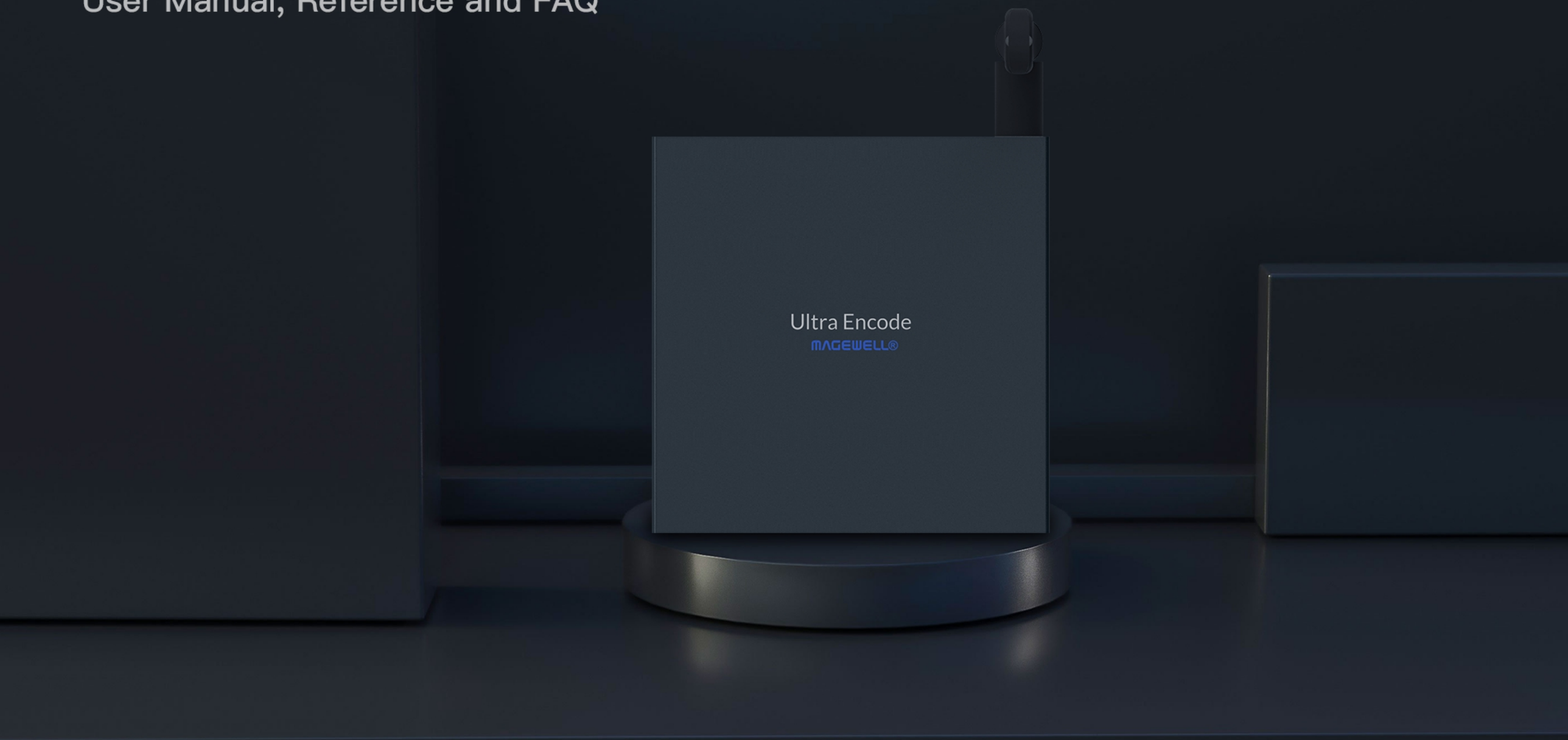
MAGEWELL®

ULTRA ENCODE

User Manual, Reference and FAQ



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Introduction

Our Ultra Encode family of universal live media encoders offers systems integrators, streaming professionals, and OEM partners a flexible and affordable encoding solution for applications including live streaming, AV over IP, remote contribution, IP production workflows and much more. Available in HDMI and SDI models, Ultra Encode supports high-quality H.264, H.265 (HEVC) and NDI®|HX encoding and multiple streaming protocols with wired or wireless network connectivity.

Encoder converts input signal to custom format, using H.264/H.265 video encoders and AAC audio encoder. It can push multiple streams to RTSP/RTMP/RTMPS/SRT Caller/SRT Listener/NDI|HX2/HLS(push)/TS over UDP/TS over RTP video servers simultaneously that you have access to.

Encoder is ideal for broadcast video and audio, natively support live broadcast for Facebook, YouTube, and Twitch, as well as your own site, with multi-platform distribution. To custom encoder perfectly for your session, we have Web UI, where device work status, a thumbnail preview window and tabs for streaming settings, analytics, and stream health monitoring are provided.

Key Features

- Support RTSP/RTMP/RTMPS/SRT Caller/SRT Listener/NDI|HX2/HLS (push)/TS over UDP/TS over RTP streaming protocols
- Dual stream encoding
- Multi-streaming to various video platforms simultaneously
- Video encoders - H.264 and H.265 (HEVC)
- Audio encoder - AAC
- Web UI - a remote network management system - provides webpage configuration with kinds of customization for device functions, including
  - Dashboard provides real-time device performance status monitor.
  - Streaming Server provides live stream server configuration.
  - General provides general settings of your device.
  - Encoding Parameters provides wizards to configure encoding profile.
  - Network provides network management and configuration.
  - Firmware provides online and manual update to refresh device firmware.
  - User Admin provides user management.
  - About provides device information and configuration report for troubleshooting.

System Requirements

Network

- 10/100/1000Mbps Ethernet
- Wi-Fi 802.11 b/g/n
- USB 3G/4G mobile broadband modem (not included)

Web UI Supported Web Browser

- Microsoft Internet Explorer 11
- Microsoft Edge
- Mozilla Firefox version 61 and above
- Google Chrome version 49 and above
- Apple Safari 11.1 and above
- Opera 55.0.2994.44 and above

Ultra Encode Family

- Ultra Encode HDMI
- Ultra Encode SDI

Tutorial

Let's learn by example.

Throughout this tutorial, we'll walk you through the creation of a basic YouTube live streaming with Ultra Encode.

It'll consist of two parts:

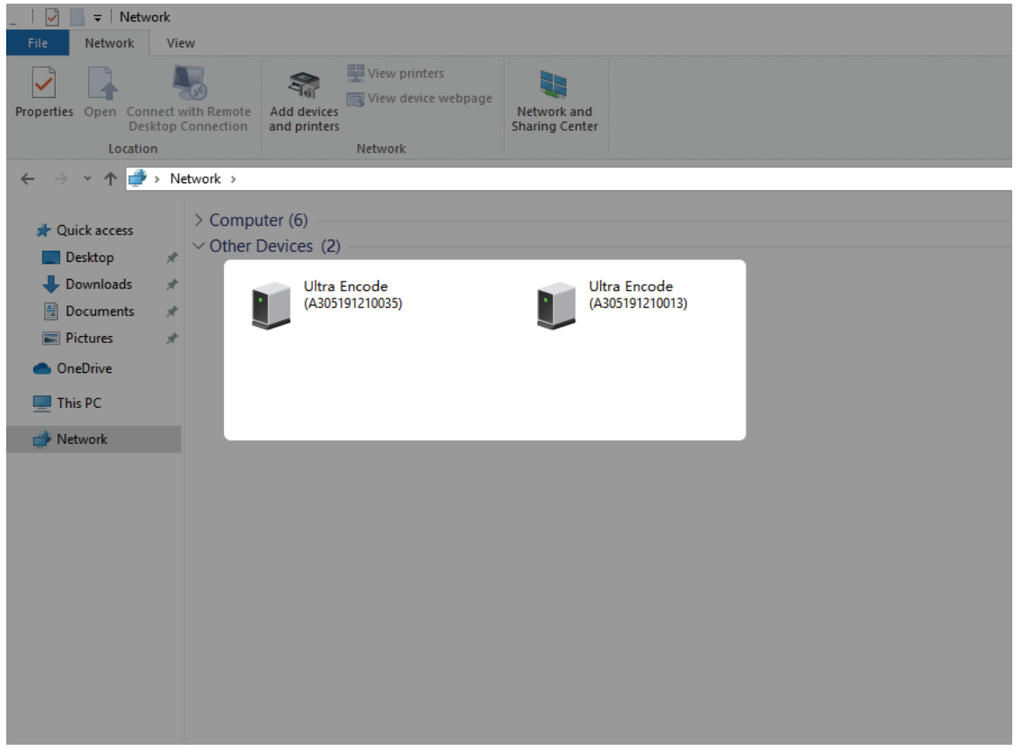
Part 1. Ultra Encode setup

Part 2. YouTube setup

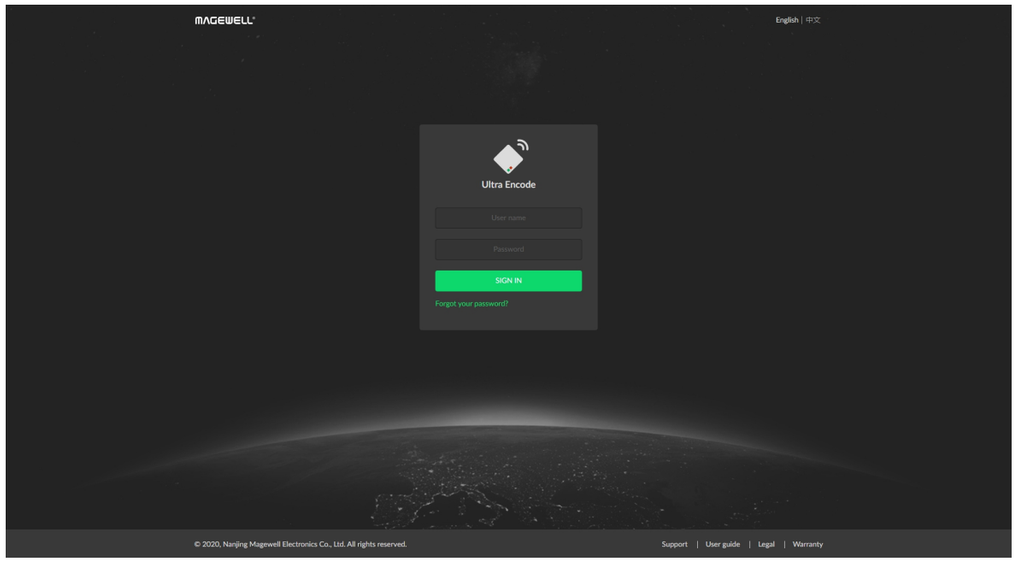
Part 1. Ultra Encode Setup

1. Find Ultra Encode

1. Connect the encoder to a LAN and power it up.
2. Connect input signal.
3. Access Web UI
    i. In Windows 10, open a File Explorer window, find the encoder in **Network** > **Other Devices**.
    ii. Double click the encoder icon by its serial number to open the Web UI of the device in your default web browser.
4. Log in with your username and password.



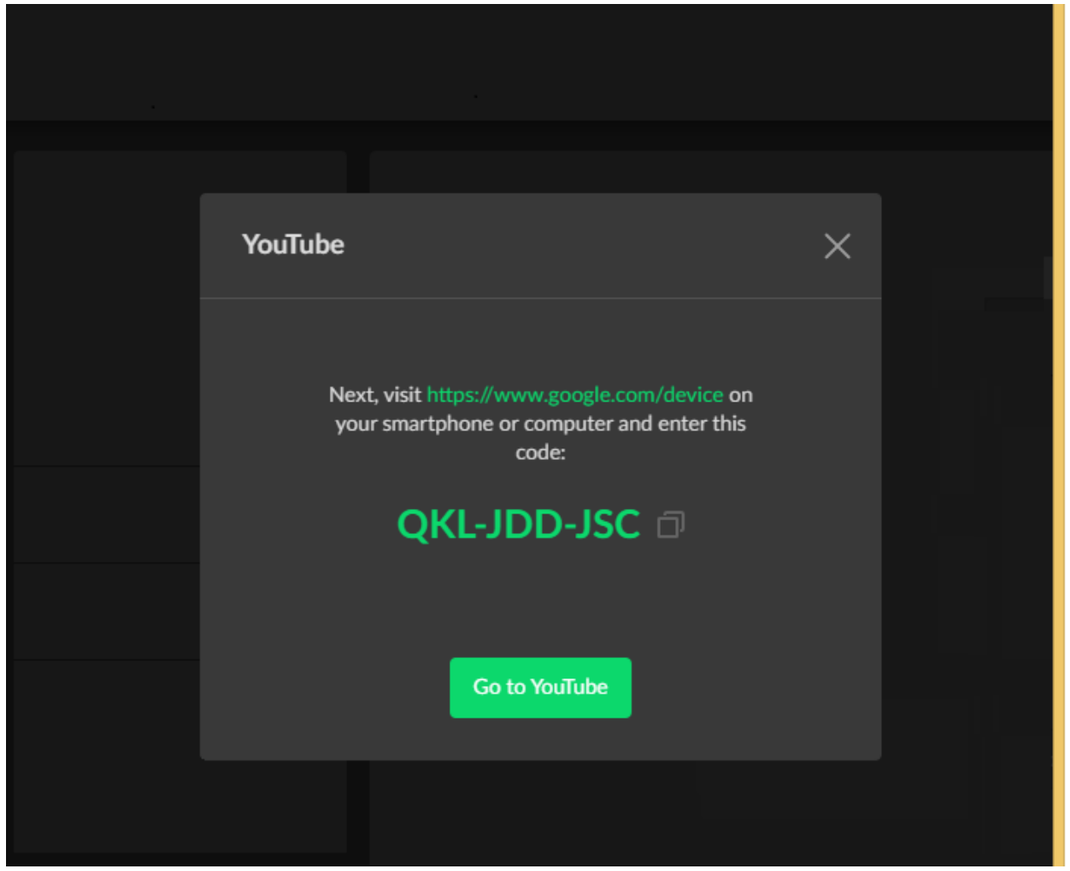
Find your Device

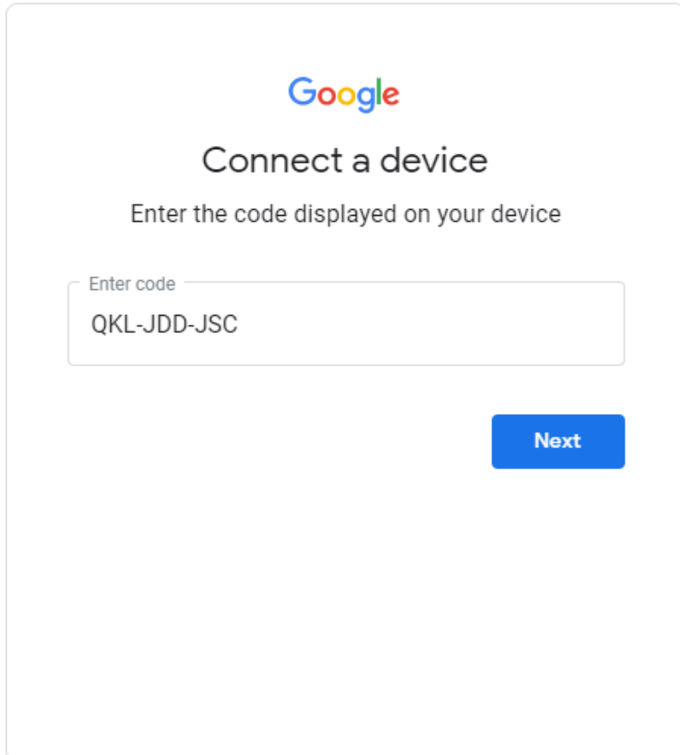


Sign In

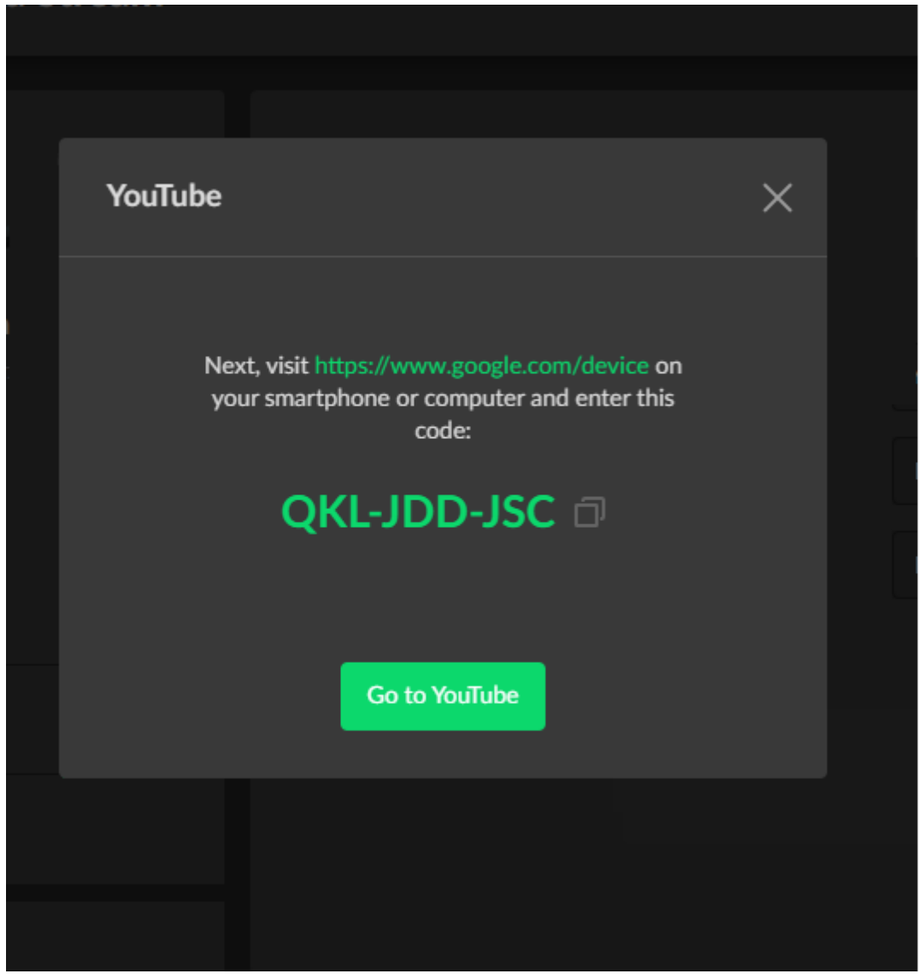
2. Add YouTube streaming session

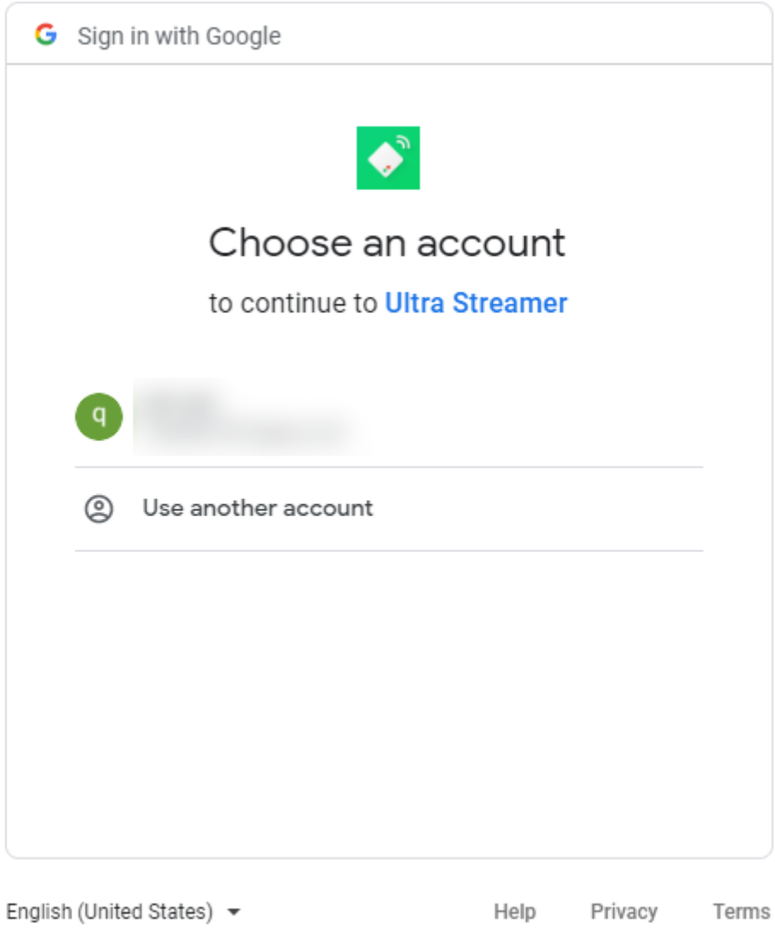
1. In the left control panel, go to **Streaming Server** tab. Click **Add Server** and choose YouTube .
2. Go to YouTube **https://www.google.com/device**, and paste the code prompted.





3. Follow the page instructions to log in and trust your device.

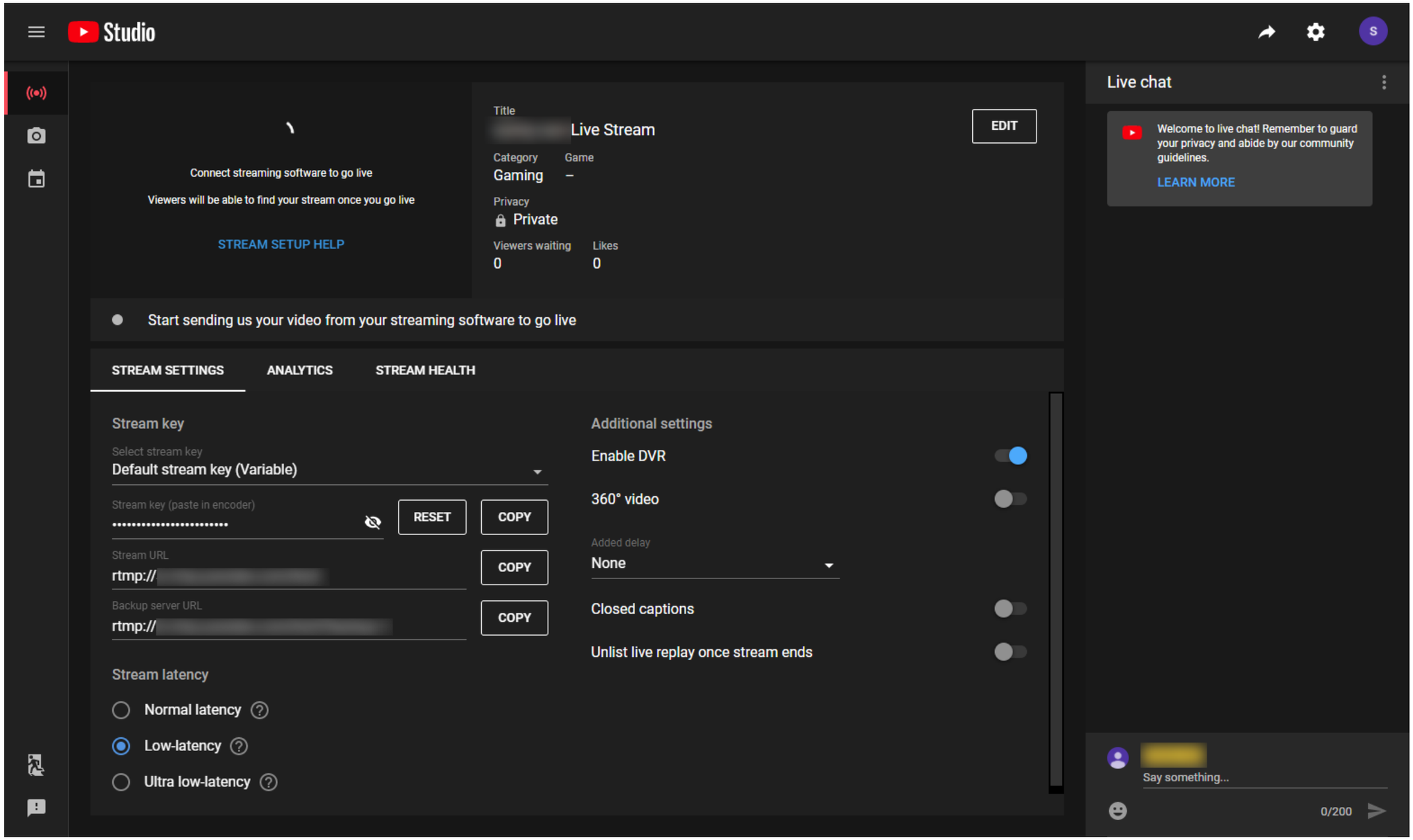




4. Choose the **Event** where you want to show your video clips.
   Then you can simply save the server with default parameters for streaming.
5. Go back to the **Streaming Server** tab and turn on the switch before YouTube icon to start the streaming session.
   Now the encoder is ready to bring your content to YouTube directly with all these settings.

Part 2. YouTube Setup

Create a live stream task in YouTube Studio to go live, and specify the Title, Category, Privacy, etc.



Installation

Safety Information

Electrical Safety

- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that you are using the correct power adapter for the local voltage. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power adapter is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer for help.

Operation Safety

- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you notice any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- If you encounter technical problems with the product, contact your dealer or the Magewell Support Team via support@magewell.net.

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and cause undesired operation

(2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Statement

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the device and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement

The antennas used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located for operating in conjunction with any other antenna or transmitter.

Interfaces & Indicators

Ultra Encode HDMI

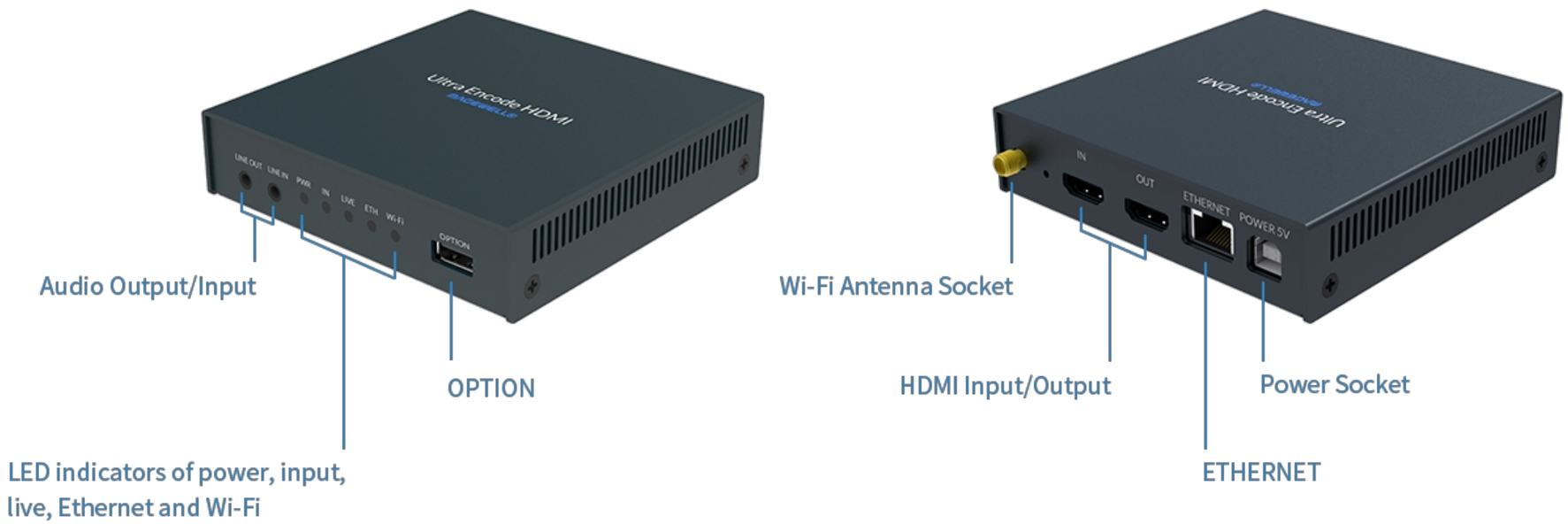


Figure 1 Ultra Encode HDMI

⚠ Plug included Wi-Fi antenna when you want to connect to a wireless network.

Ultra Encode SDI

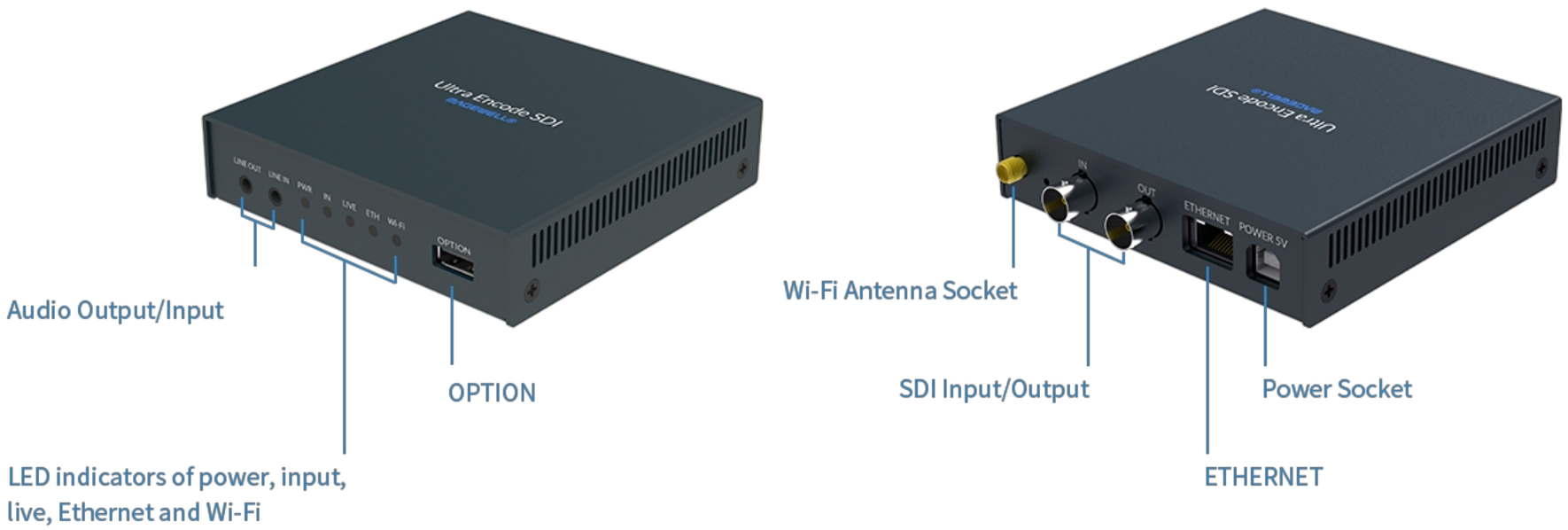


Figure 2 Ultra Encode SDI

⚠ Plug included Wi-Fi antenna when you want to connect to a wireless network.

Indicators

Indicators status is as follows.

PWR (Power)

- On: power on.
- Off: power off.

IN (HDMI/SDI)

- On: input signal detected.
- Off: input signal undetected.

LIVE

- On: the encoder is streaming to at least one streaming address.
- Breathing: none of the live sessions is enabled.

ETH

- On: Ethernet connected.
- Off: Ethernet unconnected.

Wi-Fi

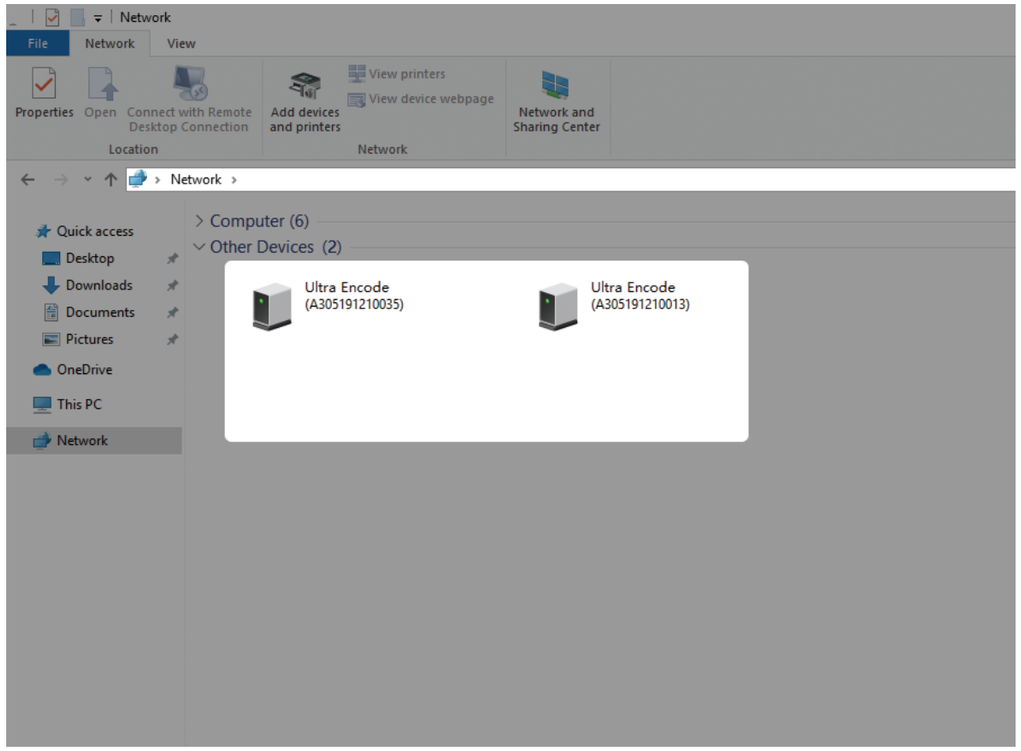
- On: Wi-Fi connected.
- Off: Wi-Fi unconnected.

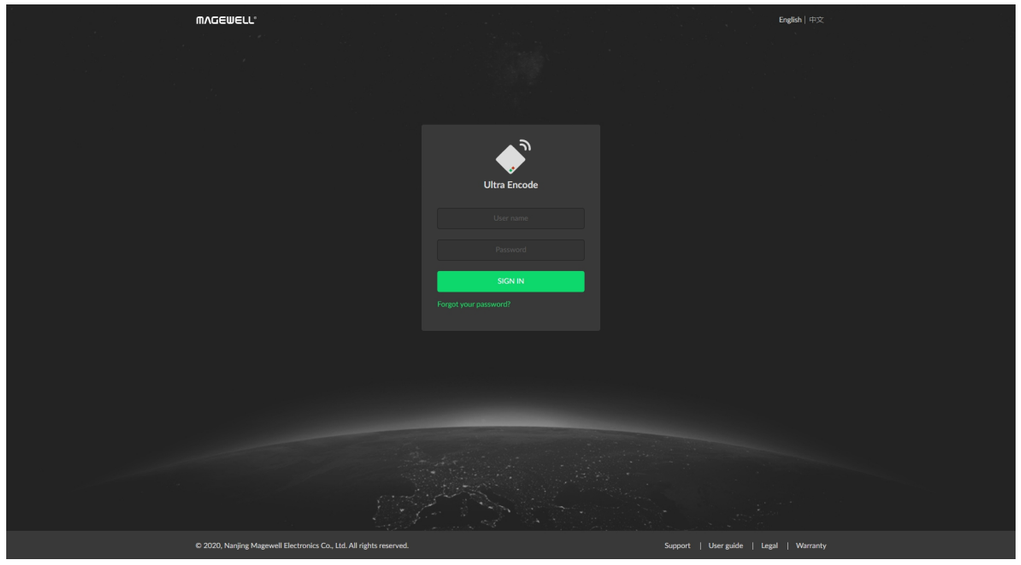
Multiple indicators flash:

- All but PWR indicator lights flash once simultaneously: system is booting up or rebooting.
- The indicator lights flash in turn from IN to Wi-Fi: firmware is updating.

⚠ If any other status appear, please try to unplug and re-plug in the power cable to recover your encoder.

Get Started With Ultra Encode





Access Web UI

Manage your device via wired networks or Wi-Fi.

1. Connect your device to your LAN and power it up.

   ⚠ To ensure a smooth video, you are recommended to connect to a wired network.

2. Open Web UI:

   - Via File Explorer on Windows 7/8/8.1/10

     i. Open File Explorer in your PC, then locate your device in **Network > Other Devices** named **Ultra Encode + (Serial number)**.

     ii. Double click the device icon, open the sign page of Web GUI.

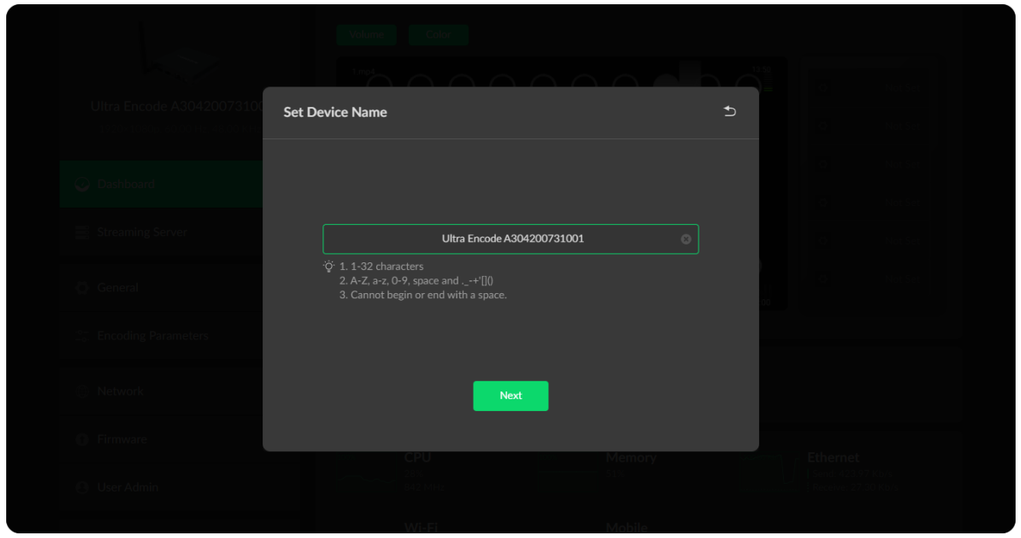
   - Via device Wi-Fi AP, IP Address: 192.168.48.1

     ⚠ Plug included Wi-Fi antenna when you want to connect to a wireless network.

     i. In your smartphone/pad/laptop, turn on WLAN, search for and join the device AP.
     The AP names after your gear's **Serial number**, and the password is the last 8 bit of the serial number.
     We recommend that the distance between the Web UI and the encoder should be within 10m.

     ii. In your web browser, enter 192.168.48.1 to open the Web UI.

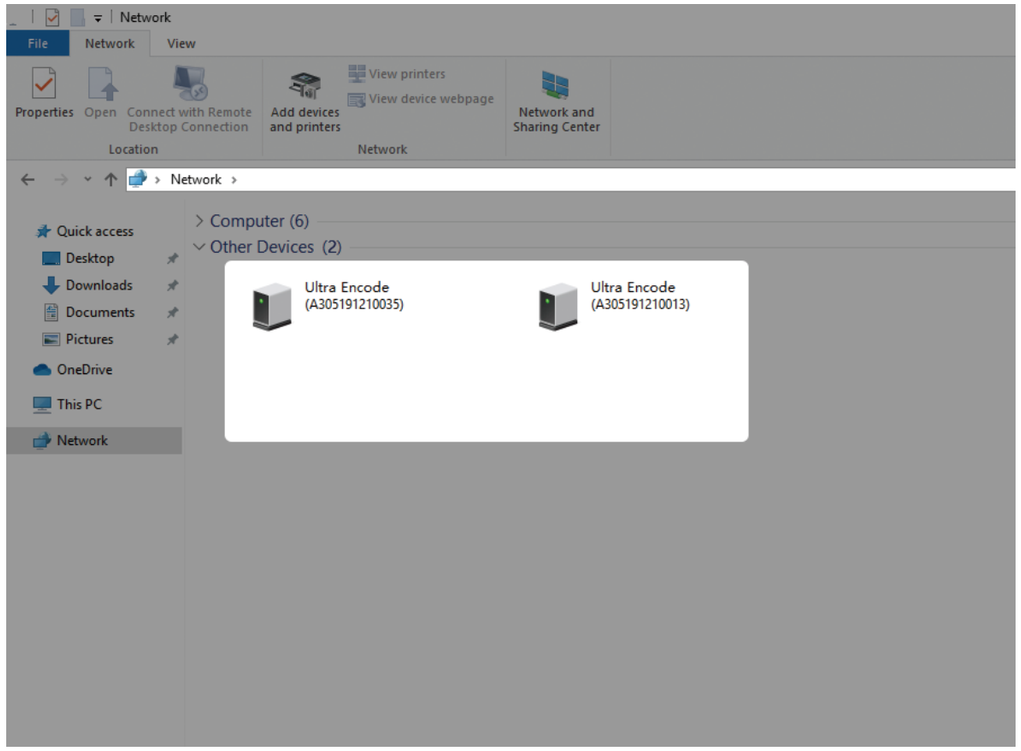
3. Input your username and password.
   - The default administrator name and password are both Admin.
   - We recommend you to modify the admin password after initial logging-in.

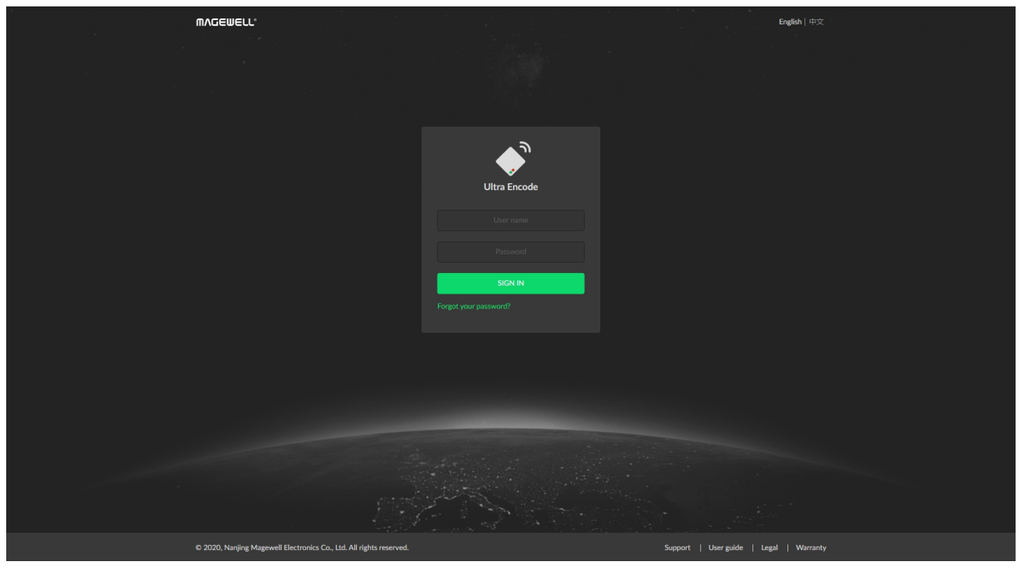


Initialization

Follow the instructions of the Web UI to perform the device initialization and set a new device name.

Web UI Configuration





Access the Web UI

If you know your device's IP address, type it into your web browser to Web UI. Alternatively, you can access the Web UI via wired Ethernet or Wi-Fi.

1. Connect your device to your LAN and power it up.

   ⚠ To ensure a smooth video, you are recommended to connect to a wired network.

2. Open Web UI:

   - Via File Explorer on Windows 7/8/8.1/10

     i. Open File Explorer in your PC, then locate your device in **Network > Other Devices** named **Ultra Encode + (Serial number)**.

     ii. Double click the device icon to open the sign page of Web GUI.

   - Via device Wi-Fi AP, IP Address: 192.168.48.1

     ⚠ Plug included Wi-Fi antenna when you want to connect to a wireless network.

     i. In your smartphone/pad/laptop, turn on WLAN, search for and join the device AP.
     The AP names after your gear's **Serial number**, and the password is the last 8 bit of the serial number by default.
     We recommend that the distance between the Web UI and the encoder should be within 10m.

ii. In your web browser, enter 192.168.48.1 to open the Web UI.

Sign In/Out

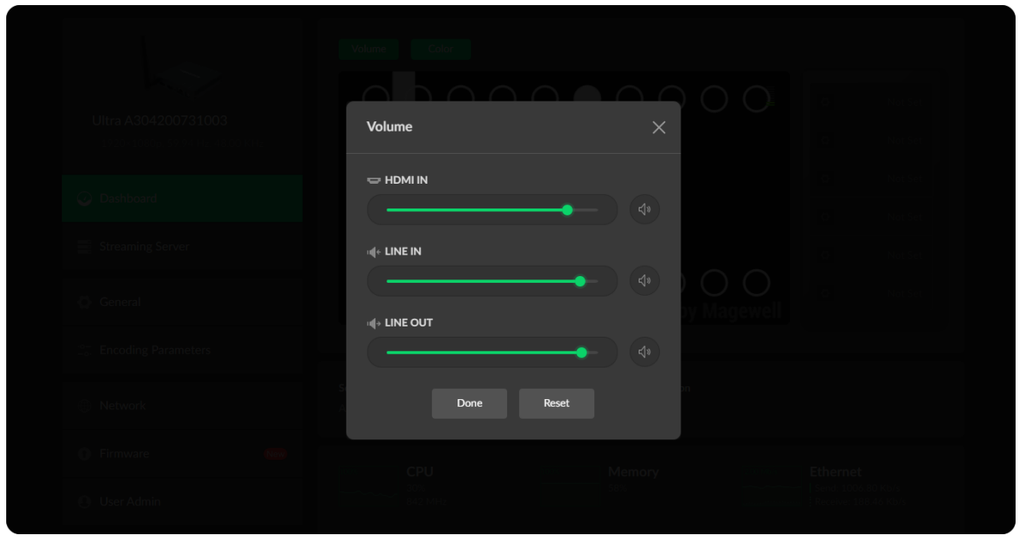
The Web UI allows multiple users to have read/write access to make configuration settings at the same time after logging-in. However, to avoid configuration conflicts, we do not recommend you to operate one device simultaneously.

1. Sign In: enter your account and password in the **SIGN IN** page.
   - The default administrator name and password are both Admin.
   - We recommend you to modify the admin password after initial logging-in.
2. Sign Out: click the drop-list icon behind the logging-in username at the top-right of the Web UI, and select **Sign out**.

Dashboard

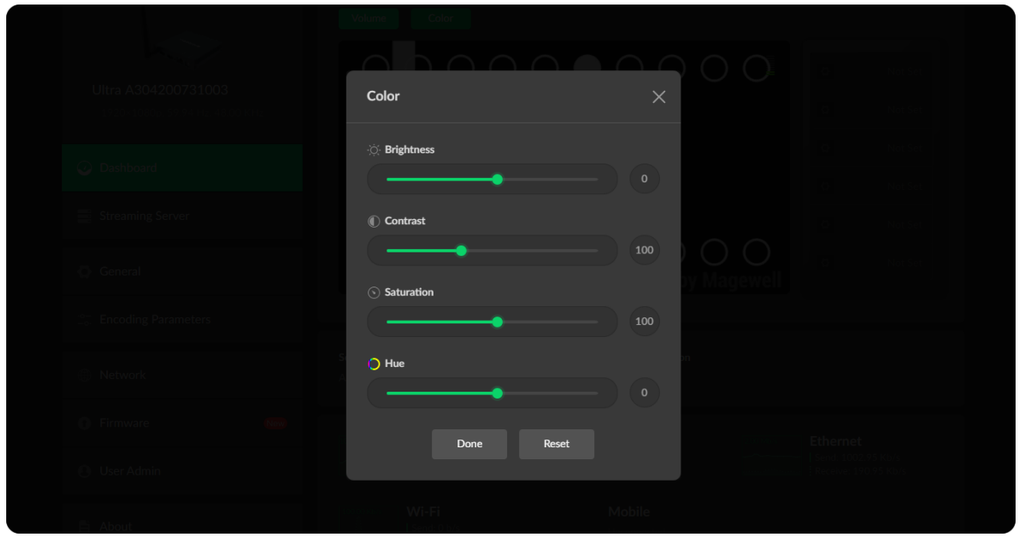
On **Dashboard** page, you can:

- preview the thumbnail of the encoded video
- check device hardware information
- check system performance status
- set global volume and color



Set Volume

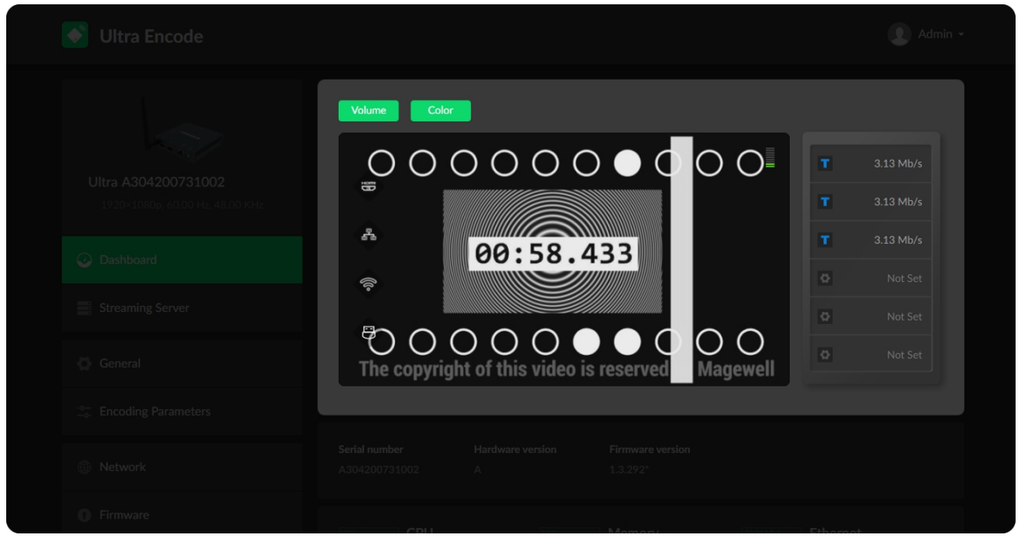
- **HDMI/SDI IN:** adjust input signal volume
- **LINE IN:** adjust the audio connected to the LINE IN
- **LINE OUT:** adjust the LINE OUT audio which remixes audio embedded in input signal and LINE IN
- : mute current channel
- : restore current channel to default value
- **Reset:** restore all settings of the volume to default settings
- **Done:** click to save your configuration



Set Color

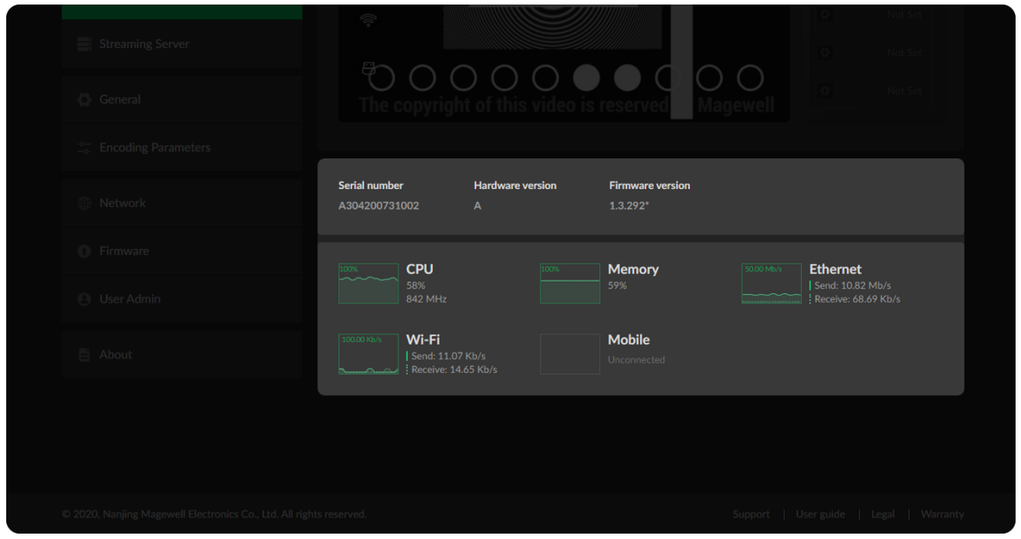
Set color format of preview and stream video.

- **Brightness:** range from -100 to 100, the default value is 0.
- **Contrast:** range from 50 to 200, the default value is 100.
- **Saturation:** range from 0 to 200, the default value is 100.
- **Hue:** range from -90 to 90, the default value is 0.
- **Reset:** restore all settings of the color to default settings
- **Done:** save your configuration



Preview Thumbnails

Thumbnails give you a quick snapshot of your video as they're browsing on the target video platform.



Check Hardware Information

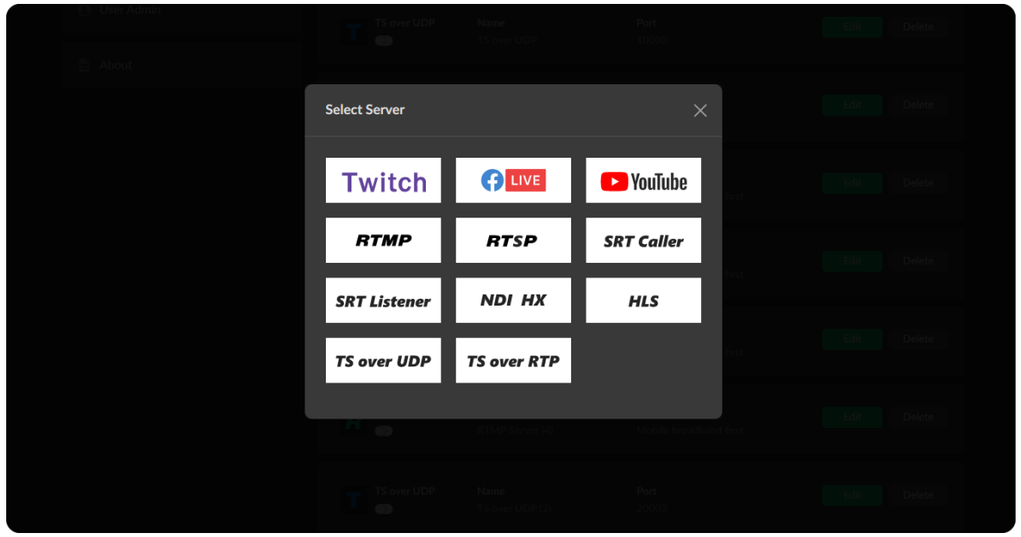
- **Serial number:** serial number of your unit, which is also marked on your device.
- **Hardware version:** hardware version of your unit.
- **Firmware version:** current firmware version that is installed in your unit. You can update the firmware, via the **System** > Firmware tab.

Check System Performance

- Gives you an overview of your system CPU, memory usage, network usage in real-time in order to evaluate the device performance & health.

Streaming Server

The encoder natively supports streaming to YouTube, Facebook, Twitch, as well as self-defined servers.



Manage Streaming Sessions

The encoder will start working automatically once a streaming session is added. That is, the first streaming task successfully added will start automatically; or, if the encode is streaming a TS, SRT or RTMP task, another streaming session, which use the same protocol as is the one streaming, will automatically start once added.

Of course, you can manually added, modify, or delete any of streaming sessions listed in **Streaming Server** tab.

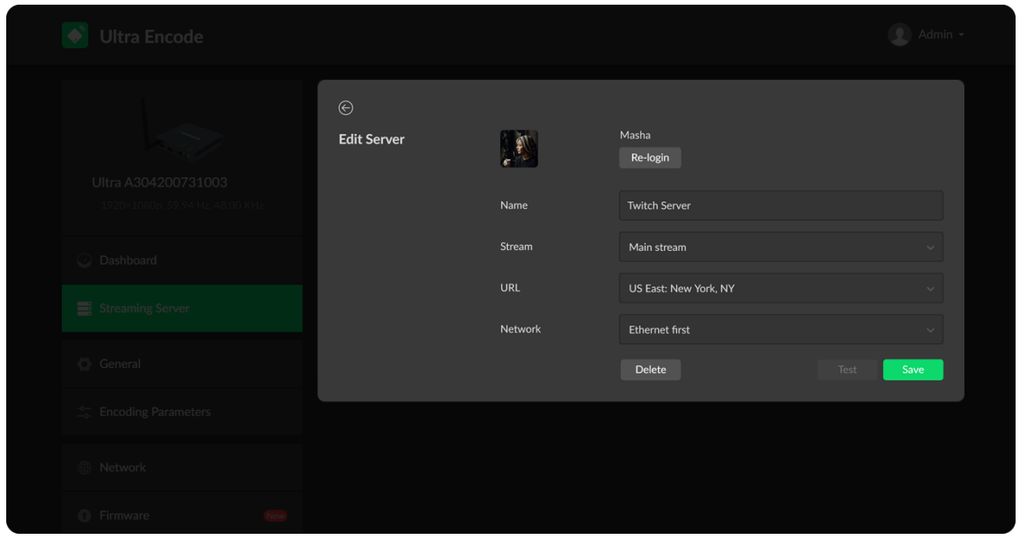
- Click **Edit** to modify the parameters of the stream.
- Click **Delete** to remove the source from the list.
- Turn on/off the switch to start/stop streaming.
- Click **Add** and select a RTMP, RTMPS, RTSP, SRT Caller/Listener, NDI|HX2, HLS (push), or a TS over UDP/RTP server to stream to.

Notes

- Supported streaming protocols - RTMP, RTMPS, RTSP, SRT Caller, SRT Listener, NDI|HX2, HLS(push), TS over UDP, TS over RTP.
- Allow simultaneous sessions over the same streaming protocol.
  - Up to 6 sessions of TS over RTP and TS over UDP simultaneously.
  - Up to 6 sessions of SRT Caller and SRT Listener simultaneously, containing one SRT Listener session at most.
  - Up to 6 sessions of RTMP and RTMPS simultaneously. It means that as

long as the destination server allows, RTMP/RTMPS video platforms such as Twitch, Facebook, YouTube can be streamed to at the same time with your accounts.

- Stream only 1 session of HLS (push), RTSP, or NDI HX (NDI|HX2).
- Total bitrates for different network connection types:
  - 24Mbps for all streams is recommended for a wired network connection
  - 16Mbps for all streams is recommended for a wireless network connection
- Select the main stream or sub stream for each session.
- Allow to stream via a different network connection for each session.

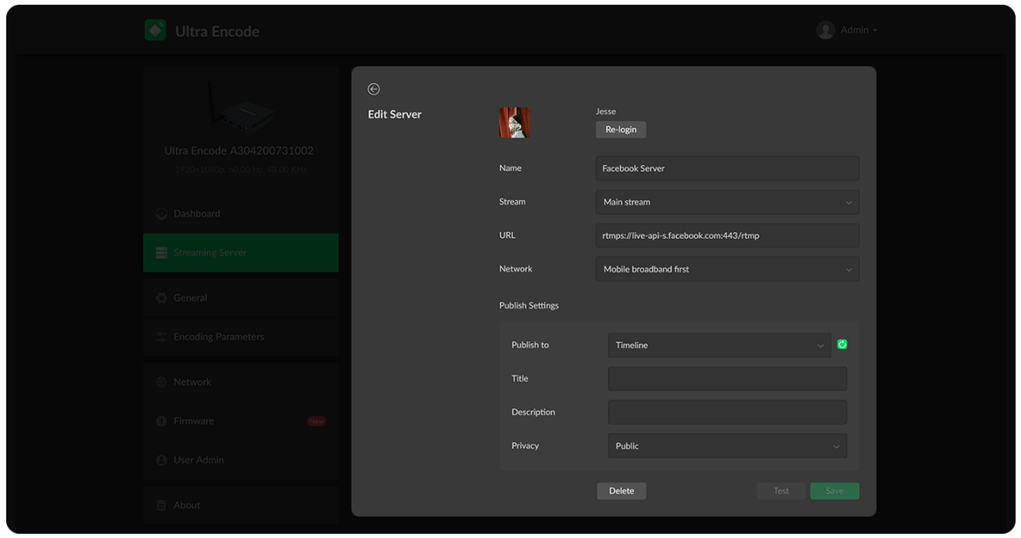


Live Streaming to Twitch

You can stream to Twitch if you have a Twitch account.

> ⚠ To ensure smooth live streaming experience, connecting to a wired Ethernet network is recommended.

1. Click **+ Add Server** in the **Streaming Server** tab, select **Twitch**, follow the on-screen instructions to log in and select a server.
   Your avatar will be displayed after a successful logging-in.
2. Choose the prime network for streaming.
   By default, the network connection priority is: Mobile Broadband > Ethernet > Wi-Fi.
   The device scans for the available network according to the connection priority and connect to it for streaming. If the current network is disconnected, the unit automatically re-scans according to the priority.
   Plug a USB modem into your encoder while using mobile network to stream.
3. Click **Test** to check the connection between the server and encoder.
4. When prompted, click **OK**.
5. Go back to **Streaming Server** page, turn on before the added server to start live streaming.



Live Streaming to Facebook Live

You can live broadcast to Facebook if you have a Facebook account.

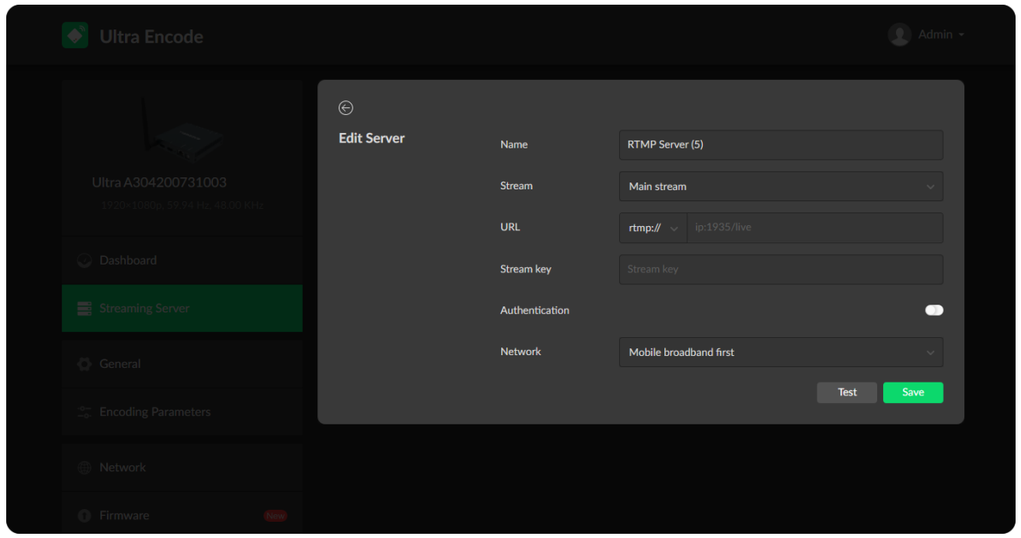
> ⚠ To ensure smooth live streaming experience, connecting to a wired Ethernet network is recommended.

- Stream via the Facebook live interface.

  1. Click **+ Add Server** in the **Streaming Server** tab, select LIVE, enter the **Stream Name**.
  2. Click **Log In**. Follow the on-screen instructions to open Facebook, enter the code prompt, and log in.

     > ⚠ Your avatar will be displayed after a successful logging-in.

  3. Choose the prime network for streaming.
     By default, the network connection priority is: Mobile Broadband > Ethernet > Wi-Fi.
     The device scans for the available network according to the connection priority and connect to it for streaming. If the current network is disconnected, the unit automatically re-scans according to the priority. Plug a USB modem into your encoder while using mobile network to stream.
  4. Click **Test** to check the network connection.
  5. After passing the test, click **OK**.
  6. Go back to **Streaming Server** page, turn on before the added server to start live streaming.



- Stream via a custom RTMP.

1. Click **+ Add Server**, select ***RTMP*** .
2. Enter Facebook **URL** and **Stream Key**.

   To create a live stream on Facebook:

   i. Go to https://www.facebook.com/live/create to create a live stream on Facebook.

   ii. Click **Create Live Stream**.

   iii. Choose where you want to post your live broadcast.

   iv. After inputting the event, or group name, the server URL and stream key or persistent stream key will be displayed on the WebUI.

   > ⚠ Select **Enable persistent stream key** if you want your stream key to be permanent. If this isn't selected, you won't be able to use this stream key again after the streaming session ends.

   v. Write a description, Title and Video Game tag.

   vi. Go live now or schedule your live session.

   > ⚠ Start the video stream from your encoder before going live on Facebook.

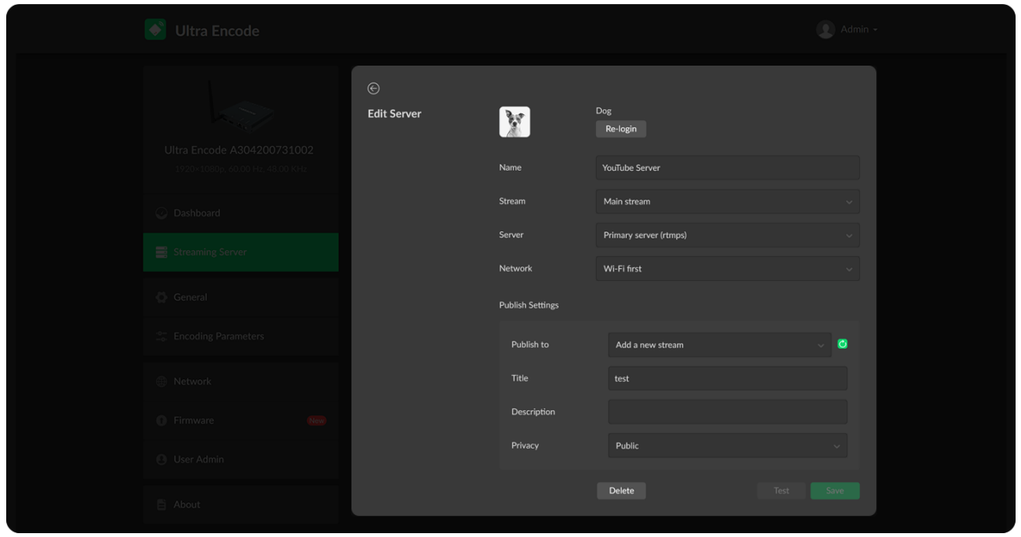
3. Choose the prime network for streaming.

   By default, the network connection priority is: Mobile Broadband > Ethernet > Wi-Fi.

   The device scans for the available network according to the connection

priority and connect to it for streaming. If the current network is disconnected, the unit automatically re-scans according to the priority. Plug a USB modem into your encoder when using mobile network to stream.

4. Click **Test** to check the network connection.
5. Go back to the **Streaming Server** page, and turn on before the added server to start live streaming.



Live Streaming to YouTube

You can stream to YouTube if you have a YouTube account, and you have enabled the Live streaming feature of your channel at least 24 hours before your streaming.

> ⚠ To ensure smooth live streaming experience, connecting to a wired Ethernet network is recommended.

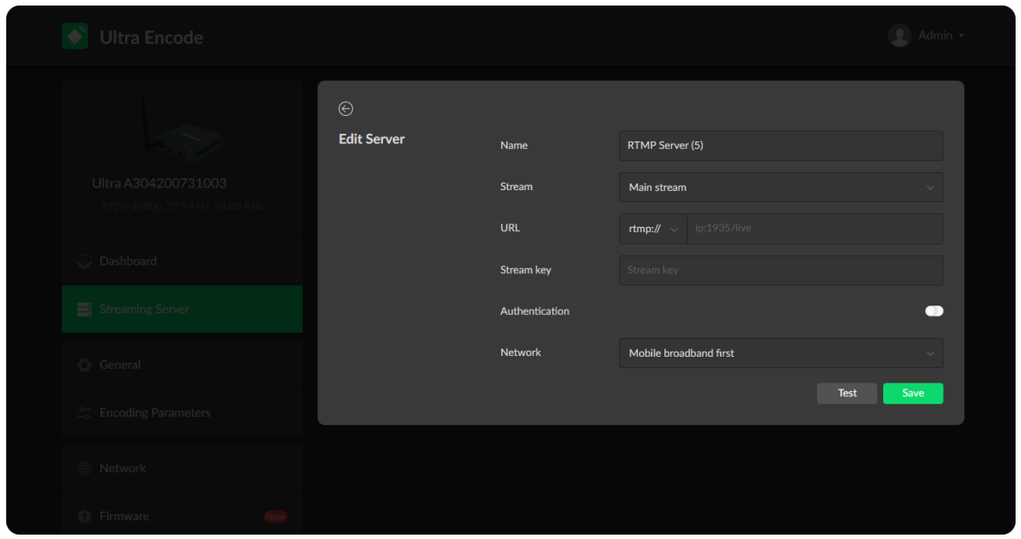
> ⚠ To enable the Live streaming feature, refer to YouTube Help.

1. Click **+ Add Server** in the **Streaming Server** tab, select YouTube, enter the **Stream Name**, follow the on-screen instructions to log in and select a server.
2. Click **Log In**. Follow the on-screen instructions to open YouTube, enter the code displayed on your device, and log in.
   Your avatar will be displayed after a successful logging-in.
3. Choose the prime network for streaming.

By default, the network connection priority is: Mobile Broadband > Ethernet > Wi-Fi.
The device scans for the available network according to the connection priority and connect to it for streaming. If the current network is disconnected, the unit automatically re-scans according to the priority.
Plug a USB modem into your encoder while using mobile network to stream.

4. Tap **Publish to** and select a channel or event for your session.
   Choose **Add a new stream** and enter title, description and privacy. Then a new live event would be added to your logging-in account automatically. And you can stream to YouTube using streamer without clicking on **go live** in YouTube Studio.

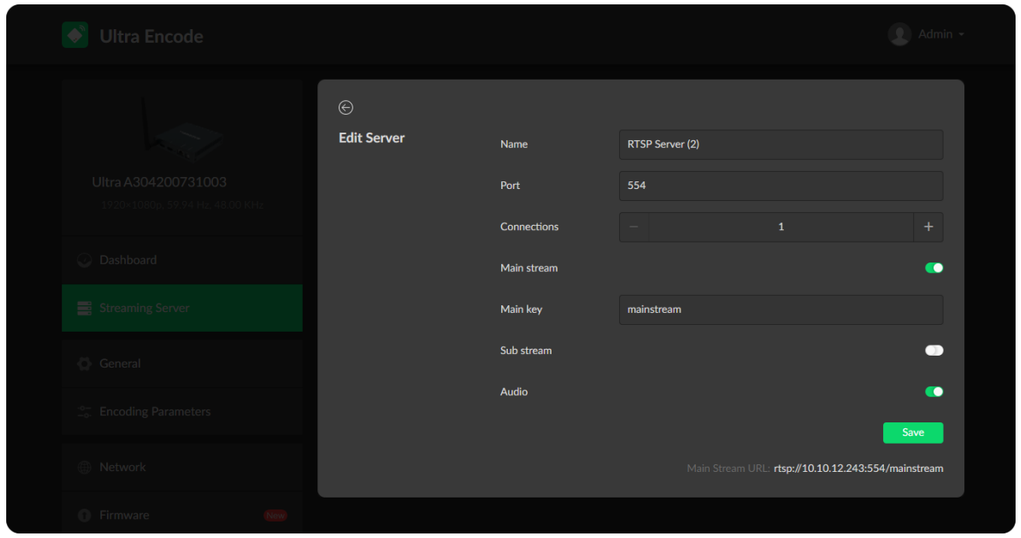
   Choose a channel or event. Then **go live** in YouTube studio to ensure a successful live broadcast.
5. Click **Test** to check the connection between the server and encoder.
6. When prompted, click **OK**.
7. (Optional) To add other YouTube accounts, repeat step 3 to 5.
8. (Optional) Choose where you want to post your live broadcast.
9. (Optional) To delete a server: touch the server, slide to the left, and click **Delete**. When prompted, click **Confirm**.



RTMP/RTMPS

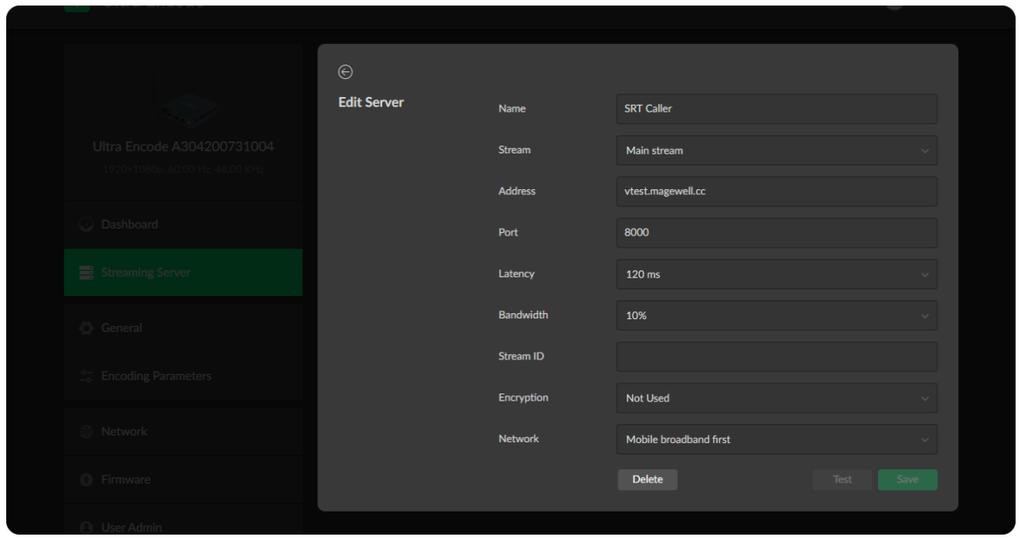
- **Name:** specify a name for current task to facilitate server management, which will be displayed in the server list.
- **Stream:** choose to deliver a main or sub stream, which can be customized in Encoding Parameters tab.
- **URL:** enter the RTMP URL address, or an RTMP address you have obtained from the live stream platform. Full address example: **rtmp://192.168.1.136:1935/live**. The port number part **:1935** can be omitted, and the value range is 1 to 65535. If the RTMP address is a domain name, live can be omitted. If the RTMP address is an IP address, The part **live** cannot be omitted.
- **Stream key:** enter the stream key obtained from the live stream platform.
- **Authentication:** turn on if your live streaming service provider requires. Obtain the User Name and Password from your live streaming service provider.
- **Network:** The device scans for the available network according to the connection priority and connect to it for streaming. If the current network is disconnected, the unit automatically re-scans according to the priority.
  By default, the network connection priority is: Mobile Broadband > Ethernet > Wi-Fi.
  Plug a USB modem into your encoder while using mobile network to stream.
- **Test:** check the connection between the server and encoder.
- **Save:** save current configuration.
- The encoder can stream up to 6 RTMP/RTMPS servers simultaneously. The

recommended total bitrates for the streams is below 24Mbps for a wired network connection, and 16Mbps for a wireless network connection.



RTSP

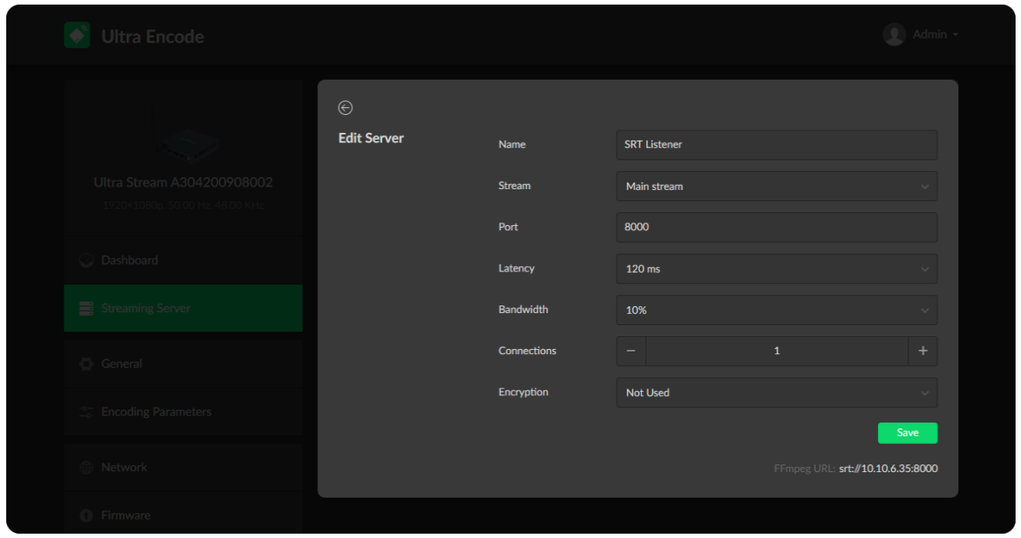
- **Name:** specify a name for current task to facilitate server management, which will be displayed in server list.
- **Port:** specify RTSP stream port, the default port is 554.
- **Connections:** set number of clients for each RTSP stream, 8 clients are supported at most.
- **Main stream:** turn on to push main stream. Specify parameters in Encoding Parameters tab.
- **Main key:** specify key for main stream. The main key should be different from sub key.
- **Sub stream:** turn on to push sub stream. Specify parameters in Encoding Parameters tab.
- **Sub key:** specify key for sub stream. The sub key should be different from main key.
- **Audio:** turn on to stream audio signal, otherwise audio will not be delivered. The audio signal consists of audio embedded in input signal and LINE IN.
- **Save:** save current configuration.
- Only 1 RTSP streaming session can be started each time, but you can add multiple servers to the streaming server list.
- After configuration, the stream URLs display at the end of the page.



SRT Caller

- **Name:** specify a name for current task to facilitate server management, which will be displayed in server list.
- **Stream:** choose to stream main or sub stream, which can be customized in Encoding Parameters tab.
- **Address:** enter the Listener address when **Mode** is set to **Caller**. If the SRT listener and caller are on the same LAN, enter the private IP address of the SRT listener on the LAN. If the SRT listener and caller are in different network environments, enter the public IP address of the SRT listener.
- **Port:** enter the port number specified by the encoder, which ranges from 1 to 65535.
- **Latency:** possible values are 30, 60, 120, 500, 1000, 5000, 8000ms. The default value is 120. We recommend that you set the same latency for SRT caller and listener.
- **Bandwidth:** indicate the portion of the total bandwidth of a stream required for the exchange of SRT control and recovery packets. Available values are 10%, 25%, 50%, 75%. A worse network condition requires more bandwidth for overhead to ensure normal transmission.
- **Stream ID:** specify Stream ID of 0 to 256 characters which should be consistent with that of its sender.
- **Encryption:** specify the stream encryption algorithm to ensure the data security, options are AES-128/192/256.
- **Passphrase:** specify stream key of 10 to 79 characters, which is the same as the SRT listener.
- **Test:** check the connection between the server and encoder.

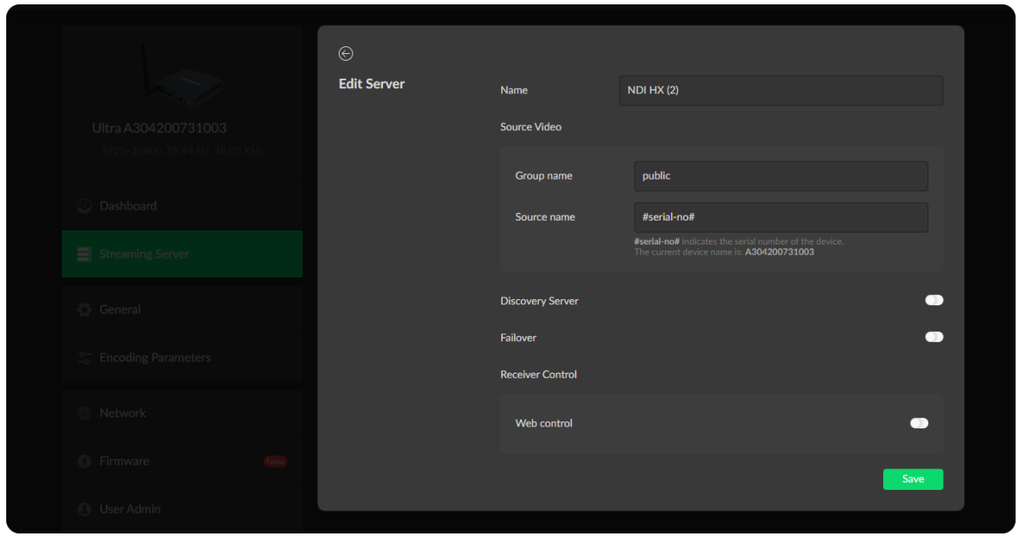
- **Save:** save current configuration.
- The encoder can stream up to 6 SRT servers. If the unit streams via wired network, the total code stream is recommended to below 24 Mbps, below 16 Mbps via wireless network.



SRT Listener

- **Name:** specify a name for current task to facilitate server management, which will be displayed in server list.
- **Stream:** choose to stream main or sub stream, which can be customized in Encoding Parameters tab.
- **Port:** specify the service port of the encoder, ranging from 8000, and 10000 to 65535. The default value is 8000.
- **Latency:** options are 30, 60, 120, 500, 1000, 5000, 8000ms and the default value is 120ms. We recommend that you set the same latency for SRT caller and listener.
- **Bandwidth:** indicate the portion of the total bandwidth of a stream required for the exchange of SRT control and recovered packets. Available values are 10%, 25%, 50%, 75%. A worse network condition requires more bandwidth for overhead to ensure normal transmission.
- **Connections:** 8 connections at most.
- **Encryption:** specify encryption algorithm for stream data security. Options are AES-128/192/256.
- **Passphrase:** specify stream key of 10 to 79 characters, which is the same as the SRT caller.

- **Save:** save current configuration.
- The encoder can stream up to 6 SRT sessions simultaneously, containing one SRT Listener session at most. If the unit streams via wired network, the total code stream is recommended to below 24 Mbps, below 16 Mbps via wireless network.
- After configuration, the play URL and passphase are shown in the page below.



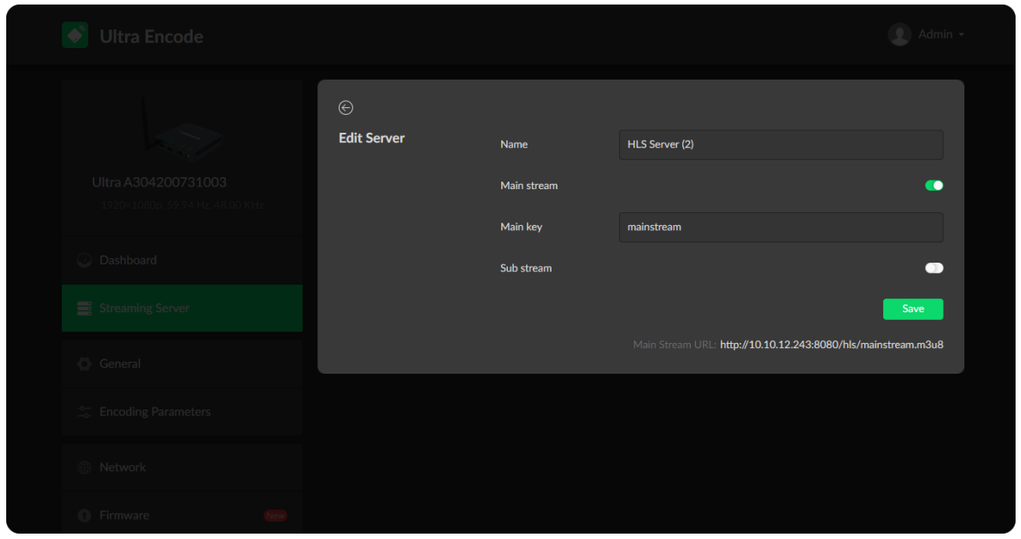
NDI HX

- **Name:** specify a name for current task to facilitate server management, which will be displayed in server list.
- Source Video
  - Group name
    Specify the **Group name** which the source belongs to. It is case-insensitive, and should be a combination of A to Z, a to z, 0 to 9 and special characters like _-. Multiple groups are supported, which should be comma-separated.
    By default, it is public.
  - Source name
    By default, it is **#serial-no#**, serial number.
- **Discovery Server:** turn on the switch to auto-detect a source sender in different network segment and ping the sender. And the **Server IP** should be the IP address of the server running discovery server software. By default, the switch is off.
- **Failover:** turn on to protect your NDI transmission from failure. If the initial

source video fails, the backup device begins to provide a service. The initial source will be automatically switched back to after it recovers. This function is disabled by default.

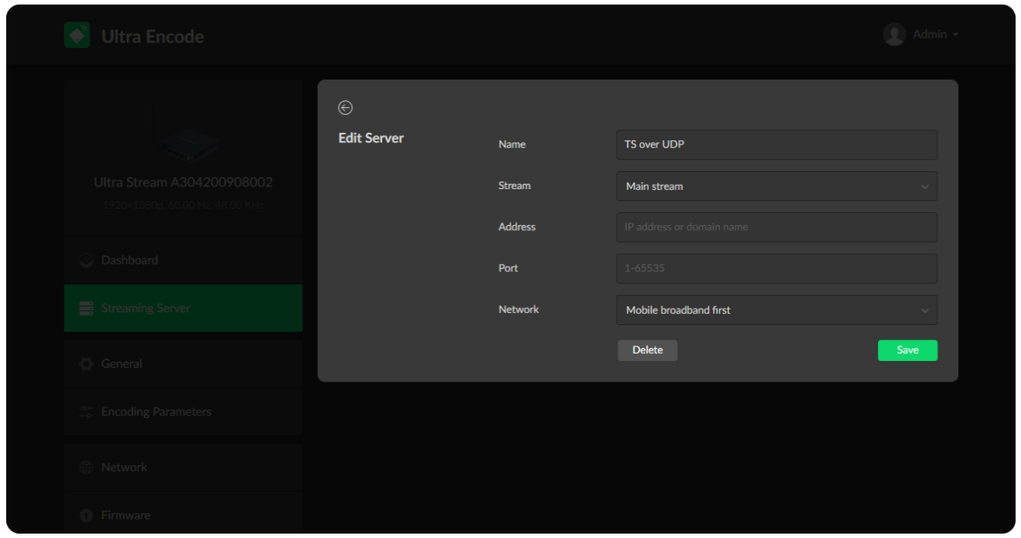
- **Source name** shows the backup NDI channel name.
  Click **Change...** and select the failover (backup) video device within the same NDI group as the initial source.
- **IP Address** shows the IP Address of the backup NDI channel which is automatically obtained after you select the backup NDI source.

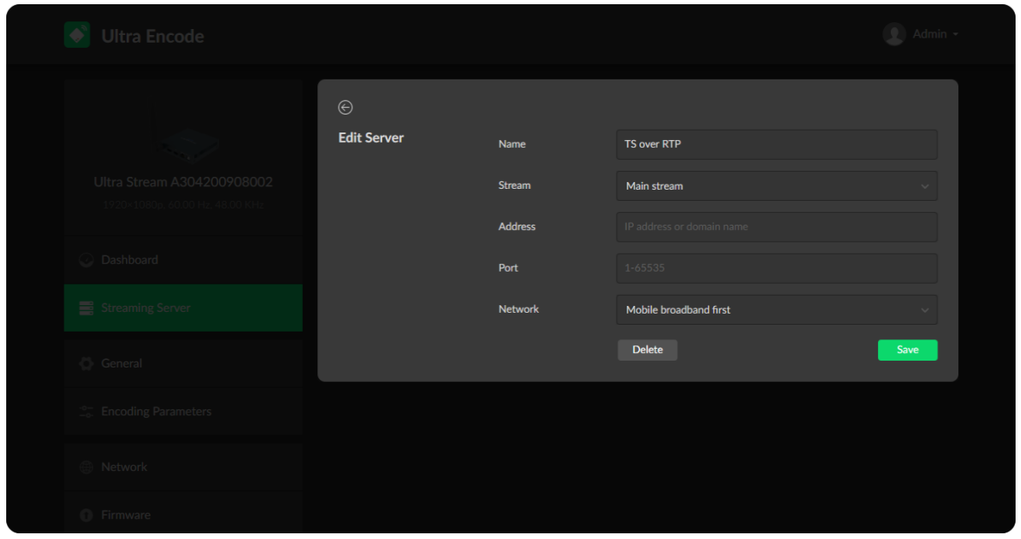
- **Receiver Control:** turn on Web control to enable you to open the Web UI by clicking the gear icon in the NDI Studio Monitor application.
- Only 1 NDI streaming session can be started each time, but you can add multiple servers to the streaming server list.
- When live streaming to NDI server, the encoder would send the main and sub streams simultaneously.
- You can push NDI over sub stream at the following encode profile:
  - Resolutions: 640x480, 640x360
  - Frame rate: 60, 59.94, 50, 30, 29.97, 25, 24, 15, 10, 5fps. To ensure smooth viewing experience, the frame rate above 29.97fps is recommended.
  - Max bitrate: 2 Mbps



HLS

- **Name:** specify a name for current task to facilitate server management, which will be displayed in server list.
- **Main stream:** switch it on when pushing main stream. Modify the stream profile in Encoding Parameters tab.
- **Main key:** set key for main stream. The keys of main and sub stream should be different.
- **Sub stream:** switch it on when you want to encode sub stream. Modify the stream profile in Encoding Parameters tab.
- **Sub key:** set key for sub stream. The sub key should be different from main key.
- **Save:** save current server configuration.
- Only 1 HLS streaming session can be started each time, but you can add multiple servers to the streaming server list.
- After configuration, the stream URLs of main and sub stream will display at the end of the setting page.

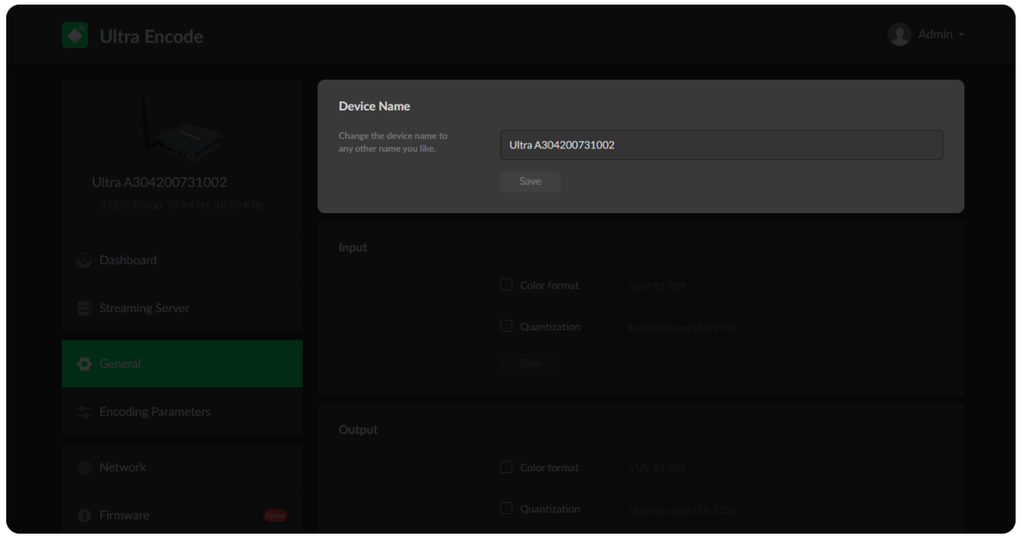




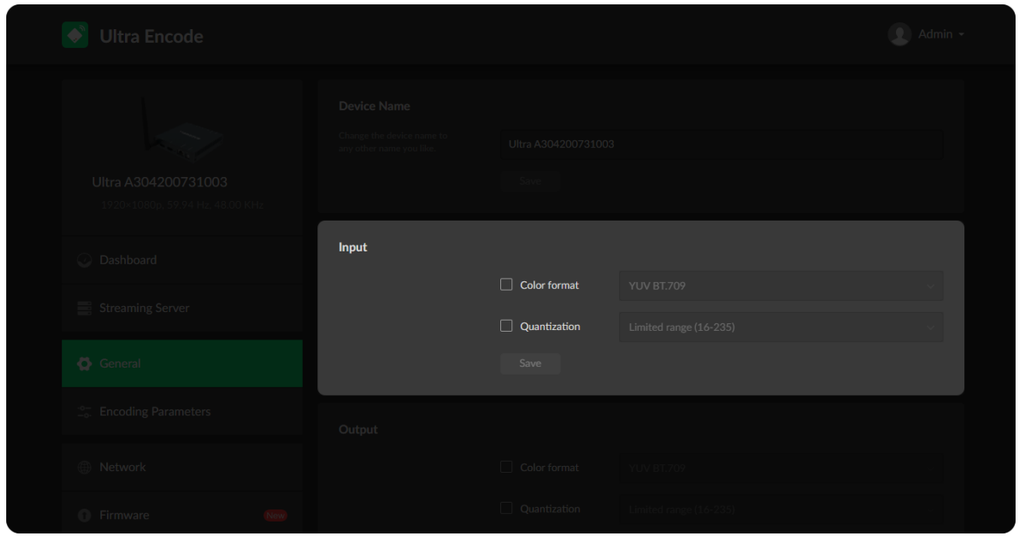
TS over UDP/RTP

- **Name:** specify a name for current task to facilitate server management, which will be displayed in server list.
- **Stream:** choose to stream main or sub stream, which can be customized in Encoding Parameters tab.
- **Address:** specify the destination address.
- **Port:** specify the stream port. The value ranges from 1 to 65535.
- **Network:** The device scans for the available network according to the connection priority and connect to it for streaming. If the current network is disconnected, the unit automatically re-scans according to the priority.
  By default, the network connection priority is: Mobile Broadband > Ethernet > Wi-Fi.
  Plug a USB modem into your encoder while using mobile network to stream.
- **Save:** save current configuration.
- The encoder can stream up to 6 TS sessions simultaneously. The recommended total bitrates for the streams is below 24Mbps for a wired network connection, and 16Mbps for a wireless network connection.

General

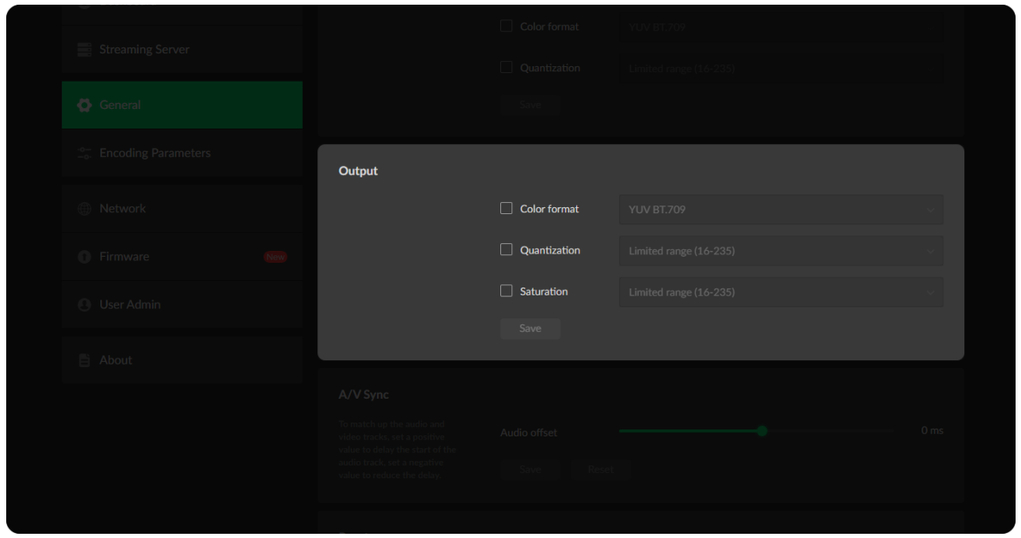


- **Device Name:** range from 1 to 32 characters, including A-Z, a-z, 0-9, space ._- + ' [ ] ( ) and cannot begin or end with a space.



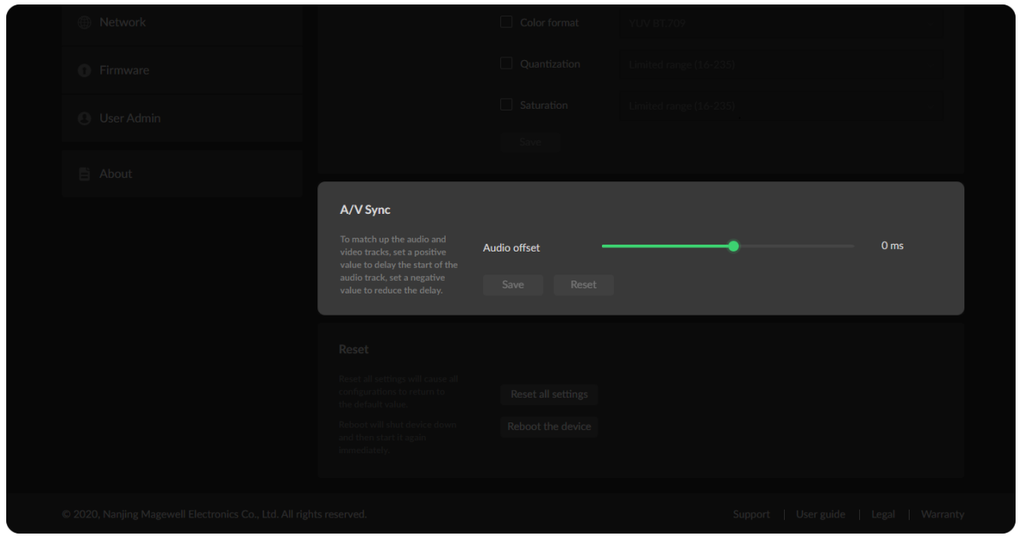
Set Input

- **Color format:** input video color format. Check the box to select other options, including RGB, YUV BT.601, YUV BT.709, YUV BT.2020.
- **Quantization:** input quantization range. Check the box to select other options, including Full range(0-255), Limited range(16-235).



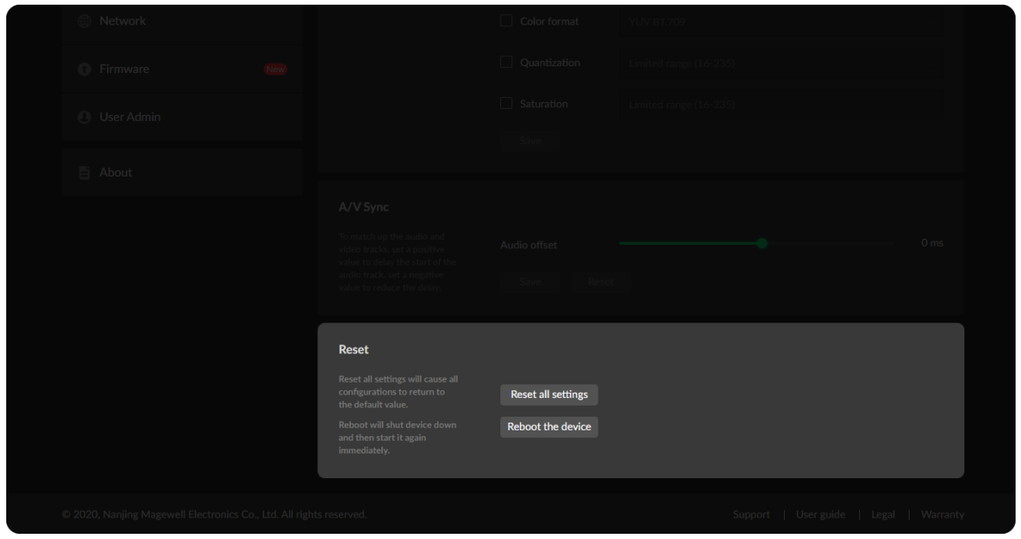
Set Output

- **Color format:** check the box to select other options, including YUV BT.601, YUV BT.709.
- **Quantization:** check the box to select other options, including Full range(0-255), Limited range(16-235).
- **Saturation:** check the box to select other options, including Full range(0-255), Limited range(16-235), Extended GAMUT range(1-254).



A/V Sync

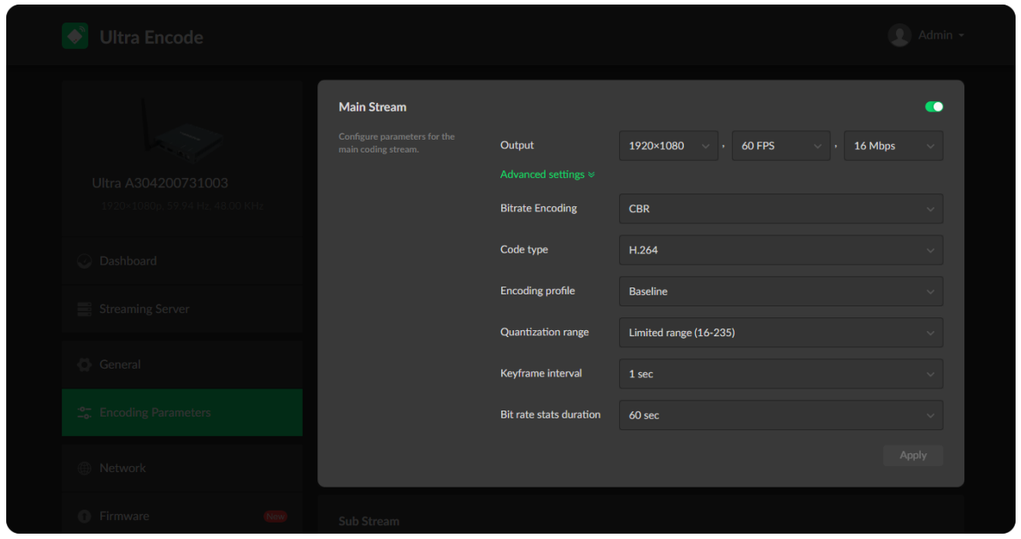
- **Audio offset** ranges from -200 to 200ms.
  To match up the audio and video tracks, set a positive value to delay the start of the audio track, or set a negative value to reduce the delay.
  We recommend that you start your live after this configuration to enjoy the A/V sync adjustment.



Reset Your Device

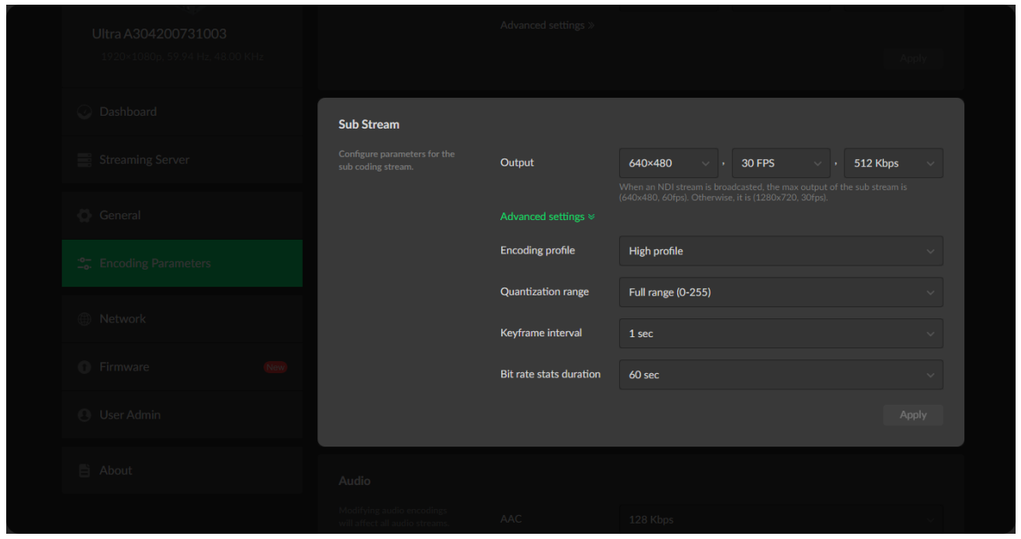
- **Reset all settings:** be cautious that resetting your device would restore configurations to defaults.
- **Reboot the device:** power off the device and restart it when it does not work.

Encoding Parameters



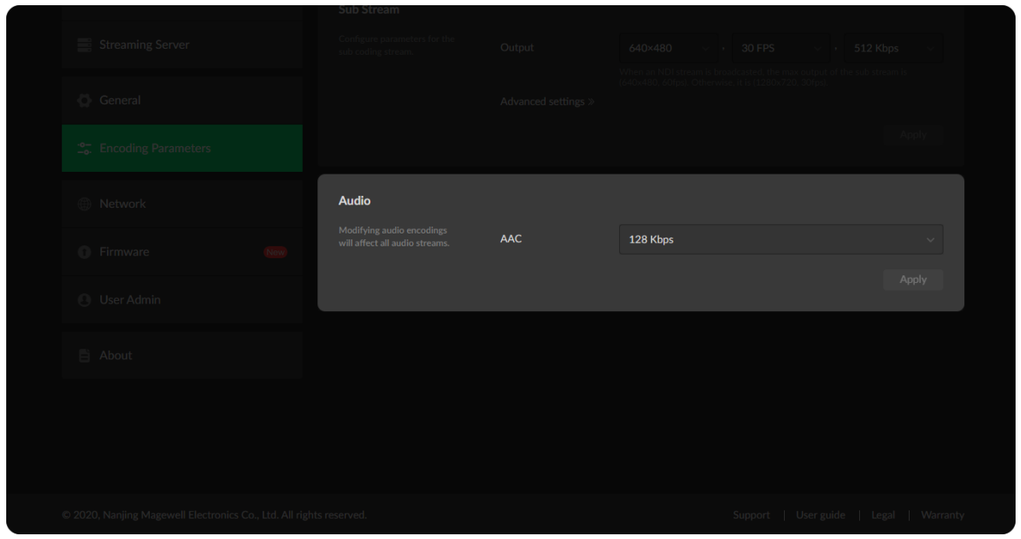
Set Main Stream

- **Output:** by default, it follows input resolution, frame rate, bitrate. However, when the pixel rate of the input signal reaches 170MHz, 4:4:4/4:2:2, the horizontal and vertical resolutions will both go down to half of the original values.
- **Bitrate Encoding:** live stream at CBR (Constant Bitrate) for bandwidth stability. VBR(Variable Bitrate) files vary the amount of output data per time segment.
- **Code type:** options are H.264 and H.265(HEVC) encoders.
- **Encoding profile:** for H.264 encoder, the profiles can be High/Main profile/Baseline. For H.265 (HEVC), it can be Main profile.
- **Quantization range:** options are Full range(0-255), Limited range(16-235).
- **Keyframe interval:** options are 1, 2, 5, 10, 30, 60sec. A smaller number will result in a larger file size and less buffer time for seeing the first frame.
- **Bit rate stats duration:** adjust bit rate by image complexity to ensure the stability of the code stream within the set period. The default value is recommended. A smaller value means more information may need to be discarded when the image data bursts.



Set Sub Stream

- **Output:** by default, it is 1280x720p30 at 1Mbps.
- **Encoding profile:** sub stream uses H.264 encoder. The profiles can be High profile, Main profile and Baseline.
- **Quantization range:** options are Full range(0-255), Limited range(16-235)
- **Keyframe interval:** options are 1, 2, 5, 10, 30, 60sec. A less number will result in a larger file size and less buffer time for seeing the first frame.
- **Bit rate stats duration:** adjust bit rate by image complexity to ensure the stability of the code stream within the set period. The default value is recommended. A smaller value means more information may need to be discarded when the image data bursts.

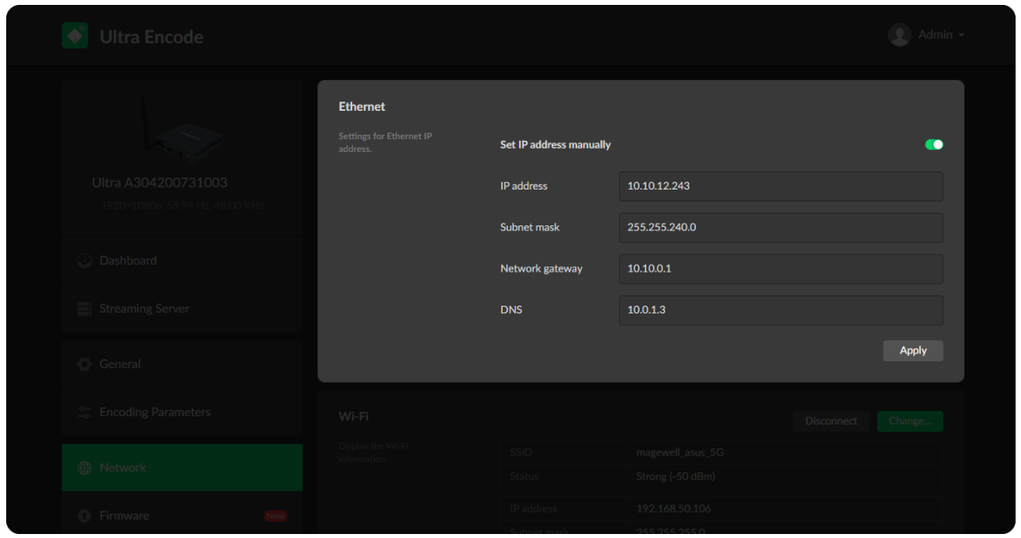


Set Audio

- **AAC:** all audio streams will be affected by modifying the AAC bitrate. It ranges from 16 to 256 Kbps, and the default value is 128 Kbps.

Network

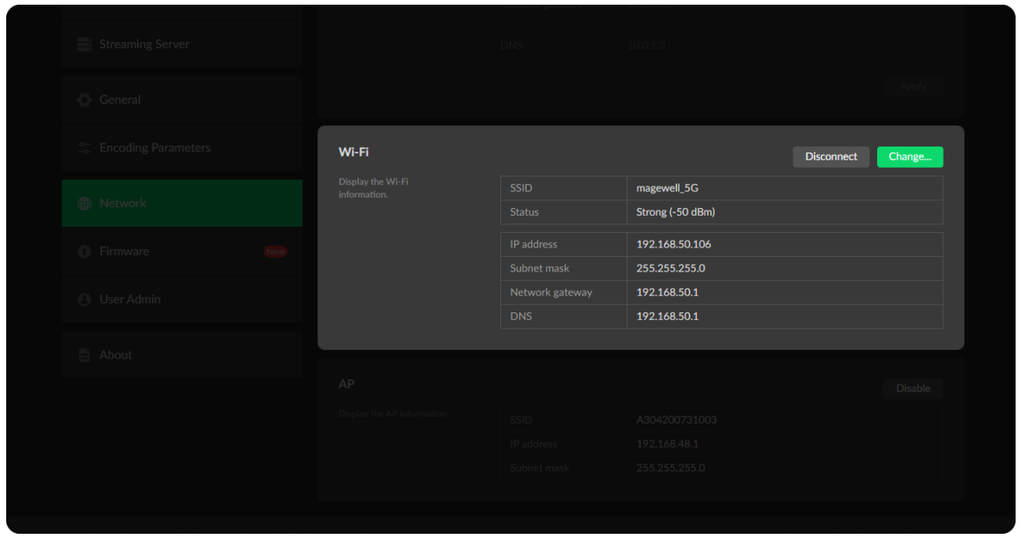
Networking information, including Ethernet, Wi-Fi and AP, can be set in the **Network** tab.

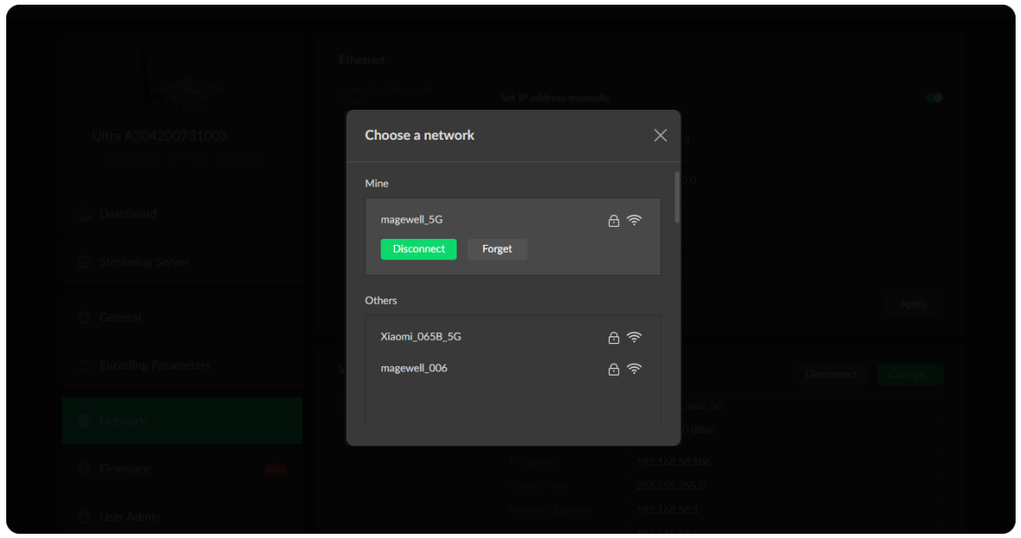


Set Ethernet

The device automatically detects and connects to the Ethernet when networking to a DHCP-enabled LAN. Or you can set the IP address manually for a fixed IP address or an auto-networking failure.

- **Set IP address manually:** turn on the switch to modify current network setting or when being connected to a non-DHCP network.
- **IP address:** device IP address.
- **Subnet mask:** device subnet mask.
- **Network gateway:** device gateway.
- **DNS:** DNS server IP address.
- **Apply:** make current configuration effective. When prompted, click **Yes**.
- Verify: input new IP address to open the Web UI.

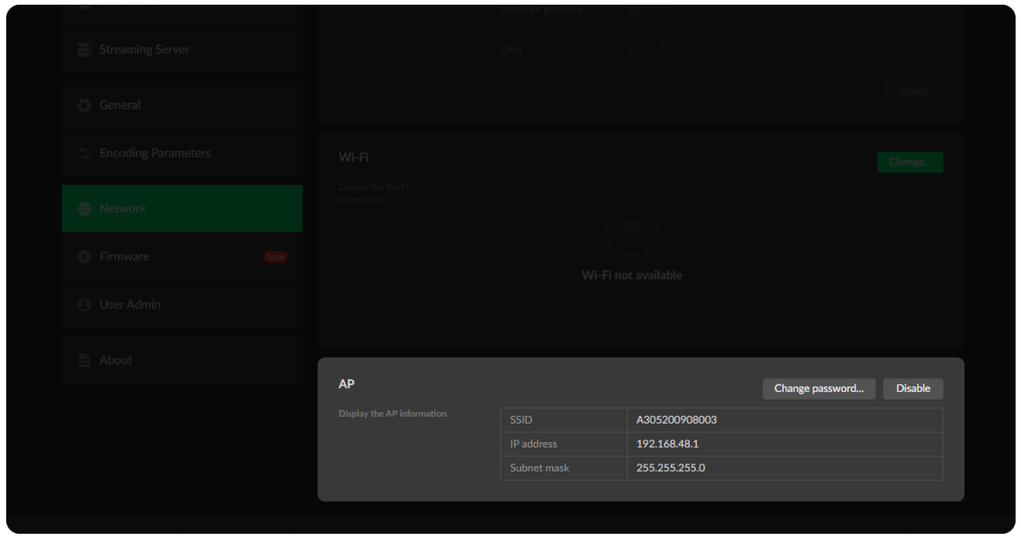




Set Wi-Fi

16 Wi-Fi network information can be saved for auto-detection.

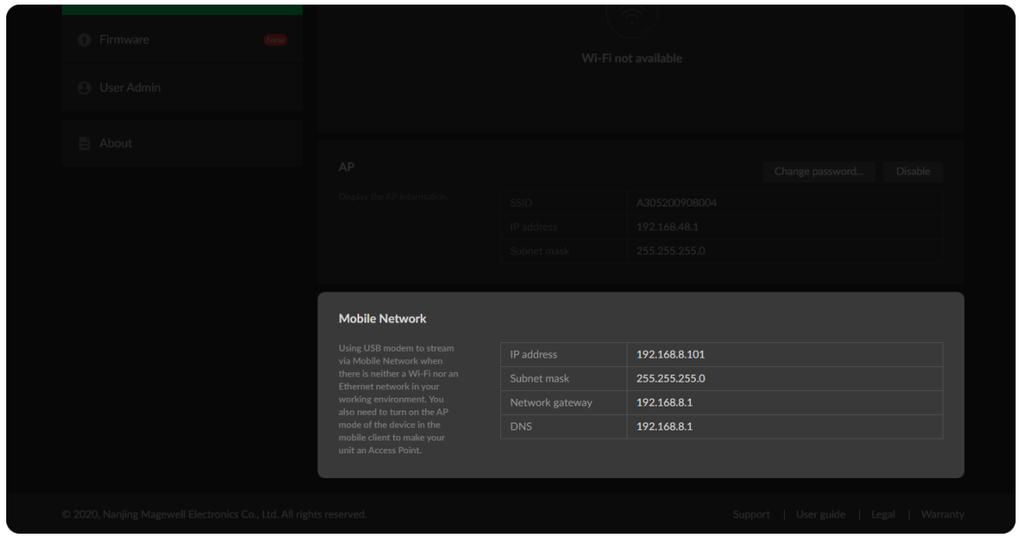
- **Disconnect:** click to cut off current Wi-Fi network.
- **Change...** click to choose a different WLAN to connect to.
- **SSID:** named after device serial number.
- **Status:** Wi-Fi signal strength.
- **IP address:** WLAN IP address.
- **Subnet mask:** WLAN subnet mask.
- **Network gateway:** WLAN gateway.
- **DNS:** WLAN DNS server IP address.



Set AP

You device can work as an AP to be joined to for remote web control.

- **Disable:** click to turn off AP mode. This renders you unable to manage the device over AP, which is not recommended, especially when you are using wireless network or linux/mac OS.
- **SSID:** by default, it is named after the device serial number.
- **IP address:** fixed as 192.168.48.1.
- **Subnet mask:** fixed as 255.255.255.0.
- **Change password**
  - **AP password:** the default AP password is the last 8-bit of the serial number. It ranges from 8 to 16 characters including A-Z, a-z, 0-9, space ._-+'[]() and cannot begin or end with a space.



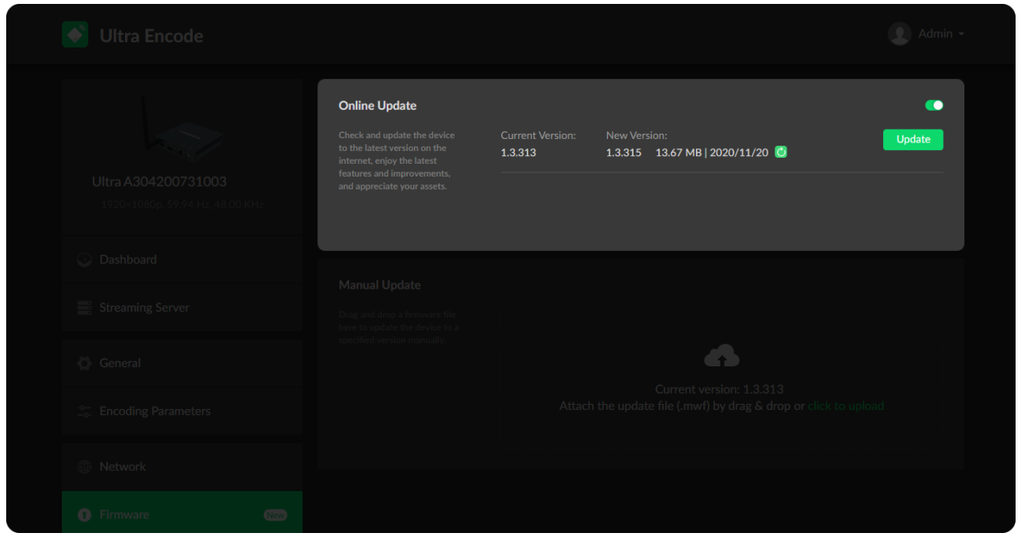
Set Mobile Network

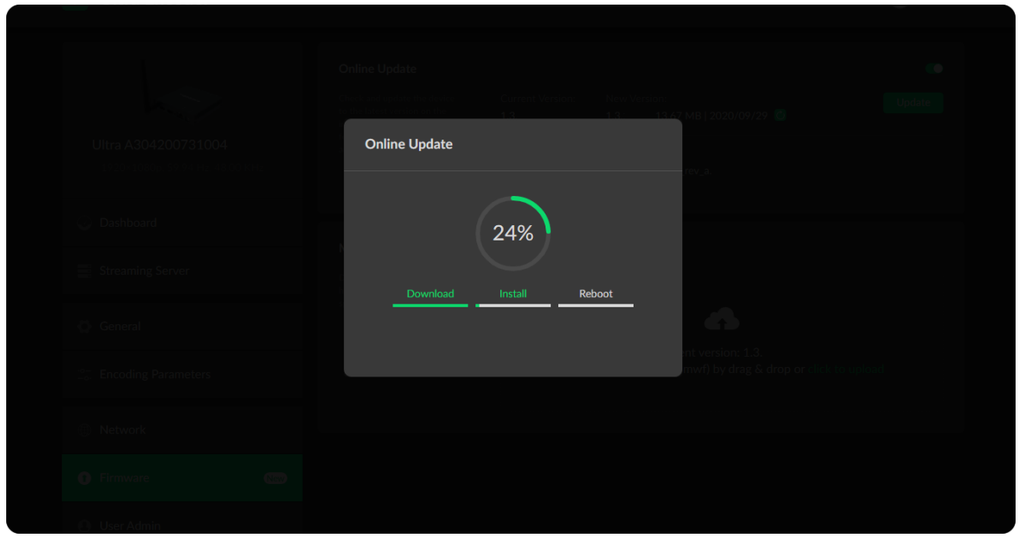
The encoder supports streaming via a USB modem.

- **IP address:** IP address assigned by the USB modem.
- **Subnet mask:** subnet mask.
- **Network gateway:** gateway.
- **DNS:** DNS server IP address.

Firmware

Detect and update firmware to the latest version online, or you can manually add a firmware file to update the unit to specified version.

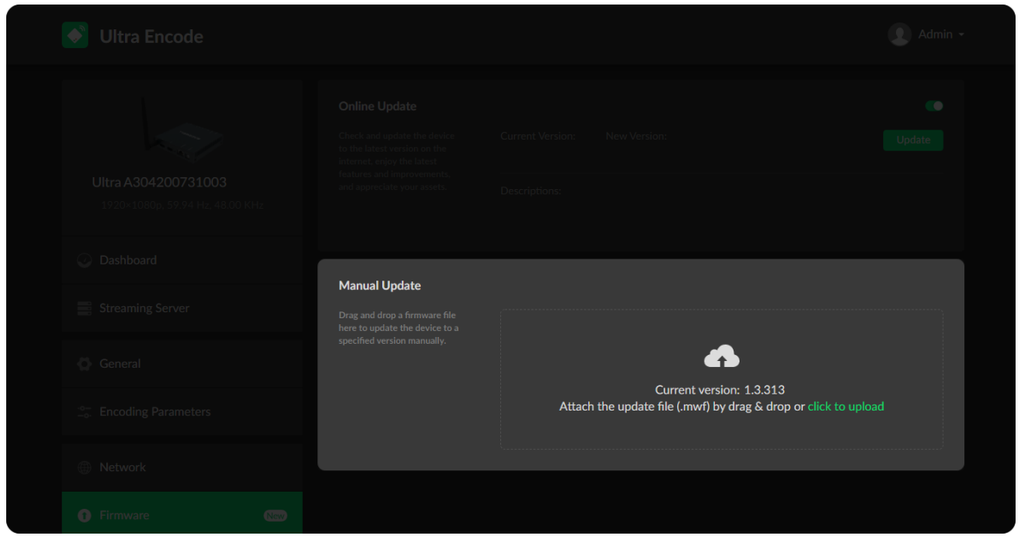


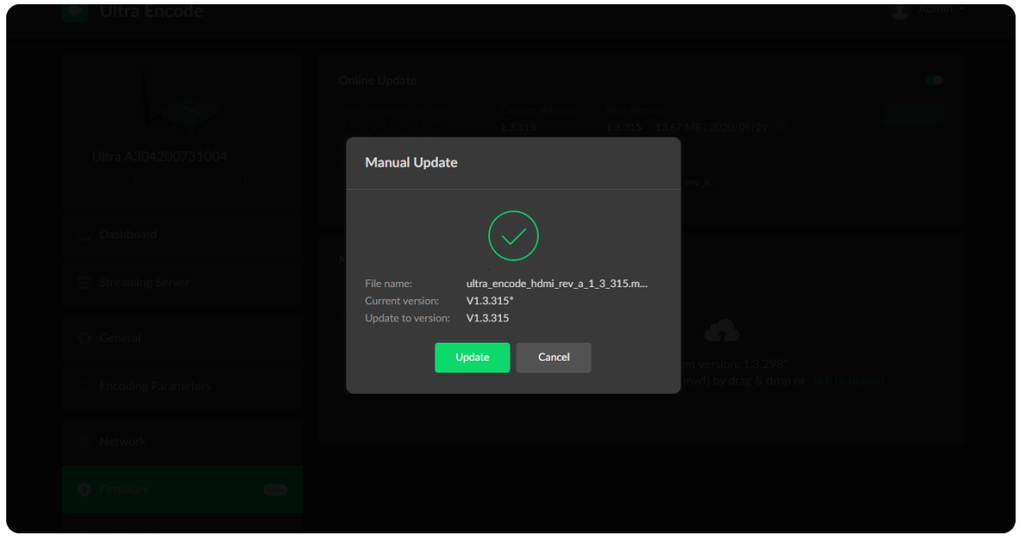


Online Update

By default, the function is on. When a new version is detected, a New icon will flow on the control panel.

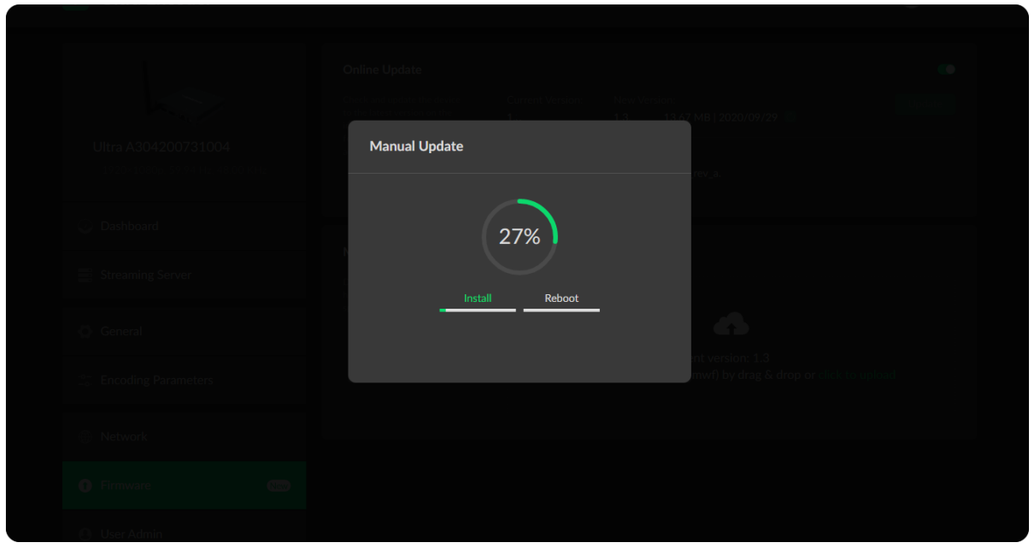
1. Turn on switch, and the online update function is on. The unit would detect the latest released firmware automatically when connecting to the Ethernet.
2. Click icon to check for the latest firmware manually.
3. Click **Update** button to download and install the new version file if any.
   Do not disconnect from the power source or perform any operation while updating the firmware as this could damage your gear.
   After a successful update, the device will restart automatically.
4. Verify: click checking for updates again.
   "Your firmware is up to date." indicates the update is successful.





Manual Update

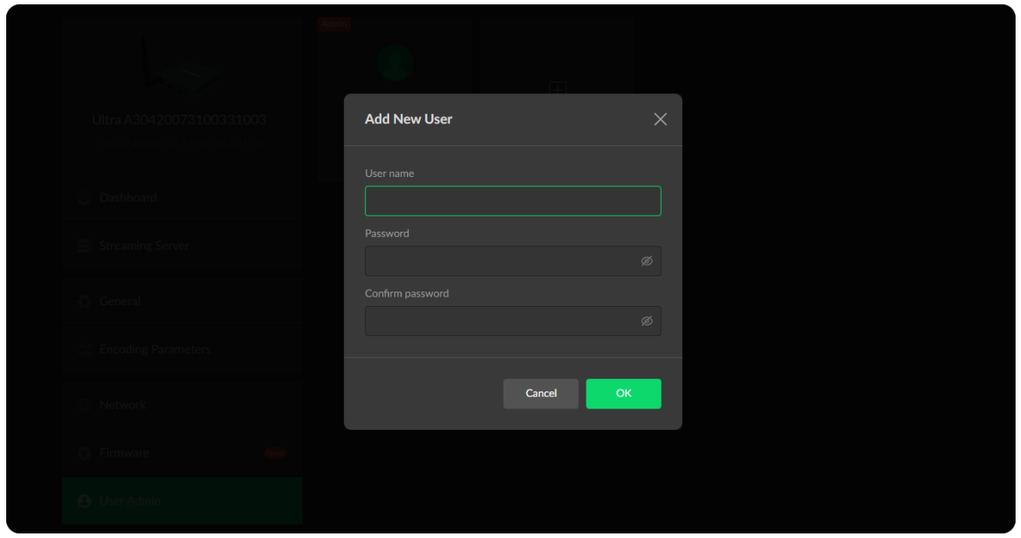
1. Click on **click to update** to select the **.mwf** firmware update file from your local storage, or just drag and drop the file from your computer into the upload zone.
   Dowload firmware file from our official website.
   The device will automatically verify the update file and upload the file after the file verification is passed.
2. Click **Update** to download and install the new version file. Then the device will reboot to complete the update.
   Do not disconnect from the power source or perform any operation while updating the firmware as this could demage your gear.
3. Verify: check the **Firmware version** in **Dashboard** or **Firmware** tab. It should be the same as your target version number.



User Admin

Administrator is allowed to perform the following tasks. The **User Admin** tab is invisible when you log in as a general user.

- Create/Remove General User Accounts
- Modify User Password



Create/Remove General User Accounts

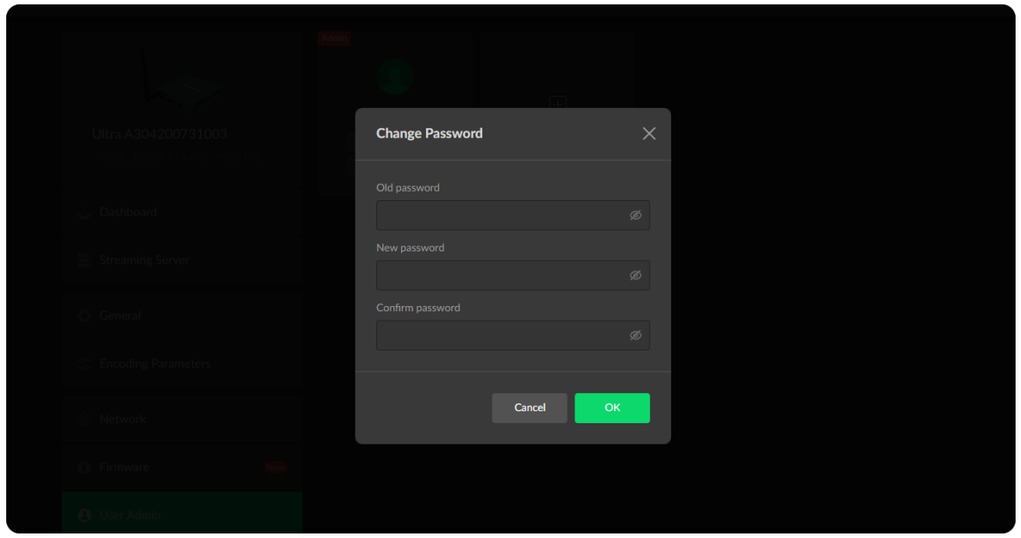
After signing in with default admin account, you may need to add general users to give them permissions to do basic operations, like monitoring the device, or setting some of the parameters.

1. Access the Web UI, and sign in as administrator.
2. Go to **User Admin** tab.
3. Click **Add user**.
4. Enter username, password, and confirm your password.
   - The username is a string of 3 to 12 characters, which contains the letters A-Z, a-z, numbers 0-9 and underline.
   - The password is a string of 1 to 32 characters, which contains the letters A-Z, a-z, numbers 0-9 and special characters _~!@#$%^&*-+=.
5. Click **OK**.
   You can add up to 15 general users.
6. To delete a user: Click **Delete** in the username card. When prompted, click **Yes**.

Modify User Password

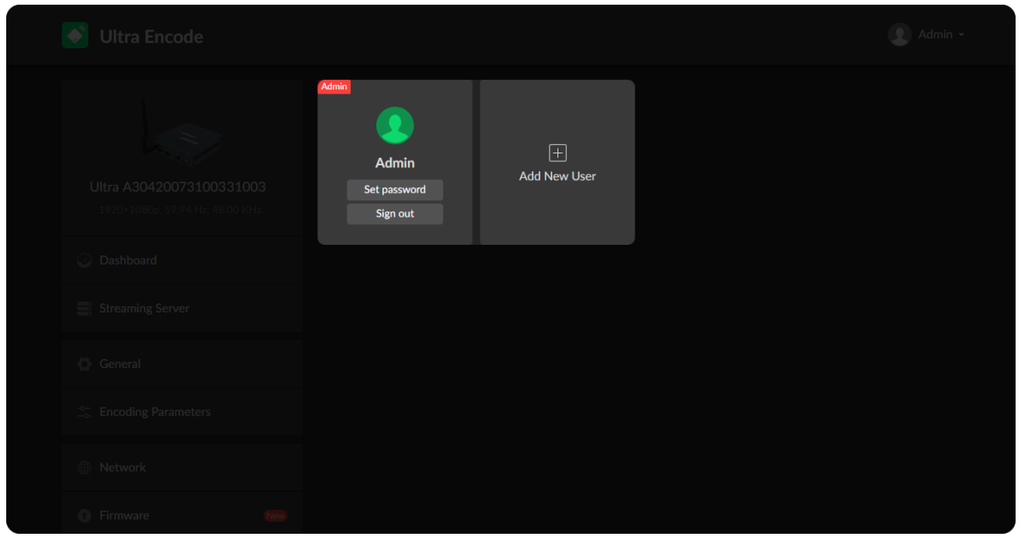
Set Password in the following ways.

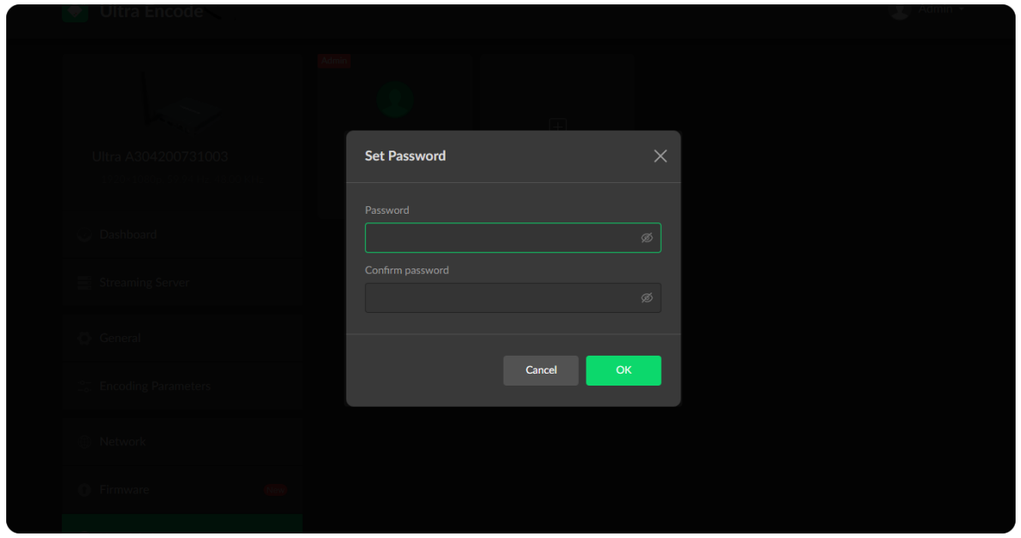
1. Modify user password logged-in via drop-list beside your avatar at the top right
2. Modify a specified user password in **User Admin** tab with admin account



Modify current logged-in user password

1. Log in Web UI.
2. Click the drop-list icon beside your avatar icon, and click **Change password**.
3. In the pop up window, type in your old password, the new password, and confirm your new password.
   The password is a string of 1 to 32 characters, which contains letters A-Z, a-z, numbers 0-9 and special characters _~!@#$%^&*-+=.
4. Click **OK**.



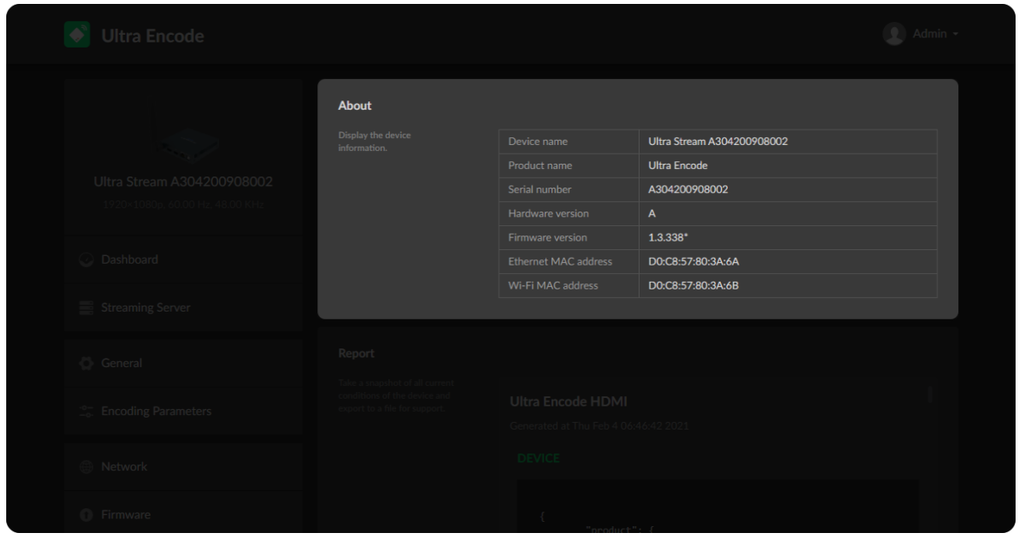


Modify a specified user password

1. Access the Web UI and sign in with the administrator account.
2. Go to **User Admin** tab, then you can change any user's password.
3. Click **Set password**.
4. In the pop up window, type in and confirm your password.
   The password is a string of 1 to 32 characters, which contains letters A-Z, a-z, numbers 0-9 and special characters _~!@#$%^&*-+=.
5. Click **OK**.

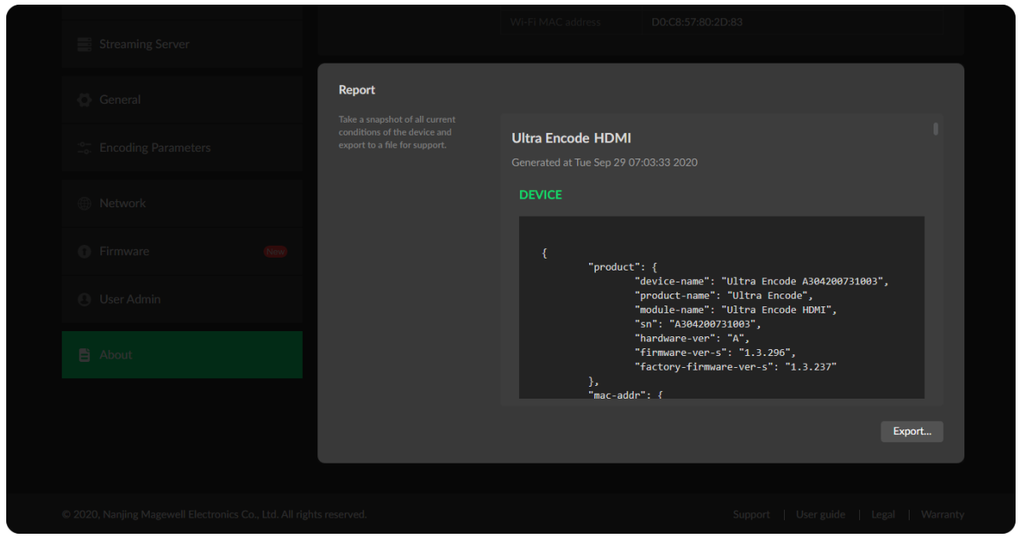
About

Obtain basic data for device maintenance in **About** tab.



Check System Information

- **Device name:** device name which can be modified in the General > Device name tab.
- **Product name:** device family name.
- **Serial number:** device serial number.
- **Hardware version:** device hardware version.
- **Firmware version:** device firmware version, which can be update in the Firmware tab.
- **Ethernet MAC address:** device Ethernet MAC address.
- **Wi-Fi MAC address:** device Wi-Fi MAC address.



Export Configuration Files

Export reports from your encoder when you want to get help from the Magewell Support team. These files will help our support engineers get a better understanding of your device status and other related information.

1. Go to **About** > **Report**.
2. Click **Export...** to generate a .html file.
3. When prompted, click **Export**.

FAQ

How to turn on/off AP mode

AP mode is on by default. You can go to **Network** > **AP** section to turn on/off the AP mode and change AP password.

What is the encoding format for live broadcast?

Two data encoding methods for main stream: CBR(constant bitrate) and VBR(variable bitrate) - which can be modified in the WebUI > **Encoding Parameters**, and CBR for sub stream which can not be changed.

Can Ultra Encode stream to multiple destinations at the same time?

- Allow simultaneous sessions over the same streaming protocol.
  - Up to 6 sessions of TS over RTP and TS over UDP simultaneously.
  - Up to 6 sessions of SRT Caller and SRT Listener simultaneously, containing one SRT Listener session at most.
  - Up to 6 sessions of RTMP and RTMPS simultaneously. It means that as long as the destination server allows, RTMP/RTMPS video platforms such as Twitch, Facebook, YouTube can be streamed to at the same time with your accounts.
- Stream only 1 session of HLS (push), RTSP, or NDI HX (NDI|HX2).

Can I set one live stream server to use the main stream and the other to use the sub stream?

Yes. You can select the main stream or sub stream for each session.

What to do if I forget the Web UI password?

- Forgot admin password:

  Press a paperclip or similar object into the hole shown in the figure. Hold the paperclip in place until all indicators but power flash twice, then remove the paper clip.

  Be cautious that resetting would lose all your configuration data.

- Forgot a general user's password:

  Sign in Web UI with the administrator account, then go to **User Admin** tab, then you can change the specific user's password.

Support

Get the Latest Information

If you have any problems using Magewell products or need more technical information, please visit the following.

- Tutorial video: Magewell TV
- YouTube channel: Magewell Video Capture Device
- Knowledge base: Ultra Encode Support

Technical Support

Ticket System: If you have any questions using Magewell products or need technical assistance, please submit and track your inquiries by clicking here.

Warranty

Limited Warranty

Except otherwise set between you and Magewell in advance in a written form, the free limited warranty service starts from the date on your proof of purchase. The proof can be: sales contract, formal sales receipt, invoice or delivery note. The earliest date of these proofs is the starting date of the free limited warranty.
The period of free limited warranty goes as below:

- Ultra Encode Family: two (2) years;
- The power adapter provided as accessories: one (1) year;

How to get the limited warranty

1. Please contact the Magewell support team by email (support@magewell.net) first, to determine whether your problem can only be solved by returning it to Magewell for repair. Magewell might ask you to take photos of the front and back of the defective products.
2. Magewell will issue an RMA letter to you if it is confirmed that you need to return the faulty product for further examination or repair. Please fill in the RMA with necessary information as required.
   If it is regular repair, you will be responsible for the shipping cost, duties and insurance cost (if applicable); if the product is DOA, Magewell will be responsible for the shipping cost.
3. If some components need to be replaced, Magewell will decide to repair, renovate or replace the components by itself. Magewell may use new or repaired component to repair the product. The repaired product can be expected to work normally and the performance to remain the same. Repaired products can work in a good working condition and at least function the same as the original unit. The original replaced component will become the property of Magewell and components which are replaced for the client will become his/her property.
4. If the product is within warranty, Magewell will repair or replace the faulty units at its own discretion. In circumstances where the faulty unit is replaced by another one, Magewell may use new, repaired or renovated units. The faulty unit will then become the property of Magewell while the replacement unit will become the property of the purchaser.
5. If the warranty expires, Magewell will inform the purchaser whether the products can be repaired and the maintenance costs they need to pay. If purchasers

decide to repair, Magewell will repair, renovate, or replace the components after receiving the maintenance costs. If purchasers give up repairing, Magewell will dispose of the faulty unit if the purchaser chooses that option.

6. The repaired or replaced product assumes 1) the remaining term of the Warranty of the replaced unit or faulty unit; 2) ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you. The extended warranty is only valid for repaired/replaced components.
7. The period of service depends on the client's location (country and area) and the product.

To view the complete warranty policy, please visit www.magewell.com/quality-assurance.

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