

ATOM-Box

USER GUIDE

REV02



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Introduction

Thank you for purchasing EvertzAV's ATOM-Box USB recorder and streaming encoder. The ATOM series of products are based upon very high performance technology and built to high standards and together these factors combine to provide a very rugged and reliable video recording and streaming system. Before operating the unit, please read this manual thoroughly and retain it for future reference.

This document is designed to give users an overview of the product as well as video recording and streaming operation details. Should you need any further information pertaining to installation or operation of your product or have any reliability issues, please contact EvertzAV or your supplier.

Figure 1. ATOM-Box



Package Contents

- 1x ATOM-Box.
- 1x 12VDC power adapter.

Important Safety Information

1. Read all of these instructions.
2. Save these instructions for later use.
3. All warnings on the product and in the operating instructions should be adhered to.
4. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
5. This product is designed for indoor use only. Avoid using this product near water (e.g. near a bathtub, washbowl, sink, or laundry tub, in a wet basement, or near a swimming pool, etc...).
6. This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your supplier or EvertzAV.
7. For added protection, during a lightning storm or when it is left unattended and unused for long periods of time, unplug this product from the wall outlet and disconnect the cables. This will prevent damage to the product due to lightning and power-line surges.
8. Do not allow anything to rest on the power cord. Do not place this product where the cord could be exposed to damage by persons walking on it, or similar hazards.
9. Follow all warnings and instructions marked on the product.
10. Never push objects of any kind through the slots/ports of this product as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock.
11. Never spill liquid of any kind on the product.
12. Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltages or other hazards. Refer all servicing to qualified service personnel.
13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power cord or plug is damaged or frayed.
 - b. If liquid has been spilled on or into the product.
 - c. If the product has been exposed to rain or water.
 - d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

- e. If the product has been dropped or the chassis has been damaged.
 - f. When the product exhibits a distinct change in performance this indicates a need for service.
14. When replacement parts are required, be sure the service technician has used replacement parts specified by EvertzAV that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
 15. Upon completion of any service or repairs to this product, ask the service technician to perform routine safety checks to determine that the product is in safe operating condition.

General Overview

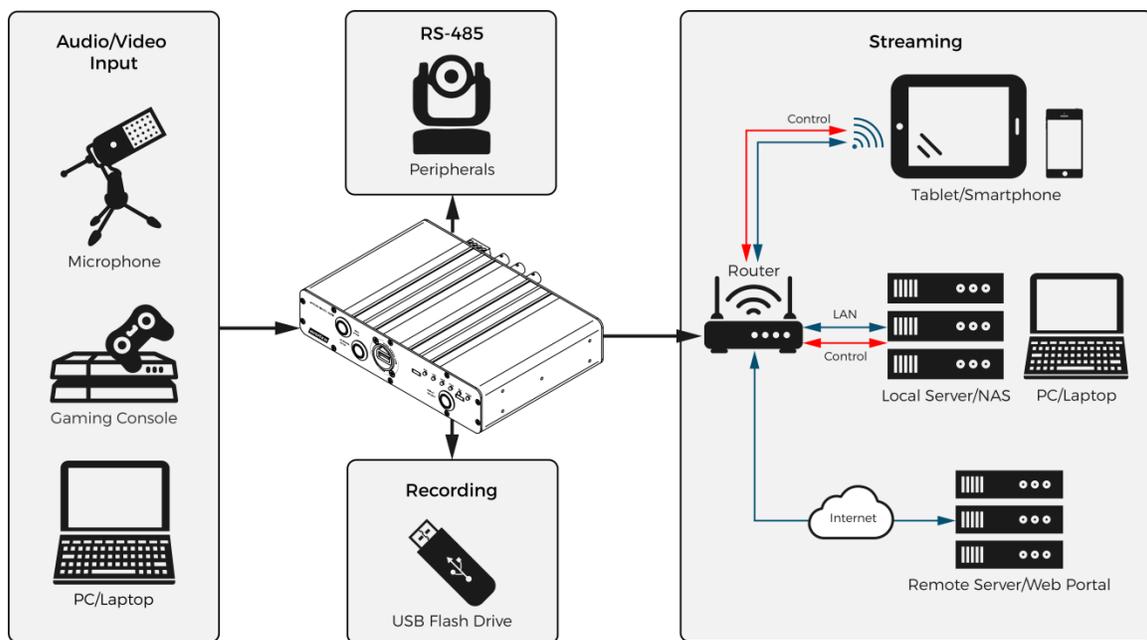
The ATOM-Box is a versatile USB recorder and streaming encoder in a compact form factor. Designed for multiple AV applications it allows for low cost recording of sport, studio productions, compliance video, and music on to a USB drive as H.264 encoded MPEG-4 files. These files can be played back on virtually any computer, mobile device, and modern smart TVs, making this file format an almost universal playback medium.

The ATOM-Box is also a high quality streaming encoder that can stream files to the Internet for others to view live while also making a recording – it's one box with two functions! It is fully equipped with a full range of input interfaces including HD/SD-SDI, DVI, VGA, YUV, AV, and HDMI.

The ATOM-Box is a flexible platform that can be used as a standalone device or rack mounted in a 1RU chassis when multiple recorders are required. One of its many benefits is that it's simple to use; insert a USB drive, press the **REC/ STOP** button for instant recording, then press it again to stop. For streaming video and audio, press the **STREAM/STOP** button for live video over IP. For optimizing recording and streaming performance, a simple Web UI is available for accessing the ATOM-Box's recording and streaming parameters.

The use of the H.264 codec ensures high-quality recordings encoded as MPEG-4 files with impressive video and audio quality for resolutions of up to 1920x1080p/60 with AAC audio bit rates up to 384 kHz and a sample rate of 48 kHz at 16-bit. The Web UI provides adjustable bit rate, standard or high profile MPEG-4 or TS, and users can further optimize the TS transport stream signals for streaming such as TCP/UDP (unicast or multicast), RTSP over HTTP/TCP/UDP in the form of elementary stream, RTMP (local or publish), and HLS.

Figure 2. ATOM-Box Application Diagram



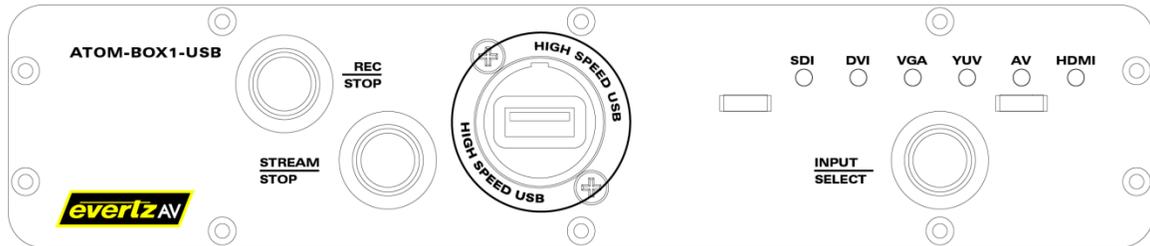
Specifications

USB	USB 2.0, high speed, >15 Mb/s sustained data rate
Codec	H.264/AVC, baseline, main, or high profile
Latency	<0.3s (RTSP/UDP streaming)
Bitrate	Preset for 3 Mb/s, user adjustable up to 16Mb/s via Web UI
File Format	TS or MPEG-4 with AAC audio
Audio Codec	32-384 Kbps, sample rate 48 kHz at 16-bit
Video Inputs	1x HD/SD-SDI, 1x DVI, 1x VGA, 1x YUV, 1x AV, 1x HDMI
Supported Input Formats	1920×1080 (p60/p50/P30/p25/p24/i60/i50), 1280×720 (p60/p50), 1280×1024 (p60), 1280×960 (p60), 1024×768 (p60), 800×600 (p60), 720×480 (p60/i60), 640×480 (p60), 720×576 (p50/i50)
Supported Output Formats	Resize range from 128x128 to 1920x1080 (p60)
Audio Inputs	2x RCA, 1x 3.5mm connector (stereo)
Control Ethernet	1x RJ-45, 10/100 Mb/s
Power Input	10V-24VDC on 2.5mm connector with screw lock
Power Consumption	15W
Dimensions (W x H x D)	6.3in x 1.7in x 4.7in (160mm x 44mm x 120mm)
Weight	1.10 lbs (0.5kg)

Interfaces

The front of the ATOM-Box includes the following interfaces:

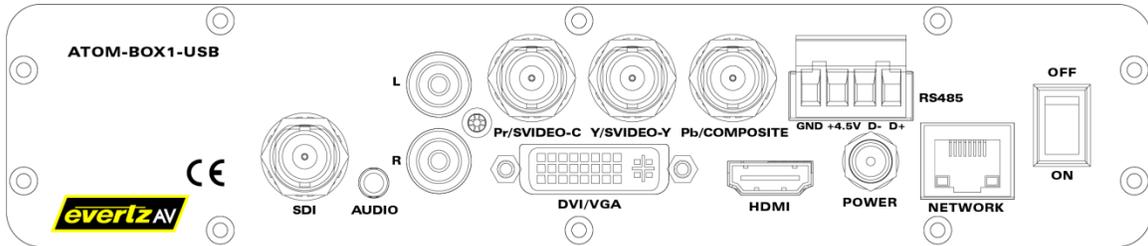
Figure 3. ATOM-Box Front



Interface	Description
Rec/Stop Button	Used to start and stop recordings to the USB drive. Press to record and press again to stop.
Stream/Stop Button	Used to start and stop streaming of the input source. Press to stream and press again to stop.
USB 2.0 Port	Insert a USB 2.0 flash drive that will be used as the storage device for recordings. Note: All USB drives should be FAT32 formatted to ensure correct operation.
Input Source LEDs	Indicates the selected input source (i.e. SDI, DVI, VGA, YUV, AV [Composite/S-Video], HDMI) as well as if a signal is detected on the selected input. Red indicates a signal has not been detected. Green (or yellow for S-Video) indicates a signal has been detected.
Input Select Button	Used to select the input source that you wish to record/stream.

The rear of the ATOM-Box includes the following interfaces:

Figure 4. ATOM-Box Rear



Interface	Description
3G-SDI Input Port	BNC port for 3G-SDI video and audio input.
3.5mm Audio Line In	3.5mm line in audio jack for audio input.
RCA Stereo Analog Audio Input Port	Left/right RCA ports for stereo analog audio input.
YPbPr/Composite/S-Video Input Ports	3x BNC ports used for YPbPr (Component/YUV), Composite (AV), and S-Video (AV) video input.
DVI/VGA Input Port	Dual link DVI-I port used for DVI video and audio input and VGA video input.
HDMI Input Port	HDMI port used for HDMI video and audio input.
RS485 Port	RS485 serial port used for controlling peripherals.
2.5mm Power Connector	A 12V DC adapter is included with the ATOM-Box. This adapter plugs into this jack to provide power.
Ethernet Port	10/100Mbps RJ45 Ethernet port used for connecting to a network and Web UI configuration.
On/Off Switch	Used to turn the ATOM-Box on/off.

Basic Hardware Operation

The ATOM-Box's recording and streaming capabilities are fully functional right out of the box. You can use the ATOM-Box to simply record or stream live or do both simultaneously. Power on your device, connect your video and audio source(s) to the applicable A/V interface(s), insert a USB flash drive, switch inputs using the **INPUT SELECT** button, record using the **REC/ STOP** button, and/or broadcast live over IP using the **STREAM/STOP** button.

By default, the main encoder resolution and frame rate is configured to be the same as the input, the H.264/AVC profile is configured for high, the video bitrate is configured for 3Mbps, the audio bitrate is configured for 128Kbps, and the GOP (Group of Pictures) is configured with a value of 60.

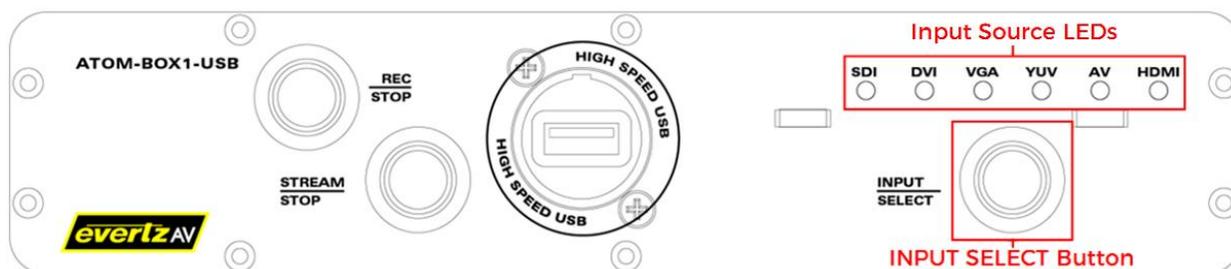
Note: Encoder settings can be configured using the ATOM-Box Web UI. For more details, refer to the section entitled [Encoder](#) on [page 17](#).

Input Selection

Located on the front of the ATOM-Box are input source LEDs (i.e. labeled SDI, DVI, VGA, YUV, AV, and HDMI) that indicate which input is currently selected. A red LED indicates no signal has been detected for the respective input source, while a green LED (or yellow for S-Video) indicates a signal has been detected.

To change the input source press the **INPUT SELECT** button. The input source LED will change accordingly.

Figure 5. ATOM-Box INPUT SELECT Button and Input Source LEDs



Recording

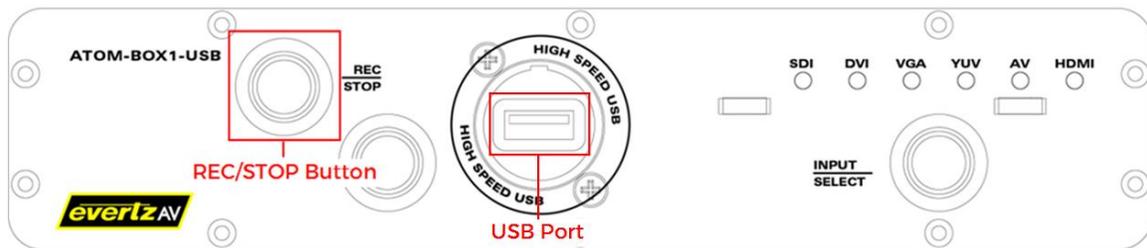
By default, recordings are configured to be a maximum size of 4GB and configured to use the filename syntax of "RECORD_XXXX.mp4" whereby XXXX is an incremental number (e.g. 0001, 0002, 0003, etc...). Recordings are also set to loop by default (i.e. after a recording has reached 4GB in size, the recording will continue on a new file).

Note: Recording settings can be configured using the ATOM-Box Web UI. For more details, refer to the section entitled [Recording](#) on [page 20](#).

To start a recording, input your USB flash drive into the USB port and press the **REC/STOP** button once. The LED around the **REC/STOP** button flashes red indicating that the recording is attempting to start. When the LED is lit solid red, recording has successfully started.

Press the **REC/STOP** button again to stop the recording. The LED around the **REC/STOP** button flashes red indicating that the recording is attempting to stop. When the LED is completely off, recording has successfully stopped and the USB is ready to be removed.

Figure 6. ATOM-Box RECORD/STOP Button and USB Port



Streaming

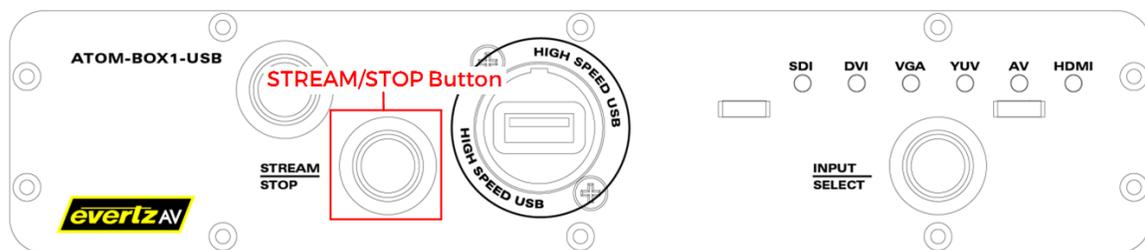
By default, streaming functionality uses RTSP (Real Time Streaming Protocol) with an RTSP port of 554 and an RTSP HTTP port of 8000. Therefore, the default stream playback URL is **rtsp://192.168.1.168:554/live** or **rtsp://192.168.1.168:8000/live**.

Note: Streaming settings can be configured using the ATOM-Box Web UI. For more details, refer to the section entitled [Streaming](#) on [page 22](#).

To start streaming, press the **STREAM/STOP** button once. The LED around the **STREAM/STOP** button flashes green indicating that streaming is attempting to start. When the LED is lit solid green, streaming has successfully started. Enter the stream playback URL in your media player to view the stream.

Press the **STREAM/STOP** button again to stop streaming. The LED around the **STREAM/STOP** button flashes green indicating that streaming is attempting to stop. When the LED is completely off, streaming has successfully ended.

Figure 7. ATOM-Box STREAM/STOP Button



Web UI

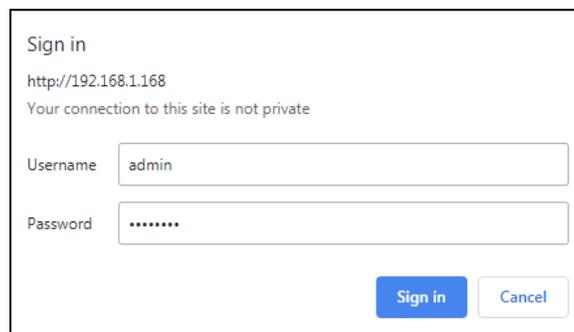
A simple Web UI is available on the ATOM-Box allowing you to optimize recording and streaming performance as well as configure multiple additional settings. The default IP to access the ATOM-Box Web UI is **192.168.1.168** while the default username/password is **admin/evertzav**.

Accessing the Web UI

To access the ATOM-Box Web UI:

1. Ensure your PC is on the same network and subnet as the device (i.e. 192.168.1.x if the default IP is used).
2. Power on your device.
3. When the device has finished its boot process, enter the IP (default = **192.168.1.168**) in the URL field in your preferred web browser.

Figure 8. ATOM-Box Web UI Authentication Popup



Sign in
http://192.168.1.168
Your connection to this site is not private

Username

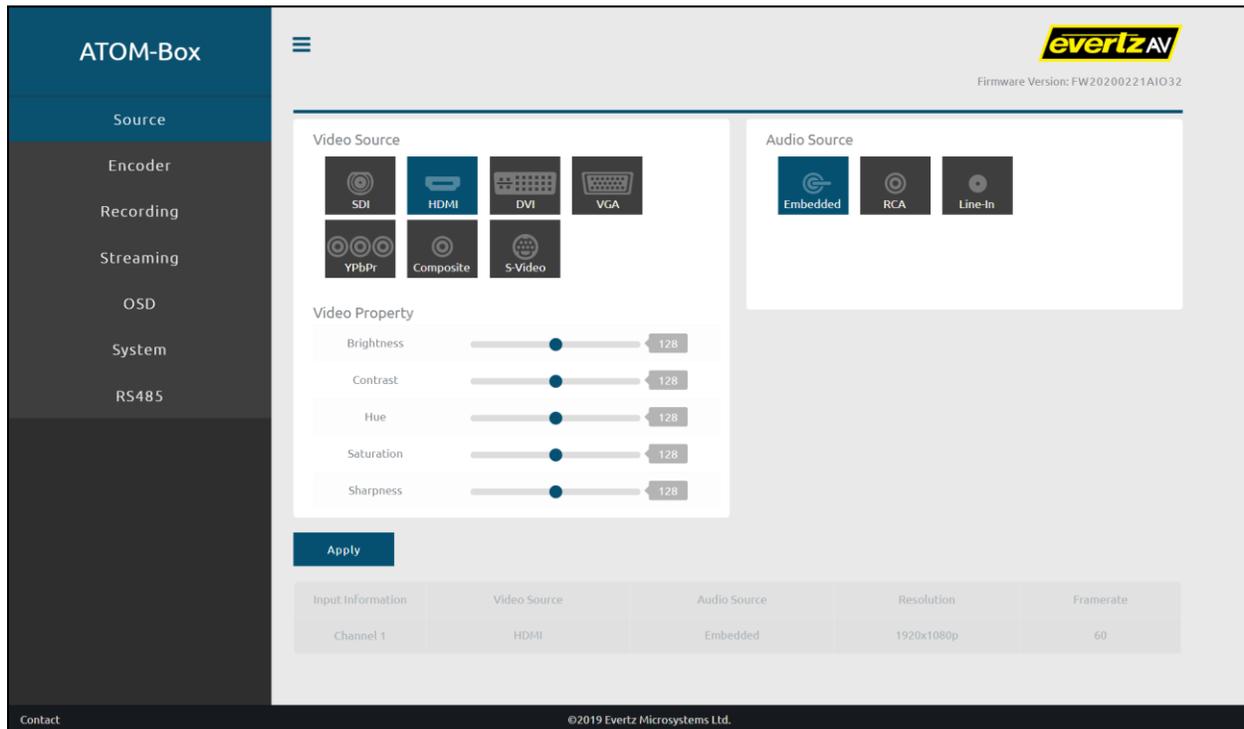
Password

4. Login using the user/password credentials (default = **admin/evertzav**).

Source

The **Source** page is the initial landing page of the ATOM-Box Web UI. On this page, you can set the video and audio input sources and fine tune video and audio properties.

Figure 9. ATOM-Box Web UI Source Page



Video Source

Click on the desired video source icon to select a video source, and then click on **Apply** to apply your changes. Options include:

- SDI
- HDMI
- DVI
- VGA
- YPbPr (Component/YUV)
- Composite (AV)
- S-Video (AV)

Video Property

Click and drag the respective video property slider to change the property value, then click **Apply** to apply your changes. Properties and ranges include:

- **Brightness** (0 – 255, default = 128)
- **Contrast** (0 – 255, default = 128)
- **Hue** (0 – 255, default = 128)
- **Saturation** (0 – 255, default = 128)
- **Sharpness** (0 – 255, default = 128)

Audio Source

Click on the desired audio source icon to select the audio source, and then click **Apply** to apply your changes. Options include:

- **Embedded** (for SDI, HDMI, and DVI only)
- **RCA**
- **Line-In**

Audio Property

Note: Audio property settings are applicable only when **RCA** or **Line-In** is selected as an audio source.

Select the audio sample rate using the dropdown menu, and then click **Apply** to apply your changes. Options include:

- **44100Hz** (default)
- **48000Hz**

Figure 10. Audio Sample Rate Dropdown Menu

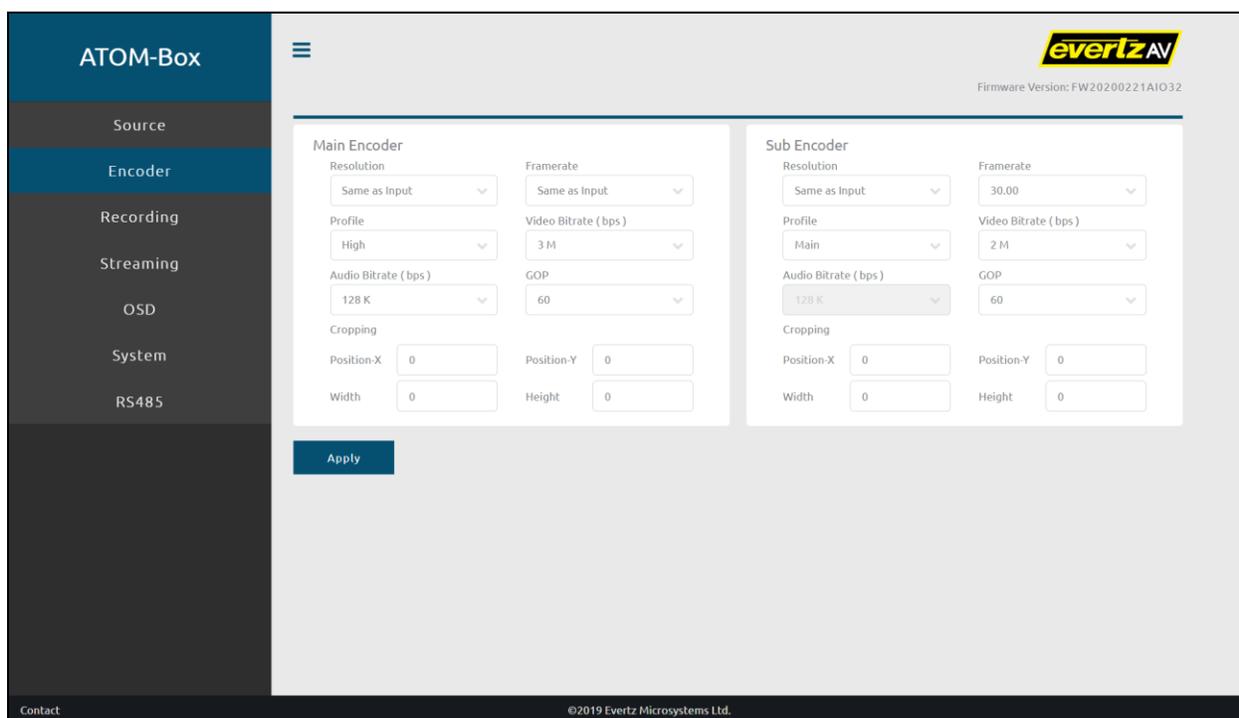


Encoder

The **Encoder** page allows you to change various video and audio settings for the main and sub encoders.

Note: If only the main encoder is used for streaming, the ATOM-Box can stream at 1920x1080p@60 fps.
If both the main and sub encoders are used for streaming, the main stream cannot exceed 1920x1080p@30 fps and the sub stream cannot exceed 960x540p@30 fps.

Figure 11. ATOM-Box Web UI Encoder Page



Main Encoder

Select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and ranges include:

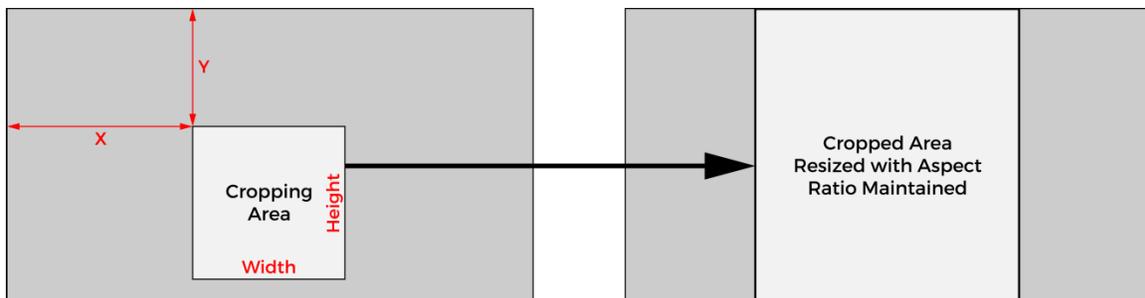
- **Resolution** (160x128, 320x240, 640x480, 720x480, 720x576, 960x540, 1280x720, 1920x1080, Same as Input, default = Same as Input)
- **Framerate** (1, 5, 10, 15, 20, 25, 30, 50, 60, Same as Input, default = Same as Input)
- **Profile (i.e. H.264/AVC profile)** (Baseline, Main, High, default = High)
- **Video Bitrate** (256Kbps, 512kbps, 1Mbps, 1.5Mbps, 2Mbps, 3Mbps, 4Mbps, 6Mbps, 8Mbps, 10Mbps, 12Mbps, 16Mbps, default = 3Mbps)

Note: When the bitrate is configured with a value higher than 6Mbps, it is recommended to use either the recording function or streaming function, not both. When the bitrate is configured with a value higher than 10Mbps, it is recommended to use only the recording function.

- **Audio Bitrate** (32Kbps, 64Kbps, 128Kbps, 256Kbps, 384Kbps, default = 128Kbps)
- **GOP (Group of Pictures)** (1, 2, 3, 5, 10, 15, 20, 25, 30, 50, 60, 100, 120, 140, 160, 180, default = 60)
- **Cropping:**
 - **Position X** (dependant on resolution, sum of X and width should be less than maximum horizontal resolution, default = 0)
 - **Position Y** (dependant on resolution, sum of Y and height should be less than maximum vertical resolution, default = 0)
 - **Width** (128 - 1920 max, but dependant on resolution, default = 0)
 - **Height** (128 - 1080 max, but dependant on resolution, default = 0)

The figure below details how the cropping parameters are defined. Note, the cropped area is resized and is displayed with the aspect ratio maintained.

Figure 12. ATOM-Box Cropping Parameters Definition and Result



Sub Encoder

Select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and ranges include:

- **Resolution** (160x128, 320x240, 640x480, 720x480, 720x576, 960x540, 1280x720, 1920x1080, Same as Input, default = Same as Input)
- **Framerate** (1, 5, 10, 15, 20, 25, 30, 50, 60, Same as Input, default = Same as Input)
- **Profile (i.e. H.264/AVC profile)** (Baseline, Main, High, default = High)

- **Video Bitrate** (256Kbps, 512kbps, 1Mbps, 1.5Mbps, 2Mbps, 3Mbps, 4Mbps, 6Mbps, 8Mbps, 10Mbps, 12Mbps, 16Mbps, default = 3Mbps)

Note: When the bitrate is configured with a value higher than 6Mbps, it is recommended to use either the recording function or streaming function, not both. When the bitrate is configured with a value higher than 10Mbps, it is recommended to use only the recording function.

- **GOP (Group of Pictures)** (1, 2, 3, 5, 10, 15, 20, 25, 30, 50, 60, 100, 120, 140, 160, 180, default = 60)
- **Cropping:**
 - **Position X** (dependant on resolution, sum of X and width should be less than maximum horizontal resolution, default = 0)
 - **Position Y** (dependant on resolution, sum of Y and height should be less than maximum vertical resolution, default = 0)
 - **Width** (128 – 1920 max, but dependant on resolution, default = 0)
 - **Height** (128 – 1080 max, but dependant on resolution, default = 0)

[Figure 12](#), above details how the cropping parameters are defined. Note, the cropped area is resized and is displayed with the aspect ratio maintained.

Recording

The **Recording** page allows you to pick which source to record, change the recording file attributes (i.e. name, file size, and whether or not looping is enabled), provides details on the USB storage device attached to the ATOM-Box, and transfer recordings from the USB to your PC. You can also start and stop recordings and format your USB storage device from this page.

Note: Recording functionality is only available when a USB storage device and an AV source are connected to the ATOM-Box and a signal has been detected.

Figure 13. ATOM-Box Web UI Recording Page

The screenshot shows the ATOM-Box Web UI Recording Page. The interface is divided into a sidebar and a main content area. The sidebar on the left contains navigation links: Source, Encoder, Recording (selected), Streaming, OSD, System, and RS485. The main content area is titled 'Recording' and features two primary sections: 'Main Record' and 'Storage Information'. The 'Main Record' section includes a dropdown for 'Encoder Source' (set to 'Main Encoder'), a text input for 'File Name' (set to 'RECORD'), a dropdown for 'File Size' (set to '4G'), and a dropdown for 'Loop Recording' (set to 'YES'). Below these are buttons for 'Start Recording', 'Stop Recording', and 'Apply'. The 'Storage Information' section displays 'Vendor', 'Product' (USB DISK 3.0), 'Capacity' (76.80G/76.80G), and 'Storage Format' (FAT32). A 'Format Storage Device' button is located below the Storage Information section. The top right corner shows the Evertz AV logo and 'Firmware Version: FW20200221AIO32'. The bottom of the page has a footer with 'Contact' on the left and '©2019 Evertz Microsystems Ltd.' on the right.

Main Record

Type the desired value in the respective input fields or select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **Encoder Source** (Main Encoder or Sub Encoder, default = Main Encoder)
- **File Name** (Alphanumeric string, default = RECORD)
- **File Size** (200MB, 500MB, 1GB, 2GB, 4GB, default = 4GB)
- **Loop Recording** (i.e. after a recording has reached the defined file size, the recording will continue using a new file), (YES or NO, default = YES)

Note: When a recording is in progress, the **Recording File** field is populated with the specific file name of the current recording.

To record using the defined settings on the **Recording** page, click on the **Start Recording** button. A **“Loading”** message displays on screen and the LED around the **REC/STOP** button on the front of the device flashes red indicating that the recording is attempting to start. When the LED is lit solid red and the **Stop Recording** button becomes available on the page, recording has successfully started.

To stop recording using the **Recording** page, click on the **Stop Recording** button. A **“Loading”** message displays on screen and the LED around the **REC/STOP** button on the front of the device flashes red indicating that the recording is attempting to stop. When the LED is completely off and the **Start Recording** button becomes available on the page, recording has successfully stopped and the USB is ready to be removed.

Storage Information

Storage Information displays the vendor, product name, capacity, and storage format (i.e. file architecture) of an attached USB storage device and also allows you to format a USB storage device.

To format your USB storage device, click on the **Format Storage Disk** button. Your USB storage device will be formatted as using the FAT32 file architecture.

Streaming

The **Streaming** page allows you to configure all streaming-related settings for the following streaming protocols/methods:

- **RTSP** (Real Time Streaming Protocol)
- **RTMP/RTMP2** (Real Time Messaging Protocol)
- **TS** (Transport Stream)
- **HLS** (HTTP Live Streaming)
- **SRT** (Secure Reliable Transport)
- **YouTube**

Note: Streaming functionality is only available when an AV source is connected to the ATOM-Box and a signal has been detected.

Figure 14. ATOM-Box Web UI Streaming Page

ATOM-Box

Source

Encoder

Recording

Streaming

OSD

System

RS485

evertz AV

Firmware Version: FW20200221AIO32

Main Streaming

Stream Type

RTSP

Encoder Source

Main Encoder

RTSP Port

554

RTSP HTTP Port

8000

RTSP Account

RTSP Password

Video Only

OFF

Adaptive Bitrate

OFF

Start Streaming

Stop Streaming

Apply

Contact

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RTSP

RTSP (Real Time Streaming Protocol) is a client-server multimedia presentation control protocol, designed to address the needs for efficient delivery of streamed multimedia over IP networks.

Figure 15. ATOM-Box Web UI RTSP Settings

The screenshot displays the ATOM-Box Web UI for RTSP settings. The interface includes a sidebar with navigation options: Source, Encoder, Recording, Streaming (highlighted), OSD, System, and RS485. The main content area is titled 'Main Streaming' and contains the following fields and controls:

- Stream Type:** Dropdown menu set to RTSP.
- Encoder Source:** Dropdown menu set to Main Encoder.
- RTSP Port:** Input field with value 554.
- RTSP HTTP Port:** Input field with value 8000.
- RTSP Account:** Input field with value evertzav.
- RTSP Password:** Input field with value evertzav.
- Video Only:** Dropdown menu set to OFF.
- Adaptive Bitrate:** Dropdown menu set to OFF.
- Play URL:** Two input fields, both containing the URL: rtsp://evertzavevertzav@192.168.1.168:554/live.

At the bottom of the form are three buttons: Start Streaming, Stop Streaming, and Apply. The footer of the page includes 'Contact' on the left and '©2019 Evertz Microsystems Ltd.' on the right.

To configure RTSP streaming, type the desired value in the respective input fields and select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

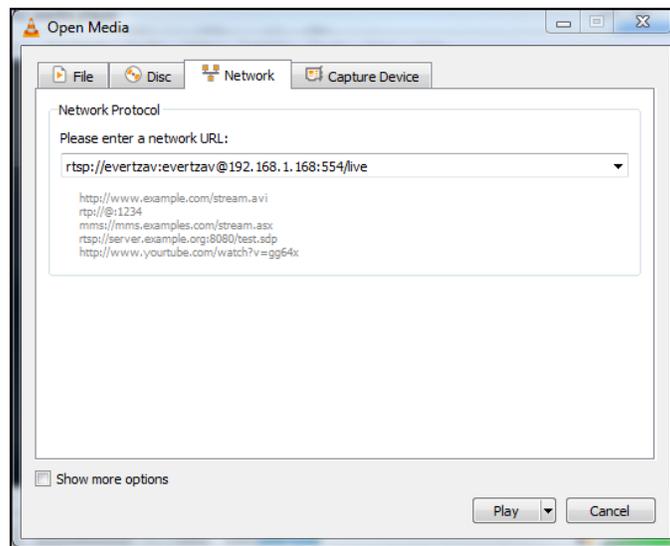
- **Encoder Source** (Main Encoder or Sub Encoder, default = Main Encoder)
- **RTSP Port** (valid port, default = 554)
- **RTSP HTTP Port** (valid port, default = 8000)
- **RTSP Account** (optional, alphanumeric string, default = N/A)
- **RTSP Password** (optional, alphanumeric string, default = N/A)
- **Video Only** (i.e. do not stream audio) (OFF, ON, default = OFF)
- **Adaptive Bitrate** (i.e. automatically adapt bitrate based on network and playback conditions) (OFF, ON, default = OFF)

To start RTSP streaming using the **Streaming** page, press the **Start Streaming** button. A "Loading" message displays on screen and the LED around the **STREAM/STOP** button located on the front of the device flashes green indicating that streaming is attempting to start. When the "Loading" message is removed and the LED is lit solid green, streaming has successfully started.

When streaming has started, two **Play URL** fields are displayed indicating stream playback URLs that can be used to view the media stream. Enter the stream playback URL in your media player to view the stream.

For example, for VLC the playback URL field can be found under **Media > Open Network Stream**.

Figure 16. VLC Playback URL Field



Press the **Stop Streaming** button to stop streaming. A "Loading" message displays on screen and the LED around the **STREAM/STOP** button flashes green indicating that streaming is attempting to stop. When the "Loading" message is removed and the LED is completely off, streaming has successfully ended.

RTMP

RTMP (Real Time Messaging Protocol) is an application-level protocol designed for multiplexing and packetizing multimedia transport streams (such as audio, video, and interactive content) over a suitable transport protocol.

Figure 17. ATOM-Box Web UI RTMP Settings

The screenshot displays the ATOM-Box Web UI for RTMP settings. The interface is organized into a sidebar on the left and a main content area. The sidebar includes navigation options: Source, Encoder, Recording, Streaming (highlighted), OSD, System, and RS485. The main content area is titled 'Main Streaming' and features four distinct RTMP configuration panels, labeled RTMP URL 1 through RTMP URL 4. Each panel contains a 'Stream Type' dropdown menu (currently set to 'RTMP'), an 'Encoder Source' dropdown menu (set to 'Main Encoder'), an 'RTMP URL' text input field, and three input fields for 'StreamName', 'Account', and 'Password'. Additionally, each panel has an 'Audio Only / Video Only' dropdown menu (set to 'OFF') and two buttons: 'Republish RTMP' and 'Stop Stream RTMP'. At the bottom of the main content area, there are three buttons: 'Start Streaming', 'Stop Streaming', and 'Apply'. The footer of the page includes the text 'Contact', '©2019 Evertz Microsystems Ltd.', and the 'evertz AV' logo.

To configure RTMP streaming, type the desired value in the respective input fields and select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **Encoder Source** (Main Encoder or Sub Encoder, default = Main Encoder)
- **RTMP URL 1/2/3/4** (valid RTMP URL [can be a URL from a streaming service such as Facebook, YouTube, etc...], up to 4 can be configured)
- **StreamName1/2/3/4** (valid stream name/key provided by streaming service, up to 4 can be configured)

- **Account 1/2/3/4** (optional, alphanumeric string, default = N/A, up to 4 can be configured)
- **Password 1/2/3/4** (optional, alphanumeric string, default = N/A, up to 4 can be configured)
- **Audio Only / Video Only** (OFF, Video Only, Audio Only, default = OFF)

To start RTMP streaming using the **Streaming** page, press the **Start Streaming** button. A "Loading" message displays on screen and the LED around the **STREAM/STOP** button located on the front of the device flashes green indicating that streaming is attempting to start. When the "Loading" message is removed and the LED is lit solid green, streaming has successfully started.

When streaming has started, **Play URL** fields are displayed indicating stream playback URLs that can be used to view the media stream. Enter the stream playback URL in the respective media player to view the stream or view the stream via the respective streaming service.

Press the **Stop Streaming** button to stop all streams. A "Loading" message displays on screen and the LED around the **STREAM/STOP** button flashes green indicating that streaming is attempting to stop. When the "Loading" message is removed and the LED is completely off, streaming has successfully ended.

You can also republish or stop individual streams using the **Republish RTMPx** and **Stop Stream RTMPx** buttons.

TS

TS (Transport Stream) is a special format for transmitting MPEG video muxed with other streams. It is commonly used for streaming across networks including the internet.

Figure 18. ATOM-Box Web UI TS Settings

The screenshot displays the ATOM-Box Web UI for configuring TS settings. The interface is divided into a left sidebar and a main content area. The sidebar lists navigation options: Source, Encoder, Recording, Streaming (highlighted), OSD, System, and RS485. The main content area is titled 'ATOM-Box' and includes the Evertz AV logo and firmware version 'FW20200221AIO32'. The 'Main Streaming' section contains the following fields: Stream Type (dropdown menu set to 'TS'), Encoder Source (dropdown menu set to 'Main Encoder'), TS IP (text input field with '239.100.100.100'), TS Port (text input field with '12345'), Video Only (dropdown menu set to 'OFF'), and Play URL (text input field with 'udp://@239.100.100.100:12345'). The 'Sub Streaming' section contains: Encoder Source (dropdown menu set to 'Sub Encoder'), TS IP (text input field with '239.100.100.101'), TS Port (text input field with '12345'), and Play URL (text input field with 'udp://@239.100.100.101:12345'). At the bottom of the main content area, there are three buttons: 'Start Streaming', 'Stop Streaming', and 'Apply'. The footer of the page includes 'Contact' on the left and '©2019 Evertz Microsystems Ltd.' on the right.

To configure TS streaming, type the desired value in the respective input fields and select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **Encoder Source** (Main Encoder or Sub Encoder, default = Main Encoder)
- **TS IP** (valid IP address, default = 239.100.100.100)
- **TS Port** (valid port, default = 12345)
- **Video Only** (i.e. do not stream audio) (OFF, ON, default = OFF)

Note: With the **TS** streaming method, you can define a main stream and sub stream. The **Encoder Source**, **TS IP**, and **TS Port** parameters are available to be configured for the both the main stream and sub stream.

To start TS streaming using the **Streaming** page, press the **Start Streaming** button. A "Loading" message displays on screen and the LED around the **STREAM/STOP** button located on the front of the device flashes green indicating that streaming is attempting to start. When the "Loading" message is removed and the LED is lit solid green, streaming has successfully started.

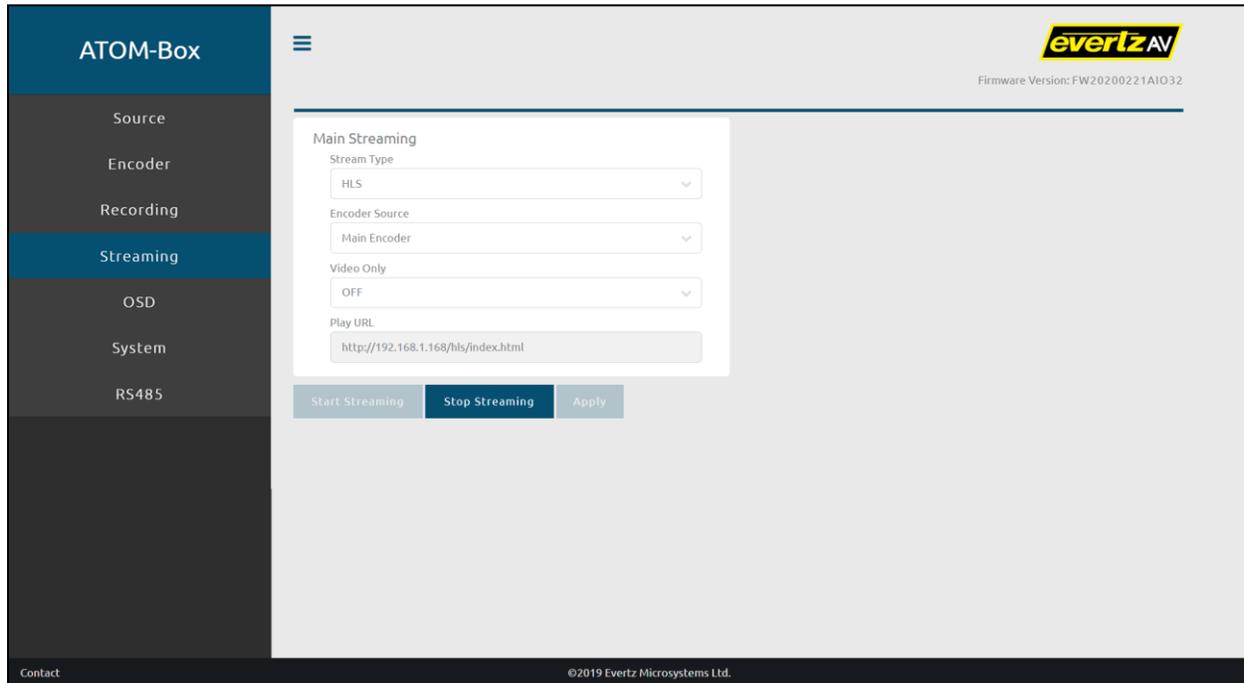
When streaming has started, **Play URL** fields are displayed for both the main and sub streams indicating stream playback URLs that can be used to view the media stream. Enter the stream playback URL in your media player to view the stream.

Press the **Stop Streaming** button to stop streaming. A "Loading" message displays on screen and the LED around the **STREAM/STOP** button flashes green indicating that streaming is attempting to stop. When the "Loading" message is removed and the LED is completely off, streaming has successfully ended.

HLS

HLS (HTTP Live Streaming) provides a reliable means of delivering continuous and long-form video over the Internet. It allows a receiver to adapt the bit rate of the media to the current network conditions in order to maintain uninterrupted playback at the best possible quality.

Figure 19. ATOM-Box Web UI HLS Settings



To configure HLS streaming, select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **Encoder Source** (Main Encoder or Sub Encoder, default = Main Encoder)
- **Video Only** (i.e. do not stream audio) (OFF, ON, default = OFF)

To start HLS streaming using the **Streaming** page, press the **Start Streaming** button. A **"Loading"** message displays on screen and the LED around the **STREAM/STOP** button located on the front of the device flashes green indicating that streaming is attempting to start. When the **"Loading"** message is removed and the LED is lit solid green, streaming has successfully started.

When streaming has started, a **Play URL** field is displayed indicating the stream playback URL that can be used to view the media stream. Enter the stream playback URL in your media player to view the stream.

Press the **Stop Streaming** button to stop streaming. A **"Loading"** message displays on screen and the LED around the **STREAM/STOP** button flashes green indicating that streaming is attempting to stop. When the **"Loading"** message is removed and the LED is completely off, streaming has successfully ended.

SRT

SRT is an open source video transport protocol based on UDP that optimizes streaming performance across unpredictable networks.

Figure 20. ATOM-Box Web UI SRT Settings

The screenshot displays the ATOM-Box Web UI SRT Settings page. The interface features a dark blue sidebar on the left with navigation options: Source, Encoder, Recording, Streaming (highlighted), OSD, System, and RS485. The main content area is titled 'Main Streaming' and contains several configuration fields: Stream Type (SRT), Encoder Source (Main Encoder), Mode (Listener), Caller IP Address, SRT Port (9001), Latency (20-8000 ms) (1000), Bandwidth Overhead (5-100%) (25), TTL (1-255) (64), and TOS (0x00-0xFF) (0xBB). A Play URL field shows 'srt://192.168.1.168:9001'. At the bottom, there are buttons for 'Start Streaming', 'Stop Streaming', and 'Apply'. The footer includes 'Contact' and '©2019 Evertz Microsystems Ltd.'

To configure SRT streaming, select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **Encoder Source** (Main Encoder or Sub Encoder, default = Main Encoder)
- **Mode** (Caller or Listener, default = Listener)
- **Caller IP Address** (required only if Caller mode is enabled; IP address of the decoder)
- **SRT Port** (valid port, default = 9001)
- **Latency** (fixed value, from 20 to 8000 ms, representing the maximum buffer size available for managing SRT packets, default 1000 ms)
- **Bandwidth Overhead** (a percentage, from 5% to 100%, that specifies how much bandwidth above the estimated bandwidth that can be used when recovering lost packets. It is assigned based in part on network quality. Stable networks require a lower percentage while noisier networks require a higher percentage, default = 25%).

- **TTL** (Time To Live value from 1 to 255, default = 64)
- **TOS** (Type of Service value in hex, from 0x00 to 0xFF, default = 0xB8).

To start streaming using the **Streaming** page, press the **Start Streaming** button. A "**Loading**" message displays on screen and the LED around the **STREAM/STOP** button located on the front of the device flashes green indicating that streaming is attempting to start. When the "**Loading**" message is removed and the LED is lit solid green, streaming has successfully started.

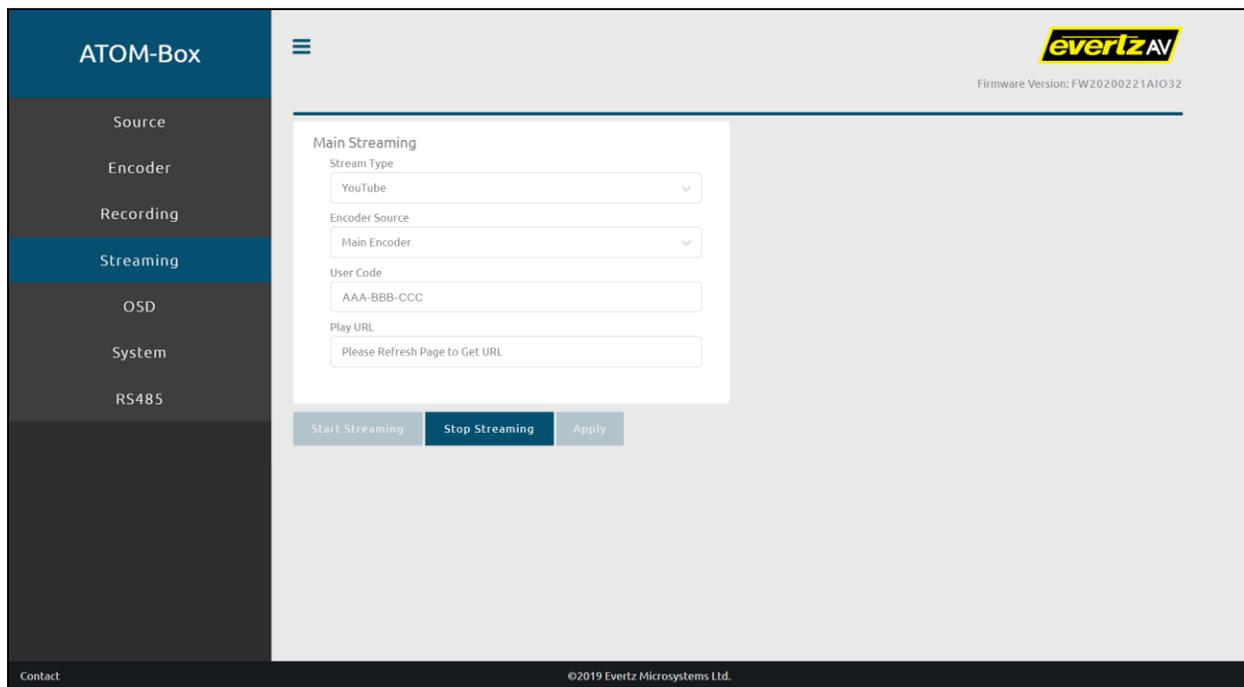
When streaming has started, a **Play URL** field is displayed indicating the stream playback URL that can be used to view the media stream. Enter the stream playback URL in your media player to view the stream.

Press the **Stop Streaming** button to stop streaming. A "**Loading**" message displays on screen and the LED around the **STREAM/STOP** button flashes green indicating that streaming is attempting to stop. When the "**Loading**" message is removed and the LED is completely off, streaming has successfully ended.

YouTube

In addition to the RTMP protocol, the ATOM-Box provides a simplified method for you to stream to YouTube.

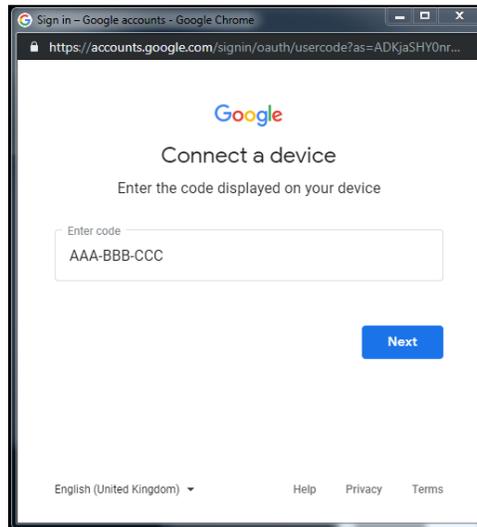
Figure 21. ATOM-Box Web UI YouTube Settings



To live stream to YouTube using this method:

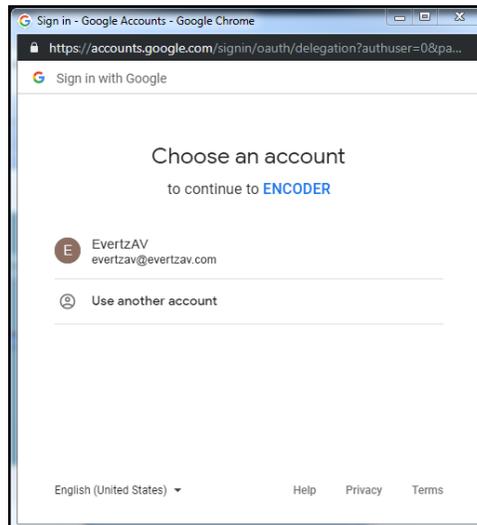
1. Ensure your device is connected to the Internet.
2. Select **YouTube** from the **Stream Type** dropdown menu.
3. Select the **Encoder Source** (i.e. Main Encoder or Sub Encoder).
4. Press the **Start Streaming** button. The page will reload and a user code is provided in the **User Code** field. Additionally, a Google Accounts Sign In popup window is displayed.

Figure 22. Google Accounts Sign In Popup Window



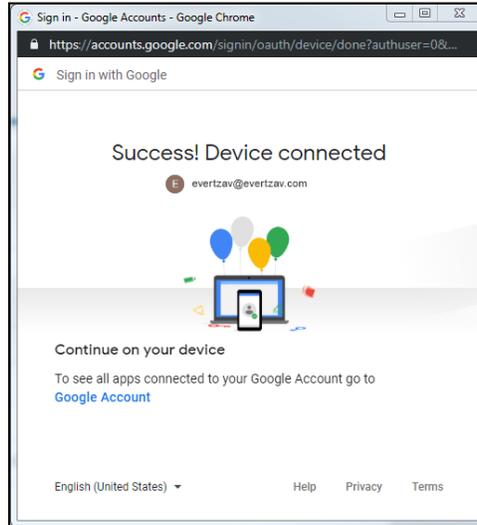
5. In the Google Accounts Sign In popup window, enter the provided user code and click **Next**. The popup window allows you to choose your account associated with your YouTube channel.

Figure 23. Choose an Account Window



6. Choose the applicable account. After the account is selected, the device connects to the Google account and will automatically live stream to the specified account's YouTube channel.

Figure 24. Device Connected Window



Note: Before the device starts streaming you may need to allow the device to manage your YouTube account.

7. Refresh the **Streaming** page to view the stream playback URL in the **Play URL** field that can be used to view the media stream. Enter the stream playback URL in your web browser to view the stream.

Figure 25. ATOM-Box Web UI YouTube Streaming Play URL

A screenshot of the ATOM-Box Web UI configuration page for YouTube streaming. The page is titled 'Main Streaming'. It contains several fields: 'Stream Type' is a dropdown menu set to 'YouTube'; 'Encoder Source' is a dropdown menu set to 'Main Encoder'; 'User Code' is a text input field containing 'Account & Device Connected'; 'Play URL' is a text input field containing 'https://www.youtube.com/embed/nXnYxvN6dkQ'. At the bottom of the form are three buttons: 'Start Streaming', 'Stop Streaming', and 'Apply'.

RTMP2

An **RTMP2** stream type is available that can be used as a backup streaming method if you encounter any issues with the normal **RTMP** streaming method.

Figure 26. ATOM-Box Web UI RTMP2 Settings

The screenshot displays the ATOM-Box Web UI interface for configuring RTMP2 streaming. The left sidebar lists navigation options: Source, Encoder, Recording, Streaming (highlighted), OSD, System, and RS485. The main content area is titled "Main Streaming" and contains the following configuration fields:

- Stream Type:** A dropdown menu set to "RTMP2".
- Encoder Source:** A dropdown menu set to "Main Encoder".
- RTMP URL 1:** A text input field containing "rtmp://a.rtmp.youtube.com/live2".
- StreamName 1:** A text input field containing "xxx-xxxx-xxxx-xxxx".
- Account 1:** A text input field containing "evertzav".
- Password 1:** A text input field containing "evertzav".
- Play URL 1:** A text input field containing "rtmp://a.rtmp.youtube.com/live2/xxx-xxxx-xxxx-xxxx".

At the bottom of the form are three buttons: "Start Streaming", "Stop Streaming" (highlighted in blue), and "Apply". The top right corner of the page displays the Evertz AV logo and the firmware version FW20200221AIO32. The bottom left corner has a "Contact" link, and the bottom center has the copyright notice ©2019 Evertz Microsystems Ltd.

To configure RTMP2 streaming, type the desired value in the respective input fields and select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **Encoder Source** (Main Encoder or Sub Encoder, default = Main Encoder)
- **RTMP URL 1** (valid RTMP URL [can be a URL from a streaming service such as Facebook, YouTube, etc...])
- **StreamName 1** (valid stream name/key provided by streaming service)
- **Account 1** (optional, alphanumeric string, default = N/A)
- **Password 1** (optional, alphanumeric string, default = N/A)

To start RTMP2 streaming using the **Streaming** page, press the **Start Streaming** button. A "Loading" message displays on screen and the LED around the **STREAM/STOP** button located on the front of the device flashes green indicating that streaming is attempting to start. When the "Loading" message is removed and the LED is lit solid green, streaming has successfully started.

When streaming has started, **Play URL** fields are displayed indicating stream playback URLs that can be used to view the media stream. Enter the stream playback URL in the respective media player to view the stream or view the stream via the respective streaming service.

Press the **Stop Streaming** button to stop all streams. A "**Loading**" message displays on screen and the LED around the **STREAM/STOP** button flashes green indicating that streaming is attempting to stop. When the "**Loading**" message is removed and the LED is completely off, streaming has successfully ended.

OSD

The **OSD** page allows you to add text as an overlay on top of the video source. If an OSD is configured, all recordings and streams will contain the OSD text.

Figure 27. ATOM-Box Web UI OSD Page

ATOM-Box

Source

Encoder

Recording

Streaming

OSD

System

RS485

evertz AV

Firmware Version: FW20200221AIO32

OSD

ON/OFF

OFF

Text

%H:%M:%S

Location-X

200

Location-Y

200

Background

None

Text Size

10

Apply

Contact

©2019 Evertz Microsystems Ltd.

OSD

Type the desired value in the respective input fields or select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **ON/OFF** (ON or OFF, default = OFF)
- **Text** (Alphanumeric string of up to 16 characters or basic date/time variables such as %H for hours, %M for minutes, %S for seconds, %Y for 4 digit year, %D for date [i.e. MM/DD/YYYY], etc..., default = %H:%M:%S)
- **Location-X** (1 - 1920 max, but dependant on the resolution, default = 200)
- **Location-Y** (1 - 1080 max, but dependant on the resolution, default = 200)
- **Background** (None or Black, default = None)
- **Text Size** (8 - 20, default = 10)

System

The **System** page allows you to configure system-related settings regarding your network, device name, time, and account. You can also upgrade the device's firmware using this page, as well as factory default your device or reboot your device.

Figure 28. ATOM-Box Web UI System Page

The screenshot shows the ATOM-Box Web UI System Page. The page is divided into a left sidebar with navigation options (Source, Encoder, Recording, Streaming, OSD, System, RS485) and a main content area. The main content area is titled 'System' and contains several sections: Network Settings, Device Name Settings, Time Settings, Firmware Update, Account Setup, and System-Related Settings. Each section has input fields and an 'Apply' button. The Network Settings section includes fields for DHCP (set to 'Disable'), Static IP (192.168.1.168), Subnet Mask (255.255.255.0), Default Gateway (192.168.1.254), Primary DNS (192.168.1.1), Secondary DNS (Alternative) (8.8.8.8), MAC Address (02:06:00:6C:04:FF), and MTU Size (1500). The Device Name Settings section has a 'Device Name' field. The Time Settings section includes 'Timezone' (UTC+8), 'Type' (Automatically from the internet), and 'NTP' (cn.poolntp.org). The Firmware Update section has a 'File Path' field and 'Browse' and 'Update' buttons. The Account Setup section has 'Original Account' and 'Original Password' fields. The System-Related Settings section has 'Factory Default' and 'Reboot System' buttons. The page footer includes 'Contact', '©2019 Evertz Microsystems Ltd.', and the Evertz AV logo.

Network Settings

Type the desired value in the respective input fields or select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **DHCP** (Enable [Auto DNS], Enable, or Disable, default = Disable)
- **Static IP** (available only if DHCP is disabled) (valid IP address, default = 192.168.1.168)
- **Subnet Mask** (available only if DHCP is disabled) (valid subnet, default = 255.255.255.0)

- **Default Gateway** (available only if DHCP is disabled) (valid IP address, default = 192.168.1.254)
- **Primary DNS** (available only when DHCP is **not** set to Enable [Auto DNS]) (valid IP address, default = 192.168.1.1)
- **Secondary DNS** (available only when DHCP is **not** set to Enable [Auto DNS]) (valid IP address, default = 8.8.8.8)
- **MAC Address** (read-only field that details the device's MAC address).
- **MTU Size** (Maximum Transmission Unit Size: the size of the largest packet that can be carried over the respective network) (numeric value in bytes, default = 1500)

Device Name Settings

Type the desired name in the **Device Name** input field and then click **Apply** to apply your changes.

Note: The device name is an alphanumeric string that can be 16 characters or less.

Time Settings

Type the desired value in the respective input fields or select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **Timezone** (UTC-12 – UTC+12, default = UTC+8)
- **Type** (Automatically from the internet or Manually, default = Automatically from the internet)
- **NTP** (Network Time Protocol, available only when **Type** is set to Automatically from the internet) (valid NTP server, default = cn.pool.ntp.org)
- **Date** (available only when **Type** is set to Manually) (YYYY-XX-XX, default = 2000-02-13)
- **Time** (available only when **Type** is set to Manually) (HH:MM:SS, default = 14:13:36)

Firmware Update

To update the device's firmware:

1. Click on the **Browse** button and select the firmware file.

Note: Firmware files may be contained in a .zip archive. Do not upload the .zip archive. Ensure you unzip the archive and use the firmware file found within.

The firmware file uploads to the device and the Web UI displays an “**Uploading**” message. When successfully uploaded, the **File Path** field displays the file name of the uploaded firmware file.

2. Click on the **Update** button to begin the firmware update process. All the LEDs on the device will flash simultaneously and the Web UI displays an **Updating** message. When all the LEDs are solidly lit, the device will reboot.

Note: Do not power off the device when the firmware update process is in progress.

Account Setup

To change your account/Web UI log in credentials:

1. Enter your current username (default = admin) in the **Original Account** field and your current password (default = evertzav) in the **Original Password** field and click **Apply**.
2. Enter your new username in the **New Account** field and new password in the **New Password** and **New Password Confirm** fields and click **Apply**. Your account credentials are changed and the account log in prompt displays.
3. Login using the new user/password credentials.

System-Related Settings

Click on the **Reboot System** button to reboot the device.

Click on the **Factory Default** button to reset your device back its original factory configuration.

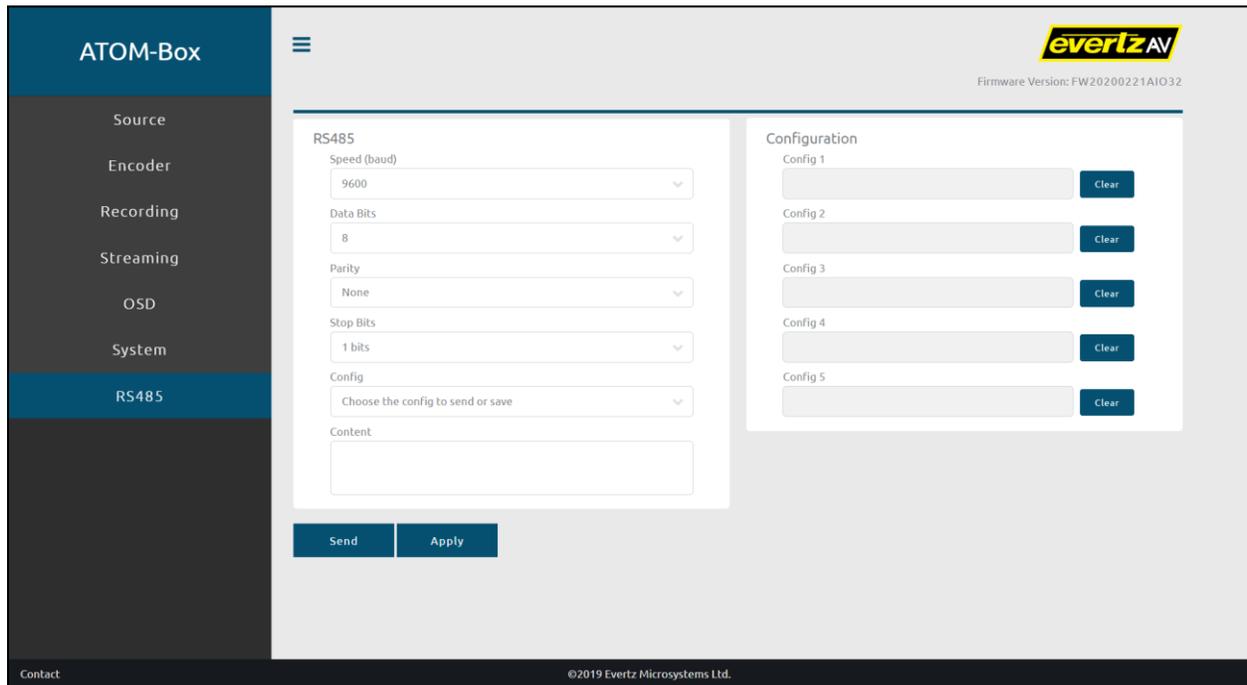
Alternatively, you can perform a factory default using the hardware buttons located on the front of your device. To perform a hardware factory default:

1. Press and hold the **REC/STOP** and **STREAM/STOP** buttons simultaneously for approximately 20 seconds. During the 20 seconds, all LEDs (except for the **Input Select** button LED, which is always on) will turn solid, flash three times, turn solid again, turn off except for one input LED, and then finally after a few seconds all LEDs will turn on again.
2. After the above LED sequence has been observed, turn off the device using the On/Off switch located on the rear and then turn the device on again.

RS485

The **RS485** page allows you to configure communication settings for the RS485 interface as well as input commands to send to the RS485-connected peripherals.

Figure 29. ATOM-Box Web UI RS485 Page



RS485

Connect your peripheral device to the RS485 interface located on the rear of the device. Ensure the communication settings on both devices correspond to one another. On the ATOM-Box Web UI, select the respective parameter values using the dropdown menus, and then click **Apply** to apply your changes. Parameters and values include:

- **Speed** (i.e. baud rate) (1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, default = 9600)
- **Data Bits** (5, 6, 7, 8, default = 8)
- **Parity** (None, Odd, Even, default = None)
- **Stop Bits** (1 bit or 2 bits, default = 1 bit)
- **Config** (i.e. the configuration to send [if defined already] or the configuration slot to save to [if not defined]) (Config 1, Config 2, Config 3, Config 4, Config 5, default = N/A)

- **Content** (i.e. the command(s) to send to the peripheral device or save to the configuration slot) (integer separated by commas, default = N/A)

Note: The commands that can be entered in the **Content** field are dependent on the respective peripheral device connected to the ATOM-Box. Please refer the documentation provided with your peripheral device for a list of valid commands.

Press the **Send** button to send the command defined in the **Content** field to the peripheral device or the **Apply** button to save the command defined in the **Content** field to the specified configuration slot.

Configuration

The **Configuration** section on the **RS485** page shows the content that was saved to the respective configuration slot (5 configuration slots are available). An empty slot indicates no content was saved to the configuration slot.

To clear a configuration slot, click the **Clear** button adjacent to the applicable slot.

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