ANTRICA
VIDEO OVER IP SOLUTIONS

ANT-2400

H265 + H264

HDMI 4K UHD STREAMING ENCODER

RTSP, HTTP, MPEG-TS & RTMP

User Manual V1.0

Table of contents

1.0 Safety Instructions

● Read this manual carefully before powering the device.
● Removing the device cover without permission may injury and the warranty will be invalid
● Handle the device with care to avoid shock caused by a fall as internal components may be damaged and warranty invalidated
● Keep all flammable metal and liquid materials from coming in contact with the device casing as this will cause damage to the device.
● Avoid dusty places and places with heat sources or direct sunlight or install the device where it will be subject to sudden or severe mechanical vibration
● Connect a grounding earth connector to the metal case when fixing the case to any surface.
● Choose the correct type of HDMI and Ethernet cable connector for connecting to the device.
● Only use the power supply provided.
● Avoid rapid and frequent power on/off, or this may cause damage to the semiconductor chipsets.
● Ensure power cord is correctly fitted into the AC mains supply and the 5v DC connector correctly plugged in.
● Do not touch the power socket with wet hands to avoid electric shock
● Take off all jewelry or ornaments ,such as ring, necklaces, watches, bracelets, etc., before operating the device, or otherwise the metal contact may possibly cause a short circuit and result in components damage.
● Make sure the AC power is unplugged in case of changing cables
● Only Antrica staff are approved to remove the case else the warranty will be invalid.
● Ensure good ventilation when the device is in operation as this may cause damage to the device due to overheating.
● It is recommended to unplug the power cord from the wall socket if the device will not be used for a long period of time

2.0 OVERVIEW

The ANT-2400 HDMI ENCODER is a low cost , high performance and easy-to-use video streaming device for RTSP HTTP RTMP and MPEG-TS streaming. Designed for professional video applications requiring 4K or 1080P60/720P60 HDMI signals to be streamed live. This product has a 1 channel HDMI audio and video input interface and can simultaneously encode video and audio. Various stream formats are supported like HTTP RTSP RTMP and MPEG-TS
The Encoder features a 5Volt USB power input. .
The Encoder supports 1 channel HDMI video capture and generates dual streams of h.264 encoding with AAC audio (G711 and MP3). HDMI bypass output is NOT provided
Product applications include , PC Desktop encoding , Set Top box and IPTV encoding ,education, health care, live events and conferencing,

Product picture:

3.0 MAIN FEATURES

➢ HDMI Input only Encoder with Lithium Cell internal Battery
➢ Adjustable Protocol, Bitrate, Resolution, Profile per HDMI Source Input
H265 or H264 support
➢ Dual streams out per HDMI input source simultaneously supports one channel up to 3840x2160p30 Full HD and one channel 1280x720 HD output (max) Dual streams H265/264
➢ Each channel stream can support any one of the following UDP/RTSP/ HTTP/MPEG-TS/RTMP protocols
➢ H.265/264 High/Main/Baseline Profile, ACC & mp3 audio
➢ Video bit rates:16-12000kbps;
➢ Audio bitrate:48-256kbps
➢ HD-to-SD downscale conversion
➢ Superior video quality at ultra-low bitrates, generally video bitrate advised SD about 680kbps, 720p about 1mbps,1080p about 3mbps for lowest bitrate
➢ Supporting CBR and VBR mode
➢ WEB User Interface / Management
➢ Easy-to-Use System Management
➢ API Http SDK available

4.0 TECHNICAL SPECIFICATION

Video Inputs

	1*4K HDMI input
Resolution	3840*2160/2048*1152/1920x1080p/ 1280x720p/720*576P/640*480
frame rate	30~60 Frames per second 1280x720 @ 60/59.94/50 Frames per second

Audio Inputs

Processes first two channels of audio embedded in HDMI input signal
Unbalanced analog stereo input via 1/8" (3.5mm) jack(option)

OUTPUTS

IP Output type	RJ45 providing 10/100/1000Base-T Ethernet with Static or DHCP addressing;
Protocol	RTMP/RTSP/HTTP/RTP/UDP Unicast, Multicast, Onvif
Multi-Screen	Up to 2 channels High def. and any resolution of streams simultaneously out

Users Interface

Computer Based control	HTTP via standard PC or web browser using Command Center. The simple Control API and SDK is also available to programmers to create their own application

Pre-processing

Frame rate	5~60FPS
Image insertion	OSD insertion(BMP) and Font color change
Package	ffmpeg/VLC
PMT ID	1~65535
Transport ID	256~3840
Stream ID	256~3840
Program ID	customize
SDT name	customize
Buffer Mode	188x7,188x6
smartencode Mode	smooth bitrate/low delay/b frame
Low latency	UDP protocol: ≦500ms TCP: 1~3S SDK: ≦100ms

H.265/HEVC Video Encoding

Bitrate mode	VBR, CBR
Key interval	30-180,multiple of 30
first stream	3840*2160/2560*1600, 2560*1440, 2048*1152, 1920*1080, 1680*1056, 1280*720,1024*576,960*540, 850*480, 720*576,720*540,720*480,720*404, auto
Second Stream	1280*720, 960*540, 848*480, 800*450 720*576, 720*540,7200*408, 720*404, 704*576, 640*480, 640*360, 480*270, 384*216,352*288,320*240,320*180,auto
H.265encoding	MPEG-H HEVC (ISO/IEC 23008-2) Main Profile Level 4.1 (4:2:0 8-bits)
Key Interval	30-180, multiple of 30
Video Bitrate	16kbps to 50Mbps
Fluctuate Level	1.2, 2.0, 3.0, 4.0, 5.0 Level Support Variable bit rate Support Average max/min data rate controls
	Deblocking Filter
Encode Frame Rates	Encode frame rates representing 1:1, ½ and ¼ of the input frames rates are supported
RTMP	URL/IP mode
RTMP MODE	video+audio/video only/audio only

H.264/MPEG-4 Part 10 (AVC) Video Encoding

Bitrate mode	VBR, CBR
First stream	Fluctuate Level
first stream	3840*2160/2560*1600, 2560*1440, 2048*1152, 1920*1080, 1680*1056, 1280*720,1024*576,960*540, 850*480, 720*576,720*540,720*480,720*404, auto
Second Stream	1280*720, 960*540, 848*480, 800*450 720*576, 720*540,7200*408, 720*404, 704*576, 640*480, 640*360, 480*270, 384*216,352*288,320*240,320*180,auto
H.264 Profile	high/main/baseline
Encode Frame Rates	Encode frame rates representing 1:1, ½ and ¼ of the input frames rates are supported
Encoding Profiles	H.264 Main Profile/High Profile/Baseline Profile
Video Bitrate	16kbps to 50Mbps
Fluctuate Level	1.2, 2.0, 3.0, 4.0, 5.0 Level Support Variable bit rate Support Average max/min data rate controls Deblocking Filter
Key Interval	30-180, multiple of 30

Audio Encoding

Audio input	line in, HDMI audio
Audio encoding	AAC(LC-AAC,HE-AAC), MP3
Bit Rates	Range from 48 kbps to 256 kbps
Resample Rate	32Khz, 44.1Khz
Audio Channel	L+R, L, R
Resampling rate	32000/44100
Audio gain	-20/-10/close/5/10dB
RTSP audio encode	AAC/G711

Color Setting

Brightness	[0-100] Default value: 50
Contrast	[0-100] Default value: 50
Hue	[0-100] Default value: 50
Saturation	[0-100] Default value: 50
Image	Noise, Sharpening, Filtering
Record	on/off

Control

	Adaptive Base T Ethernet, RJ45, auto-negotiation Management via Web Language English/Chinese

Environment

Power Supply	+12V ~2A(Compact size)
Power consumption	5W
Operation temperature	0 -50°C (32 -122°F)
Storage temperature	-40-70°C (-40-158°F)
Dimensions	110mm x 100mm x 40mm (Compact)
Weight	1.0kg (Compact)

5.0 SIGNAL CONNECTIONS

When installing the Encoder each channel requires 4 connections. Power , Ethernet , Video input (HDMI) and Audio (option).

6.0 NETWORK

When you enter the WEB interface using a browser, you will need to set the Laptop to a fixed IP address in the 192.168.1.xxx range
Browse to **192.168.1.168** (default IP address of encoder)

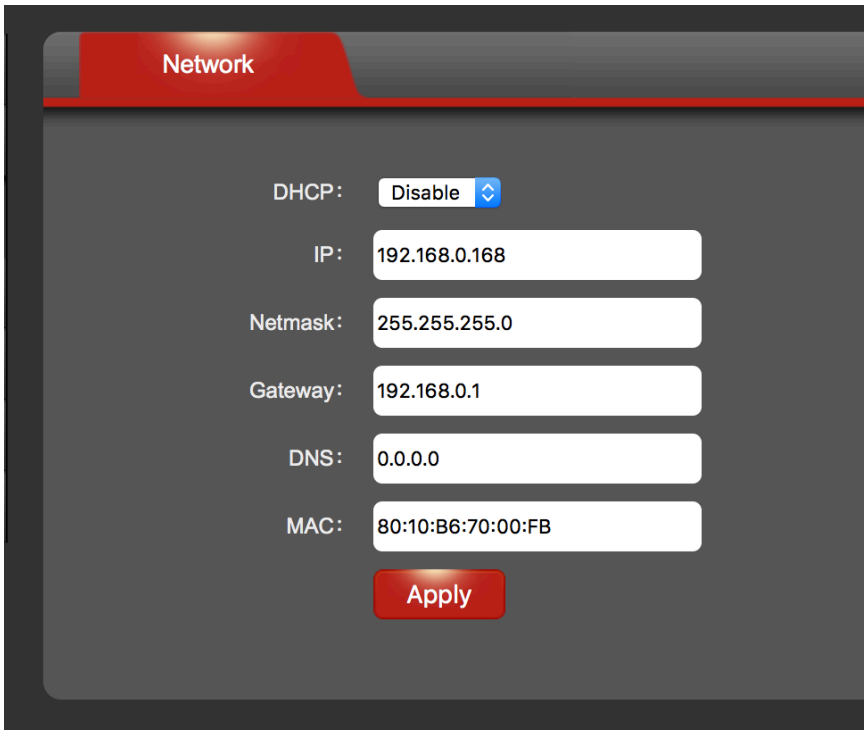
You can now enter the settings page with a Log In of:

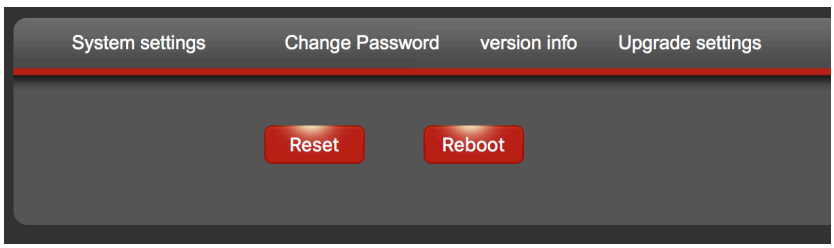
User: **admin**
Password: **admin**

Reset initialization: You can find a RESET button to the right of the HDMI input. Press and hold RESET ,after 10 seconds release the button and the encoder will restart automatically, factory default parameters will be initialized and the IP address reset to : **192.168.1.168**

To change the IP address go to Network Settings and change the IP address to the required IP address . Once changed this will require a Reboot for the new IP address to be set.

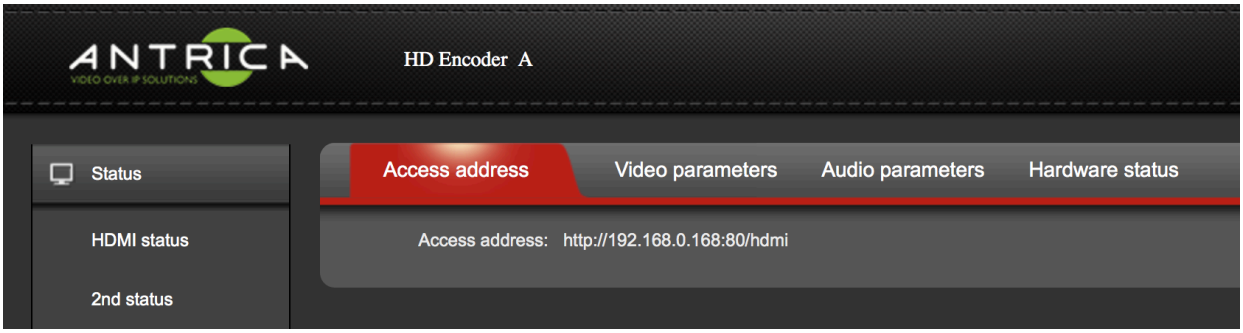
Either go to SYSTEM and click REBOOT or physically power down and power up the device





7.0 STATUS > HDMI STATUS

This page is an Information page only and details the main settings of the encoder



These settings can be changed further on in this manual.

Access Address: This is the main HTTP URL for the main stream.
Note that the main URL is http://192.168.1.168:80/hdmi and secondary URL for 2nd Stream is http://192.168.1.168:80/hdmi_ext
Copy this into VLC player to play this http stream.(VLC Network Stream / Open Stream)

Video Parameters: Will tell you what resolution and frame rate is set

Audio parameters: Will tell you what sample rate is set and number of channels (1/2)

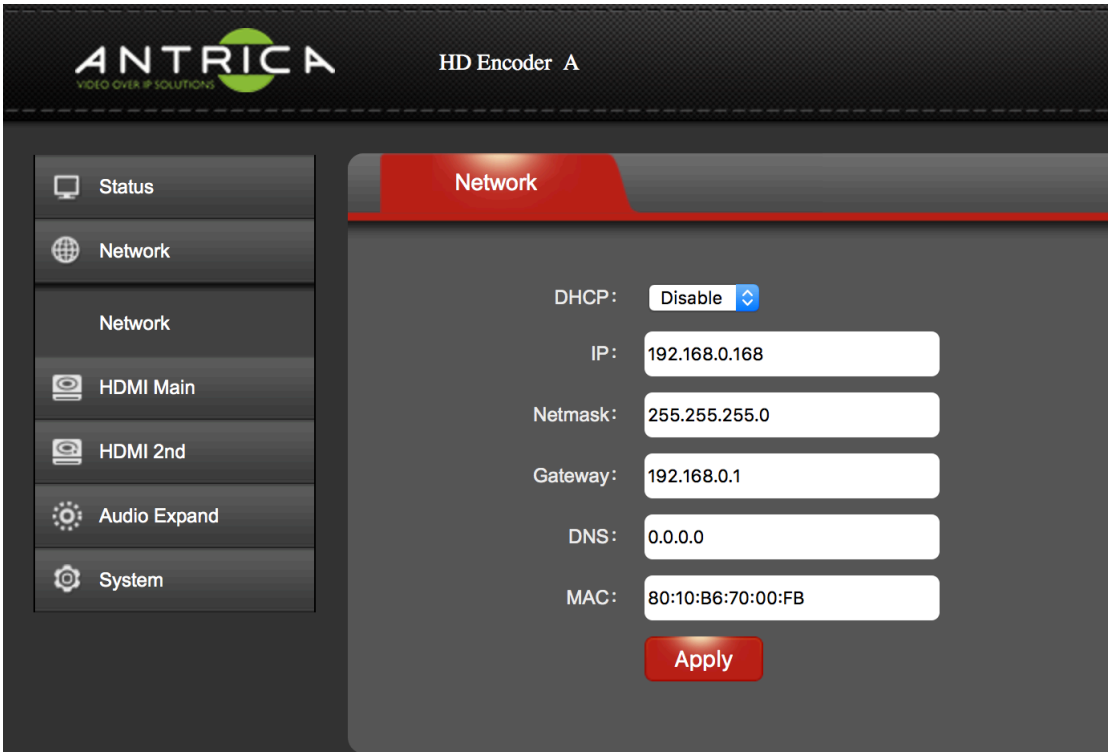
Hardware Status: XXXXXXXX

STATUS > 2ND STATUS

This section defines the status of the Secondary Stream exactly as above for the Primary Stream

8.0 NETWORK > NETWORK

On this page you can set up the main Network Settings of the encoder:



DHCP: Either is Enabled or Disabled (Fixed IP address)

IP: Current IP address

Netmask: Current Network Mask 255.255.255.0 or 255.255.0.0 etc

Gateway: Router Gateway IP address

DNS: DNS Server IP address if used

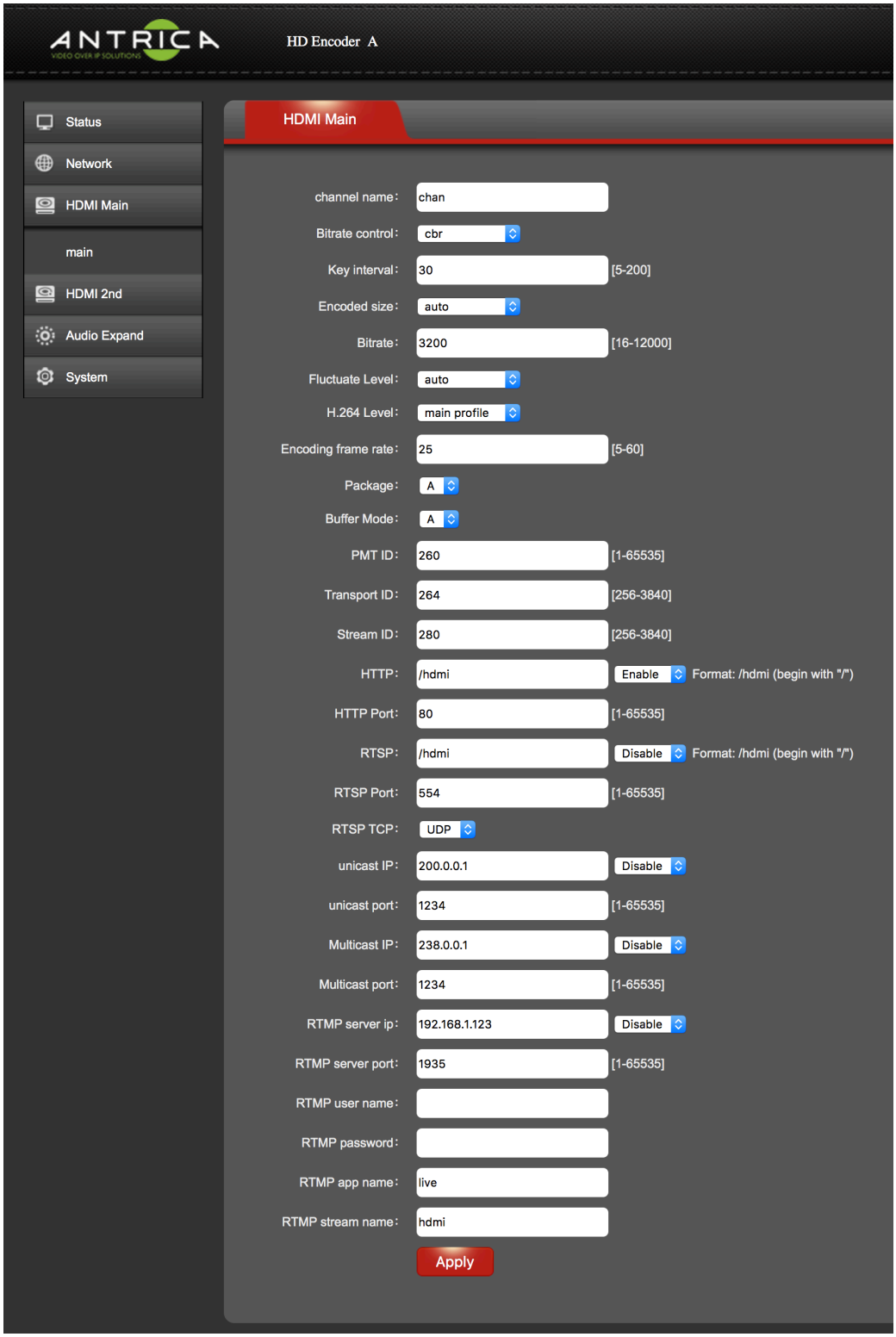
MAC: The MAC address of this encoder (unique address)

Click Apply after any changes

NOTE! When changing an IP address setting, a REBOOT is required for settings to be applied.

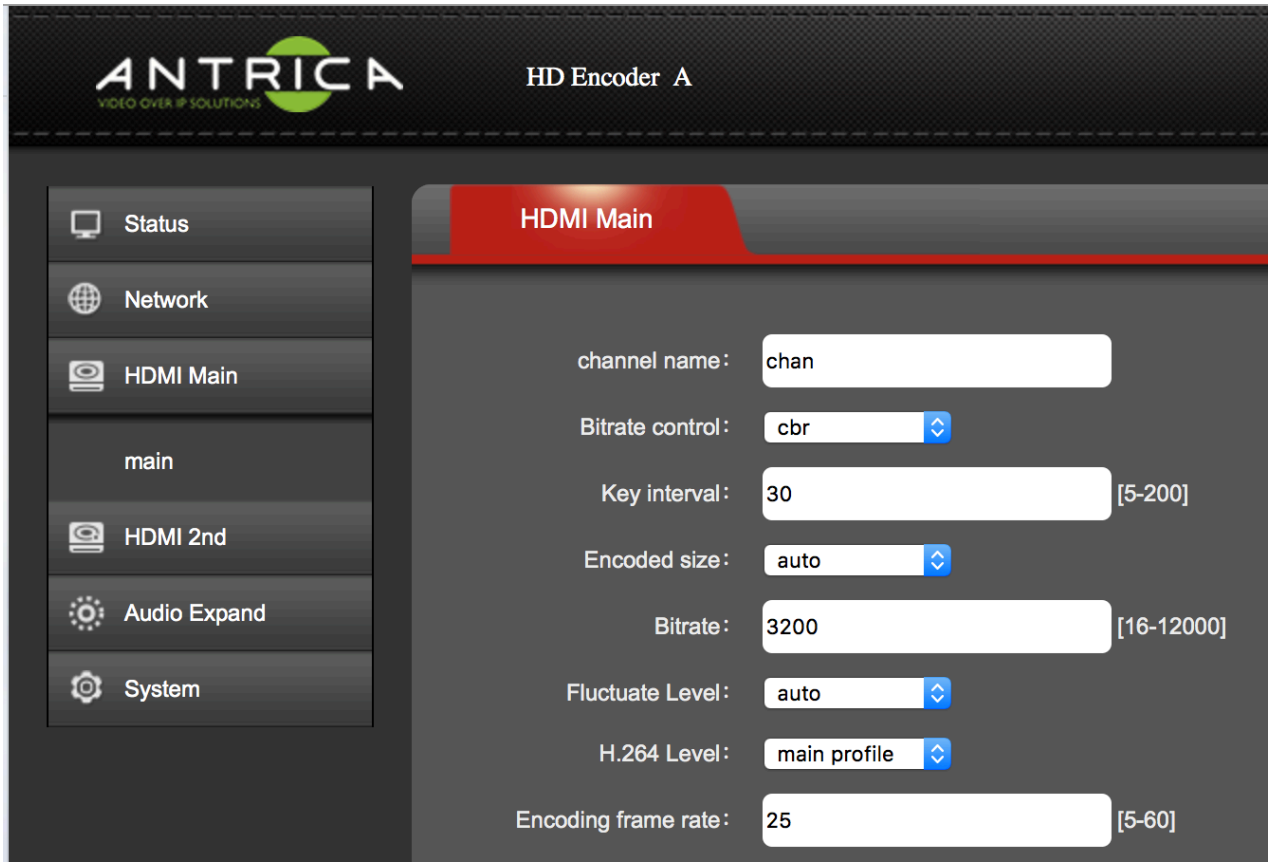
9.0 HDMI MAIN > MAIN

On this page you can see the settings as they apply to the HDMI input such as Streaming type, encoding settings such as bit rate frame rate etc. More details are described on the following 4 pages:



9.1 HDMI MAIN > MAIN (part 1 of 4)

Here you are able to change the main stream settings as they relate to H264 encoding.



NOTE! There is a setting to select H265 or H264 in the user interface not shown here

Channel Name: The name given to this stream (chan) appears on web page only

Bitrate Control: CBR (Constant Bit Rate) or VBR (Variable Bit Rate)

Key Interval: This is the I frame interval or Key Frame . E.g 30= one I frame for every 30 P frames

Encoded Size: This is the Resolution of the stream output. In Auto the encoder will stream the same size resoltion as the HDMI input . Other settings allow the user to constrain the resolution to a fixed value e.g 1280 x720 for example.

Bitrate: this controls the encoders bit rate from 16kBits/sec to a max of 12 Mbits/second.

Fluctuate Level: This is the amount of spread of data bandwidth(bit rate) to accommodate fast changing video. Constraining the bandwidth may result in poorer video when scenes are changing fast.

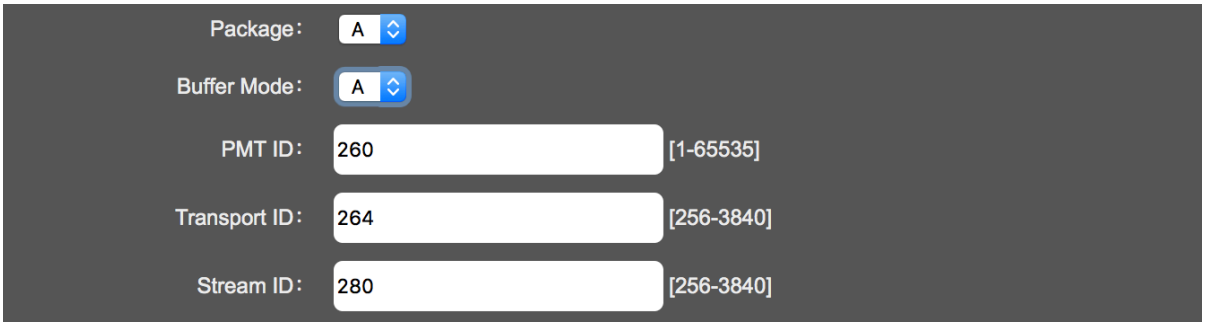
H.264 Level: Base, Main or High Profile encoding can be selected

Encoding Frame Rate: sets the stream frame rate regardless of input frame rate 5-60 fps range

Click Apply after any changes

9.2 HDMI MAIN > MAIN (part 2 of 4)

Here you can change settings to do with MPEG-TS streams and also adjust the encoder for optimum decoding using FFMPEG or VLC based players.



Package A or B: If using an FFMPEG based decoder use Package A , If using VLC based decoder use Package B.

Buffer Mode A or B : When using MPEG-TS streams : A=188*7 and b=188*7

PMT ID: When using MPEG-TS according to DVB rules the PMT PID can be set here.

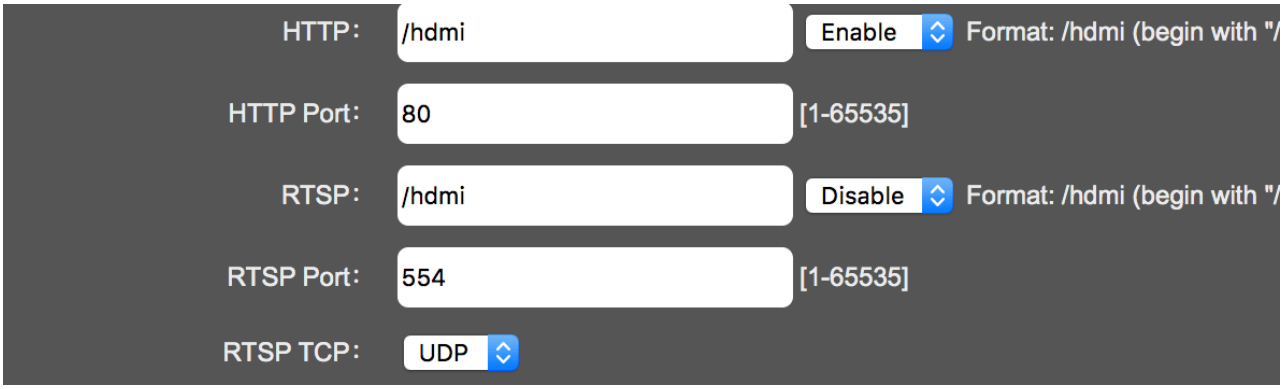
Transport ID : This is the MPEG-TS Transport ID which can be set by the user.

Stream ID : This is the MPEG-TS Stream ID setting

Click Apply after any changes

9.3 HDMI MAIN > MAIN (part 3 of 4)

These settings define HTTP and RTSP streaming parameters and enable or disable these streams.



HTTP Format: Enables or Disables the HTTP streaming format

HTTP Port: Set the port to be used for http streaming (usually port 80)

RTSP URL: Set the stream identifier used in RTSP streaming e.g rtsp://192.168.1.168:554**/hdmi** Stream identifier “hdmi” can be changed here.

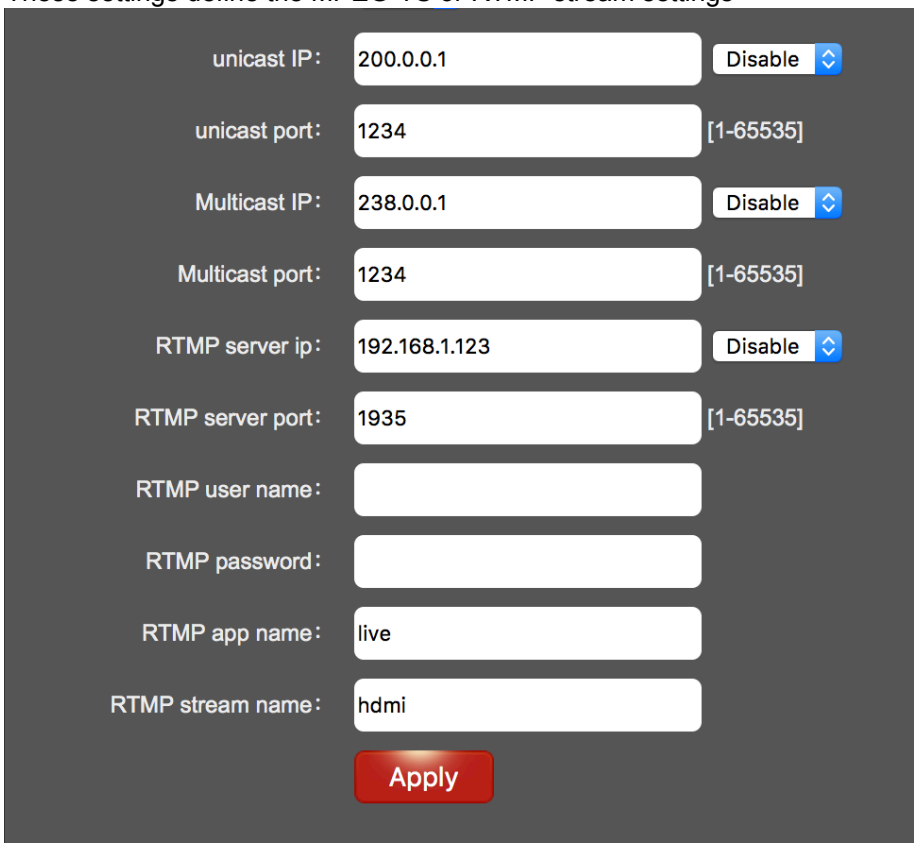
RTSP Port: change to the desired RTSP port: usually 554 but any port from 1-65535 can be chosen. Avoid conflicts with ports being used for other purposes.

RTSP TCP: You can choose to stream over TCP or UDP

Click Apply after any changes

9.4 HDMI MAIN > MAIN (part 4 of 4)

These settings define the MPEG-TS or RTMP stream settings



Unicast IP: This refers to MPEG-TS streaming , set up the IP address of the Receiving Decoder here
Unicast Port: This refers to MPEG-TS streaming in unicast mode, set the Port here
Multicast IP: This refers to MPEG-TS streaming in multicast mode. Set the Multicast IP address to be used here.
Multicast Port: This refers to MPEG-TS streaming , set the multicast port here.

The following section defines all RTMP streaming parameters to stream to you tube for example.

RTMP Server IP : The Server URL (Youtube) or public IP address here e.g **rtmp://video.mudu.tv/8eano/zvrut9** leave out the rtmp:// so enter video.mudu.tv (a.rtmp.youtube.com)

RTMP Server Port: Add a port number if known else defaults to 1935

RTMP User Name/ Password: Add user name password if used

RTMP app name: Add the app
RTMP stream name:
Example : rtmp://video.mudu.tv/8eano/zvrut9

RTMP Server IP: video.mudu.tv
RTMP app name: 8eano
RTMP stream name: zvrut9

Click Apply after any changes

10.0 HDMI 2nd > SECONDARY

On this page you can define parameters to do with a secondary stream with individual settings for the secondary stream. All settings are the same as primary stream but totally independent.
There may be some limitations when the primary stream is set to max resolution frame rate as CPU loading will be at its peak. Only one stream type can be selected as per the MAIN settings RTSP RTMP HTTP or MPEG-TS (Unicast and multicast section refers to MPEG-TS)

Click Apply after any changes

11.0 AUDIO EXPAND > AUDIO SETTING

These settings allow the user to adjust the audio characteristics of the encoder

Audio Input: Select either line input (analogue jack) or embedded audio via HDMI input

Audio Bitrate: choose the bit rate for audio encoding

Audio Channel: Stereo Mono L or Mono R can be selected

Audio Codec: Choose AAC or MP3 (Note RTSP can be AAC or G711 PCM)

AAC Type : Choose LC or HE here

Resample: 32000 42100 resampling or disable.

RTSP Audio: Select G711 (ONVIF) or AAC

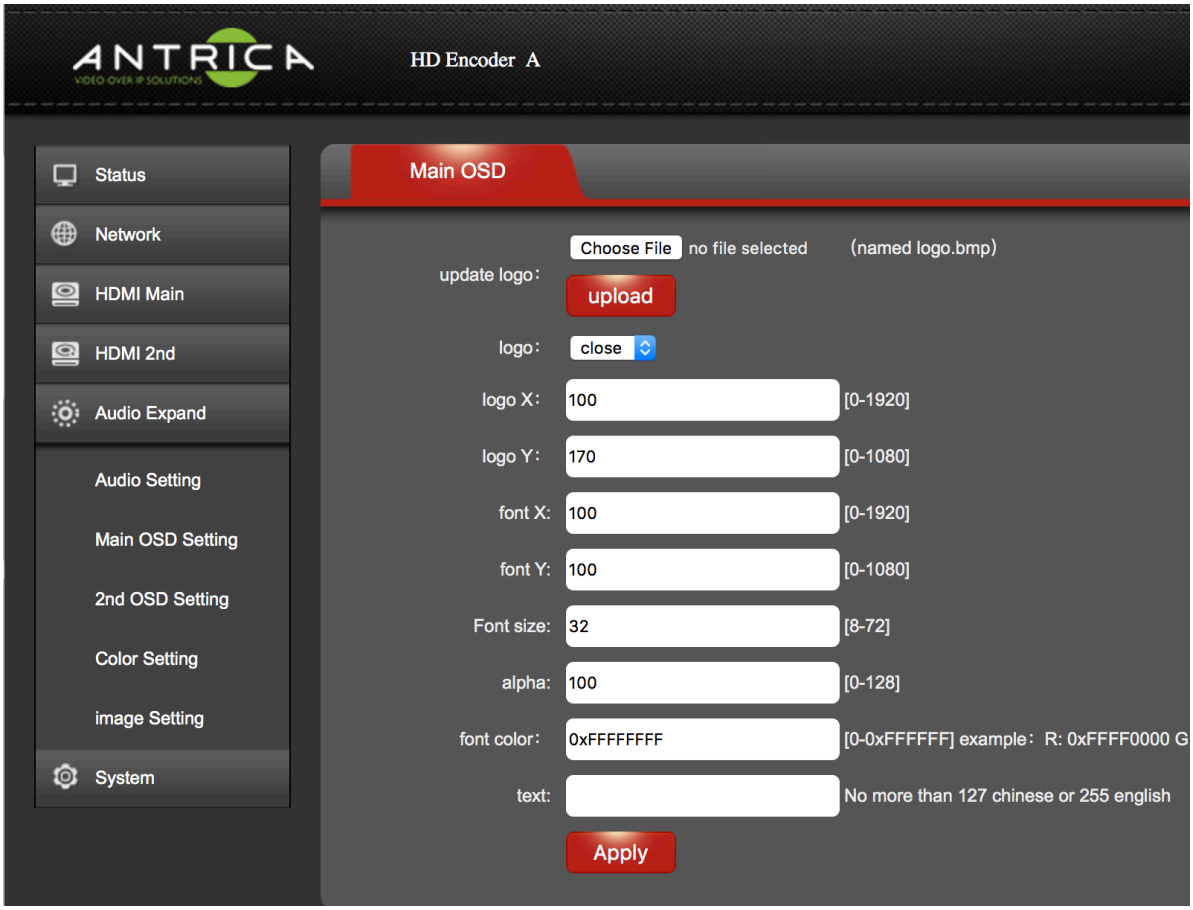
Audio Gain: Adjust from +10 to -20dB

Click Apply after any changes

12.0 AUDIO EXPAND > MAIN OSD SETTING / 2ND OSD SETTING

These settings allow you to define the position colour and size of both text and a bitmap image burnt into the streaming video.The text and image will be displayed at the receiving end.

2nd OSD Setting: Select an On Screen Display to be burnt into the SECONDARY stream



Choose File for a LOGO to be uploaded in .bmp format.: Select a bmp file (rename it logo.bmp) and click upload.File size max is 1920 x 1080 2MB

Logo : Close or Open means show the logo (Open) or do not show (close)

Logo X & Y : location of the logo in pixels left to right (1920 max) and top to bottom (1080 max)

Font X & Y: Location of the OSD Text top to bottom left to right as per logo.

Font Size: Size of Font to be used

Alpha: This is the transparency of the logo , the lower the number the more transparent the logo will become.

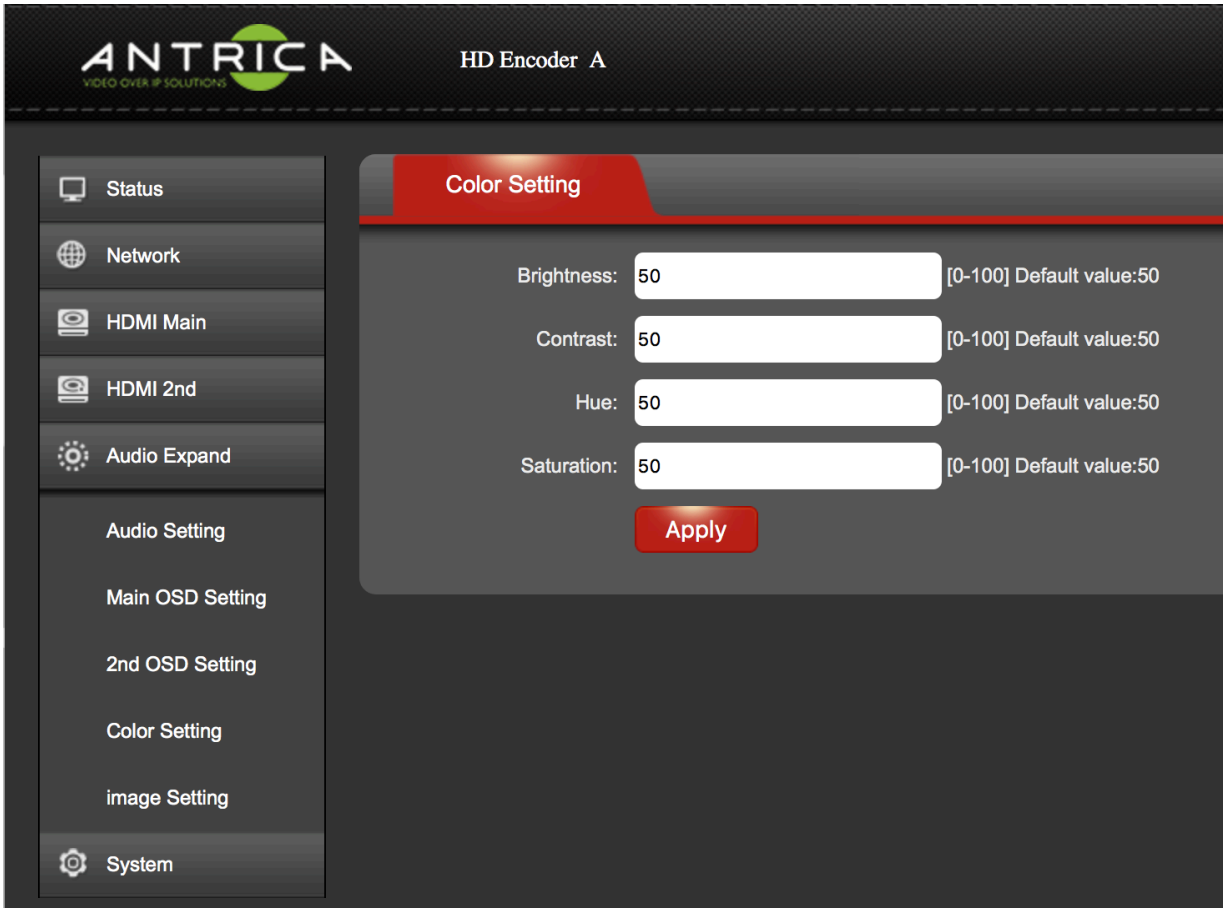
Font Colour: e.g 0xFFFFFFFF

Text: write the OSD text required here

Click Apply after any changes

13.0 AUDIO EXPAND > COLOUR SETTING

These settings allow the user to adjust Brightness, Contrast Hue and Saturation of the image being streamed



Brightness; Set from 0-100 (100 is maximum)

Contrast; Set from 0-100 (100 is maximum)

Hue; Set from 0-100 (100 is maximum)

Saturation; Set from 0-100 (100 is maximum)

Click Apply after any changes

14.0 AUDIO EXPAND > IMAGE SETTING

These settings allow you to set up various filters to improve the image quality

NOISE: Enable or disable a noise filter for removing white noise from camera images typically found on night time images.

SHARPENING: Enables a sharpening filter for improving edge detail

SHARPENING STRENGTH: Allows the user to set up the level of sharpening

FILTERING: OPEN /CLOSE Leave Open this feature is not supported currently

FILTER A: 0

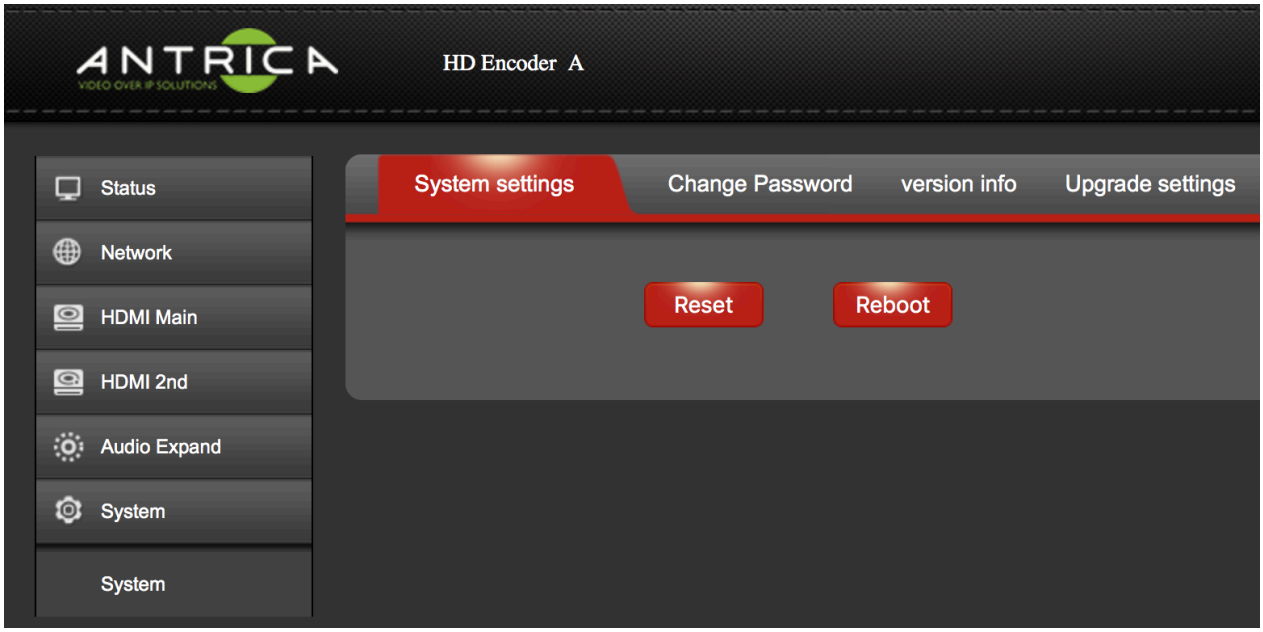
FILTER B: 0

FILTER C: 0

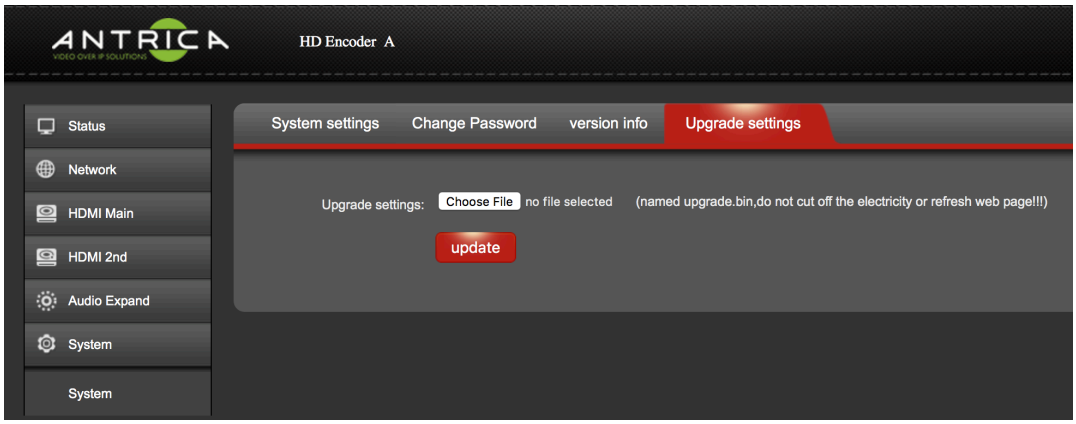
Click Apply after any changes

15.0 SYSTEM

On this page you can Reboot the system, upgrade firmware and change user credentials like password.



SYSTEM > SYSTEM SETTINGS:
SYSTEM > SYSTEM SETTINGS > RESET will restore the unit to factory settings and default IP address of 192.168.1.168
SYSTEM > SYSTEM SETTINGS > REBOOT: Unit will be rebooted but no system settings will be changed.
SYSTEM > CHANGE PASSWORD: Type in the new password , currently user is : admin and password is also admin
SYSTEM > VERSION INFO: The current version of firmware running on this unit
SYSTEM > UPGRADE SETTINGS: Upgarde the firmware here



Choose the new .bin Firmware file from the Antrica support site https://antrica.freshdesk.com or email sales@antrica.com for the latest firmware.
ONCE YOU CLICK UPDATE DO NOT TURN OFF THE SYSTEM UNTIL THE UNIT REBOOTS OR WAIT 5 MINUTES BEFORE DEPOWERING. FAILURE TO FOLLOW THIS STEP WILL RESULT IN THE UNIT NO LONGER FUNCTIONING AND WILL NEED TO BE SENT BACK TO ANTRICA.
15.0