

T/JSATL 12 - 2017

Active safety intelligent prevention and control system for road transport vehicles (communication protocol specification)

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Foreword

This standard is compiled in accordance with GB/T1.1-2009 "Guidelines for Standardization Work Part 1: Standard Structure and Writing Rules".

1 scope

This agreement is a supplement and extension to JT/T 808-2013 "Technical Specifications for Communication Protocol of Beidou Compatible Vehicle Terminals of Road Transport Vehicle Satellite Positioning System", which specifies the communication protocol between the vehicle terminal of the 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 references

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

JT/T 808 Communication protocol and data format of satellite positioning system terminals for road transport vehicles .

JT/T 1078-2016 Video communication protocol for satellite positioning system of road transport vehicles .

GB/T 26773-2011 Technical requirements and test methods for early warning systems for driving hazards of commercial vehicles .

JT/T 883-2014 Intelligent Transportation System Lane Departure Warning System Performance Requirements and Testing Methods .

3 Terms, Definitions and Abbreviations

3.1 Acronym

The following abbreviations apply to this document.

ADAS: Advanced Driver Assistant System

DSM: Driving State Monitoring

TPMS: Tire Pressure Monitoring Systems

BSD: Blind Spot Detection

CAN : Controller Area Network (Controller Area Network)

4 Terminal and Platform Protocol Basics

4.1 Basic terms of the agreement

The communication method, data type, transmission rules and message composition of the protocol are in accordance with the requirements of Chapter 4 of JT/T 808 - 2011.

The packet classification in the protocol refers to the classification method in Section 4.3 of JT/T 1078 - 2016.

The communication connection mode of the signaling data message in the protocol is in accordance with the requirements of Chapter 5 of JT/T 808 - 2011 .

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

The encryption mechanism of the signaling data message in the protocol complies with the requirements of Chapter 7 of JT/T 808-2011 .

The parties to the platform and terminal communication in the agreement shall meet the following requirements :

- Unless expressly agreed, all messages shall be answered.
- If the dedicated response message is not specified explicitly , the general response shall be used for reply.
- For messages with sub-packages , the responder shall respond to each sub-packet message one by one.

4.2 Basic information query command

4.2.1 Query basic information

The basic information query message uses the 0x8900 message defined in 8.61 of JT/T 808-2011, see Table 4-1 .

Table 4-1 query basic information data format

start byte	field	Data length	Description and requirements
0	Transparent message type	BYTE	See table 4-3
1	Total number of peripheral ID lists	BYTE	
2	Peripheral ID	BYTE	Peripheral ID definition see Table 4-5

4.2.2 Upload basic information

The upload basic information message adopts the 0x0900 message defined in 8.62 of JT/T 808-2011, and the added parameter settings are shown in Table 4-2 .

Table 4-2 upload basic information data format

start byte	field	Data length	Description and requirements
0	Transparent message type	BYTE	See table 4-3 for the definition of transparent message types
1	Total message list	BYTE	
2	Peripheral Message Structure		See Table 4- 4

Table 4-3 Transparent transmission message type definition table

Transparent transmission type	definition	Description and requirements
status query	0x F7	Peripheral status information: peripheral working status, device alarm information
Information query	0xF8	Basic information of peripheral sensors: company information, product code, version number, peripheral ID, customer code.

Table 4-4 Peripheral message structure for transparent transmission

start byte	field	Data length	Description and requirements
0	Peripheral ID	BYTE	Peripheral ID definition see Table 4-5
1	message length	BYTE	
2	Message content		When the transparent transmission message type is 0xF7, the message content is shown in Table 4-6. When the transparent transmission message type is 0xF8, the message content is shown in Table 4-7.

Table 4-5 peripheral ID definition table

peripheral name	Peripheral ID	Description and requirements
ADAS	0x64	Advanced Driver Assistance Systems
DSM	0x65	Driver Status Monitoring System
TPMS	0x66	Tire Pressure Monitoring System
BSD	0x67	Blind Spot Monitoring System

Table 4-6 peripheral status information

start byte	field	Data length	Description and requirements
0	working status	BYTE	0x01: normal operation 0x02 : Standby state 0x03: upgrade maintenance 0x04: Device abnormal 0x10 : Disconnect
1	Alarm status	DWORD	Set by bit: 0 means no, 1 means yes bit0: abnormal camera bit1: Main memory error bit2: Auxiliary memory abnormality bit3: Abnormal infrared fill light bit4: Abnormal speaker bit5 : battery abnormality bit6 ~ bit9 : Reserved bit10 : The communication module is abnormal bit11 : The positioning module is abnormal bit12~bit31: reserved

Table 4-7 peripheral system information

start byte	field	type of data	Description and requirements
0	Company name length	BYTE	Length: 0~32 Name: expressed in ASCII (for example: software version number SV1.1.0) Represented as 0x53 0x56 0x31 0x2E 0x31 0x2E 0x30) The customer code is the user code , which is customized by the peripheral manufacturer
1	Company Name	BYTE[n1]	
1+n1	Product model length	BYTE	
2+n1	product model	BYTE[n2]	
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 Parameter setting query command

4.3.1 Parameter setting command

.The parameter setting message adopts the 0x8103 message defined in 8.8 of JT/T 808-2011, see the added parameter setting in table 4-8.

Table 4-8 Data format of parameter items

field	type of data	Description and requirements
parameter ID	DWORD	Parameter ID definition and description, see Table 4-5
parameter length	BYTE	
parameter value		

Table 4-9 Definition and description of each parameter item in parameter settings

parameter ID	type of data	Description and requirements
0xF364		Advanced driver assistance system parameters, see Table 4-10
0xF365		Driver status monitoring system, see Table 4-11
0xF366		Parameters of tire pressure monitoring system, see Table 4-12
0xF367		Blind spot monitoring system parameters, see Table 4-13

Table 4-10 Parameters of advanced driver assistance systems

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start byte	field	type of data	Description and instructions
0	Alarm judgment speed threshold	BYTE	The unit is km/h, the value range is 0~60, and the default value is 30. It is only applicable to road departure alarm, forward collision alarm, vehicle distance too close alarm and frequent lane change alarm. Indicates that the alarm function is enabled only when the vehicle speed is higher than this threshold 0xFF means do not modify this parameter
1	Alarm prompt volume	BYTE	0~8, 8 is the maximum, 0 is mute , the default value is 6 0xFF means do not modify parameters
2	active photography strategy	BYTE	0x00: Disabled 0x01: Timed photo taking 0x02: Take pictures at a fixed distance 0x03: reserved The default value is 0x00 , 0xFF means do not modify parameters .
3	Active timing photo interval	WORD	The unit is second, the value range is 0~3600, the default value is 60, 0 means no capture, 0xFFFF means no parameter modification Valid when the active camera policy is 0x 01
5	Active fixed-distance camera distance interval	WORD	The unit is meter, the value range is 0~60000, the default value is 200, 0 means no capture, 0xFFFF means no parameter modification Valid when the active camera policy is 0x 02
7	The number of active photos taken at a time	BYTE	Value range 1-10 , default 3 0xFF means do not modify parameters
8	Time interval for a single active photoshoot	BYTE	The unit is 100ms , the value range is 1~5, the default value is 2, 0xFF means do not modify parameters

start byte	field	type of data	Description and instructions
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 , 0xFF means do not modify parameters , This parameter is also applicable 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 means do not modify parameters This parameter also applies to alarm trigger video resolution.
11	Alarm enable	D WORD	Alarm enable bit 0: off 1: on bit0 : Level 1 alarm for obstacle detection bit1 : Obstacle detection secondary alarm bit2 : Level 1 alarm for frequent lane changes bit3 : secondary alarm for frequent lane changes bit4 : Level 1 warning for lane departure bit5 : Lane departure secondary alarm bit6 : Level 1 forward collision alarm bit7 : forward collision level 2 alarm bit8 : Level 1 alarm for pedestrian collision bit9 : Pedestrian collision secondary alarm bit10 : Level 1 alarm when the vehicle distance is too close bit11 : Level 2 alarm for too close vehicle distance bit12~bit15: user-defined bit16: Road sign overrun alarm bit17~bit29: user-defined bit30~bit31: reserved Default value 0x00010FFF 0xFFFFFFFF means do not modify parameters

start byte	field	type of data	Description and instructions
15	event enable	D WORD	Event enable bit 0: off 1: on bit0 : road sign recognition bit1 : take pictures actively bit2 ~ bit29: user-defined bit30~bit31: reserved Default value 0x00000003 0xFFFFFFFF means do not modify parameters
19	reserved field	BYTE	reserved
20	Obstacle alarm distance threshold	BYTE	The unit is 100ms, the value range is 10-50, and the default value is 30 0xFF means do not modify parameters
twenty one	Obstacle alarm classification speed threshold	BYTE	The unit is km/h, the value range is 0~220, and 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 0xFF means do not modify parameters
twenty two	Video recording time before and after obstacle alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5, 0 means no recording, 0xFF means no parameter modification
twenty three	Obstacle alarm photo number	BYTE	The value range is 0-10, the default value is 3, 0 means no capture, 0xFF means no parameter modification
twenty four	Obstacle alarm photo interval	BYTE	The unit is 100ms , the value range is 1~10, the default value is 2 , 0xFF means do not modify parameters
25	Frequent lane change alarm judgment time period	BYTE	The unit is second, the value range is 30~120, the default value is 60 , 0xFF means do not modify parameters
26	Frequent lane change alarm judgment times	BYTE	Lane change times 3~10, default 5 , 0xFF means do not modify parameters

start byte	field	type of data	Description and instructions
27	Frequent lane change warning graded speed threshold	BYTE	The unit is km/h, the value range is 0~220, and the default value is 50, which means 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 0xFF means do not modify parameters
28	Video recording time before and after frequent lane change alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 , 0 means no recording, 0xFF means no parameter modification
29	Number of photos taken for frequent lane change alarm	BYTE	The value range is 0-10, the default value is 3 , 0 means no capture, 0xFF means no parameter modification
30	Frequent lane change alarm photo interval	BYTE	The unit is 100ms, the value range is 1~10, the default is 2 , 0xFF means do not modify parameters
31	Lane Departure Warning Grading Speed Thresholds	BYTE	The unit is km/h, the value range is 0~220, and 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 means no recording, 0xFF means no parameter modification
32	Video recording time before and after lane departure alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 , 0 means no recording, 0xFF means no parameter modification
33	Number of photos taken by lane departure alarm	BYTE	The value range is 0-10, the default value is 3 , 0 means no capture, 0xFF means no modification

start byte	field	type of data	Description and instructions
34	Lane departure alarm photo interval	BYTE	The unit is 100ms , the value range is 1~10, and the default value is 2 0xFF means do not modify parameters
35	Forward collision warning time threshold	BYTE	The unit is 100ms, and the value range is 10~50. Currently, the national standard value is 27, and the modification interface is reserved . 0xFF means do not modify parameters
36	Forward Collision Warning Grading Speed Thresholds	BYTE	The unit is km/h, the value range is 0~220, and 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 0xFF means do not modify parameters
37	Video recording time before and after forward collision warning	BYTE	The unit is second, the value range is 0-60, the default value is 5, 0 means no recording, 0xFF means no parameter modification
38	Number of photos taken with forward collision warning	BYTE	The value range is 0-10, the default value is 3 , 0 means no capture, 0xFF means no modification
39	Forward collision warning photo interval	BYTE	The unit is 100ms , the value range is 1~10, the default value is 2 , 0xFF means do not modify parameters
40	Pedestrian collision warning time threshold	BYTE	The unit is 100ms, the value range is 10-50, the default value is 30 , 0xFF means do not modify parameters
41	Pedestrian collision warning enable speed threshold	BYTE	The unit is km/h, the value range is 0~220, and the default value is 50. When it is lower than this value, it will alarm , and when it is higher than this value, the function will be closed . 0xFF means do not modify parameters

start byte	field	type of data	Description and instructions
42	Video recording time before and after pedestrian collision alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 , 0 means no recording, 0xFF means no parameter modification
43	Pedestrian collision alarm photo number	BYTE	The value range is 0-10, the default value is 3 , 0 means no capture, 0xFF means no modification
44	Pedestrian collision alarm photo interval	BYTE	Unit 100ms , value range 1~10, the default value is 2 , 0xFF means do not modify parameters
45	Vehicle distance monitoring alarm distance threshold	BYTE	The unit is 100ms, the value range is 10-50, the default value is 10 , 0xFF means do not modify parameters
46	Vehicle distance monitoring alarm classification speed threshold	BYTE	The unit is km/h, the value range is 0~220, and 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 0xFF means do not modify parameters
47	Video recording time before and after the car distance is too close to the alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 , 0 means no recording, 0xFF means no parameter modification
48	The number of photos taken when the car is too close to the alarm	BYTE	The value range is 0-10, the default value is 3 , 0 means no capture, 0xFF means no parameter modification

start byte	field	type of data	Description and instructions
49	Vehicle distance is too close alarm photo interval	BYTE	The unit is 100ms , the value range is 1~10, the default value is 2 , 0xFF means do not modify parameters
50	Number of photos taken for road sign recognition	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
51	Road sign recognition photo interval	BYTE	The unit is 100ms , the value range is 1~10, and the default value is 2 0xFF means do not modify parameters
52	reserved text	BYTE[4]	

Table 4-11 driver status monitoring system parameters

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start byte	field	type of data	Description and instructions
0	Alarm judgment speed threshold	BYTE	The unit is km/h, the value range is 0~60, and the default value is 30. Indicates that the alarm function is enabled only when the vehicle speed is higher than this threshold 0xFF means do not modify this parameter
1	alarm volume	BYTE	0~8, 8 is the maximum, 0 is mute , the default value is 6 0xFF means do not modify parameters
2	active photography strategy	BYTE	0x00: Disabled 0x01: Timed photo taking 0x02: Take pictures at a fixed distance 0x 03 : card trigger 0x04: reserved The default value is 0x00 , 0xFF means do not modify parameters
3	Active timing photo interval	WORD	The unit is second, the value range is 60~60000, the default value is 3600 0xFF means do not modify parameters
5	Active fixed-distance camera distance interval	WORD	The unit is meter, the value range is 0~60000, the default value is 200 0 means no capture, 0xFFFF means no parameter modification The active camera policy is valid when it is 02.
7	The number of active photos taken at a time	BYTE	The value range is 1-10. Default value 3 , 0xFF means do not modify parameters
8	Time interval for a single active photoshoot	BYTE	The unit is 100ms , the value range is 1~5, the default value is 2 , 0xFF means do not modify parameters
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 , 0xFF means do not modify parameters , This parameter is also applicable to the alarm trigger photo resolution .

start byte	field	type of data	Description and instructions
10	Video recording resolution	BYTE	0x01: CIF 0x02: HD1 0x03: D1 0x04: WD1 0x05 : VGA 0x06: 720P 0x07: 1080P Default value 0x01 0xFF means do not modify parameters This parameter also applies to alarm trigger video resolution .
11	Alarm enable	D WORD	Alarm enable bit 0: off 1: on bit0 : Tier 1 alarm for fatigue driving bit1 : Tier 2 alarm for fatigue driving bit2 : Make and receive phone calls, first-level alarm bit3 : make and receive phone calls, secondary alarm bit4 : Level 1 alarm for smoking bit5 : Smoking secondary alarm bit6 : Level 1 alarm for distracted driving bit7 : Level 2 alarm for distracted driving bit 8: Level 1 alarm for driver abnormality bit9 : driver abnormal secondary alarm bit10~ bit 29: user-defined bit30~bit31: Reserved Default value 0x0000 01FF 0x FFFF FFFF means do not modify parameters
15	event enable	D WORD	Event enable bit 0: off 1: on bit0 : driver change event bit1 : active camera event bit 2 ~ bit 29: user-defined bit30~bit31: Reserved Default value 0x00000003 0x FFFFFFFF means do not modify parameters
19	Smoking alarm judgment time interval	WORD	The unit is second , and the value range is 0 ~ 3600 . The default value is 180. Indicates that only one smoking alarm is triggered within this time interval. 0xFF means do not modify this parameter

start byte	field	type of data	Description and instructions
2 1	Receive and call alarm judgment time interval	WORD	The unit is second , and the value range is 0 ~ 3600 . The default value is 1 2 0. Indicates that only one incoming and outgoing call alarm is triggered within this time interval. 0xFF means do not modify this parameter
2 3	reserved field	BYTE[3]	reserved text
26	Fatigue driving alarm classification speed threshold	BYTE	The unit is km/h, the value range is 0~220, and 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 0xFF means do not modify parameters
27	Video recording time before and after fatigue driving alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
28	Fatigue driving alarm photo number	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
29	Fatigue driving alarm photo interval time	BYTE	Unit 100ms , The value range is 1~5, the default is 2 , 0xFF means do not modify parameters
30	Receive and call alarm grading speed threshold	BYTE	The unit is km/h, the value range is 0~220, and 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 0xFF means do not modify parameters
31	Video recording time before and after calling and alarming	BYTE	The unit is second, the value range is 0-60, the default value is 5 , 0 means no recording, 0xFF means no parameter modification
32	photos of the driver's facial features	BYTE	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
33	Interval time between receiving and calling the police and taking photos of the driver's facial features	BYTE	Unit 100ms , The value range is 1~5, the default value is 2 0xFF means do not modify parameters

start byte	field	type of data	Description and instructions
34	Smoking alarm graded vehicle speed threshold	BYTE	The unit is km/h, the value range is 0~220, and 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 0xFF means do not modify parameters
35	Video recording time before and after smoking alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
36	Smoking alarm to take photos of the driver's facial features	BYTE	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
37	Smoking alarm to take pictures of the driver's facial features at intervals	BYTE	Unit 100ms, Value range 1~5, default 2 0xFF means do not modify parameters
38	Distracted driving warning graded vehicle speed threshold	BYTE	The unit is km/h, the value range is 0~220, and 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 0xFF means do not modify parameters
39	Video recording time before and after distracted driving alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
40	Number of photos taken for distracted driving alarm	BYTE	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
41	Distracted driving alarm photo interval time	BYTE	Unit 100ms, Value range 1~5, default 2 0xFF means do not modify parameters
42	Abnormal Driving Behavior Grading Speed Threshold	BYTE	The unit is km/h, the value range is 0~220, and 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 0xFF means do not modify parameters

start byte	field	type of data	Description and instructions
43	Abnormal driving behavior video recording time	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
44	Abnormal driving behavior capture photos	BYTE	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
45	Abnormal driving behavior photo interval	BYTE	Unit 100ms , Value range 1~5, default 2 0xFF means do not modify parameters
46	driver identification trigger	BYTE	0x00 : not open 0x 01 : Timing trigger 0x02: distance trigger 0x03: Insert the card and start driving trigger 0x04: reserved The default value is 0x01 0xFF means do not modify parameters
47	reserved text	BYTE[2]	

Table 4-12 Parameters of tire pressure monitoring systems

start byte	field	type of data	Description and instructions
0	Tire specification model	BYTE[12]	Example: 195/65R15 91V 12 characters, expressed in ASCII . The default value is "900R20"
12	tire pressure unit	WORD	0x00: kg/cm2 0x01: bar 0x02: Kpa 0x03: PSI The default is 0x03. 0xFFFF means not to modify the parameters
14	normal tire pressure	WORD	The unit is the same as the tire pressure unit , the default value is 140 0xFFFF means do not modify parameters
16	Tire pressure imbalance threshold	WORD	The unit is % (percentage), the value range is 0~100 (reaching the cold air pressure value), the default value is 20 0xFFFF means do not modify parameters
18	slow leak threshold	WORD	The unit is % (percentage), the value range is 0~100 (reaching the cold air pressure value), the default value is 5 0xFFFF means do not modify parameters
20	low pressure threshold	WORD	The unit is the same as the tire pressure unit , the default value is 110 0xFFFF means do not modify parameters
twenty two	high voltage threshold	WORD	The unit is the same as the tire pressure unit , the default value is 189 0xFFFF means do not modify parameters
twenty four	high temperature threshold	WORD	The unit is Celsius , the default value is 80 0xFFFF means do not modify parameters
26	voltage threshold	WORD	Unit % (percentage), value range 0~100, default value 10 , 0xFFFF means do not modify parameters
28	Timing reporting time interval	WORD	The unit is second , the value is 0~ 3600 , the default value is 60, 0 means not to report, 0xFFFF means not to modify parameters
30	Reserved	BYTE[6]	Zero padding for reserved items

Table 4-13 Blind Spot Monitoring System Parameters

start byte	field	type of data	Description and instructions
0	Rear Approaching Alarm Time Threshold	BYTE	The unit is second, the value range is 1~10 0xFF means do not modify parameters
1	Side Rear Approach Alarm Time Threshold	BYTE	The unit is second, the value range is 1~10 0xFF means do not modify parameters

4.3.2 Query parameter directive

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

4.4 Alarm command

The alarm report adopts the method of reporting simultaneously with the location information. As the additional information reported in the 0x0200 location information, the additional information definition table in Table 20 of JT/T 808-2011 is extended. The extended definition of additional information is shown in Table 4-14.

Table 4-14 additional information definition table extension

Additional Information ID	Additional information length	Description and requirements
0x64		Advanced driver assistance system alarm information, see Table 4-15 for definitions
0x65		Alarm information of the driver status monitoring system, see Table 4-17 for definitions
0x66		Tire pressure monitoring system alarm information, definition see Table 4-18
0x67		Blind spot monitoring system alarm information, definition see Table 4-20

4.4.1 Advanced Driver Assistance System Alarm

Table 4-15 advanced driving assistance warning information data format

start byte	field	Data length	Description and requirements
0	Alarm ID	DWORD	According to the order of the alarms, the cumulative accumulation starts from 0, and the alarm types are not distinguished.
4	flag status	BYTE	0x00: not available 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 has no start and end flags, this bit is not available, just fill in 0x00.
5	Alarm /Event Type	BYTE	0x01: forward collision alarm 0x02: Lane departure warning 0x03: Vehicle distance too close alarm 0x04: Pedestrian collision alarm 0x05: Frequent lane change alarm 0x06: Road sign overrun alarm 0x 07 : 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: Secondary alarm
7	front vehicle speed	BYTE	Unit Km/h . The range is 0~ 250 , only valid when the alarm type is 0x01 and 0x02.
8	Front vehicle/pedestrian distance	BYTE	The unit is 100ms , the range is 0~ 100 , and it is only valid when the alarm type is 0x01 , 0x02 and 0x04.
9	Deviation type	BYTE	0x 01 : Left offset 0x02: right deviation Valid only when the alarm type is 0x02
10	Types of road sign recognition	BYTE	0x01: speed limit sign 0x 02 : Height limit flag 0x 03 : weight limit sign Only valid when the alarm type is 0x06 and 0x10
11	Road Sign Recognition Data	BYTE	Data from recognized road signs
12	speed	BYTE	Unit Km/h . Range 0~ 250
13	elevation	WORD	Altitude above sea level in meters (m)

start byte	field	Data length	Description and requirements
15	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
19	longitude	DWORD	Longitude value in degrees multiplied by 10 to the 6th power, accurate to millionths 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]	the alarm identification number is shown in Table 4-16

Table 4-16 Format of alarm identification numbers

start byte	field	Data length	describe
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 time point , accumulated from 0
14	Number of attachments	BYTE	Indicates the number of attachments corresponding to the alarm
15	reserve	BYTE	

4.4.2 Driver status monitoring system alarm

Table 4-17 driving state monitoring system alarm information data format

start byte	field	Data length	Description and requirements
0	Alarm ID	DWORD	According to the order of the alarms, the cumulative accumulation starts from 0, and the alarm types are not distinguished.
4	flag status	BYTE	0x00: not available 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 has no start and end flags, this bit is not available, and it can be filled with 0x00
5	Alarm /Event Type	BYTE	0x01: fatigue driving alarm 0x02: Receive and call the police 0x03: Smoking alarm 0x04: Alarm for distracted driving 0x05: Driver abnormal alarm 0x06~0x0F: user-defined 0x 10: Automatic capture event 0x 11: Driver change event 0x1 2 ~0x1F: user-defined
6	alarm level	BYTE	0x01: Level 1 alarm 0x02: Secondary alarm
7	Fatigue _	BYTE	The range is 1~10. The larger the value, the more serious the fatigue, it is only valid when the alarm type is 0x 01
8	reserve	BYTE [4]	reserve
12	speed	BYTE	Unit Km/h . Range 0~ 250
1 3	elevation	WORD	Altitude above sea level in meters (m)
1 5	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
1 9	longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
2 3	date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
2 9	vehicle status	WORD	See Table 5-9
31	Alarm identification number	BYTE[16]	Table 4-16 for the definition of the alarm identification number

4.4.3 Tire pressure monitoring system alarm

Table 4-18 tire pressure monitoring system alarm information data format

start byte	field	Data length	Description and requirements
0	Alarm ID	DWORD	According to the order of the alarms, the cumulative accumulation starts from 0, and the alarm types are not distinguished.
4	flag state	BYTE	0x00: not available 0x01: start flag 0x02: end flag This field is only applicable to alarms or events with start and end flag types. If the alarm type or event type has no start and end flags, this bit is unavailable, and it can be filled with 0x00
5	speed	BYTE	Unit Km/h . Range 0~ 250
6	elevation	WORD	Altitude above sea level in meters (m)
8	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
12	longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
16	date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
twenty two	vehicle status	WORD	See Table 5-9
twenty four	Alarm identification number	BYTE[16]	See Table 4-16 for the definition of the alarm identification number
39	Total alarm/event list	BYTE	
40	Alarm/event information list		See Table 4-19

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

start byte	field	Data length	description
0	Tire pressure alarm location	BYTE	Alarm tire position number (Starting from the left front wheel, they are numbered sequentially from 00 in a zigzag shape, and the numbering has nothing to do with whether TPMS is installed)
2	Alarm/Event Type	WORD	0 means no alarm, 1 means alarm b it0 : Tire pressure (regularly reported) b it1 : high tire pressure alarm b it2 : low tire pressure alarm b it3 : tire temperature is too high alarm b it4 : Abnormal sensor alarm b it5 : tire pressure imbalance alarm b it6 : Slow air leak alarm b it7 : Low battery power alarm b it8 ~ bit15 : Custom
4	tire pressure	WORD	Unit Kpa
6	fetal temperature	WORD	unit °C
8	battery power	WORD	unit %

4.4.4 Blind spot monitoring system alarm

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

start byte	field	Data length	Description and requirements
0	Alarm ID	DWORD	According to the order of the alarms, the cumulative accumulation starts from 0, and the alarm types are not distinguished.
4	flag state	BYTE	0x00: not available 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 has no start and end flags, this bit is not available, just fill in 0x00.
5	Alarm/Event Type	BYTE	0x01 : rear approach alarm 0x02: left rear approach alarm 0x03: Right rear approach alarm
6	speed	BYTE	Unit Km/h . Range 0~ 250
7	elevation	WORD	Altitude above sea level in meters (m)
9	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
13	longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
17	date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
twenty three	vehicle status	WORD	See Table 5-9
25	Alarm identification number	BYTE[16]	See Table 4-16 for the definition of the alarm identification number

4.5 Alarm attachment upload command

Message ID: 0x9208.

Message type: signaling data message.

the platform receives the alarm /event information with attachments , it sends an attachment upload instruction to the terminal . The data format of the instruction message body is shown in Table 4-21 .

Table 4-21 file upload instruction data format

start byte	field	type of data	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	Server port number when using TCP transmission
3+k	Attachment server port (UDP)	WORD	Server port number when using UDP transmission
5+k	Alarm identification number	BYTE[16]	The definition of the alarm identification number is shown in Table 4-16
21 + k	Alarm number	BYTE[32]	The unique number assigned by the platform to the alarm
53 + k	reserve	BYTE[16]	

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

4.6 Alarm attachment upload

4.6.1 Vehicle status data record file

The vehicle status data record file is a binary file, which records the vehicle status data in the form of continuous data blocks. The data format of the data blocks is shown in Table 4-22 .

Table 4-22 Vehicle status data block data format

start byte	field	type of data	Description and requirements
0	Total number of data blocks	DWORD	Total number of data blocks in the record file
4	Current data block number	DWORD	current data block in the record file
8	alarm sign	DWORD	the definition in Table 24 of JT/T 808 - 2013
12	vehicle status	DWORD	Refer to JT/T 808 - 2013 table 2 5 definition
16	latitude	DWORD	The latitude value in degrees multiplied by 10 to the 6th power, accurate to one millionth of a degree
20	longitude	DWORD	The longitude value in degrees multiplied by 10 to the 6th power, accurate to one millionth of a degree
twenty four	satellite elevation	WORD	Satellite altitude , in meters (m)
26	satellite speed	WORD	1 /10km/h
28	satellite direction	WORD	0- 359 , true north is 0, clockwise
30	time	BCD [6]	YY-MM-DD-hh-mm-ss (GMT+ 8 time)
36	X-axis acceleration	WORD	Take g as the unit multiplied by 10 to the power of 2, accurate to one hundredth of g
38	Y axis acceleration	WORD	Take g as the unit multiplied by 10 to the power of 2, accurate to one hundredth of g
40	Z axis acceleration	WORD	Take g as the unit multiplied by 10 to the power of 2, accurate to one hundredth of g
42	X-axis angular velocity	WORD	In degrees per second multiplied by 10 to the power of 2, accurate to hundredths of degrees per second
44	Y-axis angular velocity	WORD	In degrees per second multiplied by 10 to the power of 2, accurate to hundredths of degrees per second
46	Z axis angular velocity	WORD	In degrees per second multiplied by 10 to the power of 2, accurate to hundredths of degrees per second
48	Pulse speed	WORD	1 /10km/h
50	OBD speed	WORD	1 /10km/h

start byte	field	type of data	Description and requirements
52	gear status	BYTE	0: Neutral 1- 9 : gear position 10: reverse gear 11: Park gear
53	Accelerator pedal travel value	BYTE	Range 1- 100 , unit %
54	Brake pedal travel value	BYTE	Range 1- 100 , unit %
55	brake status	BYTE	0: no braking 1: braking
56	Transmitter speed	WORD	Unit RPM
58	steering wheel angle	WORD	The angle that the steering wheel has turned , clockwise is positive , counterclockwise is negative .
60	turn signal status	BYTE	0: no direction lights 1: Left turn indicator light 2: Right turn lights
61	reserve	BYTE [2]	
63	Check Digit	BYTE	The accumulation sum from the first character to the character before the check digit, and then take the accumulated lower 8 bits as the check code

4.6.2 Alarm Attachment Information Message

Message ID: 0x1210.

Message type: signaling data message.

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

Table 4-23 alarm attachment information message data format

start byte	field	Data length	Description and requirements
0	Terminal ID	BYTE [7]	7 bytes, composed of uppercase letters and numbers, this terminal ID is defined by the manufacturer, if the number of digits is insufficient, add "0x00"
7	Alarm identification number	BYTE[16]	the alarm identification number is shown in Table 4-16
23	Alarm number	BYTE[32]	The unique number assigned by the platform to the alarm
55	information type	BYTE	0x00: normal alarm file information 0x01: Supplementary transmission of alarm file information
56	Number of attachments	BYTE	Number of attachments associated with the alarm
57	Attachment information list		See Table 4-2 4

After receiving the alarm attachment information message uploaded by the terminal , the attachment server sends a general response message to the terminal . If the terminal is abnormally disconnected from the attachment server during the uploading of the alarm attachment , the alarm attachment information message needs to be resent when the link is restored. The attachment files in the message are unuploaded and unfinished attachment files before disconnection.

Table 4-24 Alarm attachment message data format

start byte	field	Data length	Description and requirements
0	file name length	BYTE	length k
1	file name	STRING	file name string
1+k	File size	DWORD	current file size

The file name naming rules are :

```
<file type>_<channel number>_<alarm type>_<serial number>_<alarm number > .
<suffix name>
```

The fields are defined as follows:

File type : 00—image; 01—audio; 02—video; 03—text; 04—other.

Channel number:

- 0~ 37 indicates the video channel defined in Table 2 in the JT/T 1076 standard.
- 64 indicates the ADAS module video channel.

- 65 indicates the video channel of the DSM module.
- 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 expressed as "6401".

Sequence number : Used to distinguish the file numbers of the same channel and the same type.

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

Suffix name : picture file is jpg or png , audio file is wav, video file is h264, text file is bin.

After receiving the alarm attachment information instruction reported by the terminal , the attachment server sends a general response message to the terminal .

4.6.3 File information upload

Message ID: 0x1211.

Message type: signaling data message.

After the terminal sends an alarm attachment information command to the attachment server and receives a response, it sends an attachment file information message to the attachment server. The message body data format is shown in Table 4-25 .

Table 4-25 attachment file information message data format

start byte	field	Data length	Description and requirements
0	file name length	BYTE	The length of the filename is l
1	file name	STRING	file name
1 + l	file type	BYTE	0x00: picture 0x01: Audio 0x02: video 0x03: text 0x04: other
2 + l	File size	DWORD	currently uploaded file .

After receiving the attachment file information instruction reported by the terminal , the attachment server sends a general response message to the terminal .

4.6.4 file data upload

Message type: code stream data message.

After the terminal sends the file information upload command to the attachment server and receives a response, it sends the file data to the attachment server. The definition of the payload packet format is shown in Table 4-26 .

Table 4-26 file code stream payload packet format definition table

start byte	field	Data length	Description and requirements
0	Frame header identification	DWORD	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	payload data
62	data body	BYTE[n]	The default length is 64K , the actual length of the file is less than 64K

When the attachment server receives the file code stream reported by the terminal , it does not need to respond.

4.6.5 File upload complete message

Message ID: 0x1212.

Message type: signaling data message.

When the terminal finishes sending a file data to the attachment server, it will send a file sending complete message to the attachment server. The format of the message body data is shown in Table 4-27 .

Table 4-27 File send complete message body data structure

start byte	field	Data length	Description and requirements
0	file name length	BYTE	l
1	file name	STRING	file name
1 + l	file type	BYTE	0x00: picture 0x01: Audio 0x02: video 0x03: text 0x04: other
2 + l	File size	DWORD	the size of currently uploaded file .

4.6.6 File upload complete message response

Message ID: 0x9212.

Message type: signaling data message.

When the attachment server receives the file sending completion message reported by the terminal, it sends a file upload completion message response to the terminal. The data structure of the response message is shown in Table 4-28 .

Table 4-28 file upload completion message response data structure

start byte	field	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 result	BYTE	0x00: completed 0x01: Supplementary transmission is required
3 + 1	The number of retransmission packets	BYTE	The number of data packets that need to be retransmitted , and the value is 0 when there is no retransmission
4+1	Supplementary data packet list		See Table 4- 29

Table 4-29 Supplementary data packet information data structure

start byte	field	Data length	Description and requirements
0	data offset	DWORD	to be uploaded in the file
1	Data length	DWORD	The length of the data that needs to be supplemented

If there is data that needs to be retransmitted , the terminal should perform data retransmission through file data upload , and then report the file upload completion message after the retransmission is completed until the file data transmission is completed.

After sending all the files, the terminal actively disconnects from the attachment server.

4.7 terminal upgrade

4.7.1 Terminal upgrade method

The terminal upgrades the terminal through the terminal control instructions in JT/T 808. The naming rules of the upgrade file are as follows :

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

The fields are defined as follows :

Device type : 01——Terminal; 02 —— Reserved ; 03 ——ADAS ; 04 ——DSM; 05 ——BSD; 06——TPMS .

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

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

Dependent software version number : The software version that the software upgrade needs to depend on , consisting of numbers and letters.

Software version number : The software version of this upgrade , composed of numbers and letters.

Suffix name : The suffix name of the upgrade file customized by the equipment manufacturer , consisting of numbers and letters.

4.7.2 Terminal upgrade result response

Message ID: 0x0108.

Message type: signaling data message.

the terminal upgrade result response message is shown in Table 4-30 .

Table 4-30 terminal upgrade result response data format

start byte	field	Data length	Description and requirements
0	upgrade type	BYTE	0x00 : terminal 0x0C : Road transport card IC card reader 0x34 : Beidou positioning module 0x64 : Advanced Driver Assistance System 0x65 : Driving status monitoring system 0x66 : tire pressure monitoring system 0x67 : Blind Spot Monitoring System
1	upgrade result	BYTE	0x00: success 0x01: failure 0x 02 : cancel 0x 10 : No target device found 0x11: The hardware model does not support 0x12: Same software version 0x 13 : The software version does not support

4.8 Instant Photo Command

Message ID: 0x8801.

0x8801 command to take pictures immediately to the terminal , and the terminal responds to the platform with 0x0805, and then judges whether the command is to control the external setup to take pictures immediately according to the channel ID field in the command. For the format of the message body, see Table 4-31 .

Table 4-31 Immediate photo taking command message body data format

start byte	field	Data length	Description and requirements
0	channel ID	BYTE	0x00~0x25 : The host uses the camera channel to take pictures 0x64 : Control ADAS to take pictures 0x65 : Control DSM to take pictures
1	shooting order	WORD	0 means stop shooting. 0xFFFF means video recording. Others indicate the number of photos taken, valid only when the host takes photos
3	Photo Interval /Video Time	WORD	Seconds , 0 means take pictures at the lowest interval or keep recording, only valid when the host takes pictures
5	save sign	BYTE	1: save 0: upload in real time Valid only when the host takes pictures
6	resolution	BYTE	0x01:320x240 0x02:640x480 0x03:800 * 600 0x04:1024x768 0x05:1761x144 , [Qcif] 0x06:352x288 , [Cif] 0x07:704x288 , [HALF D1] 0x08:704*576 , [D1] Valid only when the host takes pictures
7	Image /Video Quality	BYTE	1-10, 1 represents the lowest quality loss, 10 represents the largest compression ratio, Valid only when the host takes pictures
8	brightness	BYTE	0-255 , valid only when the host takes pictures
9	contrast	BYTE	0-127 , valid only when the host takes pictures
10	saturation	BYTE	0-127 , valid only when the host takes pictures
11	Chroma	BYTE	0-255 , 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-mounted terminals and peripherals . Peripherals include but are not limited to TPMS and BSD devices. For ADAS and DSM devices that can operate independently, this communication protocol is recommended. Integrated devices that meet the functional requirements of the active security intelligent prevention and control system are not required.

5.2 way of communication

to communicate between the terminal and the peripherals through the network . The network communication uses the TCP protocol . For peripherals that do not support network communication, RS232, RS485 or CAN communication can be used. When using RS232 or RS485, the interface parameters are configured as 115200 baud rate, 8 data bits, 1 stop bit, no parity, and no flow control. When using CAN communication, the standard frame 11-bit identifier is used, and the baud rate is 500K.

5.3 transfer agreement

1. The data types and transmission rules used in protocol messages are in accordance with the requirements of Chapter 4 of JT/T 808 - 2011.
2. When using network communication , the terminal should be used as the server in the communication network, and the peripheral device should be used as the client. When the terminal is used as the server, the recommended IP address is 192.168.100.100, and the port number is 8888.
3. When using network communication , the serial number should be included in the message frame , and the serial number of the receiver's response message should correspond to the serial number of the message sent by the sender .
4. When RS485 or CAN communication is adopted, the next message or response message can be sent only after a pause interval of at least 100ms after the message is sent. Devices with high real-time requirements are not within the scope of this requirement.
5. When using the RS485 communication mode , the terminal acts as the host in the communication , and reads the peripheral information through the query - response method . The terminal alarm response message can be used as the query command. After the peripheral device receives the command, if there is an alarm, it will upload the alarm message. If there is no alarm, it will directly use the alarm query command to respond.
6. After receiving the message, the receiver should verify the message data first, and if the verification fails, no operation or response will be performed.
7. After the terminal is started, it needs to check whether the peripheral exists every 3 seconds. If the peripheral exists, then query the detailed information of the peripheral and synchronize the working parameters of the peripheral.
8. After the connection is established , the terminal should confirm whether the communication of the peripheral device is normal through the query command at an interval of no more than 60s, and if there is a communication abnormality, it will actively send the working status information of the peripheral device to the platform.
9. The terminal should send the real-time status of the vehicle to the peripheral device at an interval of no more than 500ms.
10. Except for the real-time status message of the vehicle sent by the terminal to the peripheral device , all messages should be answered.
11. If the message receiver fails to respond correctly to the message sent by the sender within 1000ms, a communication timeout will be triggered.
12. for real-time vehicle status messages , other messages sent by the terminal to the peripheral require a response from the peripheral . If a communication timeout occurs, the message needs to be resent. If the timeout occurs 3 times in a row, the peripheral is determined to be disconnected, and the terminal needs to check whether the peripheral exists.
13. When the peripheral device sends a message to the terminal , if the communication timeout occurs , the message needs to be resent. If the timeout occurs 3 times in a row , 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 format

identifier	check code	serial number	manufacturer number	Peripheral number	function code	data content	identifier
BYTE	BYTE	WORD	WORD	BYTE	BYTE	BYTE[n]	BYTE
0x7e	see note	see note	see note	See Table 5-2	See Table 5-3	See Section 4.5~4.7	0x7e

Remark:

Flag bit: 0x7e is used to indicate that if 0x7e appears in the inspection code, message header and message body, it must be escaped, and the processing rules are as follows:

0x7e <————> 0x7d followed by a 0x02.

0x7d <————> 0x7d followed by a 0x01.

The escaping process is as follows:

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

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

Example 1:

To send a data packet with the content of 0x30 0x7e 0x08 0x7d 0x55, it will be encapsulated as follows: 0x7e 0x30 0x7d 0x02 0x08 0x7d 0x01 0x55 0x7e.

Check code: the cumulative sum accumulated sequentially from manufacturer number to user data, and then take the accumulated lower 8 bits as the check code.

Example 2:

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

Serial number: cyclically accumulate from 0 in the order of sending .

Manufacturer number: The manufacturer code of the peripheral slave.

Peripheral device number: a unique type number corresponding to each peripheral device, which is used for the peripheral interface driver of the host to distinguish the data sent by the peripheral device . The peripheral device type number is shown in Table 5-2 .

Table 5-2 Peripheral number definition table

peripheral name	Peripheral number	Description and requirements
broadcast	0x00	broadcast number
ADAS	0x64	ADAS
DSM	0x65	Driver Status Monitoring System
TPMS	0x66	Tire Pressure Monitoring System
BSD	0x67	Blind Spot Monitoring System

Table 5-3 function code definition table

function code	definition	Description and requirements
0x2F	query command	Used by the terminal to query whether the peripheral exists
0x30	Restore default parameter command	It is used for the terminal to restore the peripheral parameters to the factory setting state
0x31	real-time data command	to send data such as speed, time , position and vehicle status to peripherals
0x32	Query the basic information of peripherals	It is used for the terminal to query peripheral company information, product code, version number, device ID and other information
0x33	Upgrade peripheral program	For upgrading data interaction
0x34	query parameters	Used for the terminal to query peripheral parameters
0x35	Setting parameters	Used to set peripheral parameters on the terminal
0x36	Event/alarm reporting	Used for peripheral event/alarm data reporting
0x37	Peripheral Status Query	Used for terminals to query the working status information of peripherals
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 the terminal
0x52	Take a picture now	Used for terminal control peripherals to take pictures immediately

5.5 General Instructions

5.5.1 query command

Function code: 0x2F

See table 5-4 for the format of the query command sent by the terminal to the peripheral.

Table 5-4 query instruction format definition

Peripheral number	function code	data area
See Table 5-2	0x2F	null

the peripheral device receives the terminal table 5-4 command, it should respond according to the command requirements . The specific command format of the response is shown in Table 5-5 .

Table 5-5 Query Response Command Format Definition

Peripheral number	function code	data area
See Table 5-2	0x2F	null

5.5.2 Peripheral restore default parameter command

Function code: 0x30

See table 5-6 for the command format of the terminal to restore the default parameters for the peripherals.

Table 5-6 Restoring the Default Parameter Command Format Definition

Peripheral number	function code	data area
See Table 5-2	0x30	null

the peripheral device receives the command from Table 5-6 of the terminal, it should respond according to the command requirements , and the command format of the specific response is shown in Table 5-7 .

Table 5-7 Restoring the Default Parameter Command Response Format Definition

Peripheral number	function code	data area
See Table 5-2	0x30	null

5.5.3 real-time data command

Function code: 0x31

The format of the real-time data command sent by the terminal to the peripheral is shown in Table 5-8 .

Table 5-8 real-time data instruction format definition

Peripheral number	function code	data area
See Table 5-2	0x31	See Table 5-9

Table 5-9 Real-time data content format definition

start byte	field	type of data	Description and instructions
0	speed	BYTE	The unit is km/h. Range 0 ~ 250
1	reserve	BYTE	
2	mileage	DWORD	The unit is 0.1km. Range 0 ~ 99999999
6	reserve	BYTE[2]	
8	elevation	WORD	Altitude above sea level in meters (m)
10	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
14	longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
18	date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
24	vehicle status	WORD	Bitwise representation of other states of the vehicle : Bit0 ACC status , 0: off, 1: on Bit1 left steering status, 0: off, 1: on Bit2 Right steering status , 0: off, 1: on Bit3 Wiper status , 0: off, 1: on Bit4 braking status, 0: no braking, 1: braking Bit5 card status, 0: no card inserted, 1: card inserted Bit6 ~ Bit9 custom Bit10 positioning status , 0: not positioned, 1: positioned Bit11 ~ bit15 custom

5.5.4 Read peripheral basic information instruction

Function code: 0x32

See table 5-10 for the command format of the terminal to read the basic information of peripherals .

Table 5-10 Read Peripheral Basic Information Instruction Format Definition

Peripheral number	function code	data area
See Table 5-2	0x32	null

receiving the terminal table 5-10 command, the peripheral device should respond according to the command requirements , and the specific response command format is shown in Table 5-11 .

Table 5-11 Peripheral Response Basic Information Instruction Format Definition

Peripheral number	function code	data area
See Table 5-2	0x32	See Table 5-12

Table 5-12 Peripheral basic information content format definition

start byte	field	type of data	Description and requirements
0	Company name length	BYTE	Length: 0~255 Name: expressed in ASCII (for example: software version number SV1.1.0 expressed as : 0x53 0x56 0x31 0x2E 0x31 0x2E 0x30) The customer code is the user code , which is customized by the equipment manufacturer
1	Company Name	BYTE[n1]	
1+n1	product code length	BYTE	
2+n1	Product Code	BYTE[n2]	
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]	

5.5.5 upgrade command

Function code: 0x33

See table 5-13 for the terminal to upgrade the protocol instructions for peripherals .

Table 5-13 upgrade command data format

Peripheral number	function code	data area
See Table 5-2	0x33	Message ID (1 byte), Total package number (2 bytes) + package serial number (2 bytes) + upgrade package content , see the description below

Upgrade process description:

1. Start upgrading subcommand instructions:

- Start the upgrade subcommand: the message ID is 0x01, and the content of the remaining data area is empty.
- Clear source program subcommand: the message ID is 0x02, and the content of the remaining data area is empty.
- Transfer file package subcommand: the message ID is 0x03, and the content of the remaining data area is described below.
- Execute the subcommand of the new program: the message ID is 0x04, and the content of the remaining data area is empty.

2. Format specification:

The vehicle-mounted terminal sends the upgrade file to the peripheral in sub-packages (the structure of the data area is: total number of packages (2 bytes) + package serial number (2 bytes) + content of the upgrade package), and the length of the content of the upgrade package for each package is recommended not to exceed 1024 bytes , when using TCP/IP communication, the length of the upgrade package is not limited. The file content of the first upgrade package is the check code of the upgrade file (occupies 4 bytes), and the check code is the sum of all bytes of the upgrade file . After the peripheral device has received all the upgrade files and verified that the verification code is correct, it will confirm to the terminal that it has received it completely, start the upgrade and reply, and the device parameters should remain unchanged after the upgrade is completed.

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

Response content: 0x00 —— success ; 0x01 —— failure .

Table 5-14 upgrade command peripheral response data format

Peripheral number	function code	data area	
See Table 5-2	0x33	Message ID (1 byte)	When the message ID is 0x03 , the content of the data area is: total number of packets (2 bytes) + packet serial number (bytes) + response content (1 byte)
			When the message ID is not 0x03, the content of the data area is: response content (1 byte)

5.6 Parameter setting query command

5.6.1 Query active safety assistance system parameter command

Function code: 0x34

See table 5-15 for the command format of terminal query active safety assistance system parameters .

Table 5-15 query active safety assistance system parameter format definition

Peripheral number	function code	data area
0x64	0x34	null

the peripheral device receives the command in Table 5-15 , it should respond according to the content of the command . See Table 5-16 for the definition of the specific response data format .

Table 5-16 Response parameter instruction format definition

Peripheral number	function code	data area
0x64	0x34	See Table 5-17

Table 5-17 active safety assistance system parameter format definition

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start byte	field	type of data	Description and instructions
0	Alarm enable speed threshold	BYTE	The unit is km/h, the value range is 0~60, and the default value is 30 , indicating that the alarm function is enabled only when the vehicle speed is higher than this threshold, which is only applicable to road departure alarm, forward collision alarm , too close distance between vehicles and frequent lane change alarm. 0xFF means do not modify this parameter
1	Alarm prompt volume	BYTE	0~8, 8 is the maximum, 0 is mute , the default value is 6, 0xFF means do not modify parameters
2	active photography strategy	BYTE	0x00: Disabled 0x01: Timed photo taking 0x02: Take pictures at a fixed distance 0x03: reserved The default value is 0x00 , 0xFF means do not modify parameters
3	Active timing photo interval	WORD	The unit is second, the value range is 0~3600, the default value is 1800 0 means no capture, 0xFFFF means no parameter modification It is valid when the active photo taking strategy is 01
5	Active fixed-distance camera distance interval	WORD	The unit is meter, the value range is 0~60000, the default value is 100 0 means no capture, 0xFFFF means no parameter modification , The active camera policy is valid when it is 02 .
7	The number of active photos taken at a time	BYTE	The value range is 1-10. 3 by default 0xFF means do not modify parameters .
8	single active photoshoot	BYTE	The unit is 100ms , the value range is 1~5, and the default value is 2 0xFF means do not modify parameters .

start byte	field	type of data	Description and instructions
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 , 0xFF means do not modify parameters , This parameter is also applicable 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 means do not modify parameters This parameter is also applicable to the alarm trigger photo resolution .
11	reserved field	BYTE[9]	Reserved for future expansion, used to configure parameters of non-individual alarm types
20	Obstacle alarm distance threshold	BYTE	The unit is 100ms, the value range is 10-50, and the default value is 30 0xFF means do not modify parameters
21	Video recording time before and after obstacle alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
22	Obstacle alarm photo number	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
23	Obstacle alarm photo interval	BYTE	The unit is 100ms , the value range is 1~10, and the default value is 2 0xFF means do not modify parameters
24	Frequent lane change alarm judgment time period	BYTE	The unit is second, the value range is 30~120, the default value is 60 0xFF means do not modify parameters

start byte	field	type of data	Description and instructions
25	Frequent lane change alarm judgment times	BYTE	Lane change times 3~10, default value 5 0xFF means do not modify parameters
26	Video recording time before and after frequent lane change alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
27	Number of photos taken for frequent lane change alarm	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
28	Frequent lane change alarm photo interval	BYTE	Unit 100ms, value range 1~10, default 2 0xFF means do not modify parameters
29	before and after lane departure alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
30	Number of photos taken by lane departure alarm	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no modification
31	Lane departure alarm photo interval	BYTE	The unit is 100ms, the value range is 1~10, and the default value is 2 0xFF means do not modify parameters
32	Forward collision warning time threshold	BYTE	The unit is 100ms, and the value range is 10~50. Currently, the national standard regulation 27 is used, and the modification interface is reserved. It will not be modified in actual use.

start byte	field	type of data	Description and instructions
33	Video recording time before and after forward collision warning	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
34	Number of photos taken with forward collision warning	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no modification
35	Forward collision warning photo interval	BYTE	The unit is 100ms , the value range is 1~10, and the default value is 2 0xFF means do not modify parameters
36	Pedestrian collision warning time threshold	BYTE	The unit is 100ms, the value range is 10-50, and the default value is 30
37	Video recording time before and after pedestrian collision alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
38	Pedestrian collision alarm photo number	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no modification
39	Pedestrian collision alarm photo interval	BYTE	Unit 100ms , value range 1~10, default value 2 0xFF means do not modify parameters
40	Vehicle distance monitoring alarm distance threshold	BYTE	The unit is 100ms, the value range is 10-50, and the default value is 30 0xFF means do not modify parameters

start byte	field	type of data	Description and instructions
41	Video recording time before and after the car distance is too close to the alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
42	The number of photos taken when the car is too close to the alarm	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
43	Vehicle distance is too close alarm photo interval	BYTE	Unit 100ms , value range 1~10, default 2 0xFF means do not modify parameters
44	Number of photos taken for road sign recognition	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
45	Road sign recognition photo interval	BYTE	Unit 100ms , value range 1~10, default 2 0xFF means do not modify parameters
46	reserved text	BYTE[4]	

5.6.2 Query driver behavior detection system parameter command

Function code: 0x34

See table 5-18 for the command format of the terminal querying the parameters of the driver behavior detection system .

Table 5-18 query driver behavior detection system parameter format definition

Peripheral number	function code	data area
0x65	0x34	none

the peripheral device receives the command in Table 518 of the terminal, it should respond according to the content of the command. See Table 5-19 for the definition of the specific response data format .

Table 5-19 Response parameter instruction format definition

Peripheral number	function code	data area
0x65	0x34	See Table 5-20

Table 5-20 Driver behavior detection system parameter format definition

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start byte	field	type of data	Description and instructions
0	Alarm enable speed threshold	BYTE	The unit is km/h, the value range is 0~60, and the default value is 30. Indicates that the alarm function is enabled only when the vehicle speed is higher than this threshold . 0xFF means do not modify this parameter
1	Alarm prompt volume	BYTE	0~8, 8 is the maximum, 0 is mute , the default value is 6 0xFF means do not modify parameters
2	active photography strategy	BYTE	0x00: Disabled 0x01: Timed photo taking 0x02: Take pictures at a fixed distance 0x 03 : card trigger 0x04: reserved The default value is 0x00 . 0xFF means do not modify parameters .
3	Active timing photo interval	WORD	The unit is second, the value range is 0~60000, the default value is 3600 0 means no capture, 0xFFFF means no parameter modification The active camera policy is valid when it is 01 .
5	Active fixed-distance camera distance interval	WORD	The unit is meter, the value range is 0~60000, the default value is 200 0 means no capture, 0xFFFF means no parameter modification The active camera policy is valid when it is 02 .
7	The number of active photos taken each time	BYTE	The value range is 1-10. 3 by default 0xFF means do not modify parameters .
8	Time interval for each active photo taking	BYTE	The unit is 100ms , the value range is 1~5, and the default value is 2 0xFF means do not modify parameters .

start byte	field	type of data	Description and instructions
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, 0xFF means do not modify parameters , This parameter is also applicable to the alarm trigger photo resolution .
10	Video recording resolution	BYTE	0x01: CIF 0x02: HD1 0x03: D1 0x04: WD1 0x05: 720P 0x06: 1080P Default value 0x01 0xFF means do not modify parameters This parameter also applies to alarm trigger video resolution .
11	reserved field	BYTE[10]	Reserved for future expansion, used to configure parameters of non-independent alarm types
21	Smoking alarm judgment time interval	WORD	The unit is second , and the value range is 0 ~ 3600 . The default value is 180. Indicates that only one smoking alarm is triggered within this time interval. 0xFFFF means do not modify this parameter
23	Receive and call alarm judgment time interval	WORD	The unit is second , and the value range is 0 ~ 3600 . The default value is 120. Indicates that only one incoming and outgoing call alarm is triggered within this time interval. 0xFFFF means do not modify this parameter
25	Video recording time before and after fatigue driving alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification

start byte	field	type of data	Description and instructions
26	Fatigue driving alarm photo number	BYTE	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
27	Fatigue driving alarm photo interval time	BYTE	Unit 100ms , The value range is 1~5, the default value is 2 0xFF means do not modify parameters
28	reserve	BYTE	reserved field
29	Video recording time before and after calling the police	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
30	Receive and call the police and take photos of the driver's facial features	BYTE	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
31	Interval time between receiving and calling the police and taking photos of the driver's facial features	BYTE	Unit 100ms , The value range is 1~5, the default value is 2 0xFF means do not modify parameters
32	Video recording time before and after smoking alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
33	Smoking alarm to take photos of the driver's complete facial features	BYTE	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
34	Smoking alarm interval time for taking photos of the driver's complete facial features	BYTE	Unit 100ms , Value range 1~5, default 2 0xFFFF means do not modify parameters
35	Video recording time before and after alarm	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
36	Number of photos taken for distracted driving alarm	BYTE	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification

start byte	field	type of data	Description and instructions
37	Distracted driving alarm photo interval time	BYTE	Unit 100ms , The value range is 1~5, the default value is 2 0xFF means do not modify parameters
38	Abnormal driving video recording time	BYTE	The unit is second, the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification
39	Number of snapped photos of driving abnormalities	BYTE	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
40	Abnormal driving photo interval	BYTE	Unit 100ms , Value range 1~5, default 2 0xFF means do not modify parameters
41	reserved text	BYTE[2]	

5.6.3 Query tire pressure monitoring system command

Function code: 0x34

See table 5-21 for the command format of terminal query tire pressure monitoring system parameters .

Table 5-21 query tire pressure monitoring system parameter format definition

Peripheral number	function code	data area
0x66	0x34	null

the peripheral device receives the instruction from the terminal Table 5-21 , it should respond according to the content of the instruction , and the definition of the specific response data format is shown in Table 5-22.

Table 5-22 Response parameter instruction format definition

Peripheral number	function code	data area
0x66	0x34	See Table 5-23

Table 5-23 tire pressure monitoring system parameter format definition

start byte	field	type of data	Description and instructions
0	Tire specification model	BYTE[12]	Example: 195/65R15 91V 12 characters, expressed in ASCII. The default value is "900R20"
12	tire pressure unit	WORD	0x00: kg/cm2 0x01: bar 0x02: Kpa 0x03: PSI The default is 0x03. 0xFFFF means not to modify the parameters
14	normal tire pressure	WORD	The unit is the same as the tire pressure unit , the default value is 140 0xFFFF means do not modify parameters
16	Tire pressure imbalance alarm threshold	WORD	The unit is % (percentage), the value range is 0~100 (reaching the cold air pressure value), the default value is 20 0xFFFF means do not modify parameters
18	Slow leak alarm threshold	WORD	The unit is % (percentage), the value range is 0~100 (reaching the cold air pressure value), the default value is 5 0xFFFF means do not modify parameters
20	Low pressure alarm threshold	WORD	The unit is the same as the tire pressure unit , the default value is 110 0xFFFF means do not modify parameters
22	High pressure alarm threshold	WORD	The unit is the same as the tire pressure unit , the default value is 189 0xFFFF means do not modify parameters
24	High temperature alarm threshold	WORD	The unit is Celsius , the default value is 80 0xFFFF means do not modify parameters
26	Voltage alarm threshold	WORD	Unit % (percentage), value range 0~100, default value 10 , 0xFFFF means do not modify parameters
28	Timing reporting time interval	WORD	The unit is second , the value is 0~ 3600 , the default value is 60, 0 means not to report, 0xFFFF means not to modify parameters
30	Reserved	BYTE[6]	Zero padding for reserved items

5.6.4 Query blind spot monitoring system command

Function code: 0x34

See table 5-24 for the instruction format of querying blind spot monitoring system parameters .

Table 5-24 query blind spot monitoring system parameter format definition

Peripheral number	function code	data area
0x67	0x34	null

the peripheral device receives the command in Table 5-24 , it should respond according to the content of the command . See Table 5-25 for the definition of the specific response data format .

Table 5-25 Response parameter instruction format definition

Peripheral number	function code	data area
0x67	0x34	See Table 5-26

Table 5-26 Blind spot monitoring system parameter format definition

start byte	field	type of data	Description and instructions
0	Rear Approaching Alarm Time Threshold	BYTE	The unit is second, the value range is 1~10 , the default value is 2 0xFF means do not modify parameters
1	Side Rear Approach Alarm Time Threshold	BYTE	The unit is second, the value range is 1~10 , the default value is 2 0xFF means do not modify parameters

5.6.5 Set advanced driver assistance system parameter command

Function code: 0x35

See table 5-27 for the command format of terminal setting advanced driver assistance system parameters .

Table 5-27 Set Advanced Driver Assistance System Parameter Instruction Format Definition

Peripheral number	function code	data area
0x64	0x35	See Table 5-17

the peripheral device receives the command in Table 5-27 , it should respond according to the content of the command . See Table 5-28 for the definition of the specific response data format .

Table 5-28 Response parameter instruction format definition

Peripheral number	function code	data area
0x64	0x35	1 byte : 0--success, 1--failure

5.6.6 Set driver status monitoring system parameter command

Function code: 0x35

See table 5-29 for the command format of the terminal setting driver status monitoring system parameters.

Table 5-29 Set the driver status monitoring system parameter command format definition

Peripheral number	function code	data area
0x65	0x35	See Table 5-20

respond according to the content of the command . The specific response data format is defined in Table 5-30.

Table 5-30 Response parameter instruction format definition

Peripheral number	function code	data area
0x65	0x35	1 byte : 0--success, 1--failure

5.6.7 Instructions for setting tire pressure monitoring system parameters

Function code: 0x35

Refer to Table 5-31 for the command format of setting tire pressure monitoring system parameters on the terminal.

Table 5-31 Definition of instruction format for setting tire pressure monitoring system parameters

Peripheral number	function code	data area
0x66	0x35	See Table 5-23

the peripheral device receives the command in Table 5-31 , it should respond according to the content of the command. See Table 5-32 for the definition of the specific response data format .

Table 5-32 Response parameter instruction format definition

Peripheral number	function code	data area
0x66	0x35	1 byte : 0--success, 1--failure

5.6.8 Command to set blind spot monitoring system parameters

Function code: 0x35

See table 5-33 for the instruction format of setting blind spot monitoring system parameters .

Table 5-33 Setting the blind spot monitoring system parameter instruction format definition

Peripheral number	function code	data area
0x67	0x35	See Table 5-26

the peripheral device receives the command in Table 5-33, it should respond according to the content of the command. See Table 5-34 for the definition of the specific response data format .

Table 5-34 Response parameter instruction format definition

Peripheral number	function code	data area
0x64	0x35	1 byte: 0--success, 1--failure

5.7 Event and Alarm Commands

5.7.1 Advanced driver assistance system warning command

Function code: 0x36

See table 5-35 for the format of events and alarm commands uploaded by the advanced driving assistance system to the terminal.

Table 5-35 event and alarm command format definition

Peripheral number	function code	data area
0x64	0x36	See Table 5-37

receiving the command in Table 5-35, the terminal should respond according to the content of the command , and the specific response data format is defined in Table 5-36.

Table 5-3 6 Event and alarm response format definition

Peripheral number	function code	data area
0x64	0x36	null

Table 5-37 event and alarm content format definition

start byte	field	Data length	Description and requirements
0	Alarm ID	DWORD	According to the sequence of alarms, it starts to accumulate circularly from 0.
4	flag state	BYTE	0x00: not available 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 has no start and end flags, this bit is not available, just fill in 0x00 .
5	Alarm/Event Type	BYTE	0x01: forward collision alarm 0x02: Lane departure warning 0x03: Vehicle distance too close alarm 0x04: Pedestrian collision alarm 0x05: Frequent lane change alarm 0x06: Road sign overrun alarm 0x07~0x0F: user-defined 0x10: road sign recognition event 0x 11 : active capture event 0x12~0x1F: user-defined
6	front vehicle speed	BYTE	The unit is Km/h , the range is 0~ 250 , and it is only valid when the alarm type is 0x01 and 0x02.
7	Front vehicle/pedestrian distance	BYTE	The unit is 100ms , the range is 0~ 100 , and it is only valid when the alarm type is 0x01 , 0x02 and 0x04.
8	Deviation type	BYTE	0x 01 : Left offset 0x02: right deviation Valid only when the alarm type is 0x02
9	Types of road sign recognition	BYTE	0x01: speed limit sign 0x 02 : Height limit flag 0x 03 : weight limit sign Only valid when the alarm type is 0x06 and 0x10.
10	Road Sign Recognition Data	BYTE	Data on recognized road signs .
11	speed	BYTE	Unit Km/h . Range 0~ 250
12	elevation	WORD	Altitude above sea level in meters (m)
14	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree

start byte	field	Data length	Description and requirements
18	longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths 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	Total number of additional multimedia information lists for alarms	BYTE	
31	multimedia information list		5-38 for the format of the media information list

Table 5-38 media information list format definition

start byte	field	Data length	describe
0	multimedia type	BYTE	0x00: picture 0x01: Audio 0x02: video
1	Multimedia ID	DWORD	>0

5.7.2 Driver status monitoring system alarm command

Function code: 0x36

See table 5-39 for the format of events and alarm commands uploaded by the driver status monitoring system to the terminal .

Table 5-39 event and alarm command format definition

Peripheral number	function code	data area
See Table 5-2	0x36	See Table 5-41

the terminal receives the command in Table 5-39, it should respond according to the content of the command , and the specific response data format is defined in Table 5-40.

Table 5-40 event and alarm response format definition

Peripheral number	function code	data area
See Table 5-2	0x36	null

Table 5-41 event and alarm content format definition

start byte	field	Data length	Description and requirements
0	Alarm ID	DWORD	According to the sequence of alarms, it starts to accumulate circularly from 0.
4	flag state	BYTE	0x00: not available 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 has no start and end flags, this bit is not available, just fill in 0x00 .
5	Alarm/Event Type	BYTE	0x01 : Fatigue driving alarm 0x02 : receive and call the police 0x03 : Smoking alarm 0x04 : Alarm for distracted driving 0x05 : Driver abnormal alarm 0x06~0x0F: user-defined 0x 10: active capture event 0x 11: Driver change event 0x1 2 ~0x1F: user-defined
6	Fatigue _	BYTE	Indicates the degree of fatigue, ranging from 1 to 10 , the greater the value, the more serious the degree of fatigue , only valid when the alarm type is 0x 01 .
7	reserve	BYTE [4]	reserve
11	speed	BYTE	Unit Km/h . Range 0~ 250
12	elevation	WORD	Altitude above sea level in meters (m)
14	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
18	longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths 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	Total number of additional multimedia information lists for alarms	BYTE	
31	multimedia information list		The format of the media information list is shown in Table 5-42

Table 5-42 Format definition of media information list

start byte	field	Data length	describe
0	multimedia type	BYTE	0x00: picture 0x01: Audio 0x02: video
1	Multimedia ID	DWORD	>0

5.7.3 Tire Pressure Monitoring System Instructions

Function code: 0x36

See table 5-43 for the format of event and alarm commands uploaded by the tire pressure monitoring system to the terminal .

Table 5-43 event and alarm command format definition

Peripheral number	function code	data area
See Table 5-2	0x36	See Table 5-45

receiving the command in Table 5-43, the terminal should respond according to the content of the command , and the specific response data format is defined in Table 5-44.

Table 5-44 event and alarm response format definition

Peripheral number	function code	data area
See Table 5-2	0x36	null

Table 5-45 event and alarm content format definition

start byte	field	Data length	Description and requirements
0	Alarm ID	DWORD	According to the sequence of alarms, it starts to accumulate circularly from 0.
4	flag state	BYTE	0x00: not available 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 has no start and end flags, this bit is not available, just fill in 0x00 .
5	speed	BYTE	Unit Km/h . Range 0~ 250
6	elevation	WORD	Altitude above sea level in meters (m)
8	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
12	longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths 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 alarm/event list	BYTE	
25	Alarm/event information list		See Table 5-46

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

start byte	field	Data length	description
0	Tire pressure alarm location	BYTE	Alarm tire position number (Starting from the left front wheel, they are numbered sequentially from 00 in a zigzag shape, and the numbering has nothing to do with whether TPMS is installed)
1	Alarm/Event Type	WORD	0 means no alarm, 1 means alarm bit0 : Tire pressure (regularly reported) bit1 : high tire pressure alarm bit2 : low tire pressure alarm bit3 : tire temperature is too high alarm bit4 : Abnormal sensor alarm bit5 : tire pressure imbalance alarm bit6 : Slow air leak alarm bit7 : Low battery power alarm bit8 ~ bit15 : Reserved
3	tire pressure	WORD	Unit Kpa
5	fetal temperature	WORD	unit °C
7	battery power	WORD	unit %

5.7.4 Blind Spot Monitoring System Command

Function code: 0x36

See table 5-47 for the formats of event and alarm commands uploaded by the blind spot monitoring system to the terminal.

Table 5-47 event and alarm command format definition

Peripheral number	function code	data area
See Table 5-2	0x36	See Table 5-49

the terminal receives the command in Table 5-47, it should respond according to the content of the command , and the specific response data format is defined in Table 5-48.

Table 5-48 event and alarm response format definition

Peripheral number	function code	data area
See Table 5-2	0x36	null

Table 5-49 event and alarm content format definition

start byte	field	Data length	Description and requirements
0	reserve	BYTE	reserve
4	flag state	BYTE	0x00: not available 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 has no start and end flags, this bit is not available, just fill in 0x00 .
5	Alarm/Event Type	BYTE	0x01 : rear approach alarm 0x02: left rear approach alarm 0x03: Right rear approach alarm
6	speed	BYTE	Unit Km/h . Range 0~ 250
7	elevation	WORD	Altitude above sea level in meters (m)
9	latitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
13	longitude	DWORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to millionths of a degree
17	date time	BCD[6]	YY-MM-DD-hh-mm-ss (GMT+8 time)
twenty three	vehicle status	WORD	See Table 5-9

5.8 Peripheral working status command

5.8.1 Query peripheral working status command

Function code : 0x37

See Table 5-50 for the command format of the terminal requesting the working state of the peripheral device.

Table 5-50 multimedia instruction format definition

Peripheral number	function code	data area
See Table 5-2	0x37	null

the peripheral device receives the command from the terminal table 5-50, it should respond according to the content of the command. See Table 5-51 for the definition of the specific response data format .

Table 5-51 multimedia instruction format definition

Peripheral number	function code	data area
See Table 5-2	0x37	Working status , see Table 5-5 4

5.8.2 Peripheral upload working status command

Function code : 0x38

See table 5-52 for the format of the peripheral upload working status command.

Table 5-52 Peripheral upload working status instruction format

Peripheral number	function code	data area
See Table 5-2	0x38	Working status , see Table 5-54

After the terminal receives the commands in the peripheral table 5-52 , it should respond according to the content of the commands . The specific response data format is defined in Table 5-53 .

Table 5-53 Peripheral upload working status instruction format

Peripheral number	function code	data area
See Table 5-2	0x38	null

Table 5-54 Working status of peripherals

start byte	field	Data length	Description and requirements
0	working status	BYTE	0x01: normal operation 0x 02 : Standby state 0x03 : upgrade and maintenance 0x04: Device abnormal
1	Alarm status	DWORD	Set by bit: 0 means no, 1 means yes bit0: abnormal camera bit1: Main memory error bit2: Auxiliary memory abnormality bit3: Abnormal infrared fill light bit4: Abnormal speaker bit5 : battery abnormality bit6 ~ bit9 : Reserved bit10 : The communication module is abnormal bit11 : define module exception bit12~bit31: reserved

5.9 multimedia command

5.9.1 request multimedia data command

Function code: 0x50

See table 5-55 for the command format of the terminal requesting multimedia data .

Table 5-55 multimedia instruction format definition

Peripheral number	function code	data area	
		message ID	Multimedia ID
See Table 5-2	0x50	1 byte, see Table 5-57	DWORD

the peripheral device receives the terminal table 5-55 command , it should respond according to the content of the command . The specific response data format definition is shown in Table 5-56 .

Table 5-56 multimedia command response format definition

Peripheral number	function code	data area
See Table 5-2	0x50	null

Table 5-57 multimedia message ID definition table

message ID	definition	Description and requirements
0x00	request image	After the peripheral device receives the instruction, it replies the picture data to the terminal
0x01	request audio	After the peripheral device receives the instruction, it will reply the audio data to the terminal
0x02	request video	After the peripheral device receives the command, it will reply video data (including audio data) to the terminal

5.9.2 transmit multimedia data command

Function code: 0x51

See table 5-58 for the instruction format of multimedia data transmission by peripherals .

Table 5-58 transmission multimedia data instruction format definition

Peripheral number	function code	data area		
		message ID	Multimedia ID	multimedia data format
See Table 5-2	0x 51	1 byte, see Table 5-57	DWORD	See Table 5-59

Table 5-59 multimedia data format

start byte	field	Data length	Description and requirements
0	Total number of packages	WORD	The total number of multimedia data packets The total number of packets is 0, indicating that there is no corresponding data
2	package serial number	WORD	The serial number of the current multimedia data package, the package number starts from 0
4	multimedia data	BYTE[n]	It is recommended that the actual data of each packet does not exceed 1024 bytes, and there is no limit for network communication

receiving the command in Table 5-58, the terminal should reply the response result, see Table 5-60 .

Table 5-60 Receiving Multimedia Data Response Format Definition

Peripheral number	function code	data area		
		message ID	Multimedia ID	Response result
See Table 5-2	0x 51	1 byte, see Table 5-57	DWORD	See Table 5-61

Table 5-61 Receiving Multimedia Data Response Result Format Definition

start byte	field	Data length	Description and requirements
0	Total number of packages	WORD	The total number of multimedia data packets The total number of packets is 0, indicating that there is no corresponding data
2	package serial number	WORD	The serial number of the current multimedia data package, the package number starts from 0
4	Response result	BYTE	0: success 1: failure

5.10 Take a photo instantly command

Function code: 0x52

See table 5-62 for the format of the command to take pictures immediately issued by the terminal.

Table 5-62 Definition of the format of the command to take pictures immediately issued by terminals.

Peripheral number	function code	data area
See Table 5-2	0x52	none

the peripheral device receives the command to take pictures immediately , it should respond according to the content of the command . See Table 5-63 for the definition of the specific response data format.

Table 5-63 Peripheral Control Command Response Format Definition

Peripheral number	function code	data area
See Table 5-2	0x52	0: success 1: failure

After the peripheral device receives the command to take pictures immediately , it will take pictures according to the relevant parameters of the active picture taking function , and after the picture is taken , it will report the active capture event.

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