requirements
0	Area ID	DWORD	
4	Regional properties	WORD	See Table 58 for the definition of area attributes
6	center point latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
10	center point longitude	DWORD	Longitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
14	radius	DWORD	The unit is meters (m), and the road segment is from the inflection point to the next inflection point
18	start time	BCD[6]	YY-MM-DD-hh-mm-ss, if the area attribute 0 bit is 0, there is no such field
twenty four	End Time	BCD[6]	YY-MM-DD-hh-mm-ss, if the area attribute 0 bit is 0, there is no such field
30	top speed	WORD	Km/h, if the area attribute 1 bit is 0, there is no field
32	Overspeed Duration	BYTE	The unit is second (s)(similar expression, same as before), if the area attribute 1 bit is 0, there is no field

surface 58 Area property definitions for areas

bit	logo
0	1: According to time
1	1: Speed limit
2	1: Alarm to the driver when entering the area
3	1: Enter the area and send an alarm to the platform
4	1: Alarm to the driver when leaving the area

5	1: Send an alarm to the platform when leaving the area
6	0: north latitude; 1: south latitude
7	0: East longitude; 1: West longitude
8	0: Allow opening; 1: Prohibit opening
9-13	Reserve
14	0: Turn on the communication module when entering the area; 1: Turn off the communication module when entering the area
15	0: Do not collect GNSS detailed positioning data when entering the area; 1: Collect GNSS detailed positioning data when entering the area

8.36 Deleting circular regions

Message ID: 0x8601.

See Table 59 for the data format of the message body for deleting the circular area.

surface 59 Delete circular area message body data format

start byte	field	type of data	description and requirements
0	number of regions	BYTE	The number of areas included in this message, no more than 125, more than 125 are recommended to use multiple messages, 0 is to delete all circular areas
1	Area ID1	DWORD	
	...	DWORD	
	Area IDn	DWORD	

8.37 Setting the rectangle area

Message ID: 0x8602.

See Table 60 for setting the format of the message body data in the rectangular area.

surface 60 Set the data format of the message body in the rectangular area

start byte	field	type of data	description and requirements
0	set properties	BYTE	0: update area; 1: Additional area; 2 : Modify the area
1	total area	BYTE	
2	area item		The area item data format of the rectangular area is shown in Table 61

surface 61 Area item data format for rectangular area

start byte	field	type of data	description and requirements
0	Area ID	DWORD	
4	Regional properties	WORD	See Table 58 for the definition of area attributes
6	Latitude of upper left point	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree

10	Longitude of upper left point	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
14	Bottom right latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
18	Longitude of lower right point	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
twenty two	start time	BCD[6]	Same as the time range setting in the circular area
28	End Time	BCD[6]	Same as the time range setting in the circular area
34	top speed	WORD	The unit is kilometers per hour (km/h) , if the area attribute 1 bit is 0, then does not have this field
36	Overspeed Duration	BYTE	The unit is second (s), if the area attribute 1 bit is 0, there is no such field

8.38 Delete rectangular area

Message ID: 0x8603.

See Table 62 for the data format of the message body of the deleted rectangular area.

surface 62 Delete rectangular area message body data format

start byte	field	type of data	description and requirements
0	number of regions	BYTE	The number of regions included in this message, no more than 125, more than 125 are recommended to use multiple messages, 0 is to delete all rectangular regions
1	Area ID1	DWORD	
	...	DWORD	
	Area IDn	DWORD	

8.39 Setting the polygon area

Message ID: 0x8604.

See Table 63 for setting the data format of the polygon area message body.

surface 63 Format polygon area message body data

start byte	field	type of data	description and requirements
0	Area ID	DWORD	
4	Regional properties	WORD	See Table 58 for the definition of area attributes
6	start time	BCD[6]	Same as the time range setting in the circular area
12	End Time	BCD[6]	Same as the time range setting in the circular area
18	top speed	WORD	The unit is kilometers per hour (km/h) , if the area attribute 1 bit is 0, then does not have this field
20	Overspeed Duration	BYTE	The unit is second (s), if the area attribute 1 bit is 0, there is no such field
twenty one	The total number of vertices in the area	WORD	
twenty three	vertex item		The vertex item data format of polygon area is shown in Table 64

surface 64 Vertex Item Data Format for Polygon Regions

start byte	field	type of data	description and requirements
0	Vertex Latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
4	Vertex Longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree

8.40 Deleting polygonal regions

Message ID: 0x8605.

See Table 65 for the data format of the deleted polygon area message body.

surface 65 Delete polygon area message body data format

start byte	field	type of data	description and requirements
0	number of regions	BYTE	The number of regions included in this message, no more than 125, more than 125 are recommended to use multiple messages, 0 is to delete all rectangular regions
1	Area ID1	DWORD	
	...	DWORD	
	Area IDn	DWORD	

8.41 Setting the route

Message ID: 0x8606.

See Table 66 for setting the route message body data format.

surface 66 Set route message body data format

start byte	field	type of data	description and requirements
0	route ID	DWORD	
4	route properties	WORD	Route attribute data format see Table 67
6	start time	BCD[6]	Same as the time range setting in the circular area
12	End Time	BCD[6]	Same as the time range setting in the circular area
18	Total number of inflection points of the route	WORD	
20	inflection point		See Table 68 for the data format of the route inflection point item

surface 67 Route attribute data format

bit	logo
0	1: According to time
1	Reserve

2	1: Incoming route alarm to the driver
3	1: The incoming route alarm is sent to the platform
4	1: Outbound route alarm to the driver
5	1: Send out route alarm to the platform
6-15	Reserve

surface 68 Route Inflection Point Item Data Format

start byte	field	type of data	description and requirements
0	Inflection point ID	DWORD	
4	Segment ID	DWORD	
8	Inflection point latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
12	Inflection point longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power to the nearest millionth of a degree
16	section width	BYTE	The unit is meters (m), and the road segment is from the inflection point to the next inflection point
17	Segment properties	BYTE	See Table 69 for the format of road segment attribute data
18	Road segment travel too long threshold	WORD	The unit is second (s), if the 0 bit of the road segment attribute is 0, there is no such field
20	road segment under travel threshold	WORD	The unit is second (s), if the 0 bit of the road segment attribute is 0, there is no such field
twenty two	Road section maximum speed	WORD	The unit is kilometers per hour (km/h), if the 1 bit of the road segment attribute is 0, there is no such field
twenty four	Duration of speeding on the road	BYTE	The unit is second (s), if the 1 bit of the road segment attribute is 0, there is no such field

surface 69 Road segment attribute data format

bit	logo
0	1: Travel time
1	1: Speed limit
2	0: north latitude; 1: south latitude
3	0: East longitude; 1: West longitude
4-7	Reserve

8.42 Delete route

Message ID: 0x8607.

See Table 70 for the delete route message body data format.

surface 70 Delete route message body data format

start byte	field	type of data	description and requirements

0	number of routes	BYTE	The number of areas included in this message, no more than 125, more than 125 are recommended to use multiple messages, 0 is to delete all routes
1	route ID1	DWORD	
	...	DWORD	
	route IDn	DWORD	

8.43 Driving record data collection command

Message ID: 0x8700.

See Table 71 for the data format of the command message body of the driving record data collection.

surface 71 Data format of data collection command message body of tachograph

start byte	field	type of data	description and requirements
0	Command word	BYTE	See the relevant requirements in GB/T 19056 for the list of command words
1	data block		See the relevant content in GB/T 19056 for the content format of the data block, including the complete data package required by GB/T 19056, which can be empty.

8.44 Upload of driving record data

Message ID: 0x0700.

See Table 72 for the data format of the message body for uploading the driving record data.

surface 72 Driving record data upload message body data format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The serial number of the corresponding driving record data collection command message
2	Command word	BYTE	The command word issued by the corresponding platform
3	data block		See the relevant content in GB/T 19056 for the content format of the data block, including the complete data package required by GB/T 19056.

8.45 Drive record parameter download command

Message ID: 0x8701.

See Table 73 for the data format of the command message body for downloading the driving record parameters.

surface 73 Data format of the data format of the command message body for downloading the parameters of the driving recorder

start byte	field	type of data	description and requirements
0	Command word	BYTE	See the relevant requirements in GB/T 19056 for the list of command words
1	data block		See the relevant content in GB/T 19056 for the content format of the data block, including the complete data package required by GB/T 19056.

8.46 Electronic Waybill Reporting

Message ID: 0x0701.

See Table 74 for the data format of the electronic waybill report message body.

surface 74 Electronic Waybill Reporting Message Body Data Format

start byte	field	type of data	description and requirements
0	Electronic waybill length	DWORD	
4	Electronic waybill content		Electronic Waybill Packet

8.47 Report Driver Identification Information Request

Message ID: 0x8702.

The message body of the request for reporting driver identity information is empty.

8.48 Collect and report driver identity information

Message ID: 0x0702.

This instruction is automatically triggered after the IC card of the terminal qualification certificate is inserted or pulled out. After receiving the 0x8702 command, use this command to reply. See Table 75 for the data format of the driver identity information collection and reporting message body.

surface 75 Data format of driver identity information report message body

start byte	field	type of data	description and requirements
0	state	BYTE	0x01: The IC card of the qualification certificate is inserted (the driver goes to work) 0x02: The IC card of the qualification certificate is pulled out (the driver gets off work)
1	time	BCD[6]	Card insertion/removal time, YY-MM-DD-hh-mm-ss; The following fields are valid and filled only when the status is 0x01.
7	IC card reading result	BYTE	0x00: IC card reading is successful; 0x01: Card reading failed because the card key authentication failed; 0x02: Card reading failed because the card was locked; 0x03: Card reading failed because the card was pulled out; 0x04: Card reading failed due to data verification error. The following fields are only valid when the ICC reading result is equal to 0x00.
8	Driver's name length	BYTE	n
9	driver name	STRING	driver name
9+n	Qualification certificate code	STRING	The length is 20 digits, if it is insufficient, 0x00 is added.
29+n	The length of the name of the issuing authority	BYTE	m
30+n	Issuing agency name	STRING	The name of the certificate-issuing institution
30+n+m	Certificate validity	BCD[4]	YYYYMMDD

8.49 Batch upload of positioning data

Message ID: 0x0704.

See the table for the batch upload data format of positioning data76.

surface 76 Positioning data batch upload data format

start byte	field	type of data	instruction
0	number of data items	WORD	The number of position report data items included, > 0
1	Location data type	BYTE	0: Batch report for normal position, 1: Supplementary report for blind area
2	location reporting data item		See Table 77 for definitions

surface 77 Location reporting data item data format

start byte	field	type of data	instruction
0	Location report data body length	WORD	position report data body length, n
2	Location reporting data body	BYTE[n]	For definition, see 8.12 Location information reporting

8.50 CAN bus data upload

Message ID: 0x0705.

CAN bus data upload data format see table78.

surface 78 CAN bus data upload data format

start byte	field	type of data	instruction
0	number of data items	WORD	The number of CAN bus data items included, >0
2	CAN bus data reception time	BCD[5]	Receive time of the first CAN bus data, hh-mm-ss-msms
8	CAN bus data item		See Table 79 for definitions

surface 79 CAN bus data item data format

start byte	field	type of data	instruction
0	CAN ID	BYTE[4]	bit31 represents the CAN channel number, 0: CAN1, 1: CAN2; bit30 represents the frame type, 0: standard frame, 1: extended frame; bit29 represents the data acquisition method, 0: raw data, 1: the average value of the acquisition interval; bit28-bit0 represent CAN bus ID.
4	CAN DATA	BYTE[8]	CAN data

8.51 Upload of multimedia event information

Message ID: 0x0800

See Table 80 for the upload data format of the multimedia event message.

surface 80 Multimedia event message upload message body data format

start byte	field	type of data	description and requirements
0	multimedia data ID	DWORD	> 0
4	Multimedia Type	BYTE	0: Image; 1: Audio; 2: Video;
5	multimedia format encoding	BYTE	0: JPEG; 1: TIF; 2: MP3; 3: WAV; 4: WMV; other reserved
6	event item code	BYTE	0: Command issued by the platform; 1: Timing action; 2: Robbery alarm triggered; 3: Collision rollover alarm triggered; 4: Door open to take pictures; 5: Door closed to take pictures; km to more than 20 km; 7: take photos at a fixed distance; other reservations
7	channel ID	BYTE	

8.52 Multimedia data upload

Message ID: 0x0801.

See Table 81 for the data format of the multimedia data upload message body.

surface 81 Multimedia data upload message body data format

start byte	field	type of data	description and requirements
0	Multimedia ID	DWORD	> 0
4	Multimedia Type	BYTE	0: Image; 1: Audio; 2: Video;
5	multimedia format encoding	BYTE	0: JPEG; 1: TIF; 2: MP3; 3: WAV; 4: WMV; other reserved
6	event item code	BYTE	0: Command issued by the platform; 1: Timed action; 2: Robbery alarm triggered; 3: Collision rollover alarm triggered; others reserved
7	channel ID	BYTE	
8	location information report (0x0200) message body	BYTE[28]	Location basic information data representing multimedia data
36	multimedia packet		

8.53 Multimedia data upload response

Message ID: 0x8800.

See Table 82 for the data format of the multimedia data upload response message body.

surface 82 Multimedia data upload response message body data format

start byte	field	type of data	description and requirements
0	Multimedia ID	DWORD	> 0, no subsequent fields if all packets are received
4	Total number of retransmitted packets	BYTE	n
5	List of retransmitted packet IDs	BYTE[2*n]	The sequence numbers of the retransmission packets are arranged in sequence, such as "packet ID1 packet ID2...packet IDn".

NOTE: The response to this message should use 0x0801 The message will retransmit the packet ID The sub-packets in the list are retransmitted once, which is exactly the same as the original sub-packet message.

8.54 Camera Immediate Shooting Command

Message ID: 0x8801.

See Table 83 for the data format of the camera immediate shooting command message body.

surface 83 The camera immediately shoots the command message body data format

start byte	field	type of data	description and requirements
0	channel ID	BYTE	> 0
1	shooting order	WORD	0 means stop shooting; 0xFFFF means video recording; other means the number of pictures taken
3	Photo interval/recording time	WORD	Seconds, 0 means taking pictures at the smallest interval or recording all the time
5	save sign	BYTE	1: save; 0: real-time upload
6	Resolution [a]	BYTE	0x01:320*240; 0x02:640*480; 0x03:800*600; 0x04:1024*768; 0x05:176*144;[Qcif]; 0x06:352*288;[Cif]; 0x07:704*288;[HALF D1]; 0x08:704*576;[D1];
7	Image/Video Quality	BYTE	1-10, 1 means the least quality loss, 10 means the most compression ratio
8	brightness	BYTE	0-255
9	Contrast	BYTE	0-127
10	saturation	BYTE	0-127
11	Chroma	BYTE	0-255
a If the terminal does not support the resolution required by the system, take the closest resolution to shoot and upload			

8.55 The camera immediately responds to the shooting command

Message ID: 0x0805.

See Table 84 for the body data format of the camera immediate shooting command response message body. This command is used to answer the camera immediate shooting command 0x8801 issued by the monitoring center.

surface 84 The camera immediately shoots command response data format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The message serial number corresponding to the immediate shooting command of the platform camera
2	result	BYTE	0: success; 1: failure; 2: channel not supported. The following fields are only valid when result=0.
3	Number of multimedia IDs	WORD	n, the number of successful multimedia shoots

4	Multimedia ID List	BYTE[4*n]	

8.56 Stored multimedia data retrieval

Message ID: 0x8802.

See Table 85 for the data format of the stored multimedia data retrieval message body.

Note: Set the start time/end time to 00-00-00-00-00-00 without pressing the time range.

surface 85 Storage Multimedia Data Retrieval Message Body Data Format

start byte	field	type of data	description and requirements
0	Multimedia Type	BYTE	0: Image; 1: Audio; 2: Video;
1	channel ID	BYTE	0 means to retrieve all channels of this media type;
2	event item code	BYTE	0: Command issued by the platform; 1: Timed action; 2: Robbery alarm triggered; 3: Collision rollover alarm triggered; others reserved
3	start time	BCD[6]	YY-MM-DD-hh-mm-ss
9	End Time	BCD[6]	YY-MM-DD-hh-mm-ss

8.57 Store Multimedia Data Retrieval Response

Message ID: 0x0802.

See Table 86 for the data format of the stored multimedia data retrieval response message body.

surface 86 Storage multimedia data retrieval response message body data format

start byte	field	type of data	description and requirements
0	Reply serial number	WORD	The serial number of the corresponding multimedia data retrieval message
2	Total number of multimedia data items	WORD	The total number of multimedia data items that meet the retrieval conditions
4	search term		See Table 87 for the data format of multimedia search items

surface 87 Multimedia Search Item Data Format

start byte	field	type of data	description and requirements
0	Multimedia ID	DWORD	> 0
4	Multimedia Type	BYTE	0: Image; 1: Audio; 2: Video
5	channel ID	BYTE	
6	event item code	BYTE	0: Command issued by the platform; 1: Timed action; 2: Robbery alarm triggered; 3: Collision rollover alarm triggered; others reserved
7	location information report (0x0200) message body	BYTE[28]	Location basic information data indicating the start time of shooting or recording

8.58 Store multimedia data upload command

Message ID: 0x8803

See Table 88 for the data format of the message body of the stored multimedia data upload command.

surface 88 Store multimedia data upload command message body data format

start byte	field	type of data	description and requirements
0	Multimedia Type	BYTE	0: Image; 1: Audio; 2: Video
1	channel ID	BYTE	
2	event item code	BYTE	0: Command issued by the platform; 1: Timed action; 2: Robbery alarm triggered; 3: Collision rollover alarm triggered; others reserved
3	start time	BCD[6]	YY-MM-DD-hh-mm-ss
9	End Time	BCD[6]	YY-MM-DD-hh-mm-ss
15	delete flag	BYTE	0: reserved; 1: deleted;

8.59 Recording start command

Message ID: 0x8804

The data format of the recording start command message body is shown in Table 89.

surface 89 Recording start command message body data format

start byte	field	type of data	description and requirements
0	record command	BYTE	0: stop recording; 0x01: start recording;
1	recording time	WORD	The unit is second (s), 0 means recording all the time
3	save sign	BYTE	0: real-time upload; 1: save
4	Audio sample rate	BYTE	0: 8K; 1: 11K; 2: 23K; 3: 32K; other reserved

8.60 Single Stored Multimedia Data Retrieval Upload Command

Message ID: 0x8805

See Table 90 for the message body data format of a single stored multimedia data retrieval and upload command.

surface 90 Single storage multimedia data retrieval upload command message body data format

start byte	field	type of data	description and requirements
0	Multimedia ID	DWORD	> 0
4	delete flag	BYTE	0: reserved; 1: deleted;

8.61 Data Downlink Transparent Transmission

Message ID: 0x8900.

See Table 91 for the data format of the downlink transparent transmission message body.

surface 91 Data format of downlink transparent transmission message body

start byte	field	type of data	description and requirements
0	Transparent message type	BYTE	See Table 93 for the definition of transparent message types
1	Transparent transmission of message content		

8.62 Data Uplink Transparent Transmission

Message ID: 0x0900.

See the data format of the data uplink transparent transmission message body.

surface 92 Data upstream transparent transmission message body data format

start byte	field	type of data	description and requirements
0	Transparent message type	BYTE	See Table 93 for the definition of transparent message types
1	Transparent transmission of message content		

surface 93 Transparent transmission message type definition table

Transparent message type	definition	description and requirements
GNSS module detailed positioning data	0x00	GNSS module detailed positioning data
Road Transport Permit IC Card Information	0x0B	The upload message of the IC card information of the road transport permit is 64Bytes, and the downlink message is 24Bytes. The time-out time for transparent transmission of road transport permit IC card authentication is 30s. After the timeout, do not retransmit.
Serial port 1 transparent transmission	0x41	Serial port 1 transparently transmits messages
Serial port 2 transparent transmission	0x42	Serial port 2 transparently transmits messages
User-defined transparent transmission	0xF0-0xFF	User-defined transparent message

8.63 Data compression report

Message ID: 0x0901.

See Table 94 for the data format of the data compression report message body.

surface 94 Data compression report message body data format

start byte	field	type of data	description and requirements
0	Compressed message length	DWORD	
4	compressed message body		The compressed message body is the message that needs to be compressed after the GZIP compression algorithm

8.64 Platform RSA public key

Message ID: 0x8A00.

The data format of the platform RSA public key message body is shown in Table 95.

surface 95 platform RSA Public key message body data format

start byte	field	type of data	description and requirements
0	e	DWORD	e in platform RSA public key {e,n}
4	n	BYTE[128]	n in RSA public key {e,n}

8.65 Terminal RSA public key

Message ID: 0x0A00.

See Table 96 for the data format of the terminal RSA public key message body.

surface 96 terminal RSA Public key message body data format

start byte	field	type of data	description and requirements
0	e	DWORD	e in terminal RSA public key {e,n}
4	n	BYTE[128]	n in RSA public key {e,n}

Appendix A

(normative appendix)

Vehicle terminal and external device communication protocol

A.1 equipment

A.1.1 host

The host shall comply with JT/T 794.

A.1.2 Slave

The slave includes various point-to-point serial communication peripherals, such as scheduling display, intelligent peripherals, fuel detection devices, Collision rollover detection device, etc.

A.2 Communication Protocol

A.2.1 Frame format definition

The frame format followed by all slave-master communications is shown in Table A.1.

Table A.1 Frame format

identification bit	check code	version number	Manufacturer number	Peripheral Type Number	Command type	User data	identification bit
1 byte	1 byte	2byte	2byte	1byte	1 byte	nbyte	1 byte

The contents of Table A.1 are explained as follows:

a) Identification bit: use 0x7e Indicates that if the check code, message header and message body appear 0x7e, then escaping processing is required, and the escaping rules are defined as follows:

0x7e <————> 0x7d followed by a 0x02;

0x7d <————> 0x7d followed by a 0x01;

The escape process is as follows:

When sending a message: message encapsulation -> calculate and fill the check code -> escape; when

receiving a message: escape and restore -> verify the check code -> parse the message;

Example 1:

Send a packet with the content of 0x30 0x7e 0x08 0x7d 0x55, then encapsulate as follows: 0x7e 0x30 0x7d 0x02 0x08 0x7d 0x01 0x55 0x7e;

b) Check code: the accumulated sum from the manufacturer number to the user data, and then take the accumulated lower 8 digits as the check code;

Example 2:

If the accumulated sum is 0x1388, the check code is 0x88;

c) Version number: identifies the version of the communication protocol;

d) Manufacturer number: the manufacturer code of the peripheral slave;

e) Peripheral type number: a unique type number corresponding to each peripheral, which is used for the peripheral interface driver of the host to distinguish the data sent by the peripheral; see Table A.2 for the peripheral type number;

f) Command type: the type of information that the peripheral device and the host carry out various data interaction, the command type is divided into two categories: general protocol and proprietary protocol: the general protocol mainly includes some basic, necessary, and common information between the slave and the host. Interaction type; Proprietary protocol defines the specific information interaction type between various peripherals and the host; the command type is shown in Table A.3;

g) User data: refers to the content customized by specific business functions other than the above parts in the data that the peripheral device interacts with the host;

h) The data of the communication frame adopts the big-endian representation.

Table A.2 Peripheral Type Number Table

Peripheral type	Numbering
Industry Information Terminal	0x01
Scheduling Display	0x02
car navigation display	0x03
Oil level detector	0x04
acceleration detector	0x05
burglar alarm	0x06
interface extender	0x07
load detector	0x08
Passenger flow detector	0x09
Universal sensor	0x0A
Road Transport Permit IC Card Reader	0x0B
customize	0xF0-0xFF

Table A.3 Command Type Table

agreement type	Type of business function	Command type
Peripheral Common Protocol	Power-on indication/response	0x01
	Link Probe/Reply	0x02
	Slave Power Control/Acknowledge	0x03
	Query slave version number information	0x04
	Slave self-test/response	0x05
	Slave firmware update/answer	0x06
	Reserve	0x07-0x3F
Dedicated protocol	Road transport certificate IC card authentication request/response	0x40

	Road transport license IC card reading result notification/response	0x41
	Card Pull Notification/Answer	0x42
	Active trigger to read IC card/answer	0x43
	Proprietary function business protocol for various slave peripherals	0x44-0xFF

A.2.2 Rules for adding peripheral protocols

The addition and modification of peripheral protocols should follow the following rules:

a) The sending and replying protocols of the same function use the same command type;

b) For peripherals with many command types, when adding new command types, try to use variable parameters to reduce Command type occupation.

A.3 General protocol description

A.3.1 Slave power-on indication

See Table A.4 for the power-on instructions of the slave.

Table A.4 Slave power-on instruction table

step	Command type	describe	User data	data direction
1	01H	Power-on indication response	none	down
2	01H	Power-on instructions	none	up

A.3.2 Peripheral Link Polling

See Table A.5 for peripheral link inquiry commands.

Table A.5 Peripheral Link Inquiry Command List

step	Command type	describe	User data	data direction
1	02H	link inquiry	link maintenance time The high-order byte is first, the low-order byte is after; the high-order byte is single The bit is the minute (min), and the unit of the low byte is the second (s); Recommended link inquiry time is 15s-30s; link timeout After that, the master will cancel the registration information of the slave	up
2	02H	link polling response	none	down

A.3.3 Slave Power Control

See Table A.6 for slave power control instructions.

Table A.6 Slave Power Control Indication Table

step	Command type	describe	User data	data direction
1	03H	Slave Power Control	Control type: 0x00 - the slave exits the power saving mode; 0x01——Slave enters power saving mode	down
2	03H	Slave Power Control Reply	Response type: 0x01 - the operation is successful; 0x02 - operation failed (slave due to Unable to enter power saving mode or exit power saving under special circumstances model)	up

A.3.4 Query slave version number information

See Table A.7 for the command to query the slave version number information.

Table A.7 Command table for querying slave version number information

step	Command type	describe	User data	data direction
1	04H	Query slave version number information	none	down
2	04H	Query the slave version number information response	Slave version number, WORD Such as: 0x0207, which means version 2.07	up

A.3.5 Slave self-check

See Table A.8 for slave self-check instructions.

Table A.8 Slave self-check command list

step	Command type	describe	User data	data direction
1	05H	Slave self-check	Self-test slave type, BYTE, as defined in Table A.2	down
2	05H	Self-test result information	Self-test slave type, BYTE, as defined in Table A.2	up
			Self-test results, BYTE 0x01: Self-check succeeded; 0x02: Self-check failed.	

Note: The timeout time of this command is 1s. If there is no response, it will be resent at most three times.

After receiving the failure of the self-test, the terminal will set the corresponding alarm sign and give a voice prompt or screen display.

A.3.6 Slave firmware update

Slave firmware update instructions are shown in Table A.9.

Table A.9 Slave firmware update command list

step	Command type	describe	User data	data direction
1	06H	Update the slave module FirmWare	Total number of message packets, WORD	down
			Packet number, WORD, starting from 1	
			Packet data, the maximum length is 256 bytes	
2	06H	Confirm information	Package serial number, WORD	up
			Response result, BYTE	

			0: correct; 1: Non-this firmware program, terminate the upgrade; 2: Resend (after three times, terminate this upgrade).	

Note: The timeout time of this command is 1s. If there is no response, it will be resent at most three times.

A.3.7 Querying peripheral properties

See Table A.10 for the command to query peripheral properties.

Table A.10 Query Peripheral Property Command List

step	Command type	describe	User data	data direction
1	07H	Query peripheral properties	none	down
2	07H	Query Peripheral Properties Reply	Peripheral Manufacturer Number, 5 BYTE	up
			Peripheral hardware version number, 3 BYTE	
			Peripheral software version number, 3 BYTE	

Note: Example of version number, 0x010B02 means v1.12.2.

The command timeout is 1s, if there is no response to re-send, it will be re-sent up to three times.

A.4 Dedicated protocol description

A.4.1 Road Transport Permit IC Card Authentication Request

When the module detects that a card is inserted, and after the module is reset or powered on again, and the physical card number of the IC card in the card slot is the same as the upper

When the card numbers read the next time are inconsistent, the upward command of the road transport permit IC card authentication request is automatically triggered.

See Table A.11 for the request instruction for the IC card authentication of the road transport permit.

Table A.11 Road Transport Permit IC Card Authentication Request Instruction Form

step	Command type	describe	User data	data direction
1	40H	IC card authentication request	Status bits, BYTE, 0x00: IC card reading is successful; 0x01: IC card is not inserted; 0x02: IC card reading failed; 0x03: IC card of non-practice qualification certificate; 0x04: IC card is locked.	up
			Data area (valid when status bit=0x00), card base This information and authentication information (64 bytes)	
2	40H	IC card authentication request response	IC card authentication request response result, BYTE 0x00: The authentication request was successfully completed; 0x01: The terminal is not online; 0x02: The terminal transparent transmission authentication center times out and no response; 0x03: The terminal confirms receipt of the information (for IC card authentication, please	down

			When asking for card reading result = 0x01-0x04).	
			Data area (valid when IC card authentication request response result = 0x00), IC card authentication request returns verification data (24 byte).	

Note: When the command goes up and the IC card authentication request status bit is 0x00, the timeout period is 35S. In other states and downlink, the timeout period is 1s. If there is no response, it will be resent three times at most.

A. When the status bit is 0x00, the terminal sends 64 bytes of card basic information and authentication information to the authentication center, and returns 1 or 25 bytes of result information to the card reader module according to different situations.

a. When the IC card authentication request response result returned by the terminal to the card reader module is 0x00, the card reader module starts to read the card information, and then automatically starts the 41H command to feed back the result to the terminal, and the terminal voice prompts the driver with the corresponding result, and when the card is successfully read Then use the 0x0702 command to send the driver's identity information to the certification center and monitoring platform;

b. When the response result of the IC card authentication request returned by the terminal to the card reader module is 0x01, wait for 20 minutes, and use the 43H command to actively trigger the card reader module to read the IC card;

c. When the IC card authentication request response result returned by the terminal to the card reader module is 0x02, the card reader module resends 40H three times. After three unsuccessful attempts, the terminal ends the process and voice prompts the driver with the corresponding result;

d. When the IC card authentication request response result returned by the terminal to the card reader module is 0x03, the process ends, and the terminal voice prompts the driver with the corresponding result.

B. When the status bit is not 0x00, the terminal ends the process and voice prompts the driver with the corresponding result.

A.4.2 Notification of the result of reading the IC card of the Road Transport Permit

See Table A.12 for the notification instruction of the reading result of the IC card of the road transport permit.

Table A.12 Road Transport Permit IC Card Reading Result Notification Instruction Table

step	Command type	describe	User data	data direction
1	41H	IC card reading result notification	IC card reading result, BYTE 0x00: The IC card is successfully read, and there is follow-up data at this time; 0x01: Card reading failed because the card key authentication was not successful pass through; 0x02: Card reading failed because the card has been locked; 0x03: Card reading failed because the card was pulled out; 0x04: Card reading failed due to data verification error.	up
			Data area (valid when IC card reading result is 0x00), driver identity information, see Table A.13.	
2	41H	The driver's identity information is confirmed	none	down

Note: The timeout time of this command is 1s. If there is no response, it will be resent at most three times.

A. When the terminal receives the IC card reading result of 0x00, it uses the 0x0702 command to send the driver's identity information to the certification center and the home platform;

B. When the terminal receives an IC card reading result other than 0x00, it ends the process and voice prompts the driver with the corresponding result.

Table A.13 Driver Identity Information Table

start byte	field	type of data	description and requirements
0	Driver's name length	BYTE	length n
1	driver name	STRING	driver name

1+n	Qualification certificate number	STRING	20 digits long
21+n	The length of the name of the issuing authority	BYTE	length is m
22+n	Issuing agency name	STRING	The name of the certificate-issuing institution
22+n+m	Certificate validity	BCD[4]	YYYYMMDD

A.4.3 Card Pull Out Notification

Refer to Table A.14 for the card pull-out notification instructions.

Table A.14 Card Pull Out Notification Command List

step	Command type	describe	User data	data direction
1	42H	Card removal notification	none	up
2	42H	Card withdrawal notification received confirmation	none	down

Note: The timeout time of this command is 1s. If there is no response, it will be resent at most three times.

When the terminal receives the card pullout notification, it uses the 0x0702 command to send the driver's off-duty information to the certification center and monitoring platform.

A.4.4 Active trigger to read IC card

See Table A.15 for the command to actively trigger reading the IC card.

Table A.15 Active trigger reading IC card command table

step	Command type	describe	User data	data direction
1	43H	Active trigger to read IC card	none	down
2	43H	Active trigger to read IC card confirmation information	none	up

Note: The timeout time of this command is 1s. If there is no response, it will be resent at most three times.

This command is used for terminal roll call, terminal is offline, or the terminal uploads IC card authentication information overtime, etc. After the card reader module receives this command, it will automatically trigger the 40H command to re-read the card.

Appendix B

(normative appendix)

Message comparison table

See Table B.1 for the message comparison table of the terminal communication protocol.

Table B.1 Message comparison table

serial number	message body name	message id	serial number	message body name	message id
1	Terminal general answer	0x0001	twenty four	Event settings	0x8301
2	Platform Universal Response	0x8001	25	Incident report	0x0301
3	Terminal heartbeat	0x0002	26	Issue a question	0x8302
4	retransmission subcontracting request	0x8003	27	question and answer	0x0302
5	Terminal registration	0x0100	28	Information on demand menu settings	0x8303
6	Terminal registration response	0x8100	29	Information on demand/cancellation	0x0303
7	Terminal logout	0x0003	30	Information service	0x8304
8	Terminal authentication	0x0102	31	call back	0x8400
9	Set terminal parameters	0x8103	32	Set up phonebook	0x8401
10	Query terminal parameters	0x8104	33	vehicle control	0x8500
11	Query terminal parameter response	0x0104	34	vehicle control response	0x0500
12	terminal control	0x8105	35	set circular area	0x8600
13	Query the specified terminal parameters	0x8106	36	delete circular area	0x8601
14	Query terminal properties	0x8107	37	set rectangle area	0x8602
15	Query Terminal Properties Reply	0x0107	38	delete rectangular area	0x8603
16	Issue the terminal upgrade package	0x8108	39	set polygon area	0x8604
17	Terminal upgrade result notification	0x0108	40	delete polygon area	0x8605
18	location information report	0x0200	41	set route	0x8606
19	Location information query	0x8201	42	delete route	0x8607
20	Location information query response	0x0201	43	Drive recorder data collection command	0x8700
twenty one	Temporary position tracking control	0x8202	44	Driving recorder data upload	0x0700
twenty two	Manual acknowledgment of alarm messages	0x8203	45	Drive recorder parameter download command	0x8701
twenty three	Text message delivery	0x8300	46	Electronic Waybill Reporting	0x0701

serial number	message body name	message id	serial number	message body name	message id
47	Collect and report driver identity information	0x0702	58	Store multimedia data upload	0x8803
48	Report Driver Identification Information Request	0x8702	59	Recording start command	0x8804
49	Bulk upload of positioning data	0x0704	60	Single storage multimedia data retrieval pass command	0x8805
50	CAN bus data upload	0x0705	61	Data downlink transparent transmission	0x8900
51	Multimedia event information upload	0x0800	62	Data uplink transparent transmission	0x0900
52	Multimedia data upload	0x0801	63	data compression report	0x0901
53	Multimedia data upload response	0x8800	64	Platform RSA public key	0x8A00
54	The camera shoots the command immediately	0x8801	65	Terminal RSA public key	0x0A00
55	The camera immediately shoots the command response	0x0805	66	Platform downlink message retention	0x8F00~0x8FFF
56	Stored multimedia data retrieval	0x8802	67	Terminal Uplink Message Retention	0x0F00~0x0FFF
57	Store Multimedia Data Retrieval Response	0x0802			