



USER MANUAL

For 1U series encoders

Changsha KILOVIEW Electronics CO.,LTD.

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CONTENTS

1 PRODUCT INTRODUCTION.....	1
1.1 1U SERIES RACK-MOUNTED VIDEO ENCODER.....	1
1.1.1 Advantages.....	1
1.1.2 Parameters.....	2
2 OPERATION GUIDANCE.....	3
3 PACKING LIST AND INTERFACE DESCRIPTION.....	4
3.1 PACKING LIST.....	4
3.2 DEVICE INTERFACES.....	4
3.3 LED INDICATOR DESCRIPTIONS.....	5
4 INSTALLATION AND CONNECTION.....	5
4.1 1U SERIES INSTALLATION AND CONNECTION.....	5
4.1.1 Connect the power adapter.....	5
4.1.2 Connecting video signal.....	5
4.1.3 Connect network.....	6
5 LOGIN AND NETWORK CONFIGURATION.....	7
5.1 LOGIN TO THE DEVICE THROUGH ETHERNET.....	7
5.2 NETWORK CONFIGURATION.....	8
5.2.1 Ethernet.....	8
5.2.2 Convenient management functions.....	9
5.2.3 Android APP.....	10
6 PARAMETERS CONFIGURATION.....	26
6.1 DASHBOARD.....	26
6.2 BASIC SETTINGS.....	27
6.2.1 Change WEB login password.....	27
6.2.2 Location and time.....	28
6.2.3 Restore factory settings.....	29
6.2.4 Firmware upgrading.....	29
6.3 VIDEO & AUDIO ADJUSTMENTS.....	30
6.3.1 Video source choice and adjustments.....	30
6.3.2 Video preprocessing.....	30
6.3.3 Audio signal source.....	32
6.4 ENCODING & STREAM.....	32
6.4.1 Audio encoding parameter setting.....	32
6.4.2 Encoding and stream settings.....	33
6.4.3 Streaming media service.....	35
6.4.3.1 Motion JPEG stream.....	35
6.4.3.2 RTSP service.....	35
6.4.3.3 RTMP Pushing (Live streaming).....	37
6.4.3.4 TS-UDP Pushing (unicast and multicast).....	39

6.4.3.5 HLS service.....	41
6.4.3.6 SRT-TS pushing.....	42
6.5 NETWORK STORAGE (NAS)	44
6.6 TEXT/ IMAGE/TIME OVERLAY.....	45
6.6.1 <i>Overlay Image Management</i>	45
6.6.2 <i>Overlay function</i>	46
6.7 SERVICE CONFIGURATION.....	48
6.7.1 <i>Web Service Configuration</i>	48
6.7.2 <i>Onvif Service Configuration</i>	48
6.7.3 <i>Telnet Service Configuration</i>	49
6.8 SERIAL PORTS AND PTZ.....	49
6.8.1 <i>Serial Ports</i>	49
6.8.2 <i>PTZ Setting</i>	50
6.8.3 <i>Control Panel</i>	50
6.9 QUICK RESET AND REBOOT.....	50
6.9.1 <i>Quick Reset</i>	50
6.9.2 <i>Reboot</i>	51
6.10 LOGS AND DEBUG.....	51
6.11 PRESET CONFIGURATION.....	52

1 Product introduction

1.1 1U series rack-mounted video encoder

The rack-mounted encoder refers to an integrated single, quad or multi-channel SDI/HDMI video encoding module in a 1U/3U rack-mount frame through plug-in card. It realizes remote video transmission /live streaming through wired network.



1.1.1 Advantages

- **Highly integrated, low power consumption, stable operation**
 - It can integrate 1U single-channel, 1U four-channels, or 3U multi-channels SDI/ HDMI video encoding module, and supports up to 32-channels in 3U rack. SDI encoding module and HDMI encoding module can be integrated into the same rack for customization;
 - Advanced low-power consumption design (150w only for 32 channels at full load), together with built-in intelligent cooling device, it can ensure stable operation and 24h continuous working.
- **High bandwidth adaptability, it can transmit high-definition, low-latency and no freezing image even under a low-bandwidth network environment**
 - With branded chips solution together with video dynamic noise reduction and image enhancement technology, it can realize good encoding image under low bitrate transmission;
 - Good video image can be achieved at 1Mbps@720p, 1.5Mbps@1080p network. In the normal application, 1Mbps@720p, 1.5Mbps@1080p can get high quality video quality;
 - Advanced video buffering technology and FEC technology ensures video encoding latency $\leq 67\text{ms}$ and stable transmission stable without freezing.
 - Adjustable bit rate from 64kbit/s~40Mbit/s.

Note: ($\leq 67\text{ms}$) refers to the encoding latency, and the end-to-end latency is related with network, decoding, etc.

- **Powerful streaming media service function, all types of streaming media protocol supported**
- SRT/ RTSP/ RTMP/ HLS/ TS/ Onvif and some other streaming media protocols supported for live streaming on Facebook, YouTube, Ustream, Twitch, Wowza etc or security platform NVR system;
- Dual stream output, the main code rate is up to 1080p60Hz, and the sub-stream supports 720p 60Hz video encoding.

1.1.2 Parameters

Model No.	U1-1; U2-1; U1-4; U2-4
Video interface	U1-1: 1*BNC SDI; U2-1: 1*HDMI; U1-4: 4*BNC SDI; U2-4: 4*HDMI
Video loop	U1-1: 1*BNC SDI; U2-1: 1*HDMI; U1-4: 4*BNC SDI; U2-4: 4*HDMI
Network Support	RJ45 Ethernet
Media transmission protocols	RTMP/HLS/TS over UDP/RTSP /Onvif/SRT
Video resolution	Supports up to 1080P60Hz resolution
Video coding	H264/AVC, Motion-JPEG
Audio coding	AAC/G.711
Encoding latency	≤67ms
Image and text overlay	Custom text, image overlay function, can be superimposed to any position on the screen
Recording	NAS network storage
Management	WEB
Power supply/consumption	AC 220v 25W/U series: up to 25W
Dimensions/Weight	483*175.25*44.5mm/1.6kg
Operating temperature	-20℃~55℃

2 Operation guidance

- Installation and connection

Connect the power, Ethernet cable and video input source correctly, then the device starts working.

- Network connection and configuration

The simplest way: login to Web page via default IP address (192.168.1.168) for configuration. Default username: *admin* and password: *admin*.

- RTSP pull flow

The decoder's RTSP stream is directly pulled using a decoder or a PC-side player (such as VLC), and the RTSP stream service is continuously working.

- Other streaming service

If necessary, users can also configure the device to push streams via protocols such as RTMP, RTMPS, UDP, HLS, etc.

3 Packing list and interface description

3.1 Packing list

1U rack packing list			
Name	Unit	Quantity	Note
Encoder	PCS	1	U1: SDI Input; U2: HDMI Input
AC 220v Power cable	PCS	1	
Quick start guide	PCS	1	
Certificate/Warranty card	PCS	1	

3.2 Device interfaces

1U multi-channel device interfaces (Take HDMI version as an example)



- 1, Mini USB 2, Audio output 3, Audio line in 4, HDMI LOOP
- 5, HDMI IN 6, 100M Ethernet interface 7, Led indicator
- 8, Reset 9, AC 220V Power input 10, Power switch

1U single channel device interfaces (Take HDMI version as an example)



- 1, Mini USB 2, Audio output 3, Audio line in 4, HDMI LOOP
- 5, SDI LOOP/HDMI IN 6, 100M Ethernet interface 7, Led indicator
- 8, Reset 9, AC 220V Power input 10, Power switch

3.3 LED indicator descriptions

1U LED indicator status

Name	Color	Status	Description
POWER 	Red	Always on	Power supply is connected
		Flashing	Power failure
		Off	Power supply is not connected
SIGNAL 	Green	Always on	SDI/HDMI signal is connected
		Flashing	Restore device to factory settings
		Off	SDI/HDMI signal is not connected
RUN 	Green	Always on	Device is working
		Flashing	Restore device to factory settings
		Off	Working abnormal/not started

4 Installation and Connection

4.1 1U series installation and connection

4.1.1 Connect the power adapter

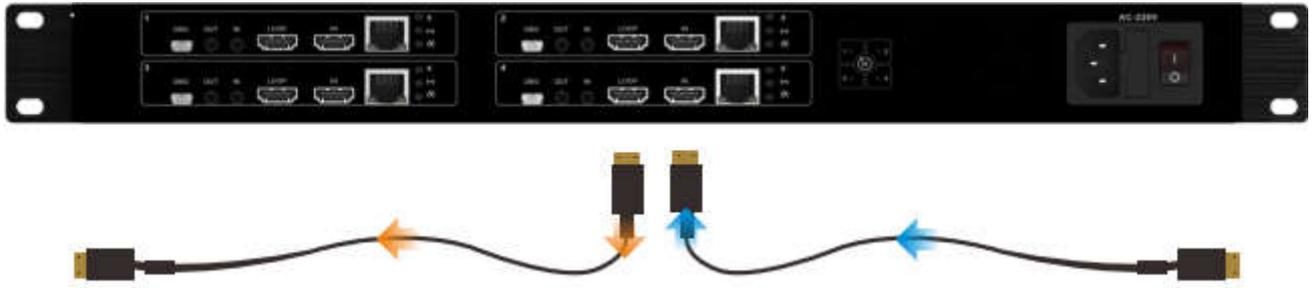
Connecting the power adapter (AC 220V) to the device, it starts working once the power is turned on.



 **Note:** Please use the standard power adapter provided. Other unqualified power supplies may damage the device.

4.1.2 Connecting video signal

Connect the SDI/HDMI signal from the source (such as a camera) to the SDI/HDMI input port of the device via a cable.



Note: Input and loop position of HDMI and SDI device are different. It is subject to the actual device.

4.1.3 Connect network

Connect one end of the network cable to the encoder Ethernet port. The other end is connected to the network switch or the computer's Ethernet port.



5 Login and network configuration

5.1 Login to the device through Ethernet

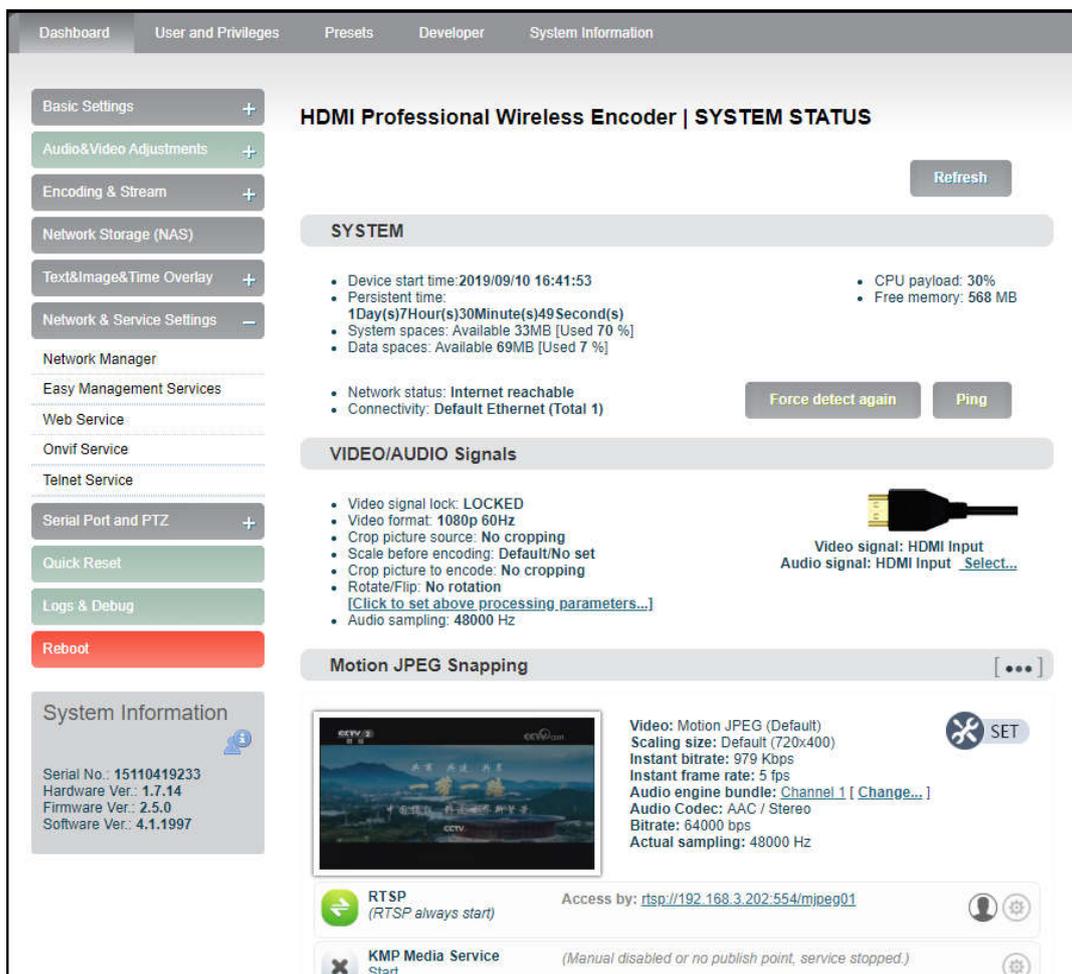
First connect the RJ45 Ethernet port of the encoder and the computer to the same switch, or connect the encoder directly to the computer network port. Then configure the encoder and computer to the same network segment so that the computer can access to the web page of the encoder.

The default management IP address of the device is 192.168.1.168. If the IP address of the computer is not in the network segment of 192.168.1.* , please set the IP address of the computer to 192.168.1.* .

Open the WEB browser, directly input the encoder's IP address (default is 192.168.1.168) or the URL <http://192.168.1.168> and press Enter to open the login interface. After opening the page, an authentication dialog will pop up, please fill in the username and password, the default username is admin, the default password is admin, and then click "Login".

 **Note:** Due to the browser compatibility issues, it may cause the web page display abnormal, it is recommended to use Chrome and Firefox.

After login, the encoding and function parameters can be set on the encoder management web page. The page is shown as below:



The screenshot displays the web management interface for an HDMI Professional Wireless Encoder. The page is titled "HDMI Professional Wireless Encoder | SYSTEM STATUS" and includes a "Refresh" button. The interface is divided into several sections:

- SYSTEM:**
 - Device start time: 2019/09/10 16:41:53
 - Persistent time: 1Day(s)7Hour(s)30Minute(s)49Second(s)
 - System spaces: Available 33MB [Used 70 %]
 - Data spaces: Available 69MB [Used 7 %]
 - CPU payload: 30%
 - Free memory: 568 MB
- Network & Service Settings:**
 - Network status: Internet reachable
 - Connectivity: Default Ethernet (Total 1)
 - Buttons: Force detect again, Ping
- VIDEO/AUDIO Signals:**
 - Video signal lock: LOCKED
 - Video format: 1080p 60Hz
 - Crop picture source: No cropping
 - Scale before encoding: Default/No set
 - Crop picture to encode: No cropping
 - Rotate/Flip: No rotation
 - Audio sampling: 48000 Hz
 - Buttons: Video signal: HDMI Input, Audio signal: HDMI Input _Select...
- Motion JPEG Snapping:**
 - Video: Motion JPEG (Default)
 - Scaling size: Default (720x400)
 - Instant bitrate: 979 Kbps
 - Instant frame rate: 5 fps
 - Audio engine bundle: Channel 1 [Change...]
 - Audio Codec: AAC / Stereo
 - Bitrate: 64000 bps
 - Actual sampling: 48000 Hz
 - Buttons: SET
- System Information:**
 - Serial No.: 15110419233
 - Hardware Ver.: 1.7.14
 - Firmware Ver.: 2.5.0
 - Software Ver.: 4.1.1997
- Services:**
 - RTSP (RTSP always start): Access by: <rtsp://192.168.3.202:554/mjpeg01>
 - KMP Media Service (Manual disabled or no publish point, service stopped.)

5.2 Network configuration

The device only supports wired connection. The specific configuration of the network is described in details as below.

⚠ Note: Multi-channel rack mount device is independent for each channel. All settings should be configured via separate Ethernet cable.

5.2.1 Ethernet

The device can provide an Ethernet access. This port can be configured with an IP address and default setting is DHCP. It will automatically get a complete IP address, gateway and DNS according to this LAN. Click "Network & Service Settings", click "Network Manager" to enter the following interface, you can see the IP address with Ethernet.



In addition to the way of DHCP, the device also supports manual IP assignment. To change the IP of the wired network, click "Configure" button in the Ethernet to enter the interface for configuring the IP. There are two ways to get the address, one is DHCP, and the other is to manual. To use DHCP to automatically obtain IP, you must first ensure that the router or switch has enabled the DHCP service. This method is simple and convenient, but the IP obtained by DHCP changes continuously, and you cannot directly know what IP address the encoder gets. As for manually, you need to enter a fixed IP to the device, and this IP address is fixed as long as the encoder does not restore the factory settings, this method is more stable. Therefore, the two methods have their own advantages, and can be selected accordingly.

LAN Connection

MAC:

MAC Clone:

Address Resolve:

IP Address:

Net Mask:

Gateway:

DNS1:

DNS2:



After Ethernet is configured correctly, you can see that the connection status is “Internet reachable” and the Internet connection is the default Ethernet port on the Information Board.

5.2.2 Convenient management functions

The "localized connection" is configured with a dedicated IP address on Ethernet (This is the failsafe IP address of the Ethernet port. Generally, do not modify this IP address.) In this way, even if you forget the IP settings of the Ethernet, or if the IP cannot be obtained because of DHCP, you can still connect and access the device through the configured private IP address.

Easy Management Service

About Easy Management

The 'Easy Management' service provide a easy way for users to manage/use this device. Two important functions is served: 1st, 'Local Link' on ethernet; 2nd, connect your Android or iOS phone/pad to this device.

'Local Link' function give a way to set a special static IP address on Ethernet port. Thus, even you forget the IP or unknow the dynamic IP, you can also access this device by that 'special static IP'.

This device enable you connect Android or iOS phone/pad to it, that you can manage it and watch live video by an App, and share your phone's 4G network.

Local Link

Enable Local Link:

Special IP Address:

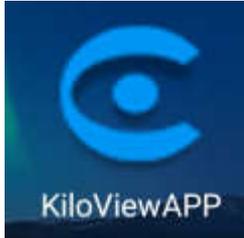
Netmask:

“Localized connection” is to bind the encoder to a separate IP address. This IP address does not affect the use of other network cards. In special cases, it can play a role in managing the device. This address can be manually changed (normally no need to change), and the default address is 192.168.1.168.

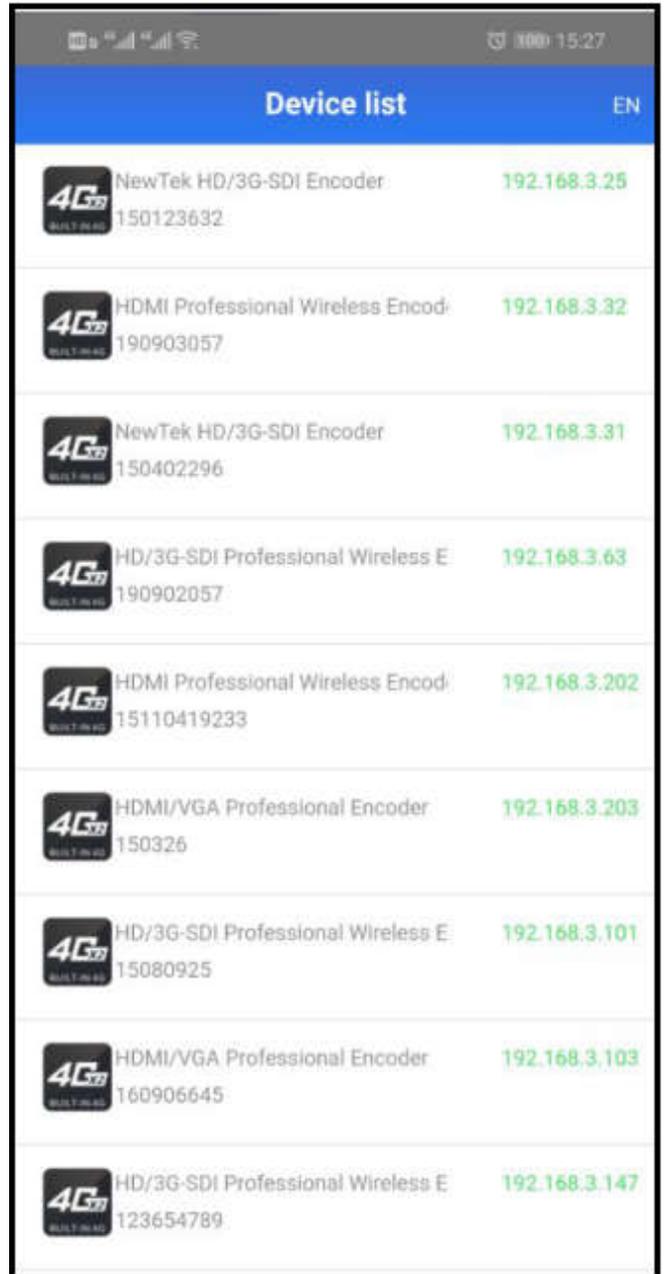
 **Note: When accessing the device through a convenient managed IP address, your computer must have an IP address on the same network segment.**

5.2.3 Android APP

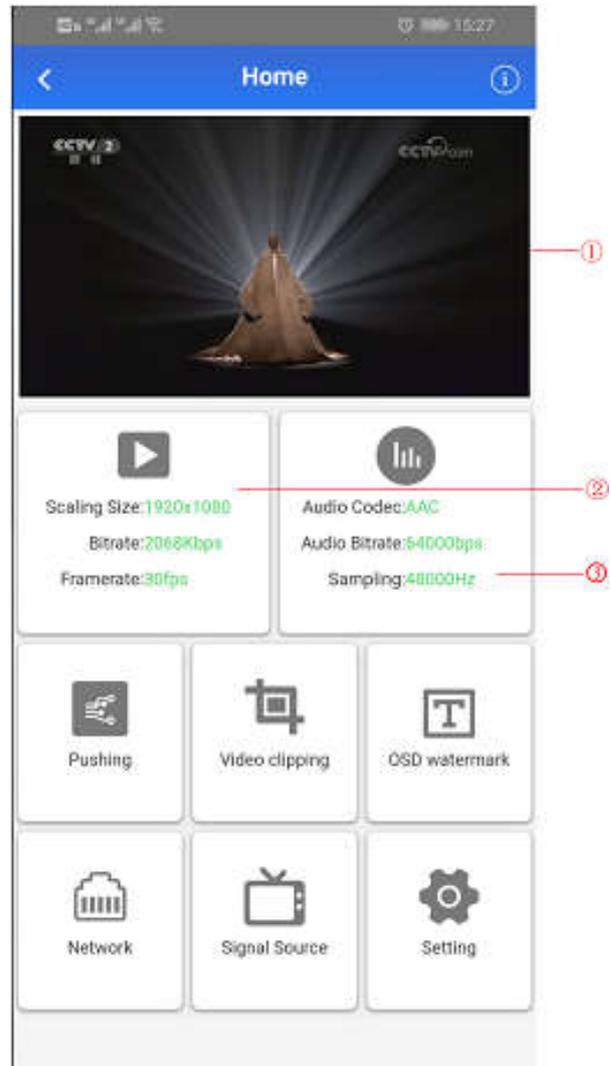
- Please download the Android APP from Kiloview website.
(<http://www.kiloview.com/companyfile/shi-pin-bian-ma-qi-Android-APP-45.html>)



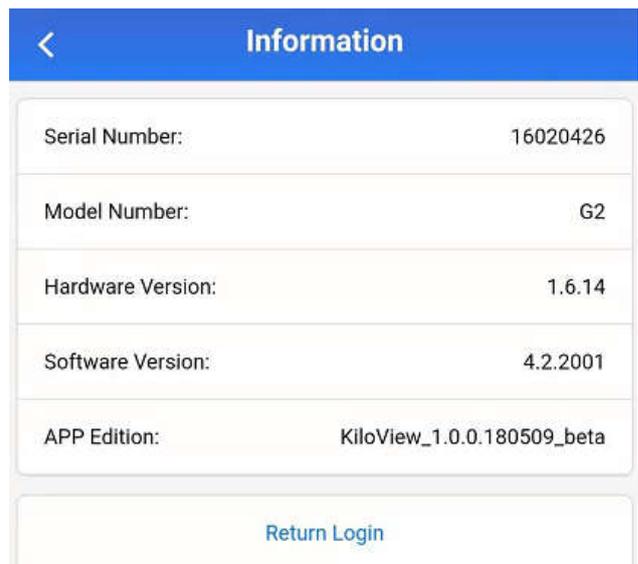
- Connect the phone to the same network segment of the WIFI that the device connects. Open the APP and search the connected devices under the same network segment automatically in the device list.
- The device information shown in the list includes device interface information, device serial number, device IP address, etc.
- Click your device from the device list to enter into management page.



- On the configuration page, it shows video source image on the area of ① to monitor whether video source is normal. This image stream is refreshed in three seconds.
- Click ② for main stream configuration (Please refer to 6.4.2).
- Click ③ for audio encoding configuration (Please refer to 6.4.1).
- Click “Pushing” for stream service configuration (Please refer to 6.4.3).
- Click “Video Clipping” for video clipping function.
- Click “OSD watermark” for image overlay function configuration. APP only supports text and time overlay configuration; image overlay is configured on Web page (Please refer to 6.7).
- Click “Network” for network configuration (Please refer to 5.3).
- Click “Signal Source” for audio and video source choice page (Please refer to 6.3).
- “Setting” is used for quick reset, device reboot, restoring factory settings and device name modifications.



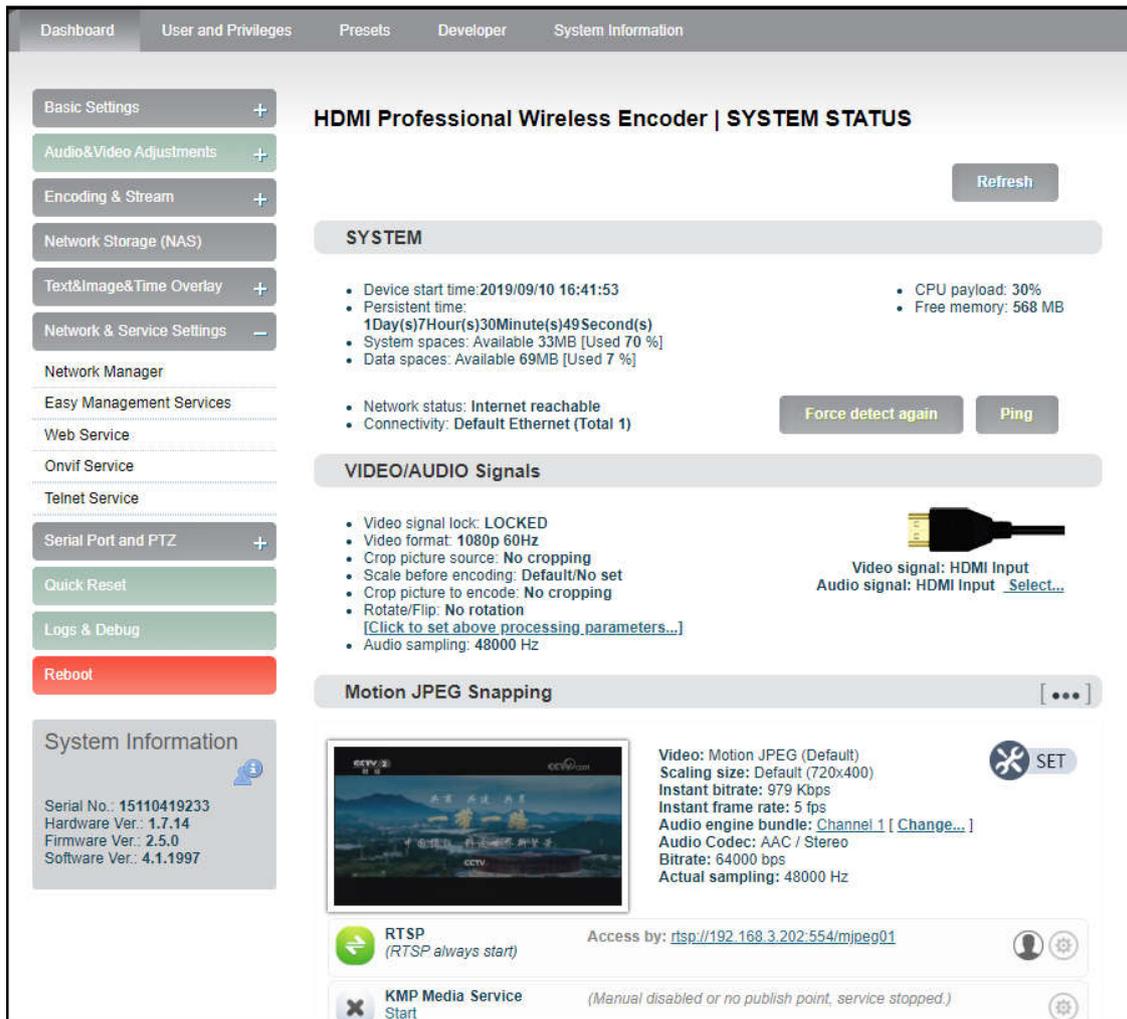
Click  and enter into device information page.



6 Parameters configuration

6.1 Dashboard

“Dashboard” is an overview of the current running status of the device and the status of audio and video streams. Users can click the “Refresh” button to refresh in real time, which can greatly help the encoder setting and troubleshooting.



- System

Click “Basic Setting”, users can know information including “device start time”, “persistent time”, “system spaces”, “data spaces”, “network status” and “connectivity” of the device, and go for “Ping” testing. If users need to push to Internet platforms, network status should be “Internet reachable”, or it cannot push streams.

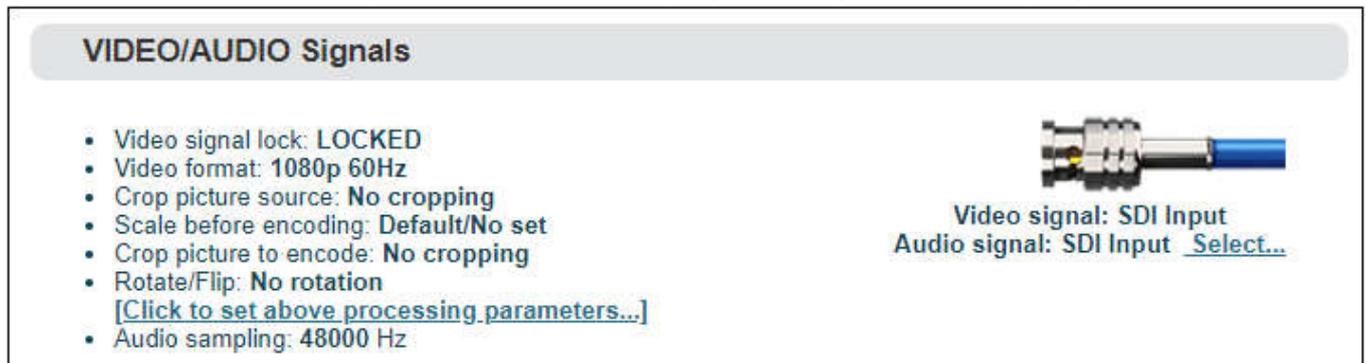
The “Ping” provides a simple function to test whether the network is reachable. Open the “Ping” button, enter the test address, click “Ping”, wait for 3s, and “Connectivity” is displayed as “reachable, packet loss rate 0%” means the network is good and streams can be pushed to the Internet normally.



⚠️ Note: If Ping public IP address is reachable, but Ping domain name is unreachable, generally, it is because the DNS server configuration is incorrect.

- Video/Audio signals

It can show “Video/audio signal”, “video format”, “preprocessing”, “audio sampling” as below:



If “video signal lock” displayed as “no signal (display blue screen)”, it means the video input source is not detected by the device. Please check if the input cable is plugged in. If “Audio sampling” is displayed as “0Hz”, the audio signal is not collected on the device. Please check if the audio of the input source is normal.

6.2 Basic settings

Users can go for some basic settings here.

6.2.1 Change WEB login password

Click “Change Password”, an option box will pop up, users can modify the WEB login password, the default password is admin.



6.2.2 Location and time

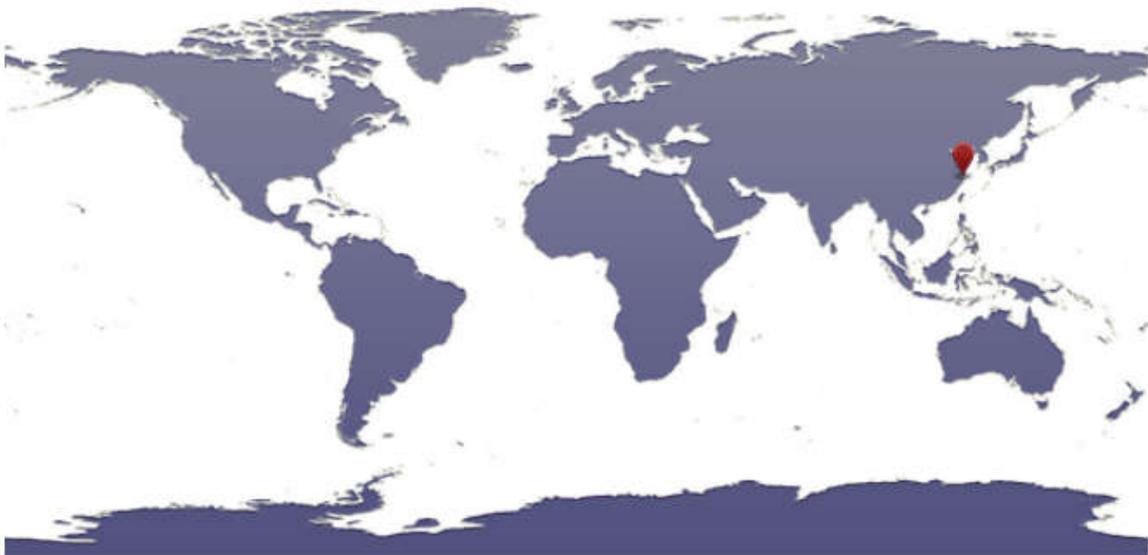
Click “location and time”, then users can modify system time of the encoder, or just select “Synchronize from this PC”.

Location & Time Setting

i Current time of device: 2019-07-03 19:31:18
Universal Coordinated Time in Device: 2019-07-03 11:31:18

Location/Time zone: Asia/Shanghai
NTP Time Synchronization Enable: yes
NTP Synchronization Status: yes

Select Your Location



Location/Time zone:

Country/Area:

Date & Time Setting

Set:

NTP Server:

6.2.3 Restore factory settings

If users change parameters that lead encoder couldn't work (Typical situation is that encoder couldn't be visited by network after modifying network address), users could restore factory settings to default value.

Two methods for restoring factory settings:

1. Via the WEB interface, "Basic Setup > restore factory settings" function;
2. Through RESET button:

Pressing on RESET button for 3 seconds, device will restore factory settings. Restoring factory setting will lead to the device hard restart, restarting course will last 1 minute.

Please note: after restoring factory setting, below parameters will be changed to default value:

- Login username and password will be admin;
- IP address will be restored as 192.168.1.168; subnet mask will be 255.255.255.0;
- All encoding parameters of video and audio will be restored to factory default value;
- Media transmission parameters will be restored as factory default value.

6.2.4 Firmware upgrading

The encoder supports online firmware upgrading. Through the "Basic Settings-Firmware Upgrade" of the Web page, users can upload the firmware online. Click "Select Files" to select the upgrade file, and click "Upgrade" to upgrade the device. The upgrade process is slow, around 30s to 1 minute, please be patient.

Firmware and software upgrading



Current Firmware Version: 2.5.0
 Current Software Version: 4.1.1997
 Device Serial No: 15110419233

Please check the device type and software/firmware version is correct before upgrading. Upload the firmware bellow.
NOTE: It need reboot the device to finish the upgrading while firmware uploaded!

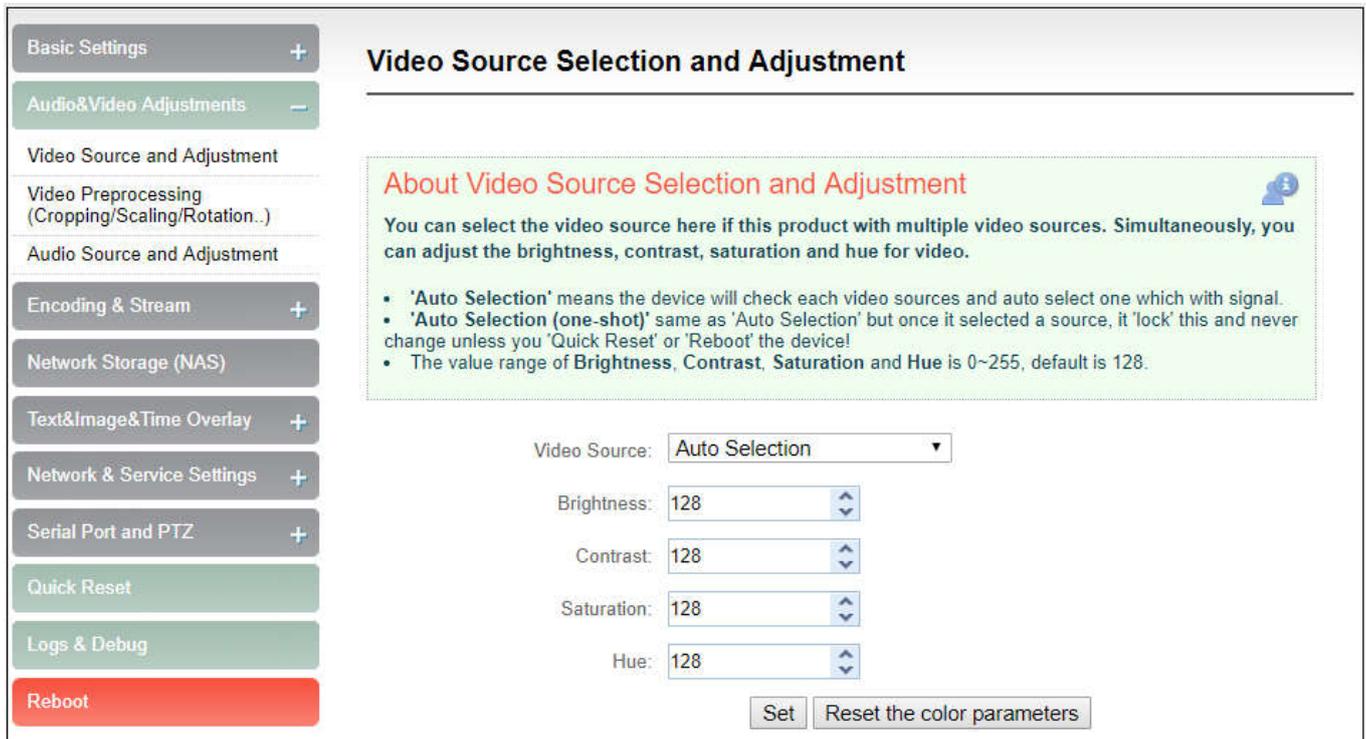


Upload Firmware: No file chosen

6.3 Video & Audio adjustments

6.3.1 Video source choice and adjustments

Users can choose video source, adjust brightness, contrast, saturation and hue parameters of the video here.



Video Source Selection and Adjustment

About Video Source Selection and Adjustment

You can select the video source here if this product with multiple video sources. Simultaneously, you can adjust the brightness, contrast, saturation and hue for video.

- 'Auto Selection' means the device will check each video sources and auto select one which with signal.
- 'Auto Selection (one-shot)' same as 'Auto Selection' but once it selected a source, it 'lock' this and never change unless you 'Quick Reset' or 'Reboot' the device!
- The value range of Brightness, Contrast, Saturation and Hue is 0~255, default is 128.

Video Source: Auto Selection

Brightness: 128

Contrast: 128

Saturation: 128

Hue: 128

Set Reset the color parameters

“Auto Selection” means the device will check each video source and automatically select the one which has signal.

“Auto Selection (one-shot)” same as “Auto Selection” but once it selected a source, it 'lock' this and never change unless you 'Quick Reset' or 'Reboot' the device!

The value range of Brightness, Contrast, Saturation and Hue is 0~255, default is 128. Based on the median value, the increase/decrease value corresponds to the increase/decrease in brightness/contrast/saturation. The default value of Hue is 128, which represents phase 0; the value range is 0-255.

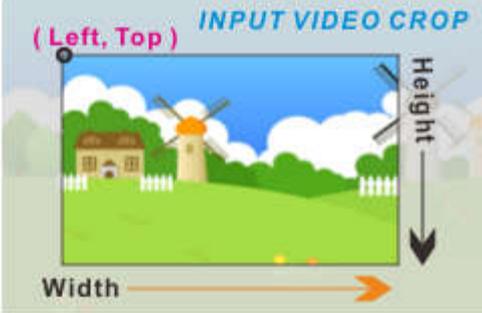
6.3.2 Video preprocessing

Before video captured and sent to encoder, we can make some necessary preprocessing:

- (1) Source picture cropping: Crop a part of the original picture for encoding.
- (2) Scaling: After step 1 cropping (or not cropping), video can be scaled up/down to certain format. (E.g. Input video is 1080p60, scaling down to 720p30 for encoding.)
- (3) Second cropping: After the step 2, you can continue cropping the size you want for encoding. (It's almost the same with step 1, but necessary in specific application.)
- (4) Rotation or flipping: It's the last step before encoding, you can rotate the video with 90/180/270 degrees, horizontal mirror or vertical flip.

Above process is a pipeline from step 1 to step 4. You could choose to open, or prohibit it about each step.

Source Picture Cropping:



Scale To:

DEFAULT



Cropping The Scaled Picture:

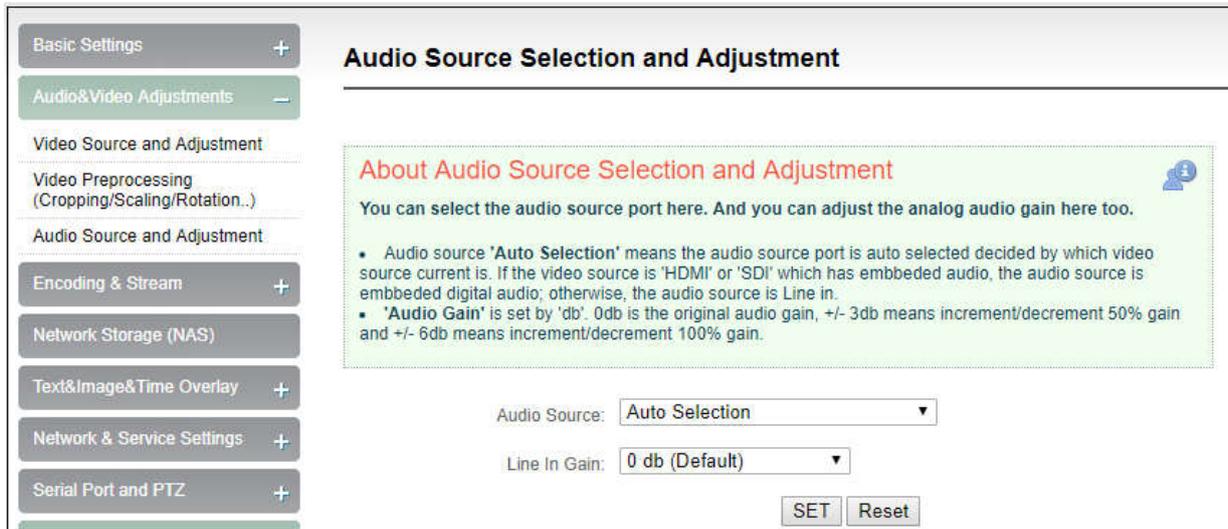


Rotation/Flipping:

		
Default	90 Deg.	180 Deg.
		
270 Deg.	Mirror	Flip

6.3.3 Audio signal source

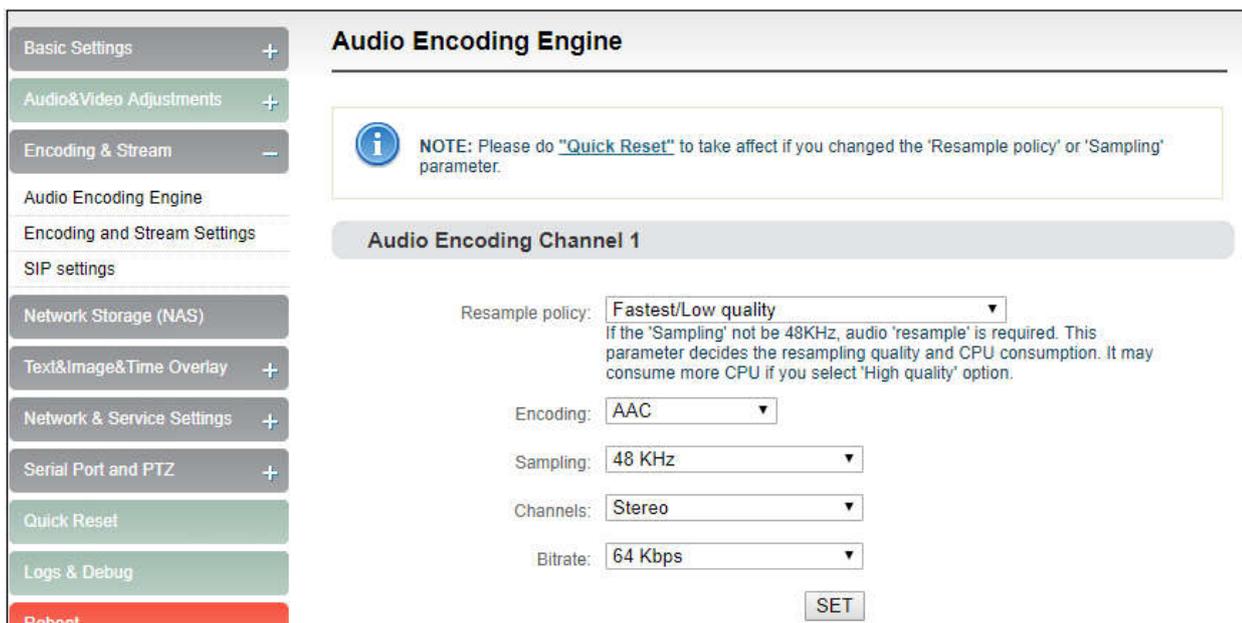
Audio source “Auto selection” mode is automatically to select the embedded audio of the input video source.



6.4 Encoding & Stream

6.4.1 Audio encoding parameter setting

Encoders can set audio encoding parameters. Click “Encoding &stream”, pull downward “Audio Encoding Engine”, then entering into audio parameters setting. Audio encoding channel is forced to enable. Audio encoding modes include AAC and G.711, optional. Audio sampling is chosen according to actual situation. Channels consist of “Stereo” and “Mono”. Encoding bitrate is adjustable between 16K-256K, default is 64Kbps. One more detail: if encoder using TS-UDP protocol or needs using recording, then it needs to choose “With ADTS header” under AAC format.

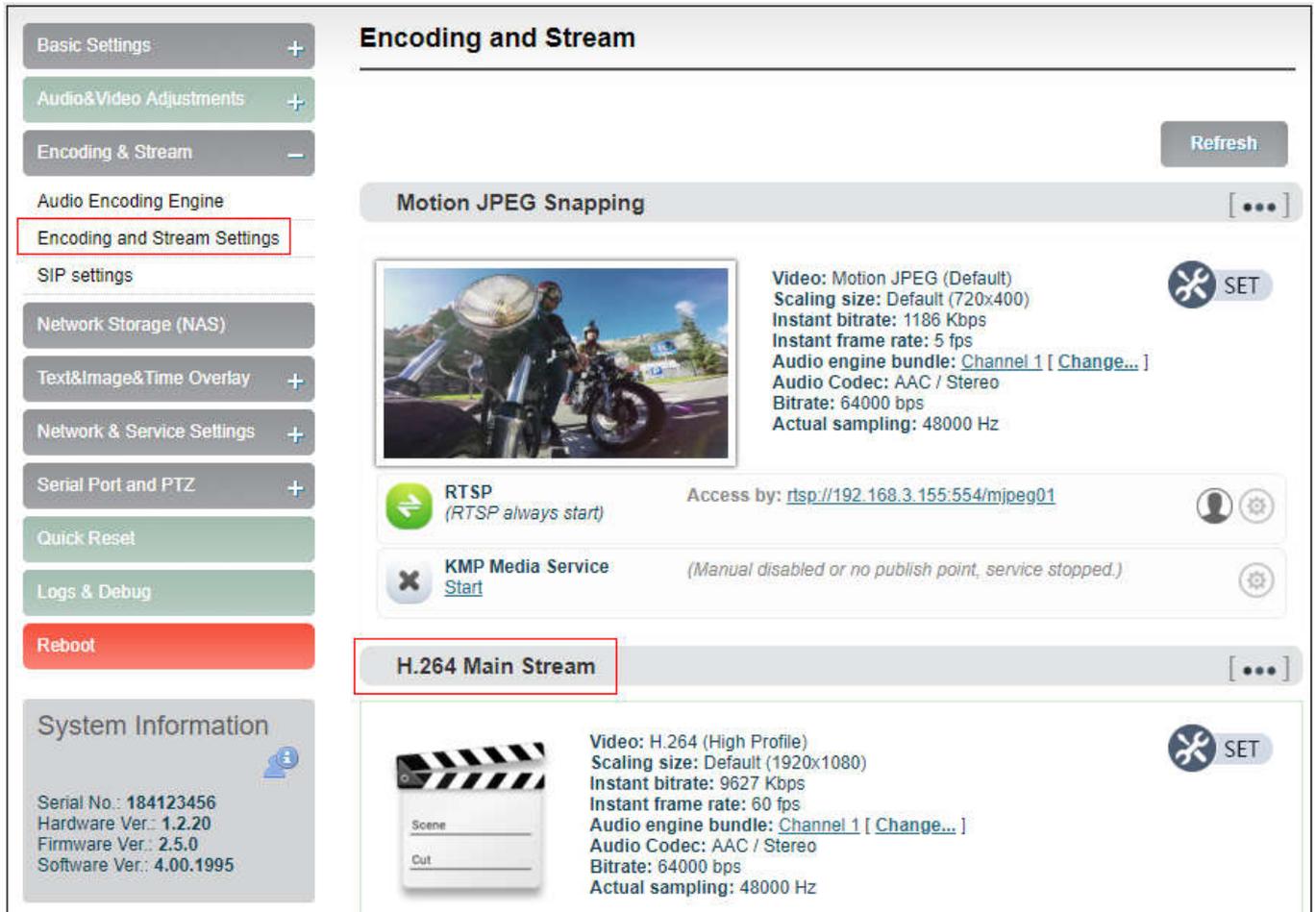


 **Note: Please do "Quick Reset" to take affect if you changed the 'Resample policy' or 'Sampling' parameter.**

6.4.2 Encoding and stream settings

Video encoding parameters are adjustable. Click “Encoding &Stream”, pull downward “Encoding and stream settings” to enter below interface. We generally set parameters of “H.264 main stream”, click “Setting”.

 **Note: It is H.264 Main stream, the second setting, not Motion JPEG setting.**



Encoding and Stream

Refresh

Motion JPEG Snapping [...]

 Video: Motion JPEG (Default)
 Scaling size: Default (720x400)
 Instant bitrate: 1186 Kbps
 Instant frame rate: 5 fps
 Audio engine bundle: Channel 1 [Change...]
 Audio Codec: AAC / Stereo
 Bitrate: 64000 bps
 Actual sampling: 48000 Hz

RTSP (RTSP always start) Access by: <rtsp://192.168.3.155:554/mjpeg01>

KMP Media Service Start (Manual disabled or no publish point, service stopped.)

H.264 Main Stream [...]

 Video: H.264 (High Profile)
 Scaling size: Default (1920x1080)
 Instant bitrate: 9627 Kbps
 Instant frame rate: 60 fps
 Audio engine bundle: Channel 1 [Change...]
 Audio Codec: AAC / Stereo
 Bitrate: 64000 bps
 Actual sampling: 48000 Hz

System Information

Serial No.: 184123456
 Hardware Ver.: 1.2.20
 Firmware Ver.: 2.5.0
 Software Ver.: 4.00.1995

Click SET, entering into the interface of main stream encoder parameters, as follows:

Main Stream Encoder parameters

Scaling:

Color:

H.264 profile:

Bitrate control:

Bitrate: bps

Bitrate auto adjust:

Framerate:

Dynamic framerate:

GOP Size:

Customized GOP size:

Reference frames:
(Using multiple reference frames should better encoding quality but this may be not compatible to some decoders)

“Scaling” has 9 options for choice. Default setting is “Default size”, that is, the video size after encoding is the same as the input video size.

“Color” has two options: “With color and monochrome”. Monochrome is black and white color, “with color” remains the original color. Default setting is “With color”.

“H.264 Profile” supports High profile , main profile , baseline, which is set according to platform supported encoding profile. High Profile is the highest compression efficiency, that is, under the same bitrates, image quality is the best; Baseline is the most widely supported; default setting is High Profile.

“Bitrate control” has two ways: CBR-Constant bitrate and VBR-Variant bitrate. From literal meaning, CBR is stable and unchanged bitrate, while VBR is constantly changing according to actual content. Generally, network transmission adopts CBR to guarantee transmission quality, while file storage uses VBR to guarantee file quality. Default setting is CBR-Constant bitrate.

“Bitrate” supports adjustable 64K-25M. Users could choose default setting, or self-define bitrate size. The higher bitrates, video quality after encoding is better. But specific setting should be based on actual network situation, couldn’t be higher than your own upstream bandwidth.

“Framerate” has three options: FULL (same as input source, HALF (half when source framerate \geq 50 and customized framerate. “FULL” means framerate after encoding is the same as the framerate of input source; “HALF” means if input video is 1920*1080P50, video framerate after encoding will be 25. This will be a good saving on the consumption of network bandwidth; customized framerate is user assigning framerate after encoding, in theory, it shouldn’t be higher than original framerate.

“GOP size” has five options and supports user-defined adjustment. It is adjustable according to actual situation, default is 60, and normally it could meet the most majority of needs.

“Reference frames” has two options: one and multiframe. Theoretically using multiframe can improve encoding quality, but some decoders and players may not support multiframe.

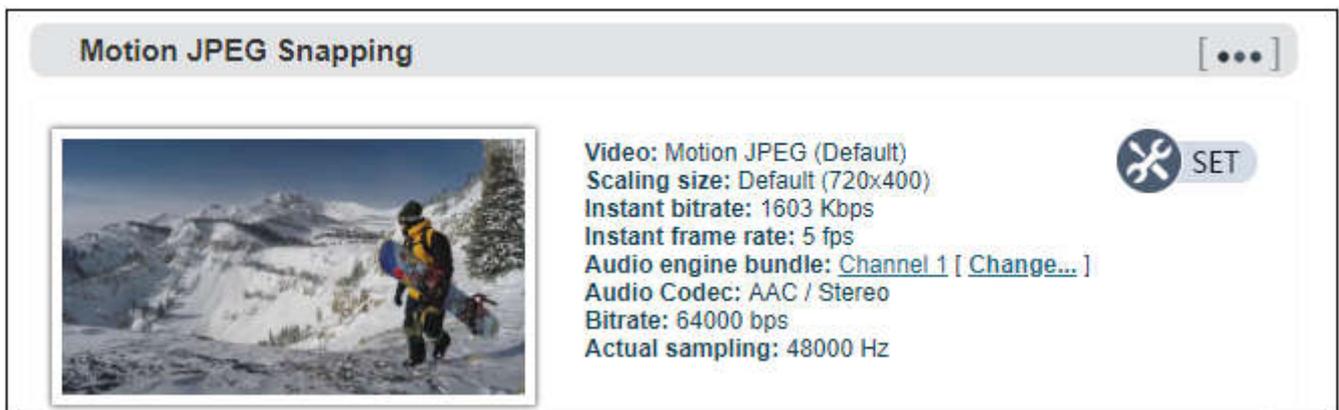
Sub stream parameter setting please refers to Main stream configuration.

6.4.3 Streaming media service

The device currently supports streaming services include: RTSP, RTMP push, HLS service, TS-UDP push, SRT push, Onvif service. One code stream can run up to 8 stream services at the same time for the encoder, which means it can push the video stream to 8 different live platforms. There are two code streams (the main stream and sub stream) for the encoder, so the encoder can stream up to 16 different live platforms at the same time. In general, the main stream is enough, and the sub stream is mainly used in the security monitoring field to achieve the docking usage with the NVR.

6.4.3.1 Motion JPEG stream

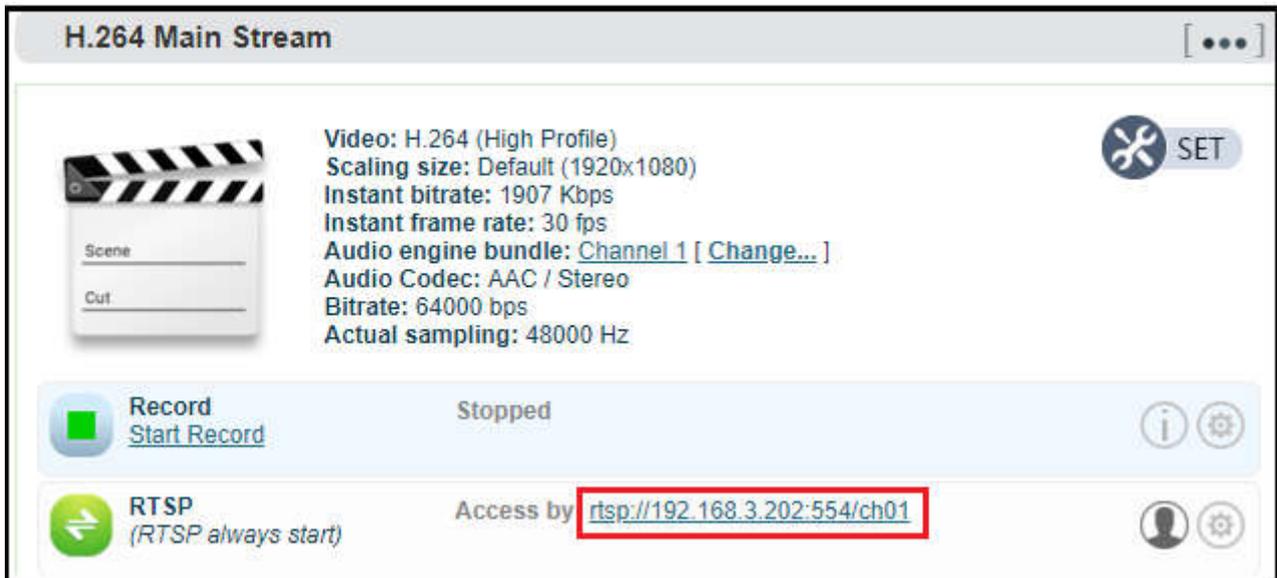
The device has a Motion JPEG stream, which keeps running without stop. It is blank with blue color if without video access. If with a video signal access, Motion JPEG stream will display the content of current flow, “the video signal lock” displays locked and it will display the current video signal format.



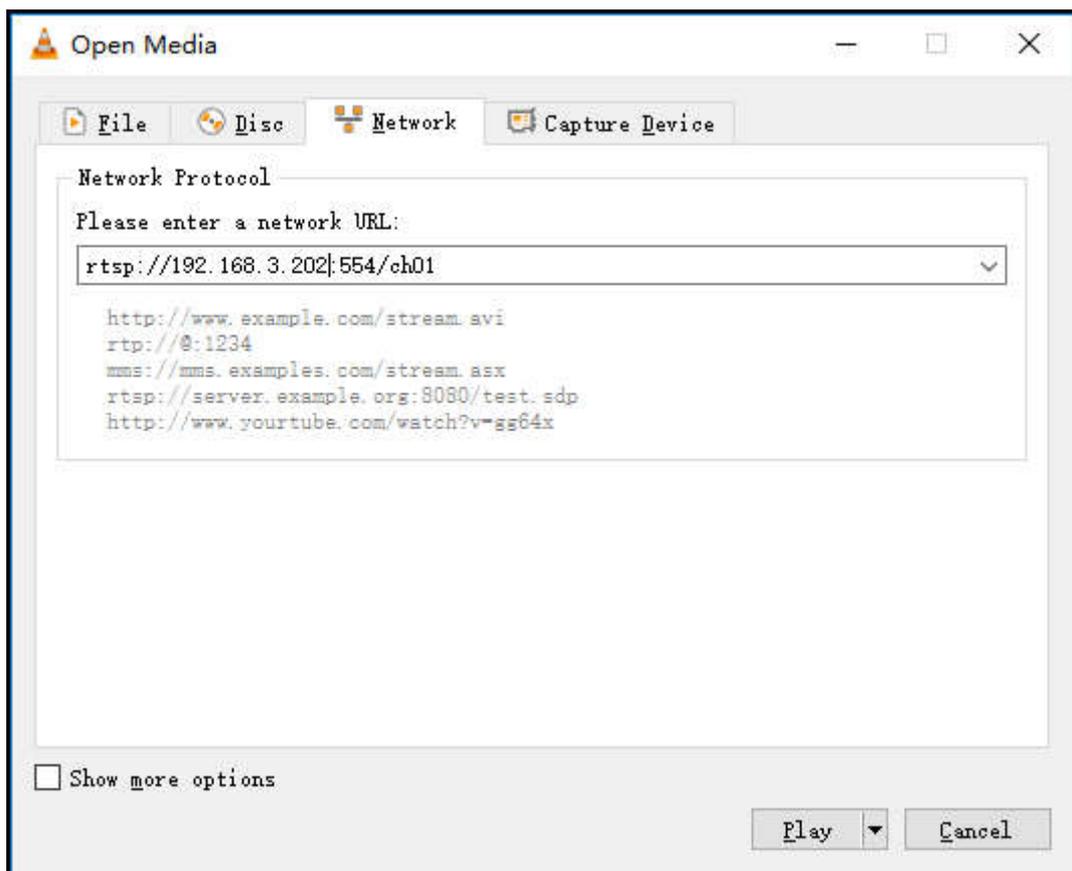
⚠️ Note: Motion JPEG stream is a picture preview, refresh every 3 seconds, or click the mouse to refresh, so it is normal to see it is not fluent on the page.

6.4.3.2 RTSP service

RTSP service cannot stop when encoder runs. It will not have additional load on the encoder if the stream is not pulled for decoding. As shown in the red frame, the RTSP service flow address is "rtsp://192.168.1.168:554/ch01". "192.168.1.168" is the IP address of the encoder, If the for encoder, the IP address is 192.168.2.168, then the RTSP service address is "rtsp://192.168.2.168:554/ch01", if there are several IP encoding device, these IP address can also directly pull RTSP flow accordingly.



Normally VLC media player is used to decode and play the video stream. Open VLC media player, select the "media", and "open network stream", then enter the RTSP service URL address, you can play the video.



⚠️ Note: URL should be copied completely and the punctuation marks should be included.

6.4.3.3 RTMP Pushing (Live streaming)

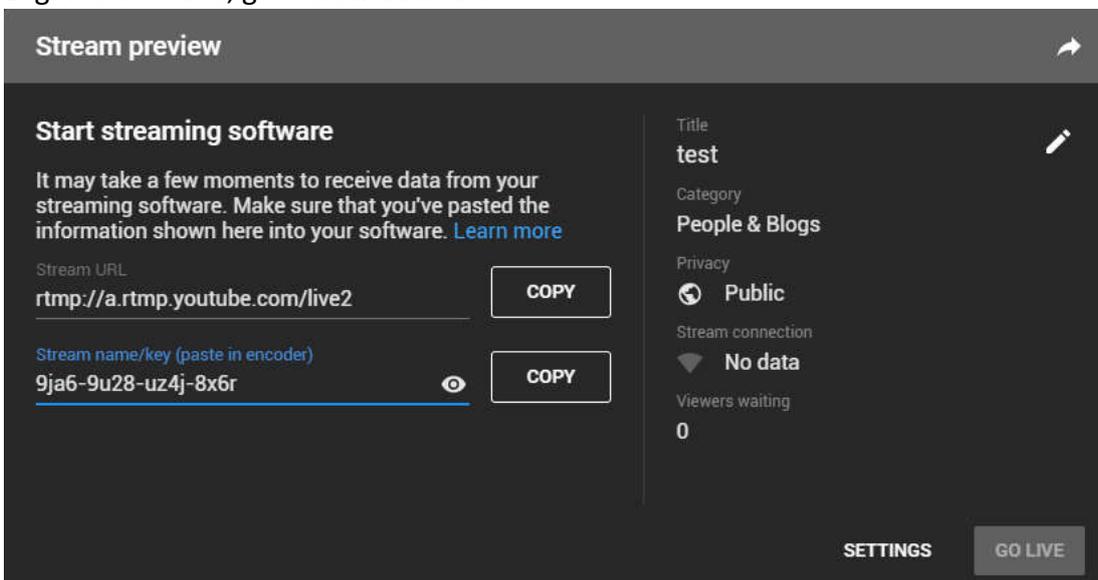
Using RTMP pushing, the first thing is to make sure platform providing RTMP pushing address, otherwise our encoders couldn't do RTMP pushing (Currently some live streaming APP couldn't provide RTMP pushing address.)

⚠️ Note: The principle of RTMP push stream is that it must be pushed from the encoder to the platform. The computer/decoder then pulls the RTMP stream from the platform for playback. The encoder cannot directly push the RTMP stream to the computer/decoder for playback.

YouTube live streaming

"Streaming point" is RTMP address given by platform (Take YouTube as an example). (Other platforms are similar, if any questions please contact platform technical support for help).

1) Login to YouTube, get below address:



Streaming point should be like Server URL+Stream name/key.

For example: rtmp://a.rtmp.youtube.com/live2/9ja6-9u28-uz4j-8x6r

2) After you get the RTMP URL address, you need to set it up in the encoder. In the main stream of H.264, there is a stream service option to be added. By adding a RTMP push, you can get a RTMP push option. Click the settings button on the right side of the RTMP push, and you will enter the interface to fill in the RTMP push configuration. The push address on YouTube platform is filled in the "push point", and set "Enable pushing" to "Yes". Click "Save", then RTMP will stream to YouTube.

Main Stream RTMP pushing parameters

Enable pushing:

Push point:

Username:

Password:

Connection timeout (s):

Connection retry interval (s):

Use old RTMP version:
(After version 3.99, a new RTMP pushing software is used, this is compatible with more RTMP servers. But if the new version has any problem, you can try use old RTMP version which is used before version 3.99)

Insert NTP timestamp:
You must set 'Use old RTMP version' to be 'Yes' to enable this feature. And don't forget enable NTP time synchronization if you need the NTP timestamp insertion

If the platform requires user name and password verification, you also need to fill in the corresponding parameters in the encoder.

- 3) On YouTube platform, if the video can be displayed, the push stream is successful; otherwise you need to check the network and other configurations.

 **Note:** *In the case of RTMPS push mode, fill in RTMPS URL at Push point and set 'Use old RTMP version' to yes, so that it can be supported.*

6.4.3.4 TS-UDP Pushing (unicast and multicast)

Click  [Add a stream...](#) to select TS-UDP Pushing, then entering into TS-UDP setting interface.

TS-UDP pushing divides into unicast and multicast. If using unicast, “pushing target address” is device IP address of receiving TS streaming. “Target port” is any port, but it is better not conflicted with other service port. No need to change Multicast TTL; If using multicast, “pushing target address” needs to write a correct multicast address (224.x.x.x ~ 239.x.x.x). “Target port” is any port, but it is better not conflicted with other service port.

Main Stream TS pushing parameters

Enable pushing:

Target Address:
(Target IP address or multicast IP address. A valid multicast address is 224.x.x.x ~ 239.x.x.x)

Target Port:

Multicast TTL:
(TTL is valid when target address is a multicast address. TTL decides how many routers the multicast packet can pass through.)

TS advanced settings Below are some TS advanced options, if you are not sure how to set these, just please use default settings

NULL packets:

Stream ID:
(1-65535)

PTS to PCR delay:

PMT start PID:
(16-7936)

Stream start PID:
(32-3840)

Tables version:
(0-31)

Service name:

Service provider:

After finishing setting, it will come up an URL address from TS-UDP pushing, which could be decoded through VLC or other decoding devices. If it is multicast, please remember to close Windows firewall.

H.264 Main Stream [...]



Video: H.264 (High Profile)
Scaling size: Default (1920x1080)
Instant bitrate: 9384 Kbps
Instant frame rate: 60 fps
Audio engine bundle: [Channel 1](#) [[Change...](#)]
Audio Codec: AAC / Stereo
Bitrate: 64000 bps
Actual sampling: 48000 Hz

 SET

	Record Start Record	Stopped	 
	RTSP <i>(RTSP always start)</i>	Access by: rtsp://192.168.3.155:554/ch01	 
	KMP Media Service Start	<i>(Manual disabled or no publish point, service stopped.)</i>	
	HLS Service Stop	Publish point: http://192.168.3.155/hls/main/playlist.m3u8	 
	RTMP Pushing Start	<i>(Manual disabled or no publish point, service stopped.)</i>	 
	TS-UDP Pushing Stop	Publish point: udp://225.225.5.5:5678	 


[Add a stream...](#)

 **Note:** When the URL obtained by configuring multicast push mode is `udp://225.225.5.5:5678`, if played by VLC Player, it needs to add @ for playing, that is `udp://@225.225.5.5:5678`.

6.4.3.5 HLS service

Using HLS service, the first thing is to “add a stream service”, then click right-side SET icon of “HLS service” for setting.

Below is setting interface of HLS service. Very simple, if no special requirements, no need setting, only enable service.

Main Stream HLS service parameters

Enable Service:

Session ID:
(Session ID is the unique identifier for HLS services, it can not be empty)

Segment Size:

Once enabling service, it will get one HLS Publish point. You could watch it through VLC and other players by using this address.

H.264 Main Stream
[...]



Scene
Cut

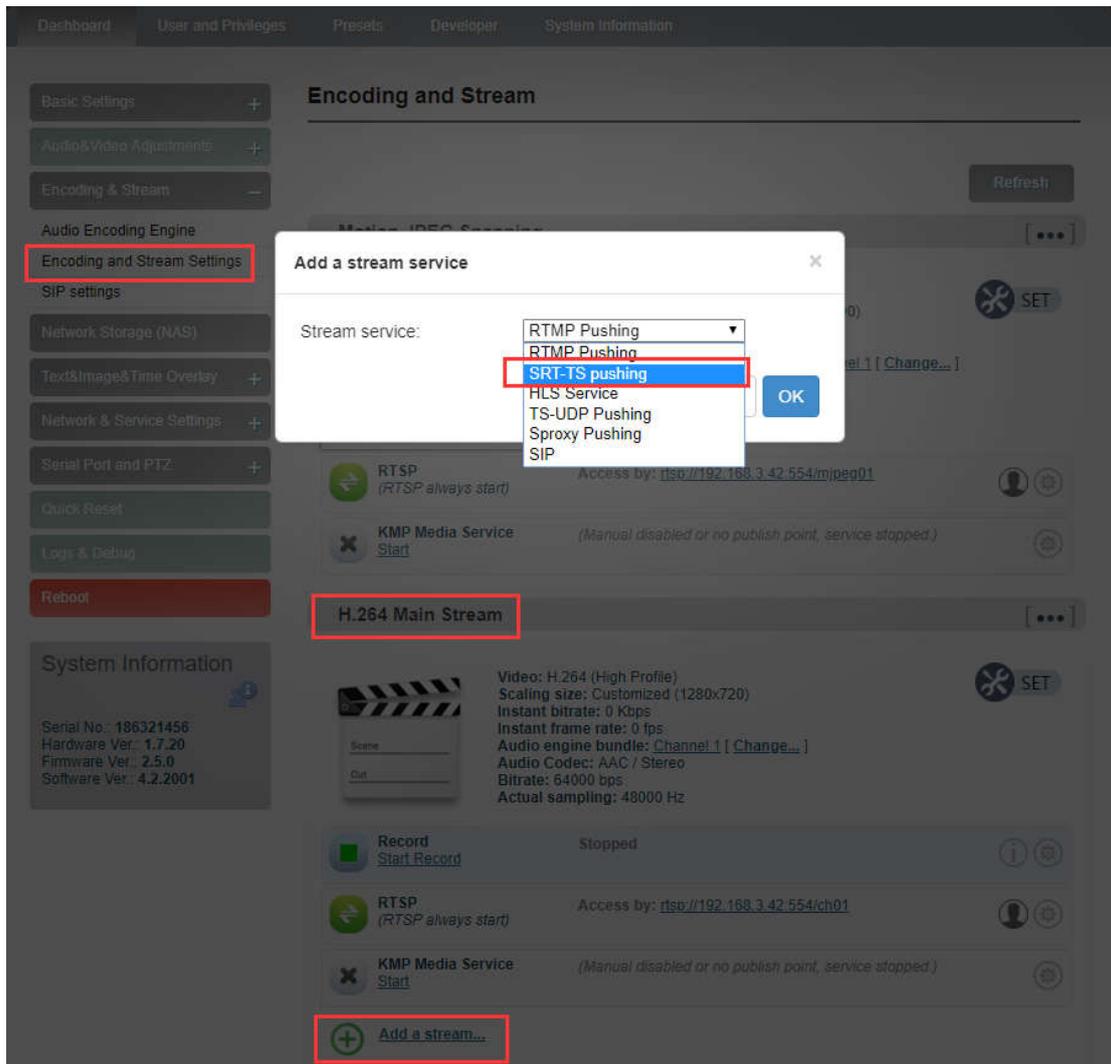
Video: H.264 (High Profile)
Scaling size: Default (1920x1080)
Instant bitrate: 9759 Kbps
Instant frame rate: 60 fps
Audio engine bundle: [Channel 1](#) [[Change...](#)]
Audio Codec: AAC / Stereo
Bitrate: 64000 bps
Actual sampling: 48000 Hz



<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"></div> <div> <p>Record Start Record</p> </div> </div> <div style="margin-left: 20px;"> <p>Stopped</p> </div> <div style="text-align: right;">   </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"></div> <div> <p>RTSP <i>(RTSP always start)</i></p> </div> </div> <div style="margin-left: 20px;"> <p>Access by: rtsp://192.168.3.155:554/ch01</p> </div> <div style="text-align: right;">   </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"></div> <div> <p>KMP Media Service Start</p> </div> </div> <div style="margin-left: 20px; color: #ccc;"> <p><i>(Manual disabled or no publish point, service stopped.)</i></p> </div> <div style="text-align: right;">  </div>
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"></div> <div> <p>HLS Service Stop</p> </div> </div> <div style="margin-left: 20px;"> <p>Publish point: http://192.168.3.155/hls/main/playlist.m3u8</p> </div> <div style="text-align: right;">   </div>

6.4.3.6 SRT-TS pushing

- 1) Click “Encoding & Stream”—“Encoding and Stream Settings”—“H.264 main stream”—“Add a stream”. Choose “SRT-TS pushing”, click “OK” and add a SRT service.



- 2) Click the icon  for SRT configuration.



3) Fill in the pushing address and port, click “Save”. Then SRT pushing is working.

Primary Stream SRT-TS Pushing Parameters

Open SRT service	<input type="text" value="Yes"/>
Handshake Mode	<input type="text" value="CALLER"/>
Address	<input type="text" value="192.168.3.139"/>
Port	<input type="text" value="6001"/> <small>(Please fill in the value of 0-65536)</small>
Transport Delay(ms)	<input type="text" value="125"/> <small>(Please fill in the value of 0-5000)</small>
Advanced Settings	<input type="text" value="Open"/>
Encryption mode	<input type="text" value="AES-128"/>
AES Key	<input type="text"/> <small>(Please fill in 10-32 letters or numbers.)</small>
Bandwidth Overhead(%)	<input type="text" value="25"/> <small>(Please fill in the value of 0-100)</small>
Load Size	<input type="text" value="1316"/> <small>(Please fill in the value of 0-1456)</small>

Handshake mode: Caller、Listener、Rendezvous;

Address: Set IP address of the receiving port;

Port: Set the listening port corresponding to the receiving port;

Transport delay: Set it based on the performance of the current network, the delay value can be set on both the SRT source device and the SRT target device. The final SRT transmission delay will be the larger one of the two values. Default is 125ms;

Advanced settings: Open and Close;

Encryption mode: AES-128, AES-192, AES-256;

AES key: encryption AES key can be 10-32 letters or numbers combination;

Bandwidth overhead: It is set as the percentage value based on network link quality. Using this value to multiply the total bitrate of the audio and video encoded by the encoder, this will get the occupied maximum bandwidth allowed by Bandwidth Overhead. This value plus the total of video and audio bitrate is the threshold of the current SRT transmission bandwidth, and also the maximum bandwidth that SRT stream can be used. From the perspective of "overhead", it is the extra "invalid" bandwidth to be used in addition to the media content required for transmission (which can be understood as the payload), but it is different from our common protocol overhead, TCP header overhead, UDP header overhead. The bandwidth overhead here is not a fixed 20~60 bytes TCP header overhead or 8 bytes UDP header overhead. It changes in real time according to the network conditions. The worse the network link conditions are, the more overhead needs for normal transmission. The range is 5%~100%, and the default overhead is 25%;

Load size: Sending data packet size, it is optimal that the receiving port should equip with the same size. The default size is 1316, the optimal packet for the codec.

Network highest packet loss rate (%)	RTT Multiplier	BW Overhead	The lowest SRT delay (when RTT ≤ 20ms)
≤ 1	3	33	60
≤ 3	4	25	80
≤ 7	5	20	100
≤ 10	6	17	120

Note: Below format is the reference delay value under different packet loss. When RTT > 20ms, it requires to increase the delay appropriately.

- Save the settings, then a SRT-TS pushing address will be added. The encoder starts to initiate a handshake connection to the receiving port.



6.5 Network Storage (NAS)

NAS is a Disk Arrays connected by network; it has all the main characteristics of disk arrays: high capacity, high efficiency and high reliability.

Open NAS Manager, click “add NAS”, then fill in the corresponding parameters.

Add NAS ✕

ID(Alphabet/number):

Name:

NAS Type: ▼

Host:

Volume/Mount point:

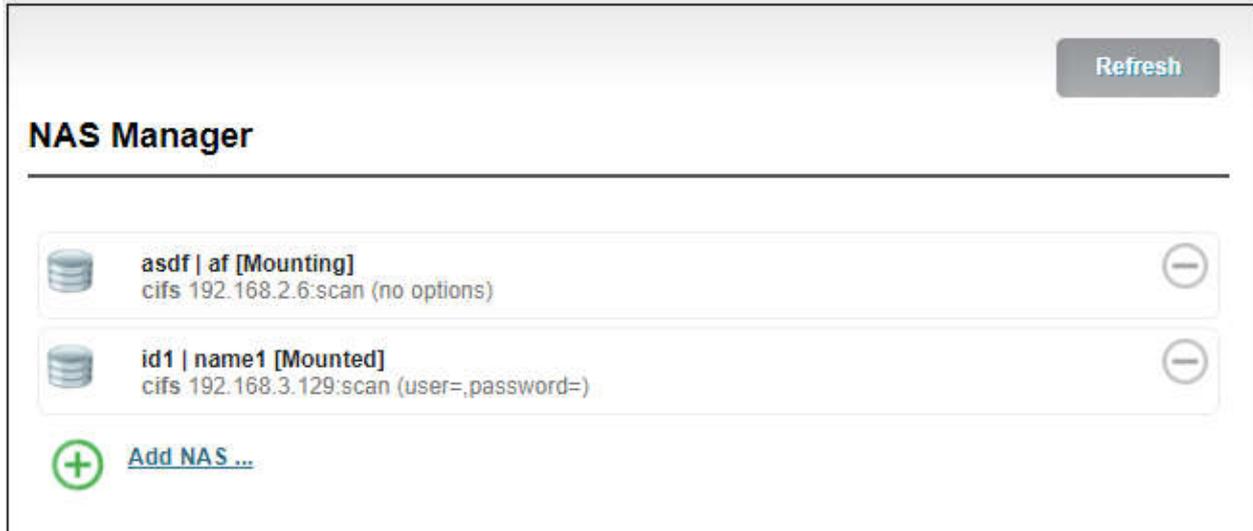
Mount options:

- ID/ Name: Any Alphabet/number.
- NAS Type: NFS or CIFS (CIFS is a shared protocol for network connection, which requires high reliability of network transmission, TCP/IP is usually adopted; NFS is transport independent. TCP or UDP is adopted; One of NFS’s disadvantages is that it requires the user to install a special software,

while CIFS is integrated inside the OS, and no additional software is needed).

- Host: IP address of the Host.
- Volume/Mount point: Storage location on the host.
- Mount options: Settings about the user name and password.

NAS manager will show “Mounted” if NAS connection has been established, and there is a RECORD file under the Mount point. If the connection is abnormal, it will be displayed as “Mounting”.

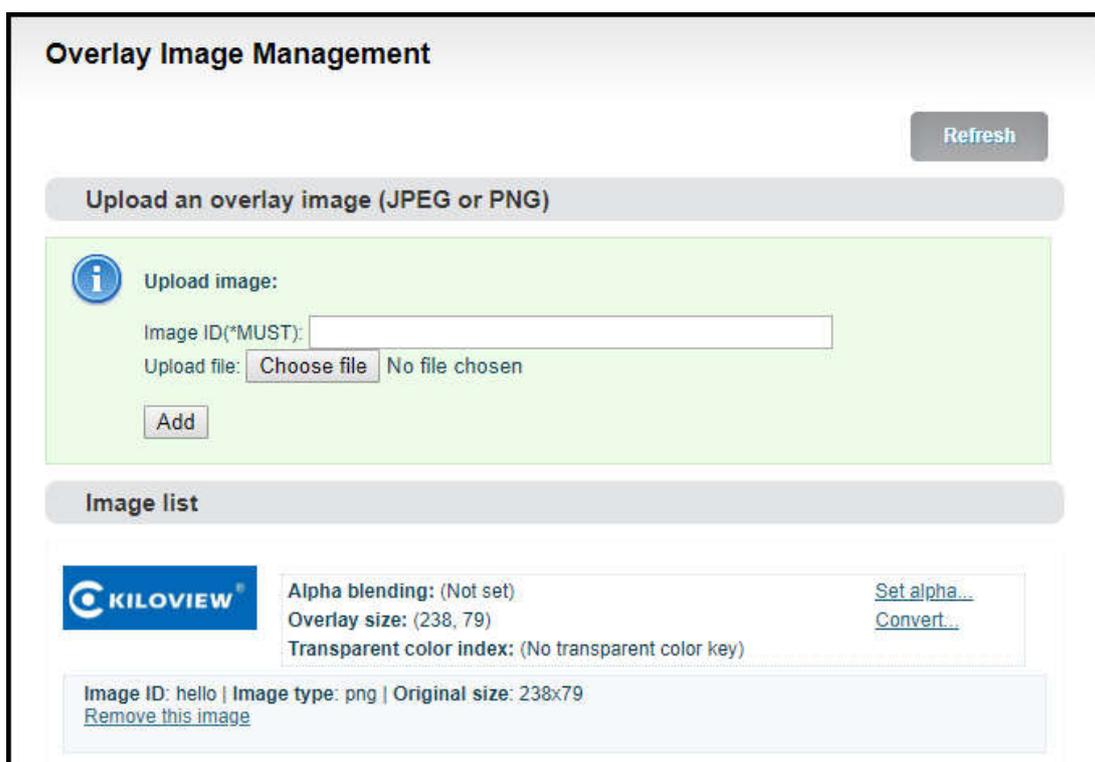


6.6 Text/ Image/Time overlay

Please open the “Overlay image management” to upload an image first if you want to make image overlay; if text or time overlay, you can set the overlay function directly.

6.6.1 Overlay Image Management

Enter “Image Management” ---fill in “Image ID-- Choose the image that you want—click “Add”, then image is uploaded to the Encoder storage. You can check the image and information listed under the Image list.



You can change the parameters after uploading the image

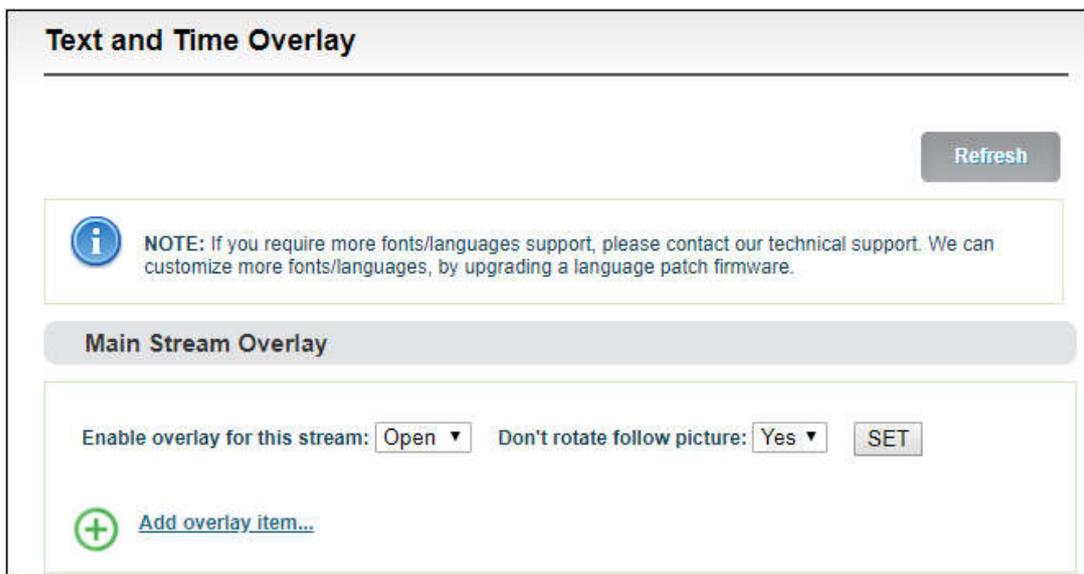
Set alpha blending: Value range is 0-255, 0 is full transparent and 255 is no alpha blending.

Convert:

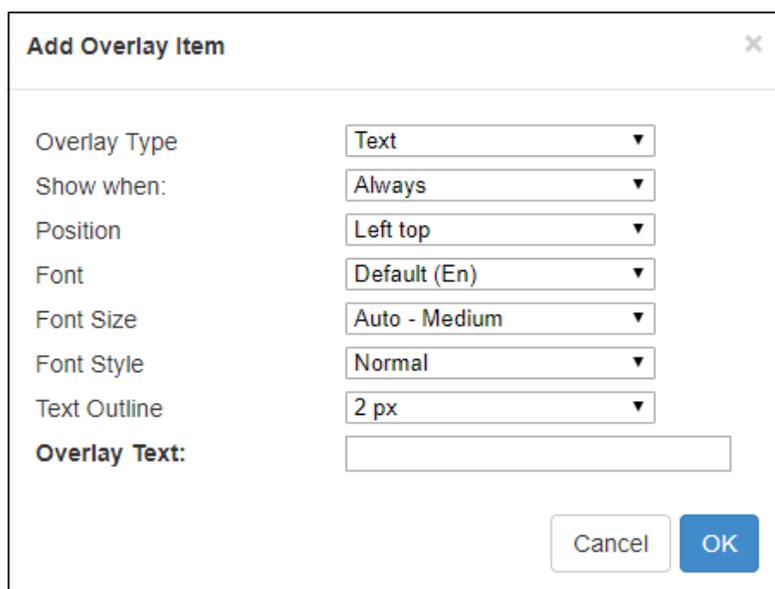
- Image size: If width/height set to 0, it will overlay the image as original size.
- PNG transparent threshold: If the original PNG transparent level is less than the threshold value, overlay that area as full transparent. Set a reasonable value can make the image border be smooth.
- Transparent color index: Manually specify an index color to erase background. Set tolerance (0%~100%) to control the similar color range selection. In most cases, transparent PNG images do not need to be processed manually.

6.6.2 Overlay function

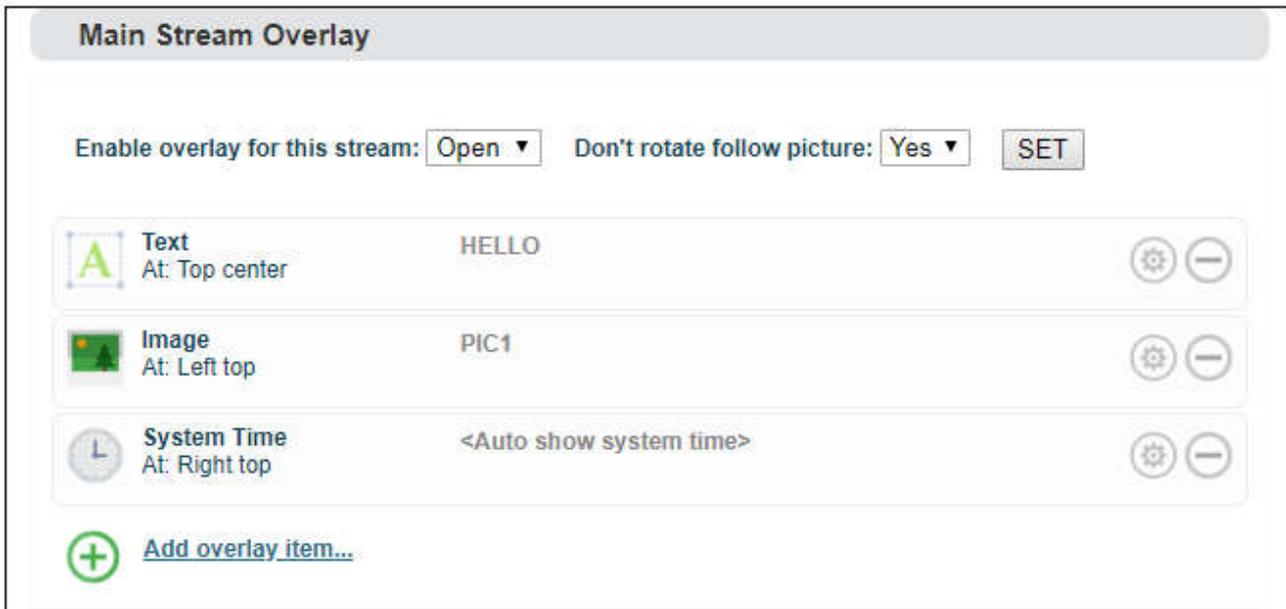
Go to the overlay settings page, in the settings of “Main stream”, please choose “open” to enable overlay, for “Don't rotate follow picture”, please choose yes or no .Then choose “Add overlay item” to set overlay functions for “Text”, “Time” and “Image” respectively. You can set multiple overlays at the same time.



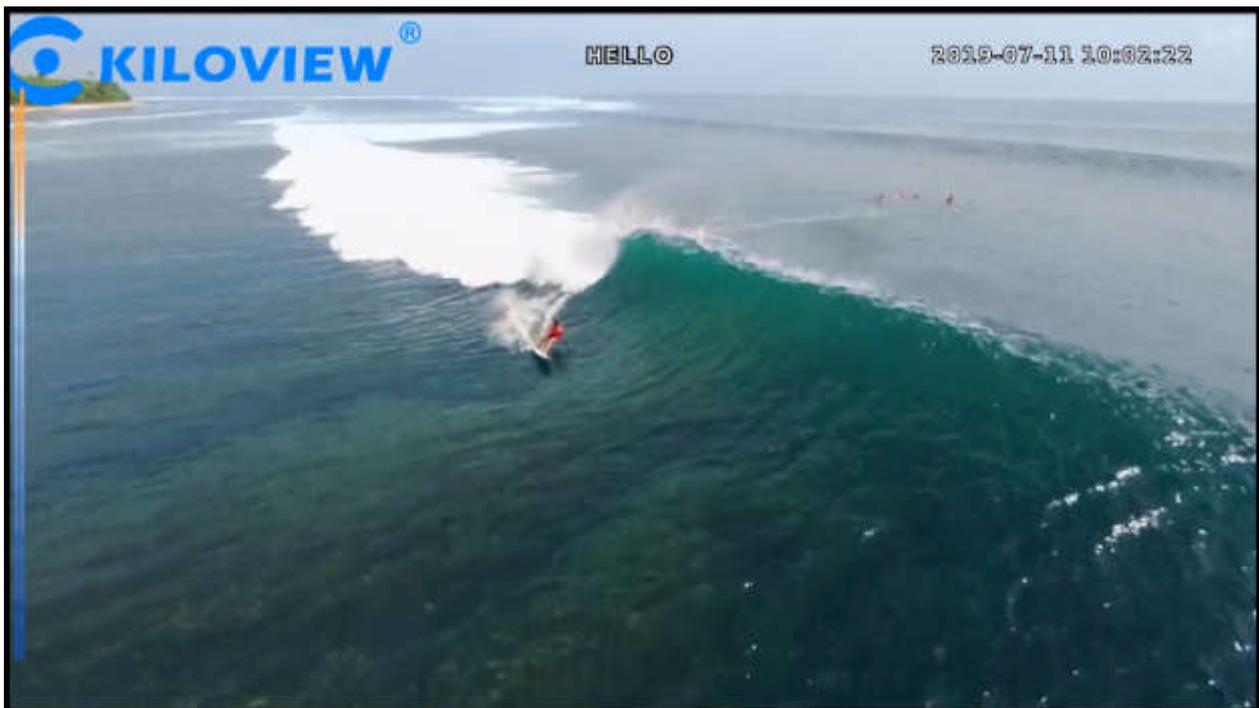
Add overlay item (text)



For every overlay, you can set the terms of overlay, position, font and font size, image or text content and so on. After adding that, it will be shown as follows:



After encoding, the overlay will be shown as follow:



 **Note:**

- The resolution of uploaded image cannot be over the video. If the resolution of the video is 1920*1080, and the uploaded image is 3840*2160, then the image overlay will fail to display.
- Please pay attention to the overlay position, if you add image, text and time with the same position, then some overlay may fail to display.
- If the added image occupies the majority of the video screen, the actual bitrate and the set bitrate will be greatly reduced due to the low screen dynamic fluctuation.
- For the image format, only JPEG and PNG supported.

6.7 Service Configuration

6.7.1 Web Service Configuration

The default web service port is 80 (https port is 443). You can change it (range: 1-65535) accordingly.

Web Service Configuration

Change the web service port

The default web service port is 80 and https port is 443, but you can change it (range: 1-65535).

NOTE: By HTTPS, if the web browser prompts privacy errors, you need add exception for correct accessing!

Web Service Port:

HTTPS Port:

⚠ Note: By HTTPS, if the web browser prompts certificate errors which are caused by the browser certificate security authentication, you will need to add it to the safe list of the browser.

6.7.2 Onvif Service Configuration

Onvif (Open Network Video Interface Forum) is an IP-based security standard. Start the Onvif service to let a security-system which based Onvif can discovery/manage this device, and get the video streams. Onvif is a 'Web Service' based protocol, you can even write your program to control this device by Onvif web service API.

Onvif Service Configuration

About Onvif Service

Onvif (Open Network Video Interface Forum) is an IP-based security standard. Start the Onvif service to let a security-system which based Onvif can discovery/manage this device, and get the video streams.

You can find informations about Onvif at <http://www.onvif.org/>. Onvif is a 'Web Service' based protocol, you can even write your program to control this device by Onvif web service API.



Onvif Service Enable:

Onvif Service Port:
(NOTE: Don't let it be same as current web service port. After version 3.99, Onvif can be accessed by default web service port, so you need not set this port specially. This setting is for compatible with old version only.)

Device Discoverable:

Location info. in Scopes:

Device name in Scopes:
(Leave it empty to use the default device name)

Authorization:

Password of 'admin':
(Only change password for user 'admin'. You can manage other users by Onvif tool.)

6.7.3 Telnet Service Configuration

Telnet service listens on port 23 for remote connection and debugging of devices. For security reasons, you can choose to close telnet services.

Telnet service

Open or close telnet service

Telnet is a remote control & debug service, it listens at TCP port 23. For security reason, you can choose to close telnet service.

Telnet service: ▼

6.8 Serial Ports and PTZ

6.8.1 Serial Ports

With USB to RS232/RS422/RS485 adaptor (cable), after connecting to USB port, if the device and identify the serial port correctly, USB port will be listed at “Device”, then you can set the corresponding serial port parameters.

USB to RS232/RS485/RS422 Serial Port

Device: ▼ [Refresh serial ports](#)

Baudrate: ▼

Data bits: ▼

Parity: ▼

Stop bits: ▼

XON/XOFF: ▼

RTS/CTS: ▼

 **Note:** The encoder can automatically identify the USB serial port conversion device of universal USB to Serial/FDTI chip/PL2303 chip. If the USB to RS232/RS422/RS485 converter (line) you inserted cannot be recognized and the converter chip is not supported by default, please replace the serial line.

6.8.2 PTZ Setting

The encoder can control the PTZ camera via Sony Visca, Pelco-D, Pelco-P protocols; you can also set the control speed.

PTZ(Pan/Tilt/Zoom) Setting

PTZ Protocol:

PTZ Address:

Default Pan Speed:

Default Tilt Speed:

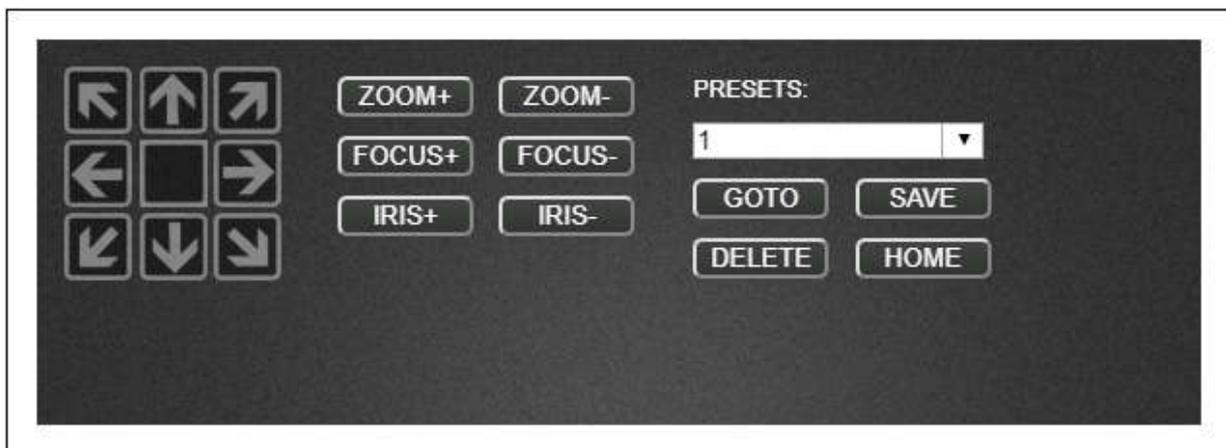
Default Zoom Speed:

Default Focus Speed:

Default Iris Speed:

6.8.3 Control Panel

Through the web page of the encoder, you can control the movement, zoom and focus of the camera in all directions.



6.9 Quick Reset and Reboot

6.9.1 Quick Reset

"Quick Reset" is used to quickly reset the video encoding service of the encoder, normally it's used to parameters come into force after modification or encoding abnormal, the current encoding service will be stopped and it will take about 3 seconds.

6.9.2 Reboot

“Reboot” is used to restart software, which is equivalent to restarting the device. It will take about 3 minutes.

6.10 Logs and Debug

System logs are available for download, which can be provided to technical service engineers for technical analysis.



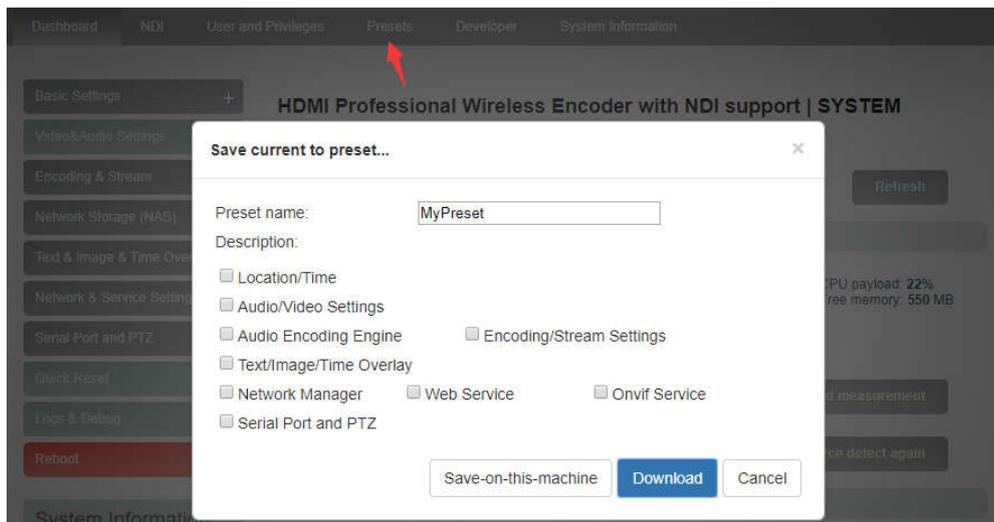
The screenshot displays a web interface titled "Logs". At the top, there are five buttons for different log categories: "Codec", "Streaming", "Web", "Buttons/Leds/Display", and "Kernel". Below these are two buttons: "History Logs" and "Pack Current Logs". A "Refresh" button is located on the right side. The main area shows a list of log entries:

```
[07-04 16:48:37] (L3) StopSession (258) RECORD-GROUP: Stop session of 0x1b59420
[07-04 16:48:37] (L3) doStopGettingFrames (322) video: Stopped get frames.
[07-04 16:48:37] (L3) doStopGettingFrames (322) audio: Stopped get frames.
[07-04 16:48:37] (L3) StopPlaying (639) RECORD: The file handler is destroyed. session:
```

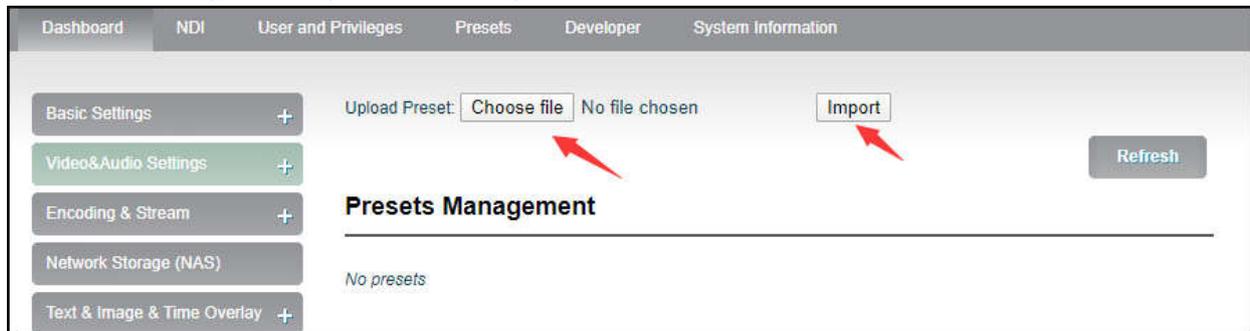
6.11 Preset configuration

When there are multi-device in your system and required to set the same configurations, you could save or download the current configuration parameters to your device, then upload to other devices. After the device is restarted, the preset saved parameters will take effect.

"Preset configuration" - "Save current configuration", you can choose to save the required parameters and download, and the configuration name is customized.



When there are other devices on site or the parameters of your device are restored to the factory, you want to use the parameters previously set. You can upload the saved configuration file in "manage or load preset configuration", restart the device after loading, and the parameter configuration will take effect.



Thank you for reading.

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