People's Republic of China Transportation Industry Standards

Video communication protocol for satellite positioning system of road transport vehicles

GNSS system for operating vehicles —
Video communication protocol

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JT/T 1078-2016

Video communication protocol for satellite positioning system of road transport vehicles

1 range _

This standard specifies the protocol basis and communication protocol between the vehicle-mounted video terminal and the video platform in the satellite positioning system of road transport vehicles, the code stream communication between the audio and video stream server and the client playback software, and the communication protocol basis between the video platforms, Communication protocol flow, constant yellow definition and protocol data body format.

This standard applies to the transmission of audio and video data between the on-board video terminal of the satellite positioning system of road transport vehicles and the enterprise video monitoring platform, as well as the exchange and sharing of audio and video resources between different video platforms.

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 808-2011 Communication protocol and data format of satellite positioning system terminal for road transport vehicles

JT/T 809-2011 Data exchange of satellite positioning system platform for road transport vehicles

JT/T 1076-2016 Technical requirements for on-board video terminals of satellite positioning systems for road transport

vehicles

JT/T 415-2006 Road Transport E-government Platform Cataloging and Coding Rules

IETF RFC 3550 RTP Real-time Transport Protocol （ Real-time Transport Protocol)

IETF RFC 2854 Text/Hypertext Markup Language Multimedia Type (The Text/Html Media Type)

3 Terms and Definitions, Abbreviations

3.1 Terms and Definitions

The following terms and definitions apply to this document.

3.1.1 _

daily rate **code rate**

The number of data bits transmitted per unit time during data transmission, the common unit is thousand bits per second (kbp $_8$) o

3.1.2 _

frame rate

Indicates the number of updates per second when the graphics processor processes the field, and is used to measure the number of display frames . The measurement unit is the number of display frames per second (Frame per Second, FPS) o

3.2 Abbreviations

The following abbreviations apply to this document.

AAC : Advanced Audio Coding (Advanced Audio Coding)

MPEG : Moving Pictures Experts Group

RTP : Real-time Transport Protocol （ Real-time Transport Protocol)

TCP : Transmission Control Protocol （ Transmission Control Protocol)

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UDP: User Datagram Protocol (User Datagram Protocol)

URL: Uniform Resource Locator

UTF& Universal Code (8-bit Unicode Transfonnation Fonnat)

FTP: File Transfer Protocol

4 Basic protocol between video terminal and video platform

4.1 Basic agreement of the agreement

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

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

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

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

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

— Unless expressly agreed, all messages shall be answered;

— If the dedicated response message is not clearly specified, the general response shall be used;

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

4.2 Real-time audio and video transmission channel agreement

One real-time audio and video transmission channel can transmit one channel of video information or one channel of audio information, and can also transmit one channel of video information and one channel of audio information. There are two types of real-time audio and video transmission channel conventions:

—When TCP is used , each TCP connection can carry multiple audio and video channels. If there is no data transmission within the set timeout period, both the terminal and the monitoring center can actively close the TCP connection used for audio and video data transmission.

——When using UDP , each UDP port can carry multiple audio and video channels.

4.3 Classification of audio and video communication packets

Audio and video data packets are divided into the following two categories:

— Command data message: the data format should comply with the provisions of JT/T 808-2011 , and add new protocol instructions and data formats on the basis of its protocol format. Message communication should use the established link between the vehicle video terminal and the enterprise video surveillance platform for transmission of positioning information, and no new link should be created.

- Code stream data message: used for network real-time audio and video transmission, network video playback, voice dialogue, voice monitoring, voice broadcasting , etc. For message communication, a new link should be created instead of the link for transmitting positioning information.

5Communication protocol between video terminal port and video platform

5.1 Protocol Instruction Set

A for the comparison table of instruction messages between video terminals and video platforms ₒ

5.2 Seam instruction

Inherit the use of other commands in JT/T 808-2011 except for the message ID 0x8804 (recording start command). In addition, in JT/T 808—2011 , 0x0800 (multimedia event message upload), 0x0801 (multimedia data upload) , 0x8802 (storage multimedia data retrieval), 0x0802 (storage multimedia data retrieval response), and 0x8803 (storage multimedia data upload) are five in total The multimedia type field in the instruction shall only contain the picture type in this standard, and the audio and video type data shall be transmitted according to the requirements of 5.4 and 5.5 .

2

5.3 Set number setting instruction

5.3.1 Terminal audio and video parameter settings

The terminal audio and video parameter setting message adopts **the 0x8103 message** defined in 8.8 of JT/T 808-2011 , and adds the following audio and video parameter settings, see Table **1** .

Wrap 1 audio and video setting parameter attenuation

parameter **ID**	type of data	Description and requirements
0x0075		Audio and video parameter settings, see Table **2 for description**
0x0076		Audio and video channel list settings, see Table **3 for description**
0*0077		Individual video channel parameter settings, description see Table **5**
0x0079		Special alarm recording parameter setting, description see Table **7**

Ox007A	DWORD		Video-related alarm masking word, corresponding to the video alarm flag bit definition in Table **13** , **if the corresponding bit is 1** , the corresponding type of alarm is masked
Ox007B			Image analysis alarm parameter setting, description see Table **8**
Ox007C			Terminal sleep wake-up mode setting, see Table **9 for description**

Decay 2 Audio and Video Parameters

start byte	field	type of data	Description and instructions
0	live stream encoding mode	**BYTE**	**O : CBR** (fixed bit rate); **1 : VBR** (variable bit rate); **2 : ABR** (average bit rate); **100-127 : ^** definition
1	Live Streaming Resolution	**BYTE**	**O : QCIF ; 1 : CIF ; 2 : WCIF ; 3 : D1 ; 4 : WD1 ; 5 : 720P ; 6 : 1080P ; W0~127 :** custom
2	Live Stream Keyframe Interval	**WORD**	Range **(1~1000)«**
4	Live Stream Target Frame Rate	**BYTE**	Range **(l~120)** frame **/s**
5	Real-time streaming target bit rate	**DWORD**	The unit is kilobits per second **(kbps)**
9	Save Stream Encoding Mode	**BYTE**	**O : CBR** (fixed bit rate); **1 : VBR** (variable bit rate); **2 ; ABR** (average bit rate); **100 ~ 127 :** custom

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Decay 2 (continued)

start byte	field	type of data	Description and instructions

10	Save Stream Resolution	BYTE	O-QCIF; 1：CIF；2：WCIF；3：D1；4：WD1；5-720P；6：1080P；100～127：custom
11	Save Stream Keyframe Interval	WORD	Range (l-1000)tt
13	Save Stream Target Frame Rate	BYTE	Range B(l~120)tt/8
14	Storage stream target bit rate	DWORD	The unit is kilobits per second (kbps)
18	OSD text overlay setting	WORD	Set by bit：0 means no superposition，1 means Sanga; bilO：date and time; bitl：license plate number; Edit channel number; lit3：latitude and longitude; bi>4：driving record speed; bit5：satellite positioning speed; bit6：continuous driving time; bit7~bitlO：reserved；bitll~bitl5：custom
20	Whether to enable audio output	BYTE	0：not enabled；1：enabled

Decay 3 audio and video channel list

start byte	field	type of data	Description and instructions
0	Total number of audio and video channels	BYTE	represented by 1
1	Total number of audio channels	BYTE	expressed by m
2	Total number of video channels	BYTE	expressed by n
3	Audio and video channel comparison table	BYTE [4x(l + m4-n)]	see table 4

Table 4 Correlation of visual channels

start byte	field	type of data	Description and instructions
0	physical channel number	BYTE	start from 1
1	logical channel number	BYTE	According to Table 2 in JT/T 1076-2016

Table 4 (continued)

start byte	field	type of data	Description and instructions
2	channel type	**BYTE**	**0**：audio and video；**1**：audio；**2**：video
3	Whether to connect to the gimbal	**BYTE**	This field is valid when the channel type is **0** and **2**；**0**：not connected；**1**：connected

The definition and description of the video parameters of Decay 5 alone through it

start byte	field	type of data	Description and instructions
0	The number of channels that need to set video parameters	**BYTE**	expressed by **n**
1	Single channel video parameter setting list	**BYTE[21xn]**	See Table **6**

Table 6 Separate channel video, number setting

start byte	field	type of data	Description and instructions
0	logical channel number	**BYTE**	According to Table **2** in **JT/T 1076-2016**
1	live stream encoding mode	**BYTE**	**O**：**CBR**（fixed bit rate）& **1**：**VBR**（variable bit rate）；**2**：**ABR**（average bit rate）；**100～127**：custom
2	Live Streaming Resolution	**BYTE**	**O**：**QCIF**；**1**：**CIF**；**2**：**WCIF**；**3**：**D1**；**4**：**WD1\$5**：**720P**；**6**：**1080P**；**100～127**：custom
3	Real-time streaming key frame interval	**WORD**	Range **(1~1000)«**
5	Live Stream Target Frame Rate	**BYTE**	Fan **ffi(l~120)tt/ s**
6	Real-time streaming target bit rate	**DWORD**	Units are kilobits per second（**kbps)**
10	Save Stream Encoding Mode	**BYTE**	**O**：**CBR**（fixed bit rate）；**1**：**VBR**（variable bit rate）；**2**：**ABR**（average bit rate）；**100～127**：custom

start byte	field	type of data	Description and instructions
11	Save Stream Resolution	BYTE	**O : QCIF** {**1 : CIF ; 2 : WCIF ; 3 : D1 ; 4 ; WD1 ; 5 : 720P ; 6 : 1080P ; 100~127 :** custom
12	Save Stream Keyframe Interval	WORD	Range **(1~1000)«**
14	Storage Stream Target Rate	BYTE	Range **(l~120)tt/s**
15	Storage stream target bit rate	DWORD	The unit is kilobits per second **(kbpe)**
19	**OSD** overlay settings	WORD	Set by bit : **0** means no children plus **J** means superposition; **bitO :** date and time; **bitl :** license plate number; **bit2 :** logical channel number; **bit3 :** latitude and longitude; **bit4 :** driving record speed; **bit5 :** satellite positioning speed; **bit6 :** continuous driving time; **bit7~bitl0 :** reserved; **bitll ~bitl5 :** custom

The definition and description of the special alarm recording parameters *of Decay 7*

start byte	field	type of data	Description and instructions
0	Special alarm video storage gate value	BYTE	The percentage of the network value stored in the main memory occupied by special alarm recording, the value is **1~99, and** the default value is **20**
1	Special alarm recording duration	BYTE	The duration of the special alarm recording session, the unit is minutes **(min),** the default value is **5**
2	Special alarm flag start time	BYTE	The recording time marked before the special alarm occurs, the unit is minutes **(min),** the default value is **1**

Bad 8 Video Analysis Report *#« Definition and Description

start byte	field	type of data	Description and instructions
0	Number of people in the vehicle	BYTE	Passenger vehicles verify the number of passengers, and an alarm will be generated when the video analysis results exceed

start byte	field	type of data	Description and requirements
1	Fatigue Prediction	BYTE	Video analysis fatigue driving alarm threshold, alarm will be generated when it exceeds

9 terminal sleep call 11 mode setting data format

start byte	field	type of data	Description and requirements
0	sleep mode	BYTE	Set by bit : **0** means not set , **1** means set; **biiO** : Conditional wake-up; **bitl** : Timing wake-up; **bit2** : manual wake-up
1	Wake-up condition class	BYTE	**bit0** *is* **1** in sleep wake-up mode , otherwise it is set to **0;** Set by bit : **0** means not set , **1** means set; **bitO** : Emergency alarm; **bitl** : Collision and rollover alarm; **bit2** : vehicle door open
2	Timing call daily setting	BYTE	Set by bit : **0** means not set , **1** means set; **bilO** : Monday: **bitl** : Tuesday; **bit2** : Wednesday; **bit3** : Thursday; **big** : Friday; **bit5** : Saturday : **bit6** : Sunday
3	List of daily wake-up parameters	**BYTE[17]**	See Table **10,** each time period should not overlap

»10 Day Call Definition

start byte	field	type of data	Description and requirements
0	Timing wakeup enable flag	BYTE	Set *by bit* : **o** means not set , **1** means set; **bitO** : wake-up time in time zone **1 is enabled; bitl : wake-up** time in time zone **2 is enabled; bit2 : wake-up** time in time zone **3** is enabled; **bil3 : wake-up** time in time zone **4** is enabled
1	Time segment **1** wake up time	**BCD[2]**	**HHMM,** value range **00 : 00 - 23 : 59**
3	Time Segment **1** Closing Time	**BCD[2]**	**HHMM,** value range **00 : 00~23 ; 59**
5	Time segment **2** wake up time	**BCD[2]**	**HHMM,** value range **00 : 00~23 ; 59**
7	Time period **2** closing time	**BCD[2]**	**HHMM,** value range **00 : 00~23 ; 59**
9	Time period **3** wake-up time	**BCD[2]**	**HHMM ,** value range **00 ; 00~23 : 59**
11	Time Zone **3** Closing Time	**BCD[2]**	**HHMM,** value range **00 : 00~23 : 59**

| 13 | Time segment **4** wake up time | **BCD[2]** | **HHMM**，value range **00：00~23：59** |
| 15 | Time Segment **4** Closing Time | **BCD[2]** | **HHMM,** value range **00：00~23：59** |

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5.3.2 Query terminal audio and video properties

Message ID：0x9003 。

The message body is empty.

5.3.3 Terminal upload audio and video attributes

Message ID：0xl003 。

Message type: signaling data message.

Use the terminal upload audio and video attribute command to respond to the query terminal audio and video attribute message issued by the platform. The message body data format is shown in Table 11 .

*11 terminal upload audio and video data format

start byte	field	type of data	Description and requirements
0	Input audio encoding method	BYTE	See Table 12
1	Number of input sound channels	BYTE	
2	Input audio sample rate	BYTE	0：8 kHz；1: 22.05 kHz；2：44.1 kHz；3：48 kHz
3	Input Audio Sample Bits	BYTE	0: 8 bits；1: 16 bits；2：32 bits
4	audio frame length	WORD	Range]~4 294 967 295
6	Whether to support audio output	BYTE	0：not supported；1：supported
7	Video encoding method	BYTE	See Table 19
8	The maximum number of audio physical channels supported by the terminal	BYTE	
9	The maximum number of video physical channels supported by the terminal	BYTE	

12 audio and video coding type definition

coding	name	Remark
0	reserve	
1	G.721	audio

2	G.722	audio	
3	G.723	audio	
4	G.728	audio	
5	G.729	audio	

			£31-III
			on~zoi
		□VAS	101
		SAV	001
	MM	S9ZH	*66*
	mantis gum	WH	86
		national	*L6-Z6*
			16
			06-63
	Solution is	MWV	8Z
	■ County	oionvHw	*a*
	Ma County	VHMCIV	*91*
	married	EdM	*SZ*
	Ji County	□1DW	Yi
	Hua County	oranvFDd	*a*
	■Easy	30I0A~H3d	*zz*
	Ma County	3W3H	*IZ*
	Lang County	OIS6VM	03
		3W	61
	Shun day	W3dl	81
		oianvoadw	II
	You County	ONOW3A9IS	91
	Rocky	03H31S~3fl9lS	Si
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5.4 Video alarm command

5.4.1 Video alarm reporting

The video alarm report adopts the method of reporting the location information at the same time. As the additional information of the **0x0200** location information report, the additional information definition table in Table **20 of JT/T 808-2011** is extended. The extended definition of additional information is shown in Table **13.** o

*13 Additional information defines the attenuation extension

Additional Information **ID**	Additional information length	Description and requirements
0x14	4	Video-related alarm, **DWORD,** set by bit, the definition of the flag bit is shown in Table **14**
0x15	4	Video signal loss alarm state, **DWORD,** set by bit, **bitO ~ bit31** represent the first **1 to 32** logical channels, if the corresponding bit is **1**, it means that the video signal loss occurs in this logical channel
0x16	4	Video signal masking alarm state, **DWORD,** set by bit, **bit0~bh31** respectively represent the **1st~32nd** logical channel, the corresponding bit is **1**, it means the video signal masking occurs in this logical channel
0x17	2	Memory fault alarm status, **WORD,** set by **bit, bitO-bit11** respectively represent the 1st to **12th main** memory, **biH2 ~ bit15** represent the **1st to 4th** disaster recovery storage device respectively, the corresponding bit is **1** means that the memory has failed
0x18	2	Abnormal driving behavior alarm detailed description, **WORD,** definition see Table **15**

«14 Video alarm flag definition

bit	definition	Handling instructions
0	Video signal loss alarm	The flag is maintained until the alarm condition is removed
1	Video signal blocking alarm	The flag is maintained until the alarm condition is removed
2	Storage unit failure alarm	The flag is maintained until the alarm condition is removed
3	Other video equipment failure alarm	The flag is maintained until the alarm condition is removed
4	Bus overcrowding alarm	The flag is maintained until the alarm condition is removed
5	Abnormal driving behavior alarm	The flag is maintained until the alarm condition is removed
6	Special alarm recording reaches the storage threshold	Cleared after receiving the response
7~31	reserve	

«15 Abnormal Driving Behavior Flag Definitions

start byte	field	type of data	Description and requirements
0	Types of abnormal driving behavior	**WORD**	Set by bit : **0** means no , **1** means yes; **bitO :** fatigue; Jia **1 :** make a phone call; **bit2 :** smoking; **bit3~bitIO :** reserved; **bitII ~bit!5 :** custom
2	Fatigue	**BYTE**	The degree of fatigue is represented by **0 ~ 100** , and the

5.4.2 Passenger transfers uploaded by the terminal

Message ID : 0x1005o _

Message type: signaling data message.

The terminal device counts passengers getting on and off the bus through video analysis, and sends the counting result to the platform. The message body data format is shown in Table 16 .

at the end of 16. Data format

start byte	field	type of data	Description and requirements
0	start time	BCD[6]	YY-MM-DD-HH-MM-SS (GMT + 8 time, the time involved in this standard will use this time zone)
6	End Time	BCD[6]	YY-MM-DD-HH-MM-SS
12	Number of people on board	WORD	Number of boarders from start time to end time
14	Number of people getting off	WORD	The number of people getting off from the start time to the end time

5.5 Real-time audio and video transmission instructions

5.5.1 Real-time audio and video transmission request

Message ID : 0x9101o _

Message type: signaling data message.

The platform requests real-time audio and video transmission from the terminal equipment, including real-time video transmission, actively initiating two-way voice intercom, one-way monitoring, broadcasting voice to all terminals and specific transparent transmission, etc. See Table 17 for the message body data format . After receiving this message, the terminal replies with a video terminal general response, and then establishes a transmission link through the corresponding server IP address and port number, and then transmits the corresponding audio and video stream data according to the audio and video stream transmission protocol.

Decay 17 Real-time audio and video transmission request data format

start byte	field	type of data	Description and requirements
0	Server **IP** address length	BYTE	length
1	Server **IP** address	STRING	Real-time video server **IP** address

1 +*n*	Server video channel monitoring port number (TCP)	WORD	Real-time soul frequency server TCP port number
3 +	Server video channel monitoring port number (UDP)	WORD	Real-time video server UDP port number
5 +n	logical channel number	BYTE	According to Table 2 in J17T 1076-2016
6	type of data	BYTE	0: audio and video , 1: video , 2: two-way intercom , 3: monitor, 4: central broadcast , 5: transparent
7+*n*	stream type	BYTE	0: main stream , 1: sub stream

After the platform receives a special alarm from the video terminal, it should issue this command without waiting for manual confirmation to start real-time audio and video transmission.

5.5.2 Audio and video real-time transmission control

Message ID: 0x9102o

Message type: signaling data message.

The platform sends audio and video real-time transmission control commands for switching code streams, pausing code stream transmission, closing audio and video transmission channels, etc. The data format of the message body is shown in Table 18 .

«18 audio and video real-time transmission control data format

start byte	field	type of data	Description and requirements
0	logical channel number	BYTE	According to Table 2 in JT/T 1076-2016
1	Control instruction	BYTE	The platform can control the real-time audio and video of the device through this command: 0 : Disable audio and video transmission commands; 1 : switch code stream (add pause and continue); 2 : Pause the sending of all streams
2	Close audio and video type	BYTE	0 : Close the audio and video data related to this channel; 1 : only turn off the audio related to this channel, and keep the video related to this channel; 2 : Only close the video related to
3	Switch stream type	BYTE	Switch the previously applied code stream to the newly applied code stream, and the audio will remain the same as before the switch. The code stream for the new application is:

5.5.3 Real-time audio and video streaming and transparent data transmission

Message type: stream data message.

The transmission of real-time audio and video stream data refers to the RTP protocol, which is carried by UDP or TCP . The format of the payload packet is based on the definition of IETF RFC 3550 RTP , adding fields such as the message serial number, SIM card number, audio and video channel number, etc., and the definition of the payload packet format is shown in Table 19. The bits defined in the table are in accordance with the big endian mode (bigYndian) to fill in.

Table 19 Audio and video stream and genetic data transmission protocol payload packet format definition attenuation

start byte	field	type of data	Description and requirements
0	Frame header identification	**DWORD**	Fixed to **0x30 0x31 0x63 0x64**
4	V	**2 BITS**	Fixed to **2**
	P	**1 BIT**	Fixed to **0**

Table 19 (continued)

start byte	field	type of data	Description and requirements
	x	**1 BIT**	**RTP** header needs extension bits. Fixed to **0**
	CC	**4 BITS**	Fixed to **1**
5	m	**1 BIT**	Flag bit to determine whether it is the boundary of a complete data frame
	PT	**7 Brrs**	load type, see Table **19**
6	package serial number	**WORD**	The initial value is **0,** each time an **RTPtt** packet is sent, the sequence number is increased by **1**
8	**SIM** card number	**BCD[6]**	Terminal device **SIM** card number
14	logical channel number	**BYTE**	According to Table **2** in **JT/T 1076-2016**
15	type of data	**4 BITS**	**0000 :** video **I** frame; **0001 :** video **P** frame; **0010 :** wish frequency **B** frame; **0011 :** audio frame; **0100 :** transparently transmit data
	subcontract processing flag	**4 BITS**	**0000 :** atomic package, which cannot be split; **0001 :** the first package when subpackaging; **0010 :** the last package when subpackaging; **0011 :** Intermediate package during subcontract processing
16	timestamp	**BYTE[8]**	Identifies the relative time of the current frame of this **RTP** packet, in milliseconds (bits). When the data type is **0100** , there is no such field
twenty four	**Last I Frame Interval**	**WORD**	The time interval between this frame and the previous key frame, in milliseconds **(ms),** when the data type is a non-video frame, there is no such field

26	**Last Frame Interval**	**WORD**	The time interval between this frame and the previous one, in milliseconds **(ms),** when the data type is non-visual earning frame, there is no such field
28	data body length	**WORD**	Subsequent data body length, excluding this field
30	data body	**BYTE[n]**	Audio and video data or transparent transmission data, the length of which should not exceed **950 bytes**

5.5.4 Real-time audio and video transmission status notification

Message ID - 0x9105 。

Message type: signaling data message.

During the process of receiving audio and video data uploaded by the terminal, the platform sends a notification packet to the terminal according to the set time interval. The format of the message body data is shown in Table 20 .

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Decay 20 real-time audio and video transmission status notification data format

start byte	field	type of data	Description and requirements
0	edit channel number	BYTE	According to Table **2** in **J17T** 1076-2016
1	Packet loss rate	BYTE	The packet loss rate of the current transmission channel. After multiplying the value by **100** , take the integer part

5.6 Historical audio and video query, playback and download commands

5.6.1 Query resource list failure

Message ID : 0x9205 。

Message type: signaling data message.

The platform queries the video file list from the terminal according to the combined conditions such as audio and video type, channel number, alarm type, and start and end time. See Table 21 for the message body data format .

Decay 21 Query video file column decay data format

start byte	field	type of data	Description and requirements
0	logical channel number	BYTE	According to table **2** in **JT/T** 1076-2016, 0 indicates all channels
1	Starting time	BCD[6]	YY-MM-DD-HH-MM-SS, all 0 means no start time condition
7	End Time	BCD[6]	YY-MM-DD-HH-MM-SS , full. Indicates no termination time condition
13	alarm sign	64BITS	biio ~ bit31 see J17T 808-2011 table 18 alarm flag definition; See Table 13 for bit32~bit63 ; All 0 means no alarm type condition

twenty one	Audio and video resource type	BYTE	0: audio and video , 1: audio , 2: video , 3: video or audio and video
twenty two	stream type	BYTE	0: All streams , 1: Main stream , 2: Sub stream
twenty three	memory type	BYTE	0: All storage . 1: Main storage , 2 : Disaster backup storage

5.6.2 List of audio and video resources uploaded by the terminal

Message ID : 0xl205e _

Message type: signaling data message.

The terminal responds to the platform's command to query the audio and video resource list, and responds with the terminal uploading the audio and video resource list message. If the list is too large and needs to be subcontracted, the subcontracting mechanism defined in 4.4.3 of JT/T 808-2011 shall be used for processing, and the platform shall reply to the general response of the video platform for each individual subcontract. See Table 22 for the message body data format .

Table 22 Terminal upload audio and video resource list data format

start byte	field	type of data	Description and requirements
0	serial number	**WORD**	Corresponding to the serial number of the query audio and video resource list command
2	Audio and video resources idle	**DWORD**	If there is no audio and video resource that meets the conditions, set it to **0**
6	List of audio and video resources		See Table **23**

Table 23 The format of the list of audio and video resources uploaded by the terminal

start byte	field	type of data	Description and requirements
0	logical channel number	**BYTE**	According to Table **2** in **JT/T 1076-2016**
1	Starting time	**BCD[6]**	**YY-MM-DD-HH-MM-SS**
7	End Time	**BCD[6]**	**YY-MM-DD-HH-MM-SS**
13	alarm sign	**64BITS**	**bit0 ~ bit31 are defined** according to the alarm flag bit in Table **18 of JT/T 808-2011 ;** See Table **13 for bit32~bit63**
twenty one	Audio and video resource type	**BYTE**	**0 :** audio and video **J:** audio **, 2 :** video
twenty two	stream type	**BYTE**	**1 :** main stream **, 2 :** sub stream
twenty three	memory type	**BYTE**	**1 :** main storage **, 2 :** disaster recovery storage
twenty four	File size	**DWORD**	Unit byte **(BYTE)**

5.6.3 Platform sends remote video playback request

Message ID : 0x9201 .

Message type: signaling data message.

The platform requests audio and video video playback from the terminal device, and the terminal should respond with the 0x1205 (terminal uploaded video file list) command, and then transmit the video data using the packet format defined in Table 18 Real-time audio and video stream data transmission RTP protocol payload format. See Table 24 for the message body data format .

The format of the remote video playback request issued by the 24 platform

start byte	field	type of data	Description and requirements
0	Server **IP** address length	**BYTE**	length″
1	Server **IP** address	**STRING**	Real-time audio and video server **IP** address
15	Server audio and video channel monitoring port number **(TCP)**	**WORD**	Real-time audio and video server port number, not using **TCP** *transmission Set to* **0** when losing
3 +n	Server audio and video channel monitoring port number **(UDP)**	**WORD**	Real-time audio and video server port number, set to **0 when UDP** transmission is not used
5	logical channel number	**BYTE**	According to Table **2** in **JT/T 1076-2016**

Wrap 24 (continued)

start byte	field	type of data	Description and requirements
6 + n	Audio and video type	**BYTE**	**0 :** audio and video , **1 :** audio , **2 :** video , **3 :** video or audio and video
7 +A	stream type	**BYTE**	**0:** main stream or sub stream, **1 :** main stream , **2:** sub stream ; if this
8 + dozen	memory type	**BYTE**	**0 :** main storage or disaster storage , **1 :** main storage, **2 :** disaster backup
9+ dishes	playback method	**BYTE**	**0 :** normal playback; **1 :** fast forward playback; **2 :** key frame rewind playback; **3 :** key frame playback; **4 :** Single frame upload
10+»	Fast forward or rewind multiples	**BYTE**	the playback mode is **1** and **2** , the content of this field is valid, otherwise it is set to **0** . **0 :** invalid; **1:1** times;
10 + n	Fast forward or rewind multiples	**BYTE**	**3:4** times; **4:8** times; **5 : 16** times

11 +n	Starting time	BCD(6]	YY-MM-DD-HH-MM-SS, when the playback mode is **4**, **this field indicates the upload time of a single frame**
17+n	End Time	BCD[6]	YY-MM-DD-HH-MM-SS, if it is **0**, it means playback all the time, when the playback mode is **4**, this field is invalid

5.6.4 Remote video playback control issued by the platform

Message ID : 0x9202o_

Message type: signaling data message.

During the audio and video playback process of the terminal device, the platform can issue playback control commands to control the playback process. See Table 25 for the message body data format .

The format of the remote video playback control data issued by the 25 platform

start byte	field	Validity type	Description and requirements
0	Audio and video channel number	**BYTE**	According to Xiang **2** in **JT/T 1076-2016**
1	playback control	**BYTE**	**0 :** start playback; **1 :** Pause playback; **2 :** end playback; **3 :** fast forward playback; **4 :** Rewind and replay key clips; **5 :** drag playback; **6 :** Key frame playback

Decay 25 (continued)

start byte	field	type of data	Description and requirements
2	fast forward or rewind thanks	BYTE	the playback control is 3 and 4 , the content of this field is valid, otherwise it is set to 0 . 0: invalid; 1:1 times; 2: 2 times; 3:4 times; 4: 8 times;
3	drag playback position	BCD[6]	YY-MM-DD-HH-MM-SS, when playback control is 5 , this field is valid

5.6.5 File upload command

Message ID : 0x9206o _

Message type: signaling data message.

The platform issues a file upload command to the terminal, and the terminal replies with a general response and uploads the file to the specified path of the target FTP server through FTP . See Table 26 for the message body data format .

Decline 26 file upload command data format

start byte	field	type of data	Description and requirements

0	Server address length .	BYTE	length k
1	server address	STRING	FTP server address
l+i	port	WORD	FTP server port number
3+k	username length	BYTE	length/
4+k	username	STRING	FTP username
4+A+J	password length	BYTE	length *m*
5+AH	password	STRING	FTP password
5 +A +/ + m	file upload path length	BYTE	length″
6 + * + 1 + m	file upload path	STRING	file upload path
6 +4 + m + л	logical channel number	BYTE	See Table 2 in JT/T 1076-2016
7 + n	Starting time	BCD[6]	YY-MM-DD-HH-MM-SS
13 +4 + Z + m +	End Time	BCD[6]	YY-MM-DD-HH-MM-SS
19-t-ic+/ + m + n	alarm sign	64BHS	bit0 ~ bit31 see JI7T 808-2011 table 18 alarm flag definition; See Table 12 for bit32~bit63 ; Complete. Indicates that it is not specified whether there is an alarm
27+4 + i4*m + n	Audio and video resource type	BYTE	0: audio and video , 1: audio , 2: video , 3: video or audio and video

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«26 (continued)

start byte	field	type of data	Description and requirements
	stream type	BYTE	0: main stream or sub stream , 1: main stream , 2: sub stream
29+i + Z + m + n	storage location	BYTE	0: main storage or disaster storage . 1: main storage, 2: disaster recovery storage
30+4 + Zi-in + Ji	Task execution conditions	BYTE	Expressed in **bits** : bh0: **WIFI,** when it is **1** , it means that **WI-H** can be downloaded; **bit1**; **LAN,** *when it is 1 ,* it means that it can be downloaded when it is connected to **LAN** ; bit2: **3G/4G,** when it is **1** , it means that it can be downloaded when it is connected by **3G/4G**

5.6.6 File upload completion notification

Message ID : 0x1206 。

Message type: signaling data message.

When all files are uploaded via FTP , the terminal reports this command to notify the platform. See Table 27 for the message body data format .

27 **File** Upload Completion Notification Format

start byte	field	type of data	Description and requirements

0	Response serial number	WORD	Corresponding to the serial number of the platform file upload message
2	result	BYTE	0: success; 1: failure

5.6.7 File upload control

Message ID : 0x9207 。

Message type: signaling data message.

The platform notifies the terminal to suspend, continue or cancel all files being transferred. See Table 28 for the message body data format .

*28 file upload control data format

start byte	field	type of data	Description and requirements
0	Response serial number	WORD	Corresponding to the serial number of the platform file upload message
2	upload control	BYTE	0: Pause; 1: Continue; 2: Cancel

5.7 PTZ control command

5.7.1 Gimbal rotation

Message ID - 0x9301 。

Message type: signaling data message.

The platform requests the terminal to rotate the camera. See Table 29 for the message body data format .

Decay 29 PTZ rotation data format

start byte	field	type of data	Description and requirements
0	logical channel number	BYTE	According to Table 2 in JT/T 1076-2016
1	direction	BYTE	0 : stop; 1 : up; 2 : down; 3 : left; 4 : right
2	speed	BYTE	0-255

5.7.2 PTZ adjustment focus control

Message ID : 0x9302 oMessage type: signaling data message.

The platform requests the terminal to adjust the focal length of the lens. See Table 30 for the message body data format .

«30 pan/tilt adjustment lens focal length control data format

start byte	field	type of data	Description and requirements
0	logical channel number	**BYTE**	According to Table **2** in **JT/T 1076-2016**
1	Focus adjustment direction	**BYTE**	**0**: increase the focal length; **1**: decrease the focal length

5.7.3 PTZ adjustment light control

Message ID : 0x9303 oMessage **type: signaling data message.**

The platform requests the terminal to adjust the lens aperture. See Table 31 for the message body data format .

a 31 PTZ adjustment lens light map control data format

start byte	field	type of data	Description and requirements
0	logical channel number	**BYTE**	According to Table **2** in **JT/T 1076-2016**
1	Aperture adjustment method	**BYTE**	**0**: turn up; **1**: turn down

5.7.4 Yunhui Wiper Control

Message ID : 0x9304o

Message type: signaling data message.

The platform requests the wiper from the terminal. See Table 32 for the message body data format .

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Table **32** PTZ wiper control data format

start byte	field	type of data	Description and requirements
0	logical channel number	**BYTE**	According to Table **2** in **JT/T 1076-2016**
1	Start and stop sign	**BYTE**	**0**: stop; **1**: start

5.7.5 Infrared fill light control

Message ID : 0x9305 。

Message type: signaling data message.
The platform requests the infrared fill light control from the terminal. See Table 33 for the message body data format .

«33 Infrared fill light control data format

start byte	field	type of data	Description and requirements
0	logical channel number	**BYTE**	According to Table **2** in **J17T 1076-2016**
1	Start and stop sign	**BYTE**	**0**: stop; **1**: start

5.7.6 PTZ zoom control

Message type: signaling data message.

The platform requests zoom control from the terminal. See Table 34 for the message body data format .

《34 PTZ zoom control data format

start byte	field	type of data	Description and requirements
0	logical channel number	**BYTE**	According to Table **2** in **J17T 1076-2016**
1	Zoom control	**BYTE**	**0 :** turn up; **1 :** turn down

5.8 Terminal sleep wake-up command

The platform wakes up the dormant terminal to start working by sending a wake-up message. The content of the message is "WAKEUPXX" , where XX represents the wake-up time, the unit is minutes (min), and the value range is 0 ~ 65 536 . If it is 0, it means it is always in the wake-up state until the terminal ACC is ON or is lower than the rated voltage.

6 Code stream communication between audio and video stream server and client playback software

6.1 Audio and video stream and transparent data encapsulation format

18 for the definition of the encapsulation format of audio and video streams and transparent transmission data between the video platform and the client playback software .

6.2 Audio and video stream request URL instruction format

After the government video monitoring platform sends a real-time preview or remote playback request command to the enterprise video monitoring platform and receives a successful response, it will receive 20

After obtaining the **IP** address and port number of the audio and video streaming server, the client of the government video monitoring platform directly sends a **URL** command to the enterprise audio and video streaming server, and obtains the audio and video streaming data after the link is established. play.

The audio and video stream request **URL** should not be displayed on the interface, and the command format is defined as follows:

http : // [Server **IP** address]:[Port number]/[License plate number].[License plate color].[Logical channel number].[Audio and video logo].[Aging password]

35 for the definition of each data item of the audio and video stream request **URL command.** o

《35 audio and video stream request URL instruction data item definition

field		Description and requirements
Address attribute information	Server **IP**	Audio and video streaming server **IP** address
	The port	Audio and video streaming service port number
	License plate number	**UTF-8 encoding** should be used and converted to **appbcation/x-www-fbnn-URLencoclecl MIME** format in **IETF RFC 2854**
	license plate color	According to the provisions of **5.4.12 in** JT /**T 415-2006**
	logical channel number	According to table **2,0** in **JT/T 1076-2016,** all channels are represented
	audio and video logo	**0 :** audio and video; **1 :** audio; **2 :** Video

Additional Information	Aging password	Generated by the server of the enterprise platform, the time-limited password of the client of the regional government platform is different from the time-limited password of the cross-domain regional government platform. The time -limited password should only consist of English letters (including uppercase and lowercase) and Arabic numerals, with a length of **64 ASCD** characters, and should be updated every **24h**
	location identification	of the vehicle at any time within 5 minutes are used for verification when accessing the cross-regional regional government platform, and the client access of the regional government platform can be empty **. ASCU** character representation, the format is: **YYYYMMDD - HHMMSS - NXX. XXXXXX - EXXX. XXXXXX**

7Basic value agreement between video platforms

The communication method, data type, security authentication method and protocol message format between different video platforms are in accordance with the requirements of Chapter **4 of JT/T 809-2011** .
the links that have been established between the positioning platforms , and no new links will be added.

8 Communication protocol flow between video platforms

8.1 Aging password report and request business class

The time-limited password is automatically generated by the enterprise video surveillance platform every day, and is actively uploaded to the video supervision platform of the local government. When the cross-domain regional government video supervision platform needs to access the audio and video information of cross-domain vehicles, it should request the cross-domain time-limited password of the day to the higher-level government video supervision platform. .

JT/T 1078—2016 **8.2** Real-time audio and video services

8.2.1 The enterprise video monitoring platform uploads audio and video data to the government video monitoring platform in real time

The government video monitoring platform sends a real-time audio and video upload request to the enterprise video monitoring platform. After receiving the request, the enterprise video monitoring platform should respond to the government video monitoring platform. If the answer is successful, the government video monitoring platform requests real-time audio and video data from the video server **IP and port specified by the enterprise video monitoring platform.**

8.2.2 The enterprise video monitoring platform stops uploading audio and video data to the government video monitoring platform in real time

The government video surveillance platform sends a request to stop real-time audio and video uploads to the enterprise video surveillance platform. After receiving the request, the enterprise video surveillance platform should respond to the government video surveillance platform. If the answer is successful, the enterprise video monitoring platform stops sending real-time audio and video data to the government video monitoring platform.

8.3 Remote video retrieval service

8.3.1 The government video monitoring platform obtains the audio and video resource catalog from the enterprise video monitoring platform

The government video monitoring platform sends a request to the enterprise video monitoring platform to obtain the audio and video resource directory. After receiving the request, the enterprise video monitoring platform should immediately retrieve the latest audio and video resource directory from the terminal, update the local directory, and send the request to the government video monitoring platform. answer. If the answer is successful, the enterprise video monitoring platform sends the audio and video resource directory data to the government video monitoring platform.

8.3.2 The enterprise video monitoring platform actively uploads the audio and video resource catalog to the government video monitoring platform

After the enterprise video monitoring platform receives the special alarm information uploaded by the terminal, after waiting for the complete record of the video information, it should retrieve the latest audio and video resource catalog with the special alarm logo from the terminal, and update the local catalog to the government video monitoring platform Actively upload audio and video resource directories.

8.4 Remote video download business

8.4.1 The government video monitoring platform downloads video data to the enterprise video monitoring platform

The government video monitoring platform sends a request to obtain video data to the enterprise video monitoring platform. After receiving the request, the enterprise video monitoring platform should respond to the government video monitoring platform. If the answer is successful, the government video monitoring platform can request video recording data from the FTP server IP and port specified by the enterprise video monitoring platform .

8.4.2 The enterprise video surveillance platform sends a notification of completion of downsizing to the government video surveillance platform

The enterprise video monitoring platform sends a download completion notification to the government video monitoring platform. After receiving the notification, the government video monitoring platform indicates that the video data has been downloaded from the terminal. The government video monitoring platform can send the IP and port of the video FTP server specified by the enterprise video monitoring platform . Request recording data.

8.4.3 The government video monitoring platform sends download control instructions to the enterprise video monitoring platform

The government video monitoring platform sends download control instructions to the enterprise video monitoring platform. After receiving the instruction, the enterprise video monitoring platform should respond to the corresponding control actions in a timely manner and give the answer to the government video monitoring platform.

8.5 Remote video playback business

8.5.1 The government video monitoring platform requests video playback from the enterprise video monitoring platform

The government video surveillance platform sends a video playback request to the enterprise video surveillance platform. After receiving the request, the enterprise video surveillance platform responds **22**

Respond to the government video surveillance platform. If the answer is successful, the government video monitoring platform requests historical audio and video streaming data from the IP and port of the audio and video streaming server specified by the enterprise video monitoring platform.

8.5.2 The government video monitoring platform stops requesting video playback from the enterprise video monitoring platform

The government video monitoring platform sends a request to the enterprise video monitoring platform to stop playback of videos. After receiving the request, the enterprise video monitoring platform should respond to the government video monitoring platform and stop sending historical audio and video stream data to the government video monitoring platform.

9 Common definitions of communication protocols between video platforms

9.1 Business data type identification

36 for the name and identification of service data types stipulated in the audio and video data exchange protocol .

36 Business data type name and identification comparison

message type	Business data type name	message link	Business data type identification	value
Aging password business class	Main link aging password interaction message	main link	**UP_AUTHORIZE_MSG**	**0x1700**
	Slave Link Aging Password Interaction Message	from the link	**DOWN_AUTHORIZE_ MSG**	**0x9700**
Real-time audio and video business	Real-time audio and video interactive messages on the main	main link	**UP_REALVIDEO_MSG**	**0x1800**
	Real-time audio and video interactive messages from the link	from the link	**DOWN_REALVTOEO_ MSG**	**0x9800**
Remote Video Retrieval	Main link remote video retrieval interactive message	main link	**UP_SEARCH_MSG**	**0x1900**
	Retrieve interactive messages from link remote	from the link	**DOWNJSEARCH_MSG**	**0x9900**
Remote video playback	Main link remote video playback interaction message	main link	**UP_PLAYBACK_MSG**	**0x1 A00**
	Remote recording and playback of interactive messages from the link	from the link	**DOWN_PLAYBACK_ MSG**	**0x9 A00**
Remote video download	Main link remote video download interactive message	main link	**UP_DOWNLOAD_MSG**	**0x1 BOO**
	Download interactive messages from link remote recording	from the link	**DOWN_DOWNLOAD_ MSG**	**0x9B00**

9.2 Identification of sub-service types

37 for the name and identification of the sub-service types specified in the data exchange protocol .

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37 Sub -service type name and logo comparison

business data type	in business type name	Sub-service data type identification	value
Main link aging password service message UP _ AUTHORIZE _MSG	Aging password report message	UP_AUTHORIZE_MSG_STARTUP	0x1701
	Aging Password Request Message	UP_AUTHORIZE_MSG_STARTUP_REQ	0x1702
DOWN_BASE_DATA _MSG from link aging password service class message	Aging Password Request Reply Message	DOWN_AUTHORIZE_MSG_STAR· njP_REQ_ACK	0x9702
Main link real-time audio and video interaction message UP _ REALVIDEO _MSG	Real-time audio and video request	UP_REALVIDEO_MSG_STARTUP_ACK	0x1801
	Active request to stop real-time	UP_REALVIDEO_MSG_END_ACK	0x1802
DOWN_REALVIDEO _MSG from Cone Road real-time audio and video interaction	Real-time audio and video request	DOWN_REALVIDEO_MSG_STARTUP	0x9801
	Active request to stop real-time	DOWN_REALVIDEO_MSG_END	0x9802
Main link remote video search interaction message UP_SEARCH_MSG	Actively upload audio and video	UP_FILEUST_MSG	0x1901
	Query audio and video resource	UP_REALVIDEO_FILELIST_REQ_ACK	0x1902
Retrieve interactive messages from link remote recording	Actively upload audio and video	DOWN_nLEUST_MSG_ACK	0x9901
	Query audio and video resource	DOWN_REALVIDEO_FILELIST_REQ	0x9902
Main link remote video playback interaction message UP .PLAYBACK _MSG	Remote video playback request	UP_PLAYBACK_MSG_STARTUP_ACK	0x1 A01
	Remote video playback control	UP_PLAYBACK_MSG_CONTROL_ACK	0x1 A02
Remote video playback interaction message from the link DOWN_PLAY- BACICMSG	Remote video playback request	DOWN_PLAYBACK_MSG_STARTUP	0x9 A01
	Remote video playback control	DOWN_PLAYBACK_MSG_CONTROL	0x9 A02
Main link remote video download interactive message UP _ DOWNLOAD MSG	Remote video download request	UP_DOWNLOAD_MSG_STARTUP_ACK	0x1 H01
	Remote video download complete	UP_DOWNLOAD_MSG_ENDJNFORM	0x1 B02
	Remote video download control	UP_DOWNLOAD_MSG_CONTROUACK	0x1B03
Download interactive message from link remote recording DOWN_DOWN-LOAD_MSG	Remote video download request	DOWN_DOWNLOAD_MSG_STARTUP	0x9B01
	Remote video download complete	UP_DOWNLOAD_MSG_END_INFORM_ACK	Ox9BO2
	Remote video download control	DOWN_DOWNLOAD_MSG_CONTROL	0x9003

9.3 Video alarm type coding

See Table 38 for the coding of video alarm types reported through the platform .

«38 Vehicle Video Report Type Coding Decay

the code	name	Description and requirements
0x0101	Video signal loss alarm	—
0x0102	Video signal blocking alarm	—
0x0103	Storage unit failure alarm	—
0x0104	Other video equipment failure alarm	—
0x0105	Bus overcrowding alarm	—
0x0106	Abnormal driving behavior alarm	—
0x0107	Special alarm recording reaches storage value alarm	—

10 Video platform Tao communication protocol data format

10.1 Aging password report and request business class

10.1.1 Aging password report message

Link Type: Main Link
Message direction: lower platform to upper platform .
Sub business type identifier: UP_AUTH0RIZE_MSG_STARTUP。

Insert: The enterprise video monitoring platform actively reports the time-limited password to the government video monitoring platform or the lower-level government video monitoring platform to the higher-level government value-based monitoring platform. The data is shown in Table 39 . This command does not need to be answered.

«39 Aging password report message data body

field name	Byte failure	type of data	Description and requirements
DATA JTYPE	**2**		Sub business type identification
PLATEFORM_ID	**11**	**BYTES**	The unique code of the enterprise video surveillance platform, the administrative division code of the enterprise to which the platform belongs + the announcement number of the platform
AUTHORIZE_CODE_1	**64**	**BYTES**	The time-limited password used by the government platform of the belonging region
AUTHORIZE_CODEJ2	**64**	**BYTES**	Time-limited passwords used by cross-domain regional government platforms

10.1.2 Aging password request message

Link Type: Main Link

Message direction: Cross-regional government video supervision platform to higher-level government video supervision platform

Sub business type identifier: UP_AUTH0RIZE_MSG_STARTUP_REQ。

Description: The cross-regional government video surveillance platform obtains the current-day aging password of the enterprise video surveillance platform where the designated vehicle is located from the superior government video surveillance platform. The data body is shown in Table 40 .

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40 Aging password request message body

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE_COLOR	1	BYTE	License plate color, according to JT /T 415-2006 5.4.12 Regulations _
DATA.TYPE	2	uintl6 $_w$ t	Sub business type identification
DATA_LENGTH	4	uint32_t	Subsequent data length, the value is 0x00000000

10.1.3 Aging password request response message

Link Type: Slave Link

Direction of news: Higher-level government video supervision platform to cross-regional government video supervision platform

Sub service type ID: DOWN_AUTHORIZE_MSG_STARTUP_REQ_ACK ₀

Description: The higher-level government video monitoring platform responds to the time-limited password request message sent by the cross-regional government video monitoring platform, and the higher-level government video monitoring platform determines the content of the response according to the geographical location of the requesting vehicle within 5 minutes . The data volume is shown in Table 41 .

Decline 41 Aging password request response message data body

field name	Bytes	type of data	Description and requirements
VEHICLE.NO	twenty one	Octet String	number plate
VEHICLE_COLOR	1	BYTE	License plate color, according to JT /T 415-2006 The provisions of 5.4.12
DATA.TYPE	2	uintl6.t	Sub business type identification
DATA_LENGTH	4	uint32.t	of the next two fields

10.2 Real-time audio and video services

10.2.1 Real-time audio and video request message

Link Type: Slave Link

Message direction: from the initiator platform to the receiver platform

Sub business type identifier: DOWN_REALVIDEO_MSG_STARTUPo

Description: The government video monitoring platform issues this command to the enterprise video monitoring platform, the upper-level government platform to the lower-level government platform, or the cross-domain regional government platform to the regional government platform to request real-time audio and video of the vehicle. The data volume is shown in Table 42 .

*42 Real-time audio and video request data body

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE_COLOR	1	BYTE	License plate color, according to JT /T 415-2006 The provisions of 5.4.12
DATA_TYPE	2	uintl6.t	Sub business type identification

Decay 42 (continued)

field name	Bytes	type of data	Description and requirements
DATA_LENGTH	4	uint32.t	of the next 4 fields
CHANNELED)	1	BYTE	Logical channel number, according to Table 2, 0 in JT/T 1076-2016 indicates all channels
AV1TEM_TYPE	1	BYTE	Audio and video type, defined as follows: 0x00 : audio and video; 0*1 : audio ; 0x02 : video
AUTHORIZE. CODE	64	BYTES	Aging password
GNSS. DATA	36	BYTES	Any location within 5 minutes after the vehicle enters the cross-domain area , this field is only used for cross-domain access requests, in accordance with the provisions of JT/T 809-2011 agreement 4.5.8.1

10.2.2 Real-time audio and video request response message

Link Type: Main Link

Message direction: from the receiver platform to the initiator platform

Sub service type identifier: UP_REALVIDE0_MSG_STARTUP_ACK 。

Description: The enterprise video surveillance platform responds to the real-time audio and video request message sent by the government video surveillance platform. The data volume is shown in Table 43 .

«43 real-time audio and video response data body

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate

VEHICLE_COLOR	1	BYTE	License plate color, according to the provisions of 5.4.12 in JVT 415-2006
DATA_TYPE	2	uint16_t	Sub business type identification
DATA_LENGTH	4	uint32.t	of the next 3 fields
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 0x01: failure; 092: not supported; 0X3 : the session ends; 0x04: the aging password is wrong; 0x05 : the cross-domain condition is not satisfied
SERVER.IP	32	Octet String	Enterprise video server IP address
SERVER.PORT	*2*	uint16.t	Enterprise video server port number

10.2.3 Active request to stop real-time audio and video transmission message

Link Type: Slave Link

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News direction: government video surveillance platform to enterprise video surveillance platform
Sub business type identifier: D0WN_REALVIDE0_MSG_END。

Description: The government video monitoring platform issued this order to the enterprise video monitoring platform, actively requesting to stop the real-time audio and video transmission of the vehicle. The data volume is shown in Table 44 .

《44 actively requested to stop real-time audio and video message data

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate color, in accordance with the provisions of 5.4.12 in JT/T 415-2006
DATA_TYPE	2	uint16_t	Sub business type identification
DATA_LENGTH	4	uint32.t	of the next two fields
CHANNEL JD	1	BYTE	Logical channel number, representing all channels according to Table 2.0 in JT/T 1076-2016
AVITEM.TYPE	1	BYTE	Audio and video type, defined as follows: 0x00: audio and video; 0x01 : audio; 0x02: video

10.2.4 Active request to stop real-time audio and video transmission response message

Link Type: Main Link

News direction: Enterprise video monitoring platform to government video monitoring platform
Sub service type identifier: UP_REALVIDEO_MSG_END_ACK。

Description: The enterprise video monitoring platform responds to the active request sent by the government video monitoring platform to stop the real-time audio and video transmission message. The data body is shown in Table 45 .

«45 Active request to stop real-time audio and video response message data body

field name	Bytes	data class	broadcast and request
VEHICLE_NO	twenty one	Octet String	number plate
VEH1CLE. COLOR	1	BYTE	License plate color, in accordance with the provisions of 5.4.12 in JI7T 415-2006
DATA_TYPE	2	uint16.t	Sub business type identification
DATA_LENGTH	4	uint32_t	Subsequent 1 field data length
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 091: failure; 0x02: not supported; 0x03: session ended

10.3 Remote Video Retrieval

10.3.1 Actively upload audio and video resource directory information messages

Link Type: Main Link

Message direction: lower-level platform to upper-level platform

Sub business type identifier: UP_HLEUST_MSG。

Description: The enterprise video monitoring platform actively sends audio and video resource catalogs with special alarm signs to the government video monitoring platform, or the lower-level government platform to the higher-level government platform. The data volume is shown in Table 46 .

Bad 46 master and child upload audio and video resource directory data body

field name	Bytes	type of data	Description and requirements
VEHICLE.NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate color, according to JT /T 415-2006 The provisions of 5.4.12
DATA_TYPE	2	uint16.t	identified by business type
DATA_LENGTH	4	uint32_t	of the next two fields
ITEM_NUM	4	uint32_t	Total Resource Catalog Items
ITEM_LIST			List of resource directory items, see Table 47

*47 Upload audio and video resource directory item list format

field name	Bytes	type of data	Description and requirements
CHANNEL JD	1	BYTE	Logical channel number, according to table 2 in JT/T 1076-2016 , 0 indicates all channels

START^TIME	8	time ″	UTC time
END_TME	8	time_t	UTC time
ALARM_TYPE	8	64BITS	bit0-31 is defined *in accordance with JT/T* 808-2011 Table 18 alarm flag bit; Bit32-63 see decline 10
AVJTEM. TYPE	1	BYTE	Audio and video type, defined as follows: 0x00 : audio and video; 0x01 : audio ; 0x02 : video
STREAM. TYPE	1	BYTE	Stream type, defined as follows: 091: main stream; 0x02: sub stream
MEM_TYPE	1	BYTE	Memory type, defined as follows: 0x01 : main memory; 00: disaster recovery memory
nLE_SJZE	4	uint32_t	File size, unit byte (BYTE)

JT/T 1078—2016 **10.3.2** Actively upload audio and video resource directory response message

Link Type: Slave Link

Message direction: upper platform to lower platform

Sub service type identifier: DOWN_FILEUST_MSG_ACK。

Description: The government video monitoring platform responds to the request message sent by the enterprise video monitoring platform to actively upload audio and video resource catalogs. The data volume is shown in Table 48 .

Failing 48 actively uploads audio and video resource directory request response data body

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE_COLOR	1	BYTE	License plate color, according to JT /T 415-2006 The provisions of 5.4.12
DATA. TYPE	2	uint16_t	Sub business type identification
DATA. LENGTH	4	uint32_t	of the next two fields
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 0x01: failure; 0x02: not supported; 0x03: session ended
ITEM-NUMBER	1	BYTE	Total number of resource directories

10.3.3 Query audio and video resource directory request message

Link Type: Slave Link

Message direction: upper platform to lower platform

Sub service type identifier: DOWN_REALVIDEO_nLEUST_REQ。

Description: The government video surveillance platform sends a request message to the enterprise video surveillance platform, or the upper-level government platform to the lower-level government platform to query the audio and video resource catalog. The data volume is shown in Table 49 .

Xiang49 query audio and video resource directory request data body

field name	Bytes	type of data	Description and requirements
VEHICLE.NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate color, according to JT /T 415-2006 5.4.12 Regulations _
DATA. TYPE	2	uint!6 ₘt	Sub business type identification
DATA. LENGTH	4	uint32_t	of the next 9 fields
CHANNEL. ID	1	BYTE	Logical channel number, according to JT/T 1076-2016 table 2,0 indicates all channels

Table 49 (continued)

field name	Bytes	type of data	Description and requirements
START. TIME	8	time*	Start time. YY-MM-DD-HH-MM-SS , all 0 means no start time condition
END. TIME	8		End time, YY-MM-DD-HH-MM-SS, *all* 0 means no end time condition
ALARM. TYPE	8	BYTES	alarm type, bit0-31 , see Table 18 in JT/T 808-2011 Alarm flag definition; biB2-63 , see Table 9; All 0 means no alarm type condition
AVITEM_TYPE	1	BYTE	Audio and video type , 0: audio and video; 1: audio; 2: video, 3: video or audio and video
STREAM-TYPE	1	BYTE	Stream type , 0: all streams , 1: main stream , 2: sub stream
MEM. TYPE	1	BYTE	Storage type , 0: all storage 1: main storage , 2: disaster recovery storage
AUTHORIZE. CODE	64	BYTES	Aging password
GNSS_DATA	36	BYTES	5 minutes after the vehicle enters the cross-domain area , this field is only used for cross-domain access requests, according to the agreement 4.5.8.1 in JTVT 809-2011

10.3.4 Query audio and video resource directory response message

Link Type: Main Link

Message direction: from the lower-level platform to the upper-level platform.

Sub-service type identifier: UP_REALVIDEO.FILEUST_REQ_ACK $_0$

Description: The enterprise video surveillance platform responds to the government video surveillance platform or the lower-level government platform responds to the upper-level government platform for audio and video resource catalog messages. See Table 50 for the data volume .

<p align="center">Table 50 Query audio and video resource directory response data body</p>

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	unicorn , according to the provisions of 5. 4. 12 in JT/T 415-2006
DATA. TYPE	2	uint16_t	Sub business type identification
DATA. LENGTH	4	uint32.t	of the next 3 fields

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<p align="center">Fading 50 (continued)</p>

field name	Bytes	type of data	Description and requirements
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; O Xiang 1: failure; 0x02: not supported; 0x03: the session ends; 0x04: the aging password is wrong; the cross-domain condition is not met
1TEM_NUM	4	DWORD	Total Resource Catalog Items
ITEM_LIST			List of resource directory items, see Table 47

10.4 Remote video playback

10.4.1 Remote video playback request message

Link Type: Slave Link

Message direction: from the initiator platform to the receiver platform

Sub business type identifier: D0WN_PLAYBACK_MSG_STARTUP $_0$

Description: The government video monitoring platform issues this order to the enterprise video monitoring platform, the superior government platform to the lower government platform, or the cross-domain regional government platform to the regional government platform to request the video and audio of the vehicle. Data body see table 51 o

<p align="center">«51 Remote video playback request data body</p>

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate

field name	Bytes	type of data	Description and requirements
VEHICLE_COLOR	1	BYTE	License plate color, according to the provisions of 5.4.12 in J17T 415-2006
DATA. TYPE	2	uint!6.t	Sub business type identification
DATA_LENGTH	4	uint32—t	of the next 8 fields
CHANNEL_JD	1	BYTE	Logical channel number, according to table 2 in JT/T 1076-2016 , 0 indicates all channels
AVITEM_TYPE	1	BYTE	Audio and video type , 0: audio and video; 1: audio; 2: video, 3: video or audio and video
STREAM. TYPE	1	BYTE	Stream type , 0: all streams , 1: main stream , 2: sub stream
MEM_TYPE	1	BYTE	Storage type , 0: all storage 1: main storage , 2: disaster recovery storage
PLAYBACK. STARTIIME	8	time ″	Playback start time, UTC time

Decay 51 (continued)

field name	Bytes	type of data	Description and requirements
PLAYBACK_ENDTIME	8		Playback end time, UTC time
AUTHORIZE_CODE	64	BYTES	Aging password
GNSS. DATA	36	BYTES	Any location within 5 minutes after the vehicle enters the cross-domain area , this field is only used for cross-domain access

10.4.2 Remote video playback request response message

Link Type: Main Link

Message direction: from the receiver platform to the initiator platform

Sub business type identifier: UP_PLAYBACK_MSG_STARTUP_ACK o

Description: The enterprise video surveillance platform responds to the government video surveillance platform, and the lower-level government platform responds to the higher-level government platform or the government platform of the belonging region responds to the video playback request message sent by the cross-domain regional government platform. The data body is shown in Table 52 ₀

Table 52 Remote video playback response data body

field name	Bytes	type of data	Description and requirements
VEHICLE.NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate color, in accordance with the provisions of 5.4.12 in JIZT 415-2006
DATA_TYPE	2	uint16_t	Sub business type identification
DATA. LENGTH	4	uint32_t	of the next 3 fields
SERVERJP'	32	Octet String	Enterprise video server IP address
SERVER_PORT	2	uint16_t	Enterprise video server port number

RESULT	1	BYTE	The response result is defined as follows: 0x00: success; . Stubborn: Failed; 0x02: Not supported; 0x03: Session ended; 0x04: Wrong aging password; 0*5: Cross-domain conditions not met

10.4.3 Remote video playback control message

Link Type: Slave Link

News direction: government video surveillance platform to enterprise video surveillance platform

Sub business type identifier: DOWN_PLAYBACK_MSG_CONTROL$_0$

Description: The government video monitoring platform issues this command to the enterprise video monitoring platform to control playback. The data volume is shown in Table 53 .

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53 remote video playback control system

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE_COLOR	1	BYTE	License plate color, according to the provisions of 5.4.12 in JT/T 415-2006
DATA.TYPE	2	uint16-t	Sub business type identification
DATA_LENGTH	4	uint32.t	of the next 3 fields
CONTROUTYPE	1	BYTE	0x00: normal playback ; 0x01: pause playback; 0X2 : end playback; 0x03: fast forward playback ; 0x04: key frame rewind playback; 095: drag playback; 0x06: key frame playback
FAST_TIME	1	BYTE	Fast forward or rewind multiple, when the playback control is 0x03 and 0x04 , the content of this field is valid, otherwise it is set to 0 . 0x00: invalid; 0 stubborn: 1 times; 0x02: 2 times; 0x03: 4 times; 0x04-8 times; 0x05: 16 times
DATE.TIME	8	time.t	Drag position, expressed in UTC time, when the playback control is 0*5 , the content of this field is

10.4.4 Remote video playback control response message

Link Type: Main Link

News direction: enterprise video surveillance platform to government video surveillance platform

Subservice type identifier: UP_PLAYBACK_MSG_CONTROL-ACK .

Description: The enterprise video surveillance platform responds to the playback control message issued by the government video surveillance platform. The data volume is shown in Table 54 .

a 54 remote video playback response data body

field name	Bytes	type of data	Description and requirements
VEHICLE.NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate color, in accordance with the provisions of 5.4.12 in JT/T 415-2006
DATA. TYPE	2	uintI6_t	Sub business type identification
DATA_LENGTH	4	uint32_t	Subsequent 1 field data length
RESUin*	1	BYTE	The response result is defined as follows: 0x00: success; 091: failure; 0x02: not supported; 0x03: session ended

10.5 Remote video download

10.5.1 Remote recording download request message

Link Type: Slave Link

News direction: government video surveillance platform to enterprise video surveillance platform

Sub business type ID: DOWN_DOWNLOAD_MSG_STARTUP 0

Description: The government video monitoring platform issues this command to the enterprise video monitoring platform to download the video, audio and video of the vehicle. See Table 55 for the data volume .

Table 55 Remote video download request data body

field name	bytes	type of data	Description and requirements
VEHICLE.NO	twenty one.	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate SI color, in accordance with the provisions of 5.4.12 in JT/T 415-2006
DATA_TYPE	2	uintl6.t	Sub business type identification
DATA LENGTH	4	wxya	of the next 10 fields
CHANNEL JD	1	BYTE	Logical channel number, according to Table 2,0 in JT/T 1076-2016 indicates all channels
START.TIME	8	time*	UTC time

END TIME	8	time "	UTC time
ALARM.TYPE	8	64BITS	For bit0 ~ bit31 , see the definition of alarm flag bits in Table 18 in JT/T 808-2011 ; bit32 - bit63 see Table 10
AVITEM_TYPE	1	BYTE	Audio and video type, defined as follows: 0x00 : audio and video ; 0x01 : audio ; 0x02 : video
STREAM_TYPE	1	BYTE	Stream type, defined as follows: 0x01 : main stream; 0 : sub stream
MEM.TYPE	1	BYTE	Memory type, defined as follows: 0x01 ; main memory ; 0x02 : disaster recovery memory
ni£_SIZE	4	uint32_t	File size, unit byte (BYTE)
AUTHORIZE_CODE	64	BYTES	Aging password
GNSS.DATA	36	BYTES	Any location within 5 minutes after the vehicle enters the cross-domain area , this field is only used for cross-domain access requests, see protocol 4.5.8.1 in JT7T 809-2011 for details

10.5.2 Response message of remote video download request

Link Type: Main Link
News direction: Enterprise video monitoring platform to government video monitoring platform
Sub business type identifier: UP_DOWNLOAD_MSG_STARTUP_ACK $_0$

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Description: The response message sent by the enterprise video surveillance platform to the request for downloading the audio and video of the handlebar sent by the government video surveillance platform. The data volume is shown in Table 56 .

Decay 56 remote video download request response data body

field name	Bytes	type of data	Description and requirements
VEH1CLE_NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate color, in accordance with the provisions of 5.4.12 in JT/T 415-2006
DATA_TYPE	2	uintl6_t	Sub business type identification
DATA_LENGTH	4	uint32_t	of the next two fields

			The response result is determined as follows:
RESULT	1	BYTE	0x00 : success; gl : fail; 0x02 : not supported; (H03 : end of session; 0xiang4 : The aging password is wrong; 0*5 : Does not meet the cross-domain conditions
SESSION.®	2	uintl6_t	Corresponding to the serial number of the platform file upload message, RESULT Valid when 0

10.5.3 Notification message of completion of remote recording

Link Type: Main Link

News direction: Enterprise video monitoring platform to government video monitoring platform

Sub business type identifier: UP_DO WNLO AD_MSG_END .INFORM 。

Description: The enterprise video monitoring platform sends to the government video monitoring platform to notify the government video monitoring platform that the video file has been downloaded from the terminal. The data volume is shown in Table 57 .

<center>«57 Remote video download complete notification data body</center>

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate motorcycle 1 color, in accordance with the provisions of 5.4.12 in J17T 415-2006
DATA.TYPE	2	uintl6_t	Sub business type identification
DATA.LENGTH	4	uint32_t	of the next 7 fields
RESULT	1	BYTE	0x00 : success, 0 stubborn: failure
SESSION JD	2	uintl6_t	Corresponding to the serial number of the platform file upload message, valid when RE·SULT is 0
SERVER_IP	32	Octet String	FTP server ip address, valid when RESULT is 0

<center>**Table 57 (continued)**</center>

field name	Bytes	type of data	Description and requirements
TCP. PORT	2	uintl6_t	Valid when FTP port.RESULT is 0
USERNAEM	49	Octet String	FTP username, valid when RESULT is 0
PASSWORD	twenty two	Octet String	FTP password, valid when RESULT is 0

FILE PATH	200	Octet String	File storage path, valid when RESULT is 0

10.5.4 Response message of remote recording cut completion notification

Link Type: Slave Link
News direction: government video surveillance platform to enterprise video surveillance platform

Subservice type identifier: UP_D0WNL0AD_MSG_END_INF0RM_ACK。

Description: The government video monitoring platform responds to the download completion notification of the enterprise video monitoring platform. The data volume is shown in Table 58 .

Decline 58 short-range video download completion notification response data body

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE_COLOR	1	BYTE	License plate color, in accordance with the provisions of 5.4.12 in JT/T 415-2006
DATA_TYPE	2	uint16_t	identified by business type
DATA.LENGTH	4	uint32_t	of the next two fields
RESULT	1	BYTE	Answer result: 0x00: success; 091: failure; 0∗2: Not supported; 0x03: session ended
SESSION_ID	2	uint16.t	Corresponding to the serial number of the platform file upload message , 1 is valid when the old SULT is 0

10.5.5 Remote video download control request message

Link Type: Slave Link
News direction: government video surveillance platform to enterprise video surveillance platform

Sub business type identifier: DOWN_DOWNLOAD_MSG_CONTROL₀

Description: The government video monitoring platform sends a download control message to the enterprise video monitoring platform. The data volume is shown in Table 59 .

«59 Remote video download control request body

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate color, in accordance with the provisions of 5.4.12 in JT/T 415-2006

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Decay 59 (continued)

field name	Bytes	type of data	Description and requirements
DATA_TYPE	2	uint16_t	Sub business type identification
DATA.LENGTH	4	uint32_t	of the next two fields
SESSION_ID	2	uint16_t	Corresponding to the serial number of the platform file upload message
TYPE	1	BYTE	*0x00:* ˆstop; 0x01: continue; 0x02: cancel

10.5.6 Remote video download control request response message

Link Type: Main Link

News direction: Enterprise video monitoring platform to government video monitoring platform

Subservice type identifier: UP_D0WNL0AD_MSG_C0NTR0L_ACK。

Description: The response message of the enterprise video monitoring platform to the download control request sent by the government video monitoring platform. See Table 60 for the data volume .

*60 Remote video download control request response data body

field name	Bytes	type of data	Description and requirements
VEHICLE_NO	twenty one	Octet String	number plate
VEHICLE. COLOR	1	BYTE	License plate color, in accordance with the provisions of 5.4.12 in JT/T 415-2006
DATA_TYPE	2	uint16_t	identified by business type
DATA.LENGTH	4	uint32.t	Subsequent 1 field data length
RESULT	1	BYTE	Answer result: 0x00: success; 0x01: failure; 0x02: not supported; 0x03: session ended

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Appendix A

(Normative appendix)

Message comparison between video terminal and video platform

A. l ₒ for the message comparison table of the communication protocol between the video terminal and the video platform

«A.1 Message comparison table between video terminal and video platform

serial	message body name	message **ID**	serial	message body name	message **ID**
1	Query terminal audio and video properties	**0x9003**	12	file upload command	**0x9206**

2	Terminal uploads audio and video attributes	0x1003	13	File upload complete notification	0x1206
3	Real-time audio and video transmission request	0x9101	14	File Upload Control	0x9207
4	Terminal upload passenger flow	0x1005	1S	Gimbal rotation	0x9301
5	Audio and video real-time transmission control	0x9102	16	Gimbal adjustment focus control	0x9302
6	Real-time audio and video streaming and transparent data transmission		17	PTZ adjustment light 91 control	0x9303
7	Real-time audio and video transmission status	0x9105	18	PTZ wiper control	0x9304
8	Query resource list	0x9205	19	Infrared fill light control	0x9305
9	List of audio and video resources uploaded by the	0x1205	20	PTZ zoom control	0x9306
10	The platform sends a remote video playback request	0x9201	twenty one	Platform manual wake-up request (short message)	WAKEUP XX
11	Remote video playback control issued by the	0x9202		•	