PRO VIDEO INSTRUMENTS


# VECODER 4K ULTRA IP SERIES H264/H265 ENCODER

## PRODUCT SPECS & FEATURES

| | |
|---|---|
| **Input** | Up to 16 HDMI inputs (4 HDMI per HDMI Video Encoder Card) |
| **Supports HDMI Resolution** | Supports to up 4k30fps on Input 1 & 2(disabled Input 3 & 4 when 4k is used) or 4 Inputs of 1080p60fps |
| **Encoding type** | H.265/H.264 |
| **Encoding Levels** | H.264/AVC High/Main/Baseline Profile \| H.265/HEVC main profile<br>MJPEG/JPEG baseline |
| **Supported Output Formats** | User Selectable outputs to downscale video format<br>3840x2160' ,1920x1080', '1680x1056', '1280x720', '1024x768', '1024x576', '850x480', '720x576', '720x540', '720x480', '720x404', '704x576', '640x480', '640x360', '608x448', '544x480', '480x480', '480x384', '480x360', '480x320', '480x272', '480x270', '400x320', '400x224', '352x480', '352x228', '320x256', '320x240', '320x180', '240x180', '176x144' |
| **Video FPS** | 5-60FPS 1080P or 30 frames in 4k Mode |
| **Video Bitrate** | 0.1~ 32Mbps adjustable |
| **Bitrate control** | VBR / CBR |
| **TS Protocols** | SRT / HTTP / HLS / FLV / RTSP / UDP/RTP Multicast / RTMP / ONVIF/ SRT Protocol |
| **Audio Input** | HDMI digital Audio or 2*3.5mm L/R Analog Audio line-in for Mixed for HDMI Inputs 1 and 2 |
| **Sample Rates** | 44.1 kHz, 48.0 kHz |
| **Encoding** | AAC / AAC+ / AAC++ / MP3, G.711 (i-Law/a-Law) / AC3 |
| **Bitrate** | 12K ~ 320K adjustable |
| **ONVIF** | G.711 |
| **Network** | 1000Base-T Ethernet interface |
| **Control Panel** | Http Web interface |
| **Firmware Update** | Supports Web portal updates |
| **Remote management** | Supports external remote management via port forwarding. |

| Working environment | |
|---|---|
| **Operating temperature** | 0 to 40 deg C |
| **Storage temperature** | –20 to 80 deg C |
| **Relative Humidity** | 5% to 90% non-condensing |
| **Dimension & Accessories** | |
| **Dimension** | 1U 483 (L) *250 (W) *44.5 (H) mm |
| **Weight** | 4.5kg |
| **Power adapter** | AC input 100-240V 50/60Hz DC output 12V 8.5A |

**DEFAULT IPS:** **192.168.1.170** **192.168.1.171**


**192.168.1.168** **192.168.1.169**

## CONNECTING TO THE UNITS

# NETWORK CONNECTION VIA WINDOWS PC

**These steps walk you through setting a Windows PC to a Static IP address to allow an Ethernet connection with one of the units module on its default IP address. Refer to the photo above for the Default IP.**

1. **Connect your PC to the Network Port of the VeCOAX unit via Ethernet cable.**
2. **On your PC, in the Control Panel, open Network and Sharing Center (Network and Internet for Windows 8 and above)**
3. **Once you have Network and Sharing Center open, click on "Change adapter settings."**
4. **Right Click on your Local Ethernet connection and click on "Properties."**
5. **Once the Ethernet Properties are open click on, "Internet Protocol Version 4 (TCP/IPv4) " and click on "Properties."**
6. **In the Properties, select "Use the following IP address" and set the static IP: 192.168.1.100.**
7. **Click OK.**

**You are now ready to connect.**

# NETWORK CONNECTION VIA MAC OS X

**These steps walk you through setting a Windows PC to a Static IP address to allow an Ethernet connection with one of the units module on its default IP address. Refer to the photo above for the Default IP.**

1. **Connect your Mac to the Network Port of the VeCOAX unit via Ethernet cable.**
2. **From the Apple menu, select System Preferences, then select network.**
3. **Select Ethernet.**
4. **From the Configure IPv4 menu, select Manually.**
5. **Enter the IP address 192.168.1.100.**
6. **Enter the Subnet Mask 255.255.255.0.**
7. **It is not necessary to enter DNS or Router.**
8. **Click Apply.**

**You are now ready to connect.**

**DEFAULT IPS:** **192.168.1.170** **192.168.1.171**


**192.168.1.168** **192.168.1.169**

**Note: The following manual uses references and examples to demonstrate the functions of the unit. Menu features and format might differ from your model; however, the core features are the same.**

## POWERING THE DEVICE – QUICK GUIDE

1. Connect your included Power cord to the unit.
2. Once the unit is powered on, insert your **valid HDMI Video Signals** into the HDMI ports
3. Set your computer to a **static IP** as **192.168.1.100** ( Refer to "connecting to unit" guide above)
4. Connect your **PC ETHERNET PORT** to the Vecoder's **First Module** ETHERNET PORT using a patch cord. Depending on the number of modules you have will determine the available channels and default ip's. We recommend you connect to the first module with the default IP label of 192.168.1.168. ( Please refer to picture above)
5. Run VLC Video LAN video playback software ( www.videolan.org ) On VLC > MEDIA > OPEN NETWORK STREAM > http://192.168.1.168/0.ts. You should now see the video playing on VLC
6. Each module has its own Lan port.
7. Each module has four channels/HDMI Inputs. Depending on the module you are connected to will determine the Stream IP you use in VLC. Please refer to the Welcome Status page of the module you are connected to for the IP streams available.
8. If you wish to use 4K30 HDMI sources, please note that only Inputs 1 and 2 on each module support 4k30 inputs. Therefore, using 4k30 inputs, HDMI input 3&4 on that module are disabled automatically.

**NOTE:** If the above is not working, please check all connections, network settings, and ensure your video source works. You could also try with another pc, or **reset the VeCoder** unit by pressing the **Reset button** for 20 seconds on the rear panel of the unit.

**This will default the modules' IP settings back to the default of 192.168.1.168.**

## PARAMETERS & CUSTOMIZATIONS

**Each unit is ready to work default by plug & play.** You can also customize the unit parameters to fit your application and needs. The unit comes with 4 independent video encoder engines. Each is capable of outputting 6 different protocols. **RTMP** / **HTTP** / **RTSP** / **UDP** / **HLS/ SRT**, Video Scaling, HEVC H.265 or H.264 video formats, AAC or MP3 Audio Formats, FIVE CG Logo Generators, frame rate controls, etc.

## DIRECT STREAMING & REPEATER SERVERS

**Each unit has a built-in 1-gigabit streaming server.** This allows you to stream direct-to-internet to up to 200+ clients simultaneously (limit depends on the selected bitrate and the available bandwidth from your internet service provider & your LAN traffic). There is no need for any additional hardware, but it is suggested to run a **Layer 2 Managed Switch with IGMP snooping and Jumbo Frame Features** if running multiple units for local viewing. Should you need to do a wider distribution over the internet, you can always point the stream / receive the stream over single or multiple internet services such as **YouTube**, **Facebook**, or similar to receive / repeat / redistribute your stream(s) to millions of people using RTMP Ingestion servers.

## INSTALLING MULTIPLE UNITS

To install multiple units on the same network, make sure to **CHANGE** the IP addresses of each unit **BEFORE** you connect them to the same network so there will be no IP Conflicts. Point your web browser to one of the module's IP address to log in to the unit, click **NETWORK** on the bottom, change the **NETWORK SETTINGS** as needed by your application. **Save your settings and power cycle the unit**.

**As an example**, you can set your unit(s) IP addresses to **192.168.1.168, 169, 170**, etc. **Write down these values or put a sticker on each unit** with the newly assigned IP address, so it's accessible to log in to the unit in the future without the need to reset it. Depending on your setup, it's suggested to use a Multicast IGMP enabled to switch to help with the traffic if you are using any UDP Multicasting from the device

## DEVICE LAYOUT


| | |
|---|---|
| 1) | **120V/220V Power Switch** |
| 2) | **Auxiliary Analog Audio ports for Channel HDMI ports 1 & 2 on each module** |
| 3) | **Hard Factory Reset – Hold for 30 Sec** |
| 4) | **HDMI Inputs** |
| 5) | **1-gigabyte Network port** |
| 6) | **Grounding Screw** |

- **Note: Depending on the model purchased, the device layout might differ.**

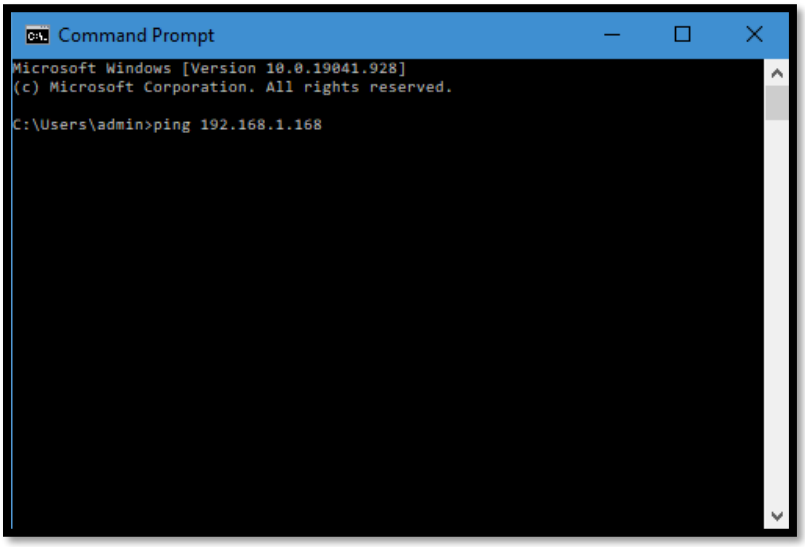
## CONNECTING TO THE VECODER

The factory network settings of the Network port are as followed for module 1:

| | |
|---|---|
| **IP address** | 192.168.1.168 |
| **Subnet** | 255.255.255.0 |
| **Gateway** | 192.168.1.1 |

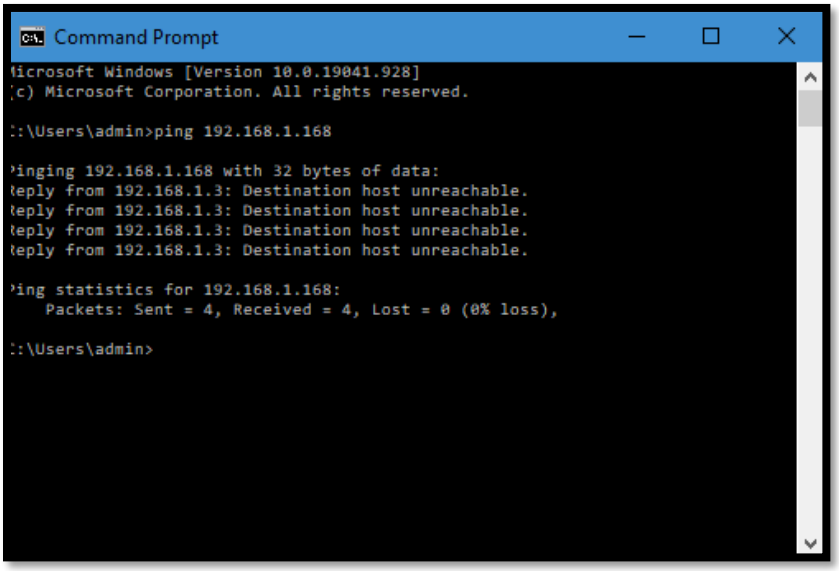
To connect to the Web interface, we must first connect directly to the Network port on the back of the unit using an Ethernet patch cable CAT5e/CAT6 or higher.


Once connected, you can verify the physical connection by ping command. This step is not necessary but helpful to ensure a connection can be established before proceeding.




Open a CMD prompt in windows and use the following command: ping 192.168.1.168

If you are connected directly to the unit, you should get a response. If not, the following message appears in the command prompt.



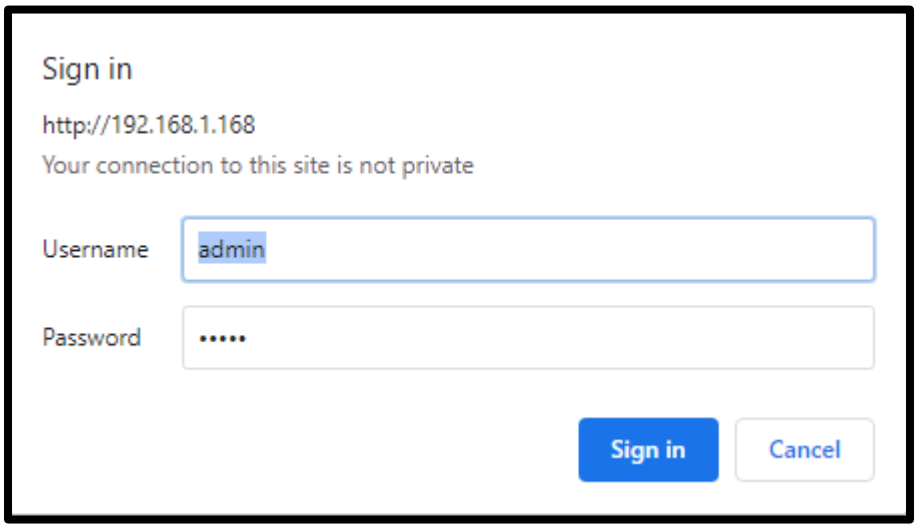

If the unit is not pingable, verify that your connections are secure and that your Static IP of your PC is set up correctly. Refer to Setting up a Static IP section of the guide.

## LOGGING INTO WEB GUI INTERFACE

If you can ping the unit successfully, then we can proceed to open your web browsers such as Firefox, Chrome, or Safari.


In the address bar, enter the default IP for one of the modules of the unit: Example for module one would be 192.168.0.168 and hit enter.

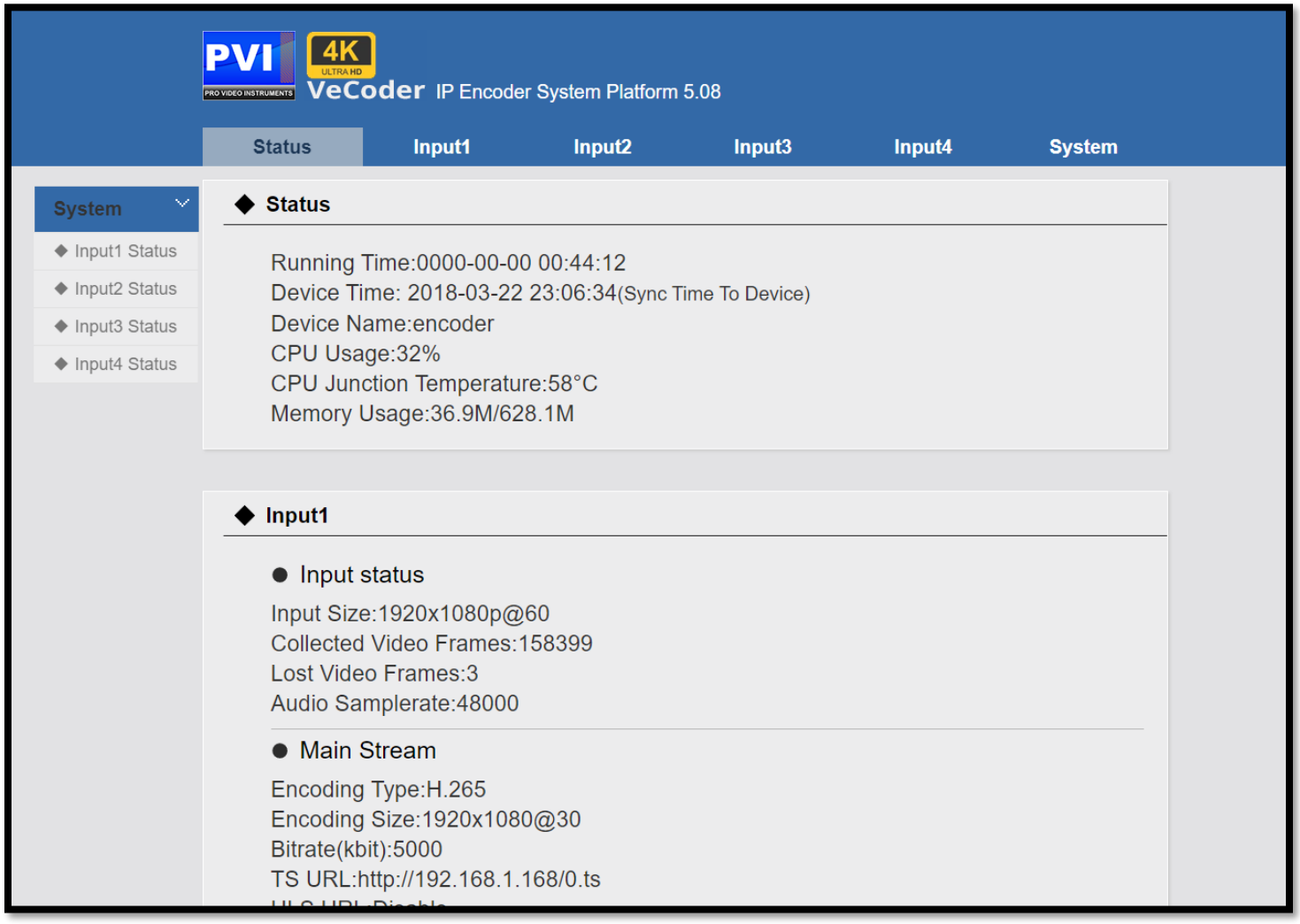
The login page prompt appears for the Web interface.




**Default Username**: admin **Default password**: admin

## WEB INTERFACE

- Once you have logged into the unit, you will see the **STATUS** page. This will display all your enabled formats for all streams and video input resolution, as well as the status of the current unit.



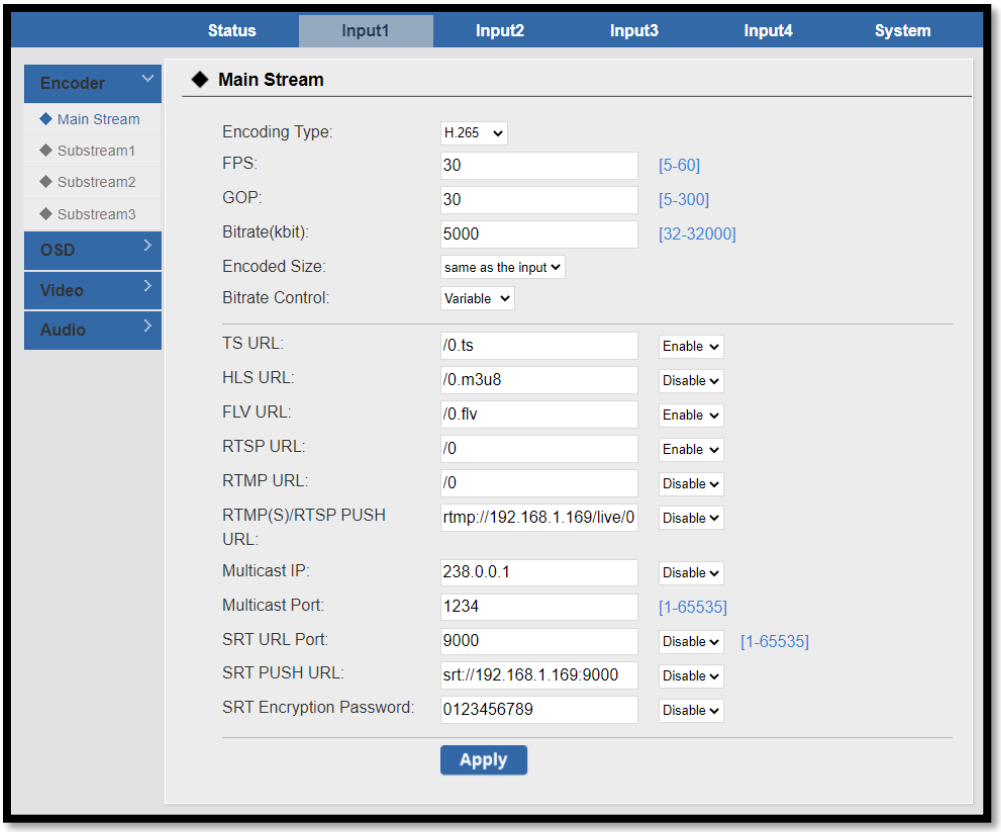

**NOTE: If the unit starts slowing down or the CPU usage is too high under the status page, please disable any formats you are not using, lower the number of clients connected, or Factory Reset the Unit under the Systems Tab**

## NAVIGATION PANEL

- **This is at the top of the web interface.** Depending on your model, it may look slightly different. Here you can change between your **Status page, HDMI Inputs 1-4, which include Main & Subtreams**, **System** menu.


## HDMI INPUTS 1-4

- **Under these menus, you can adjust the Main Stream settings, Audio, Substreams, and OSD(On Screen Display) for each of the Inputs. Under Mainstream**. You can enable and disable different formats you wish to use as well as **Bitrate**, **FPS**, **Encoding Size**, & **Compression Profile**. You may adjust these settings to match your needs. Please set your unit all up and then power cycle the unit to ensure the settings take effect. The same settings can be applied in the other substream but are unnecessary. If you wish to use a specific format or require unique settings such as lower bitrate for Wifi devices, frame rate, or RTMP servers, then the substream would be required.

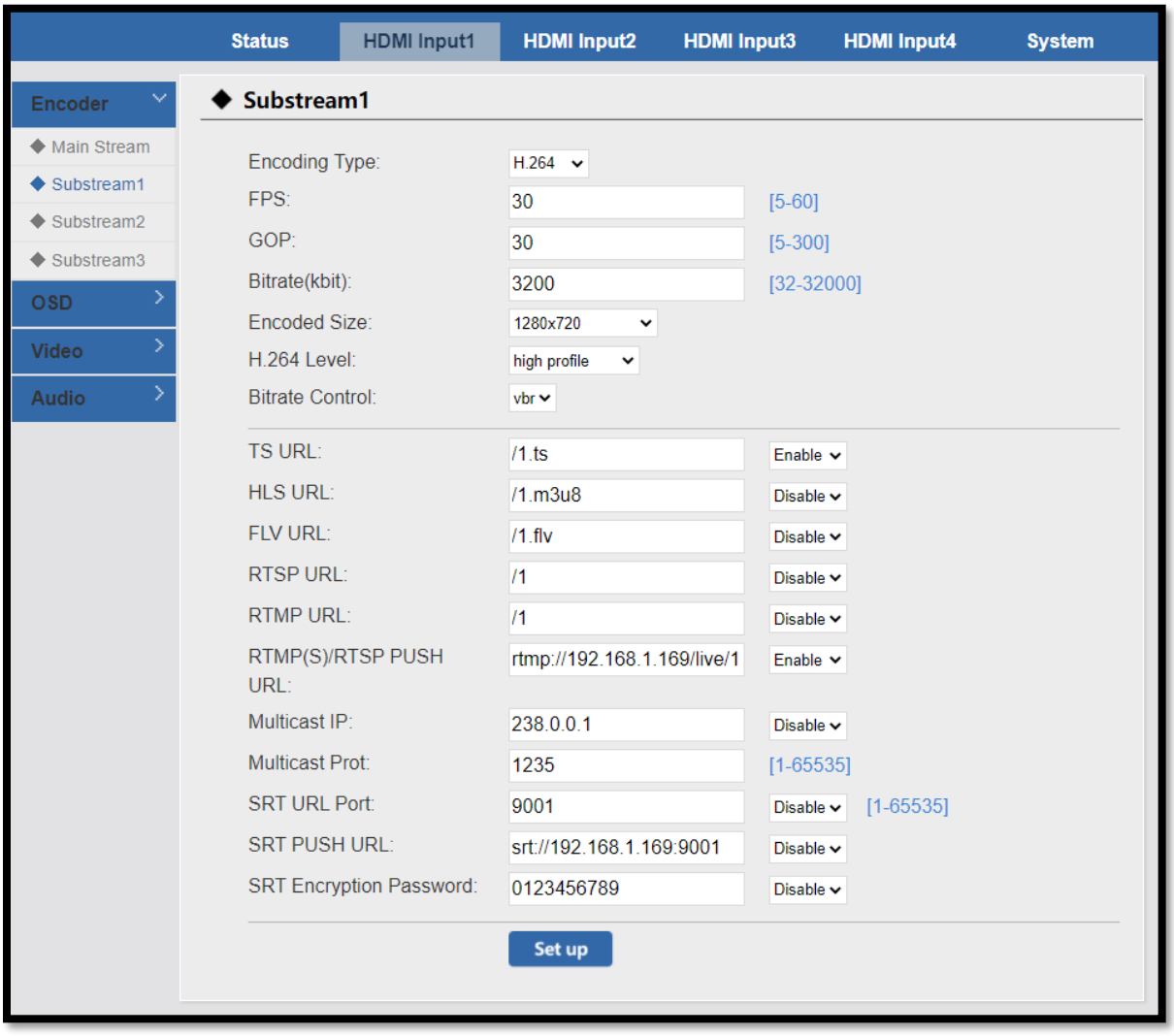



**If you wish to use 4K30 HDMI sources, please note that only Inputs 1 and 2 on each module support 4k30 inputs. Therefore, using 4k30 inputs, HDMI input 3&4 on that module are disabled automatically.**

## SUBSTREAM

- **Here you can set your settings for the substream.** You can enable and disable different formats you wish to use as well as **Bitrate**, **FPS**, **Encoding Size**, & **Compression Profile**. You may adjust these settings to match your needs. Please set your unit all up and then power cycle the unit to ensure the settings take effect. The same settings can be applied in the other substream but are unnecessary. If you wish to use a specific format or require unique settings such as lower bitrate for Wifi devices, frame rate, or RTMP servers, then the substream would be required.

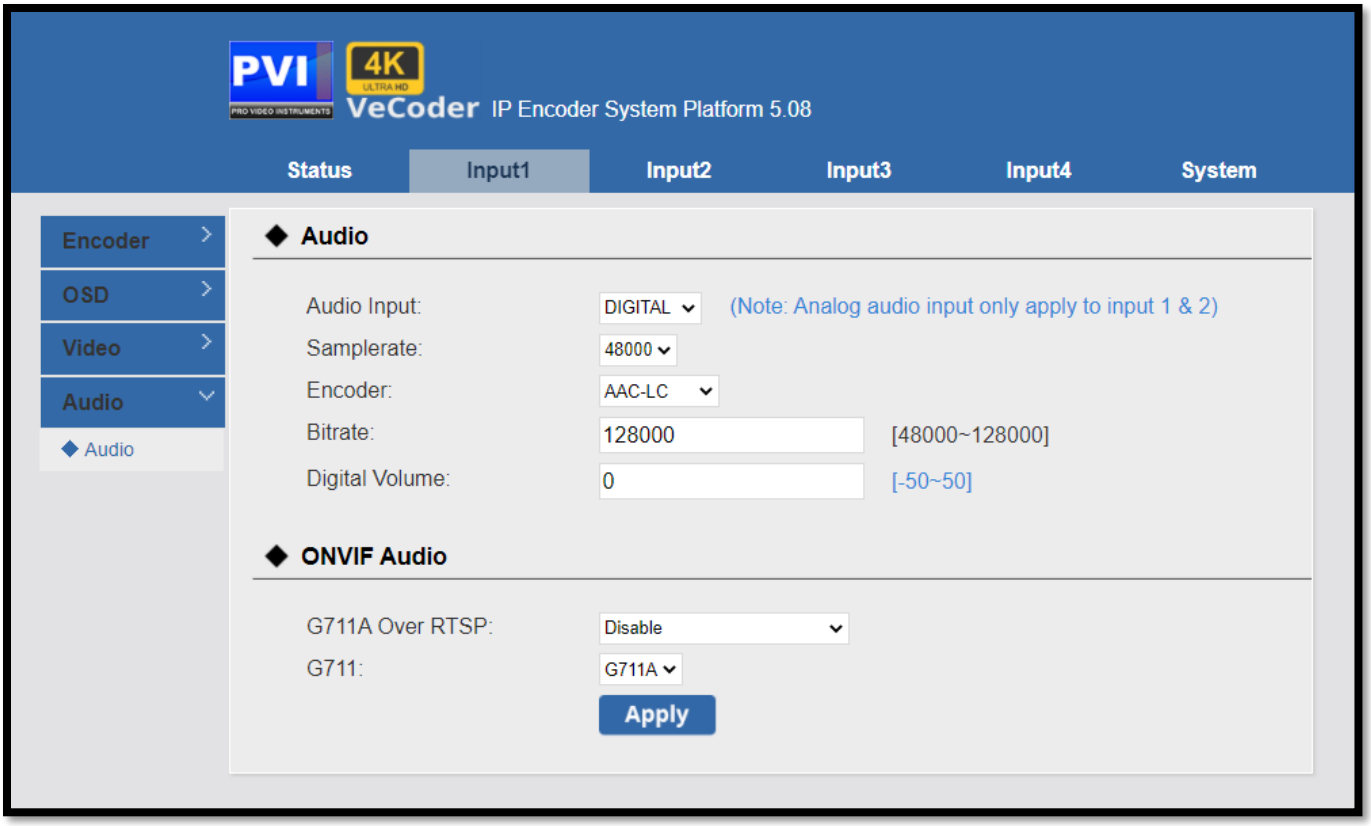
- ***This is just an example of our substream settings :***



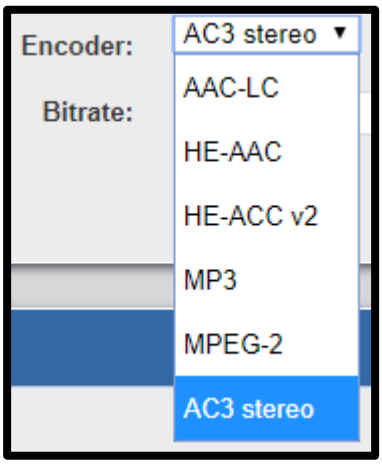
## AUDIO ENCODING SETTINGS

**Here you can adjust your Audio Format and Volume for the Streams to suit your needs.** The settings, by default, work just fine.

- **Audio Input**: Source for audio input. Analog Audio is only supported on Inputs 1 & 2 on each module.
- **Sample rate**: Adjust this setting to toggle between sample rates. A higher sample rate may provide higher quality but require more bandwidth. **48K Recommended for YouTube Broadcasting**
- **Format**: Use this to select your ideal compression format.
- **Bitrate**: Increase or decrease this value to balance quality/performance.
- **Digital/Analog Vol**: Adjust this value to change the output volume of your stream. 0 Is the Balanced default level with no adjustment done.



## AUDIO FORMAT OPTIONS:




### AAC-LC: Advance Audio Coding – Low Complexity

Designed for standard Audio encoding over IP that achieves higher sound quality than MP3 at the same bitrate.

### HE-ACC: High efficacy – Advanced Audio Encoding

Extension of ACC optimized for applications that require low bitrate without losing much audio quality, such as audio-only streams.

### HE-ACC v2

Further extension of HE-ACC and more standard in today's world. It has been further developed for low bitrate application as well as enhanced features for Stereo audio and Multichannel audio. However, our Vecoder only uses the Stereo channel functions of this format.

### MP3

formally MPEG-1 Audio Layer III or MPEG-2 Audio Layer III, mp3 is a lossy audio compression used when quality with smaller bitrates was necessary. This format isn't as good as the ACC audio format used in today's world but still has a place for specific applications

### MPEG-2:

Standard Mpeg 2 Stereo Audio is used in a lot of specific applications where most standard audio formats are not supported; therefore, the older Mpeg 2 audio is the only option. Mpeg 2 audio requires a higher bitrate to achieve the same audio quality as the other formats

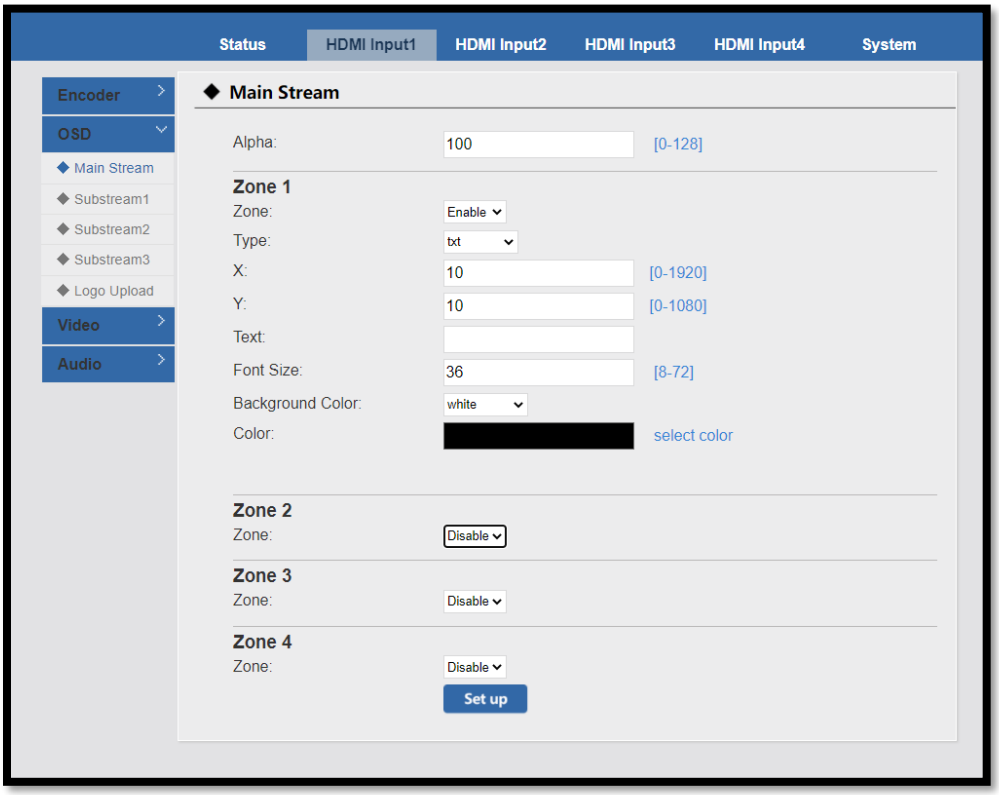
### AC3 STEREO:

AC3 or also known as Dolby Digital Stereo 2 channel audio, is an audio compression technology developed by Dolby Laboratories. Originally named Dolby, Stereo Digital is used for TV Broadcasts and some IP streams. Most Coax broadcasts require AC3 audio, or the TVs don't decode the sound correctly.

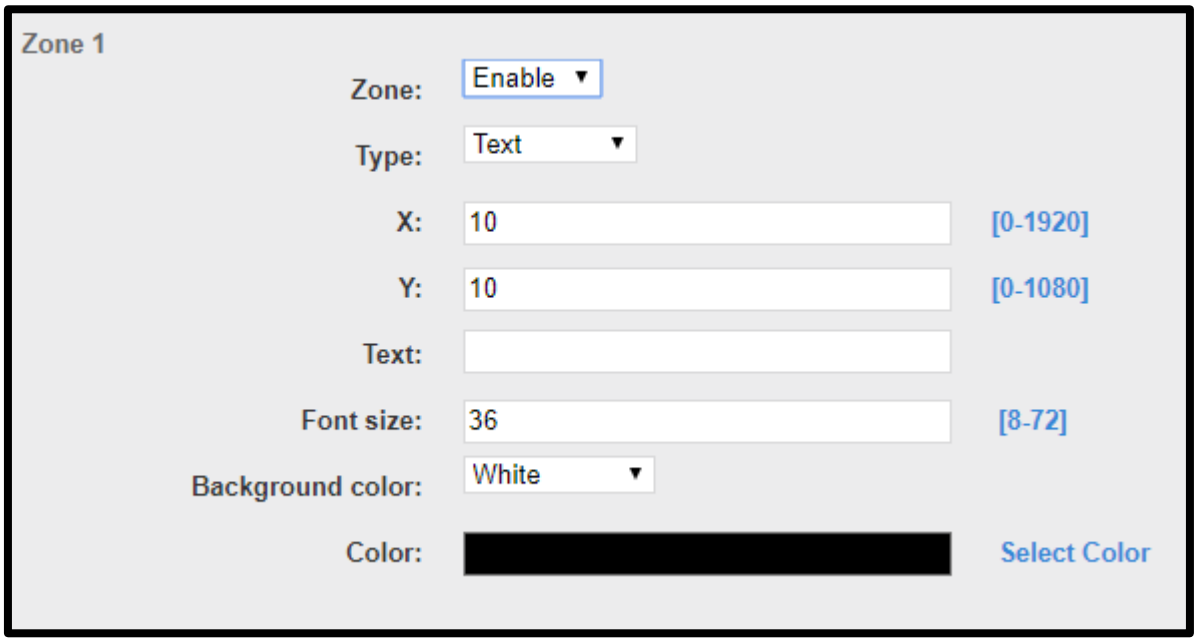
## ON-SCREEN DISPLAY (OSD)

- **Here you can set your Logo to Display (overlay) over the incoming HDMI video, such as your company logo or text.** The unit has 4 different CG Generators providing you many options such as Text, Logo, Scrolling Text, or Time Stamping.
- **The logo requires to be named logo1.bmp. It must be a BMP or PNG format picture.** Depending on the zone you wish to use, the logo results in the required name.
    - ***BMP Example**: Logo1.bmp for ZONE 1 Logo2.bmp for ZONE 2 Logo3.bmp for ZONE 3 Logo4.bmp for ZONE 4*
    - ***PNG Example**: Logo1.png for ZONE 1 Logo2.png for ZONE 2 Logo3.png for ZONE 3 Logo4.png for ZONE 4*

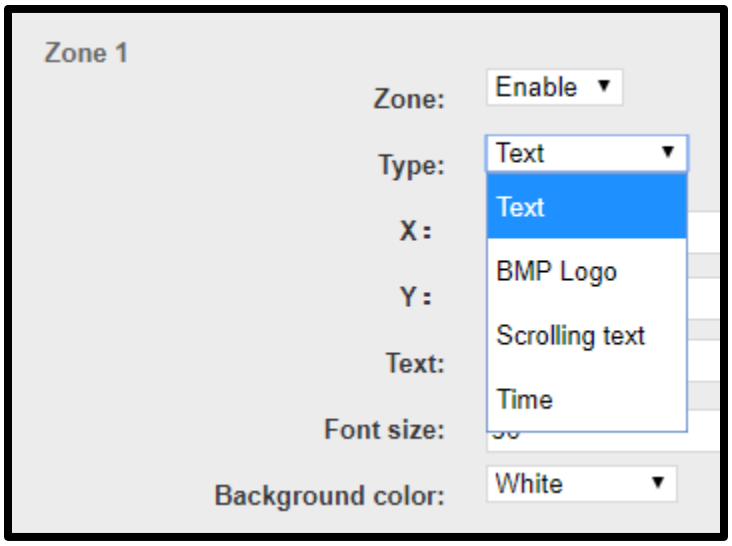
- **You can use all 4 zones at the same time to show both logos and text.**



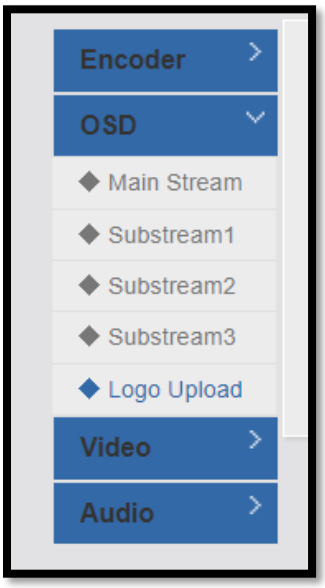
To enable OSD – On Screen Display, click on the drop-down menu for the specific zone and enable.




Select the type of OSD you wish to use. Depending on your model, some OSD options might not be available.

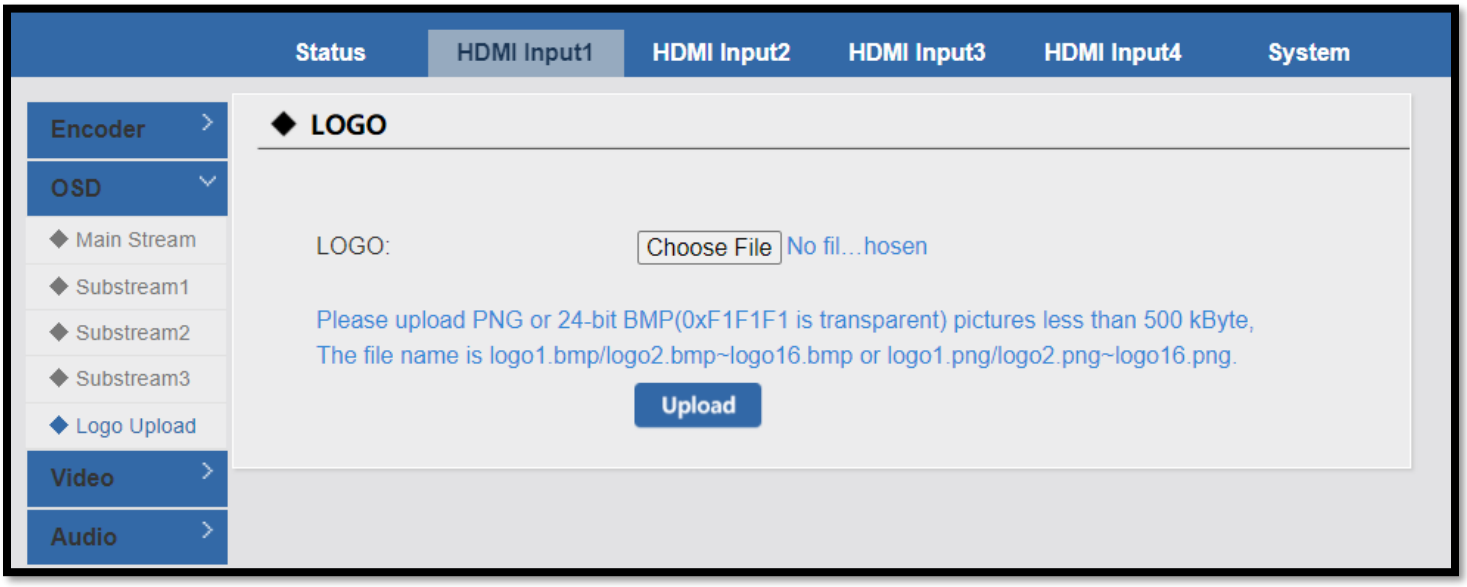


To upload a logo for the Logo OSD type, click on Logo upload on the sub-navigation menu on the left side.




Choose file – Browse on your PC the location of the file you wish to use. Remember the logo must be named logo1.bmp/logo2.bmp to logo16.bmp for BMP format or logo1.png/logo2.png to logo16.png for PNG files

Uploaded PNG or 24-bit BMP(0xF1F1F1 is transparent) pictures must be less than 500 Kbyte in size.



## TEXT SETTINGS

- **TEXT X: [0-1920]**: Left and Right position of the text.
- **TEXT Y: [0-1080]**: Up and down position of the text.
- **FONT: [8-72]:** Size of Text.
- **ALPHA**: Opacity of the Text [0-128].
- **COLOR**: Color of the Text.
- **BG**: Background color of the text if you wish.
- **TEXT**: type the text here that you wish to display.

## PICTURE SETTINGS

- **Picture**: Disable/Enable
- **Picture X**: [0-1920] – Left and Right position of the Picture
- **Picture Y**: [0-1080] – Up and down position of the Picture
- **ALPHA**: Opacity of the Picture [0-128]

## SCROLL TEXT SETTINGS

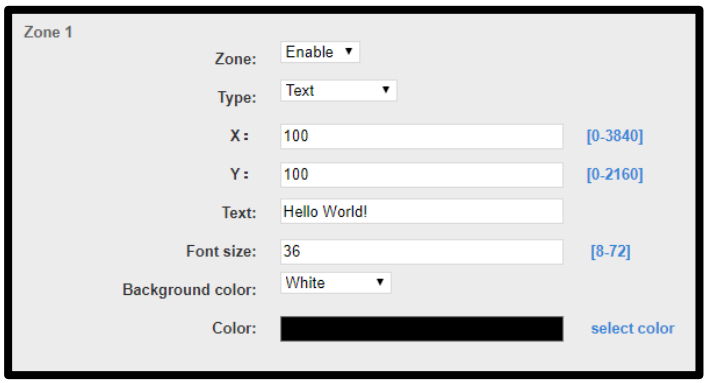
- **Position**: Position of scroll text on the screen.
- **Speed**: Speed of the scroll
- **Text**: Text you want to be displayed
- **Font Size**: Size of Text
- **Background Color**: Background color of the text
- **Color**: Color of the Text

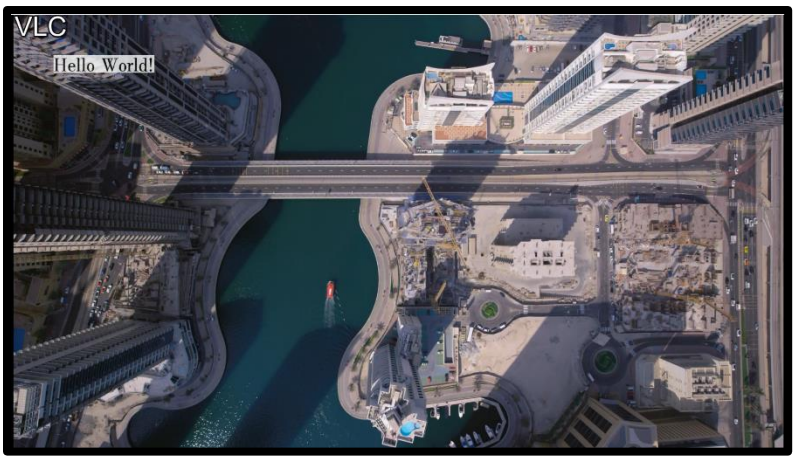
## TIME SETTINGS

- **X: [0-1920]**: Left and Right position of the Picture
- **Y: [0-1080]**: Up and down position of the Picture
- **FONT SIZE**: [8-72] – Size of Text
- **BACKGROUND COLOR**: Background color of time
- **COLOR**: Color of the Time

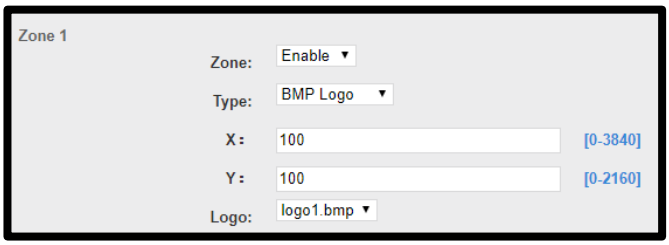
## OSD- EXAMPLES

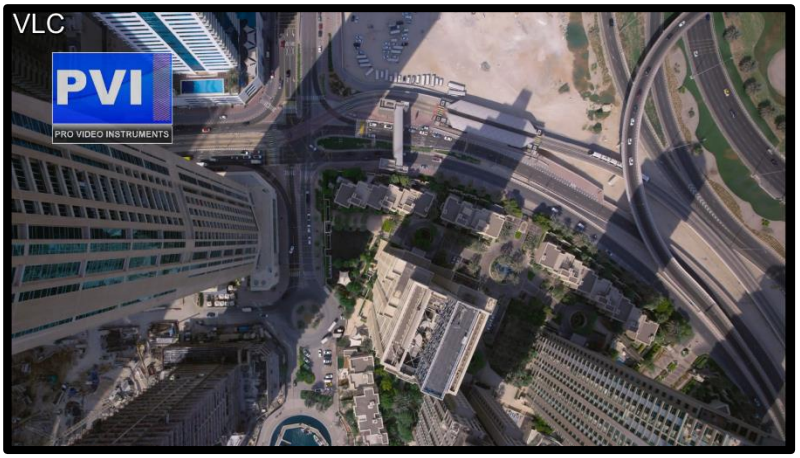
### TEXT:



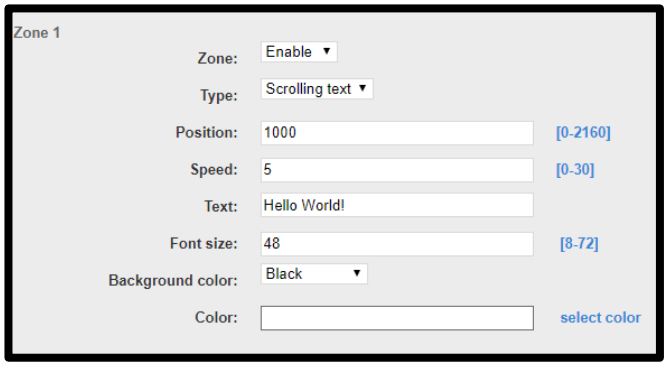



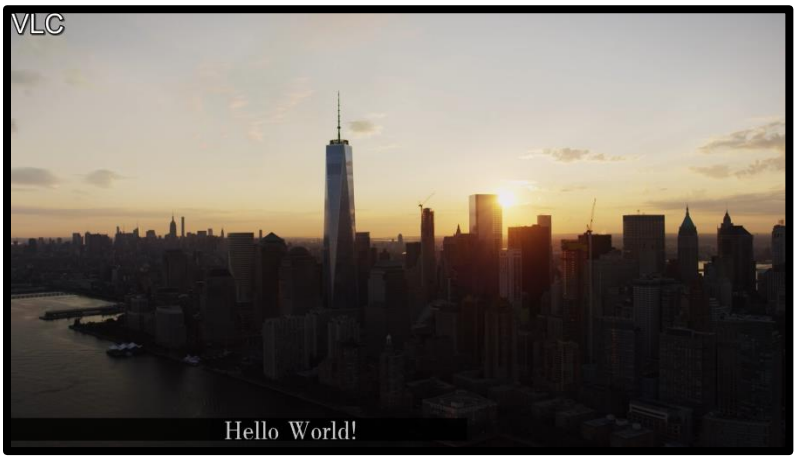

### LOGO:



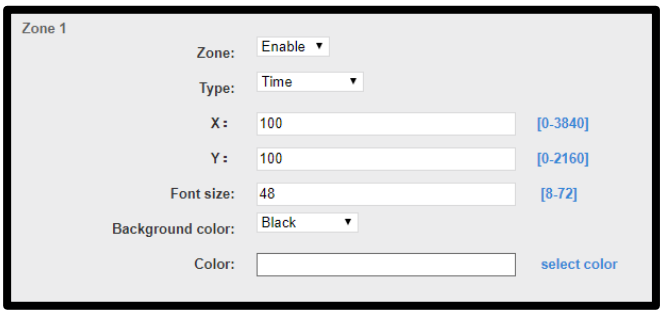



### SCROLLING TEXT:



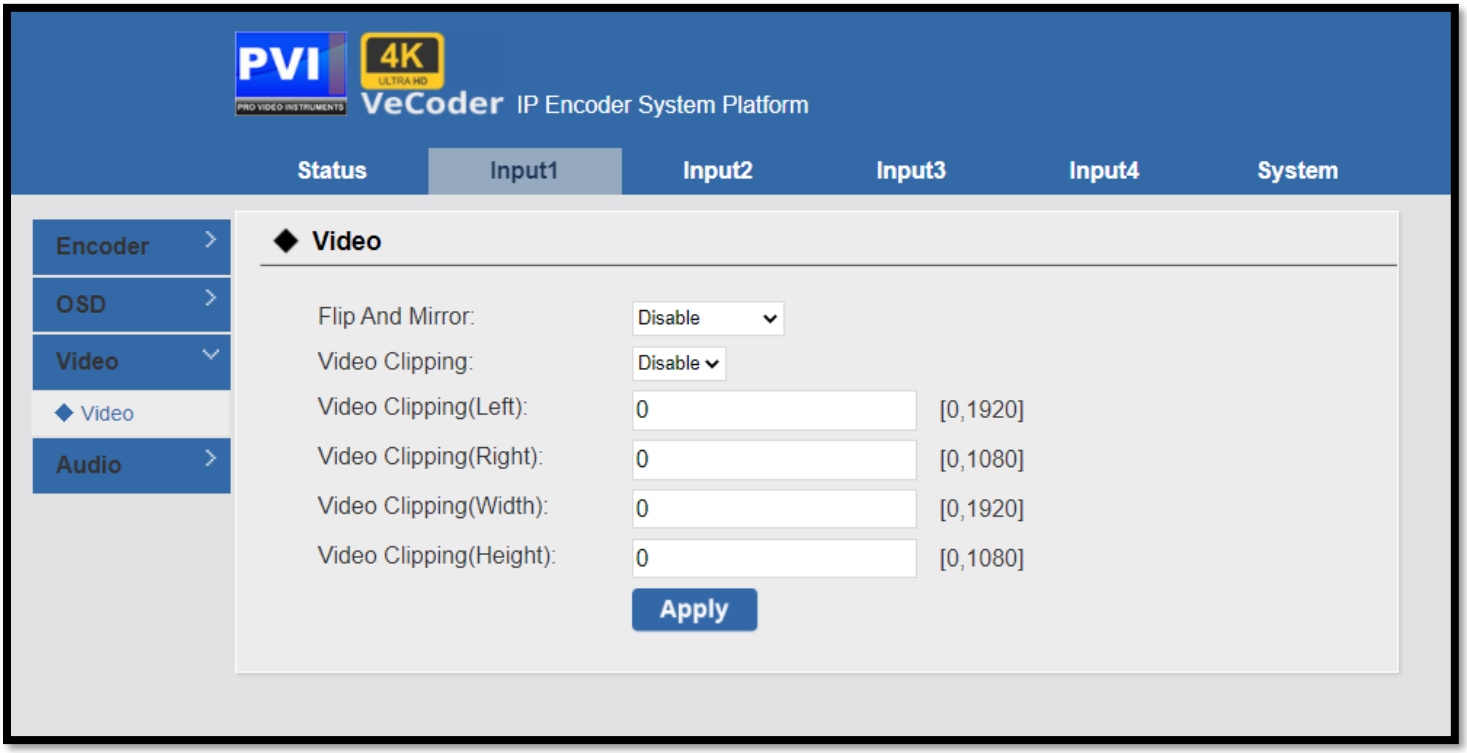




### TIME STAMP:

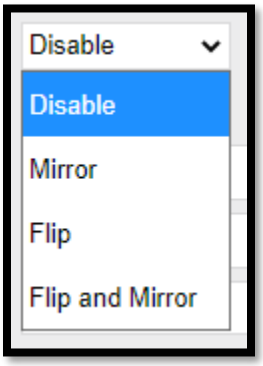



## Video Clip/Mirror Options

Under Video Menu, Users can Flip & Mirror the output video as well as Video cropping.



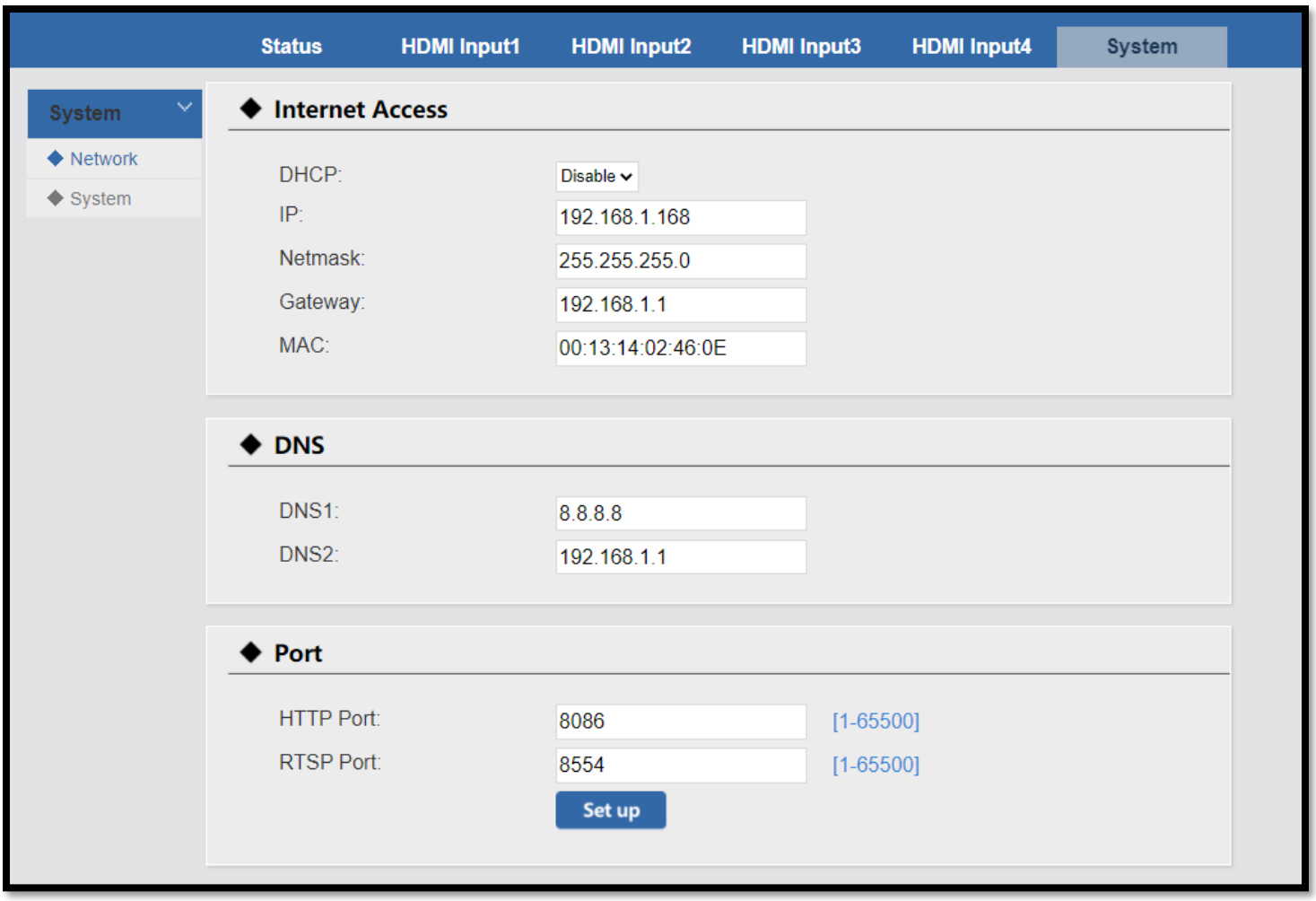

**FLIP AND MIRROR:** Enable or Disable the Flip and Mirror feature.




**VIDEO CLIPPING:** Enable or Disable the Video Clipping feature. This Crops the video to the specified size using the value below. This is based on a Grid system of resolution. 1080P is the max resolution (1920 X 1080) supported; therefore, the grid is 1920 Wide by 1080 High.

## SYSTEM - NETWORK

Here you can adjust the network settings to match the needs of your specific network topology.

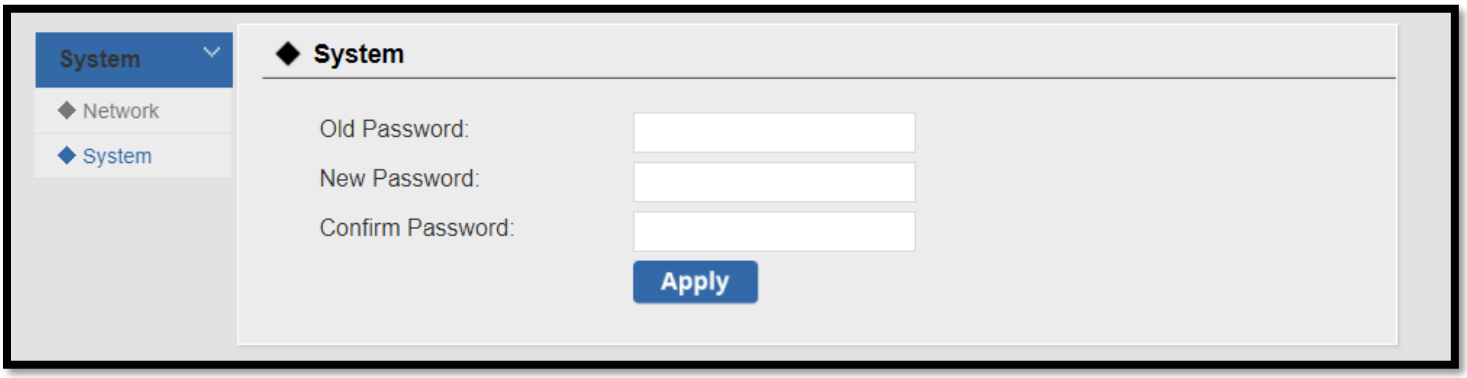


## SYSTEM SETTINGS

Under the System tab of the nav menu provides you several advance options for the encoder. Change password, Advance encoding options, NTP Time server, Update firmware, Load configuration, Backup configuration, Reboot, Factory reset.

### CHANGE PASSWORD:

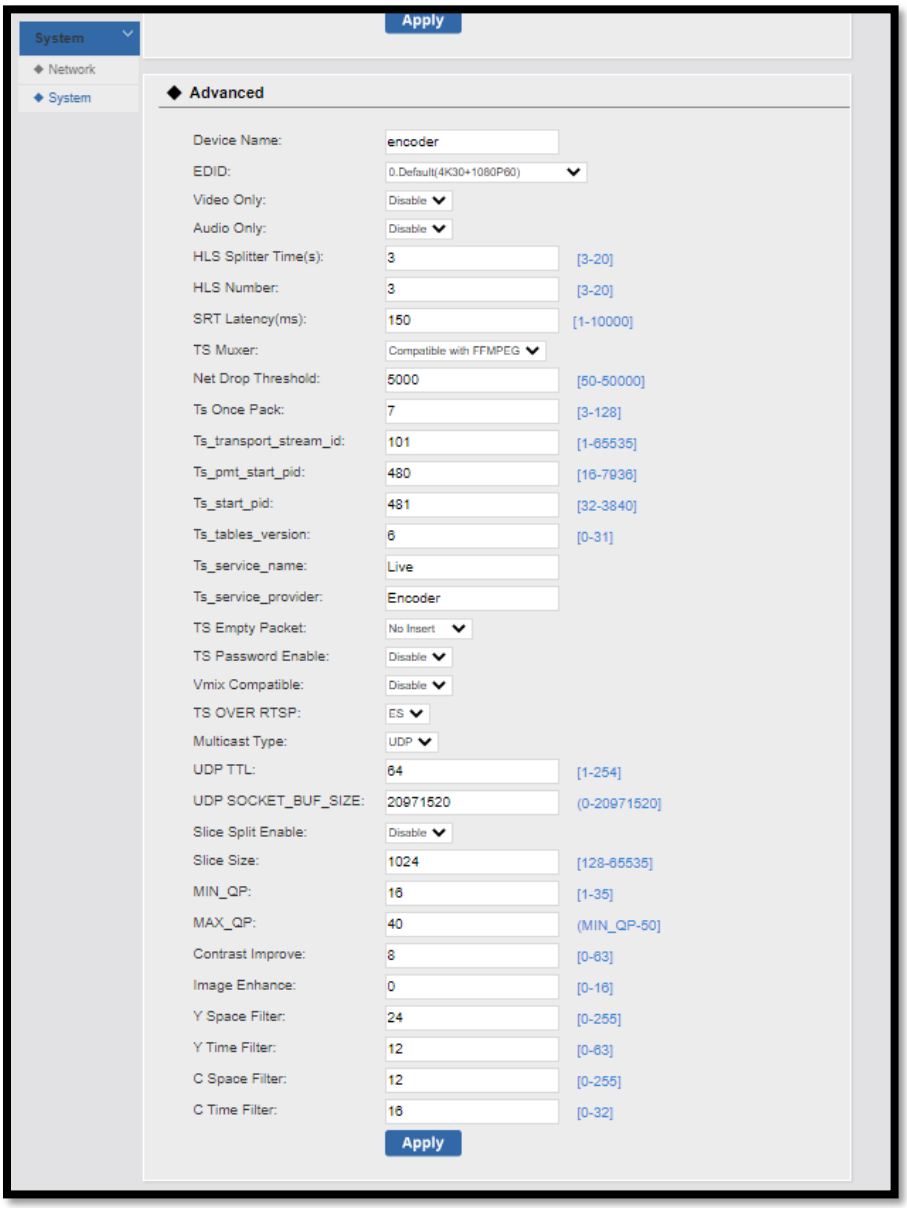
Customers can change the password here. It's required to enter the old password before proceeding to create the new password.



## ADVANCE OPTIONS:

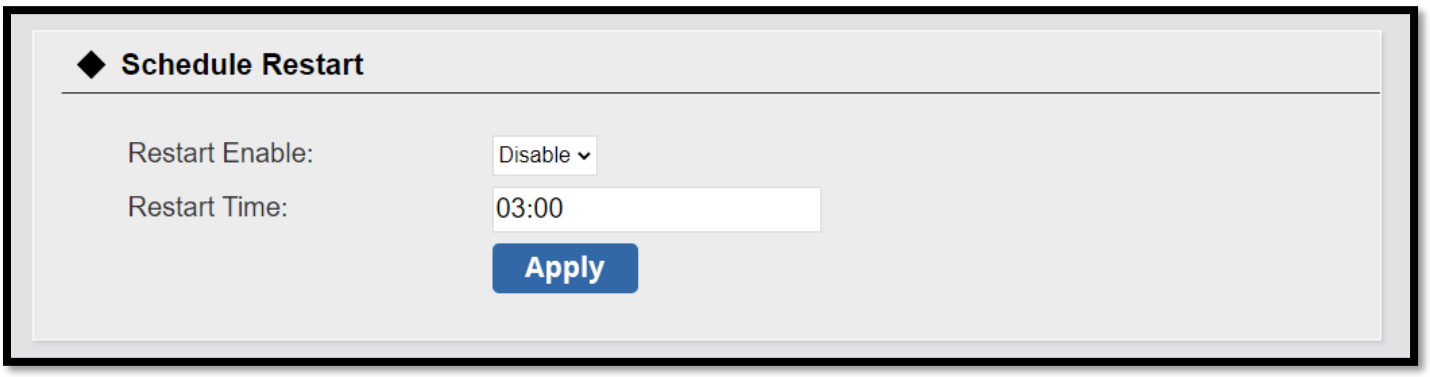
**Here you can change the Advanced settings for the encoder.** At the bottom of the page, you can perform a **soft reboot** of the device, as well as Factory reset the unit if required. You can also set up an **automatic restart** of the unit to ensure the unit's stream restarts and refreshes itself daily during off-hours. **This is optional**.

- **NOTE: Please don't change these settings unless you know what you are doing or require a specific setting for your application, such as a different Multicast Type (UDP/RTP). Changing these settings could result in unwanted effects on your video stream.**



## SCHEDULE RESTART:

- **Schedule Restart**: This feature allows you to schedule a restart. This field accepts the Military Time standard.
- **Upgrade Settings**: This is where upgrade files would be uploaded to the device. Please refrain from using this feature without the instruction of PVI Support.
- **System Settings**: This is where you can reboot the device or reset the device back to its' factory settings.

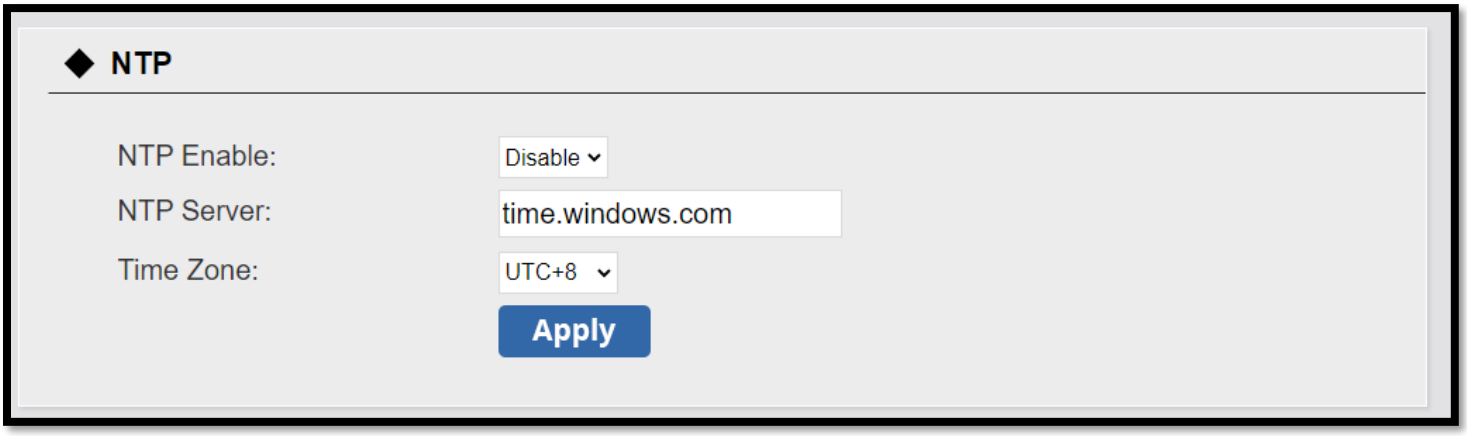


## NTP – TIME STAMPING SERVER:

NTP time server allows you to sync your device to an NTP server for accurate time stamping.

- **NTP Enable**: Enable or Disable this feature
- **NTP Server**: Enter the address for the NTP server. The default is time.windows.com.
- **Time Zone:** Set your UTC(coordinated universal time). See the Conversion Chart below.

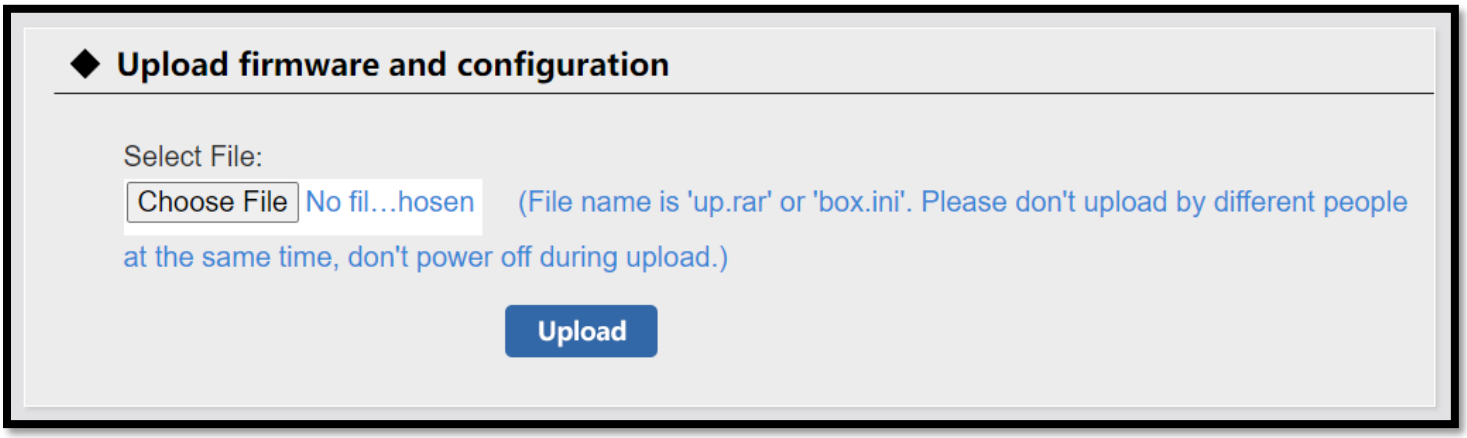
**UTC** = Coordinated Universal Time, or **Zulu**
**PST** = Pacific Standard Time (UTC - 8 hours)
**ALDT** = Alaskan Daylight Time (UTC - 8 hours)
**PDT** = Pacific Daylight Time (UTC - 7 hours)
**MST** = Mountain Standard Time (UTC - 7 hours)
**MDT** = Mountain Daylight Time (UTC - 6 hours)
**CST** = Central Standard Time (UTC - 6 hours)
**CDT** = Central Daylight Time (UTC - 5 hours)
**EST** = Eastern Standard Time (UTC - 5 hours)
**EDT** = Eastern Daylight Time (UTC - 4 hours)
**AST** = Atlantic Standard Time (UTC - 4 hours)
**ALST** = Alaskan Standard Time (UTC - 9 hours)
**HST** = Hawaiian Standard Time (UTC - 10 hours)



## UPDATE FIRMWARE | LOAD CONFIGURATION:

Users can upload the latest firmware for their device here or load a configuration file that was backed up previously or from another device.

- **Firmware**: The firmware file must be named **up.rar.** The provided file given from PVI will already be called this. Please do not change or modify this file as it could result in irreversible damage to the unit.
- **Configuration File:** The configuration file must be named **box.ini.** This filename should already be named when using the backup feature of the device. Do not change or modify this file in any way, as it could result in irreversible damage to the unit.
  - **Note:** Configuration file **WILL** load the IP address settings of the configuration file. If you are setting up multiple units and using the configuration too as "copy & paste," please be aware of this.



## BACKUP CONFIGURATION:

Provides the user a dump file of the current settings from the unit. This includes the IP Network settings of the unit. Please be aware of this.


## FACTORY RESET | REBOOT:

**Reboot:** Soft reboots the unit

**Factory reset:** Resets the settings back to default. Network IP settings will remain the same. Requires a reboot for changes to take effect.

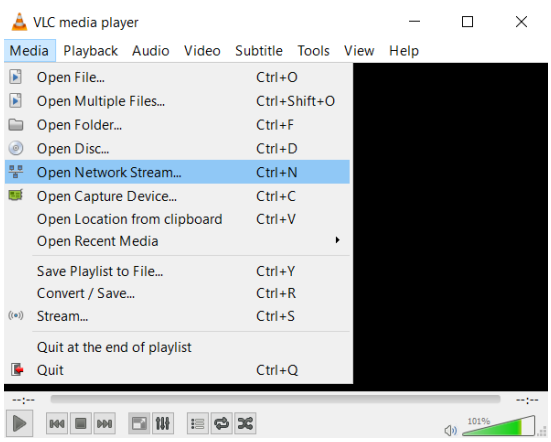
You must hold the reset button on the back of your device for 30 seconds for a **hard reset**. This will reset all settings, including the IP address of the device, back to default.

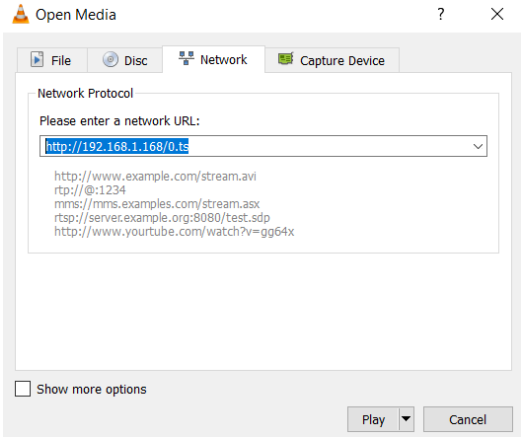
## TESTING YOUR STREAM IN VLC

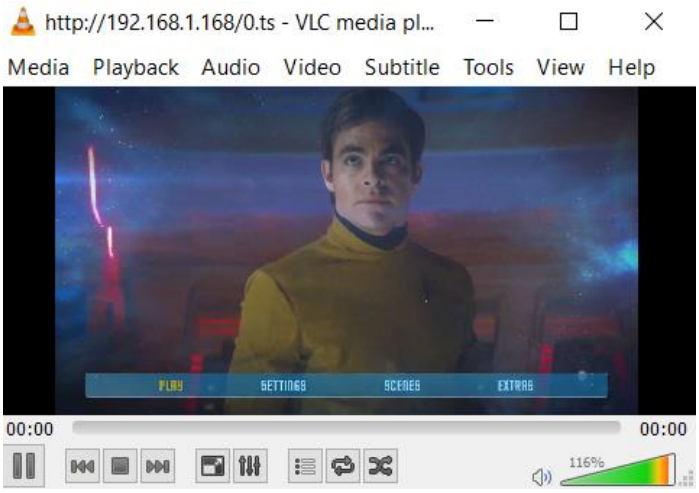
- **VLC**

*VLC is a free and open-source, cross-platform multimedia player and framework that plays various streaming protocols.* You can find it here: https://www.videolan.org/

1. Rule of Thumb: If your stream works in VLC, your stream is operational.
2. Connect your device to the Source & Network.
3. Plug your source in via HDMI.
4. Plug your VeCoder into your network via Ethernet.
5. Open the Menu of the VeCoder by connecting to the IP address you have set.
6. Paste the stream you wish to test from the Mainstream menu into VLC Network Stream
7. Open VLC > Media > Open Network Stream
8. If your stream is working correctly, it will automatically begin playing in a matter of seconds.
9. You can test all other streams this same way. Simply ensure the stream is enabled.



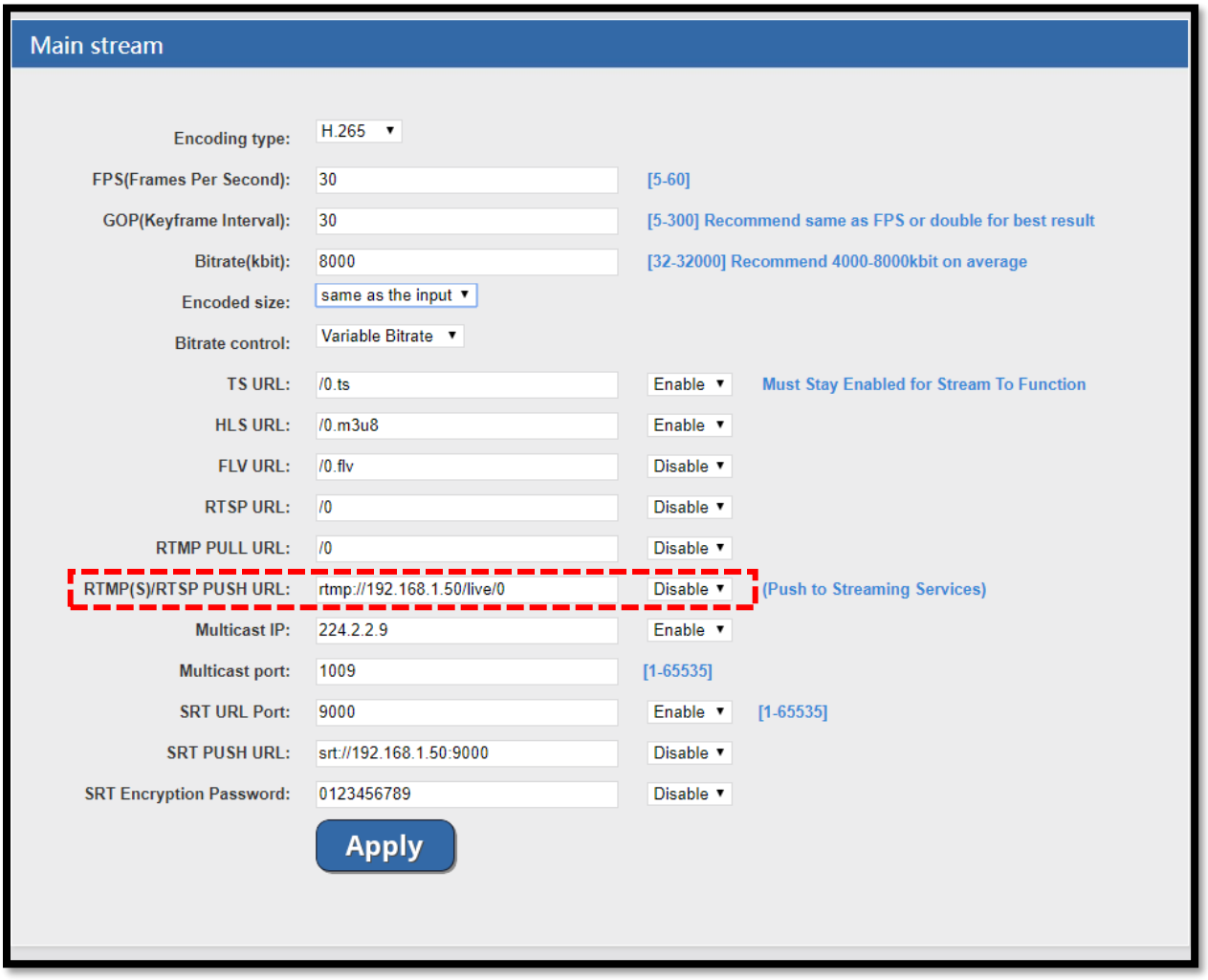



## STREAMING TO FACEBOOK LIVE PRODUCER

To Stream to Facebook Live, we must enable the RTMP PUSH format on the VeCoder.

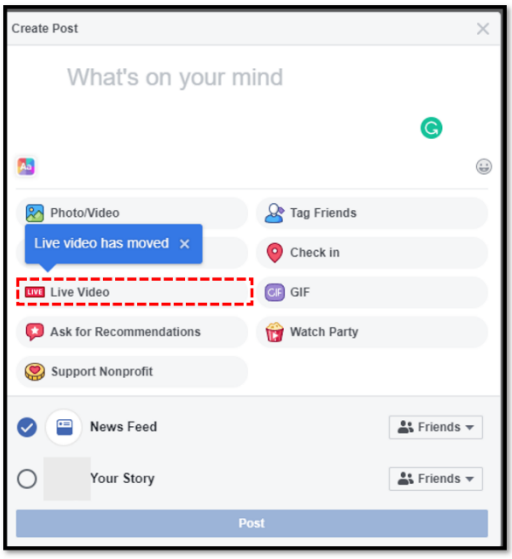
Depending on your model, the Web interface will vary, but the steps are the same.



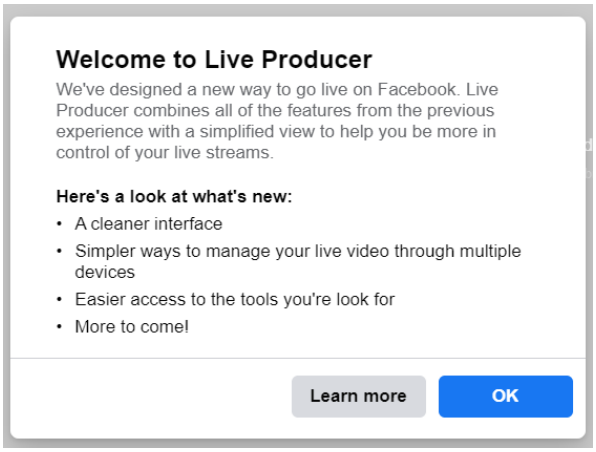

Once we have enabled the RTMP Push URL on your encoder, proceed to Facebook.

Login into Facebook. If you wish to post your Live video on your Group page or Business page, then proceed to do so under **Create Post**.

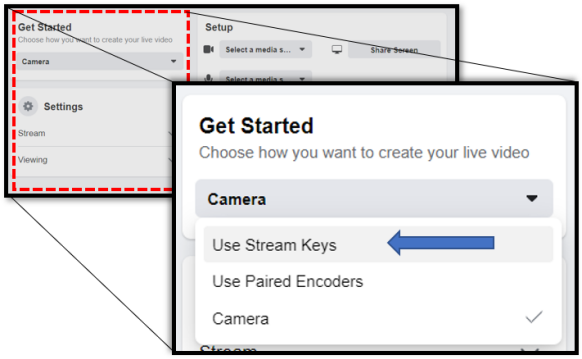
Under Create Post > Live video. Click on **Live Video**.



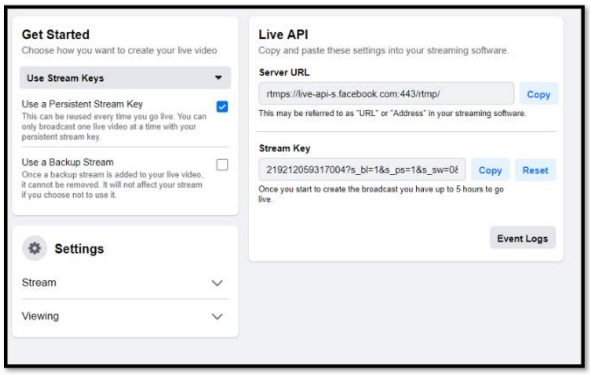

Facebook will direct you to a new page to configure the live feed which is now known as Live Producer (as of March 2020)




Under the **Get Started** options, click on the drop-down menu to change from "Camera," to "Use Steam Keys"




Once "Use Stream Keys" is selected, a new menu will appear on the right side of the **Get Started** Menu.




Facebook will provide you a **URL** and a **Stream Key**

**The following information is an example, and the user should refer to your Facebook account for the following information.**

**Server URL:** rtmps://live-api-s.facebook.com:443/rtmp/

**Stream Key:** 219212059317004?s_bl=1&s_ps=1&s_sw=0

With the following information provided by Facebook, we can apply it to our Vecoder unit.

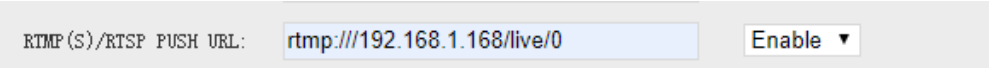
Our unit requires that you combine the **Server URL** and the **Stream Key**

**RTMPS://SERVER URL/STREAM KEY**

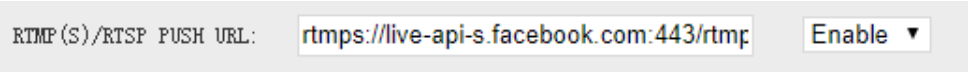
**Combine:** rtmps://live-api-s.facebook.com:443/rtmp/219212059317004?s_bl=1&s_ps=1&s_sw=0

Copy the Combine URL into the Vecoder.

Delete the default information in the text field




Paste the new Combine URL into the Text Field.




Once entered, hit the **Setup/Apply** Button.

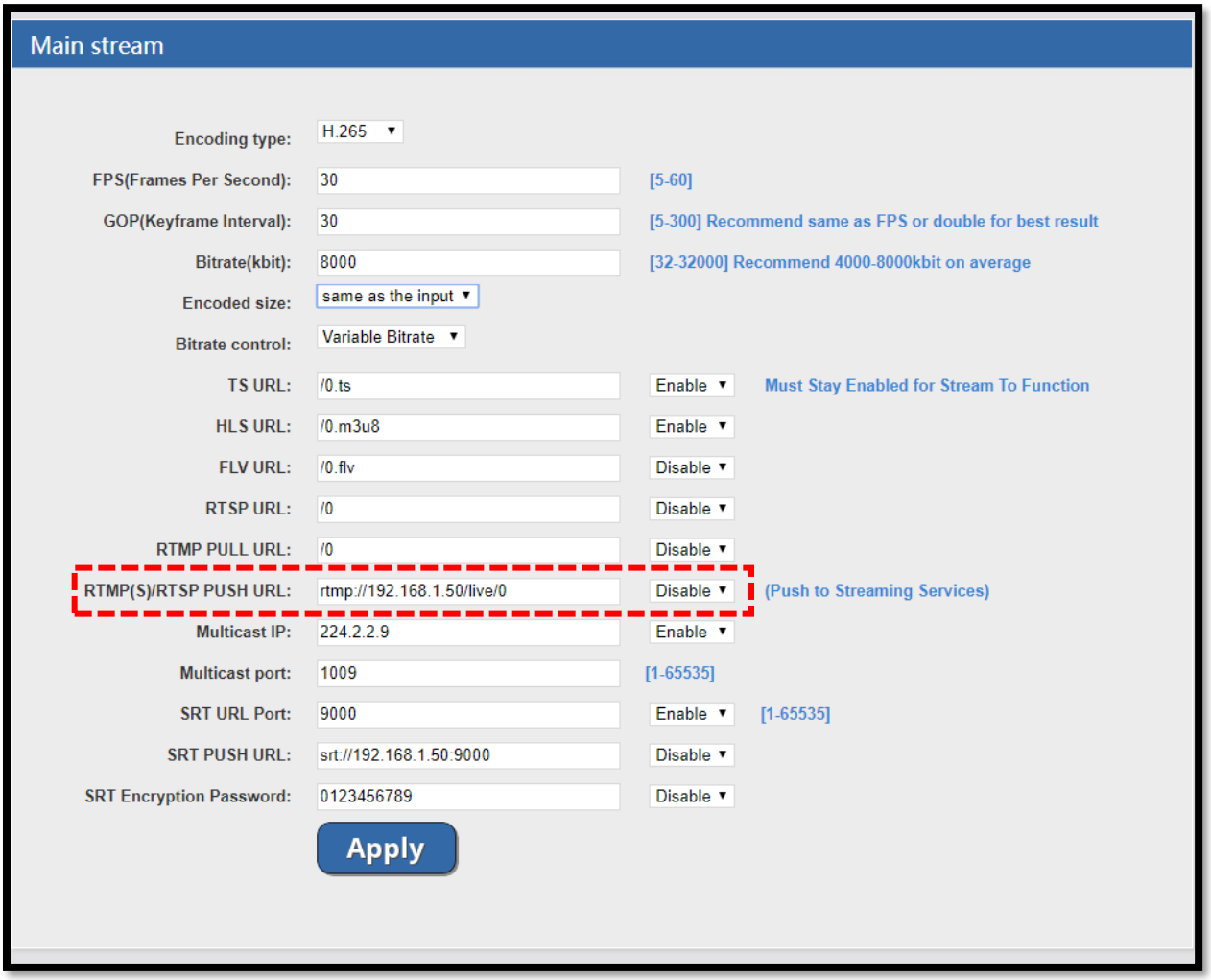

Please note it can take up to 30 seconds before Facebook will show the Live preview of the stream.

## STREAMING TO YOUTUBE

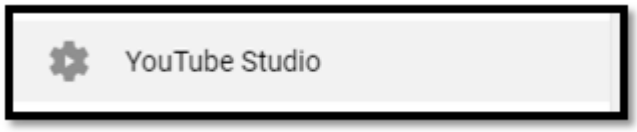
Here are the steps required to broadcast the video feed from our Vecoder to YouTube Live.

Enable **RTMP(s) Push** format on your encoder. *The look of the menu may vary depending on your model.*

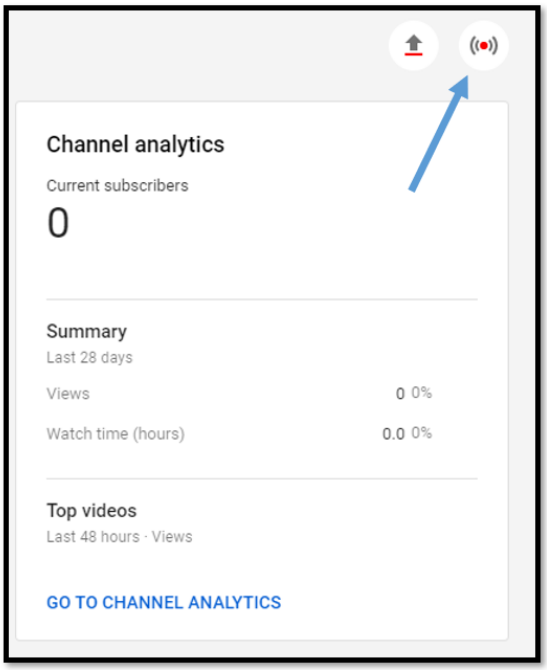
**Mainstream > RTMP(s) Push > Enable**



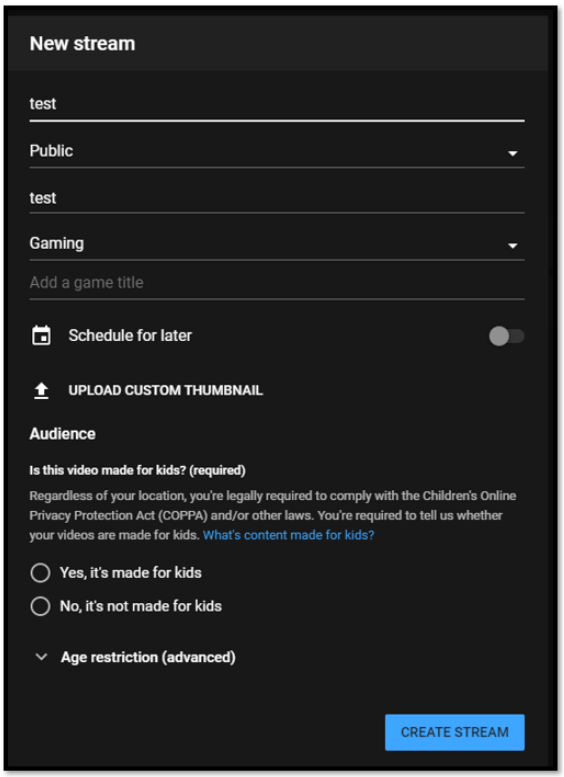
Login to your **YouTube Studio**.



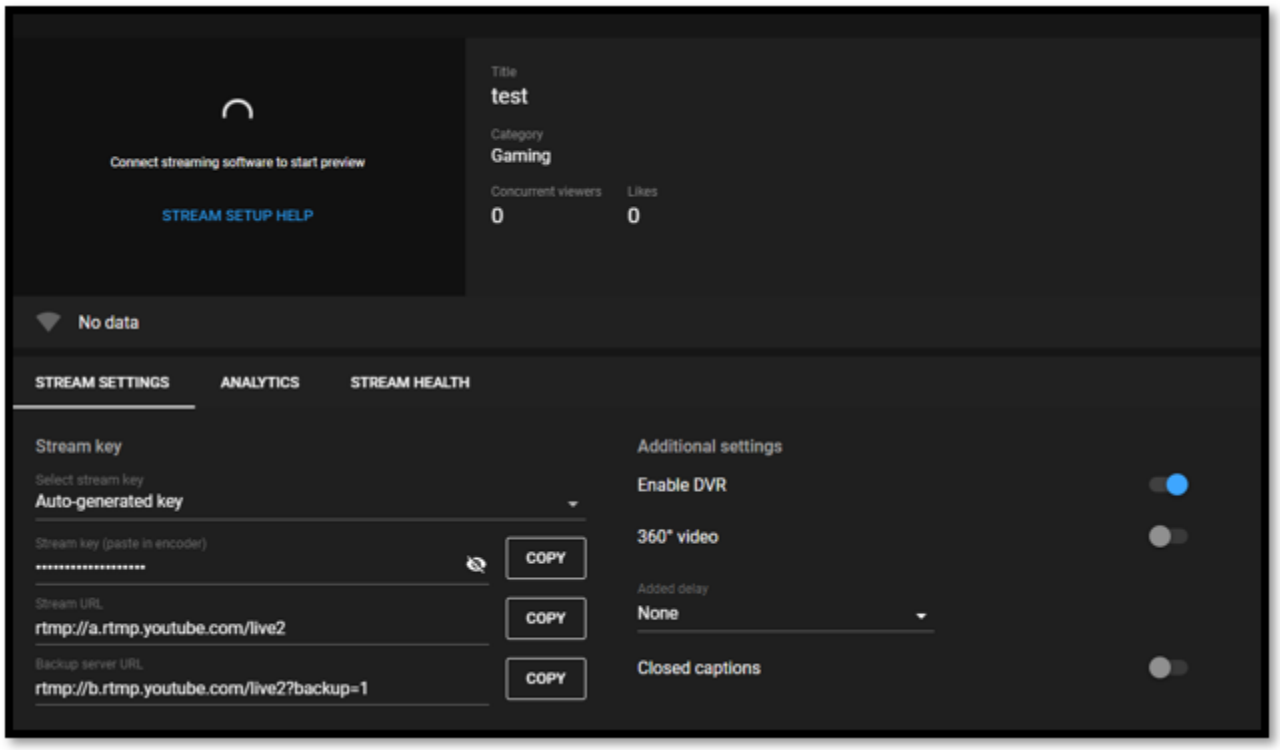

Click on the **Live** icon in YouTube Studio.



Create a new **Live Stream** or use an **existing** stream setting.



Once the stream is created, **YouTube will provide the RTMP URL and Stream Key**. **The key is unique to your account.**




**Server URL:**rtmp://a.rtmp.youtube.com/live2

**Stream Key:**live_123456

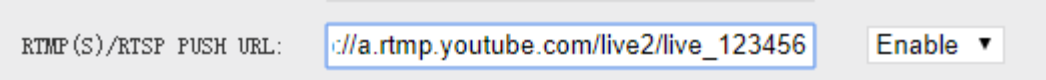
Combine the **Server URL** and the **Stream Key**

**Combined:** rtmp://a.rtmp.youtube.com/live2/live_123456

**Copy the combined URL** into the Vecoder

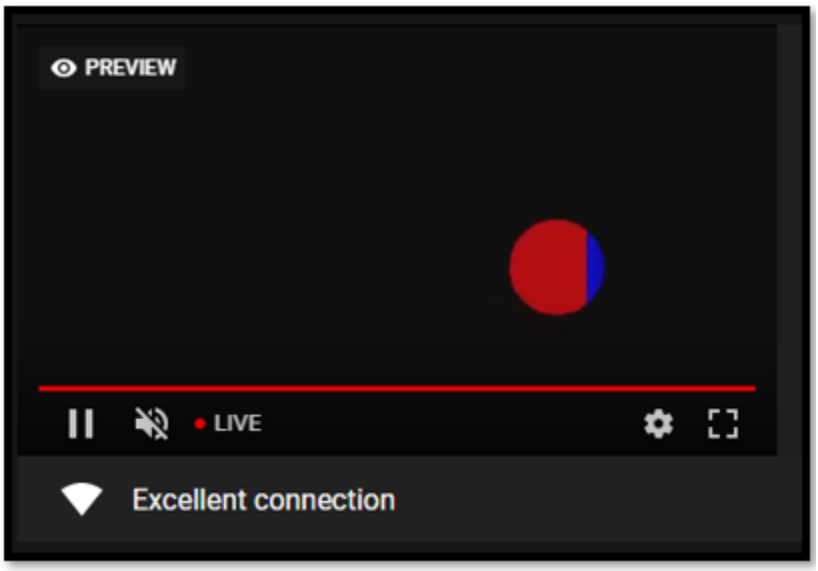
Delete the default information in the text field.


**Paste the new combined URL** into the Text Field.




Once entered hit the **Setup** Button.


Please note it can take up to **30 seconds** before YouTube will show the live preview of the stream.




- **Note:** This guide is created as a general overview of using RTMP with streaming services. Please refer to your streaming service support for any issues dealing with the streaming service. ProVideoInstruments does not provide tech support for third-party applications.

Troubeshooting Steps:

**1)** Youtube not seeing a connection

-Make sure you have audio via HDMI or SDI Depending on the model. Youtube live requires audio to accept the stream due to previous copyright issues with users. The audio is used to verify the content is owned by you.

-Verify that the Vecaster is connected to the router to provide internet access and your RTMP URL is set up correctly.

-Check the Status page of the encoder and verify if RTMP Push has a status of

(Connected) or (Not Connected)

Connected means the device can ping the Ingestion server from Youtube.

Not connected means there is an issue with the internet connection to Youtube, or the RTMP Url is incorrect. Verify all network connections and network settings.

-Try rebooting the Vecaster to reinitialize the connection with the Youtube server or refresh the Youtube live page.

**2)** Poor Audio Quality on Youtube

- Change your Audio settings on the encoder samplerate from 44k to 48k. Youtube requires 48K samplerate.

## STREAMING TO OTHER RTMP SERVICES

Most of the Streaming Services on the market use the RTMP format to Ingest your Video feed.

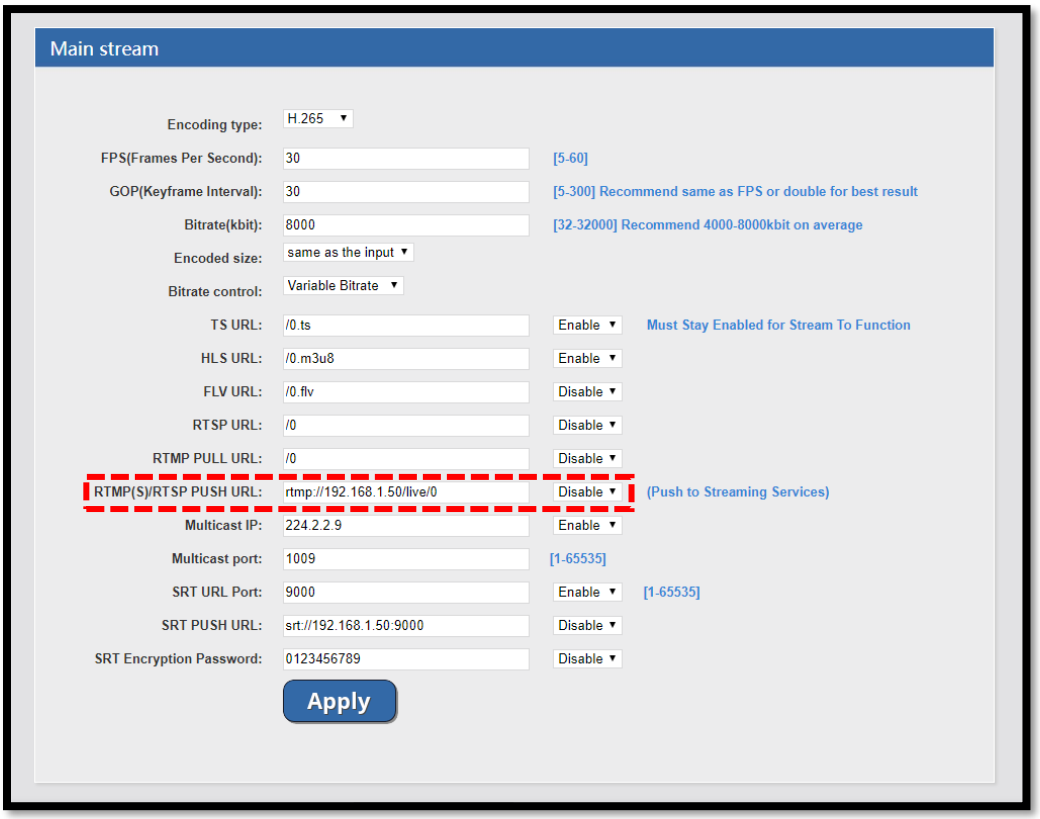
They will provide you a Stream URL and a Stream Key.

Here are the steps required to broadcast the Video Feed from our Vecoder to your Streaming Service.

Enable RTMP Push format on your encoder, the look of the menu may vary depending on your model.

**Mainstream > RTMP Push > Enable**

RTMP does not support H.265. If you have our h.265 HEVC model, please change the encoding type to h.264 or use the substream in h.264 mode. - Please refer to the User Manual.



Most of the Streaming services will provide you the following. Please refer to your Streaming Service Instructions on where to find this information.

**Server URL:**rtmp://mylivestream.com

**Stream Key:**live_123456

For this to work on, the encoder must combine the **Server URL** and the **Stream Key** as shown below.

**Combined:** rtmp://mylivestream.com/app/live_123456

If your Services uses a Username and Password for the RTMP Stream, then use this format; otherwise, ignore:

**Username:**pvi123

**Password:**12345

**Server URL:**rtmp://mylivestream.com

**Stream Key:**live_123456

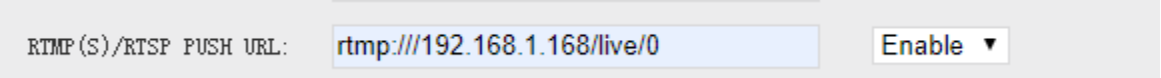
Replace username, password, Server URL, and Stream key with the information provided from your streaming service.

rtmp://**username**:**password**@**Serverurl(Remove the RTMP From the URL)/Stream Key**

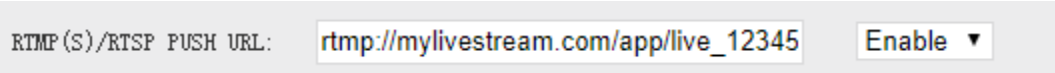
**Combined:** rtmp://pvi123:12345@mylivestream.com/live_123456

Copy the Combined URL into the Vecoder\Vecoder

The default value. Delete the default information in the text field.



Paste the new Combine URL into the Text Field.




Once entered, hit the **Setup** Button.


Please note that it can take up to 30 seconds before most Streaming services will show the Live preview of the stream.

- **Note:** This guide is created as a general overview of using RTMP with streaming services. Please refer to your streaming service support for any issues dealing with the streaming service. ProVideoInstruments does not provide tech support for third-party applications.

## STREAMING PROTOCOLS

### 1. .TS format—MPEG Transport Stream

- Digital container format for transmission and storage of audio, video, & PSIP Data.
- Encapsulates packetized elementary streams and equips them with error correction and synchronization features to maintain transmission integrity when the communication channel carrying the stream is degraded.
- Ideal for maintaining transmission integrity over unknown or unreliable mediums.

### 2. RTMP—Real Time Messaging Protocol

- Protocol developed for streaming audio, video, and data over the internet.
- RTMP is a TCP-based protocol that maintains persistent connections and allows low-latency communication.
- Splits streams into fragments, and their size is negotiated dynamically between the client and server.
- In practice individual fragments are not typically interleaved. Instead, the interleaving and multiplexing is done at the packet level, with RTMP packets across several different active channels being interleaved in such a way as to ensure that each channel meets its bandwidth, latency, and other quality-of-service requirements. Packets interleaved in this fashion are treated as indivisible and are not interleaved on the fragment level.

### 3. HTTP—Hypertext Transfer Protocol

- An application protocol for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web, where hypertext documents include hyperlinks to other resources that the user can easily access, for example by a mouse click or by tapping the screen in a web browser.
- HTTP functions as a request–response protocol in the client–server computing model. A web browser, for example, may be the client and an application running on a computer hosting a website may be the server. The client submits an HTTP request message to the server. The server, which provides resources such as HTML files and other content, or performs other functions on behalf of the client, returns a response message to the client. The response contains completion status information about the request and may also contain requested content in its message body.

## 4. HLS—HTTP Live Streaming

- HTTP-based adaptive bitrate streaming communications protocol.
- Works by breaking the overall stream into a sequence of small HTTP-based file downloads, each download loading one short chunk of an overall potentially unbounded transport stream. A list of available streams, encoded at different bit rates, is sent to the client using an extended M3U playlist.
- Based on standard HTTP transactions, HTTP Live Streaming can traverse any firewall or proxy server that lets through standard HTTP traffic, unlike UDP-based protocols
- HTTP Live Streaming uses a conventional web server to distribute audiovisual content. It requires specific software to fit into the proper format transmission in real-time.
- HTTP Live Streaming provides mechanisms for players to adapt to unpredictable network conditions without causing user-visible playback stalling. For example, on an unreliable wireless network, HLS allows the player to use a lower quality video, thus reducing bandwidth usage. HLS videos can be made highly available by providing multiple servers for the same video, allowing the player to swap seamlessly if one of the servers fails.

## 5. UDP—User Datagram Protocol

- With UDP, computer applications can send messages, in this case, referred to as datagrams, to other hosts on an Internet Protocol (IP) network. Prior communications are not required to set up communication channels or data paths.
- UDP is suitable for purposes where error checking and correction are either unnecessary or performed in the application. UDP avoids the overhead of such processing in the protocol stack. Time-sensitive applications often use UDP because dropping packets is preferable to waiting for packets delayed due to retransmission, which may not be an option in a real-time system.
- Suitable for vast numbers of clients, such as in streaming media applications such as IPTV.
- Because it supports multicast, it is suitable for broadcast information such as in many kinds of service discovery and shared information.

## 6. RTSP—Real Time Streaming Protocol

- Network control protocol designed for use in entertainment and communications systems to control streaming media servers.
- The protocol is used for establishing and controlling media sessions between endpoints. Clients of media servers issue VHS-style commands, such as play, record, and pause, to facilitate real-time control of the media streaming from the server to a client (Video On Demand) or from a client to the server (Voice Recording).
- RTSP defines control sequences as useful in controlling multimedia playback. While HTTP is stateless, RTSP has a state. An identifier is used when needed to track concurrent sessions. Like HTTP, RTSP uses TCP to maintain an end-to-end connection and, while the client sends most RTSP control messages to the server, some commands travel in the other direction.

## 7. SRT – Secure Reliable Transport

- EXTREMELY SECURE: Using the same 128/256 bit AES encryption trusted by governments and organizations around the world, SRT ensures that valuable content is protected end-to-end from contribution to distribution so that no unauthorized parties can listen.
- ALWAYS RELIABLE: No matter how unreliable your network, SRT can recover from severe packet loss and jitter, ensuring the integrity and quality of your video streams.
- LOW LATENCY ERROR RECOVERY: SRT's stream error correction is configurable to accommodate a user's deployment conditions. Leveraging real-time IP communications development to extend traditional network error recovery practices, SRT delivers media with significantly lower latency than TCP/IP while offering the speed of unreliable UDP transmission without the disadvantages.
- EASY FIREWALL TRAVERSAL: The handshaking process used by SRT supports outbound connections without the potential risks and dangers of permanent exterior ports being opened in a firewall, thereby maintaining corporate LAN security policies and minimizing the need for IT intervention.
- CONTENT AGNOSTIC: Unlike some other streaming protocols that only support specific video and audio formats, SRT is payload agnostic. Because SRT operates at the network transport level, acting as a wrapper around your content, it can transport any type of video format, codec, resolution, or frame rate.

## GLOSSARY

**Net Drop Threshold**: Specify the maximum number of Layer 2 PDUs (Protocol Data Units) of the specified protocol that can be received per second on the interfaces in a specified VLAN before the switch begins dropping the Layer 2 PDUs. The drop threshold value must be less than or equal to the shutdown threshold value.

**TS Once Pack:** Size of a packet sent out from **Vecoder**.

**FPS:** Frame rate (expressed in frames per second or FPS) is the frequency (rate) at which consecutive images called frames appear on display.

**GOP:** Group of Pictures. The GOP is a collection of successive pictures within a coded video stream. Each coded video stream consists of successive GOPs, from which the visible frames are generated. Encountering a new GOP in a compressed video stream means that the decoder doesn't need any previous frames in order to decode the next ones.

**Bitrate:** Number of bits that are conveyed or processed per unit of time. Often refers to the number of bits used per unit of playback time to represent a continuous medium such as audio or video.

**Encoded Size:** Indicates the degree of required decoder performance for a profile.

**Bitrate Control - Variable & Constant**

**Variable Bitrate:** VBR files vary the amount of output data per time segment. VBR allows a higher bitrate (and therefore more storage space) to be allocated to the more complex segments of media files while less space is allocated to less complex segments.

**Constant Bitrate:** CBR is useful for streaming multimedia content on limited capacity channels since it is the maximum bit rate that matters, not the average, so CBR would be used to take advantage of all the capacity.

**Min_QP/Max_QP:** QP regulates how much spatial detail is saved. When QP is very small, almost all that detail is retained. As QP is increased, some of that detail is aggregated so that the bit rate drops – but at the price of some increase in distortion and some loss of quality.

**HLS Splitter Time:** This value x HLs value will determine the amount of latency when using the HLS streaming protocol. For instance, HLS Split time = 3 and HLs =5 would result in about 15seconds of latency.

## TECH SUPPORT

- **Please read this manual carefully as it covers NEARLY ALL ASPECTS to set this product as per your needs, using pictures and examples.**
- **Should you need any additional support, please go to www.pvisupport.com and open a support ticket or start a chat.**
- **We strongly suggest opening a ticket first, so we can better support you.**
- **The proper engineer will address your questions quickly if you include all information pertaining to your inquiry/issue.**
- **Tickets work faster and better than phone calls. The tickets are responded to directly from the proper engineers to give you the most efficient and straightforward solution.**
- **Free tech support is active MON-FRI 9:30 AM – 5 PM US EST TIME. Tickets posted out from this time window or on Saturdays, Sundays, and US/FL holidays days are responded to ASAP the following business day.**
- **Phone Tech support is available by calling +1.407.720.6101 extension #2**

# END