

Streamax Technology Co., Ltd.	File Number	Version	security classification
		V1.0.5	Top-secret
	Product name:Streamax-N9M		Total pages:

Protocol Reference

(For internal use only)

Streamax

Content

1. Protocol Carrier	3
1.1 Package header	3
1.2 Message format and definition	3
2. Device Connection and Authentication Protocol	4
2.1 Device authentication process	4
2.2 Device keep connection process	6
3. Parameter Configuration	6
3.1. Parameter list	6
3.1.1 Time-sync parameter	7
3.1.2 Device On/Off parameter	7
3.1.3 Date and time parameter	7
3.1.4 P2 registration parameter	8
3.2 Parameter operation	9
3.2.1 Obtain parameter	9
3.2.2 Setup parameter	9
4. Door Status and Counting Data Sync	10
4.1 Door open/close status	10
4.2 Passenger counting data	10
4.2.1 P2 counting result	11
5. Time Sync	11
5.1 Setup device UTC time	11
5.2 Obtain device UTC time	11
6. Version Query	12
6.1 Device version info	12
7. Device File Operation	13
7.1 Remotely file operating command	13
7.2. Remotely file operating status	14
7.2.1 P2 task execution result	15
8. Device Upgrade	15
8.1 Upgrade command	15
8.2 Upgrade status upload	16
9 Error Code Table	16
10. Time Zone Definitions	19

1. Protocol Carrier

1.1 Package header

All messages and media data adopt a unified Package.

1-2bit	3bit	4bit	5-8bit	9-16bit	17-32bit
V	P	M	CSRC COUNT	PAYLOAD TYPE	SSRC
PAYLOAD LEN					
RESERVE					
CSRC(VARIABLE 0-15 ITEMS 32BITS EACH)					
PAYLOAD					

V: Version number;

P: The mark of padding field is 0.;

M: Mark some important events;

CSRC COUNT(CC): Number of contributors, related with following CSRC, used to distinguish between different sources; If the value is 0, then the following CSRC is null, does not occupy the protocol field, or CSRC based on the actual CSRC.

PAYLOAD TYPE: Payload data type;

SSRC: Synchronization Source Identifier, used to identify the synchronization source。

PAYLOAD LEN: (TCP) payload data length. (UDP) sequence number

RESERVE: Reserved bit

CSRC: Contributing source, used to distinguish different source.

PAYLOAD: The payload data, not include the extend part.

PAYLOAD TYPE	Description	Format
0	SIGNAL (message)	JSON string

1.2 Message format and definition

The message is packed in JSON format. There is mapped one-to-one between message packing and device description file, each message is represented by character stings in big endian.

Example:

MODULE	AVSTREAM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	SETVIDEOIMAGE	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	CHANNEL	INTEGER	1-32
	BRIGHTNESS	INTEGER	1-100
	CONTRAST	INTEGER	1-100
	SATURATION	INTEGER	1-100

	HUE	INTEGER	1-100
RESPONSE	NAME	TYPE	RANGE
	RETURN	BOOLEAN	

Request device format:

```
{ "module": "avStream", "operation": { "Type": "Request-response", "name": "SetVideoImage" }, "parameter": { "brightness": { "range": "1-100", "type": "integer", "value": 50 }, "channel": { "range": "1-32", "type": "integer", "value": 8 }, "contrast": { "range": "1-100", "type": "integer", "value": 50 }, "hue": { "range": "1-100", "type": "integer", "value": 50 }, "saturation": { "range": "1-100", "type": "integer", "value": 50 } }, "session": "98190dc2-0890-4ef8-ac9a-5940995e6119" }
```

Device return format:

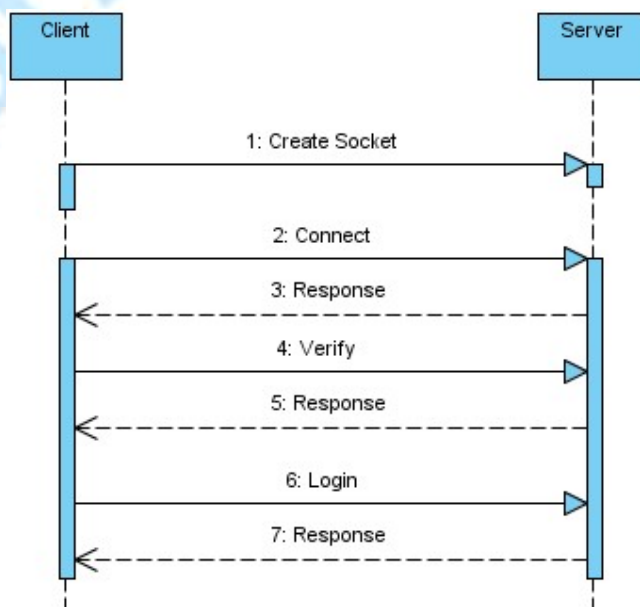
```
{ "module": "avStream", "operation": { "Type": "Request-response", "name": "SetVideoImage" }, "response": { "return": { "type": "boolean", "value": true } }, "session": "98190dc2-0890-4ef8-ac9a-5940995e6119" }
```

2. Device Connection and Authentication Protocol

2.1 Device authentication process

Device authentication means the process of communication between Client and Device, including that Client connect to device, pass authentication, description, This process duration is limited to 15 seconds, it will be considered as illegal connections, the server can automatically reject the connection, and disconnect the link. Authentication process generates globally unique communication description. Subsequent communication is required by this descriptor marked.

Device authentication process sequence diagram



In Direct mode (passive mode), Client connects to the server entering into TCP, after the connection is established, it sends

CONNECT Package data, the server directly return back SO and global descriptor SESSIONID data for subsequent connection when server receive CONNECT data. Client received the SO data and encrypt it ,the key is SESSIONID, and the encrypted SO Package is returned to the server, server will verify encrypted data, disconnect if it is incorrect ,return verification if it success. Client send user name and password to server, server will verify user name and password and return verification result.

Connection service

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	CONNECT		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	MODE	ENUM	link mode 0 : direct mode,
RESPONSE	NAME	TYPE	RANGE
	S0	STRING	
	ERRORCODE	INTEGER	Valid under MODE 1
	ERRORCAUSE	STRING	1-100(valid under MODE 1)

Authentication service

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	VERIFY		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	S0（MD5 encryption）	STRING	
RESPONSE	NAME	TYPE	RANGE
	RETURN	BOOLEAN	
	ERRORCODE	INTEGER	
	ERRORCAUSE	STRING	1-100

Login service

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	LOGIN		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	USER	STRING	
	PASSWD	STRING	

	LOGINTYPE		0: Field is empty or a value of 0 for retention。 1: NVR connection
RESPONSE	NAME	TYPE	RANGE
	RETURN	BOOLEAN	
	ERRORCODE	INTEGER	
	ERRORCAUSE	STRING	

2.2 Device keep connection process

Device heartbeat

Device heartbeat is used to keep connection, heartbeat packet is set to trigger every 10 seconds, no heartbeat or response for continuous 30 seconds is regard as disconnection, heartbeat packet is created in message link and start by Client to connect.

MDVR in transmit mode, heartbeat packet time interval is 45 seconds, heartbeat for 5 times, no response for 5 times is regard as disconnection.

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	KEEPALIVE	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE

3. Parameter Configuration

3.1. Parameter list

The parameter configuration format is different from other instructions and need to do the resolve and package work in the parameter module, refer to the parameter module in 2.2. The device will return the upper layer corresponding value according to the name which contains in the instruction. As long as the instruction contains a parameter name and the range is '?', the device will return a corresponding parameter name and range. The first two fields are error code and then it will judge the error code and then to resolve the parameters.

MDVR	(MDVR PARAM MODULE)		
	NAME	TYPE	RANGE
	ATP		3.1.1 Time-sync
	SSP		3.1.2 Device On/Off
	TIMEP		3.1.3 Date and time

	RIP		3.1.4 P2 Registration
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3.1.1 Time-sync parameter

The JSON combination of the paramAdjustTime_t parameters	Atomic data structure	Remark
ATP	GE	Whether to turn on the sign for GPS schooling, 1: On, 0: Off.
	NE	NTP function switch 1: enabled 0: disabled
	CE	Whether to turn on the sign for N9 protocol schooling, 1: On, 0: Off.
	SID	CMS(N9 protocol) server number
	NS	NTP server address (name), 64 Byte

3.1.2 Device On/Off parameter

The JSON combination of the paramSwitchSetting_t parameters	Atomic data structure	Remark
SSP	UPT	Power mode: 0: Ignition 1: Timing 2: Ignition or Timing
SSP	DDS	The shutdown delay time, unit: second, non-negative integer

3.1.3 Date and time parameter

The JSON combination of the paramTimeSetting_t time parameters	Atomic data structure	Remark
TIMEP	DATEM	Data format 0: MM/DD/YY 1: YY-MM-DD 2: DD-MM-YY
	TIMEM	Time format 0: 24H 1: 12H
	TIMEZ	6.2.6 Time zone definitions Chart
	OFS	Time zone shift, MSB is the sign bit, 1 is negative, 0 is positive, stored in minutes.
	DST	7.3.1 DST parameters

3.1.3.1 DST parameter

The JSON combination of the stuDst DST parameters	Atomic data structure	Remark
DST	SW	DST function switch 0: disabled 1: enabled
	DSTM	DST using mode 0: Default(From SMON to ES) 1: Universal Custom mode 2: The date can be customized, etc. (From STARTTIME to ENDTIME)
	DSTS	DST shifting time, hours
	SMON	The start month, 0-11 integer.
	SWEEK	Start week, represents the starting week (0: The first week 1: The second week 2: The third week 3: The fourth week 4: The last week)
	SWIND	Represent the day(0-Monday, 1-6From Monday to Saturday) Integer
	EMON	The stop month 0~11 integer
	EWEEK	End week, the first four bits represents the week (0: The first week 1: The second week 2: The third week 3: The fourth week 4: The last week)
	EWIND	Represent the day(0-Monday, 1-6From Monday to Saturday) Integer
	SH	Start hour of DST
	SM	Start minute
	SS	Start second
	EH	End hour
	EM	End minute
	ES	End second
	STARTTIME	The start date of DST and the UTC time, used to custom date mode.
	ENDTIME	The end date of DST and the UTC time, used to custom date mode.

3.1.4 P2 registration parameter

The JSON combination of the paramRegisterInfo_t parameter	Atomic data structure	Remark
RIP	DEVP	P2 installation position: 0~7 means door-1 to door-8

3.2 Parameter operation

3.2.1 Obtain parameter

MODULE	CONFIGMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	GET	REQUEST-RESPONSE	
PARAMETER	NAME	NAME	VALUE
	MODULE1	PARAMETER1	
	
	MODULE2	PARAMETER1	
	
		
RESPONSE	NAME	NAME	VALUE
	MODULE1	PARAMETER1	
	
	MODULE2	PARAMETER1	
	
		

3.2.2 Setup parameter

MODULE	CONFIGMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	SET	REQUEST-RESPONSE	
PARAMETER	NAME	NAME	VALUE
	MODULE1	PARAMETER1	
	
	MODULE2	PARAMETER1	
	
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	ERRORDescription	STRING	1-100

Examples:

Apply for getting: Apply for module CONFIGMODEL, SESSION is "98190DC2-0890-4EF8-AC9A-5940995E6119", operation

is GET, the parameters: PARAM, PARAM may contain several modules and parameters, so it is an array type when defining. If there is one module then the array only has one element, which is PARAM[0], every element in PARAM is a whole JSON. There are parameters in MODULE1 and MODULE2 contained in the PARAM, they can be the same for it is only getting the parameters, so there are only parameter name without the range. (This example uses "?" instead.)

```
{MODULE:"CONFIGMODEL", SESSION:" 98190DC2-0890-4EF8-AC9A-5940995E6119", OPERATION:"GET", PARAMETER:
[
{ " MODULE1": {A:"?", B:{A:"?", B:{"?"}}}, C:"?"},
{ " MODULE2": {D:"?",E:"?",F:"?"}}
]
}
```

4. Door Status and Counting Data Sync

4.1 Door open/close status

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	INTELLIGENTCONTROL	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	CMD	INTEGER	Control command 1: door open, start counting 2: door close, stop counting
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

4.2 Passenger counting data

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	UPSUPPLEDEVINFO	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	DT	INTEGER	Device type 0: P2
	SID	INTEGER	Unique, bring back in response

	SUF	INTEGER	Supplement uploading mark 0: real time upload 1: supplement upload
	P2	OBJECT	4.2.1: JSON structure of P2 counting data
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	DT	INTEGER	Same DT as in PARAMETER
	SID	INTEGER	Same SID as in PARAMETER

4.2.1 P2 counting result

P2	Atomic data structure		Remark
	PNI		Boarding passenger counts
	PNO		Alighting passenger counts
	OPF		Door opening time, unit: ms
	CFP		Door closing time, unit: ms
	CTG		Algorithm time consuming, unit: ms
	SN		Station ID

5. Time Sync

5.1 Setup device UTC time

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SETCTRLUTC		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CURT	INTEGER	UTC time(Directly change the device time)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5.2 Obtain device UTC time

MODULE	DEVEMM(DEVICEMANAGEMODEL)
--------	---------------------------

SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETCTRLUTC		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CURT	INTEGER	UTC time

6. Version Query

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETDEVVERSIONINFO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	DEVINFO	OBJECT	6.1 device version info
	DSNO	STRING	Device SN.

6.1 Device version info

JSON structure of DEVINFO	Atomic data structure	Remark
DEVINFO	DEVNAME	Device name
	MANVERSION	Device main version
	APPVERSION	Application version
	PROTOCOLVERSION	Protocol version The first version is "1.0.0", the first "1" is main version (big change), the first "0" means added new command, the second "0" means small fix.
	UBOOT	Uboot version
	KERNEL	Kernel version
	ROOTFS	Rootfs version
	MCU	MCU version

	TOFV	P2 TOF MCU version
--	------	--------------------

7. Device File Operation

7.1 Remotely file operating command

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	REMOTEDVFILEOPER	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	TASKINDEX	INTEGER	File operation task index number, used to distinguish between different tasks
	OPERTYPE	INTEGER	File operation type: 0: file upload 1: file download
	DEVTYPE	INTEGER	Remote device type: 1: P2
	FILETYPE	INTEGER	File type for 0: normal log
	SERVERADDR	STRING	The file server address, the remote device uploads files to or download file from the server. The format is "protocol header (eg: ftp://)+"IP:PORT"+server path such as: Ftp://192.168.1.1:23/logfile Currently the protocol only supports FTP mode.
	STARTTIME	STRING	The start time of the file being manipulated, a 14-byte string in the format YYYYMMDDHHMMSS, for example 20171201082030
	ENDTIME	STRING	The end time of the file being manipulated, a 14-byte string in the format YYYYMMDDHHMMSS, for example 20171201082030
	USERNAME	STRING	FTP username, max 32 bytes
	PWD	STRING	FTP password, max 32 bytes
	DOORMASK	INTEGER	P2 door bit-mask, bit represent,

			bit0-bit31 means door1 to door 32, available when DEVTYPE is 1, null means operation to all online P2 Remark: can be channel bit mask;
RESPONSE	NAME	TYPE	RANGE
	TASKINDEX	INTEGER	File operation task index number, corresponding to when the task is delivered
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

7.2. Remotely file operating status

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	UPFILEOPERSTATUS	NOTIFICATION	
PARAMETER	NAME	TYPE	RANGE
	TASKINDEX	INTEGER	File operation task index number, corresponding to when the task is delivered
	OPERTYPE	INTEGER	File operation type: 0: file upload 1: file download
	FILETYPE	INTEGER	File type 0: Normal log 1: Background pic 2: Parameter file 3: Video
	PER	INTEGER	Progress of file operations (upload or download) This field is a positive integer when file operation is in progress, for example, 20 means that the current file is downloaded or uploaded by 20%. This field should be set to 0 when an error occurs.
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	P2RES[N]	ARRAY	P2 task execution result, each array element represent each P2 task execution result P2R (7.2.1: JSON

			structure for P2 task execution result), available when ERRORCODE is 0X00000058
--	--	--	---

7.2.1 P2 task execution result

P2R	Atomic data structure	Remark
	DOORID	P2 door ID 0: invalid; 1-N means door 1-door N Remark: If using channel mask as DOORMASK when requesting, then here will be channel number in the response.
	RESULT	Task execution result, refer to error code table 9

8. Device Upgrade

8.1 Upgrade command

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	DEVUPGRADE	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	MODE	ENUM	0: Immediately upgrade 1: Booking upgrade 2: Stop the network upgrade task
	FROM	ENUM	0: Hard disk upgrade(default) 1: RAM upgrade
	SERVERADDR	STRING	Address of the upgrade server, the length cannot over 256 Bytes. The firmware used for upgrade stored in this server. The format is "Protocol head (ftp:// or http://)"+"IP:PORT (Domain name)"+" server path". Such as: ftp://192.168.1.1:23/upgrade, http://www.streamaxtech.com/upgrade, etc. Currently only support FTP mode.
	BAKADDR	STRING	Backup upgrade server address. Use the same format as the upgrade server. Keep blank if there is no backup upgrade server.

	USERNAME	STRING	32 bytes, FTP user name.
	PWD	STRING	32 bytes, FTP password.
	DEVTYPE	INTEGER	Upgrade device/module type 0 or NULL: Device
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

8.2 Upgrade status upload

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	UPUPGRADESTATUS		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	MODE	ENUM	0: Immediately upgrade
	PRE	INTEGER	Upgrade status return error code is 0X00000054, the file download progress, positive integer, default other errors as 0; For example, 20, said at this time to download the 20 percent. When the value is 100, the upgrade is finished.
	ERRORCODE	ENUM	Refer to error code table 9
	ERRORCAUSE	STRING	1-100
	DEVTYPE	INTEGER	Upgrade device type 0: Device firmware 1: TOF MCU

9 Error Code Table

Error code	Error Code Description	Error Code Description
0X00000000	Success	SUCCESS
0X00000001	Device getting failed	GET FAILED
0X00000002	Identification failure	IDENTIFICATION FAILURE
0X00000003	Authentication timeout	AUTHENTICATION TIMEOUT
0X00000004	Verify S0 failure	VALIDATION FAILURE
0X00000005	User name or password error	NAME OR PASSWORD FAILED
0X00000006	Execution fails	EXECUTION FAILED
0X00000007	Protocol analysis failed	ANALYZE PROTOCOL FAILED
0X00000008	Media server connecting failed	CONNECT MEDIA SERVER FAILED

0X00000009	Media link register failed	REGISTER MEDIA LINK FAILED
0X0000000A	Media Transfer Thread creation failed	CREATE MEDIA TRANSFER THREAD FAILED
0X0000000B	Protocol does not currently support this feature	NOT SUPPORT FUNCTION
0X0000000C	Memory allocation failure	ALLOCATE MEMORY FAILED
0X0000000D	No matched result	NOT MATCH RESULTS
0X0000000E	Network does not work	UNSTABLE NET
0X0000000F	EMAIL server connection failed	CONNECT EMAIL SERVER FAILED
0X00000010	Timing failed	TIME FAILED
0X00000011	Forced offline failure	FORCE OFFLINE FAILED
0X00000012	Permission denied	NO RIGHT
0X00000013	Permissions low forced offline	FORCED OFFLINE BY LOW RIGHT
0X00000014	Add user name failed	ADD NEW USER FAILED
0X00000015	The same user name	THE SAME USER NAME
0X00000016	Edit user failed	EDIT USER FAILED
0X00000017	Delete user failed	DELETE USER FAILED
0X00000018	Too many users online	TOO MANY USERS ONLINE
0X00000019	Task exist	TASK EXIST
0X0000001A	Lack of resources or tasks full	LACK OF RESOURCE OR TASK FULL
0X0000001B	Channel illegal	CHANNEL ILLEGAL
0X0000001C	Uncoded	UNCODED
0X0000001D	Does not support the main stream	NOT SUPPORT THE MAIN STREAM
0X0000001E	Does not support the sub-stream	NOT SUPPORT THE SUB STREAM
0X0000001F	Does not support the mobile stream	NOT SUPPORT THE MOBLIE STREAM
0X00000020	Start Live preview failed	START REAL-TIME PREVIEW FAILED
0X00000021	File does not exist	FILE IS NOT EXIST
0X00000022	Get the upgrade file path fails	GET THE UPGRADE FILE PATH FAILED
0X00000023	Failure to receive the upgrade file	RECEIVE THE UPGRADE FILE FAILED
0X00000024	Check upgrade file failure	CHECK UPGRADE FILE FAILED
0X00000025	Open upgrade file failure	OPEN UPGRADE FILE FAILED
0X00000026	Failed to capture pictures	CATCH PICTURE FAILED
0X00000027	Failed to send data	SEND DATA FAILED
0X00000028	No this task	NO TASK
0X00000029	Unknown error	UNKNOW
0X0000002A	Parameter error	PARAM ERROR
0X0000002B	Time error	TIME ERROR
0X0000002C	Connection to the server timed out	LINK TIME OUT (Mainly to test the error code of the network service MAIL、DDNS、WIFI、FTP etc.)
0X0000002D	Other users are configuring	SOME ONE OPERTAING
0X0000002E	Frequently operation	OPERATE SO MUCH
0X0000002F	Testing	TESTING
0X00000030	Sender address error	SENDER ADDR ERROR
0X00000031	Receiver address error	RECVER ADDR ERROR
0X00000032	Sever error	SERVER PARAM ERROR
0X00000033	Fail to get the data from the device	GET DATA FAILED
0X00000034	Fail to start the remote synchronous playback	START PLAYBACK FAILED
0X00000035	Fail to end the remote synchronous playback	STOP PLAKBACK FAILEB

0X00000036	Drag failure	SEEK FAILED
0X00000037	Too many users upgrading	TOO MUCH USER UPGRADE
0X00000038	Users do not have this privilege	NO ROGHT
0X00000039	The same version for the upgrade file	VISION IS SAME
0X0000003A	System upgrading	IS UPGRADING
0X0000003B	Server port error	PORT IS ERROR
0X0000003C	WiFi module does not exist	WIFI MODE IS NOT EXIST
0X0000003D	WiFi Switch is off	WIFI IS CLOSE
0X0000003E	Connecting	LINKING
0X0000003F	Illegal MAC address	USER MAC ILLEGAL
0X00000040	Permission denied	PERMISSION DENIED
0X00000041	Media link exist	MEDIA LINK EXIST
0X00000042	Device serial number does not exist	DEV IS NOT EXIST
0X00000043	Audio encoding failure	AUDIO ENCODE FAILED
0X00000044	Audio decoding failure	AUDIO DECODE FAILED
0X00000045	Start intercom failure	START TALK FAILED
0X00000046	Download the log failed	DOWN LOG FAILED
0X00000047	Validating	TESTING
0X00000048	Validation fails	TEST FAILED
0X00000049	Validation succeed	TEST SUCCESS
0X0000004A	Getting valid IP	GET VALID IP
0X0000004B	Export parameters fail	EXPORT PARAM FAILED
0X0000004C	Import parameter fail	IMPORT PARAM FAILED
0X0000004D	Parameter validation fail	CHECK PARAM FAILED
0X0000004E	Failed to configure network parameters	CONFIGUE NET FAILED
0X0000004F	Re-submitted to the server	RESUBMITTED
0X00000050	Connecting signaling server fail	CONNECT CENTER SERVER FAILED
0X00000051	Processing instructions	ANALYSING CMD
0X00000052	No remote device	NO EXIST REMOUTE DEV
0X00000053	Login to ftp server fail	LOGIN FTP SERVER FAILED
0X00000054	Download the upgrade package successfully	DOWN UPGRADE FILE SUCCESS
0X00000055	No storage space or storage media	NO ENOUGH HDD
0X00000056	Disk Protected	HDD PROTECT
0X00000057	File backup	EXPORTING
0X00000058	Task complete and end	TASK COMPLETE
0X00000059	Task is rejected	TASK REFUSED
0X0000005A	U-Disk upgrade interrupted	STOP NET UPGRADE
0X0000005B	Remotely playback data over	PLAY BACK DATA OVER
0X0000005C	Line busy	CALLING
0X0000005D	Call failed	CALL FAILED
0X0000005E	The current network does not support	NOT SUPPORT NETTYPE
0X0000005F	3G / 4G module began to upgrade	3G4G START UPGRADING
0X00000060	No deleted data	NO DELETE DATA
0X00000061	be ready to delete	DELETE IS READY
0X00000062	being deleting	IS DELETING
0X00000063		

0X00000064	User expired	SUER IS OVERDUE
0X00000065	Time shift task has expired and been deleted	TIMESHIFT TASK DELETE
0X00000066	Failed to receive maintenance record.	FAIL TO RECV MAINTAINRECORD
0X00000067	File existed	FILE EXISTED
0X00000068	Failed to create file	FAIL TO CREATE FILE
0X00000069	U-disk not exist	USB FLASH DISK NOT EXIST
0X0000006A	U-disk write or read error	USB DISK WRITE OR READ FAILED
0X0000006B	No needed file in U-disk	NO NEEDED FILE IN USB DISK
0X0000006C	Hardware config table not exist	HARDWARE CONFIG TABLE NOT EXIST
0X0000006E	Failed to import hardware config table	IMPORT HARDWARE CONFIG TABLE FAILED
0X0000006F	Need to modify initial password	MODIFY INITIAL PWD
0X00000070	Failed to save new password	SAVE THE NEW PWD FAILED
0X00000071	New password is same as the old one.	NEW PWD IS SAME TO OLD PWD
0X00000072	New password is same as the initial one.	NEW PWD IS SAME TO INITIAL PWD
0X00000073	Function has been disabled	FUNCTION HAS DISABLED
0X00000074	Task is in progress	TASK IS RUNNING
0X00000075	Download failed, no SD card in P2	DOWNLOAD FAILED,P2 NO SD
0X00000076	No corresponding time range data in P2 SD card	P2 SD NO VALID DATA
0X00000077	Failed to create route	ROUTE CREATE FAILED

10. Time Zone Definitions

Time zone, format is string which can contain digit, -, and letters.

-720A=(GMT-12:00)INTERNATIONAL DATE LINE WEST
-660A=(GMT-11:00)MIDWAY ISLANDS,SAMOA
-660B=(GMT-11:00)UNIVERSAL TIME-11
-600A=(GMT-10:00)HAWAII
-540A=(GMT-09:00)ALASKA
-480A=(GMT-08:00)PACIFIC TIME(US & CANADA)
-480B=(GMT-08:00)BAJA CALIFORNIA
-420A=(GMT-07:00)CHIHUAHUA,LA PAZ,MAZATLAN
-420B=(GMT-07:00)MOUNTAIN TIME(US&CANADA)
-420C=(GMT-07:00)ARIZONA
-360A=(GMT-06:00)GUADALAJARA, MEXICO CITY
-360B=(GMT-06:00)SASKATCHEWAN
-360C=(GMT-06:00)CENTRAL TIME(US & CANADA)
-360D=(GMT-06:00)CENTRAL AMERICA
-300A=(GMT-05:00)BOGOTA,LIMA,QUITO
-300B=(GMT-05:00)EASTERN TIME(US & CANADA)
-300C=(GMT-05:00)INDIANA(EAST)
-270A=(GMT-04:30)CARACAS
-240A=(GMT-04:00)ATLANTIC TIME(CANADA)
-240B=(GMT-04:00)CUIABA
-240C=(GMT-04:00)GEORGETOWN,LA PAZ,MANAUS
-240D=(GMT-04:00)SANTIAGO

-240E=(GMT-04:00)ASUNCION
-210A=(GMT-03:30)NEWFOUNDLAND
-180A=(GMT-03:00)BRASILIA
-180B=(GMT-03:00)BUENOS AIRES
-180C=(GMT-03:00)GREENLAND
-180D=(GMT-03:00)CAYENNE, FORTALEZA
-180E=(GMT-03:00)MONTEVIDEO
-120A=(GMT-02:00)UNIVERSAL TIME-02
-120B=(GMT-02:00)MID-ATLANTIC
-60A=(GMT-01:00)CAPE VERDE IS.
-60B=(GMT-01:00)AZORES
0A=(GMT)DUBLIN, EDINBURGH, LONDON
0B=(GMT)CASABLANCA
0C=(GMT)MONROVIA, REYKJAVIK
0D=(GMT)COORDINATED UNIVERSAL TIME
60A=(GMT+01:00)AMSTERDAM,BERLIN,ROME
60B=(GMT+01:00)BELGRADE, BRATISLAVA
60C=(GMT+01:00)BRUSSELS,MADRID,PARIS
60D=(GMT+01:00)SARAJEVO,WARSAW,ZAGREB
60E=(GMT+01:00)WEST CENTRAL AFRICA
60F=(GMT+01:00)WINDHOEK
120A=(GMT+02:00)ATHENS
120B=(GMT+02:00)BEIRUT
120C=(GMT+02:00)DAMASCUS
120D=(GMT+02:00)HARARE, PRETORIA
120E=(GMT+02:00)HELSINKI,KYIV,RIGA,TALLINN
120F=(GMT+02:00)CAIRO
120G=(GMT+02:00)MINSK
120H=(GMT+02:00)ATHENS,BUCHAREST,ISTANBUL
120I=(GMT+02:00)JERUSALEM
180A=(GMT+03:00)BAGHDAD
180B=(GMT+03:00)KUWAIT,RIYADH
180C=(GMT+03:00)MOSCOW, ST.PETERSBURG
180D=(GMT+03:00)NAIROBI
210A=(GMT+03:30)TEHRAN
240A=(GMT+04:00)ABU DHABI, MUSCAT
240B=(GMT+04:00)YEREVAN
240C=(GMT+04:00)BAKU
240D=(GMT+04:00)TBILISI
240E=(GMT+04:00)PORT LOUIS
270A=(GMT+04:30)KABUL
300A=(GMT+05:00)TASHKENT
300B=(GMT+05:00)EKATERINBURG
300C=(GMT+05:00)ISLAMABAD, KARACHI
330A=(GMT+05:30)CHENNAI,MUMBAI,NEW DELHI
330B=(GMT+05:30)SRI JAYAWARDENEPURA
345A=(GMT+05:45)KATHMANDU

360A=(GMT+06:00)ASTANA, DHAKA
360B=(GMT+06:00)NOVOSIBIRSK
390A=(GMT+06:30)YANGON
420A=(GMT+07:00)KRASNOYARSK
420B=(GMT+07:00)BANGKOK, HANOI, JAKARTA
480A=(GMT+08:00)BEIJING,CHONGQING,HONGKONG,URUMQI
480B=(GMT+08:00)KUALA LUMPUR, SINGAPORE
480C=(GMT+08:00)PERTH
480D=(GMT+08:00)TAIPEI
480E=(GMT+08:00)ULAN BATOR
480F=(GMT+08:00)IRKUTSK
540A=(GMT+09:00)OSAKA,SAPPORO, TOKYO
540B=(GMT+09:00)SEOUL
540C=(GMT+09:00)YAKUTSK
570A=(GMT+09:30)ADELAIDE
570B=(GMT+09:30)DARWIN
600A=(GMT+10:00)BRISBANE
600B=(GMT+10:00)VLADIVOSTOK
600C=(GMT+10:00)GUAM. PORT MORESBY
600D=(GMT+10:00)HOBART
600E=(GMT+10:00)CANBERRA, MELBOURNE,SYDNEY
660A=(GMT+11:00)MAGADAN,SOLOMON IS.
720A=(GMT+12:00)AUCKLAND, WELLINGTON
720B=(GMT+12:00)FIJI
720C=(GMT+12:00)UNIVERSAL TME+12
780A=(GMT+13:00)NUKU'ALOFA