



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
	MJPEG/JPEG baseline
Supported	User Selectable outputs to downscale video format
Output Formats	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 environr	nent
Operating temperature	0 to 40 deg C
Storage temperature	–20 to 80 deg C
Relative Humidity	5% to 90% non-condensing
Dimension & Acce	essories
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



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.



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)
- 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



> 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.

Command Prompt	-	×
<pre>licrosoft Windows [Version 10.0.19041.928] [c) Microsoft Corporation. All rights reserved.</pre>		^
::\Users\admin>ping 192.168.1.168		
<pre>'inging 192.168.1.168 with 32 bytes of data: teply from 192.168.1.3: Destination host unreachable. teply from 192.168.1.3: Destination host unreachable. teply from 192.168.1.3: Destination host unreachable. teply from 192.168.1.3: Destination host unreachable.</pre>		
<pre>Ping statistics for 192.168.1.168: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),</pre>		
::\Users\admin>		
		~

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.

Sign in			
http://192.16 Your connect	8.1.168 ion to this site is not private		
Username	admin		
Password			
		Sign in	Cancel

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.

			er System Platform	5.08		
	Status	Input1	Input2	Input3	Input4	System
System 💙	♦ Status					
<ul> <li>Input1 Status</li> <li>Input2 Status</li> <li>Input3 Status</li> <li>Input4 Status</li> </ul>	Running Device Ti Device N CPU Usa CPU Jun Memory I	Time:0000-00-0 me: 2018-03-22 ame:encoder ge:32% ction Temperatu Usage:36.9M/62	10 00:44:12 2 23:06:34(Sync T ure:58°C 28.1M	Fime To Device)		
<ul> <li>♦ Input1</li> <li>● Input status</li> <li>Input Size:1920x1080p@60</li> <li>Collected Video Frames:158399</li> <li>Lost Video Frames:3</li> </ul>						
	Main S     Encoding     Encoding     Bitrate(kb     TS URL:F	Stream   Type:H.265   Size:1920x108 bit):5000 http://192.168.1	30@30 .168/0.ts			

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.

	oder IP Encode	er System Platform	5.08		
Status	Input1	Input2	Input3	Input4	System

### 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

	Status	Input1	Input2	Input3	Input4	System
Encoder 💙	♦ Main Stre	am				
Encoder   Main Stream   Substream1   Substream2   Substream3   OSD   Video   Audio	FPS: GOP: Bitrate(kbii Encoded S Bitrate Con TS URL:	type: t): Size: ntrol:	H 265 V 30 30 5000 same as the input V Variable V	[5-60] [5-300] [32-32000	]	
	HLS URL: FLV URL: RTSP URI RTMP URI RTMP(S)/I URL: Multicast I SRT URL I SRT URL I SRT PUSH SRT Encry	.: L: RTSP PUSH P: Port: Port: H URL: /ption Password:	/0.m3u8 /0.flv /0 /0 rtmp://192.168.1.169/liv 238.0.0.1 1234 9000 srt://192.168.1.169:900 0123456789	Disable V Enable V Enable V Disable V Disable V Disable V Disable V Disable V Disable V Disable V Disable V	[1-65536]	
			Apply			

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 :

	Status	HDMI Input1	HDMI Input2	HDMI Input3	HDMI Input4	System
Encoder	♦ Substrea	m1				
Main Stream	Encoding	Tupo:	11.204			
♦ Substream1	Encounty	гуре.	n.204 <b>∨</b>	15 601		
Substream2	COD:		30	[00-6]		
♦ Substream3	GOP.		30	[5-300]		
osd >	Bitrate(Kbit	:):	3200	[32-32	000]	
Video	Encoded S	Size:	1280x720 🗸			
Video	H.264 Lev	el:	high profile 🗸			
Audio >	Bitrate Cor	ntrol:	vbr 🗸			
	TS URL:		/1.ts	Enable	*	
	HLS URL:		/1.m3u8	Disable	~	
	FLV URL:		/1.flv	Disable	~	
	RTSP URL	-	/1	Disable	<b>~</b>	
	RTMP URI	L:	/1	Disable	*	
	RTMP(S)/F	RTSP PUSH	rtmp://192.168.1.169	9/live/1 Enable	*	
	URL:					
	Multicast II	D:	238.0.0.1	Disable	~	
	Multicast F	Prot:	1235	[1-655	35]	
	SRT URL I	Port:	9001	Disable	✓ [1-65535]	
	SRT PUSH	I URL:	srt://192.168.1.169:9	001 Disable	~	
	SRT Encry	ption Password:	0123456789	Disable	~	
			Set up			

## 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. <u>48K Recommended for YouTube Broadcasting</u>
- 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.

a		ncoder System Platform	5.08		
	Status Input1	Input2	Input3	Input4	System
Encoder >	♦ Audio				
osd >	Audio Input:	DIGITAL 🗸 (Not	e: Analog audio inp	out only apply to in	put 1 & 2)
/ideo >	Samplerate:	48000 🗸			
Audio 🗸	Encoder:	AAC-LC 🗸			
Audio	Bitrate:	128000	[4800	0~128000]	
, radio	Digital Volume:	0	[-50~5	50]	
	ONVIF Audio	Disable			
	G711A OVER RTSP.	Disable	~		
	6/11.	Apply			

	5
AC3 stereo 🔻	
AAC-LC	
HE-AAC	l
HE-ACC v2	
MP3	l
MPEG-2	
AC3 stereo	
	AC3 stereo AAC-LC HE-AAC HE-ACC v2 MP3 MPEG-2 AC3 stereo

### 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.

	Status	HDMI Input1	HDMI Input2	HDMI Input3	HDMI Input4	System
incoder >	♦ Main Stre	am				
osd 🗠	Alpha:		100	[0-128	3]	
Main Stream						
Substream1	Zone 1		Enable M			
Substream2	Zune.		the the			
Substream3	v.		10	10, 102	01	
Logo Upload	A		10	[0-192	oj	
Video >	Y:		10	[0-108	0]	
	Text:					
Audio	Font Size:		36	[8-72]		
	Background	d Color:	white 🗸			
	Color:			select	color	
	Zone 2 Zone:		Disable 🗸			
	Zone 3					
	Zone:		Disable 🗸			
	Zone 4					
	Zone:		Disable 🗸			
			Set up			

Zone 1 Zone:	Enable •	
Туре:	Text •	
Х:	10	[0-1920]
Y:	10	[0-1080]
Text:		
Font size:	36	[8-72]
Background color:	White •	
Color:		Select Color

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.

: Enable •
: Text 🔻
Text
BMP Logo
Scrolling text
: Time
:
: White ▼

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.

	Status	HDMI Input1	HDMI Input2	HDMI Input3	HDMI Input4	System
Encoder	♦ LOGO					
osd 🗠						
♦ Main Stream	LOGO:		Choose File No	filhosen		
Substream1						
Substream2	Please up	load PNG or 24-bit	BMP(0xF1F1F1 is	transparent) pictur	es less than 500 kBy	te,
Substream3	The file ha	ime is logo1.bmp/lo	go2.bmp~logo16.b	omp or logo1.png/lo	go2.png~logo16.png	
◆ Logo Upload			Upload			
Video						
Audio						

#### 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:

Zone 1 Zone:	Enable •	
Туре:	Text	
Χ:	100	[0-3840]
Υ:	100	[0-2160]
Text:	Hello World!	
Font size:	36	[8-72]
Background color:	White •	
Color:		select color



### LOGO:

Zone 1		
Zone:	Enable •	
Туре:	BMP Logo V	
Х:	100	[0-3840]
Υ:	100	[0-2160]
Logo:	logo1.bmp ▼	



#### VECODER SERIES MANUAL

#### SCROLLING TEXT:

Zone 1 Zone:	Enable V	
Туре:	Scrolling text V	
Position:	1000	[0-2160]
Speed:	5	[0-30]
Text:	Hello World!	
Font size:	48	[8-72]
Background color:	Black •	
Color:		select color



#### TIME STAMP:

Zone 1		
Zone:	Enable 🔻	
Туре:	Time •	
Χ:	100	[0-3840]
Υ:	100	[0-2160]
Font size:	48	[8-72]
Background color:	Black	
Color:		select color



## Video Clip/Mirror Options

Under Video Menu,	Users can Flip & N	Airror the output video as	well as Video cropping.
-------------------	--------------------	----------------------------	-------------------------

	PTC		oder IP Enco	der System Platform			
		Status	Input1	Input2	Input3	Input4	System
Encoder	>	◆ Video					
OSD	>	Flip And M	irror:	Disable 🗸			
Video	~	Video Clip	ping:	Disable 🗸			
◆ Video		Video Clip	ping(Left):	0	[0,1920	]	
Audio	>	Video Clip	ping(Right):	0	[0,1080	]	
		Video Clip	ping(Width):	0	[0,1920	]	
		Video Clip	ping(Height):	0	[0,1080	]	
				Apply			

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.

	Status	HDMI Input1	HDMI Input2	HDMI Input3	HDMI Input4	System	
System 💙	♦ Internet	Access					
Network			Disable to				
♦ System			102 168 1 168				
	Notmoole:		192.100.1.100				
	Netmask.		255.255.255.0				
	Gateway:		192.168.1.1				
	MAC:		00:13:14:02:46:0E				
	♦ DNS						
	DNS1:		8.8.8.8				
	DNS2:		192.168.1.1				
	♦ Port						
	HTTP Por	t:	8086	[1-655	500]		
	RTSP Por	t:	8554	[1-65	500]		
			Set up				

## 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.

System 💙	♦ System	
Network	Old Password	
◆ System	New Password: Confirm Password:	
	Apply	

### 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.

System 💙	Abbil	
Network		
System     Advanced		
Device Name:	annadar	
EDID-	0 Defectl(4/20+1080D80	
Video Only:	Disable V	· · ·
Audio Only:	Disable V	
HLS Splitter Time(	s): 3	[3-20]
HLS Number:	3	[3-20]
SRT Latency(ms):	150	[1-10000]
TS Muxer:	Compatible with FFMPEG	•
Net Drop Threshol	d: 5000	[50-50000]
Ts Once Pack:	7	[3-128]
Ts_transport_strea	m_id: 101	[1-65535]
Ts_pmt_start_pid:	480	[16-7936]
Ts_start_pid:	481	[32-3840]
Ts_tables_version:	6	[0-31]
Ts_service_name:	Live	(* - · · )
Ts_service_provide	er: Encoder	
TS Empty Packet:	No Insert 💉	
TS Password Enab	ole: Disable 🗸	
Vmix Compatible:	Disable 🗙	
TS OVER RTSP:	es 🗸	
Multicast Type:	UDP 🗸	
UDP TTL:	64	[1-254]
UDP SOCKET_BU	JF_SIZE: 20971520	(0-20971520]
Slice Split Enable:	Disable 🗙	
Slice Size:	1024	[128-65535]
MIN_QP:	16	[1-35]
MAX_QP:	40	(MIN_QP-50]
Contrast Improve:	8	[0-63]
Image Enhance:	0	[0-16]
Y Space Filter:	24	[0-255]
Y Time Filter:	12	[0-63]
C Space Filter:	12	[0-255]
C Time Filter:	16	[0-32]

## 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 - 6 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)

♦ NTP	
NTP Enable:	Disable 🗸
NTP Server:	time.windows.com
Time Zone:	UTC+8 🗸
	Apply

### 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 <u>up.rar.</u> 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 <u>WILL</u> 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.

Upload firmware and co	nfiguration
Select File: Choose File No filhosen	(File name is 'up.rar' or 'box.ini'. Please don't upload by different people
at the same time, don't power	off during upload.)
	Upload

## 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.

Backup firmware and configuration				
	Firmware	Configuration		

### 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.

System Settings			
	Reboot	Reset	
	Reboot	Reset	

## **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: <u>https://www.videolan.org/</u>

- 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.

🛓 VLC media player		– 🗆 ×	📥 Open Media	? ×
Media Playback Audio	Video Subtitle Tools View	Help	File Disc	Network
Open File	Ctrl+O			
Open Multiple Files	Ctrl+Shift+O		Network Protocol	
Dpen Folder	Ctrl+F		Please enter a network	URL:
Ø Open Disc	Ctrl+D		http://192.168.1.168/0	<b>21</b>
📱 Open Network Stream	Ctrl+N		http://www.example.o	com/stream.avi
5 Open Capture Device	Ctrl+C		rtp://@:1234 mms://mms.examples.	com/stream.asx
Open Location from clip	oboard Ctrl+V		rtsp://server.example.o	rg:8080/test.sdp
Open Recent Media	•		http://www.yourcabe	conywaterry-ggo4x
Save Playlist to File	Ctrl+Y			
Convert / Save	Ctrl+R			
((•)) Stream	Ctrl+S			
Quit at the end of playli	st			
🕒 Quit	Ctrl+Q			
			Show more options	
▶ B44 ■ B44 🖬 111	11 <b>X 4</b>	Q)) 101%		Play 💌 Cancel



## 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.

Main stream		
Encoding type:	H.265 V	
FPS(Frames Per Second):	30	[5-60]
GOP(Keyframe Interval):	30	[5-300] Recommend same as FPS or double for best result
Bitrate(kbit):	8000	[32-32000] Recommend 4000-8000kbit on average
Encoded size:	same as the input <b>▼</b>	
Bitrate control:	Variable Bitrate <	
TS URL:	/0.ts	Enable  Must Stay Enabled for Stream To Function
HLS URL:	/0.m3u8	Enable •
FLV URL:	/0.flv	Disable •
RTSP URL:	/0	Disable •
RTMP PULL URL:	/0	Disable •
RTMP(S)/RTSP PUSH URL:	rtmp://192.168.1.50/live/0	Disable  (Push to Streaming Services)
Multicast IP:	224.2.2.9	Enable •
Multicast port:	1009	[1-65535]
SRT URL Port:	9000	Enable • [1-65535]
SRT PUSH URL:	srt://192.168.1.50:9000	Disable •
SRT Encryption Password:	0123456789	Disable •
	Apply	

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 <u>Create</u> <u>Post</u>.

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

Create Post		×
What's on your	mind	
		G
•		
Photo/Video	Arriends	
Live video has moved ×	O Check in	
Live Video	GIF	
Ask for Recommendations	👸 Watch Party	
Support Nonprofit		
News Feed		👫 Friends 🔻
O Your Story		👫 Friends 🔻
	Post	

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

We've designed a new way to go live on Facebook. Live Producer combines all of the features from the previous experience with a simplified view to help you be more in control of your live streams.		
Н	lere's a look at what's new:	
A cleaner interface		
•	Simpler ways to manage your live video through multiple devices	
•	Easier access to the tools you're look for	
•	More to come!	

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

Get Stated Choose how you went to create your live video Camera	Setup B4 Select amedia s v 📮 SkTre Sevan
Stream	Get Started Choose how you want to create your live video
<u>.</u>	Camera 👻
	Use Stream Keys
	Use Paired Encoders
	Camera 🗸

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

Get Started		Live API	
Choose how you want to create your live vide	90	Copy and paste these settings into your streaming software.	
Use Stream Keys	•	Server URL	
las a Damistart Channe Kau	_	rtmps://live-api-s.facebook.com:443/rtmp/	
This can be reused every time you go live. You can inly broadcast one live video at a time with your variated tenam key.		This may be referred to as "URL" or "Address" in your streaming software	ire.
ызынып алыпп кеу.		Stream Key	
Use a Backup Stream Cnce a backup stream is added to your live video. It cannot be removed. It will not affect your stream If you choose not to use it.		219212059317004?s_bl=1&s_ps=1&s_sw=0& Copy	Reset
		Once you start to create the broadcast you have up to 5 hours to go live.	
Settings		Eve	nt Logs
Stream	~		
/iewing	~		

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				
RTMP(S)/RTSP PUSH URL:	rtmp:///192.168.1.168/live/0	Enable 🔻		
Paste the new Combine URL into the Text Field.				
RTMP(S)/RTSP PUSH URL:	rtmps://live-api-s.facebook.com:443/rt	mp Enable •		

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

Main stream				
Encoding type:	H.265 V			
FPS(Frames Per Second):	30	[5-60]		
GOP(Keyframe Interval):	30	[5-300] Recommend same as FPS or double for best result		
Bitrate(kbit):	8000	[32-32000] Recommend 4000-8000kbit on average		
Encoded size:	same as the input <b>▼</b>			
Bitrate control:	Variable Bitrate			
TS URL:	/0.ts	Enable  Must Stay Enabled for Stream To Function		
HLS URL:	/0.m3u8	Enable •		
FLV URL:	/0.flv	Disable <b>•</b>		
RTSP URL:	/0	Disable <b>•</b>		
RTMP PULL URL:	/0	Disable 🔻		
RTMP(S)/RTSP PUSH URL:	rtmp://192.168.1.50/live/0	Disable  (Push to Streaming Services)		
Multicast IP:	224.2.2.9	Enable 🔻		
Multicast port:	1009	[1-65535]		
SRT URL Port:	9000	Enable  [1-65535]		
SRT PUSH URL:	srt://192.168.1.50:9000	Disable 🔻		
SRT Encryption Password:	0123456789	Disable 🔻		
	Apply			

## Login to your YouTube Studio.



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

	<b>1</b>
Channel analytics Current subscribers	
Summary Last 28 days	
Views	0 0%
Watch time (hours)	0.0 0%
Top videos Last 48 hours · Views	

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

\_

New stream				
test				
Public -				
test				
Gaming -				
Schedule for later				
UPLOAD CUSTOM THUMBNAIL				
Audience				
Is this video made for kids? (required)				
Regardless of your location, you're legally required to comply with the Children's Online Privacy Protection Act (COPPA) and/or other laws. You're required to tell us whether your videos are made for kids. What's content made for kids?				
O Yes, it's made for kids				
O No, it's not made for kids				
<ul> <li>✓ Age restriction (advanced)</li> </ul>				

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

Connect streaming software to start preview STREAM SETUP HELP	Title test Category Gaming Concurrent viewers O	Likes O	
💎 No data			
STREAM SETTINGS ANALYTICS STREAM HEALTH			
Stream key Select stream key Auto-generated key		Additional settings Enable DVR	•
Stream key (paste in encoder)	© СОРУ СОРУ	360° video Adsed delay None -	•»
Backup server URL rtmp://b.rtmp.youtube.com/live2?backup=1	Сору	Closed captions	•>

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.



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.

	11.205			
Encoding type:	H.265 V			
FPS(Frames Per Second):	30 [5.60]			
GOP(Keyframe Interval):	30	[5-300] Reco	[5-300] Recommend same as FPS or double for best result	
Bitrate(kbit):	8000	[32-32000] R	[32-32000] Recommend 4000-8000kbit on average	
Encoded size:	same as the input <b>▼</b>			
Bitrate control:	Variable Bitrate 🔻			
TS URL:	/0.ts	Enable •	Must Stay Enabled for Stream To Function	
HLS URL:	/0.m3u8	Enable •		
FLV URL:	/0.flv	Disable •		
RTSP URL:	/0	Disable •		
RTMP PULL URL:	/0	Disable <b>•</b>		
RTMP(S)/RTSP PUSH URL:	rtmp://192.168.1.50/live/0	Disable 🔻	(Push to Streaming Services)	
Multicast IP:	224.2.2.9	Enable 🔻	•	
Multicast port:	1009	[1-65535]		
SRT URL Port:	9000	Enable •	[1-65535]	
SRT PUSH URL:	srt://192.168.1.50:9000	Disable •		
SRT Encryption Password:	0123456789	Disable •		
	Apply			

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.

RTMP(S)/RTSP PUSH URL: rtmp:///192.168.1.168/live/0 Enable T

Paste the new Combine URL into the Text Field.

RTMP(S)/RTSP PUSH URL:	rtmp://mylivestream.com/app/live_12345	Enable 🔻
RTMP(S)/RTSP PUSH URL:	rtmp://mylivestream.com/app/live_12345	Enable •

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