AVMATRIX SE2017 SDI HDMI Encoder and Recorder User Manual

AVMATRIX

SDI/HDMI ENCODER & RECORDER

SE2017
SDI/HDMI ENCODER & RECORDER

Contents

USING THE UNIT SAFELY

Before using this unit, please read below warning and precautions which provide important information concerning the proper operation of the unit. Besides, to assure that you have gained a good grasp of every feature of your new unit, read below manual. This manual should be saved and kept on hand for further convenient reference.

Warning and Cautions

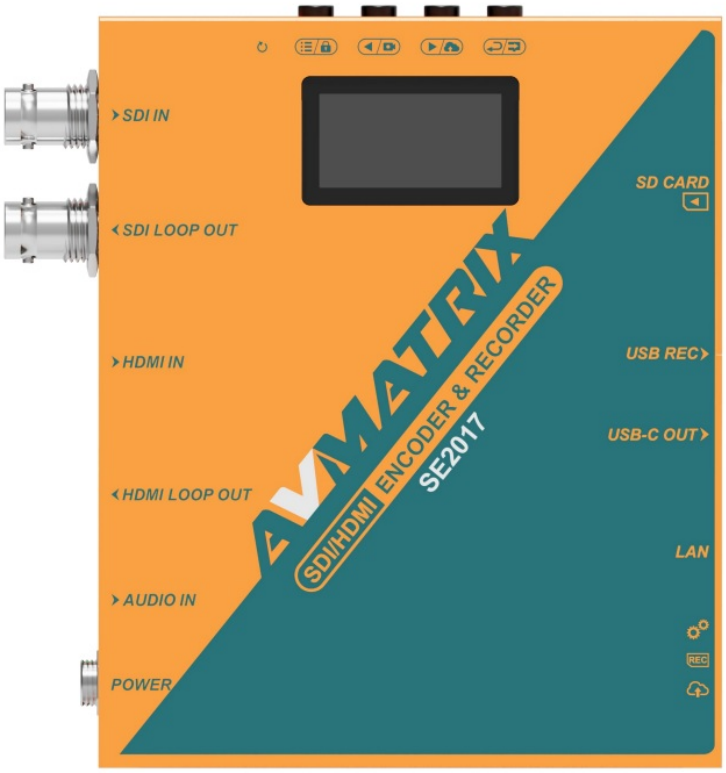
- To avoid falling or damage, please do not place this unit on an unstable cart, stand, or table.
- Operate unit only on the specified supply voltage.
- Disconnect power cord by connector only. Do not pull on cable portion.
- Do not place or drop heavy or sharp-edged objects on power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check power cord for excessive wear or damage to avoid possible fire / electrical hazards.
- Ensure unit is always properly grounded to prevent electrical shock hazard.
- Do not operate unit in hazardous or potentially explosive atmospheres. Doing so could result in fire, explosion, or other dangerous results.
- Do not use this unit in or near water.
- Do not allow liquids, metal pieces, or other foreign materials to enter the unit.
- Handle with care to avoid shocks in transit. Shocks may cause malfunction. When you need to transport the unit, use the original packing materials, or alternate adequate packing.
- Do not remove covers, panels, casing, or access circuitry with power applied to the unit! Turn power off and disconnect power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.
- Turn off the unit if an abnormality or malfunction occurs. Disconnect everything before moving the unit.

Note: due to constant effort to improve products and product features, specifications may change without notice.

BRIEF INTRODUCTION

1.1.Overview

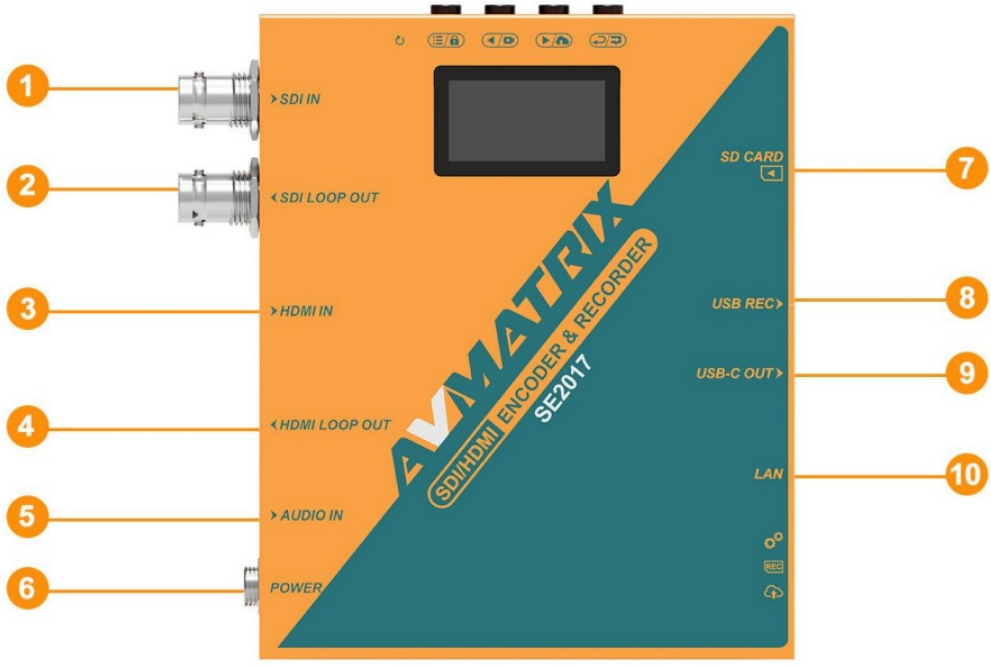
SE2017 is a high-definition audio and video encoder that can compress and encode SDI and HDMI video and audio sources into IP streams. These streams can then be transmitted to a streaming media server via a network IP address for live broadcasting on platforms such as Facebook, YouTube, Ustream, Twitch, and Wowza. It also supports USB and SD card recording feature, and it provides SDI and HDMI video source loop-out for easy monitoring on another monitor.



1.2.Main Features

- Record, stream and capture multi-function three-in-one
- HDMI and SDI inputs and loopout
- Line audio input embedded
- Encoding bit rate up to 32Mbps
- USB/SD card recording, MP4 and TS file format, up to 1080P60
- Multiple streaming protocols: RTSP, RTMP(S), SRT(LAN), HTTP-FLV, Unicast, Multicast
- USB-C capture, supports up to 1080P60
- Supports PoE and DC power

1.3.Interfaces



1	SDI In
2	SDI Loop Out
3	HDMI In
4	HDMI Loop Out
5	Audio In
6	DC 12V In
7	SD Card (for recording)
8	USB REC (for recording)
9	USB-C Out (for capturing)
10	LAN (for streaming)

1.4.Button Operation

1		**Reset:** Insert the pin and hold it for 3 seconds until restarted to restore the factory setti ngs.
2		**Menu:** Short press to access the menu. Long press to lock the menu.
3		**Back/REC:** Short press to go back. Long press (5 seconds) to start recording.
4		**Next/Stream:** Short press to go forward. Long press (5 seconds) to start streaming.
5		**Return:** Return to previous page.

SPECIFICATIONS

CONNECTIONS	
Video Input	HDMI Type A x1, SDI xl
Video Loop Out	HDMI Type A x1, SDI x1
Analog Audio In	3.5mm (line in)x 1
Network	RJ-45 x 1 (100/1000Mbps self-adaptive Ethernet)
RECORD	
REC SD Card Format	FAT32/ exFAT/ NTFS
REC U Disk Format	FAT32/ exFAT/ NTFS
REC File Segment	1/5/10/20/30/60/90/120mins
Recording Storage	SD Card/USB Disk
STANDARDS	
HDMI In Format Support	1080p 60/59.94/50/30/29.97/25/24/23.98 1080i 50/59.94/60, 720p 60/59.94/50/30/29.97/25/24/23.98, 576i 50, 576p 50, 480p 59.94/60, 480i 59.94/60
SDI In Format Support	1080p 60/59.94/50/30/29.97/25/24/23.98 1080i 50/59.94/60, 720p 60/59.94/50/30/29.97/25/24/23.98, 525159.94, 625150
USB capture out	Up to 1080p 60Hz
Video Bitrate	Up to 32Mbps
Audio Coding	ACC
Audio Encoding Bitrate	64/128/256/320kbps
Encoding Resolution	Main Stream: 1920×1080, 1280×720, 720×480 Sub Stream: 1280 x 720, 720×480
Encoding Frame Rate	24/25/30/50/60fps
SYSTEMS	
Network Protocols	RTSP, RTMP(S), SRT(LAN), HTTP-FLV, Unicast, Multicast
Configuration Management	Web configuration, Remote upgrade
ETHERS	
Power	DC 12V 0.38A, 4.5W
PoE	Support PoE(IEEE802.3 af), PoE+(IEEE802.3 at), PoE++ (IEEE802.3 bt)
Temperature	Working : -20°C-60°C, Storage : -30°C-70°C
Dimension (LWD)	104×125.5×24.5mm
Weight	Net weight: 550g, Gross weight: 905g
Accessories	12V 2A power supply

NETWORK CONFIGURATION AND LOGIN

Connect the encoder to network via a network cable. The encoder can auto obtain a new IP address when it is using DHCP on the network.
Visit encoder's IP address through an Internet browser to login the WEB page for setting up. The default Username is admin, and password is admin.

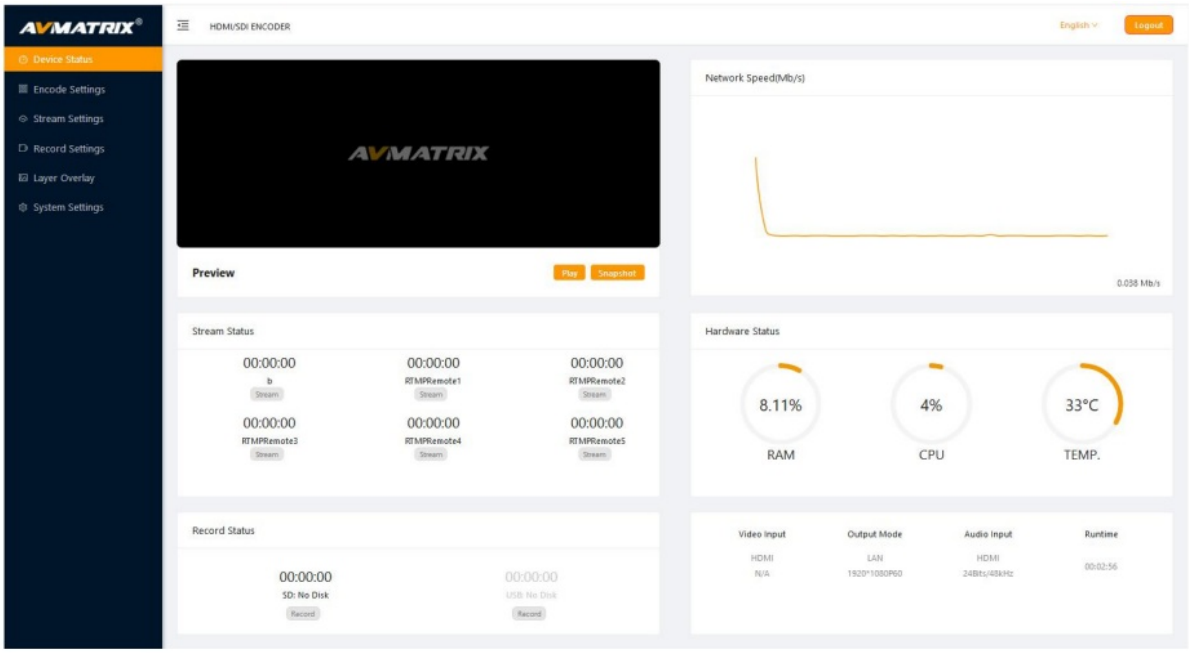
MANAGEMENT WEB PAGE

4.1.Language Settings

There are languages of Chinese ( ) and English for option on the top-right corner of the encoder management web page.

4.2.Device Status

The status of the network speed, recording status, streaming status, and hardware status can be checked on the web page. And users also can have a preview on the streaming video from the preview video.
Preview: On this page, you can monitor the streaming images.
NetworkSpeed(Mb/s): Easily check the current network speed at any time.
Stream status: Learn more detailed information about each stream, including its status, time, protocol, and name.
Hardware Status: Monitor the device's RAM, CPU usage, and temperature in real-time to ensure smooth operation.
Record Status Conveniently check the recording status and time on SD card and USB disk, providing timely insights into the device's recording activities.

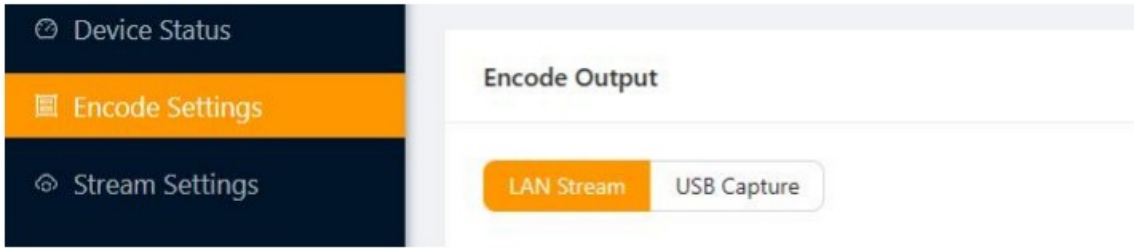


4.3.Encode Settings

The encoding settings can be set on the encoder management web page.

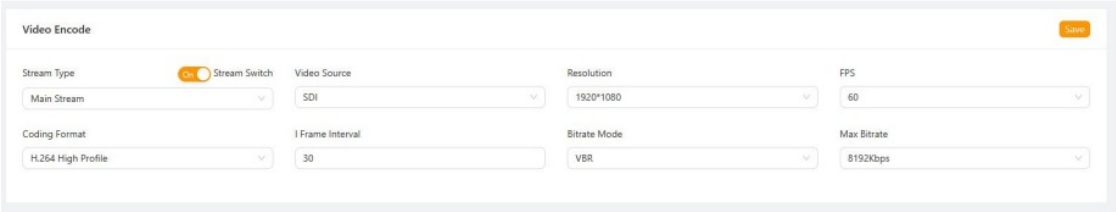
4.3.1. Encode Output

The encoder has a two-way function, select LAN Stream or USB capture method for encoding output, and the machine will restart when switching.



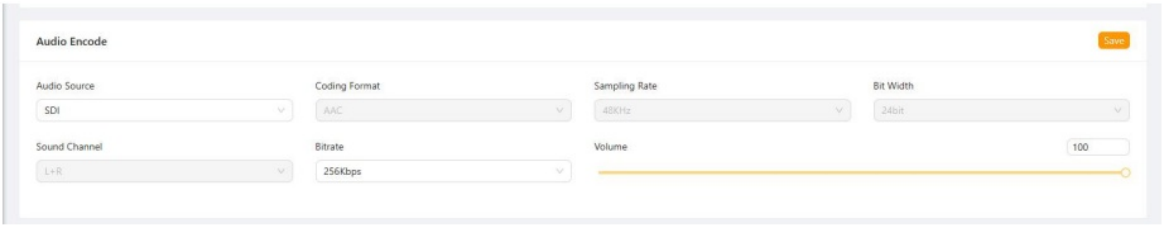
4.3.2. Video Encode

Set the parameters of main stream and sub-stream for video encoding. Select SDI/HDMI video source.
The resolution supports 1920*1080, 1280*720, 720*480. The bitrate mode supports VBR, CBR. These settings can also be operated via the buttons on the panel.



4.3.3. Audio Encode

The encoder supports audio embedding from an external analog input. Therefore, the audio can be from SDI/ HDMI embedded audio or analog Line in audio. Audio Encode Mode supports ACC.



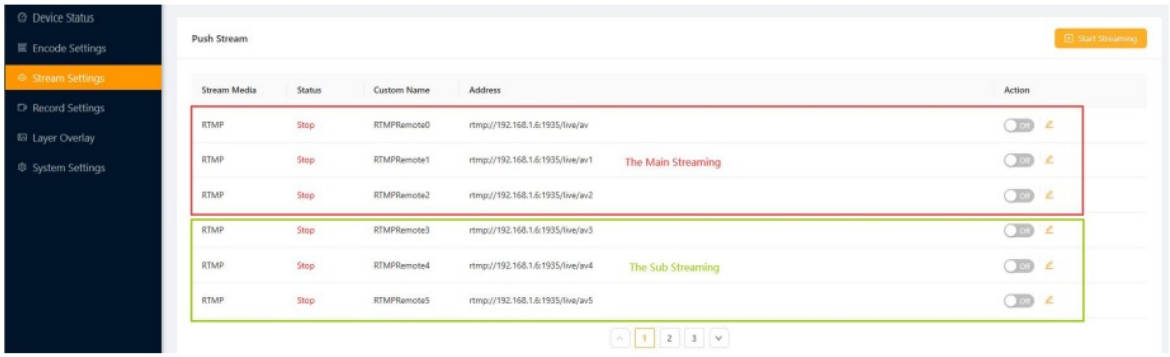
4.4.Stream Settings

4.4.1. Main Stream Settings

The main stream can be set in the encode settings. After turning on the main stream switch and setting the corresponding parameters, you can start streaming by entering the streaming address in the first three RTMPs. The main stream supports simultaneous streaming to three platforms.
Please note that only one of HTTP/ RTSP/ UNICAST/ MULTICAST can be enable at same time.

4.4.2. Sub-Stream Settings

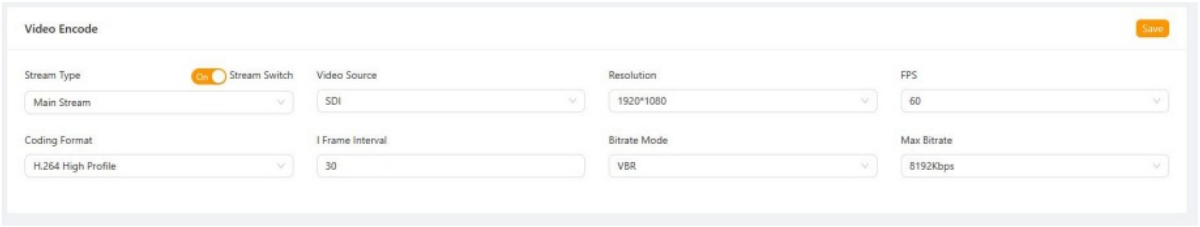
The sub-stream can be set in the encode settings. After turning on the sub-stream switch and setting the corresponding parameters, you can start streaming by entering the streaming address in the last three RTMPs. The sub-stream supports simultaneous streaming to three platforms.
Please note that only one of HTTP/ RTSP/ UNICAST/ MULTICAST can be enable at same time.
Main stream resolution support 1920*1080, 1280*720, 720*480. FPS support 24/25/30/50/60. Bitrate support up to 32Mbps. Sub stream resolution support 1280*720, 720*480. FPS support 24/25/30/50/60.
Bitrate support up to 32Mbps.



How to configure the encoder for YouTube live streaming

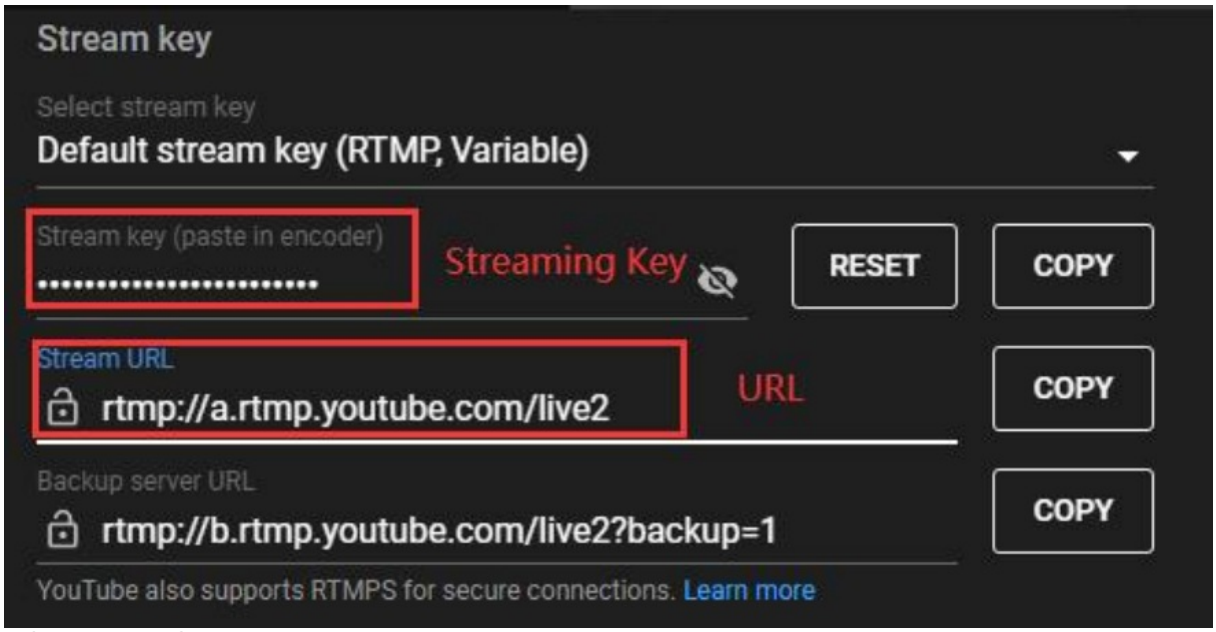
Step 1: Adjust Encode Settings

Users can adjust the Bitrate, Rate control, Encoding, Resolution, FPS of the live video in the Encode settings according to the actual situation. For example, if the network speed is slow, the Bitrate Control can be switched from CBR to VBR and adjust the Bitrate accordingly. These settings can also be adjusted from the panel.



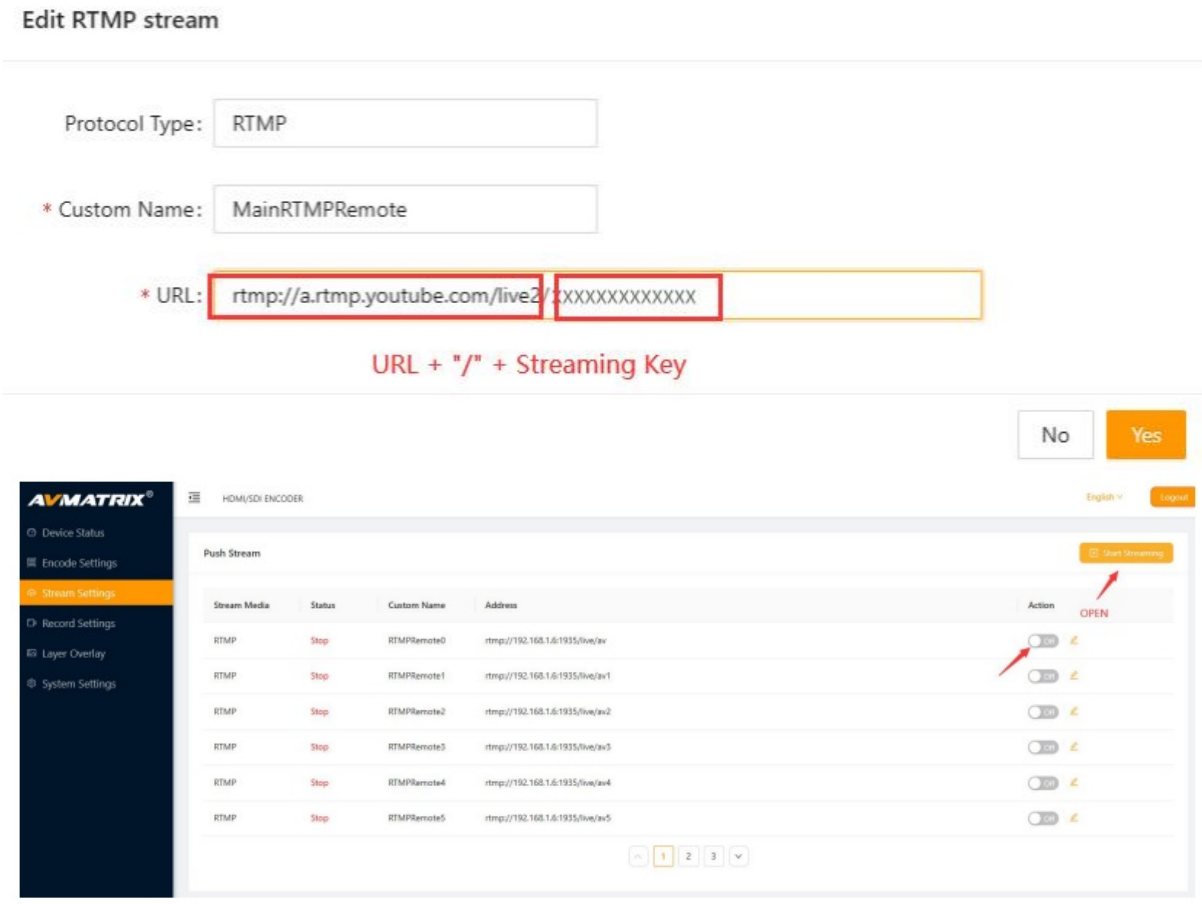
Step 2: Obtain Stream URL and Streaming Key

Access the live streaming settings of the stream platform you are using and obtain and copy the Stream URL and Streaming Key.



Step 3: Connect to Steam Platform

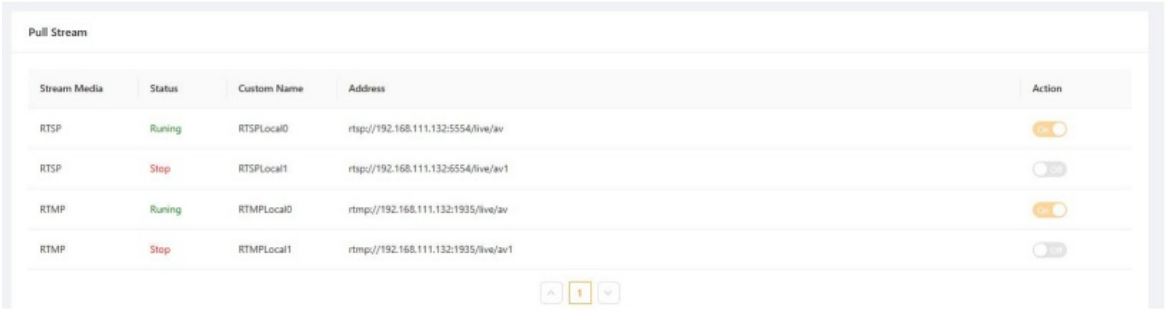
Access the encoder's web page and select "Stream settings" section, then paste the Stream URL and Streaming Key into the URL fields, connecting them with a "/". Enable the "Switch" option and click "Start Streaming" to initiate the live stream.



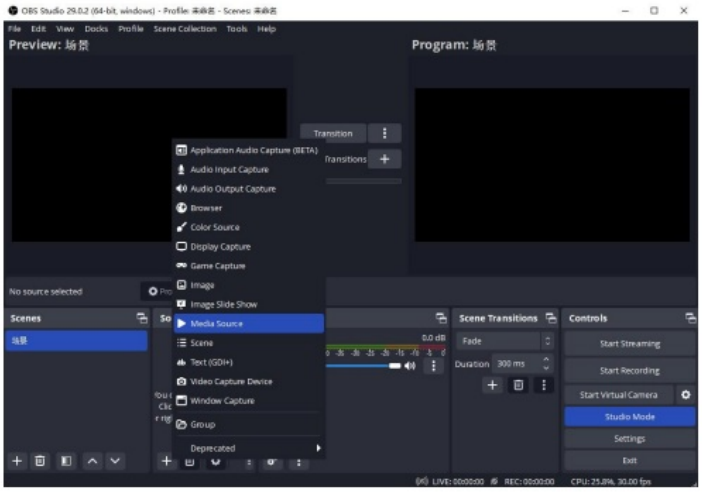
4.4.3. Pull Streaming

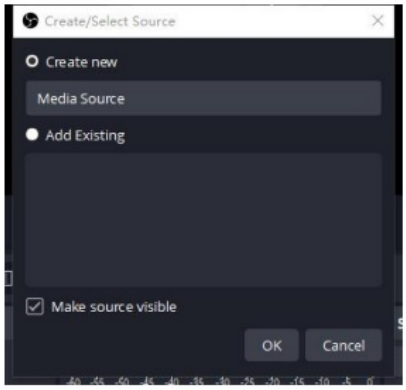
Access the encoders web page and select "Stream settings" section, then obtain and copy the "Local Address

URL” for pull streaming.
Open a video player app like OBS, PotPlayer or Vmix, and paste the local address URL into the designated field to initiate the local streaming.

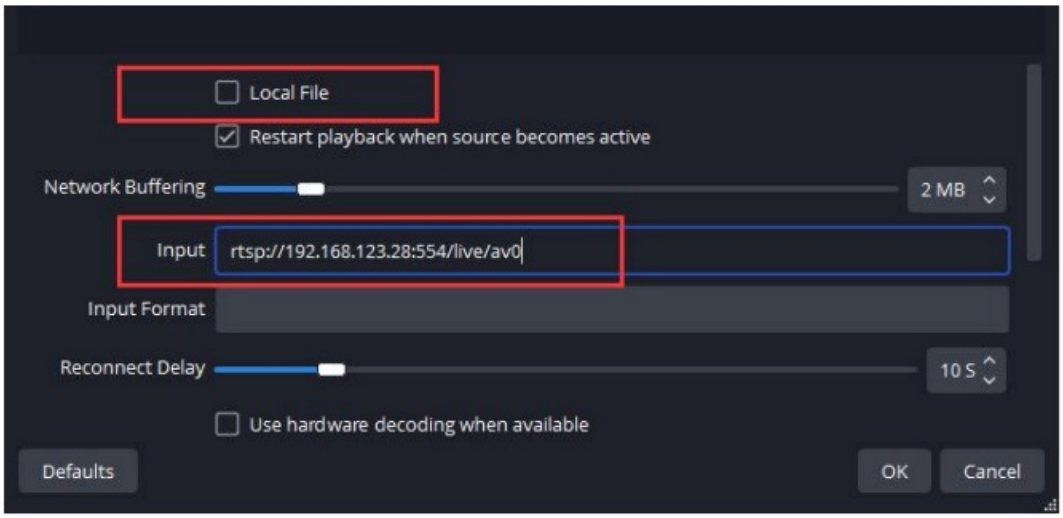


How to configure the encoder for pull stream using OBS
Step 1: Open OBS Studio. Click the “+” icon in the “Sources” section and select “Media Source” to add a new media source.”

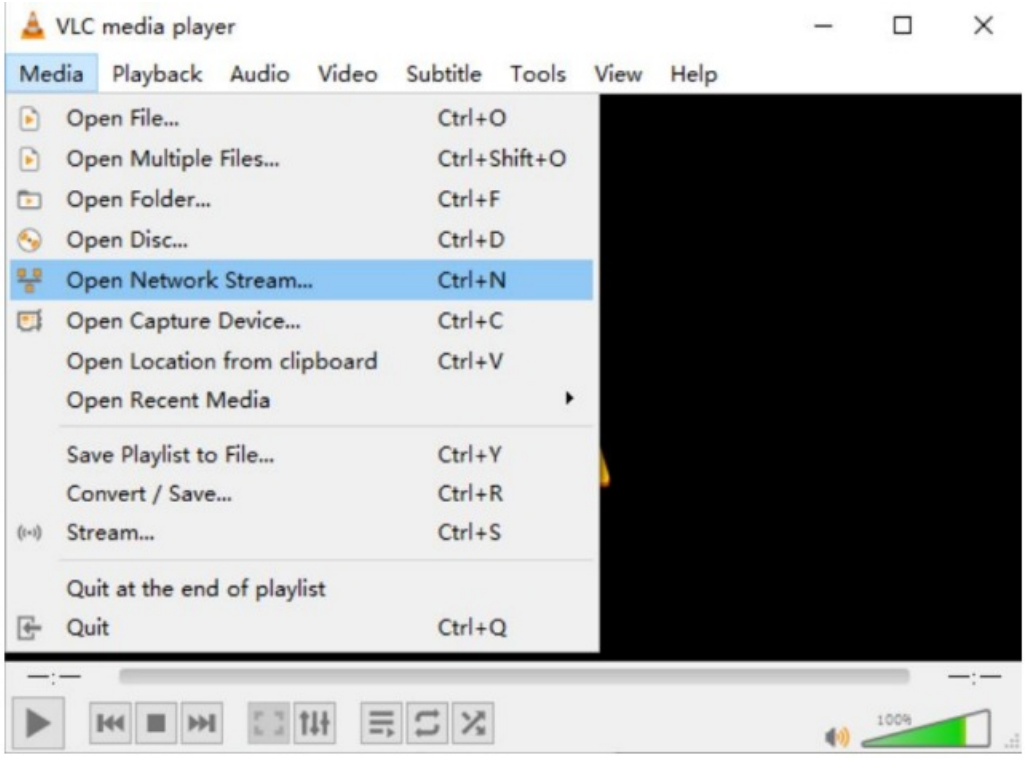




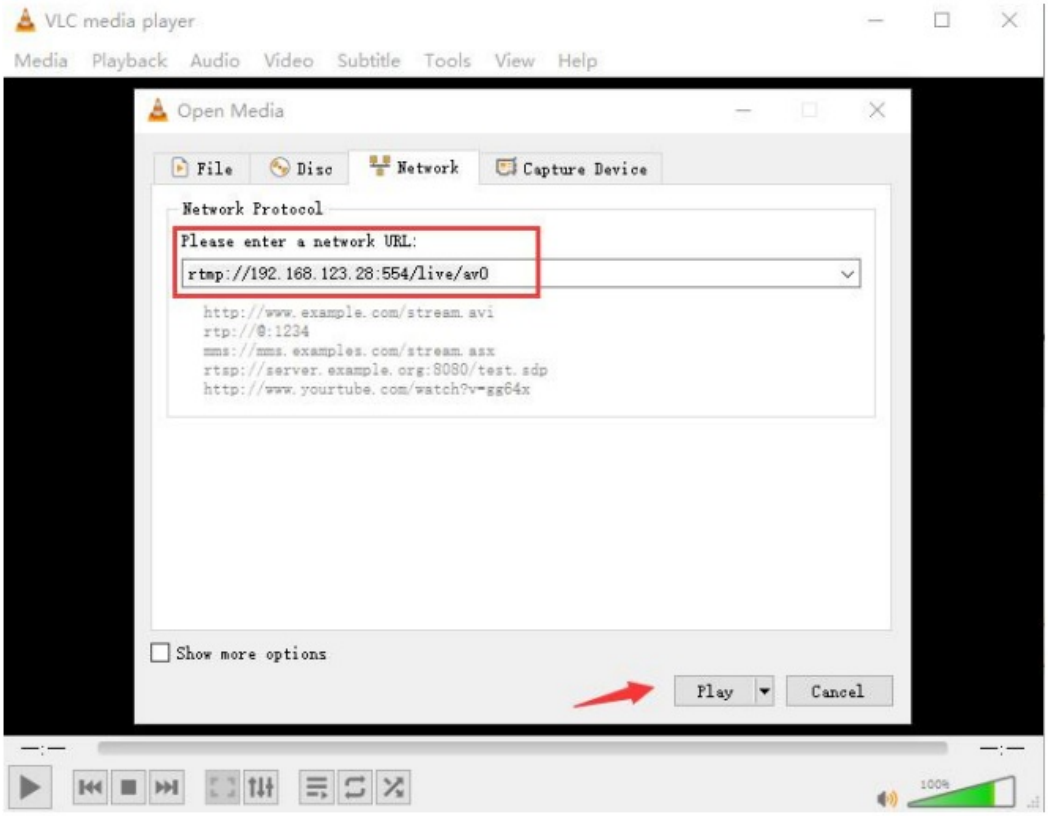
Step 2: Cancel the local file setting, paste the “local address URL” into the “Input” field, and click “OK” to complete the local streaming setup.



How to Play the RTSP Stream Using VLC Player:
Step 1: Open VLC Player, and click the “Media” section and select “Open Network Stream”.



Step 2: Enter the RTSP address of the stream in the “Network” section of the pop-up window. (av0 means main stream; av1 means sub stream)

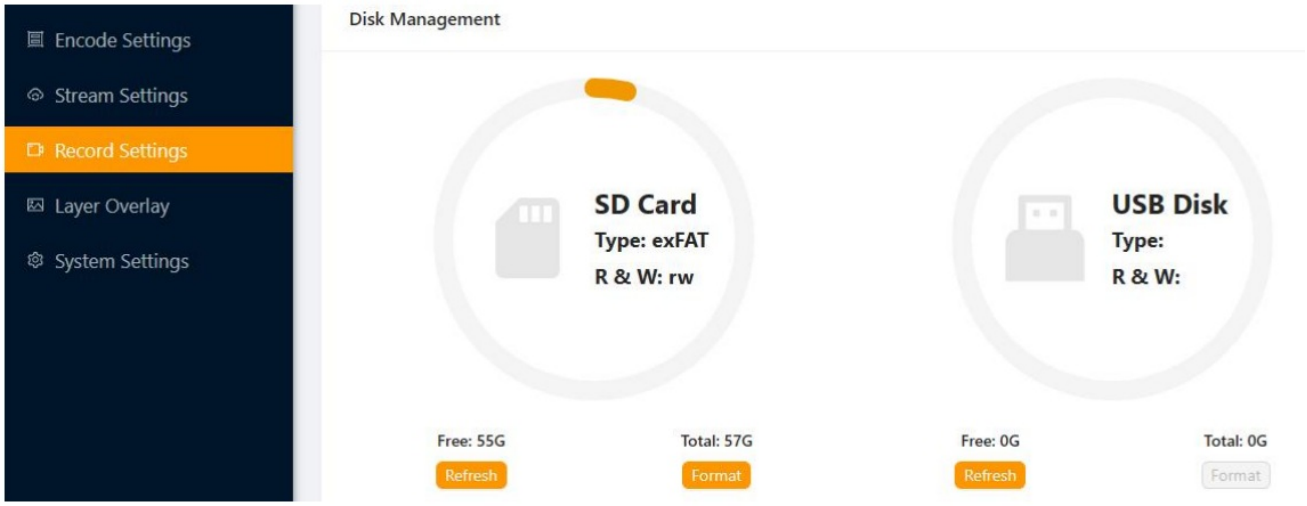


4.5.Record Settings

The encoder offers two recording methods: via USB disk or SD card.

4.5.1. Disk Management

After inserting the USB disk or SD card into the device, the web page displays the reading and capacity of the USB disk and SD card along with their format types. Users can manually refresh to check the current storage remaining. Additionally, formatting can be performed through the web page if necessary. The default formatted file system is exFAT. Keep in mind that formatting will permanently erase all data on the disk, so please back up important data beforehand.



4.5.2. Storage Settings

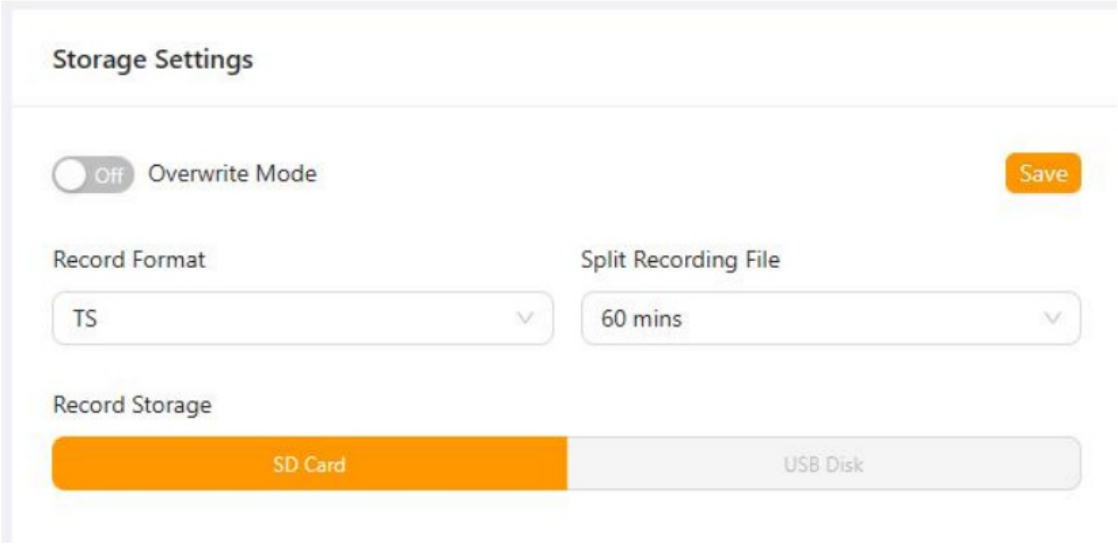
In the storage settings section, users can configure the record storage device, record format, Split Recording File, and overwrite mode.

Record Storage Device: Choose between the USB disk and SD card as the desired storage device for recordings.

Record Format: Select the recording format from the available options of MP4 and TS.

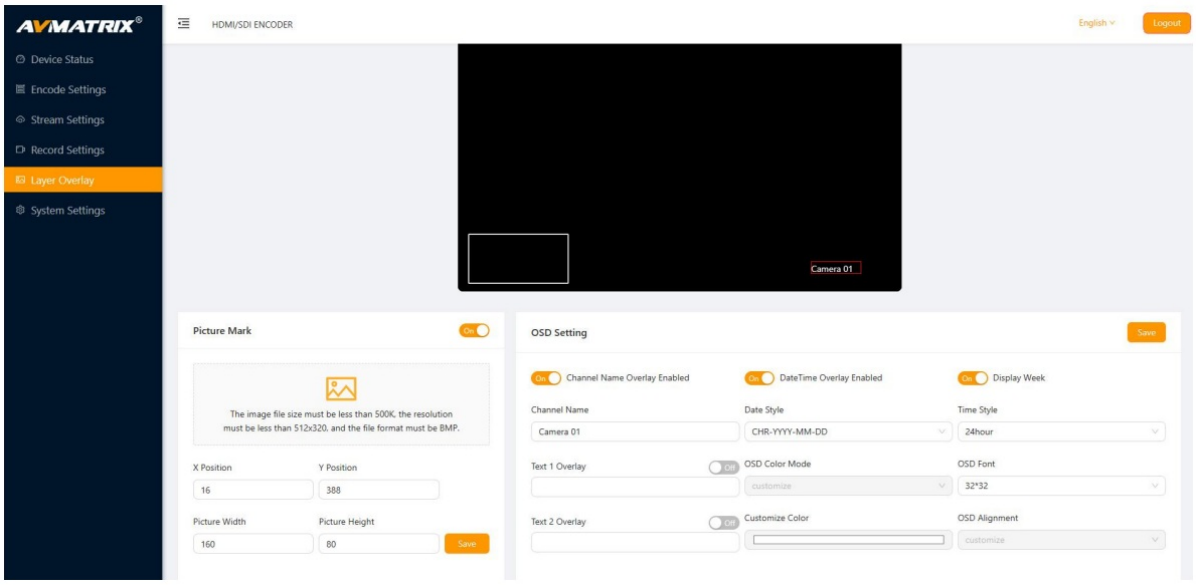
Split Recording File: Recorded videos can be automatically split into segments based on the chosen interval: 1 minute, 5 minutes, 10 minutes, 20 minutes, 30 minutes, 60 minutes, 90 minutes, or 120 minutes. Alternatively, recordings can be stored without interruption.

Overwrite Mode: When the SD card or USB disk memory is full, the overwrite function automatically deletes and overwrites previously recorded content with the new recording. The default is to end storage when it is full. Users can enable or disable the overwrite function via the web page or menu button. Click “Save” to complete the setup.



4.6.Layer Overlay

The encoder allows users to simultaneously embed logos and text into both the Main Stream and Sub Stream videos. Supported logo file formats is BMP, with a resolution limit of 512×320 and a file size under 500KB. You can customize the logo’s position and size directly on the web page. Additionally, you can enable channel name and date/time overlay on the images. The text’s size, color, and position can also be adjusted on the web page. Click “Save” to complete the setup.

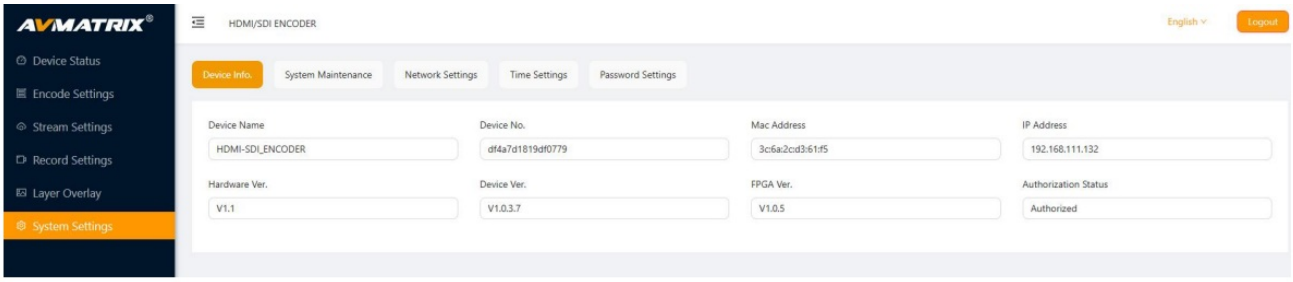


4.7.System Settings

In system settings section, users can view device information, upgrade firmware, configure network settings, set time, and set password. The firmware version information can be checked the web page as below.

4.7.1. Device Information

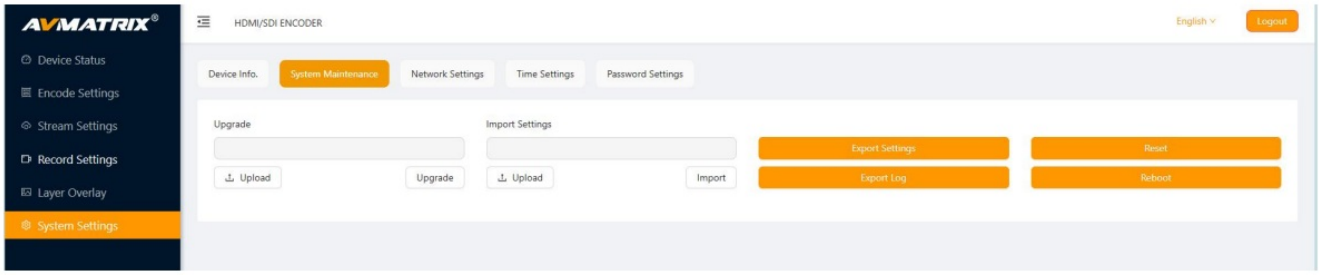
View device information, including model number, serial number, and firmware version.



4.7.2. Firmware Upgrade

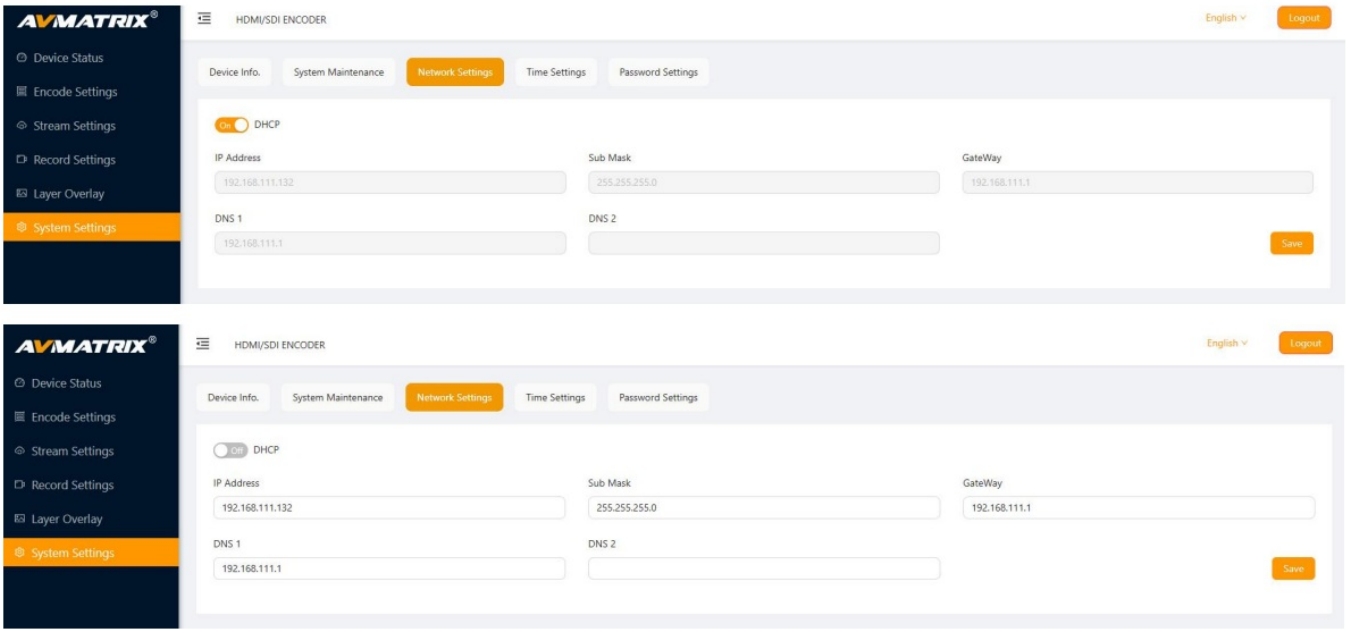
Upgrade the encoder's firmware to the latest version.

1. Download the latest firmware file from offical website to your computer.
2. Open the web page and navigate to the firmware upgrade section.
3. Click the "Browse" button and select the firmware file.
4. Click the "Upgrade" button and wait 2-5 minutes.
5. Do not turn off the power or refresh the web page during the upgrade process.



4.7.3. Network Settings

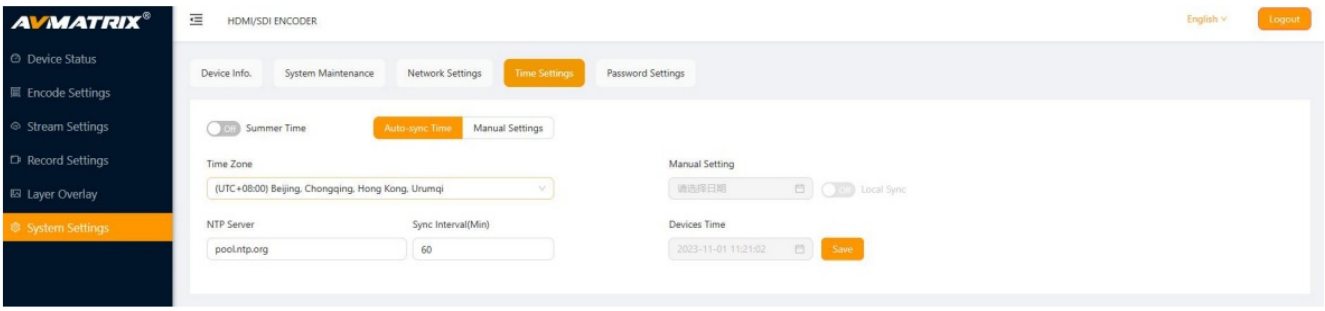
Configure the encoder's network settings, including IP address, subnet mask, and default gateway.
Network mode: dynamic IP (DHCP Enable).
Using dynamic IP, the encoder will automatically obtain an IP address from the network's DHCP server.
Click the "Save" button to apply the network settings.



4.7.4. Time Settings

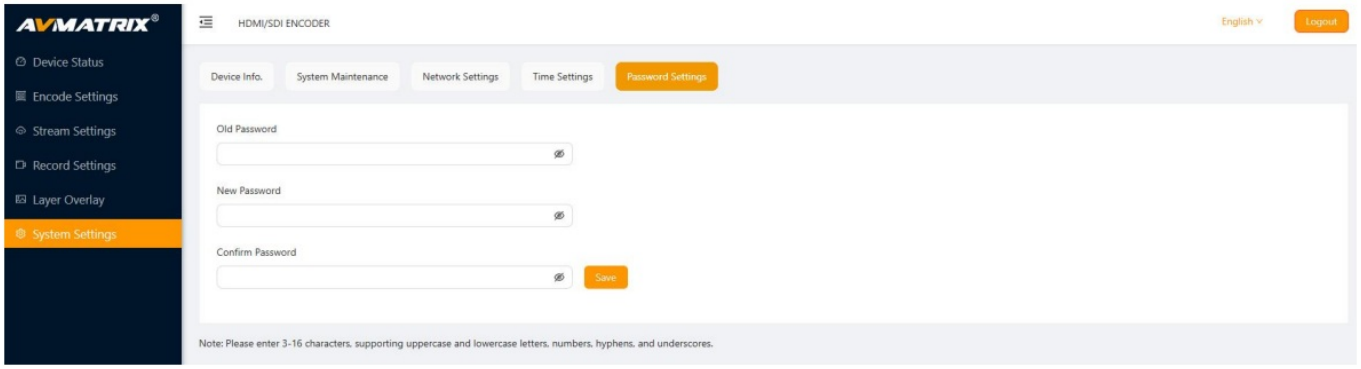
Set the encoder's time manually or automatically.

1. Enter time zone, date, time to set the time manually.
2. Select the "Auto-sync Time" option and enter the time zone, NTP server address and synchronization interval. Select the custom time zone, click the "Save" button to set the time automatically. Users can choose the automatic calibration time interval according to their own needs.



4.7.5. Password Settings

Set or change the encoder's password by enter the current password, the new password, and confirm the new password. The default password is "admin".
Click the "Save" button to apply the password settings.



DEVICE MENU SETTINGS

The device also can be set through menu by buttons and an OLED screen on the device.
On the home status page of the device menu, you can easily view the IP address, streaming duration, recording duration, as well as CPU memory usage and the working temperature.
In the device menu, you can configure stream, record, video, audio, overlay, and system settings using the

buttons:

- **Stream settings**
  Accessing the streaming menu allows you to dynamically enable or disable streaming functionality and you can also choose to enable or disable three main streams and three sub-streams.
- **Record settings**
  Recording settings allow users to choose between MP4 and TS recording formats, save recordings to SD cards or USB flash drives, and enable or disable overwrite mode.
- **Video settings**
  Video settings allow users to choose the video source (SDI or HDMI), the encoding bitrate (up to 32Mbps), the bitrate mode (VBR or CBR), the video code, the resolution (1080p, 720p, or 480p), the frame rate (24/25/30/50/60fps).
- **Audio settings**
  Audio settings allow users to choose the audio source (SDI or HDMI), adjust the volume, select the sampling rate (48kHz), the bitrate (64kbps, 128kbps, 256kbps, or 320kbps).
- **Overlay settings**
  In the overlay settings, you can toggle on or off image and text overlays. Overlays can be configured in the web interface.
- **System settings**
  The system settings allow you to choose your preferred language, select USB-C or LAN mode, check the version number, format USB drives and SD cards, restart the device, and reset the device to factory defaults.

Documents / Resources

	AVMATRIX SE2017 SDI HDMI Encoder and Recorder [pdf] User Manual SE2017 SDI HDMI Encoder and Recorder, SE2017, SDI HDMI Encoder and Recorder, Encoder and Recorder, Recorder

References

- User Manual