

Jiangsu Group Standard

T/JSATL12-2017

Intelligent Prevention and Control System for Active Safety of Road Transport Vehicles (Communication Protocol Specification)

Intelligent prevention system for active safety of operating
vehicles

(Specifications for communication protocol)

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Foreword

This standard is prepared in accordance with GB/ T1.1-2009 "Standardization Work Guidelines Part 1: Rules for the structure and Preparation of Standards". This standard is put forward and centralized by the Transportation Administration Bureau of Jiangsu Provincial Transportation Department.

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Intelligent prevention and control system for active safety of road transport vehicles

1 Scope **Communication protocol Specification**

This agreement is for JT/T 808-2013 The Technical Specification for Communication Protocol of Road Transport Vehicle Satellite Positioning System Beidou Compatible Vehicle Terminal is supplemented and extended, which stipulates the communication protocol between the vehicle terminal of active safety intelligent prevention and control system (hereinafter referred to as the terminal) and the supervision/monitoring platform (hereinafter referred to as the platform), and between the vehicle terminal and peripherals, including the protocol basis, message definition and data format.

2 Normative reference documents

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document. For undated citations, the most recent version (including all amendment orders) applies to this document.

JT/T 808 Road transport vehicle satellite positioning system terminal communication protocol and data format. JT/T 1078-2016 Road transport vehicle satellite positioning system video communication protocol. GB/T 26773-2011 Technical requirements and test methods for operating vehicle driving hazard warning system. JT/T 883-2014 Zhie vehicle deviation alarm is the method of obtaining and detecting EE

3 technique E meaning and strategy

3.1 abbreviations

The following abbreviations are appropriate for this document

ADAS: Advanced Driver Assistant System DSM: Driving State Monitoring TPMS: Tire Pressure Monitoring Systems) BSD: Blind Spot Detection (BSD)

CAN: Controller Area Network

4 Terminal and Platform protocol basics

4.1 Basic provisions of the Agreement

The communication mode, data type, transmission rules and message composition of this agreement are stipulated in Chapter 4 of JT/T 808-2011. The classification of packets in the protocol refers to Section 4.3 classification of JT/T 1078-2016.

The communication connection mode of data packets in the protocol shall be in accordance with the requirements of Chapter 5 of JT/T 808-2011.

The message processing mechanism of the protocol message is in accordance with the requirements of Chapter 6 of JT/T 808-2011.

The encryption mechanism of the data message is in accordance with the requirements of Chapter 7 of JT/T808-2011. The parties to the platform and terminal communication in the agreement shall meet the following requirements:

- ___ Except as expressly agreed, all messages should be answered.
- ___ Where a dedicated reply message is not explicitly specified, a general reply should be used. For messages in which subcontracting exists, the responder shall respond packet-by-packet for each subcontracting message.

4.2 Basic information query instruction

4.2.1 Query basic information

The message 0x8900 defined in 8.61 in JT/T 808-2011 is used to query the basic information, as shown in Table 4-1

Table 4-1 Data formats of querying Basic information

Start byte	Fields	Data length	Description and requirements
0	Transparent message type	BYTE	Table 4-3 defines the types of transparent messages
1	Total number of peripheral ID lists	BYTE	
2	Peripheral ID	BYTE	Table 4-5 defines peripheral ids

4.2.2 Upload basic information

The message 0x0900 defined in 8.62 of JT/T 808-2011 is used to upload basic information. For the added parameter Settings, see Table 4-2

Table 4-2 Data formats of Uploading Basic information

Start byte	Fields	Data length	Description and requirements
0	Transparent message type	BYTE	Table 4-3 defines the types of transparent messages
1	Total message list	BYTE	
2	Peripheral message structure		See Table 4-4

Table 4-3 Defines the types of transparent messages

Transparent type	Definitions	Description and Requirements
Status inquiry	0xF7	Peripheral status information: peripheral working status, equipment alarm information
Information query	0xF8	Basic information of peripheral sensors: company information, product code, version number, peripheral ID, customer code. The corresponding message content is shown in the table

Table 4-4 Message structure of transparent peripherals

Start byte	Fields	Data length	Description and requirements
0	Peripheral ID	BYTE	Table 4-5 defines peripheral ids
1	Message length	BYTE	
2	Message content		Table 4-6 describes the message content if the transparent message type is 0xF7 Table 4-7 shows the contents of the message when the transparent message type is 0xF8

Table 4-5 IDE meaning table of peripherals

Peripheral name	Peripheral ID	Description and Requirements
ADAS	0x64	Advanced driver assistance system
DSM	0x65	Driver status monitoring system
TPMS	0x66	Tire pressure monitoring system
BSD	0x67	Blind spot monitoring system

Table 4-6 peripherals status information

Start byte	Fields	Data length	Description and requirements
0	Working condition	BYTE	0x01: Working properly 0x02: Standby 0x03: Upgrade maintenance 0x04: Device is abnormal 0x10: Disconnected
1	Alarm status	DWORD	Set by bit: 0 for none, 1 for yes bit0: The camera is abnormal bit1: Abnormal main memory bit2: abnormal secondary memory bit3: abnormal infrared fill light bit4: loudspeaker abnormal bit5: battery abnormal bit6 bit9: reserved bit10: Abnormal communication module bit11: The positioning module is abnormal bit12 to bit31: reserved

Table 4-7 System information about peripherals

Start byte	Fields	Data type	Description and requirements
0	Company name Length	BYTE	Length: 0 to 32
1	Company name	BYTE[n1]	Name: ASCII (for example, software version SV1.1.0)
1+n1	Product model length	BYTE	Expressed as 0x53 0x56 0x31 0x2E 0x31 0x2E 0x30)
2+n1	Product model number	BYTE[n2]	The customer code is the user code, which is customized by the peripheral manufacturer

2+n1+n2	Hardware version number length	BYTE
3+n1+n2	Hardware version number	BYTE[n3]
3+n1+n2+n3	Software version number length	BYTE
4+n1+n2+n3	Software version number	BYTE[n4]
4+n1+n2+n3+n4	Device ID Length	BYTE
5+n1+n2+n3+n4	Device ID	BYTE[n5]
5+n1+n2+n3+n4+n5	Customer code Length	BYTE
6+n1+n2+n3+n4+n5	Customer code	BYTE[n6]

4.3 Query instruction for parameter Settings

4.3.1 parameter setting instruction

The parameter setting message is 0x8103 defined in 8.8 of JT/T 808-2011. The added parameter Settings are shown in Table 4-8.

Table 4-8 Format of parameter data

fields	Data type	Description and requirements
Parameter ID	DWORD	For the definition and description of parameter ids, see Table 4-5
Parameter Length	BYTE	
Parameter value		

Table 4-9 Parameter Settings Parameter definitions and descriptions

Parameter ID	Data type	Description and requirements
0xF364		The parameters of the advanced driver assistance system are listed in Table 4-10. The parameters of the driver condition monitoring system are listed in Table 4-11
0xF365		
		Tire pressure monitoring system parameters, see Table 4-12
0xF366-0xF367		For parameters of the blind zone monitoring system, see Table 4-13

Table 4-10 Advanced driver assistance system parameters

Start byte	Fields	Data type	Description and description
0	Call the police to determine speed threshold value	BYTE	Unit km/h, value range 0~60, default value 30, only applicable to road departure alarm, forward collision alarm, vehicle close alarm and frequent lane change alarm. Indicates that the alarm function is enabled only when the vehicle speed is higher than the threshold. 0xFF indicates that this parameter is not modified
1	Alarm cue volume	BYTE	The value ranges from 0 to 8. 8 is the maximum value and 0 is silent. The default value of 60xFF indicates that the parameter is not modified
2	Active photo strategy	BYTE	0x00: Not on 0x01: Take pictures periodically 0x02: Take a photo at a fixed distance 0x03: Hold

			<p>The default value is 0x00, 0xFF indicates that the parameter is not modified.</p>
3	<p>Take the initiative to time your photo</p> <p>interspace</p>	WORD	<p>The unit is second. The value ranges from 0 to 3600. The default value is 60.</p> <p>0 means no snap, 0xFFFF means no parameter modification</p> <p>This is valid if the active photo policy is 0x01</p>
5	<p>Active distance to take photos</p> <p>Distance from</p>	WORD	<p>In meters, the value ranges from 0 to 60,000, the default value is 200, 0 indicates that the snapshot is not captured, and 0xFFFF indicates that the parameter is not modified</p> <p>This is valid if the active photo policy is 0x02</p>
7	<p>When taking a single active photo</p> <p>The number</p>	BYTE	<p>The value ranges from 1 to 10. The default value is 3</p> <p>0xFF means not modifying parameters</p>
8	<p>Interspace</p>	BYTE	<p>The unit is 100ms. The value ranges from 1 to 5. The default value is 2.</p> <p>0xFF indicates that the parameter is not modified</p>
9	<p>Photo resolution</p>	BYTE	<p>0x01: 352×288 0x02: 704×288 0x03: 704×576 0x04: 640×480 0x05: 1280×720 0x06: 1920×1080</p> <p>The default is 0x01, 0xFF means that the parameter is not modified, This parameter also applies to the alarm trigger photo resolution.</p>
10	<p>Video recording resolution</p>	BYTE	<p>0x01: CIF 0x02: HD1 0x03: D1 0x04: WD1 0x05: VGA 0x06: 720P 0x07: 1080P</p> <p>Default value 0x01 0xFF indicates that the parameters are not modified This parameter also applies to alarm trigger video resolution.</p>
11	<p>Alarm Enable</p>	DWORD	<p>Alarm enable bit 0: Off 1: On</p> <p>bit0: Obstacle detection Level 1 alarm bit1: Obstacle detection Level 2 alarm bit2: Frequent lane change level 1 alarm bit3: Frequent lane change Level 2 alarm bit4: Lane departure Level 1 alarm bit5: Lane departure Level 2 alarm bit6: Forward collision Level one alarm bit7: Forward collision Level 2 alarm bit8: Pedestrian collision level 1 alarm bit9: Pedestrian collision Level 2 alarm bit10: vehicle too close to level 1 alarm bit11: Vehicle too close to the second alarm</p>

			bit12 to bit15: User-defined bit16: road sign overlimit alarm bit17 to bit29: User-defined bit30 bit31: Reserved OxFFFFFFF indicates that the parameter is not modified Default value Ox00010FFF
15	Event Enable	DWORD	Event Enable bit0: Off 1: On bit0: Road sign recognition bit1: Take an active photo bit2 to bit29: User-defined bit30 to bit31: Reserved Default value Ox00000003 OxFFFFFFF indicates that the parameter is not modified
19	Reserved fields	BYTE	reserve
20	Obstacle alarm distance threshold	BYTE	The unit is 100ms. The value ranges from 10 to 50. The default value is 30 OxFF
21	Obstacle alarm classification speed threshold	BYTE	The value ranges from 0 to 220, measured in km/h. The default value is 50. Indicates that when the alarm is triggered, the speed is higher than the threshold for the second-level alarm, otherwise it is the first-level alarm. OxFF indicates that the parameter is not modified
22	Video recording time before and after obstacle alarm	BYTE	The unit is second. The value ranges from 0 to 60. The default value is 5. 0 indicates that no recording is performed. OxFF indicates that the parameter is not modified in 100ms, the value range is 1 to 10, the default value is 2, OxFF indicates that the parameter is not modified in seconds, the value range is 30 to 120, the default value is 60, OxFF indicates that the number of lane changes is 3 to 10, the default value is 5, OxFF indicates that the parameter is not modified in km/h, The value range is 0 to 220, and the default value is 50, which means that when the alarm is triggered, the vehicle speed is higher than the threshold is the second-level alarm, otherwise, it is the first-level alarm. OxFF means that the parameter is not modified
23	number of obstacle alarm photograph	BYTE	
24	number of obstacle alarm photograph interval	BYTE	
25	Frequent lane change alarm judgment Time period	BYTE	
26	Frequent lane change alarm judgment number	BYTE	
27	Frequent lane change alarm classification speed threshold	BYTE	
28	Video recording time before and after frequent lane change alarm	BYTE	The unit is second. The value ranges from 0 to 60. The default value is 5. 0 indicates no recording. OxFF indicates no modification. The value ranges from 0 to 10. The default value is 3
29	photograph Number	BYTE	
30	Frequent lane change alarm photograph interval	BYTE	
31	lane departure alarm Classification speed threshold	BYTE	The value ranges from 0 to 220, measured in km/h. The default value is 50. Indicates that when the alarm is triggered, the vehicle speed is higher than the threshold, which is the second-level alarm, otherwise, it is the first-level alarm. 0 indicates that the recording is not performed, and OxFF indicates that the parameter is not modified
32	Video recording time before and after lane departure alarm	BYTE	The value ranges from 0 to 60, in seconds. The default value is 5. 0 indicates that no recording is performed
33	Lane departure alarm beat	BYTE	The value ranges from 0 to 10. The default value is 3.

	Number of views		0 means no snap, 0xFF means no modification
34	Lane departure alarm photo interval	BYTE	The unit is 100ms. The value ranges from 1 to 10. The default value is 20xFF: the parameter is not modified
35	Forward collision alarm time threshold	BYTE	The unit is 100ms. The value ranges from 10 to 50. Currently, the national standard value is 27. 0xFF indicates that the parameter is not modified
36	Forward collision alarm Classification Speed threshold Video recording time	BYTE	The value ranges from 0 to 220, measured in km/h. The default value is 50. Indicates that when the alarm is triggered, the speed is higher than the threshold for the second-level alarm, otherwise it is the first-level alarm. 0xFF indicates that the parameter is not modified
37	before and after forward collision alarm	BYTE	The value ranges from 0 to 60 seconds.
38	Number of forward collision alarm photos taken	BYTE	The default value is 5. 0 indicates no recording. 0xFF indicates no modification. The value ranges from 0 to 10. The default value is 3
39	Forward collision alarm photo interval	BYTE	
40	Pedestrian collision alarm time threshold	BYTE	The value ranges from 10 to 50, and the default value is 30. 0xFF indicates that the parameter is not modified
41	Pedestrian collision alarm enables speed threshold	BYTE	The value ranges from 0 to 220, measured in km/h. The default value is 50. Below this value alarms, and above this value the function turns off. 0xFF indicates that the parameter is not modified
42	Video recording time before and after pedestrian collision alarm	BYTE	The value ranges from 0 to 60 seconds.
43	Pedestrian collision alarm photograph Several pedestrian	BYTE	The default value is 5. 0 indicates no recording. 0xFF indicates no modification. The value ranges from 0 to 10. The default value is 3
44	collision alarm photograph intervals	BYTE	
45	Vehicle distance from monitoring alarm threshold	BYTE	The value ranges from 10 to 50, and the default value is 10. 0xFF indicates that the parameter is not modified
46	Vehicle distance monitoring alarm classification speed threshold video	BYTE	The value ranges from 0 to 220, measured in km/h. The default value is 50. Indicates that when the alarm is triggered, the speed is higher than the threshold for the second-level alarm, otherwise it is the first-level alarm. 0xFF indicates that the parameter is not modified
47	recording time before and after vehicle distance too	BYTE	The value ranges from 0 to 60 seconds.
48	close alarm photograph number of vehicle distance	BYTE	The default value is 5. 0 indicates that no recording is performed. 0xFF indicates that no capturing is
49	too close alarm photograph interval	BYTE	performed. The default value is 3 to 10
50	Number of road sign recognition photos	BYTE	The value ranges from 0 to 10. The default value 30 indicates that the snapshot is not captured, and 0xFF indicates that the parameter is not modified
51	Number of road sign recognition photo intervals	BYTE	The unit is 100ms. The value ranges from 1 to 10. The default value is 20xFF: the parameter is not modified
52	Reserved fields	BYTE[4]	

Table 4-11 Parameters of the driver status monitoring system

Start byte	Fields	Data type	Description and description
0	Call the police to determine the speed threshold	BYTE	The unit is km/h. The value ranges from 0 to 60. The default value is 30. Indicates that the alarm function is enabled only when the vehicle speed is higher than the threshold. 0xFF indicates that the parameter is not modified
1	Alarm volume	BYTE	The maximum value is 0 to 8, and 0 is silent. The default value is 60xFF, indicating that the parameter is not modified
2	Active photo Strategy	BYTE	0x00: Not on 0x01: Timed photo 0x02: Take a photo at a fixed distance 0x03: The card is triggered 0x04: Hold Default value 0x00, 0xFF indicates that the parameter is not modified
3	Actively timer photo intervals	WORD	The value ranges from 60 to 60000, in seconds. The default value is 36000xFF
5	Active distance take photo distance intervals	WORD	The value ranges from 0 to 60000, in meters. The default value is 2000, indicating that no capture is required.
7	Number of time intervals between single active shots	BYTE	The value ranges from 1 to 10. The default value is 3, with 0xFF indicating that the parameters are not modified
8		BYTE	The value ranges from 1 to 5, and the default value is 2. 0xFF indicates that the parameter is not modified
9	Photo resolution	BYTE	0x01: 352 × 288 0x02: 704 × 288 0x03: 704 × 576 0x04: 640 × 480 0x05: 1280 × 720 0x06: 1920 × 1080 The default is 0x01, 0xFF means that the parameter is not modified, This parameter also applies to the alarm trigger photo resolution.
10	Video recording resolution	BYTE	0x01: CIF 0x02: HD1 0x03: D10x04: WD10x05: VGA0x06: 720P 0x07: 1080P The default is 0x01 0xFF indicates that the parameters are not modified This parameter also applies to alarm trigger video resolution.
11	Alarm Enable	DWORD	Alarm enable bit 0: off 1: on

			<p>bit0: first-level alarm for tired driving bit1: second-level alarm for tired driving bit2: first-level alarm for receiving and calling bit3: second-level alarm for receiving and calling bit4: first-level alarm for smoking bit5: second-level alarm for smoking bit6: first-level alarm for distracted driving bit7: second-level alarm for distracted driving bit8: Driver abnormal level 1 alarm bit9: driver abnormal Level 2 alarm bit10~bit29: User-defined bit30~bit31: Retain the default value 0x000001FF0xFFFFFFFF indicates that the parameter is not modified</p>
15	Event Enable	DWORD	<p>Event Enable bit0: Off 1: On bit0: Driver Replacement event bit1: active photo event bit2 bit29: User-defined bit30 to bit31: Leaving 0xFFFFFFFF means not modifying the parameter Default value 0x00000003</p>
19	Smoking alarm judgment time interval	WORD	<p>The value ranges from 0 to 3600 in seconds. The default value is 180. Indicates that the smoking alarm will only be triggered once during this time interval. 0xFF indicates that this parameter is not modified</p>
21	Determine the time interval between answering and calling the police	WORD	<p>The value ranges from 0 to 3600 in seconds. The default value is 120. Indicates that only one incoming call alarm is triggered during this time interval. 0xFF indicates that this parameter is not modified</p>
23	Reserved fields	BYTE[3]	Reserved field
26	Fatigue driving alarm classification speed threshold video recording time before and after fatigue driving alarm photo Number of fatigue driving alarm photo interval time	BYTE	<p>The value ranges from 0 to 220, measured in km/h. The default value is 50. Indicates that when the alarm is triggered, the speed is higher than the threshold for the second-level alarm, otherwise it is the first-level alarm. 0xFF indicates that the parameter is not modified</p>
27		BYTE	<p>The default value is 0 to 60. The default value is 50: no recording is performed. The default value is 30: no capturing is performed. The default value is 30: no capturing is performed</p>
28		BYTE	
29		BYTE	
30	Receiving and calling alarm Classification Speed threshold Video recording time before and after receiving and calling alarm	BYTE	<p>The value ranges from 0 to 220, measured in km/h. The default value is 50. Indicates that when the alarm is triggered, the speed is higher than the threshold for the second-level alarm, otherwise it is the first-level alarm. 0xFF indicates that the parameter is not modified</p>
31		BYTE	<p>The value ranges from 0 to 60, in seconds. The default value is 5. 0 indicates that no recording is performed</p>
32	Answer and call the alarm to take a picture of the driver's facial features	BYTE	<p>The value ranges from 1 to 10, the default is 3 0 indicates that the snapshot is not captured, and 0xFF indicates that the parameter is not modified</p>

	Number of photographs		
33	Time between answering and calling 911 to take photos of the driver's facial features	BYTE	The unit is 100ms. The value ranges from 1 to 5. The default value is 20xFF: the parameter is not modified
34	Smoking alarm classification speed threshold	BYTE	The value ranges from 0 to 220, measured in km/h. The default value is 50. Indicates that when the alarm is triggered, the speed is higher than the threshold for the second-level alarm, otherwise it is the first-level alarm. 0xFF indicates that the parameter is not modified
35	Smoking alarm before and after video recording time	BYTE	The value ranges from 0 to 60, in seconds. The default value 50 indicates that no recording is performed. 0xFF indicates that no parameter is modified
36	Smoking alarm take the number of photos of the driver's facial features	BYTE	The value ranges from 1 to 10. The default value 30 indicates that the snapshot is not captured and 0xFF indicates that the parameter is not modified
37	Time between smoking alarm shots of driver's facial features	BYTE	The unit is 100ms. The value ranges from 1 to 5. The default value is 20xFF
38	Distracted driving alarm classification speed threshold	BYTE	The value ranges from 0 to 220, in km/h. The default value is 50. Indicates that when the alarm is triggered, the speed is higher than the threshold for the second-level alarm, otherwise it is the first-level alarm. 0xFF indicates that the parameter is not modified
39	Distracted driving alarm before and after video recording time	BYTE	The value ranges from 0 to 60, in seconds. The default value 50 indicates that no recording is performed. 0xFF indicates that no parameter is modified
40	Distracted driving alarm photo number distracted driving alarm photo interval time	BYTE	The value ranges from 1 to 10. The default value is 30. The value ranges from 1 to 5. The default value is 20xFF
41	Distracted driving alarm photo interval time	BYTE	20xFF
42	Abnormal Driving Behavior Classification Speed Threshold	BYTE	The value ranges from 0 to 220, in km/h. The default value is 50. Indicates that when the alarm is triggered, the speed is higher than the threshold for the second-level alarm, otherwise it is the first-level alarm. 0xFF indicates that the parameter is not modified
43	Abnormal Driving behavior video recording time	BYTE	The value ranges from 0 to 60 seconds. The default value is 50: no recording is performed. The default value is 30: no capturing is performed. The default value is 30: no capturing is performed
44	Abnormal Driving behavior Snap photos Number of abnormal driving behavior photo intervals	BYTE	no capturing is performed
45	Abnormal driving behavior photo intervals	BYTE	no capturing is performed
46	Driver identification trigger	BYTE	0x00: Disabled 0x01: Timed trigger 0x02: Range trigger 0x03: The card starts driving 0x04: Retain The default value 0x01 0xFF indicates that the parameter is not modified
47	Reserved Fields	BYTE[2]	

Table 4-12 Tire pressure monitoring system parameters

Start byte	Fields	Data type	Description and description
0	Tire specification Model number	BYTE[12]	For example, 195/65R15 91V contains 12 characters, expressed in ASCII. Default value "900R20"
12	Tire pressure units	WORD	0x00: kg/cm ² 0x01: bar 0x02: Kpa 0x03: PSI The default is 0x03. 0xFFFF means no modification of parameter unit Same tire pressure unit, default 1400xFFFF means no modification of parameter
14	Normal tire pressure values	WORD	
16	Tire pressure imbalance threshold	WORD	The value ranges from 0 to 100 (up to cold air pressure). The default value is 200xFFFF, indicating that the parameter is not modified
18	Slow leak threshold	WORD	The value ranges from 0 to 100 (up to cold air pressure). The default value is 50xFFFF, indicating that the parameter is not modified
20	Low pressure threshold	WORD	Unit Same tire pressure unit, default value 1100xFFFF means no modification unit, default value 1890xFFFF means no modification unit Celsius, The default value 800xFFFF indicates the unit %(percent) of the parameter is not modified, the value ranges from 0 to 100, the default value is 10, 0xFFFF indicates the parameter is not modified
22	High voltage threshold	WORD	
24	High temperature threshold	WORD	
26	Voltage threshold	WORD	
28	Schedule reporting intervals	WORD	The value ranges from 0 to 3600, in seconds. The default value is 60. 0 indicates that the parameter is not reported, and 0xFFFF indicates that the parameter is not modified
30	Reserved Items	BYTE[6]	Reserved items are zeroed out

Table 4-13 Parameters of the blind zone monitoring system

Start byte	Fields	Data type	Description and description
0	Rear approach when calling the alarm Intermediate Threshold	BYTE	The value ranges from 1 to 10, in seconds 0xFF indicates that the parameter is not modified
1	The rear side approaches the alarm time threshold	BYTE	The value ranges from 1 to 10 0xFF, indicating that the parameter is not modified

4.3.2 Query parameter instruction

The query parameter message is 0x8103/0x8106 defined in 8.8 of JT/T 808-2011. The data format of the query parameter message body of the specified terminal is shown in Table 15 of JT/T 808-2011, and the terminal is answered by instruction 0x0104.

4.4 Alarm instruction

The alarm report is reported at the same time as the location information. As additional information reported by 0x0200 location information, the definition of additional information in Table 20 of JT/T 808-2011 is extended. Table 4-14 shows the extended definition of additional information.

Table 4-14 Extension of Additional information definition table

Additional information ID	Length of additional information	Description and requirements
0x64		Advanced driver assistance system alarm information is defined in Table 4-15
0x65		The alarm information of the driver condition monitoring system is defined in Table 4-17. The alarm information of the
0x66		tire pressure monitoring system is defined in Table 4-18. The
0x67		alarm information of the blind zone monitoring system is defined in Table 4-20

4.4.1 Advanced Driver Assistance System Alarm

Table 4-15 Advanced Driver assistance alarm information data formats

Start byte	Fields	Data length	Description and requirements
0	Alarm ID	DWORD	According to the alarm sequence, the cycle accumulates from 0, without distinguishing the alarm type.
4	Flag status	BYTE	0x00: Unavailable 0x01: Start flag 0x02: End flag This field only applies to alarms or events that have a start and end flag type, if the alarm type or event type does not have a start and end flag, this bit is not available, just fill in 0x00.
5	Type of alarm/incident	BYTE	0x01: Forward collision alarm 0x02: Lane Departure alarm 0x03: Vehicle too close alarm 0x04: Pedestrian collision alarm 0x05: Frequent lane change alarm 0x06: Road sign out of limit alarm 0x07: Obstacle alarm 0x08~0x0F: User-defined 0x10: Road sign recognition event 0x11: Active capture event 0x12~0x1F: User-defined
6	Alarm level	BYTE	0x01: Level 1 alarm 0x02: Level 2 alarm
7	Speed of the car in front	BYTE	The unit is Km/h. Range 0 to 250, valid only if alarm types are 0x01 and 0x02.
8	Front car/pedestrian distance	BYTE	Unit 100ms, range 0 to 100, valid only when the alarm type is 0x01, 0x02, and 0x04.

9	Deviation Type	BYTE	0x01: Left side deviation 0x02: Right side deviation Valid only if alarm type is 0x02
10	Type of road sign recognition	BYTE	0x01: Speed limit sign 0x02: Height limit sign 0x03: Weight limit flag Valid only if alarm types are 0x06 and 0x10
11	Road sign identification data	BYTE	Data that recognizes road signs
12	Speed	BYTE	The unit is Km/h. The value ranges from 0 to 250
13	Elevation	WORD	Altitude, in meters (m)
15	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
19	Longitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
23	Date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
29	Vehicle status	WORD	See Table 5-9
31	Alarm identification number	BYTE[16]	Table 4-16 defines alarm identification numbers

Table 4-16 Format of alarm identification numbers

Start byte	Fields	Data length	Description
0	Terminal ID	BYTE[7]	7 bytes, consisting of uppercase letters and numbers
7	Time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
13	Serial number	BYTE	The serial number of the alarm at the same point in time, adding up from 0
14	Number of attachments	BYTE	Indicates the number of attachments corresponding to the alarm
15	Reserved	BYTE	

4.4.2 Driver Condition Monitoring system alarm

Table 4-17 Data formats of alarm information of the driver status monitoring system

Start byte	Fields	Data length	Description and requirements
0	Alarm ID	DWORD	According to the alarm sequence, the cycle accumulates from 0, without distinguishing the alarm type.
4	Flag status	BYTE	0x00: Unavailable 0x01: Start flag 0x02: End flag This field is only applicable to alarms or events with start and end flags. If the alarm type or event type does not have start and end flags, this field is unavailable. Enter 0x00
5	Type of alarm/incident	BYTE	0x01: Tired driving alarm 0x02: Call alarm

			0x03: Smoking alarm 0x04: Distracted driving alarm 0x05: Abnormal driver alarm 0x06~0x0F: User-defined 0x10: Auto capture event 0x11: Driver change event 0x12~0x1F: User-defined
6	Alarm level	BYTE	0x01: Level 1 alarm 0x02: Level 2 alarm
7	Fatigue level	BYTE	The value ranges from 1 to 10. A larger value indicates more severe fatigue and is only valid if the alarm type is 0x01
8	Reserved	BYTE [4]	Reserved
12	Speed	BYTE	The unit is Km/h. The value ranges from 0 to 250
13	Elevation	WORD	Altitude, in meters (m)
15	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
19	Longitude	DWORD	The value of longitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
23	Date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
29	Vehicle status	WORD	See Table 5-9
31	Alarm identification number	BYTE[16]	Table 4-16 defines alarm identification numbers

4.4.3 Tire Pressure monitoring system alarm

Table 4-18 Data formats of tire pressure monitoring system alarm information

Start byte	Fields	Data length	Description and requirements
0	Alarm ID	DWORD	According to the alarm sequence, the cycle accumulates from 0, without distinguishing the alarm type.
4	Flag status	BYTE	0x00: Unavailable 0x01: Start flag 0x02: End flag This field only applies to alarms or events that have a start and end flag type, if the alarm type or event type does not have a start and end flag, this bit is not available, just fill in 0x00
5	Speed	BYTE	The unit is Km/h. The value ranges from 0 to 250
6	Elevation	WORD	Altitude, in meters (m)
8	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
12	Longitude	DWORD	The value of longitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
16	Date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
22	Vehicle status	WORD	See Table 5-9

24	Alarm identification number	BYTE[16]	Table 4-16 defines alarm identification numbers
39	Total number of alarm/incident lists	BYTE	
40	List of alarm/incident information		See Table 4-19

Table 4-19 Format of tire pressure monitoring system alarm/event information list

Start byte	Fields	Data length	Description
0	Tire pressure alarm position	BYTE	Alarm tire position number (numbered from the left front wheel in a Z-shape from 00, the number is not related to whether the TPMS is installed)
2	Type of alarm/incident	WORD	0 means no alarm, 1 means alarm bit0: tire pressure (reported regularly) bit1: Excessive tire pressure alarm bit2: Alarm for low tire pressure bit3: Tire temperature alarm bit4: Sensor abnormal alarm bit5: Tire pressure imbalance alarm bit6: Slow leak alarm bit7: Low battery alarm bit8 to bit15: Custom
4	Tire Pressure	WORD	Unit Kpa
6	Tire temperature	WORD	Unit °C
8	Battery level	WORD	Unit %

4.4.4 Blind Zone Monitoring system alarm

Table 4-20 Blind spot monitoring system alarm definition data format

Start byte	Fields	Data length	Description and requirements
0	Alarm ID	DWORD	According to the alarm sequence, the cycle accumulates from 0, without distinguishing the alarm type.
4	Flag status	BYTE	0x00: Unavailable 0x01: Start flag 0x02: End flag This field only applies to alarms or events that have a start and end flag type. If an alarm or event type does not have a start and end flag, this bit is unavailable, just fill in 0x00.
5	Alarm/event type	BYTE	0x01: Rear approaching alarm 0x02: Left rear approach alarm 0x03: Right rear approaching alarm
6	Speed	BYTE	The unit is Km/h. The value ranges from 0 to 250
7	Elevation	WORD	Altitude, in meters (m)

9	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
13	Longitude	DWORD	The value of longitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
17	Date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
23	Vehicle status	WORD	See Table 5-9
25	Alarm identification number	BYTE[16]	Table 4-16 defines alarm identification numbers

4.5 Alarm attachment upload instruction

Message ID: 0x9208.

Message type: Signaling data message.

After receiving the alarm/event information with the attachment, the platform sends the attachment upload instruction to the terminal. The data format of the instruction message body is shown in the table

4-21.

Table 4-21 File Upload Instruction Data Formats

Start byte	Fields	Data type	Description and requirements
0	Attachment server IP address length	BYTE	Length k
1	Attachment server IP address	STRING	Server IP address
1+k	Attachment Server port (TCP)	WORD	Port number of the server when TCP is used
3+k	Attachment Server Port (UDP)	WORD	Server port number for UDP transmission
5+k	Alarm identification number	BYTE[16]	Table 4-16 defines alarm identification numbers
21+k	Alarm number	BYTE[32]	The unique number assigned by the platform to the alarm
53+k	Reserved	BYTE[16]	

After receiving the alarm attachment upload instruction issued by the platform, the terminal sends a general reply message to the platform.

4.6 alarm attachment upload

4.6.1 Vehicle status data record file

A vehicle status data record file is a binary file that records vehicle status data in continuous data blocks. Table 4-22 lists the block data formats.

Table 4-22 Format of vehicle status data block data

起始字节	字段	数据类型	描述及要求
------	----	------	-------

0	Total number of data blocks	DWORD	Records the total number of data blocks in the file
4	Serial number of current data block	DWORD	Serial number of the current data block in the record file
8	Alarm signs	DWORD	For details, see Table 24 of JT/T 808-2013
12	Vehicle status	DWORD	For details, see Table 25 of JT/T 808-2013
16	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
20	Longitude	DWORD	The value of longitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
24	Satellite elevation	WORD	Altitude of the satellite in meters (m)
26	Satellite speed	WORD	1/10km/h0-359, true
28	Satellite direction	WORD	north is 0, clockwise
30	Time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
36	X-axis acceleration	WORD	Multiply by 10 to the second power in units of g, accurate to one hundredth of g
38	Y-axis acceleration	WORD	Multiply by 10 to the second power in units of g, accurate to one hundredth of g
40	Z-axis acceleration	WORD	Multiply by 10 to the second power in units of g, accurate to one hundredth of g
42	X-axis angular velocity	WORD	In degrees per second multiplied by 10 to the second, accurate to hundredths of a degree per second
44	Y-axis angular velocity	WORD	In degrees per second multiplied by 10 to the second, accurate to hundredths of a degree per second
46	Z-axis angular velocity	WORD	In degrees per second multiplied by 10 to the second, accurate to hundredths of a degree per second
48	Pulse speed	WORD	1/10km/h
50	OBD speed	WORD	1/10km/h
52	Gear state	BYTE	0: neutral 1-9: Gear position 10: Reverse gear 11: Parking gear
53	Accelerator pedal travel value	BYTE	The value ranges from 1 to 100, unit %
54	Brake pedal travel value	BYTE	The value ranges from 1 to 100, unit %
55	Braking condition	BYTE	0: no brake 1: Brake
56	Transmitter RPM	WORD	Unit RPM
58	Steering wheel Angle	WORD	The Angle of the steering wheel is positive clockwise and negative anticlockwise.
60	Turn signal state	BYTE	0: The direction indicator is not turned on 1: left turn indicator 2: Right turn direction light
61	Reserved	BYTE[2]	
63	Check bit	BYTE	The sum of the first character to the character before the check bit, and then take the lower 8 bits of the sum as the check code

4.6.2 Alarm attachment Information message

Message ID: 0x1210.

Message type: Signaling data packet.

The terminal connects to the attachment server according to the attachment upload instruction, and sends the alarm attachment information message to the server. Table 4-23 shows the format of the message body data.

Table 4-23 Alarm attachment information message data format

Start byte	Fields	Data length	Description and requirements
0	Terminal ID	BYTE[7]	7 bytes, consisting of uppercase letters and numbers. This terminal ID is defined by the manufacturer. If the number of digits is insufficient, the terminal ID is followed by "0x00".
7	Alarm identification number	BYTE[16]	Table 4-16 defines alarm identification numbers
23	Alarm number	BYTE[32]	The unique number assigned by the platform to the alarm
55	Type of information	BYTE	0x00: Normal alarm file information 0x01: Supplementary alarm file information
56	Number of attachments	BYTE	Number of attachments associated with alarms
57	List of Attachments Information		See Table 4-24

After receiving the alarm attachment information message uploaded by the terminal, the attachment server sends a general reply message to the terminal. If the terminal is abnormally disconnected from the attachment server during the upload of the alarm attachment, the alarm attachment information message needs to be re-sent when the link is restored. The attachment file in the message is the attachment file that was not uploaded and not completed before the disconnect.

Table 4-24 Alarm attachment message data format

Start byte	Fields	Data length	Description and requirements
0	File name Length	BYTE	Length k
1	File name	STRING	File name string
1+k	File size	DWORD	Size of the current file

The file name naming rules are:

< file type >_< channel number >_< alarm type >_< serial number >_< alarm number >.< suffix name > Fields are defined as follows:

File type: 00 -- picture; 01 -- audio; 02 -- video; 03 -- text; 04 -- other. Channel number: 0~37 indicates the video channel as defined in Table 2 of the JT/T 1076 standard.

64 indicates the ADAS module video channel.

65 means the DSM module video channel.

If the attachment has nothing to do with the channel, fill in 0 directly.

Alarm type: A code consisting of the peripheral ID and the corresponding module alarm type, for example, the forward collision alarm is represented as "6401". Serial number: Used to distinguish the same channel, the same type of file number.

Alarm number: The unique number assigned by the platform to the alarm.

Suffix: jpg or png for picture files, wav for audio files, h264 for video files, bin for text files. After receiving the alarm attachment information instruction reported by the terminal, the attachment server sends a general reply message to the terminal.

4.6.3 File information upload

Message ID: 0x1211.

Message type: Signaling data packet.

After the terminal sends the alarm attachment information instruction to the attachment server and gets the answer, it sends the attachment file information message to the attachment server. The format of the message body data is shown in Table 4-25.

Table 4-25 Attachment file information message data format

Start byte	Fields	Data length	Description and requirements
0	File name length	BYTE	The filename length is 1
1	File name	STRING	File name
1 + 1	File type	BYTE	0x00: Picture 0x01: audio 0x02: video 0x03: text 0x04: Other
2 + 1	File size	DWORD	The size of the currently uploaded file.

After receiving the attachment file information command from the terminal, the attachment server sends a general reply message to the terminal.

4.6.4 File data upload

Packet type: Stream data packet.

The terminal sends the file data to the attachment server after receiving the command to upload the file information. Table 4-26 defines the load packet format.

Table 4-26 Defines the format of the load packet for file stream

Start byte	Fields	Data length	Description and requirements
0	Frame header identification	DWORD	It is fixed to 0x30 0x31 0x63 0x64
4	File name	BYTE[50]	File name
54	Data offset	DWORD	Data offset of the currently transferred file
58	Data length	DWORD	The length of the load data

62	数据体	BYTE[n]	默认长度 64K，文件小于 64K 则为实际长度
----	-----	---------	--------------------------

The attachment server does not need to respond when receiving the file stream reported by the terminal.

4.6.5 Indicates that the file upload is complete

Message ID: 0x1212.

Packet type: signaling data packet.

When the terminal completes sending a file data to the attachment server, it sends a message to the attachment server. Table 4-27 lists the format of the message body data.

Table 4-27 Data structure of the file sending completion message body

Start byte	Fields	Data length	Description and requirements
0	File name length	BYTE	1
~	File name	STRING	File name
1 + 1	File type	BYTE	0x00: Picture 0x01: Audio 0x02: Video 0x03: text 0x04: Other
2 + 1	File size	DWORD	The size of the currently uploaded file.

4.6.6 File upload completion message response

Message ID: 0x9212.

Message type: Signaling data message.

When receiving the message of file sending completion reported by the terminal, the attachment server sends the message of file uploading completion to the terminal. Table 4-28 describes the data structure of the reply.

Table 4-28 File Upload Completion message response data structure

Start byte	Fields	Data length	Description and requirements
0	File name length	BYTE	1
1	File name	STRING	File name
1 + 1	File type	BYTE	0x00: Picture 0x01: Audio 0x02: video 0x03: text 0x04: Other

2 + 1	Upload results	BYTE	0x00: Finished 0x01: Need to update
3 + 1	Number of catch-up packets	BYTE	Number of packets to be retransmitted. The value is 0 if no retransmission is required
4 + 1	List of catch-up packets		See Table 4-29

Table 4-29 Data structure of data packet retransmission

Start byte	Fields	Data length	Description and requirements
0	Data offset	DWORD	Offset of the data to be retransmitted in the file
1	Data length	DWORD	Length of the data to be retransmitted

If the data needs to be retransmitted, the terminal should retransmit the data through file data upload. After the retransmission is complete, the terminal reports the message of file upload completion until the file data is sent.

After all files are sent, the terminal takes the initiative to disconnect from the attachment server.

4.7 Terminal upgrade

4.7.1 Terminal upgrade mode

The terminal upgrades the terminal through the terminal control instruction in JT/T 808. The upgrade file is named as follows:

< Device type >_< manufacturer number >_< device model >_< dependent software version >_< software version >.< suffix name >.

The fields are defined as follows:

Device type: 01 -- Terminal; 02 -- reserved; 03 -- ADAS; 04 -- DSM; 05 -- BSD;

06 -- TPMS.

Manufacturer number: Device manufacturer name number, consisting of numbers and letters.

Device model: The device model defined by the device manufacturer, consisting of numbers and letters.

Dependent Software version: indicates the software version that the software upgrade depends on. The value consists of letters and numbers. Software version number: indicates the software version of the upgrade. The value consists of numbers and letters.

Suffix name: indicates the name extension of the upgrade file defined by the manufacturer. The name extension consists of letters and numbers.

4.7.2 Response to the terminal upgrade result

Message ID: 0x0108.

Message type: Signaling data packet.

Table 4-30 shows the format of the reply packet.

Table 4-30 Format of the reply message of the terminal upgrade result

Start byte	Fields	Data length	Description and requirements
0	Upgrade type	BYTE	0x00: Terminal 0x0C: Road Transport Certificate IC card reader 0x34: Beidou positioning module 0x64: Advanced driver assistance system 0x65: Driver condition monitoring system 0x66: Tire pressure monitoring system 0x67: Blind spot monitoring system
1	Upgrade results	BYTE	0x00: Success 0x01: Failure 0x02: Cancelled 0x10: Target device not found 0x11: Not supported by hardware model 0x12: Same software version 0x13: Software version not supported

4.8 Peripheral take a picture immediately command

Message ID: 0x8801.

The platform sends the command 0x8801 take a picture now to the terminal, the terminal responds to the platform with 0x0805, and then determines whether the command is for the control peripheral to take a picture immediately according to the channel ID field in the command. Table 4-31 shows the format of the message body data.

Table 4-31 Data formats of the message body of the Take a picture Immediately instruction

Start byte	Fields	Data length	Description and requirements
0	Channel ID	BYTE	0x00 to 0x25: The host uses the camera channel to take pictures 0x64: Control ADAS to take pictures 0x65: Control the DSM photograph
1	Shoot command	WORD	0 indicates that shooting stops. 0xFFFF means recording. Other indicates the number of pictures taken, valid only when the host takes pictures
3	Photo interval/recording time	WORD	Seconds. 0 indicates that the lowest interval is used to take pictures or record all the time. This parameter is valid only when the host takes pictures
5	Save signs	BYTE	1: Save 0: real-time upload Valid only when the host takes a photo
9	Resolution	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] Valid only when the host takes a photo
7	Image/video quality	BYTE	1 to 10:1 indicates the lowest quality loss, and 10 indicates the highest compression ratio. This parameter is valid only when the host takes pictures
8	Brightness	BYTE	0-255: This parameter is valid only when the host takes pictures
9	Contrast	BYTE	0-127: This parameter is valid only when the host takes pictures
10	Saturation	BYTE	0-127: This parameter is valid only when the host takes pictures
11	Chroma	BYTE	0-255: This parameter is valid only when the host takes pictures

5 Device communication protocol

5.1 Scope of application

Part of the communication protocol between terminals and peripherals is applicable to the communication between vehicle terminals and peripherals. Peripherals include but are not limited to TPMS and BSD devices. This communication protocol is recommended for ADAS and DSM devices that can run independently, and the integrated devices that meet the functional requirements of the active safety intelligent prevention and control system are not required.

5.2 Communication mode

It is recommended that the terminal and peripherals communicate over the network. TCP is used for network communication. For peripherals that do not support network communication, RS232, RS485, or CAN can be used. When RS232 or RS485 is used, the interface parameter configuration is 115200 baud rate, data bit is 8, stop bit is 1, no check, no flow control. When using CAN communication, the standard frame 11 bit identifier is used, and the baud rate is 500K.

5.3 Transmission Convention

- a) The data type and transmission rules used in protocol messages are specified in Chapter 4 of JT/T808-2011.
- b) When network communication is adopted, the terminal should be used as the server in the communication network, and the peripheral should be used as the client. When the terminal serves as the server, the recommended IP address is 192.168.100.100 and the port number is 8888.
- c) For network communication, the message frame should contain a serial number. The serial number of the message answered by the receiver should be the serial number of the message sent by the intended sender.
- d) When RS485 or CAN communication mode is adopted, the next message or response message can be sent at least 100ms time interval after the message is sent, and the equipment with high real-time requirements is not within the scope of this requirement.
- e) When the RS485 communication mode is adopted, the terminal as the host in the communication can read the peripheral information through the query-answer mode, and the terminal alarm response message can be used as the query command. If there is an alarm after receiving the command, the peripheral will upload the alarm message; if there is no alarm, the alarm query command will be directly used to answer.
- f) After receiving the information, the receiver should verify the message data first, and if the test fails, it will not carry out any operation and response.

- g) After the terminal is started, it needs to check whether the peripheral exists every 3 seconds. If the peripheral exists, then the detailed information of the peripheral is queried and the working parameters of the peripheral are synchronized.
- h) After the connection is established, the terminal should check whether the peripheral communication is normal through the query command at an interval of not more than 60s. If the communication is abnormal, the terminal will actively send the working status information of the peripheral to the platform.
- i) The terminal shall send the real-time vehicle status to the peripheral at an interval of no more than 500ms.
- j) All messages shall be answered except when the terminal sends a real-time status message of the vehicle to the peripheral.
- k) If the receiver of the message fails to respond correctly to the message sent by the sender over 1000ms, the communication timeout will be triggered.
- l) In addition to the real-time vehicle status message, the terminal needs peripheral response to send other messages to the peripheral. If the communication timeout occurs, it needs to resend the message. If the peripheral times out for 3 consecutive times, it will be determined that the peripheral is disconnected, and the terminal needs to check whether the peripheral exists again.
- m) When the peripheral sends a message to the terminal, if the communication timeout occurs, it needs to send the message again. If it times out for 3 consecutive times, it is determined that the connection with the terminal is disconnected, and the message needs to be saved and resent after the communication is normal.

5.4 message frame format

Table 5-1 Message Frame formats

identifier	Check code	Serial number	Manufacturer number	Peripheral number	Function code	Data content	Identifiers
BYTE	BYTE	WORD	WORD	BYTE	BYTE	BYTE[n]	BYTE0x7e
0x7e	See remarks	See remarks	See remarks	See Table 5-2	See Table 5-3	See sections 4.5 to 4.7	

Note:

Flag bit: 0x7e is used, if the check code, message header and message body appear 0x7e, then escape processing, processing rules are 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 check code -- > Escape. When receiving message: Escape Restore -- > Verify Check Code -- > Parse message.

Example 1:

Sending a packet with the contents 0x30 0x7e 0x08 0x7d 0x55 is encapsulated as follows: 0x7e 0x30 0x7d 0x02 0x08 0x7d 0x01 0x55 0x7e.

Check code: The sum from the manufacturer number to the user data, and then take the lowest 8 bits of the sum as the check code. Example 2:

If the sum is 0x1388, the check code is 0x88.

Serial number: The sum is added in a loop from 0 in the order it was sent.

Vendor number: The peripheral slave's manufacturer code.

Peripheral number: A unique type number corresponding to each peripheral. It is used for the peripheral interface driver of the host to distinguish the data sent by the peripheral. Table 5-2 lists the peripheral type numbers.

Table 5-2 Definition of peripheral numbers

Peripheral name	Peripheral number	Description and Requirements
Broadcast	0x00	Broadcast number
ADAS	0x64	Advanced driver assistance system
DSM	0x65	Driver condition monitoring system
TPMS	0x66	Tire pressure monitoring system
BSD	0x67	Blind spot monitoring system

Table 5-3 Function code definitions

Function code	Definitions	Description and Requirements
0x2F	Query instruction	Used for the terminal to query whether peripherals exist
0x30	Restore default parameter instruction	Used for the terminal to restore peripheral parameters to factory Settings
0x31	Real-time data instruction	Used for the terminal to send speed, time, position and vehicle status data to peripherals
0x32	Example Query basic peripheral information	Used to query peripheral company information, product code, version number, device ID and other information on the terminal
0x33	Upgrade the peripheral program	Used to upgrade data interaction
0x34	Query parameter	Used for terminal query peripheral parameters
0x35	Set parameters	Used for terminal setting peripheral parameters
0x36	Incident/alarm reporting	For peripheral event/alarm data reporting
0x37	Querying peripheral status	Used for terminal query peripheral working status information
0x38	Peripheral status report	Used for peripherals to report working status information
0x50	Request multimedia data	Used for terminals to request multimedia data from peripherals
0x51	Upload multimedia data	Used for peripherals to upload multimedia data to terminals
0x52	Photo now command	Used for terminal control peripherals to take immediate pictures

5.5 General Directives

5.5.1 query instruction

Function code: 0x2F

Table 5-4 shows the format of the query command sent by the terminal to the peripheral.

Table 5-4 Definition of query instruction format

Peripheral number	Function code	Data area
See Table 5-2	0x2F	空

After receiving the command in Table 5-4, the peripheral should respond according to the command requirements. Table 5-5 shows the command format of the specific response.

Table 5-5 Formats of query response commands

Peripheral number	Function code	Data area
See Table 5-2	0x2F	empty

5.5.2 Peripheral Restore Default parameter instruction

Function code: 0x30

Table 5-6 shows the format of the command for restoring default parameters to peripherals.

Table 5-6 Definition of Restore default parameter instruction format

Peripheral number	Function code	Data area
See Table 5-2	0x30	empty

After receiving the instructions in Table 5-6 of the terminal, the peripheral should respond according to the instruction requirements. Table 5-7 shows the instruction format of the specific response.

Table 5-7 Definition of the command reply format for restoring default parameters

Peripheral number	Function code	Data area
See Table 5-2	0x30	空

5.5.3 Real-time Data Instruction

Function code: 0x31

Table 5-8 shows the format of the real-time data command that the terminal sends to peripherals.

Table 5-8 Real-time data instruction format definitions

Peripheral number	Function code	Data area
See Table 5-2	0x31	See Table 5-9

Table 5-9 Format definition of real-time data content

Start byte	Fields	Data type	Description and description
0	Speed	BYTE	The unit is km/h. The value ranges from 0 to 250

1	Reserved	BYTE	
2	Mileage	DWORD	The unit is 0.1km. Range 0 to 99999999
6	Reserved	BYTE[2]	
8	Elevation	WORD	Altitude, in meters (m)
10	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
14	Longitude	DWORD	The value of longitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
18	Date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
24	Vehicle status	WORD	Other state of the vehicle: Bit0 ACC state, 0: off, 1: Turn on Bit1 left turn state, 0: off, 1: turn on Bit2 right turn state, 0: off, 1: turn on Bit3 wiper state, 0: off, 1: turn on Bit4 brake state, 0: No brake, 1: brake Bit5 card state, 0: no card, 1: inserted card Bit6 Bit9 Custom Bit10 Positioning status, 0: not positioned, 1: Positioned Bit11 bit15 Custom

5.5.4 Read peripherals basic information instruction

Function code: 0x32

Table 5-10 shows the format of the command for terminal read peripherals basic information.

Table 5-10 Definition of the instruction format for reading basic information of peripherals

Peripheral number	Function code	Data area
See Table 5-2	0x32	empty

After receiving the command in Table 5-10, the peripheral responds according to the command requirements. Table 5-11 shows the command format for specific response.

Table 5-11 Definition of the command format of the peripheral answer basic information

Peripheral number	Function code	Data area
See Table 5-2	0x32	See Table 5-12

Table 5-12 Definition of the basic peripheral information content format

Start byte	Fields	Data type	Description and requirements
0	Company name Length	BYTE	Length: 0~255
1	Company name	BYTE[n1]	Name: ASCII (for example, software version SV1.1.0)

1+n1	Product code length	BYTE	It is expressed as: 0x53 0x56 0x31 0x2E 0x31 0x2E 0x30)
2+n1	Product code	BYTE[n2]	
2+n1+n2+n1+n2	Hardware version number length	BYTE	
	Hardware version number	BYTE[n3]	
3+n1+n2+n3+n1+n2+n3	Software version number length	BYTE	
	Software version number	BYTE[n4]	
4+n1+n2+n3+n4+n1+n2+n3+n4	Device ID Length	BYTE	
	Device ID	BYTE[n5]BYTE	
5+n1+n2+n3+n4+n5	Customer code Length		
6+n1+n2+n3+n4+n5	Client Code	BYTE[n6]	

5.5.5 Upgrade Instruction

Function code: 0x33

Table 5-13 lists the protocol instructions for the terminal to upgrade peripherals.

Table 5-13 Upgrade command data formats

Peripheral number	Function code	Data area	
See Table 5-2	0x33	Message ID (1 byte)	Total number of packets (2 bytes) + packet serial number (2 bytes) + Upgrade packet content, as described below

Description of the upgrade process:

a) Start the upgrade subcommand description:

Start upgrade subcommand: The message ID is 0x01 and the contents of the remaining data area are empty. Clear source subcommand: Message ID is 0x02, remaining data area content is empty. Transfer file bun command: Message ID is 0x03, the remaining data area content is described below. Execute new program subcommand: Message ID is 0x04, remaining data area content is empty.

b) Format description:

The vehicle terminal sends an upgrade file (the structure of the data area is: Total number of packets (2 bytes) + package serial number (2 bytes) + upgrade package content) to a peripheral subcontractor. It is recommended that the content length of each upgrade package not exceed 1024 bytes. When the communication is carried out through TCP/IP, the upgrade package length is not limited. The file content of the first upgrade package is the verification code of the upgrade file (occupying 4 bytes), which is the sum of all bytes of the upgrade file. After the peripheral receives all the upgrade files and verifies that the verification code is correct, it confirms to the terminal that the reception is complete, and starts the upgrade and replies. After the upgrade, the device parameters should remain unchanged.

c) Upgrade (peripheral) reply data content, see Table 5-14:

Reply content: 0x00 -- Success; 0x01 -- Failure.

Table 5-14 Format of response data for upgrade command peripherals

Peripheral number	Function code	Data area	
See Table 5-2	0x33	Message ID (1 byte)	When the message ID is 0x03, the contents of the data area are: Total number of packets (2 bytes) + packet serial number (bytes) + reply content (1 byte) When the message ID is not 0x03, the data area content is: Reply content (1 byte).

5.6 Parameter Settings Query instruction

5.6.1 Query active safety assistance system parameter instruction

Function code: 0x34

Table 5-15 shows the format of the terminal query active safety assistance system parameter instruction.

Table 5-15 Definition of parameter formats for querying Active safety assistance systems

Peripheral number	Function code	Data area
0x64	0x34	空

After receiving instructions in Table 5-15, peripherals should respond according to the instructions. Table 5-16 defines specific response data formats.

Table 5-16 Definition of response parameter instruction format

Peripheral number	Function code	Data area
0x64	0x34	See Table 5-17

Table 5-17 Definition of active safety assistance system parameter format

Start byte	Fields	Data type	Description and description
0	Alarm Enable speed threshold	BYTE	The unit is km/h. The value ranges from 0 to 60 and the default value is 30, indicating that the alarm function is enabled only when the vehicle speed is higher than the threshold. The alarm is applicable only to road deviation alarm, forward collision alarm, vehicle proximity alarm, and frequent lane change alarm. 0xFF indicates that this parameter is not modified
1	Alarm cue volume	BYTE	The maximum value is 0 to 8. The default value is 6. 0xFF indicates that the parameter is not modified
2	Active photo strategy	BYTE	0x00: Not on 0x01: Timed photo 0x02: Take pictures at a fixed distance 0x03: Hold The default is 0x00, 0xFF indicates that the parameter is not modified
3	Actively timer photo intervals	WORD	The value ranges from 0 to 3600, in seconds. The default value is 18000, and 0xFFFF, indicating that the parameter is not modified

			This parameter is valid when the active photo taking policy is 01
5	Active distance take photo distance intervals	WORD	The value ranges from 0 to 60000, in meters. The default value is 1000, indicating no capture. 0xFFFF is valid only when the active photo taking policy is 02.
7	Number of time intervals	BYTE	The value ranges from 1 to 10. The default 3 0xFF indicates that the parameters are not modified.
8	between single active shots	BYTE	The unit is 100ms. The value ranges from 1 to 5. The default value is 20xFF: the parameter is not modified.
9	Photo resolution	BYTE	0x01: 352×288 0x02: 704×288 0x03: 704×576 0x04: 640×480 0x05: 1280×720 0x06: 1920×1080 The default is 0x01, 0xFF means that the parameter is not modified, This parameter also applies to the alarm trigger photo resolution.
10	Video recording resolution	BYTE	0x01: CIF 0x02: HD1 0x03: D1 0x04: WD1 0x05: VGA 0x06: 720P 0x07: 1080P Default value 0x01 0xFF indicates that the parameters are not modified This parameter also applies to the alarm trigger photo resolution.
11	Reserved fields	BYTE[9]	Reserved for future expansion to configure parameters that are not separate alarm types
20	Obstacle alarm distance threshold	BYTE	The unit is 100ms. The value ranges from 10 to 50. The default value is 30 0xFF
21	Video recording time before and after obstacle alarm photograph	BYTE	The value ranges from 0 to 60. The default value 50 indicates that recording is not performed. The default value 30 indicates that capturing is not performed. The default value 20xFF indicates that the parameter is not modified. The value ranges from 30 to 120, and the default value 60 0xFF indicates that the parameter is not modified
22	number of obstacle alarm photograph interval	BYTE	
23	Frequent lane change alarm judgment time period	BYTE	
24	Video recording time after frequent lane change alarm judgment times	BYTE	
25		BYTE	The default value is 5 in seconds. The value ranges from 0 to 60. The default value is 50, indicating that no recording is performed
26	Before frequent channel change alarm	BYTE	
27	Frequent lane change alarm beat	BYTE	The value ranges from 0 to 10. The default value is 3

	Number of views		0 means no snap, 0xFF means no modification of parameters
28	Frequent lane change alarm Photo interval	BYTE	The unit is 100ms. The value ranges from 1 to 10. The default value is 20xFF
29	video recording time before and after lane departure alarm	BYTE	The value ranges from 0 to 60, in seconds. The default value is 5 0 indicates that no recording is performed, and 0xFF indicates that no parameter is modified
30	Lane departure alarm photograph number lane	BYTE	The value ranges from 0 to 10. By default, 30 indicates that the snapshot is not captured and 0xFF indicates that the snapshot is not modified
31	departure alarm photograph interval Forward	BYTE	The unit is 100ms. The value ranges from 1 to 10. The default value is 20xFF: the parameter is not modified
32	collision alarm time threshold Video recording time	BYTE	The unit is 100ms. The value ranges from 10 to 50. Currently, the national standard 27 is used
33	before and after forward collision alarm	BYTE	The value ranges from 0 to 60, in seconds. The default value 50 indicates that no recording is performed. 0xFF indicates that no parameter is modified
34	Number of forward collision alarm photos taken	BYTE	The value ranges from 0 to 10. By default, 30 indicates that the snapshot is not captured and 0xFF indicates that the snapshot is not modified
35	Forward collision alarm photo interval	BYTE	The unit is 100ms. The value ranges from 1 to 10. The default value is 20xFF: the parameter is not modified
36	pedestrian collision alarm time threshold video recording	BYTE	The unit is 100ms. The value ranges from 10 to 50. The default value is 30
37	time before and after pedestrian collision alarm number of pedestrian collision	BYTE	The value ranges from 0 to 60, in seconds. The default value 50 indicates that no recording is performed. 0xFF indicates that no parameter is modified
38	alarm photo	BYTE	The value ranges from 0 to 10. By default, 30 indicates that the snapshot is not captured and 0xFF indicates that the snapshot is not modified
39	Pedestrian collision alarm photo interval	BYTE	The unit is 100ms. The value ranges from 1 to 10. The default value is 20xFF: the parameter is not modified
40	Vehicle distance monitoring alarm distance threshold	BYTE	The unit is 100ms. The value ranges from 10 to 50. The default value is 300xFF
41	video recording time before and after the vehicle is too close to the	BYTE	The default value is 0 to 60. The default value is 50: no recording is performed.
42	alarm photograph number of vehicle is too close to the	BYTE	The default value is 30: no capturing is performed.
43	alarm photograph interval	BYTE	The default value is 30: no capturing is performed
44	Number of road sign identification photos	BYTE	The value ranges from 0 to 10. The default value is 3 0 indicates that the snapshot is not captured, and 0xFF indicates that the parameter is not modified
45	Road sign identification photo interval	BYTE	The unit is 100ms. The value ranges from 1 to 10. The default value is 20xFF
46	Retain fields	BYTE[4]	

5.6.2 Query the parameter instruction of the driver behavior detection system

Function code: 0x34

Table 5-18 shows the format of terminal query driver behavior detection system parameter instruction.

Table 5-18 Definition of parameter format of Query Driver behavior detection system

Peripheral number	Function code	Data area
0x65	0x34	There is no

After receiving the instructions in Table 5-18 of the terminal, the peripheral should respond according to the contents of the instructions, and the specific response data format is defined in Table 5-19.

Table 5-19 Definition of reply parameter instruction format

Peripheral number	Function code	Data area
0x65	0x34	See Table 5-20

Table 5-20 Definition of driver behavior detection system parameter format

Start byte	Fields	Data type	Description and description
0	Alarm Enable speed threshold	BYTE	The unit is km/h. The value ranges from 0 to 60. The default value is 30. Indicates that the alarm function is enabled only when the vehicle speed is higher than the threshold. 0xFF indicates that this parameter is not modified
1	Alarm Prompt Volume	BYTE	The maximum value is 0 to 8, and 0 is silent. The default value is 6, indicating that the parameter is not modified
2	Active photo strategy	BYTE	0x00: Not on 0x01: Timed photo 0x02: Take a photo at a fixed distance 0x03: The card is triggered 0x04: Leave the default at 0x00. 0xFF indicates that the parameter is not modified.
3	Actively timer photo intervals	WORD	The value ranges from 0 to 60000, in seconds. The default value is 36000, indicating that no capture is required.
5	Active distance take photo distance intervals	WORD	The value ranges from 0 to 60000, in meters. The default value is 2000, indicating that no capture is required.
7	Number of active photos per active	BYTE	The value ranges from 1 to 10. The default 3
8	photo interval	BYTE	0xFF indicates that the parameters are not modified. The unit is 100ms. The value ranges from 1 to 5. The default value of 2, indicating that no parameter is modified.
9	Photo resolution	BYTE	0x01: 352 × 288 0x02: 704 × 288 0x03: 704 × 576 0x04: 640 × 480 0x05: 1280 × 720 0x06: 1920 × 1080 The default value is 0x01,

			<p>OxFF means that the parameter is not modified, This parameter also applies to the alarm trigger photo resolution.</p>
10	Video recording resolution	BYTE	<p>Ox01: CIF Ox02: HD10x03: D1 Ox04: WD1 Ox05: 720P Ox06: 1080P</p> <p>Default value Ox01 OxFF indicates that the parameters are not modified This parameter also applies to alarm trigger video resolution.</p>
11	Reserved fields	BYTE[10]	<p>Reserved for future expansion, used with configured parameters that are not separate alarm types The number</p>
21	Smoking alarm when judging interspace	WORD	<p>The value ranges from 0 to 3600, in seconds. The default value is 180. Indicated here Trigger the smoking alarm only once in the interval. OxFFFF means that this parameter is not modified</p>
23	Call the police to determine the time interval	WORD	<p>The value ranges from 0 to 3600 in seconds. The default value is 120, indicating that only one incoming and outgoing call alarm is triggered during this interval. OxFFFF means that this parameter is not modified</p>
25	Drowsy driving before calling the police After video recording time	BYTE	<p>The value ranges from 0 to 60 seconds. The default value is 5. Views 0 indicates that no recording is performed, and OxFF indicates that no parameter is modified</p>
26	Drowsy driver alarm Take the Number of drowsy shots	BYTE	<p>The value ranges from 0 to 10, with the default being 3 0 indicates that the snapshot is not captured, and OxFF indicates that the parameter is not modified</p>
27	drowsy driver alarm photo interval	BYTE	<p>The value ranges from 1 to 5, expressed in 100ms. The default value is 2. Views OxFF indicates that the parameter is not modified</p>
28	Reserved	BYTE	Reserved field
29	Before and after calling the police Video recording time	BYTE	<p>The value ranges from 0 to 60 seconds. The default value is 5. Views 0 indicates no recording and OxFF indicates no parameter modification</p>
30	Call the police to take a picture of the driver's facial features Number of photographs	BYTE	<p>The value ranges from 1 to 10, the default is 3 0 means no snap, OxFF means no modification of parameters</p>
31	Answer and call the police to photograph the driver's facial features Time between photos	BYTE	<p>The value ranges from 1 to 5, expressed in 100ms. The default value is 2. Views OxFF means no modification of parameters</p>
32	Smoking alarm before and after video recording time	BYTE	<p>The value ranges from 0 to 60 seconds. The default value is 5. Views 0 indicates that no recording is performed, and OxFF indicates that no parameter is modified</p>
33	Smoking alarm take full facial features of driver Number of photos	BYTE	<p>The value ranges from 1 to 10. The default value is 3 0 means no snap, OxFF means no modification of parameters</p>
34	Smoking alarm take full facial features of driver Time between photos	BYTE	<p>The unit is 100ms. The value ranges from 1 to 5. The default value is 2 OxFFFF means no modification of parameters</p>
35	Video recording before and after the alarm Make time	BYTE	<p>The value ranges from 0 to 60, in seconds. The default value 50 indicates that no recording is performed and OxFF indicates that no parameter is modified</p>

36	Distracted driving alarm number of photos	BYTE	The value ranges from 1 to 10. The default value 30 indicates that the snapshot is not captured and 0xFF indicates that the parameter is not modified
37	Distracted driving alarm photo interval	BYTE	The unit is 100ms. The value ranges from 1 to 5. The default value is 20xFF: the parameter is not modified
38	Driving anomaly video recording time	BYTE	The value ranges from 0 to 60, in seconds. The default value 50 indicates that no recording is performed. 0xFF indicates that no parameter is modified
39	Number of abnormal driving snaps	BYTE	The value ranges from 1 to 10. The default value 30 indicates that the snapshot is not captured and 0xFF indicates that the parameter is not modified
40	Driving abnormal photo intervals	BYTE	The unit is 100ms. The value ranges from 1 to 5. The default value is 20xFF
41	Reserved Fields	BYTE[2]	

5.6.3 Query tire pressure monitoring system instructions

Function code: 0x34

Table 5-21 shows the format of the instruction for terminal query tire pressure monitoring system parameters.

Table 5-21 Definition of parameter format of query tire pressure monitoring system

Peripheral number	Function code	Data area
0x66	0x34	空

After receiving the instructions in Table 5-21 of the terminal, the peripheral should respond according to the contents of the instructions. The specific response data format is defined in Table 5-22.

Table 5-22 Definition of response parameter instruction format

Peripheral number	Function code	Data area
0x66	0x34	See Table 5-23

Table 5-23 Parameter format definition of tire pressure monitoring system

Start byte	Fields	Data type	Description and description
0	Tire specification Model number	BYTE[12]	Example: 195/65R15 91V 12 characters, expressed in ASCII. Default Value "900R20"
12	Tire pressure units	WORD	0x00: kg/cm2 0x01: bar 0 x 02: District aspera 0x03: PSI The default 0x03.0xFFFF means no parameter modification
14	Normal tire pressure values	WORD	Unit Unit of tire pressure. The default value is 140 0xFFFF means no modification of the parameter
16	Tire pressure imbalance alarm threshold	WORD	The unit is %(percentage) and ranges from 0 to 100 (to reach cold air pressure Value), the default value is 20

			OxFFFF indicates that the parameter is not modified
18	Slow leak alarm threshold	WORD	The value ranges from 0 to 100 (up to cold air pressure). The default value is 5OxFFFF, indicating that the parameter is not modified
20	Low pressure alarm threshold	WORD	Unit Tire pressure unit. The default value is 110OxFFFF, indicating that the parameter is not modified
22	High voltage alarm threshold	WORD	Unit Tire pressure unit. The default value is 189OxFFFF, indicating that the parameter is not modified
24	Heat alarm threshold	WORD	The default value is 80OxFFFF, indicating that the parameter is not modified
26	Voltage alarm threshold	WORD	The value ranges from 0 to 100, and the default value is 10. OxFFFF indicates that the parameter is not modified
28	Schedule reporting intervals	WORD	The value ranges from 0 to 3600, in seconds. The default value is 60. 0 indicates that the parameter is not reported, and OxFFFF indicates that the parameter is not modified
30	Reserved Items	BYTE[6]	Reserved items are zeroed out

5.6.4 Queries the instruction of the blind zone monitoring system

Function code: 0x34

Table 5-24 shows the format of the instruction to query the parameters of the blind zone monitoring system.

Table 5-24 Defines the format of query blind spot monitoring system parameter

Peripheral number	Function code	Data area
0x67	0x34	空

After receiving the instructions in Table 5-24, peripheral devices should respond according to the instructions. Table 5-25 defines the specific response data formats.

Table 5-25 Defines the format of the reply parameter command

Peripheral number	Function code	Data area
0x67	0x34	See Table 5-26

Table 5-26 Format definition of parameters of the blind spot monitoring system

Start byte	Fields	Data type	Description and description
0	Rear approach when calling the alarm	BYTE	The value ranges from 1 to 10, in seconds. The default value is 2
	Intermediate threshold		OxFF indicates that the parameter is not modified
1	Side and rear approach alarm	BYTE	The value ranges from 1 to 10, in seconds. The default value is 2OxFF, indicating that the parameter is not modified
	Time threshold		

5.6.5 Set Advanced Driver Assistance System Parameter Instruction

Function code: 0x35

Table 5-27 shows the format of the terminal Settings Advanced Driver assistance system parameter instruction.

Table 5-27 Setting Advanced Driver Assistance System parameter instruction format definition

Peripheral number	Function code	Data area
0x64	0x35	See Table 5-17

After receiving the instructions in Table 5-27, peripheral devices should respond according to the contents of the instructions. Table 5-28 defines the specific response data format.

Table 5-28 Defines the format of the reply parameter command

Peripheral number	Function code	Data area
0x64	0x35	1 byte: 0- success, 1- failure

5.6.6 Sets the driver condition monitoring system parameter instruction

Function code: 0x35

Table 5-29 shows the format of parameter instruction for terminal setting driver condition monitoring system.

Table 5-29 Definition of parameter instruction format of setting driver status monitoring system

Peripheral number	Function code	Data area
0x65	0x35	See Table 5-20

After receiving the instructions in Table 5-29, peripheral devices should respond according to the contents of the instructions. The specific response data format is defined in Table 5-30.

Table 5-30 Defines the format of the reply parameter command

Peripheral number	Function code	Data area
0x65	0x35	1 byte: 0- success, 1- failure

5.6.7 Sets the tire pressure Monitoring system parameter instruction

Function code: 0x35

Table 5-31 shows the format of the terminal setting tire pressure monitoring system parameter instruction.

Table 5-31 Setting tire pressure monitoring system parameter instruction format definition

外设编号	功能码	数据区

0x66	0x35	见表 5-23
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After receiving the commands listed in Table 5-31, the peripheral responds according to the commands. Table 5-32 defines the response data format.

Table 5-32 Defines the format of the reply parameter command

Peripheral number	Function code	Data area
0x66	0x35	1 byte: 0- success, 1- failure

5.6.8 Sets the Blind Spot Monitoring system parameter instruction

Function code: 0x35

Table 5-33 shows the format of the instruction for setting blind zone monitoring system parameters.

Table 5-33 Defines the format of setting Blind zone monitoring system parameter instruction

Peripheral number	Function code	Data area
0x67	0x35	See Table 5-26

After receiving the instructions in Table 5-33, peripheral devices should respond according to the contents of the instructions. Table 5-34 defines the specific response data format.

Table 5-34 Defines the format of the reply parameter command

Peripheral number	Function code	Data area
0x64	0x35	1 byte: 0- success, 1- failure

5.7 Incident and Alarm Instruction

5.7.1 Advanced Driver Assistance System Alarm instruction

Function code: 0x36

Table 5-35 shows the format of the event and alarm instructions uploaded to the terminal by the advanced driver assistance system.

表5-35 事件及报警指令格式定义

Peripheral number	Function code	Data area
0x64	0x36	See Table 5-37

After receiving the instructions in Table 5-35, the terminal shall respond according to the contents of the instructions. The specific response data format is defined in Table 5-36.

Table 5-36 Definition of event and alarm response formats

外设编号	功能码	数据区
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0x64	0x36	空
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Table 5-37 Definition of event and alarm response formats

Start byte	Fields	Data length	Description and requirements
0	Alarm ID	DWORD	According to the alarm sequence, the cycle starts from 0.
4	Flag status	BYTE	0x00: Unavailable 0x01: Start flag 0x02: End marker This field is only applicable to alarms or events with start and end flags. If the alarm type or event type does not have start and end flags, this field is unavailable. Enter 0x00.
5	Type of alarm/incident	BYTE	0x01: Forward collision alarm 0x02: Lane Departure alarm 0x03: Vehicle too Close alarm 0x04: Pedestrian collision alarm 0x05: Frequent lane change alarm 0x06: Road sign over limit alarm 0x07~0x0F: User-defined 0x10: Road sign recognition event 0x11: Active capture event 0x12~0x1F: User-defined
6	Speed of the car in front	BYTE	The unit is Km/h and ranges from 0 to 250. It is valid only when the alarm type is 0x01 and 0x02.
7	Front car/pedestrian distance	BYTE	Unit 100ms, range 0 to 100, valid only when alarm type is 0x01, 0x02, and 0x04.
8	Deviate Type	BYTE	0x01: Left side deviation 0x02: Right side deviation Valid only if alarm type is 0x02
9	Type of road sign recognition	BYTE	0x01: Speed limit sign 0x02: Height limit sign 0x03: Weight limit mark Valid only if alarm types are 0x06 and 0x10.
10	Road sign identification data	BYTE	Data that recognizes road signs.
11	Speed of vehicle	BYTE	The unit is Km/h. The value ranges from 0 to 250
12	Elevation	WORD	Altitude, in meters (m)
14	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
18	Longitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
22	Date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)

28	Vehicle status	WORD	See Table 5-9
30	Alarm Additional multimedia information list total	BYTE	
31	Multimedia Information List		Table 5-38 shows the format of the media information list

Table 5-38 Format of the media information list

Start byte	Fields	Data length	Description
0	Types of multimedia	BYTE	0x00: Picture 0x01: Audio 0x02: Video
1	Multimedia ID	DWORD	> 0

5.7.2 Alarm instruction of the driver condition monitoring system

Function code: 0x36

Table 5-39 shows the format of the event and alarm instruction that the driver status monitoring system transmits to the terminal.

Table 5-39 Defines the format of event and alarm instruction

Peripheral number	Function code	Data area
See Table 5-2	0x36	See Table 5-41

After receiving the instructions in Table 5-39, the terminal shall respond according to the contents of the instructions. The specific response data formats are defined in Table 5-40.

Table 5-40 Definition of event and alarm response formats

Peripheral number	Function code	Data area
See Table 5-2	0x36	空

Table 5-41 Definition of event and alarm response formats

Start byte	Fields	Data length	Description and requirements
0	Alarm ID	DWORD	According to the alarm sequence, the cycle starts from 0.
4	Flag status	BYTE	0x00: Unavailable 0x01: Start flag 0x02: End flag This field is only applicable to alarms or events with start and end flags. If the alarm type or event type does not have start and end flags, this field is unavailable. Enter 0x00.
5	Type of alarm/incident	BYTE	0x01: Fatigue driving alarm 0x02: Call 911

			0x03: Smoking alarm 0x04: Distracted driving alarm 0x05: Abnormal driver alarm 0x06-0x0F: User-defined 0x10: Active capture event 0x11: Driver changes event
6	Fatigue level	BYTE	Indicates the degree of fatigue, ranging from 1 to 10. The larger the value, the more serious the degree of fatigue. It is only valid when the alarm type is 0x01.
7	Reserved	BYTE [4]	Reserved
11	Speed	BYTE	The unit is Km/h. The value ranges from 0 to 250
12	Elevation	WORD	Altitude, in meters (m)
14	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
18	Longitude	DWORD	The value of longitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
22	Date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
28	Vehicle status	WORD	See Table 5-9
30	Alarm Additional multimedia information list total	BYTE	
31	Multimedia Information List		Table 5-42 shows the format of the media information list

Table 5-42 Format definitions of the media information list

Start byte	Fields	Data length	Description
0	Types of multimedia	BYTE	0x00: Picture 0x01: Audio 0x02: Video
4	Multimedia ID	DWORD	> 0

5.7.3 Tire Pressure Monitoring System Instruction

Function code: 0x36

Table 5-43 shows the format of the event and alarm instruction that the tire pressure monitoring system sends to the terminal.

Table 5-43 Defines the format of event and alarm instruction

Peripheral number	Function code	Data area
See Table 5-2	0x36	See Table 5-44

The terminal received an error! Reference source not found. After the command of 43, a response should be made according to the command content. Table 5-45 defines the specific response data format.

Table 5-44 Definition of event and alarm response formats

Peripheral number	Function code	Data area
See Table 5-2	0x36	空

Table 5-45 Definition of event and alarm response formats

Start byte	Fields	Data length	Description and requirements
0	Alarm ID	DWORD	According to the alarm sequence, the cycle starts from 0.
4	Flag status	BYTE	0x00: Unavailable 0x01: Start flag 0x02: End flag This field is only applicable to alarms or events with start and end flags. If the alarm type or event type does not have start and end flags, this field is unavailable. Enter 0x00.
5	Speed	BYTE	The unit is Km/h. The value ranges from 0 to 250
6	Elevation	WORD	Altitude, in meters (m)
8	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
12	Longitude	DWORD	The value of longitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
16	Date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
22	Vehicle status	WORD	See Table 5-9
24	Total number of alarm/incident lists	BYTE	
25	List of alarm/incident information		See Table 5-46

Table 5-46 Format of tire pressure monitoring alarm/event information list

Start byte	Fields	Data length	Description
0	Tire pressure alarm location	BYTE	Alarm tire position number (numbered from the left front wheel in a Z-shape from 00, the number is not related to whether the TPMS is installed)
1	Type of alarm/event	WORD	0 means no alarm and 1 means alarm bit0: Tire pressure (reported regularly) bit1: high tire pressure alarm bit2: low tire pressure alarm bit3: Tire temperature alarm bit4: Abnormal sensor alarm bit5: tire pressure imbalance alarm bit6: Slow leakage alarm bit7: Low battery alarm

			bit8 bit15: reserved
3	Tire Pressure	WORD	Unit Kpa
5	Tire temperature	WORD	Unit °C
7	Battery level	WORD	Unit %

5.7.4 Blind Spot Monitoring System Instruction

Function code: 0x36

Table 5-47 shows the format of the events and alarm instructions uploaded to the terminal by the blind area monitoring system.

Table 5-47 Defines the format of event and alarm instruction

Peripheral number	Function code	Data area
See Table 5-2	0x36	See Table 5-49

After receiving the instructions in Table 5-47, the terminal shall respond according to the contents of the instructions. The specific response data format is defined in Table 5-48.

Table 5-48 Definition of event and alarm response formats

Peripheral number	Function code	Data area
See Table 5-2	0x36	empty

Table 5-49 Definition of event and alarm response formats

Start byte	Fields	Data length	Description and requirements
0	Reserved	BYTE	reserve
4	Flag status	BYTE	0x00: Unavailable 0x01: Start flag 0x02: End flag This field only applies to alarms or events that have a start and end flag type, if the alarm type or event type does not have a start and end flag, this bit is not available, just fill in 0x00.
5	Type of alarm/incident	BYTE	0x01: Rear approach alarm 0x02: Left rear approach alarm 0x03: Right rear approaching alarm
6	Speed	BYTE	In Km/h. The value ranges from 0 to 250
7	Elevation	WORD	Altitude, in meters (m)
9	Latitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to one millionth of a degree
13	Longitude	DWORD	The value of latitude in degrees is multiplied by 10 to the power of 6, accurate to millionths of a degree
17	Date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)

23	车辆状态	WORD	见表 5-9
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5.8 Peripheral working status instruction

5.8.1 Query the peripheral working status instruction

Function code: 0x37

Table 5-50 shows the format of the terminal request peripherals working status instruction

Table 5-50 Definitions of multimedia instruction formats

Peripheral number	Function code	Data area
See Table 5-2	0x37	空

After receiving the commands listed in Table 5-50, the peripheral responds according to the commands. Table 5-51 defines the specific response data formats.

Table 5-51 Definitions of multimedia command formats

Peripheral number	Function code	Data area
See Table 5-2	0x37	Table 5-54 lists the operating status

5.8.2 Uploads working status commands for peripherals

Function code: 0x38

Table 5-52 shows the format of the peripherals upload working status instruction

Table 5-52 Formats of peripheral upload working status instructions

Peripheral number	Function code	Data area
See Table 5-2	0x38	Table 5-54 lists the operating status

After receiving the command in Table 5-52, the terminal should respond according to the command content. Table 5-53 defines the specific response data format.

Table 5-53 Format of peripherals upload working status instruction

Peripheral number	Function code	Data area
See Table 5-2	0x38	empty

Table 5-54 Operating status of peripherals

Start byte	Fields	Data length	Description and requirements
0	Working status	BYTE	0x01: Working properly

		0x02: Standby 0x03: Upgrade maintenance 0x04: Device is abnormal
	Alarm status	Set by bit: 0 for none, 1 for yes bit0: The camera is abnormal bit1: Abnormal main memory bit2: abnormal main memory bit3: Abnormal infrared fill light bit4: abnormal speaker bit5: abnormal battery bit6 bit9: reserved bit10: abnormal communication module bit11: Defines module exceptions bit12 to bit31: reserved

5.9 Multimedia Directives

5.9.1 Request multimedia Data Instruction

Function code: 0x50

Table 5-55 shows the format of the terminal Request multimedia data instruction.

Table 5-55 Multimedia instruction format definitions

Peripheral number	Function code	Data area	
		Message ID	Multimedia ID
See Table 5-2	0x50	For details, see Table 5-57	DWORD

After receiving the command in Table 5-55, peripheral devices should respond according to the command content. Table 5-56 defines the specific response data format.

Table 5-56 Definition of multimedia command reply formats

Peripheral number	Function code	Data area
See Table 5-2	0x50	空

Table 5-57 Definitions of multimedia message ids

Message ID	Definition	Description and Requirements
0x00	Request picture	When the peripheral receives the command, it replies the picture data to the terminal
0x01	Request audio	When the peripheral receives the command, it replies the audio data to the terminal
0x02	Request video	After receiving the command, the peripheral replies the video data (including audio data) to the terminal.

5.9.2 Transfer multimedia data instruction

Function code: 0x51

Table 5-58 shows the format of the peripheral Transmit multimedia data instruction.

Table 5-58 Definitions of Transmit multimedia data instruction formats

Peripheral number	Function code	Data area		
		Message ID	Multimedia ID	Multimedia Data Format
See Table 5-2	0x51	For details, see Table 5-57	DWORD	See Table 5-59

Table 5-59 Multimedia data formats

Start byte	Fields	Data length	Description and requirements
0	Total packet count	WORD	Total multimedia data packets If the total number of packets is 0, no corresponding data is available
2	Packet serial number	WORD	Serial number of the current multimedia packet, starting from 0
4	Multimedia data	BYTE[n]	It is recommended that each packet contains no more than 1024 bytes for network communication There are no restrictions

After receiving the instructions in Table 5-58, the terminal should reply with the response results, as shown in Table 5-60.

Table 5-60 Definition of the reply format for receiving multimedia data

Peripheral number	Function code	Data area		
		Message ID	Multimedia ID	Response Results
See Table 5-2	0x51	For details, see Table 5-57	DWORD	See Table 5-61

Table 5-61 Formats of the reply results for receiving multimedia data

Start byte	Fields	Data length	Description and requirements
0	Total packet count	WORD	Total multimedia data packets If the total number of packets is 0, no corresponding data is available
2	Packet serial number	WORD	Serial number of the current multimedia packet, starting from 0
4	Response results	BYTE	0: successful 1: Failure

5.10 Take a Picture Now Command

Function code: 0x52

Table 5-62 shows the format of the instant photo command sent by the terminal.

Table 5-62 Formats of the instant photo sending command on a terminal

Peripheral number	Function code	Data area
See Table 5-2	0x52	There is no

After receiving the command to take a picture immediately, the peripheral responds according to the command content. Table 5-63 defines the response data formats.

Table 5-63 Defines the response formats of peripheral control commands

Peripheral number	Function code	Data area
See Table 5-2	0x52	0: success 1: Failure

After receiving the command to take a picture immediately, the peripheral takes a picture according to the parameters of the active photo function. After taking a picture, the peripheral reports the active photo event.

