

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

Intelligent prevention system for active safety of operating
vehicles
(Specifications for communication protocol)

directory

Preface	II
1 Scope	1
2 Normative references	1
3 Terms , Definitions and Abbreviations	1
4 Basics of Terminal and Platform Protocols	1
5 Basics of Terminal and Peripheral Protocol	2 3

foreword

This standard is compiled in accordance with GB/T1.1-2009 "Guidelines for Standardization Work Part 1: Standard Structure and Writing Rules". This standard is proposed and managed by the Transportation Management Bureau of Jiangsu Provincial Department of Transportation.

This standard was drafted by : Transportation Administration Bureau of Jiangsu Provincial Department of Transportation, Safety Department of Jiangsu Provincial Department of Transportation, Nanjing Sanbao Technology Co., Ltd. Co. , Ltd.

The main drafters of this standard : Lu Yuanliang, Tan Ruibing, Yang Guixin, Tao Xulin, Mo Kun, Fang Li, Hao Wei, Liu Boping, He Shuaishuai, Ren Yong and Chen Haimeng .

Active safety intelligent prevention and control system for road transport vehicles

Communication Protocol Specification

1 range

This agreement is based on JT/T 808-2013 "Technical Specifications of Beidou Compatible Vehicle Terminal Communication Protocol for Road Transport Vehicle Satellite Positioning System" The Supplement and Expansion of the Standard , which stipulates the vehicle terminal (hereinafter referred to as the terminal) and supervision/monitoring platform (hereinafter referred to as the terminal) of the active safety intelligent prevention and control system Platform for short), the communication protocol 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 references, the latest version (including all amendments) applies to this document.

JT / T 8 08 Communication protocol and data format of satellite positioning system terminals for road transport vehicles.

JT / T 10 78-2016 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 Abbreviations

The following abbreviations apply to this document.

ADAS: Advanced Driver Assistant System

DSM : Driving State Monitoring

TPMS : Tire Pressure Monitoring System (Tire Pressure Monitoring Systems)

BSD : Blind Spot Detection

CAN : Controller Area Network (Controller area Network)

4 Basics of Terminal and Platform Protocols

4.1 Basic agreement of the agreement

The communication mode, 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 complies 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/T808-2011.

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

- Unless expressly agreed upon, all messages shall be answered.

——If the dedicated reply message is not specified explicitly, the general reply shall be used.

- For messages with sub-packages, the responder shall respond to each sub-packet message one by one.

4.2 Basic Information Query Instructions

4.2.1 Query 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 for the definition of transparent message types
1	Total Peripheral ID List	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 the 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 Definition of message types for transparent transmission

Transparent transmission type	definition	Description and requirements
status query	0x F 7	Peripheral status information: peripheral working status, device alarm information
Information inquiry	0x F 8	Basic information of peripheral sensors: company information, product code, version number, peripheral ID , customer account code. The corresponding message content is shown in the table

surface 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 content of the message is shown in Table 4-6 When the transparent transmission message type is 0xF8, the content of the message is shown in Table 4-7

Table 4-5 Peripheral ID definition table

peripheral name	peripherals ID	Description and requirements
ADAS	0x64 _ _	ADAS _
DS M	0x65 _ _	Driver Status Monitoring System
TPM S	0x66 _ _	Tire Pressure Monitoring System
B SD	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 0 x 03: upgrade maintenance 0 x 04: device abnormal 0x10 : Disconnect _

1	Alarm status	DWORD	Bitwise setting: 0 means no, 1 means yes bit 0: abnormal camera bit1: Main memory error bit2: Auxiliary memory abnormality bit3: Abnormal infrared fill light bit 4 : abnormal speaker bit 5 : battery abnormal bit 6~ bit 9 : Reserved bit 10: The communication module is abnormal bit 11: positioning module exception bit 12~ bit31: Reserved
---	--------------	-------	---

Table 4-7 Peripheral system information

start byte	field	data type	Description and requirements
0	Company name length	BYTE	Length: 0~ 32 Name: expressed in ASCII (for example: software version number SV 1.1 .0 Expressed 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+ n 1	Product number	BYTE [n2]	

$2+n_1+n_2$	Hardware version number length	BYTE _	
$3+n_1+n_2$	hardware version number	BYTE [n3]	
$3+n_1+n_2+n_3$	Software version number length	BYTE _	
$4+n_1+n_2+n_3$	software version number	BYTE [n4]	
$4+n_1+n_2+n_3+n_4$	Device ID length	BYTE _	
$5+n_1+n_2+n_3+n_4$	device ID	BYTE [n5]	
$5+n_1+n_2+n_3+n_4+n_5$	customer code length	BYTE _	
$6+n_1+n_2+n_3+n_4+n_5$	customer code	BYTE [n6]	

4.3 Parameter setting query command

4.3.1 Parameter setting instruction

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

Table 4-8 Parameter item data format

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

surface 4-9 Parameter setting Definition and description of each parameter item

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

Table 4-10 Advanced Driver Assistance System Parameters

start byte	field	data type	Description and instructions
0	Alarm judgment speed threshold	BYTE _	The unit is km/h, the value range is 0~60, the default value is 30, 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 Indicates not to 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 not to modify the parameters.
3	When taking active timed photos 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 It is valid when the active camera policy is 0x01
5	Active fixed distance camera distance isolation _	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 It is valid when the active camera policy is 0x02
7	The number of active photos taken at a time	BYTE _	The value range is 1-10, and the default is 3 sheets 0xFF means do not modify parameters
8	When taking a single active photo Interval _	BYTE _	The unit is 100m s , the value range is 1~5, the default value is 2, 0xFF means do not modify parameters
9	photo resolution	BYTE _	0x01: 35 2 × 288 0x02 : 70 4 × 288 0x03: 70 4 × 576 0x04 : 64 0x480 0x05 : 1280x720 _ 0x06 : 19 20 × 1080 The default value is 0x01 , 0 xFF means do not modify parameters, This parameter is also applicable to the alarm trigger photo resolution.

1 0	Video recording resolution	BYTE _	0x01: CIF 0x02 : HD 1 _ 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.
1 1	Alarm enable	DW ORD	Alarm enable bit 0: off 1: on bit 0 : Level 1 alarm for obstacle detection bit 1 : Obstacle detection secondary alarm bit 2 : Level 1 alarm for frequent lane changes bit 3 : secondary alarm for frequent lane changes bit 4 : Level 1 warning for lane departure bit 5 : Lane departure secondary warning bit 6 : Level 1 forward collision alarm bit 7 : Forward collision secondary alarm bit 8 : Level 1 alarm for pedestrian collision bit 9 : Pedestrian collision secondary alarm bit 10 : Level 1 alarm when the vehicle distance is too close bit 11 : Level 2 alarm when the vehicle distance is too close

			bit 12~ bit 15: user- defined bit 16 : road sign overrun alarm bit 17~ bit 29: user- defined bit 30 ~bit31: reserved Defaults 0x00010FFF 0xFFFFFFFF means do not modify parameters
15	event enable	DWORD	Event enable bit 0: off 1: on bit 0 : road sign recognition bit 1 : Actively take pictures bit 2~ bit 29: user-defined bit 30 ~bit31: reserved Defaults 0x00000003 0xFFFFFFFF means do not modify parameters
19	reserved field	BYTE _	reserve
20	Obstacle alarm distance threshold	BYTE _	unit 100ms, value range 10-50, default value 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 trigger When the vehicle speed is higher than the threshold , it is the second-level alarm, otherwise it is the first-level alarm . 0 xFF means not to modify the parameters
twenty two	Before and after obstacle alarm 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
twenty three	Obstacle alarm camera Number of sheets	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	BYTE _	Unit 100ms , value range 1~10, default value 2, 0xFF means do not modify parameters

	camera interval		
25	Frequent lane change warning 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 warning Number of breaks	BYTE _	change times 3~10, default 5, 0xFF means do not modify parameters
27	Frequent lane change warning points level speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50, indicating that the alarm is triggered When the vehicle speed is higher than the threshold , it is the second-level alarm, otherwise it is the first-level alarm. 0 xFF means not to modify the parameters
28	Before frequent lane change alarm post 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
29	Frequent lane change alarm Number of photos	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 _	Unit 100ms Value range 1~10, default 2, 0xFF means do not modify parameters
31	Lane departure warning points level speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50. Indicates trigger When the vehicle speed is higher than the threshold, it is the second-level alarm, otherwise it is the first-level alarm 0 means no recording, 0xFF means no parameter modification

3 2	Before lane departure warning post 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
3 3	Lane departure alarm	BYTE _	The value range is 0-10, the default value is 3,

	Number of photos		0 Means no capture, 0xFF means no modification
3 4	Lane departure alarm photo interval	BYTE _	unit 100ms , value range 1~10, default value 2 0xFF means do not modify parameters
3 5	Forward collision warning Inter - threshold	BYTE _	The unit is 100ms, the value range is 10~50, and the national standard value is currently used 27. Reserve the modification interface. 0xFF means do not modify parameters
3 6	forward collision warning level speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50. Indicates trigger When the vehicle speed is higher than the threshold , it is the second-level alarm, otherwise it is the first- level alarm. 0 xFF means not to modify the parameters
3 7	Before forward collision warning post 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
3 8	forward collision warning Number of photos	BYTE _	The value range is 0-10, the default value is 3, 0 Means no capture, 0xFF means no modification
3 9	forward collision warning photo interval	BYTE _	Unit 1 00ms , value range 1~10, default value 2, 0xFF means do not modify parameters
4 0	Pedestrian collision alarm	BYTE _	The unit is 100ms, the value range is 10-50, the default value is 30, 0xFF means do not modify parameters

	Inter - threshold		
4 1	pedestrian collision alarm energy speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50. below this value An alarm is issued, and the function is closed when the value is higher than this value. 0xFF means do not modify parameters
4 2	pedestrian collision alarm post 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
4 3	Pedestrian collision alarm Number of photos	BYTE _	The value range is 0-10, the default value is 3, 0 Means no capture, 0xFF means no modification
4 4	Pedestrian collision alarm photo interval	BYTE _	Unit 1 00ms , value range 1~10, default value 2, 0xFF means do not modify parameters
4 5	Vehicle distance monitorin g and alarm distance off threshold	BYTE _	The unit is 100ms, the value range is 10-50, the default value is 10, 0xFF means do not modify parameters
4 6	Vehicle distance monitoring and alarm points level speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50. Indicates trigger When the vehicle speed is higher than the threshold , it is the second-level alarm, otherwise it is the first-level alarm. 0 xFF means not to modify the parameters
4 7	Before the car is too close to	BYTE _	The unit is second, the value range is 0-60, the default value is 5 ,

	the alarm post video recording time		0 means no recording, 0xFF means no parameter modification
48	car too close alarm Number of photos	BYTE _	The value range is 0-10, the default value is 3, 0 means no capture, 0xFF means no parameter modification
49	car too close alarm photo interval	BYTE _	Unit 100ms , value range 1~10, default value 2, 0xFF means do not modify parameters
50	road sign recognitio n Number of photos	BYTE _	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
51	road sign recognitio n photo interval	BYTE _	unit 100ms , value range 1~10, default value 2 0xFF means do not modify parameters
52	reserved field	BYTE [4]	

Table 4-11 Driver status monitoring system parameters

start byte	field	data type	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 when the speed Above this threshold, the alarm function is enabled 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 0 x 03: card trigger 0x04 : Reserved _ The default value is 0x00 , 0xFF means do not modify parameters
3	When taking active timed photos 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 isolation _	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 It is valid when the active camera policy is set to 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	When taking a single active photo Interval _	BYTE _	The unit is 100m s , 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.
10	Video recording resolution	BYTE _	0x01: CIF 0x02 : HD 1 _ 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	DWORD	Alarm enable bit 0: off 1: on

			bit 0: Level 1 alarm for fatigue driving bit 1: Level 2 alarm for fatigue driving bit 2: First-level alarm when receiving and making calls bit 3: Secondary alarm for receiving and making calls bit 4: Level 1 alarm for smoking bit 5: Smoking secondary alarm bit 6: Level 1 alarm for distracted driving bit 7: Level 2 alarm for distracted driving bit 8: Level 1 alarm for driver abnormality bit 9: Level 2 alarm for driver abnormality bit 10~ bit 29: user- defined bit30~bit 31: Reserved Defaults 0x000001FF 0xFFFFFFFF means do not modify parameters
15	event enable	DWORD	Event enable bit 0: off 1: on bit 0: Driver change event bit 1: active photo taking event bit 2~ bit 29: user-defined bit30~bit 31: Reserved Defaults 0x00000003 0xFFFFFFFF means do not modify parameters
19	When judging by the smoking alarm Interval _	WORD	The unit is second , and the value range is 0~3600. The default value is 180. expressed here The smoking alarm is triggered only once within the time interval . 0xFF means do not modify this parameter
21	call the police Interval _	WORD	The unit is second , and the value range is 0~3600. The default value is 120. expressed here Only one incoming and outgoing call alarm is triggered within the time interval . 0xFF means do not modify this parameter
23	reserved field	BYTE [3]	reserved field

26	Fatigue driving warning score level speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50. Indicates trigger When the vehicle speed is higher than the threshold , it is the second-level alarm, otherwise it is the first-level alarm . 0 xFF means not to modify the parameters
27	Before fatigue driving alarm post 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
28	Fatigue driving alarm Number of photos	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	BYTE _	The unit is 100ms , the value range is 1~5, the default is 2, 0xFF means do not modify parameters
30	call alarm level speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50. Indicates trigger When the vehicle speed is higher than the threshold , it is the second-level alarm, otherwise it is the first-level alarm . 0 xFF means not to modify the parameters
31	before calling the police post 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
32	call the police 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

	Number of photos		
3 3	call the police driver's facial features photo interval	BYTE _	Unit 100ms, value range 1~5, default value 2 0xFF means do not modify parameters
3 4	Smoking alarm classificati on car speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50. Indicates trigger When the vehicle speed is higher than the threshold , it is the second-level alarm, otherwise it is the first-level alarm. 0 xFF means not to modify the parameters
3 5	Front and rear view of smoking alarm 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
3 6	Smoking alarm and driving photos of facial features Number of sheets	BYTE _	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
3 7	Smoking alarm and driving photos of facial features Intervals	BYTE _	unit 100ms, value range 1~5, default 2 0xFF means do not modify parameters
3 8	distracted driving alert level speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50. Indicates trigger When the vehicle speed is higher than the threshold , it is the second-level alarm, otherwise it is the first-level alarm. 0 xFF means not to modify the parameters
3 9	Distracted driving before calling the	BYTE _	The unit is second , the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter

	police post video recording time		modification
4 0	distracted driving alarm Number of photos	BYTE _	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
4 1	distracted driving alarm photo interval	BYTE _	unit 100ms, value range 1~5, default 2 0xFF means do not modify parameters
4 2	abnormal driving behavior level speed threshold	BYTE _	The unit is km / h , the value range is 0~220, and the default value is 50. Indicates trigger When the vehicle speed is higher than the threshold , it is the second-level alarm, otherwise it is the first- level alarm. 0 xFF means not to modify the parameters
4 3	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
4 4	abnormal driving behavior Number of photos taken	BYTE _	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
4 5	abnormal driving behavior photo interval	BYTE _	unit 100ms , value range 1~5, default 2 0xFF means do not modify parameters
4 6	driver identifica tion	BYTE _	0 x 00 : Disabled 0 x 01: timing trigger 0 x 02: distance trigger 0 x 03: Insert the card to start driving trigger 0x04 : Reserved _ The default value is 0x01 0xFF means do not modify parameters

	trigger		
4 7	reserved fields	BYTE [2]	

Table 4-12 Parameters of tire pressure monitoring system

start byte	field	data type	Description and instructions
0	Tire specification model	BYTE [12]	Example: 195/65R15 91V 12 characters, expressed in ASCII. default Value "900 R 20"
1 2	tire pressure unit	WORD	0x00 : kg / cm2 _ _ 0x01: bar 0x02: Kpa 0x03: PSI default 0x03. 0xFFFF means not to modify parameters
1 4	normal tire pressure	WORD	The unit is the same as the tire pressure unit, the default value is 140 0xFFFF _ Indicates that the parameters are not modified
1 6	Tire pressure imbalance threshold	WORD	The unit is % (percentage), the value range is 0~100 (reaching the cold state air pressure value) , default value 20 0xFFFF _ Indicates that the parameters are not modified
1 8	slow leak threshold	WORD	The unit is % (percentage), the value range is 0~100 (reaching the cold state air pressure value) , default value 5 0xFFFF _ Indicates that the parameters are not modified
20	low pressure threshold	WORD	The unit is the same as the tire pressure unit, the default value is 110 0xFFFF _ Indicates that the parameters are not modified
twenty two	high voltage threshold	WORD	The unit is the same as the tire pressure unit, the default value is 189 0xFFFF _ Indicates that the parameters are not modified
twenty four	high temperature threshold	WORD	The unit is Celsius, the default value is 80 0xFFFF _ Indicates that the parameters are not modified
26	voltage threshold	WORD	Unit % (percentage), value range 0~100, default value 10, 0xFFFF _ Indicates that the parameters are not modified

28	Timing reportin g 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	data type	Description and instructions
0	Rear approach alarm Inter - 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 command

The query parameter message uses the 0x8103/0x8106 message defined in 8.8 of JT/T 808-2011 to query the specified terminal parameter message For the body data format, see 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 the location information at the same time, as the additional information of the 0x0200 location information report, for JT/T 808-2011 Table 20 The additional information definition table is expanded, and the extended definition of additional information is shown in Table 4-14.

Table 4- 1 4 Additional Information Definition Table Extension

Additional Information I D	Additional information length	Description and requirements
0x64 __		Advanced driving assistance system alarm information, see Table 4-15 for definitions
0x65 __		Driver status monitoring system alarm information, definition see Table 4-17
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 Data format of advanced driving assistance warning information

start byte	field	data length	Description and requirements
0	Alarm ID	DW ORD	the sequence of alarms , the accumulation starts from 0, and the alarm types are not distinguished.
4	flag state	BYTE _	0x00 : not available 0x01 : start flag 0 x 02: 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 0 x 00.

5	Alarm/Event Type	BYTE _	0 x 0 1: forward collision warning 0 x 0 2: Lane departure warning 0 x 0 3: Vehicle distance too close alarm 0 x 04: Pedestrian collision alarm 0 x 0 5: frequent lane change alarm 0x06: Road sign overrun alarm 0 x 07 : Obstacle alarm 0x08~0 x 0 F : user-defined 0x10 : Road sign recognition event 0 x 11: active capture event 0x12~0 x 1 F : user-defined
6	alarm level	BYTE _	0 x 01: Level 1 alarm 0 x 02: Secondary alarm
7	front vehicle speed	BYTE _	unit Km/h. Range 0~250, only when the alarm type is 0x01 and 0x02 effective .
8	Front vehicle /pedestrian distance	BYTE _	The unit is 100ms, the range is 0~100, only the alarm types are 0x01, 0x02 and Valid at 0x04 .

9	Deviation type	BYTE _	0x01 : Offset to the left 0x02 : Right deviation Only valid when the alarm type is 0x02
10	Types of road sign recognition	BYTE _	0x01 : Speed limit sign 0 x 02: Height limit flag 0 x 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 _	The unit is Km/h. Range 0~250
13	elevation	WORD	Altitude in meters (m)
15	latitude	DWORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
19	longitude	DWORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
twenty three	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

surface 4-16 Alarm identification number format

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 (GM T +8 time)
13	serial number	BYTE _	The serial number of the alarm at the same time point, cyclically 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 Data Format of Alarm Information of Driving Status Monitoring System

start byte	field	data length	Description and requirements
0	Alarm ID	DW ORD	the sequence of alarms , the accumulation starts from 0, and the alarm types are not distinguished.
4	flag state	BYTE _	0x00 : not available 0x01 : start flag 0 x 02: 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 unavailable, just fill in 0 x 00
5	Alarm/Event Type	BYTE _	0x01 : Fatigue driving alarm 0 x 02: receive and call the police

			0x03 : Smoking alarm 0x04 : Distracted driving alarm 0x05 : Abnormal driver alarm 0x06~0 x 0 F : user-defined 0 x 1 0: Automatic capture event 0x11 : Driver change event 0x12~0 x 1 F : user-defined
6	alarm level	BYTE _	0 x 01: Level 1 alarm 0 x 02: Secondary alarm
7	Fatigue	BYTE _	The range is 1~10. The larger the value, the more serious the fatigue, only in the alarm Valid when the type is 0x01
8	reserve	BYTE [4]	reserve
1 2	speed	BYTE _	The unit is Km/h. Range 0~250
1 3	elevation	WORD	Altitude in meters (m)
1 5	latitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
1 9	longitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
twenty three	date time	BCD [6]	YY-MM-DD-hh-mm-ss (GM T +8 time)
29	vehicle status	WORD	See Table 5-9
3 1	Alarm identification number	BYTE [16]	the alarm identification number

4.4.3 Tire pressure monitoring system alarm

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

start byte	field	data length	Description and requirements
0	Alarm ID	DW ORD	the sequence of alarms , the accumulation starts from 0, and the alarm types are not distinguished.

4	flag state	BYTE _	0x00 : not available 0x01 : start flag 0 x 02: 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 unavailable, just fill in 0 x 00
5	speed	BYTE _	The unit is Km/h. Range 0~250
6	elevation	WORD	Altitude in meters (m)
8	latitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
1 2	longitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
1 6	date time	BCD [6]	YY-MM-DD-hh-mm-ss (GM T +8 time)
twenty two	vehicle status	WORD	See Table 5-9

twenty four	Alarm identification number	BYTE [16]	the alarm identification number
3 9	Total alarm/event list	BYTE _	
4 0	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	describe
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 number is the same as No installation of TPM S does not matter)
2	Alarm/Event Type	WORD	0 means no alarm, 1 means alarm bit 0 : Tire pressure (report regularly) bit 1: High tire pressure alarm bit 2: low tire pressure alarm bit 3: tire temperature is too high alarm bit 4: sensor abnormal alarm bit 5: tire pressure imbalance alarm bit 6: slow leak alarm bit 7: low battery alarm bit 8~ bit 15: Custom
4	tire pressure	WORD	Unit Kpa
6	tire temperature	WORD	unit °C
8	battery level	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	DW ORD	the sequence of alarms , the accumulation starts from 0, and the alarm types are not distinguished.
4	flag state	BYTE _	0x00 : not available 0x01 : start flag 0 x 02: 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 0 x 00.
5	Alarm/Event Type	BYTE _	0 x 0 1: Rear approach warning 0x02: left rear approach alarm 0x03 : Right rear approach warning
6	speed	BYTE _	The unit is Km/h. Range 0~250
7	elevation	WORD	Altitude in meters (m)

9	latitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
13	longitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
17	date time	BCD [6]	YY-MM-DD-hh-mm-ss (GM T +8 time)
twenty three	vehicle status	WORD	See Table 5-9
25	Alarm identification number	BYTE [16]	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 the table

4-21.

Table 4-21 File upload command data format

start byte	field	data type	Description and requirements
0	Attachment server IP address length	BYTE _	length k
1	Attachment server IP address	STRING	server IP address
1+k	Attachment server port (TCP)	WORD	Server port number when using TCP transmission
3 + k	Attachment server port (UDP)	WORD	Server port number when using UDP transmission
5 + k	Alarm	BYTE [16]	the alarm identification number, see Table 4-16

	identification number		
21+ k	Alarm number	BYTE [32]	assigned by the platform to the alarm
5 3+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 state data record file is a binary file, which records the vehicle state data in the form of continuous data blocks, and the data block data format See Table 4-22 for the formula .

Table 4-22 Data format of vehicle status data block

start byte	field	data type	Description and requirements
------------	-------	-----------	------------------------------

0	Total number of data blocks	DW ORD	Total number of data blocks in the record file
4	Current data block number	DW ORD	the current data block in the record file
8	alarm sign	DW ORD	Refer to the definition in Table 24 of JT/T 808-2013
12	vehicle status	DW ORD	Refer to the definition in Table 25 of JT/T 808-2013
16	latitude	DW ORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to the million one-fifth of a degree
20	longitude	DW ORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to the million one-fifth 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 shaft angular velocity	WORD	In degrees per second multiplied by 10 to the power of 2, accurate to one hundredth degrees per second
44	Y shaft angular velocity	WORD	In degrees per second multiplied by 10 to the power of 2, accurate to one hundredth degrees per second
46	Z axis angular velocity	WORD	In degrees per second multiplied by 10 to the power of 2, accurate to one hundredth degrees per second
48	Pulse speed	WORD	1 /10km/h
50	OBD speed	WORD	1 /10km/h
52	gear status	BYTE _	0 : Neutral 1 -9: Gears 10: reverse gear 11 : Park gear

5 3	Accelerator pedal travel value	BYTE _	Range 1-100, unit%
5 4	Brake pedal travel value	BYTE _	Range 1-100, unit %
5 5	brake status	BYTE _	0 : no braking 1: braking
5 6	Transmitter speed	WORD	Unit RPM
5 8	steering wheel angle	WORD	The angle that the steering wheel has turned , clockwise is positive, counterclockwise is negative.
6 0	turn signal status	BYTE _	0 : turn off the turn signal 1 : turn left direction light 2 : Right turn indicator light
6 1	reserve	BYTE [2]	
6 3	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 message body data format is See Table 4-23.

Table 4-23 Data format of alarm attachment information message

start byte	field	data length	Description and requirements
0	Terminal ID	BYTE [7]	7 bytes, consisting of uppercase letters and numbers, this terminal ID is made of Defined by the manufacturer , when the number of digits is insufficient, add "0 x 00"
7	Alarm identification number	BYTE [16]	the alarm identification number
twenty three	Alarm number	BYTE [32]	assigned by the platform to the alarm
5 5	information type	BYTE _	0 x 00: normal alarm file information 0 x 01: Supplementary transmission of alarm file information
5 6	Number of attachments	BYTE _	Number of attachments associated with the alarm
5 7	Attachment information list		See Table 4-24

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 process of uploading the alarm attachment , it needs to resend the alarm attachment information message when the link is restored. The attachment files in are unuploaded and incomplete 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	DW ORD	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.

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: jpg or png for picture files , wav for audio files , h264 for video files ,

and bin for text files . 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.

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, For the message body data format, see 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 : image 0x01 : Audio _ 0x02 : Video _ 0x03 : text 0x04 : other
2 +l	file size	DW ORD	The size of the currently uploaded file .

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.

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, and its payload See Table 4-26 for the packet format definition.

Table 4-26 Format Definition of File Code Stream Payload Packet

start byte	field	data length	Description and requirements
0	Frame header identification	DW ORD	Fixed to 0x30 0x31 0x63 0x64
4	file name	BYTE [50]	file name
5 4	data offset	DW ORD	Data offset of the currently transferred file
5 8	data length	DW ORD	The length of the payload data

6 2	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.

the terminal finishes sending a file data to the attachment server, it sends a file sending completion message to the attachment server, and the message body number is See Table 4-27 for the data format.

Table 4-27 Data structure of message body after file sending

start byte	field	data length	Description and requirements
0	file name length	BYTE _	I
1	file name	STRING	file name
1+I	file type	BYTE _	0x00 : image 0x01 : Audio _ 0x02 : Video _ 0x03 : text 0x04 : other
2 +I	file size	DW ORD	The size of the 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 upload completion message reported by the terminal, it sends a file upload completion message response to the terminal , and the response message is The volume data structure 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 _	I
1	file name	STRING	file name
1+I	file type	BYTE _	0x00 : image 0x01 : Audio _ 0x02 : Video _ 0x03 : text 0x04 : other

2 + l	upload result	BYTE _	0x00 : Done 0 x 01: Retransmission is required
3 + l	The number of retransmission packets	BYTE _	data packets that need to be retransmitted , and the value is 0 when there is no retransmission
4 +l	Supplementary data packet list		See Table 4-29

Table 4-29 Data structure of supplementary data packet information

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

If there is data that needs to be retransmitted , the terminal should upload the data through file data upload, and then report the file upload after the retransmission is completed Completion message 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

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 ;

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.

of 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 _ _ _ 0 x 0 C : IC card reader for road transport certificate 0 x 3 4 : Beidou positioning module 0x64 : Advanced Driver Assistance System 0 x 6 5 : Driving status monitoring system 0 x 6 6 : tire pressure monitoring system 0x67 : Blind Spot Monitoring System
1	upgrade result	BYTE _	0x00 : success 0x01 : failure 0x02 : cancel _ 0 x 1 0 : target device not found 0x11 : hardware model does not support 0 x 12 : same software version 0 x 13 : The software version does not support

4.8 Set up an instant photo command externally

Message ID : 0x8801 .

ID in the command Field to judge whether the command is to control the external setup to take a photo. The data format of the message body is shown in Table 4-31.

Table 4-31 Data format of the message body of the command to take pictures immediately

start byte	field	data length	Description and requirements
0	channel ID	BYTE _	0 x 00~0 x 2 5 : 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 F indicates video recording. Other means to take pictures Number of sheets, valid only when the host

			takes pictures
3	Photo Interval/Video Time	WORD	seconds, 0 means take pictures at the lowest interval or keep recording, only the host takes pictures Valid from time to time
5	save sign	BYTE _	1 : save 0 : real-time upload Valid only when the host takes pictures
6	resolution	BYTE _	0x01 :320 * 240 0x02 :640 * 480 0 x 03:80 0*600 0x04 :102 4 *768 0x05 :176*144, [Qcif]

			0x06 :352*288, [Cif] 0x07 :7 04*288 , [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 _	valid only when the host takes pictures
9	contrast	BYTE _	valid only when the host takes pictures
1 0	Saturation _	BYTE _	valid only when the host takes pictures
1 1	Chroma	BYTE _	valid only when the host takes pictures

5 Device communication protocol

5.1 Scope of application

between the terminal and the peripherals is applicable to the communication between the vehicle terminal and the peripherals. The peripherals include but are not limited to TPMS and BSD and other devices. For ADAS and DSM equipment that can operate independently , it is recommended to use this communication protocol to meet the functional requirements of the active safety intelligent prevention and control system The integrated equipment requested is not required.

5.2 Communication method

It is recommended 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, Can use RS232, RS485 or CAN communication. When using RS232 or RS485, the interface parameters are configured as baud rate 115200, The data bit is 8, the stop bit is 1, no parity, no flow control. The 11-bit standard frame identifier is used for CAN communication, and the baud rate is 500K.

5 .3 Transmission conventions

a) The data types and transmission rules used in the protocol messages are in accordance with the requirements of Chapter 4 of JT/T808-2011.

b) When network communication is adopted, the terminal should be used as the server in the communication network, and the peripheral device should be used as the client. When the terminal is used as the server

IP The recommended address is 192.168.100.100, and the port number is 8888.

c) When using network communication, the message frame should have a serial number, and the serial number of the receiver's response message should correspond to the message sent by the sender

serial number.

d) When RS485 or CAN communication is used, the next message can be sent only after a pause interval of at least 100ms.

A message or a response message, devices with high real-time requirements are not within the scope of this requirement.

e) When RS 4 85 communication mode is adopted , the terminal acts as the host in the communication, and reads the peripheral device information through the query-response method, which can be used

Use the terminal alarm response message 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, then Directly use the alarm query command to answer.

f) After receiving the message, the receiver should check the message data first, and if the check fails, no operation or response will be performed .

g) After the terminal is started , it needs to check whether the peripheral device exists every 3 seconds. If the peripheral device exists, then query the detailed information of the peripheral device.

And synchronize the peripheral working parameters.

h) After the connection is established , the terminal should check whether the peripheral device is communicating normally through the query command at an interval of no more than 60s.

the communication is abnormal , it will actively send peripheral working status information to the platform.

i) The terminal should send the real-time status of the vehicle to the peripheral device at an interval of no more than 500ms.

j) Except for the real-time status message of the vehicle sent by the terminal to the peripheral device , all messages should be answered.

k) If the message receiver fails to respond correctly to the message sent by the sender within 1000ms, a communication timeout will be triggered.

l) In addition to the real-time vehicle status message, other messages sent by the terminal to the peripheral device need to be responded by the peripheral device. If a communication timeout occurs, it needs to

Resend the message, and if it times out three times in a row, it is determined that the peripheral is disconnected, and the terminal needs to check whether the peripheral exists again.

m) 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 for 3 times in a row, it is judged to be the same as

When the terminal is disconnected , the message needs to be saved and reissued after the communication is normal.

5.4 Message frame format

surface 5-1 Message frame format

identifier	check code	serial number	manufacturer	Peripheral number	function code	data content	identifier
-------------------	-------------------	----------------------	---------------------	--------------------------	----------------------	---------------------	-------------------

			number				
BYTE _	BYTE _	WORD	WORD	BYTE _	BYTE _	BYTE [n]	BYTE _
0x7 e	see note	see remark s	see note	See Table 5 -2	See Table 5-3	See Section 4.5~4.7	0x7e _

Remarks :

Flag bit: 0x7e is used to indicate that if 0x7 e appears in the inspection code, message header and message body , it must be escaped, and the processing rules

as follows :

0 x 7 e < —————> 0x7d followed by a 0x02 .

0 x 7 d < —————> 0x7d followed by a 0x01 .

The escaping process is as follows:

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

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

Example 1 :

To send a packet with the content of 0 x 30 0 x 7 e 0 x 08 0 x 7 d 0 x 55 , the package is as follows: 0 x 7 e 0 x 30 0 x7d 0x02

0x08 0x7d 0x01 0x55 0x7e .

Check code: the cumulative sum accumulated sequentially from the

manufacturer number to the user data, and then take the accumulated lower 8

bits as the check code. Example 2 :

If the cumulative sum is 0 x 1 388 , the check code is 0x88 .

cyclically accumulate from 0 in the order of sending .

Manufacturer ID: The manufacturer code of the peripheral slave.

Peripheral number: a unique type number corresponding to each peripheral , which is used to distinguish the peripheral interface driver of the host from what kind of peripheral

The data , peripheral type numbers are shown in Table 5-2 .

Table 5-2 Peripheral number definition table

peripheral name	Peripheral number	Description and requirements
broadcast	0 x 00	broadcast number
ADAS	0x64 __	ADAS
DS M	0x65 __	Driver Status Monitoring System
TPM S	0x66 __	Tire Pressure Monitoring System
B SD	0x67 __	Blind Spot Monitoring System

Table 5-3 Function code definition table

function code	definition	Description and requirements
0x2 F	query command	Used by the terminal to query whether the peripheral exists
0 x 30	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	Used for the terminal 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
0 x 35	Setting	Used to set peripheral parameters on the terminal

	parameters	
0x36 __	Event/alarm reporting	Used for peripheral event/ alarm data reporting
0 x 37	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
0 x 50	request multimedia data	Used for terminals to request multimedia data from peripherals
0 x 51	Upload multimedia data	Used for peripherals to upload multimedia data to the terminal
0 x 52	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.

surface 5-4 Query Command Format Definition

Peripheral number	function code	data area
See Table 5-2	0x2 F	null

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

Table 5-5 Format definition of query response command

Peripheral number	function code	data area
See Table 5-2	0x2 F	null

5.5.2 Peripheral restore default parameter command

Function code: 0x30

of the terminal to restore the default parameters to the peripheral .

Table 5-6 Restoring the Default Parameter Command Format Definition

Peripheral number	function code	data area
See Table 5-2	0 x 30	null

After the peripheral device receives the commands in Table 5-6 of the terminal, it should respond according to the command requirements. See Table 5-7 for the command format of the specific responses .

Table 5-7 Response Format Definition of Restore Default Parameter Command

Peripheral number	function code	data area
See Table 5-2	0 x 30	null

5.5.3 Real-time data command

Function code: 0x31

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

Table 5-8 Definition of real-time data instruction format

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

Table 5-9 Definition of real-time data content format

start byte	field	data type	Description and instructions
0	speed	BYTE _	The unit is km / h . Range 0~250

1	reserve	BYTE _	
2	mileage	DW ORD	The unit is 0.1km. Range 0~99999999
6	reserve	BYTE [2]	
8	elevation	WORD	Altitude in meters (m)
10	latitude	DW ORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to the million one-fifth of a degree
14	longitude	DW ORD	Latitude value in degrees multiplied by 10 to the 6th power, accurate to the million one-fifth of a degree
18	date time	BCD [6]	YY-MM-DD-hh-mm-ss (GM T +8 time)
twenty four	vehicle status	WORD	Bitwise representation of other states of the vehicle : Bit 0 ACC status, 0: off, 1: on Bit 1 Left steering status, 0: off, 1: on Bit 2 Right steering status, 0: off, 1: on Bit 3 wiper status, 0: off, 1: on Bit 4 Braking status, 0: no braking, 1: braking Bit 5 card status, 0: no card inserted, 1: card inserted Bit 6~ Bit 9 Custom Bit 10 positioning status, 0: not positioned, 1: positioned Bit 11 ~ bit 15 custom

5.5.4 Read Peripheral Basic Information Instructions

Function code: 0x32

of the terminal to read the basic information of peripherals .

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

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

Peripheral Received Terminal Table 5-10 After the instruction, a response should be made according to the instruction requirements. The instruction format of the specific response 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 Format definition of basic peripheral information content

start byte	field	data type	Description and requirements
0	Company name length	BYTE _	Length: 0~ 255 Name: expressed in ASCII (for example: software version number SV1.1.0)
1	company name	BYTE [n1]	

1 + n1	product code length	BYTE _	Expressed as : 0x53 0x56 0x31 0x2E 0x31 0x2E 0x30) The customer code is the user code , which is defined by the equipment manufacturer
2+ n 1	product code	BYTE [n2]	
2+n1+n2	Hardware version number length	BYTE _	
3+ n1+n2	hardware version number	BYTE [n3]	
3+n1+n2+ n 3	Software version number length	BYTE _	
4+ n 1+ n2+n3	software version number	BYTE [n4]	
4+ n 1+ n2+n3+n4	Device ID length	BYTE _	
5+ n 1+ n 2+ n 3+ n 4	device ID	BYTE [n5]	
5+ n 1+ n 2+ n 3+ n 4+ n5	customer code length	BYTE _	
6+ n 1+ n 2+ n 3+ n4+n5	customer code	BYTE [n6]	

5.5.5 Upgrade Instructions

Function code: 0x33

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:

a) Start upgrading subcommand instructions:

Start the upgrade subcommand: the message ID is 0 x 01, and the content of the remaining data area is empty.

Clear source program subcommand: The message ID is 0x02, and 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.

b) 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 number (2 bytes) + upgrade package content), the length of the upgrade package content of each package is recommended not to exceed 1024 bytes, when using TCP/ IP communication, the upgrade package The length 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 upgrade file The sum of all bytes of the 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 been completely received and start After the upgrade is completed, the device parameters should remain unchanged .

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

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

Table 5-14 Peripheral response data format of upgrade command

Peripheral number	function code	data area	
See Table 5-2	0x33 _ _	Message ID (1 word section)	When the message ID is 0 x 03, the content of the data area is: total number of packets (2 bytes) + packets Serial number (bytes) + response content (1 byte)
			When the message ID is not 0 x 03, 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

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

Peripheral Received Table 5-15 After the command, a response should be made 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 Format definition of active safety assistance system parameters

start byte	field	data type	Description and instructions
0	Alarm enable speed threshold	BYTE _	The unit is km / h , the value range is 0~60, the default value is 30, which means the current speed The alarm function is enabled only when the threshold is higher than this value , and it is only applicable to road departure alarm, forward collision alarm, too close vehicle distance alarm 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	When taking active timed photos 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

			Valid when the active camera policy is 01
5	Active fixed distance camera distance isolation _	WORD	The unit is meter, the value range is 0~60000, the default value is 100 0 means no capture, 0xFF F means no modification of parameters, It is valid when the active camera policy is set to 02.
7	The number of active photos taken at a time	BYTE _	The value range is 1-10. Default 3 sheets 0xFF means do not modify parameters.
8	When taking a single active photo Interval _	BYTE _	The unit is 100m s , the value range is 1~5, and the default value is 2 0xFF means do not modify parameters.
9	photo resolution	BYTE _	0x01: 35 2 ×288 0x02 :70 4 ×288 0x03:70 4 × 576 0x04 : 64 0x480 0x05 : 1280x720 _ 0x06 : 19 20×1080 The default value is 0x01 , 0 xFF means do not modify parameters, This parameter is also applicable to the alarm trigger photo resolution.
10	Video recording resolution	BYTE _	0x01: CIF 0x02 : HD 1 _ 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 _	unit 100ms, value range 10-50, default value 30 0xFF means do not modify parameters
twenty one	Before and after obstacle alarm 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
twenty two	Obstacle alarm camera Number of sheets	BYTE _	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
twenty three	Obstacle alarm camera interval	BYTE _	unit 100ms , value range 1~10, default value 2 0xFF means do not modify parameters
twenty four	Frequent lane change warning time period	BYTE _	The unit is second, the value range is 30~120, the default value is 60 0xFF means do not modify parameters
25	Frequent lane change warning Number of breaks	BYTE _	Lane change times 3~10, default value 5 0xFF means do not modify parameters
26	Before frequent lane	BYTE _	The unit is second , the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter

	change alarm post video recording time		modification
27	Frequent lane change alarm	BYTE _	The value range is 0-10, the default value is 3

	Number of photos		0 means no capture, 0xFF means no parameter modification
28	Frequent lane change alarm photo interval	BYTE _	Unit 1 00ms , value range 1~10, default 2 0xFF means do not modify parameters
29	Before lane departure warning post 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
30	Lane departure alarm Number of photos	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 _	unit 100ms , value range 1~10, default value 2 0xFF means do not modify parameters
32	Forward collision warning Inter - threshold	BYTE _	unit 100ms, the value range is 10~50, currently using the national standard 27. The modification interface is reserved, and it will not be modified in actual use
33	Before forward collision warning post 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
34	forward collision warning Number of photos	BYTE _	The value range is 0-10, the default value is 3 0 Means no capture, 0xFF means no modification

3 5	forward collision warning photo interval	BYTE _	unit 100ms , value range 1~10, default value 2 0xFF means do not modify parameters
3 6	Pedestrian collision alarm Inter - threshold	BYTE _	unit 100ms, value range 10-50, default value 30
3 7	pedestrian collision alarm post 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
3 8	Pedestrian collision alarm Number of photos	BYTE _	The value range is 0-10, the default value is 3 0 Means no capture, 0xFF means no modification
3 9	Pedestrian collision alarm photo interval	BYTE _	unit 100ms , value range 1~10, default value 2 0xFF means do not modify parameters
4 0	Vehicle distance monitorin g and alarm distance off threshold	BYTE _	unit 100ms, value range 10-50, default value 30 0xFF means do not modify parameters
4 1	Before the car is too close to the alarm post 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
4 2	car too close alarm Number of photos	BYTE _	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
4 3	car too close	BYTE _	Unit 1 00ms , value range 1~10, default 2

	alarm photo interval		0xFF means do not modify parameters
4 4	road sign recognitio n Number of photos	BYTE _	The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
4 5	road sign recognitio n photo interval	BYTE _	Unit 1 00ms , value range 1~10, default 2 0xFF means do not modify parameters
4 6	reserved field	BYTE [4]	

5.6.2 Query driver behavior detection system parameter command

Function code: 0x34

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 5-18 of the terminal, it should respond according to the content of the command. The specific response data format is defined in Table 5-19.

Table 5-19 Response parameter instruction format definition

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

Table 5-20 Parameter Format Definition of Driver Behavior Detection System

start byte	field	data type	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 when the speed Above this threshold, the alarm function is enabled . 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 0 x 03: card trigger 0x04 : Reserved _ The default value is 0x00. 0xF F means not to modify the parameters.

3	When taking active timed photos Interval _	WORD	The unit is second, the value range is 0~60000, the default value is 360 0 0 means no capture, 0xFFFF means no parameter modification It is valid when the active camera policy is 01.
5	Active fixed distance camera distance isolation _	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 It is valid when the active camera policy is set to 02.
7	The number of active photos taken each time	BYTE _	The value range is 1-10. Default 3 sheets 0xF F means not to modify the parameters.
8	Every time you take a photo Interval _	BYTE _	The unit is 100m s , the value range is 1~5, and the default value is 2 0xF F means not to modify the parameters.
9	photo resolution	BYTE _	0x01: 35 2 ×288 0x02 :70 4 ×288 0x03:70 4 × 576 0x04 : 64 0x480 0x05 : 1280x720 _ 0x06 : 19 20×1080 The default value is 0x01,

			<p>0 xFF means do not modify parameters, This parameter is also applicable to the alarm trigger photo resolution.</p>
1 0	Video recording resolution	BYTE _	<p>0x01: CIF 0x02 : HD 1 _ 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.</p>
1 1	reserved field	BYTE [10]	Reserved for future expansion , used to configure parameters of non-independent alarm types
2 1	When judging by the smoking alarm Interval _	WORD	<p>The unit is second , and the value range is 0~3600. The default value is 180. expressed here The smoking alarm is triggered only once within the time interval . 0xFFFF _ Indicates not to modify this parameter</p>
2 3	call the police Interval _	WORD	<p>The unit is second , and the value range is 0~3600. The default value is 120. expressed here Only one incoming and outgoing call alarm is triggered within the time interval . 0xFFFF _ Indicates not to modify this parameter</p>
25	Before fatigue driving alarm post video recording time	BYTE _	<p>The unit is second , the value range is 0-60, the default value is 5 0 means no recording, 0xFF means no parameter modification</p>
26	Fatigue driving alarm Number of photos	BYTE _	<p>The value range is 0-10, the default value is 3 0 means no capture, 0xFF means no parameter modification</p>

27	Fatigue driving alarm photo interval	BYTE _	Unit 100ms , value range 1~5, default value 2 0xFF means do not modify parameters
28	reserve	BYTE _	reserved field
29	calling the police 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
30	call the police driver's facial features Number of photos	BYTE _	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
31	call the police driver's facial features photo interval	BYTE _	Unit 100ms , value range 1~5, default value 2 0xFF means do not modify parameters
32	Front and rear view of smoking alarm 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
33	Smoking alarm and driving complete facial features Number of photos	BYTE _	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
34	Smoking alarm and driving complete facial features photo interval	BYTE _	unit 100ms , value range 1~5, default 2 0xFFFF _ Indicates that the parameters are not modified
35	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

3 6	distracted driving alarm Number of photos	BYTE _	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
3 7	distracted driving alarm photo interval	BYTE _	Unit 100ms , value range 1~5, default value 2 0xFF means do not modify parameters
3 8	recording of abnormal driving make 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
3 9	Snapping photos while driving abnormality Sheets _	BYTE _	The value range is 1-10, the default value is 3 0 means no capture, 0xFF means no parameter modification
4 0	Abnormal driving photo interval	BYTE _	unit 100ms , value range 1~5, default 2 0xFF means do not modify parameters
4 1	reserved field	BYTE [2]	

5.6.3 Query the command of tire pressure monitoring system

Function code: 0x34

terminal query tire pressure monitoring system parameters.

Table 5-21 Format definition for querying tire pressure monitoring system parameters

Peripheral number	function code	data area
-------------------	---------------	-----------

0x66 _ _	0x34 _ _	null
----------	-------------	------

the peripheral device receives the command in Table 5-21 of the terminal, it should respond according to the content of the command. See Table 5-22 for the definition of the specific response data format.

Table 5-22 Response parameter instruction format definition

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

Table 5-23 TPMS parameter format definition

start byte	field	data type	Description and instructions
0	Tire specification model	BYTE [12]	Example: 195/65R15 91V 12 characters, expressed in ASCII. default Value "900 R 20"
1 2	tire pressure unit	WORD	0x00 : kg / cm2 _ _ 0x01: bar 0x02: Kpa 0x03: PSI default 0x03. 0xFFFF means not to modify parameters
1 4	normal tire pressure	WORD	The unit is the same as the tire pressure unit, the default value is 140 0xFFFF _ Indicates that the parameters are not modified
1 6	Unbalanced tire pressure alarm threshold _	WORD	The unit is % (percentage), the value range is 0~100 (reaching the cold state air pressure value) , default value 20

			0xFFFF _ Indicates that the parameters are not modified
18	Slow leak alarm threshold	WORD	The unit is % (percentage), the value range is 0~100 (reaching the cold state air pressure value), default value 5 0xFFFF _ Indicates that the parameters are not modified
20	Low pressure alarm threshold	WORD	The unit is the same as the tire pressure unit, the default value is 110 0xFFFF _ Indicates that the parameters are not modified
twenty two	High pressure alarm threshold	WORD	The unit is the same as the tire pressure unit, the default value is 189 0xFFFF _ Indicates that the parameters are not modified
twenty four	High temperature alarm threshold	WORD	The unit is Celsius, the default value is 80 0xFFFF _ Indicates that the parameters are not modified
26	Voltage alarm threshold	WORD	Unit % (percentage), value range 0~100, default value 10, 0xFFFF _ Indicates that the parameters are not modified
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

Table 5-24 for the command 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. The specific response data format is defined in Table 5-25.

Table 5-25 Response parameter instruction format definition

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

Table 5-26 Parameter Format Definition of Blind Spot Monitoring System

start byte	field	data type	Description and instructions
0	Rear approach alarm Inter - 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

setting advanced driving assistance system parameters on the terminal .

Table 5-2 7 Command format definition for setting advanced driving assistance system parameters

Peripheral number	function code	data area
0x64 _ _	0 x 35	See Table 5-17

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

Table 5-28 Response parameter instruction format definition

Peripheral number	function code	data area
0x64 _ _	0 x 35	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 setting the parameters of the driver status monitoring system on the terminal .

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

Peripheral number	function code	data area
0x65 _ _	0 x 35	See Table 5-20

the peripheral device receives the command in Table 5-29, it should 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 _ _	0 x 35	1 byte: 0--success, 1--failure

5.6.7 Set TPMS parameter command

Function code: 0x35

of setting tire pressure monitoring system parameters on the terminal .

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

Peripheral number	function code	data area
-------------------	---------------	-----------

0x66 _ _	0 x 35	See Table 5-23
----------	--------	----------------

the peripheral device receives the command in Table 5-3 1 , it should respond according to the content of the command. The specific response data format is defined in Table 5-32.

Table 5-32 Response parameter instruction format definition

Peripheral number	function code	data area
0x66 _ _	0 x 35	1 byte: 0--success, 1--failure

5.6.8 Command to set blind spot monitoring system parameters

Function code: 0x35

of setting blind spot monitoring system parameters .

Table 5-33 Definition of instruction format for setting blind spot monitoring system parameters

Peripheral number	function code	data area
0x67 _ _	0 x 35	See Table 5-26

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

Table 5-34 Response parameter instruction format definition

Peripheral number	function code	data area
0x64 _ _	0 x 35	1 byte: 0--success, 1--failure

5.7 Event and alarm commands

5.7.1 Advanced driver assistance system alarm 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

5 , the terminal should respond according to the content of the command. For the definition of the specific response data format, see Table 5-36.

Table 5-36 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	DW ORD	According to the order of the alarms, the cycle accumulation starts from 0.
4	flag state	BYTE _	0x00 : not available 0x01 : start flag 0 x 02: 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 0 x 00.
5	Alarm/Event Type	BYTE _	0 x 0 1: forward collision warning 0 x 0 2: Lane departure warning 0 x 0 3: Vehicle distance too close alarm 0 x 04: Pedestrian collision alarm 0 x 0 5: frequent lane change alarm 0x06: Road sign overrun alarm 0x07~0 x 0 F : user-defined 0x10 : Road sign recognition event 0 x 11: active capture event 0x12~0 x 1 F : user-defined
6	front vehicle speed	BYTE _	unit Km/h, range 0~250, only when the alarm type is 0x01 and 0x02 effective .
7	Front vehicle /pedestrian distance	BYTE _	The unit is 100ms, the range is 0~100, only the alarm types are 0x01, 0x02 and Valid at 0x04 .
8	Deviation type	BYTE _	0x01 : Offset to the left 0x02 : Right deviation Only valid when the alarm type is 0x02
9	Types of road sign recognition	BYTE _	0x01 : Speed limit sign 0 x 02: Height limit flag 0 x 03: Weight limit sign only when the alarm type is 0x06 and 0x10.

10	Road Sign Recognition Data	BYTE _	Data on recognized road signs .
11	speed	BYTE _	The unit is Km/h. Range 0~250
12	elevation	WORD	Altitude in meters (m)
14	latitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
18	longitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
twenty two	date time	BCD [6]	YY-MM-DD-hh-mm-ss (GM T +8 time)

28	vehicle status	WORD	See Table 5-9
30	additional multimedia information lists for alarms	BYTE _	
31	multimedia information list		the media information list

Table 5-38 Format definition of media information list

start byte	field	data length	describe
0	multimedia type	BYTE _	0x00 : image 0x01 : Audio _ 0x02 : Video _
1	Multimedia ID	DWORD	> 0

5.7.2 Driver state monitoring system alarm command

Function code: 0x36

See Table 5-39 for the formats 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. For the definition of the specific response data format, see 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	DW ORD	According to the order of the alarms, the cycle accumulation starts from 0.
4	flag state	BYTE _	0x00 : not available 0x01 : start flag 0 x 02: 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 0 x 00.
5	Alarm/Event Type	BYTE _	0 x 01: Fatigue driving alarm 0 x 02: receive and call the police

			0 x 03: smoking alarm 0 x 04: Distracted driving warning 0 x 05: Driver abnormal alarm 0x06~0 x 0 F : user-defined 0 x 10: active capture event 0x11 : Driver change event 0x12~0 x 1 F : user-defined
6	Fatigue	BYTE _	Indicates the degree of fatigue, ranging from 1 to 10, the greater the value, the more severe the fatigue Heavy , only valid when the alarm type is 0x01.
7	reserve	BYTE [4]	reserve
11	speed	BYTE _	The unit is Km/h. Range 0~250
12	elevation	WORD	Altitude in meters (m)
14	latitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
18	longitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
twenty two	date time	BCD [6]	YY-MM-DD-hh-mm-ss (GM T +8 time)
28	vehicle status	WORD	See Table 5-9
30	additional multimedia information lists for alarms	BYTE _	
31	multimedia information list		the media information list

Table 5-42 Format definition of media information list

start byte	field	data length	describe
0	multimedia type	BYTE _	0x00 : image 0x01 : Audio _ 0x02 : Video _
1	Multimedia ID	DW ORD	> 0

5.7.3 Tire pressure monitoring system instructions

Function code: 0x36

See Table 5-43 for the format of events 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 5-44

Terminal received error! **Reference source not found** . After the command of 43, a response should be made according to the content of the command, and the specific response data format is defined See Table 5-45.

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	DW ORD	According to the order of the alarms, the cycle accumulation starts from 0.
4	flag state	BYTE _	0x00 : not available 0x01 : start flag 0 x 02: 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 0 x 00.
5	speed	BYTE _	The unit is Km/h. Range 0~250
6	elevation	WORD	Altitude in meters (m)
8	latitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
1 2	longitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
1 6	date time	BCD [6]	YY-MM-DD-hh-mm-ss (GM T +8 time)
twenty two	vehicle status	WORD	See Table 5-9
twenty four	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	describe
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 number is the same as No installation of TPM S does not matter)
1	Alarm/Event Type	WORD	0 means no alarm, 1 means alarm bit 0 : Tire pressure (report regularly) bit 1: High tire pressure alarm bit 2: low tire pressure alarm bit 3: tire temperature is too high alarm bit 4: sensor abnormal alarm bit 5: tire pressure imbalance alarm bit 6: slow leak alarm bit 7: low battery alarm

			bit8~bit15: reserved
3	tire pressure	WORD	Unit Kpa
5	fetal temperature	WORD	unit °C
7	battery level	WORD	unit%

5.7.4 Blind Spot Monitoring System Instructions

Function code: 0x36

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. For the definition of the specific response data format, see 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 0 x 02: 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 0 x 00.
5	Alarm/Event Type	BYTE _	0 x 0 1: Rear approach warning 0x02: left rear approach alarm 0x03 : Right rear approach warning
6	speed	BYTE _	The unit is Km/h. Range 0~250
7	elevation	WORD	Altitude in meters (m)
9	latitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
13	longitude	DW ORD	in degrees multiplied by 10 to the 6th power, accurate to parts per million one degree
17	date time	BCD [6]	YY-MM-DD-hh-mm-ss (GM T +8 time)

twenty three	vehicle status	WORD	See Table 5-9
-----------------	-------------------	------	---------------

5.8 Peripheral working state command

5.8.1 Query Peripheral Working Status Command

Function code: 0x37

See Table 5-5 for the command format of the terminal requesting the working state of the peripheral device 0

Table 5- 5 0 Multimedia instruction format definition

Periphera l number	functio n code	data area
See Table 5-2	0 x 37	null

After the peripheral device receives the command from the terminal Table 5-50, it should respond according to the content of the command, and the specific response data format is defined in Table 5-51.

Table 5- 5 1 Multimedia instruction format definition

Periphera l number	functio n code	data area
See Table 5-2	0 x 37	Working status, see Table 5-54

5.8.2 Peripheral upload working status command

Function code: 0x38

the peripheral upload working status command

Table 5-52 Peripheral upload working status command format

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

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 device upload working status instruction format

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

Table 5-54 Peripheral working status

start byte	field	data length	Description and requirements
0	working status	BYTE _	0x01 : normal operation

			0x02 : standby state 0 x 03: upgrade maintenance 0 x 04: device abnormal
1	Alarm status	DW ORD	Bitwise setting: 0 means no, 1 means yes bit 0: abnormal camera bit1: Main memory error bit2: Auxiliary memory abnormality bit3: Abnormal infrared fill light bit4: Abnormal speaker bit 5 : battery abnormal bit 6~ bit 9 : Reserved b it 10: The communication module is abnormal b it 11: define module exceptions bit 12~ bit31: Reserved

5.9 Multimedia commands

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- 5 5 Multimedia Command Format Definition

Peripheral number	function code	data area	
		message ID	Multimedia ID
See Table 5-2	0 x 50	1 byte, see Table 5-57	DW ORD

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

Table 5-56 Definition of multimedia command response format

Peripheral number	function code	data area
See Table 5-2	0 x 50	null

Table 5-57 Multimedia message ID definition table

the news ID	definition	Description and requirements
0 x 00	request image	After the peripheral device receives the instruction, it replies the picture data to the terminal
0 x 01	request audio	After the peripheral device receives the instruction, it will reply the audio data to the terminal
0 x 02	request video	After the peripheral device receives the instruction , it will reply the video data (including audio data) to the terminal

5.9.2 Transmit multimedia data command

Function code: 0x51

Refer to Table 5-58 for the instruction format of multimedia data transmission by peripherals .

Table 5-58 Definition of instruction format for transmitting multimedia data

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

surface 5-59 Multimedia Data Format

start byte	field	data length	Description and requirements
0	Total number of packages	WORD	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, if the network communication no limit

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

Table 5-60 Response format definition for receiving multimedia data

Peripheral number	function code	data area		
		message ID	Multimedia ID	Response result

See Table 5-2	0 x 5 1	1 byte, see Table 5-57	DW ORD	See Table 5-61
---------------	---------	------------------------	--------	----------------

Table 5-61 Definition of the response result format for receiving multimedia data

start byte	field	data length	Description and requirements
0	Total number of packages	WORD	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 : failed

5.10 Immediate photo instruction

Function code: 0x52

See Table 5-62 for the format of the immediate camera command issued by the terminal

Table 5-62 Definition of the format of the immediate camera command issued by the terminal

Periphera l number	functio n code	data area
See Table 5-2	0 x 52	none

the peripheral device receives the immediate camera command , it should respond according to the content of the command. The specific response data format is defined in Table 5-63.

Table 5-63 Response Format Definition of Peripheral Control Commands

Periphera l number	functio n code	data area
See Table 5-2	0 x 52	0: success 1 : failed

the peripheral device receives the immediate camera command, it will take pictures according to the relevant parameters of the active camera function. After the camera is completed, it will report the active capture Shoot the event .