



**NETWORK
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HD-ENC-H264

H.264 Video Encoder

User Manual



Introduction

The H.264 HDMI Video Encoder streams 1080p video from an HDMI video source to a media streaming server (Wowza, Xtreme Codes, Nginx, etc) or online live broadcast platform (YouTube Live, FaceBook Live, IBM Cloud Video (Ustream), etc) over IP in real time. It encodes video using H.264 compression and AAC/MP3 audio.

Features:

- Accepts 1080p HD video at 60 frames per second and produces IP streams that can be sent on a standard Ethernet cable.
- Encode the same HDMI video source in two different formats and resolutions - unicast and multicast.
- Supports RTMP, RTSP, UDP, HTTP, HLS, FLV and ONVIF protocols
- Compatible with most Internet live broadcast platforms, such as YouTube Live, Facebook Live, Twitter Live, Twitch, and IBM Upstream.
- Broadcast to SmartTVs using a media streaming sever, such as Wowza, Xtreme Codes, Nginx, etc.
- Easy-to-use HTTP-based web interface.
 - Modify network and video quality settings such as IP address, bit rate, and fps.
- Add text and logos to the video stream.
- Supports 100Base-T Ethernet connection.
- Linux inside.
- Ideal solution for many applications, including:
 - Digital signage
 - IPTV/SmartTV
 - Hotel TV systems
 - Live broadcast
 - Classrooms - teaching online
 - IP video surveillance
 - Video conference

Factory Default Settings:

IP: 192.168.1.168

Username and Password: admin

When you first login, if the display is in Chinese, select English (lowermost choice) from the pull down menu located at the top right of the window.

Settings:

Upon Initial Login to the User Interface through your browser, you will be provided with a Status Display providing the following information:

Input Status : shows the type of input signals that are attached

Running Time: Indicates how long the Encoder has been connected to the Input Source

CPU Usage: Typically 25% (if this value is more than 85%, there may be an excess drain on the resources of the source)

Input Size: 1920x1080p@60Hz (Default configuration for the source)

Collected Video Frames: 65116 (Indicates how many frames of video have been encoded from the source)

Lost Video Frames: Indicates how many frames have dropped by the encoder

Audio Sample Rate: 48000

Click on the "Network Settings" tab to view the current network settings and MAC address for the Encoder.

The screenshot displays the 'Network Settings' configuration page. It is divided into three main sections: 'Internet access', 'DNS', and 'PORT'. The 'Internet access' section includes fields for DHCP (set to 'Disable'), IP (192.168.1.168), Netmask (255.255.255.0), Gateway (192.168.1.1), and MAC (00:13:14:15:3C:F0). The 'DNS' section has fields for DNS1 (192.168.1.1) and DNS2 (8.8.8.8). The 'PORT' section includes fields for HTTP Port (8080) and RTSP Port (8554), both with a range indicator [1-65500]. A 'Set up' button is located at the bottom of the PORT section.

Section	Field	Value
Internet access	DHCP	Disable
	IP	192.168.1.168
	Netmask	255.255.255.0
	Gateway	192.168.1.1
	MAC	00:13:14:15:3C:F0
DNS	DNS1	192.168.1.1
	DNS2	8.8.8.8
PORT	HTTP Port	8080 [1-65500]
	RTSP Port	8554 [1-65500]

Set up

Be sure to enter the proper DNS server and Gateway address. Otherwise the Encoder will not be able to connect with the internet and stream video to your desired destination.

To set the destination, configure the video settings for one or more Mainstream addresses:

Main stream

FPS:

30

[5-60]

GOP:

30

[5-300]

Bitrate(kbit):

3500

[32-32000]

Encoded size:

1920x1080

H.264 Level:

high profile

Bitrate control:

vbr

MIN_QP:

5

[1-35]

MAX_QP:

42

(MIN_QP-50]

TS URL:

/0.ts

Disable

HLS URL:

/0.m3u8

Disable

FLV URL:

/0.flv

Disable

RTSP URL:

/0

Disable

Multicast IP:

238.0.0.1

Disable

Multicast port:

1234

[1-65535]

RTMP PUBLISH URL:

rtmp://192.168.1.50/live/1

Enable

rtmp://ip/xxx/xxx or rtmp://user:pass@ip/xxx/xxx

Set up

Field	Description
FPS	Max. is 60fps, but when input is 1080i, fps will be halved (for deinterlacing)
GOP	Group of pictures (recommend using the same value as the FPS)
BITRATE (kbit)	Value depends on the video quality needed (suggestions: 1080p@3500kbs, 720p@2800kbs, SD@1500kbs)
Encoded size	Encoded Output Resolution.
H.264 Level:	Profile-baseline / main / high Profile High Profile is recommended
Bitrate control:	Vbr (Variable Bitrate) or Cbr (Constant bitrate)
MIN_QP	Minimum Quantization Parameter (Typically between 1-35) The larger the value, the more stable the bandwidth will be, but video quality will decrease. Recommend using the default value (5)
MAX_QP	Maximum allowable is 50, default is 42
TS URL	/0.ts Select to Enable or Disable

HLS URL	/0.m3u8	Select to Enable or Disable
FLV URL	/0.flv	Select to Enable or Disable
RTSP URL	/0	Select to Enable or Disable
Multicast IP	238.0.0.1	Select to Enable or Disable
Multicast port	Port to use for multicasting video/audio (1-65535)	
RTMP PUBLISH URL	Address of the real time media player to broadcast encoded video to.	

RTMP Settings:

Wowza- `rtmp://serverIP:port/Application/stream name`
i.e. - `rtmp://192.168.1.50P:1935/live/oupre`

If Wowza requires Source Authentication, the source is username **oupre**, password is **123456**, so the address will be:
`rtmp://oupre:123456@192.168.1.50P:1935/live/oupre`

Xtream Codes- on its panel, write address as **`rtmp://127.0.0.1:8001/live/stream name`**

OSD- to display the transparent logo, set the background color as 0xF1F1F1 or R-177 G-204 B-233,

See examples on pages 7 and 8.

Audio Encoding Settings:

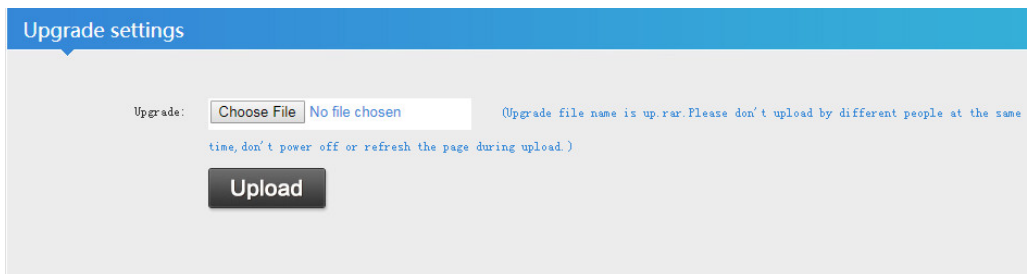
Generally, leave these set at the default (as shown below), but if you feel comfortable changing the settings, set as needed.

The image shows two panels from a settings interface. The top panel, titled 'Audio encoder', has a blue header. It contains three settings: 'Samplerate:' with a dropdown menu showing '44100', 'Encoder:' with a dropdown menu showing 'AAC+', and 'Bitrate:' with a text input field showing '48000' and a range indicator '[24000~48000]' to its right. Below these is a dark grey 'Set up' button. The bottom panel, titled 'ONVIF Audio', also has a blue header. It contains the text 'G711A Over' and 'RTSP:' followed by a dropdown menu showing 'Disable'. Below this is another dark grey 'Set up' button.

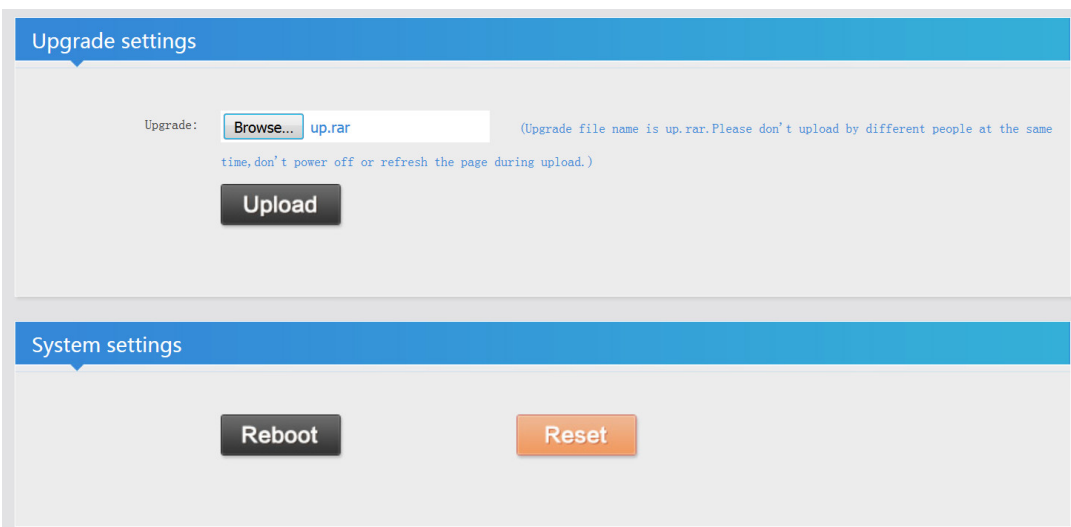
System Settings:

In this window you can change the password if desired.

Upgrade Firmware:



The screenshot shows the 'Upgrade settings' section of a web interface. It features a blue header with the text 'Upgrade settings'. Below the header, there is a label 'Upgrade:' followed by a button labeled 'Choose File' and a text input field containing 'No file chosen'. To the right of the input field, there is a note in blue text: '(Upgrade file name is up.rar. Please don't upload by different people at the same time, don't power off or refresh the page during upload.)'. Below this, there is a large black button labeled 'Upload'.



The screenshot shows two sections of a web interface. The top section is 'Upgrade settings', which has a blue header. Below the header, there is a label 'Upgrade:' followed by a button labeled 'Browse...' and a text input field containing 'up.rar'. To the right of the input field, there is a note in blue text: '(Upgrade file name is up.rar. Please don't upload by different people at the same time, don't power off or refresh the page during upload.)'. Below this, there is a large black button labeled 'Upload'. The bottom section is 'System settings', which has a blue header. Below the header, there are two buttons: a black button labeled 'Reboot' and an orange button labeled 'Reset'.

If new firmware becomes available, we will provide a link to it on our website. If new firmware is available, download the file "up.rar" to your PC. Then, while in the webinterface (above) browse for it, select the file, and click "Upload". When you get the message "Upload Success", click "Reboot".

Example of HD-ENC-H264 Encoder Settings to connect to YouTube Live Stream

(YouTube Live Dashboard)

The screenshot shows the YouTube Live Dashboard interface. On the left is a sidebar with navigation links: 'TRANSLATIONS & TRANSCRIPTIONS', 'CREATE', 'YOUR CONTRIBUTIONS', and a 'Help and feedback' button. The main content area is titled 'OFFLINE' and includes buttons for 'Create highlight' and 'Change thumbnail'. Below these are tabs for 'BASIC INFO', 'STREAM OPTIONS', and 'CARDS'. The 'BASIC INFO' tab is active, showing fields for 'Oupree - Test', a description box, a 'Schedule next stream' checkbox, a 'Category' dropdown set to 'Nonprofits & Activism', and a 'Privacy' dropdown set to 'Private'. An 'Advanced settings' link is at the bottom right of this section. The 'ENCODER SETUP' section is expanded, showing the 'Server URL' as 'rtmp://a.rtmp.youtube.com/live2', the 'Stream name/key' as '2x9a-y4d6-k8ep-er2u', and buttons for 'Hide (10)' and 'Reset'. A warning icon and text state: 'Anyone with this key can live stream on your YouTube channel. Keep it secret.'

Based on the window above, the encoder input address for rtmp is
`rtmp://a.rtmp.youtube.com/live2/2x9a-y4d6-k8ep-er2u`

192.168.1.168/OutputP1MainE.html

The screenshot shows an encoder configuration interface. It has several input fields and dropdown menus. 'RTSP URL' is set to '/0' with an 'Enable' dropdown. 'Multicast IP' is '238.0.0.1' with a 'Disable' dropdown. 'Multicast port' is '1234' with a range '[1-65535]' shown. 'Multicast type' is 'UDP' with a dropdown. 'RTMP PUBLISH URL' is 'rtmp://a.rtmp.youtube.com/live2/2x9a-y4' with an 'Enable' dropdown. Below this is a hint: 'rtmp://ip/xxx/xxx or rtmp://user:pass@ip/xxx/xxx'. A large 'Set up' button is at the bottom.

Example of HD-ENC-H264 Encoder Settings to connect to Facebook Live Stream

https://www.facebook.com/oupree

☐ Camera ☒ Connect

Connect your live stream to the Live API

Use live-streaming software or a hardware encoder. [Learn more.](#)

1. Choose where you want to post your broadcast on the right-hand side.
2. Enter the information below into your software's settings.

☐ Secure connection (SSL) ⓘ

Server URL ⓘ

rtmp://live-api.facebook.com:80/rtmp/

Stream key ⓘ

10214319118682173?ds=1&a=AThZy91OQ

3. Select **Go Live** in the bottom-right corner.

Based on the window above, the encoder input address for rtmp is
rtmp://live-api.facebook.com:80/rtmp/10214319118682173?ds=....

192.168.1.168/OutputP1MainE.html

RTSP URL:	/0	Enable ▼
Multicast IP:	238.0.0.1	Disable ▼
Multicast port:	1234	[1-65535]
Multicast type:	UDP ▼	
RTMP PUBLISH URL:	rtmp://live-api.facebook.com:80/rtmp/102	Enable ▼
rtmp://ip/xxx/xxx or rtmp://user:pass@ip/xxx/xxx		
Set up		

SPECIFICATIONS

Video

- One female HDMI-A port for source connection.
- Supported resolutions: 720p/1080i/1080p @ 50/60Hz and below including:

1920x1080	720x540	608x448	480x272	320x256
1680x1056	720x480	544x480	480x270	320x240
1280x720	720x404	480x480	400x320	320x180
1024x576	704x576	480x384	400x224	240x180
850x480	640x480	480x360	352x480	176x144
720x576	640x360	480x320	352x228	

- Codec: H.264/AVC High/Main/Baseline
- Bit rate: 0.1 to 32 Mbps, adjustable
 - Bit rate control: VBR/CBR
- Frames per second: 5 to 60 FPS

Audio

- HDMI embedded audio.
- Sample rates: 44.1 kHz, 48.0 kHz
- Codec: AAC/AAC+/AAC++/MP3
- Bit rate: 0.1 to 32 Mbps, adjustable

Ethernet Port

- One female RJ45 connector.
- 100 Base-T Ethernet interface.

Protocols

- HTTP, HLS, FLV, RTSP, UDP, RTMP, ONVIF
 - ONVIF: G.711

Dimensions

WxDxH: 5.16x6.57x1.14 in. (131x167x29mm)

Power

- Input: 110 or 240 VAC at 50 or 60 Hz via AC adapter (US AC adapter included).
- Optional universal power plug adapters available (not included).
- Output: 12VDC, 1A

Environmental

- Operating temperature: 32 to 104°F (0 to 40°C).
- Storage temperature: -4 to 158°F (-20 to 70°C).
- Operating and storage relative humidity: 5 to 90% non-condensing RH.

Regulatory Approvals

CE, FCC, RoHS

Warranty

Two years.

Cables

- Use HD-xx-MM cable to connect an HDMI video source (not included).
- Use CAT5e/6 solid or stranded straight through cable for TIA/EIA-568B wiring terminated with standard RJ45 connectors (not included).