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# HD-ENC-H264

## H.264 HDMI Video Encoder

## Operation Manual

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## 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**

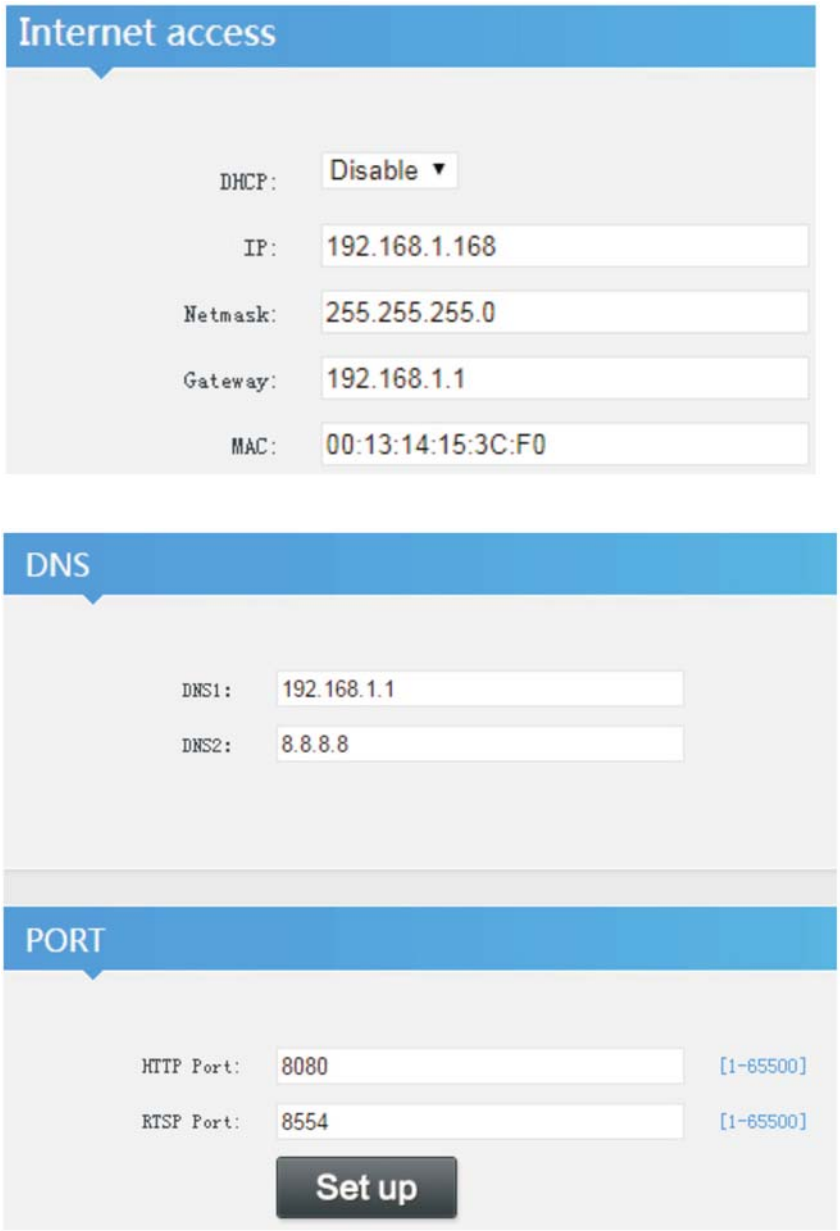
### When you first login, if the display is in Chinese, select English (lowermost choice) from the pull down menu located at the top right of the window.

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

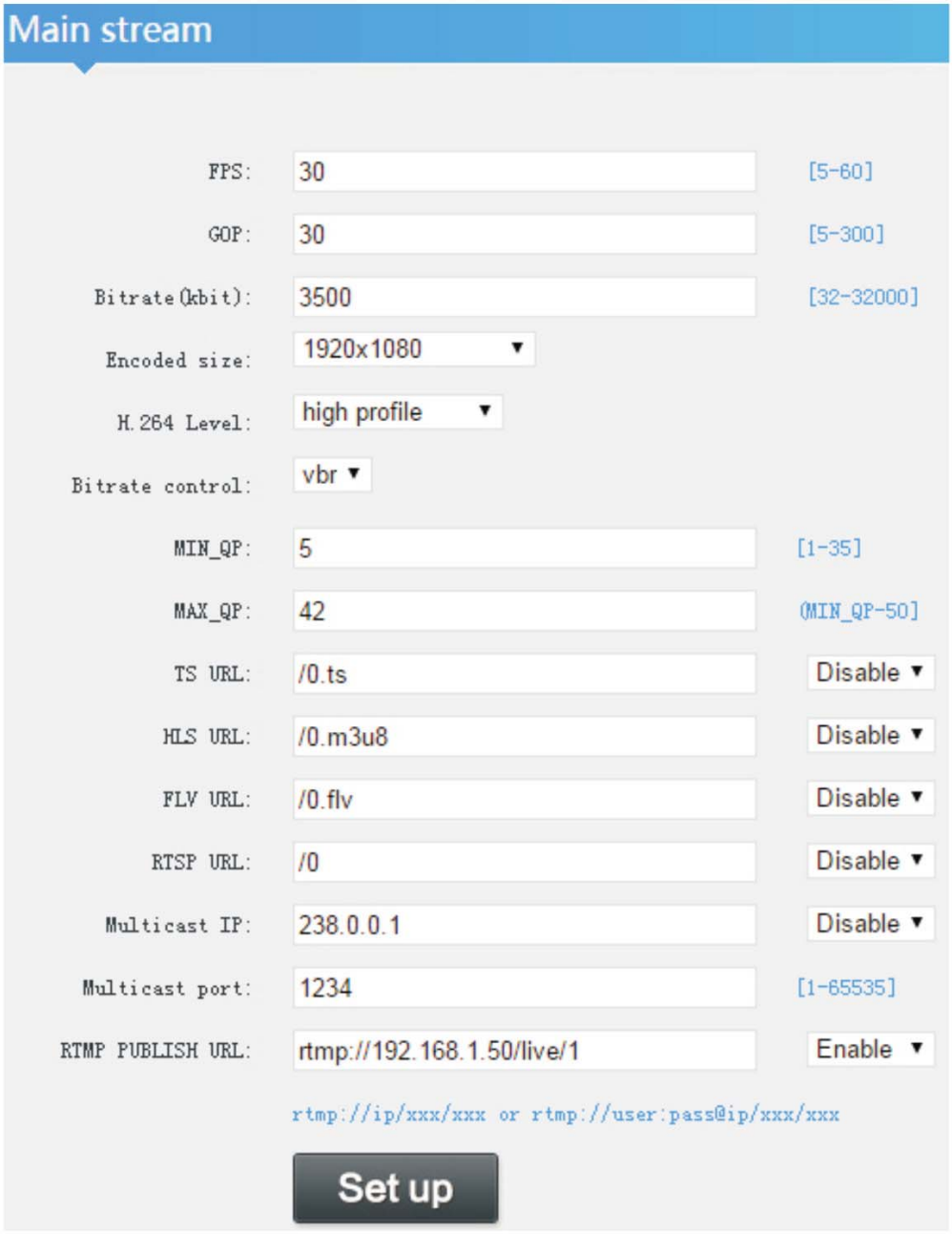
## Network Settings:

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




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:




| 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:<br>1080p@3500kbs, 720p@2800kbs, SD@1500kbs) |
| Encoded size | Encoded Output Resolution. |
| H.264 Level: | Profile-baseline / main / high Profile<br>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/oupree**

If Wowza requires Source Authentication, the source is username **oupree** , password is **123456**, so the address will be:

**rtmp://oupree:123456@192.168.1.50P:1935/live/oupree**

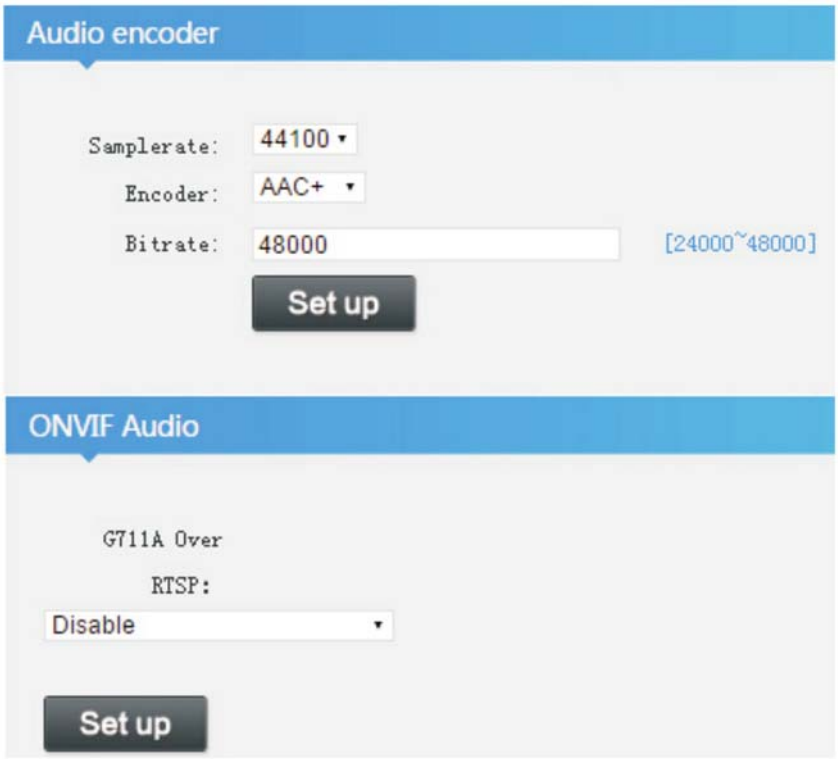
Xtream Codes- on its panel, write address as **rtmp://127.0.0.1:8001/live/stream name**

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:

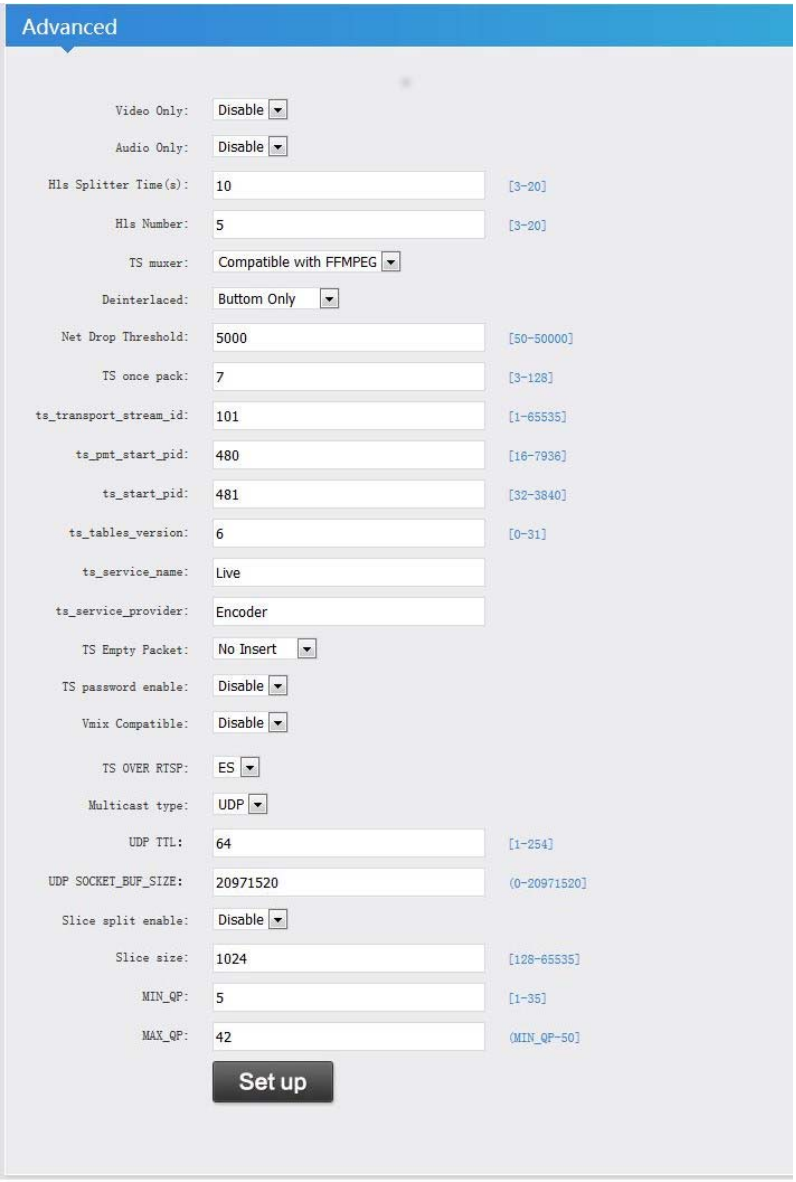
Generally, leave these set at the default (as shown below), but if you feel comfortable changing the settings, set as needed.



## System Settings:

In this window you can change the password if desired.


The Advanced settings (right) are provided to give the expert user significant control over how the streamed content is managed.

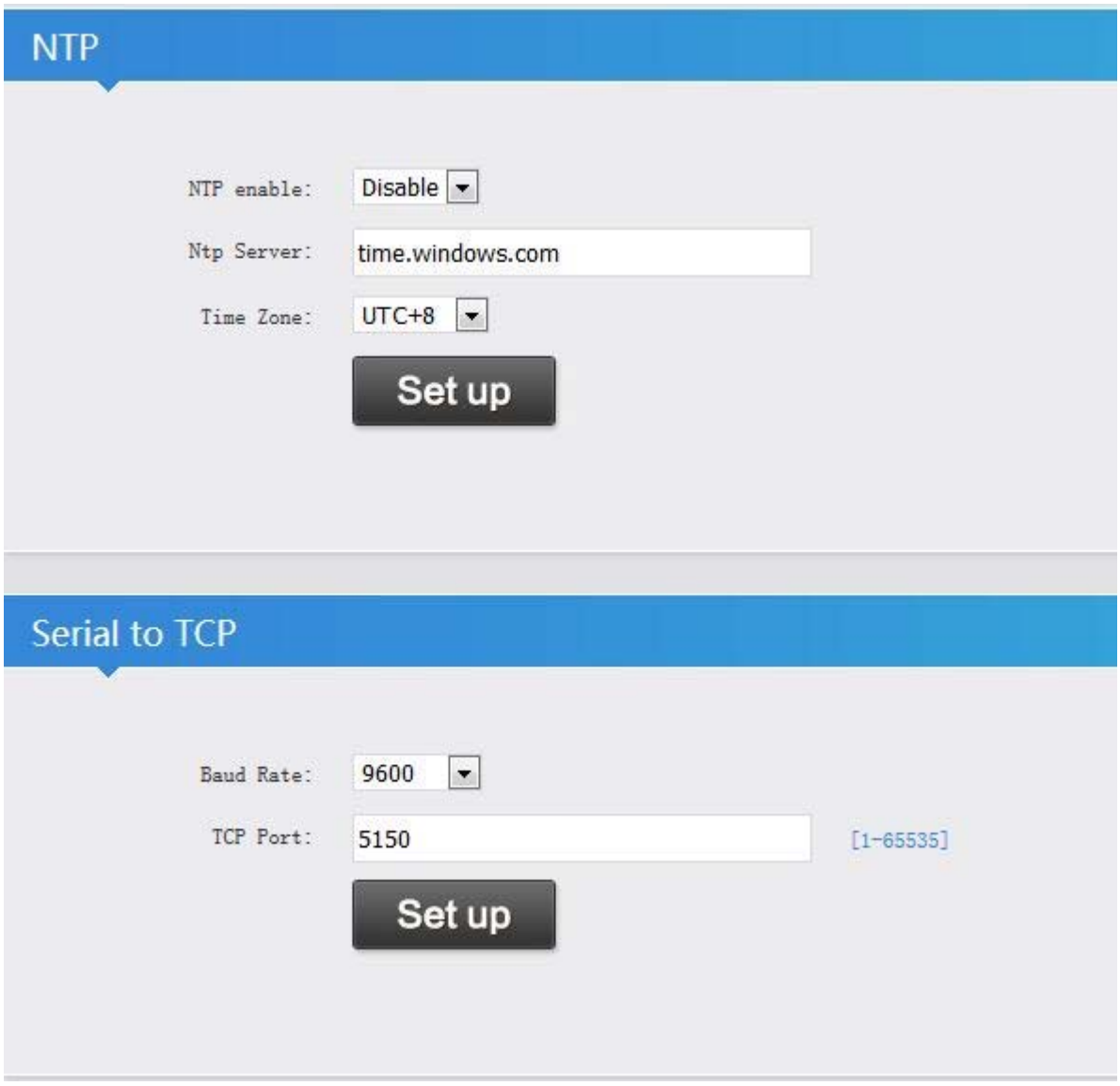


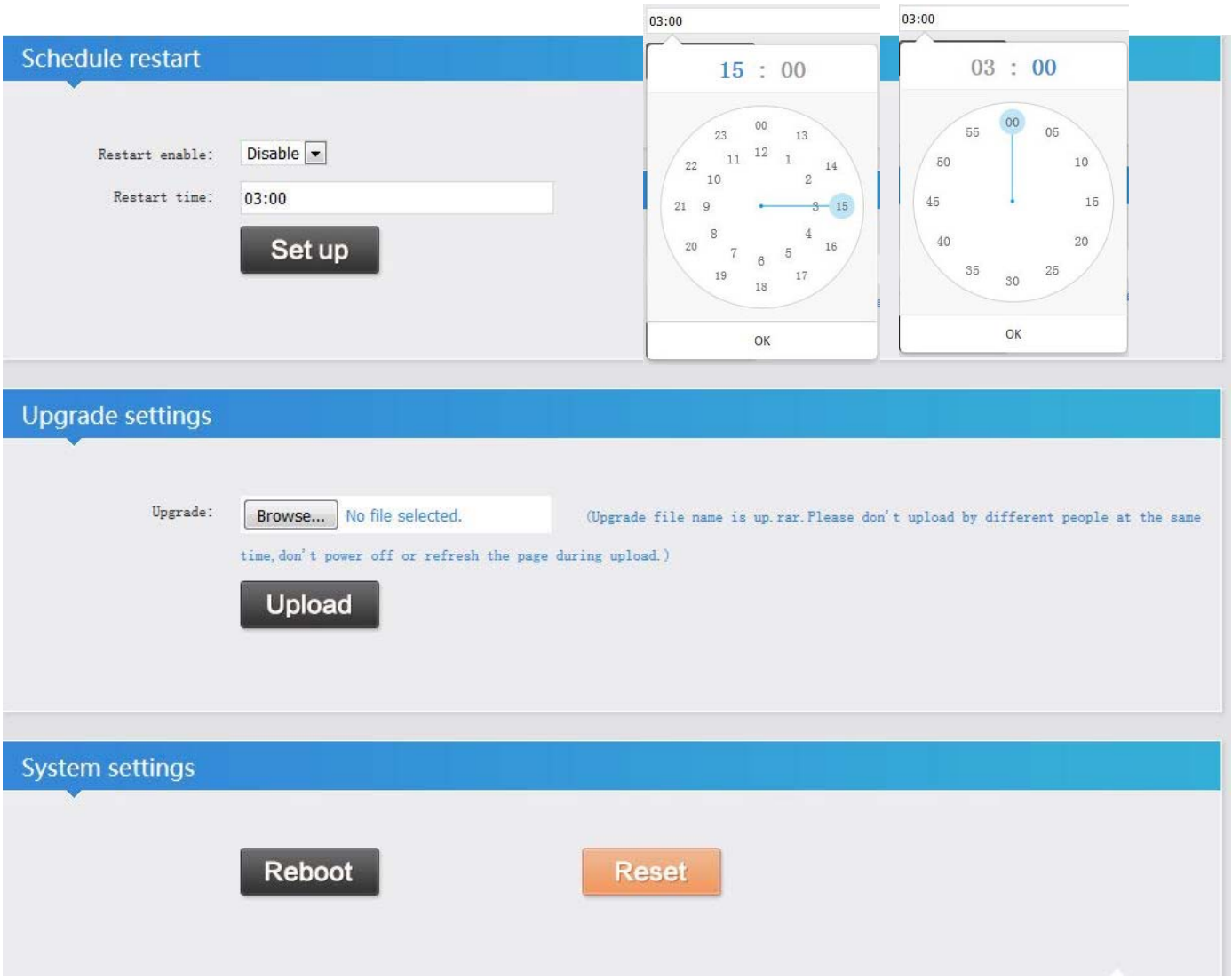
## NTP:

Under System Settings is the ability to setup a connection to an NTP server. Enable the feature, enter the address of a legitimate NTP server, and enter the time zone that should be used.

## Serial to TCP:

To use TCP protocol, select the baud rate of the device that will send commands, and enter the port number that will be used.






## Schedule restart:

If you want to have the HD-ENC-H264 automatically reboot, refreshing its connection, you can enable the feature and apply a time for the restart to occur each day. Click on Setup to select the hour and then the minutes of the time to be set.

## Upgrade Firmware:

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 web interface (above), browse for it, select the file, click "Upload". When you get the message "Upload Success", click "Reboot".

## System Settings:

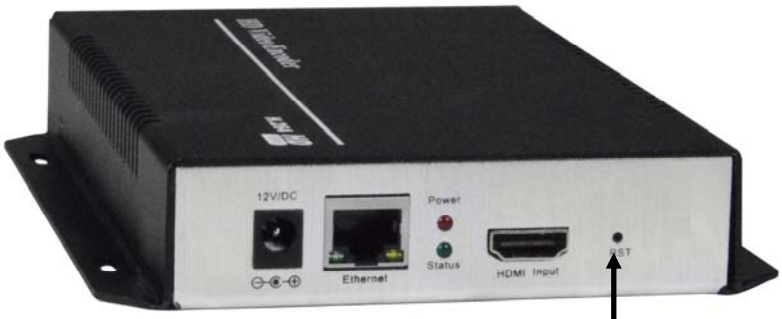
In this window you can either just **Reboot** the HD-ENC-H264 or press **Reset** and restore the encoder to default settings.

## Restore to Default Settings

The settings can be restored to factory defaults in either of two ways:

1. Click the orange "**Reset**" button under the System settings (previous page)

2. Press in the "**Rst**" button on the outside of the HD-ENC-H264 and hold for 10 seconds. Then release.

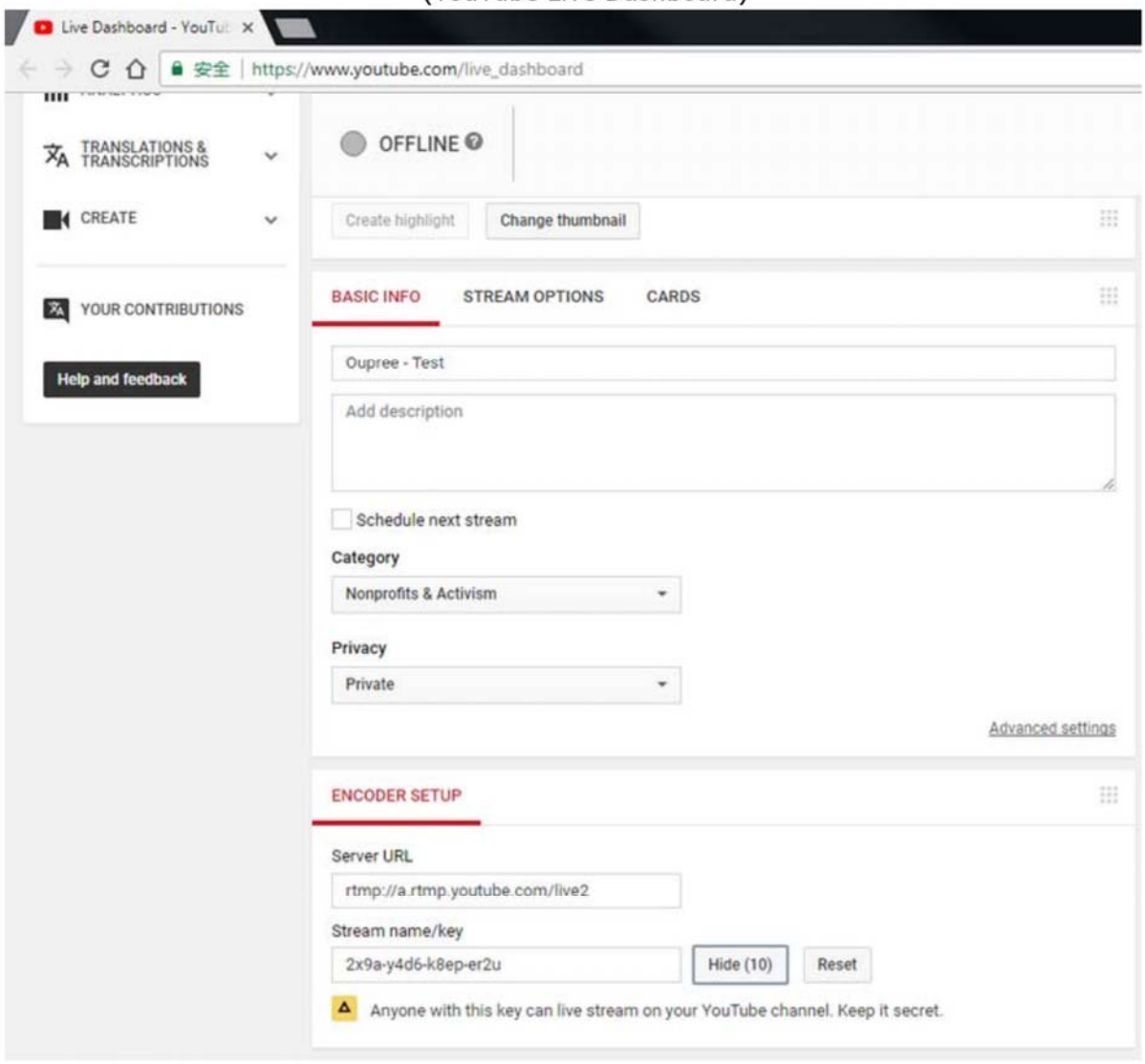



**HD-ENC-H264**

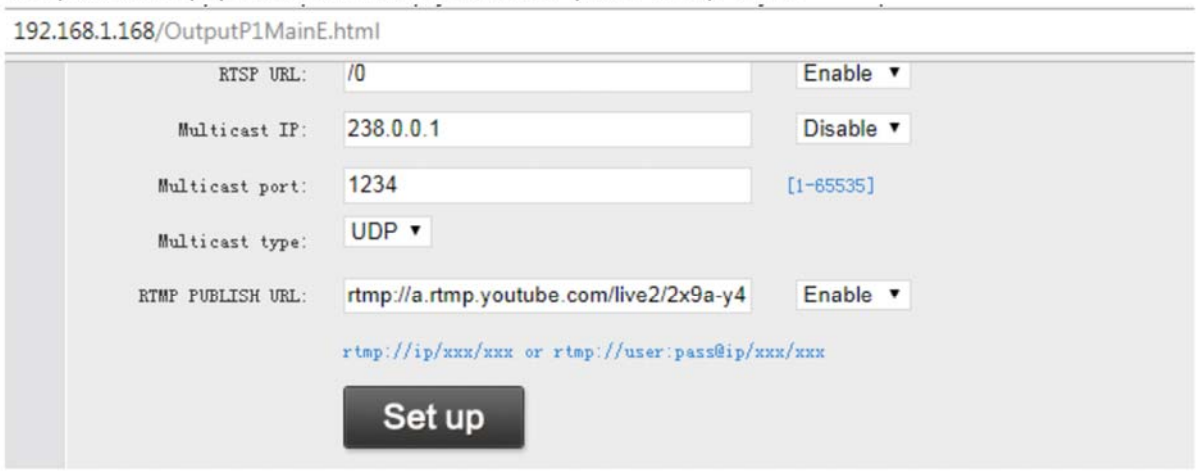
**Restore Defaults Button**

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

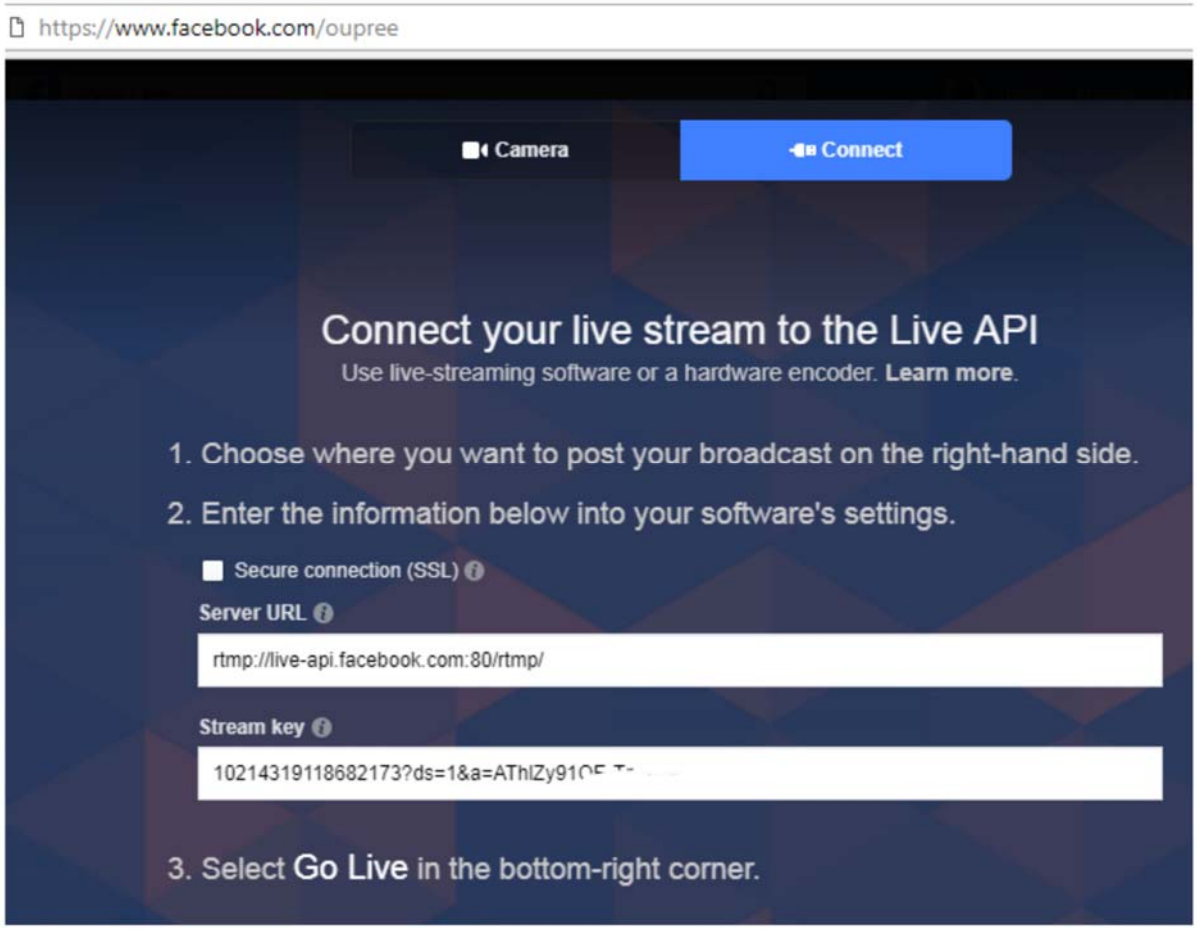
(YouTube Live Dashboard)




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



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




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

# Encoder Control Guide

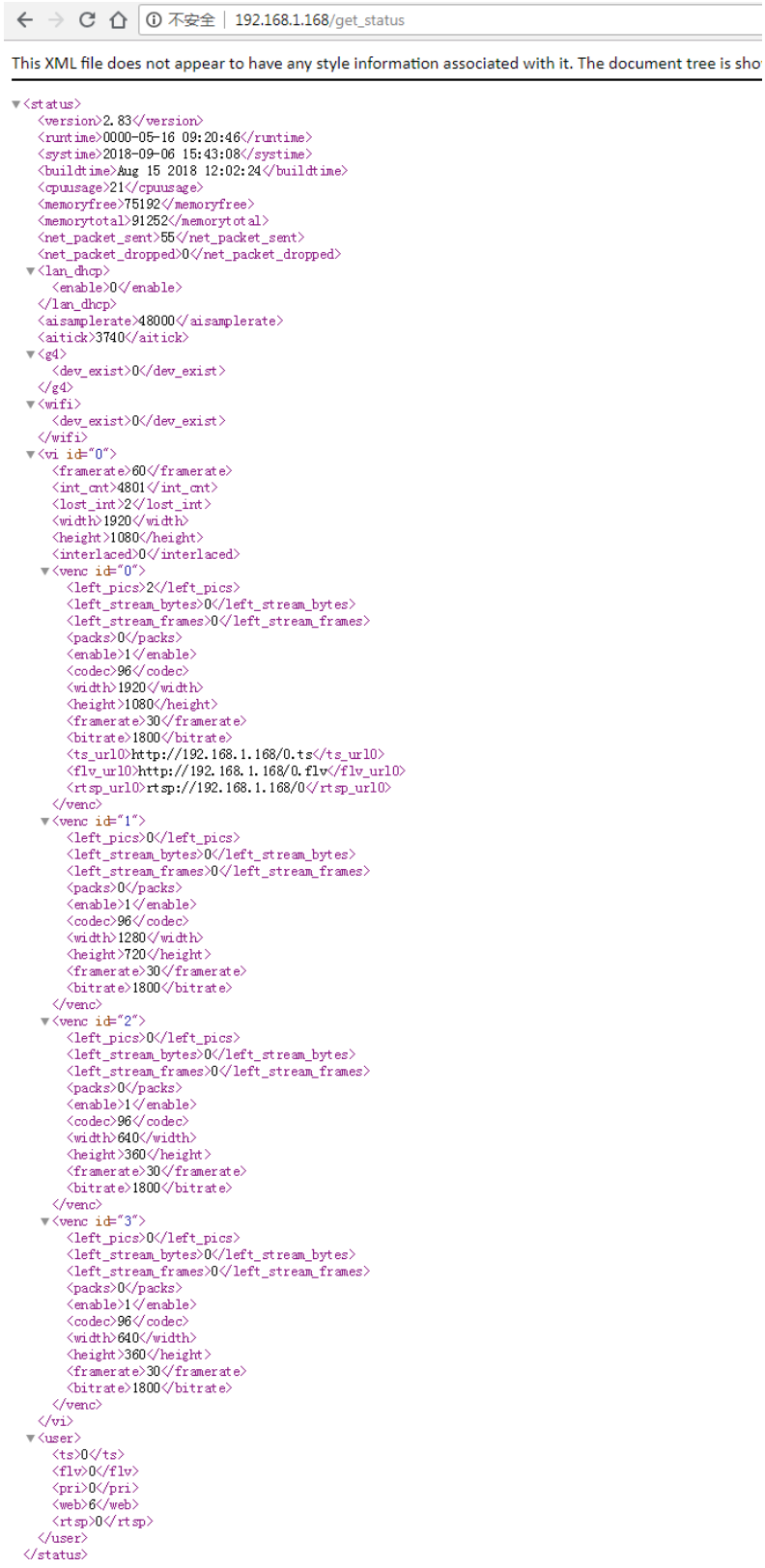
The following API commands can be used to control the HD-ENC-H264:

**1. Get current encoder device status. Enter the following in the URL bar:**

**http://xxx.xxx.xxx.xxx/get_status**

where xxx.xxx.xxx.xxx = the device IP address,

When opening the above link using a web browser, it will return the standard XML format, and the device status will be listed as: ,



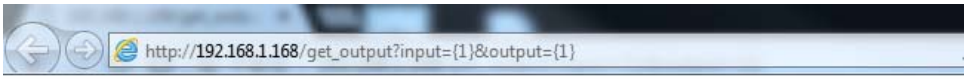

```
<status>
  <version>2.83</version>
  <runtime>0000-05-16 09:20:46</runtime>
  <systime>2018-09-06 15:43:08</systime>
  <buildtime>Aug 15 2018 12:02:24</buildtime>
  <cpuusage>21</cpuusage>
  <memoryfree>75192</memoryfree>
  <memorytotal>91252</memorytotal>
  <net_packet_sent>55</net_packet_sent>
  <net_packet_dropped>0</net_packet_dropped>
  <lan_dhcp>
    <enable>0</enable>
  </lan_dhcp>
  <aisamplerate>48000</aisamplerate>
  <aitick>3740</aitick>
  <g4>
    <dev_exist>0</dev_exist>
  </g4>
  <wifi>
    <dev_exist>0</dev_exist>
  </wifi>
  <vi id="0">
    <framerate>60</framerate>
    <int_cnt>4801</int_cnt>
    <lost_int>2</lost_int>
    <width>1920</width>
    <height>1080</height>
    <interlaced>0</interlaced>
    <venc id="0">
      <left_pics>2</left_pics>
      <left_stream_bytes>0</left_stream_bytes>
      <left_stream_frames>0</left_stream_frames>
      <packs>0</packs>
      <enable>1</enable>
      <codec>96</codec>
      <width>1920</width>
      <height>1080</height>
      <framerate>30</framerate>
      <bitrate>1800</bitrate>
      <ts_url0>http://192.168.1.168/0.ts</ts_url0>
      <flv_url0>http://192.168.1.168/0.flv</flv_url0>
      <rtsp_url0>rtsp://192.168.1.168/0</rtsp_url0>
    </venc>
    <venc id="1">
      <left_pics>0</left_pics>
      <left_stream_bytes>0</left_stream_bytes>
      <left_stream_frames>0</left_stream_frames>
      <packs>0</packs>
      <enable>1</enable>
      <codec>96</codec>
      <width>1280</width>
      <height>720</height>
      <framerate>30</framerate>
      <bitrate>1800</bitrate>
    </venc>
    <venc id="2">
      <left_pics>0</left_pics>
      <left_stream_bytes>0</left_stream_bytes>
      <left_stream_frames>0</left_stream_frames>
      <packs>0</packs>
      <enable>1</enable>
      <codec>96</codec>
      <width>640</width>
      <height>360</height>
      <framerate>30</framerate>
      <bitrate>1800</bitrate>
    </venc>
    <venc id="3">
      <left_pics>0</left_pics>
      <left_stream_bytes>0</left_stream_bytes>
      <left_stream_frames>0</left_stream_frames>
      <packs>0</packs>
      <enable>1</enable>
      <codec>96</codec>
      <width>640</width>
      <height>360</height>
      <framerate>30</framerate>
      <bitrate>1800</bitrate>
    </venc>
  </vi>
  <user>
    <ts>0</ts>
    <flv>0</flv>
    <pri>0</pri>
    <web>6</web>
    <rtsp>0</rtsp>
  </user>
</status>
```

**2. Get the encoding status**

**http://192.168.1.168/get_output?input={0}&output={0}**

input_id is the device input ID, the 1st channels is 0, and 2nd is 1, etc.

output_id is the output stream ID, the main stream is 0, and Substream is 1, etc.




```
<?xml version="1.0" encoding="UTF-8"?>
- <output>
    <input>0</input>
    <output>0</output>
    <aenc_codec>0</aenc_codec>
    <aenc_bitrate>128000</aenc_bitrate>
    <venc_enable>1</venc_enable>
    <venc_codec>96</venc_codec>
    <venc_gop>30</venc_gop>
    <vi_cap_width>1920</vi_cap_width>
    <vi_cap_height>1080</vi_cap_height>
    <venc_width_height_same_as_input>1</venc_width_height_same_as_input>
    <venc_width>1920</venc_width>
    <venc_height>1080</venc_height>
    <venc_framerate>30</venc_framerate>
    <venc_profile>1</venc_profile>
    <venc_rc_mode>1</venc_rc_mode>
    <venc_bitrate>1800</venc_bitrate>
    <http_private_enable>1</http_private_enable>
    <http_private_uri>/0.pte</http_private_uri>
    <http_ts_enable>1</http_ts_enable>
    <http_ts_uri>/0.ts</http_ts_uri>
    <http_hls_enable>0</http_hls_enable>
    <http_hls_uri>/0.m3u8</http_hls_uri>
    <http_flv_enable>1</http_flv_enable>
    <http_flv_uri>/0.flv</http_flv_uri>
    <rtsp_enable>1</rtsp_enable>
    <rtsp_uri>/0</rtsp_uri>
    <rtmp_enable>0</rtmp_enable>
    <rtmp_publish_uri>rtmp://192.168.1.50/live/0</rtmp_publish_uri>
    <multicast_enable>0</multicast_enable>
    <multicast_ip>238.0.0.1</multicast_ip>
    <multicast_port>1234</multicast_port>
    <unicast_enable>0</unicast_enable>
    <unicast_ip/>
    <unicast_port>1000</unicast_port>
</output>
```

**Key & Val:**

| Key | Val (value type) | Description |
|---|---|---|
| input | int | Default value 0: a certain channel input |
| output | int | [0-3]: 0-Main Stream, 1 Substream 1 etc,. |
| aenc_codec | int | 0 AAC<br>1 AAC+<br>2 AAC++<br>4 MP3<br>6 MP2<br>7 AC3 |
| aenc_bitrate | int | Audio bitrate - bps<br>AAC [48000-320000]<br>AAC+ [24000-48000]<br>AAC++ [12000-32000]<br>MP3 [64000-320000]<br>MP2 [64000-320000]<br>AC3 [40000-640000] |

| | | |
|---|---|---|
| venc_enable | int | [0-1]: Encoding, 1-enable, 0-disable Read only. |
| venc_codec | int | Encoding type :<br>96 H264<br>265 H265(only H265 Encoder supports) |
| venc_gop | int | [5-300] Keyframe interval |
| vi_cap_width | int | Get the input video width, Read only. |
| vi_cap_height | int | Get the input video height, Read only. |
| venc_width_height_same_sa_input | int | [0-1]: 1- encoding resolution same as input hdmi.<br>0-encoding resolution as settings |
| venc_width | int | Video Encoding width |
| venc_height | int | Video Encoding height |
| venc_framerate | int | [5-60] fps |
| venc_profile | int | Only works with H264 Encoding<br>0 base profile<br>1 main profile<br>2 high profile |
| venc_rc_mode | int | Bitrate control:<br>0 cbr<br>1 vbr |
| venc_bitrate | int | [32-32000] Bitrate (kbps) |
| http_private_enable | int | [0-1] HTTP private protocol , 1 – enable, Read only. |
| http_private_uri | String | Beginning with '/', i.e. '/0.pte' |
| http_ts_enable | int | [0-1] http TS stream 1-enable, 0-disable. |
| http_ts_uri | String | Beginning with '/', i.e. '/0.ts' |
| http_hls_enable | int | [0-1] http hls stream 1-enable, 0-disable. |
| http_hls_uri | String | Beginning with '/', i.e. '/0.m3u8' |
| http_flv_enable | int | [0-1] http flv stream 1-enable, 0-disable. |
| http_flv_uri | String | Beginning with '/', i.e. '/0.flv' |
| rtsp_enable | int | [0-1] http rtsp stream 1-enable, 0-disable. |
| rtsp_uri | String | Beginning with '/', i.e. '/0' |
| rtmp_enable | int | [0-1] rtmp stream 1-enable, 0-disable. |
| rtmp_publish_uri | String | Rtmp://server-ip:port/app/streamname |
| multicast_enable | int | [0-1] udp 1-enable, 0-disable. |
| multicast_ip | String | IP such as 224.0.0.1 |
| multicast | int | Port such as 1234 |

IE. To setup the 1st hdmi input- Main stream resolution set at 1920x1080@25fps, GOP 30, the URL command will be

**http://xxx.xxx.xxx.xxx/set_output?input=0&output=0&venc_width=1920&venc_height=1080&venc_framerate=25&venc_gop=30**

**4. To get the device information**

http://xxx.xxx.xxx.xxx/get_sys


**5. To set up the device**

http://xxx.xxx.xxx.xxx/set_sys?key=val

**Key & Val:**

| Key | Val (value type) | Description |
|---|---|---|
| ip | String | Wired Network IP |
| netmask | String | Wired Network subnet mask |
| gateway | String | Wired Network Gateway |
| mac | String | Wired Network MAC |
| dhcp_enable | int | [0-1] Wired Network DHCP. 1-enable, 0-disable. |
| g4_dev_exist | int | [0-1] 4G network 0-N/A 1-have Read only |
| g4_enable | int | [0-1] 1-enable, 0-disable 4G |
| g4_apn | String | APN set up |
| wifi_dev_exist | int | [0-1] For WiFi Module 0-Not 1-Have, Read only |
| wifi_enable | int | [0-1] 1-enable, 0-disable WiFi |
| wifi_ap_mode | int | 0 WiFi works as STA<br>1 WiFi works as AP |
| wifi_hostap_essid | String | WIFI AP Name |
| wifi_hostap_psk | String | WIFI AP password |
| wifi_hostap_channel | int | WIFI AP Signal channel |
| wifi_essid | String | WIFI for connection name |
| wifi_psk | String | WIFI passoword |

| | | |
|---|---|---|
| wifi_ip | String | WIFI network IP |
| wifi_netmask | String | WIFI-subnet mask |
| wifi_gateway | String | WIFI-Gateway |
| wifi_dhcp_enable | int | WIFI- DHCP |
| dns0 | String | DNS0 |
| dns1 | String | DNS1 |
| http_port | int | HTTP port |
| rtsp_port | int | RTSP backup port |
| rtsp_g711 | int | [0-1] 1-enable, 0-disable RTSP enable G711 |
| rtsp_g711_8k | int | [0-1] 1-enable, 0-disable 8K-G711 |
| rtsp_g711_mu | int | 0 G711U<br>1 G711A |
| audio_left_right | int | 0 Stereo<br>1 Left<br>2 Right |
| ts_over_rtsp | int | 0 RTSP- ES<br>1 RTSP-TS |
| rtp_multicast | int | 0 Multicast - UDP<br>1 Multicast - RTP |
| udp_ttl | int | [1-254] UDP-TTL |
| udp_sock_buf_size | int | udp socket buffering size |
| html_password | String | Web password |
| hostname | String | Device hostname |

**6. Reboot Device**

**http://xxx.xxx.xxx.xxx/reboot**

succeed / failed

**7. Reset**

**http://xxx.xxx.xxx.xxx/reset**

Succeed

Failed

**8. Command with Username and Password**

**http:// username: password@xxx.xxx.xxx.xxx/**

**I.E. http:// admin: admin@192.168.1.168/reboot**

**9. Get Device Version**

**http://xxx.xxx.xxx.xxx/get_version**

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<version> 2.84</version>
```

**10. Get advanced settings**

**http://xxx.xxx.xxx.xxx/get_adv**

```
▼<adv>
    <interlaced_only_bottom>1</interlaced_only_bottom>
    <field_to_frame>0</field_to_frame>
    <ts_muxer>1</ts_muxer>
    <ts_once>7</ts_once>
    <httpts_password_enable>0</httpts_password_enable>
    <g4_gw_as_dns>1</g4_gw_as_dns>
    <ntp_server>time.windows.com</ntp_server>
    <ntp_enable>0</ntp_enable>
    <time_zone>8</time_zone>
    <hls_buffer_number>5</hls_buffer_number>
    <hls_splitter_time>10</hls_splitter_time>
    <ts_transport_stream_id>101</ts_transport_stream_id>
    <ts_pmt_start_pid>480</ts_pmt_start_pid>
    <ts_start_pid>481</ts_start_pid>
    <ts_tables_version>6</ts_tables_version>
    <ts_rc_mode>0</ts_rc_mode>
    <ts_service_name>Live</ts_service_name>
    <ts_service_provider>Encoder</ts_service_provider>
    <vmix_compatible>0</vmix_compatible>
    <audio_only>0</audio_only>
    <video_only>0</video_only>
    <auto_super_frame_reencode>1</auto_super_frame_reencode>
    <slice_split_enable>0</slice_split_enable>
    <slice_split_size>1024</slice_split_size>
    <min_qp>5</min_qp>
    <max_qp>42</max_qp>
    <i_qp>5</i_qp>
    <p_qp>42</p_qp>
    <schedule_restart_enable>0</schedule_restart_enable>
    <schedule_restart_time>180</schedule_restart_time>
    <net_packet_drop_threshold>5000</net_packet_drop_threshold>
    <remserial_baudrate>9600</remserial_baudrate>
    <remserial_tcp_port>5150</remserial_tcp_port>
    <csc_enable>0</csc_enable>
    <csc_contrast>64</csc_contrast>
</adv>
```

**11. Set up advanced settings**

**http://xxx.xxx.xxx.xxx/set_adv?key=val**

**Key & Val:**

| Key | Val (value type) | Description |
|---|---|---|
| interlaced_only_bottom | int | 0 Deinterlaced – both (Weaving)<br>1 Buttom Only |
| field_to_frame | int | [0-1] Field To Frame (Line doubling) 1-enable, 0-disable |
| ts_muxer | int | 0 TS – VLC<br>1 TS-FFMPEG |
| ts_once | int | [3-128] TS once pack |
| httpts_password_enable | int | [0-1] HTTP TS enable password 1-enable, 0-disable |
| ntp_server | String | NTP Server |
| ntp_enable | int | [0-1] NTP Sync 1-enable, 0-disable |
| time_zone | int | [-12-12] time zone UTC-12 - UTC+12 |
| ts_transport_stream_id | int | ---- |
| ts_pmt_start_pid | int | --- |
| ts_start_pid | int | --- |
| ts_tables_version | int | --- |
| ts_rc_mode | int | Null packets insert to TS<br>0 No<br>12 insert (1.2x)<br>13 insert (1.3x)<br>15 insert (1.5x)<br>20 insert (2x)<br>25 insert (2.5x)<br>30 insert (3x)<br>35 insert (3.5x) |
| ts_service_name | String | TS Service Name |
| ts_service_provider | String | TS Publisher |
| vmix_compatible | int | [0-1] compatible with VMIX<br>1-enable, 0-disable |
| audio_only | int | [0-1] 1-enable, 0-disable |
| video_only | int | [0-1] 1-enable, 0-disable |
| auto_super_frame_reencode | int | [0-1] 1-enable, 0-disable |
| slice_spilt_enable | int | [0-1] 1-enable, 0-disable |
| slice_split_size | int | [128-65535] Slice size |
| min_qp | int | [1-35] |
| max_qp | int | [min_qp - 50] |
| schedule_restart_enable | int | [0-1] restart encoder 1-enable, 0-disable |
| schedule_restart_time | int | |
| net_packet_drop_threshold | int | [50-50000] |
| remserial_baudrate | int | |
| remserial_tcp_port | int | [1-65535] TCP Port |
| csc_enable | int | [0-1] CSC 1-enable, 0-disable |
| csc_contrast | int | [0-255] set contrast for stream |

**12. Get input video signals**

**http://xxx.xxx.xxx.xxx/get_input**

```
<?xml version="1.0" encoding="ISO-8859-1"?>
- <input>
    <input>0</input>
    <ai_samplerate>48000</ai_samplerate>
    <aenc_samplerate>44100</aenc_samplerate>
    <aenc_bitrate>128000</aenc_bitrate>
    <aenc_codec>4</aenc_codec>
    <aenc_input>0</aenc_input>
    <analog_vol>10</analog_vol>
    <digital_vol>0</digital_vol>
    <vi_cap_x>0</vi_cap_x>
    <vi_cap_y>0</vi_cap_y>
    <vi_cap_width>1920</vi_cap_width>
    <vi_cap_height>1080</vi_cap_height>
    <vi_cap_framerate>50</vi_cap_framerate>
    <vi_cap_interlaced>0</vi_cap_interlaced>
</input>
```

**13. To get OSD info**

**http://xxx.xxx.xxx.xxx/get_osd?enc_chn={output_id}&osd_chn={osd_id}**

```
<?xml version="1.0" encoding="ISO-8859-1"?>
- <osd>
    <enable>1</enable>
    <type>0</type>
    <x>10</x>
    <y>10</y>
    <alpha>100</alpha>
    <font_size>36</font_size>
    <color>0</color>
    <bcolor>16777215</bcolor>
    <txt>今天是2018年7月12号</txt>
    <bmp>null</bmp>
</osd>
```

**14. To set OSD**

**http://xxx.xxx.xxx.xxx/set_osd?enc_chn={output_id}&osd_chn={osd_id}&key_val**

**Key & Val:**

| Key | Val (value type) | Description |
|---|---|---|
| output_id | int | [0-3] |
| osd_id | int | [0-3] |
| enable | int | [0-1] |
| type | int | 0 TXT<br>1 BMP<br>10 scroll txt<br>11 NTP time |
| x | int | Position - coordinate |
| y | int | Same as X |
| alpha | int | [0-128] OSD transparency |
| font_size | int | [8-72] |
| color | int | Text color |
| bcolor | int | Background color |
| txt | String | TXT OSD - contents |
| bmp | String | BMP file name |

**15. Get WiFI AP information**

**http://xxx.xxx.xxx.xxx/get_wif**

```
<?xml version="1.0" encoding="ISO-8859-1"?>
- <wifi>
  - <ap id="0">
      <mac>e4:a7:c5:05:6a:64</mac>
      <frequency>2412</frequency>
      <level>92</level>
      <ssid>neworange2</ssid>
    </ap>
  - <ap id="1">
      <mac>94:d9:b3:74:55:3d</mac>
      <frequency>2412</frequency>
      <level>68</level>
      <ssid>CY-3</ssid>
    </ap>
  + <ap id="2">
  + <ap id="3">
  + <ap id="4">
  + <ap id="5">
  + <ap id="6">
  + <ap id="7">
  + <ap id="8">
  + <ap id="9">
  + <ap id="10">
  + <ap id="11">
</wifi>
```

## Discovery Tool

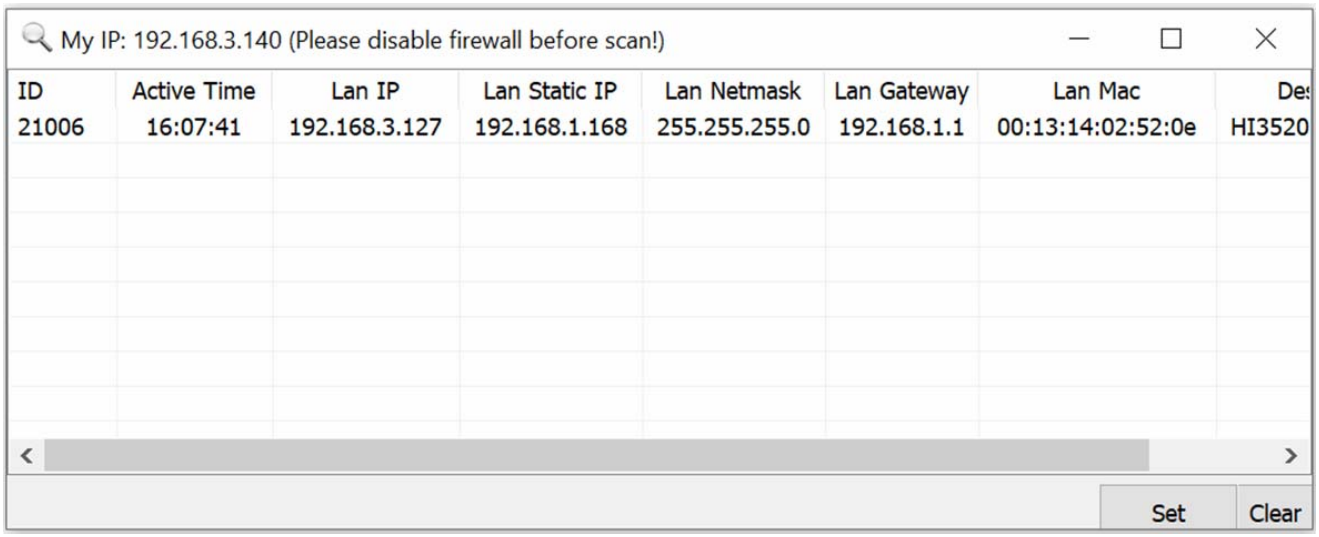
A Discovery Tool application is available to help identify the IP address provided

A. the application is executed from a computer on the same network as the HD-ENC-H264 and

B. provided DHCP is enabled in the unit's web management page (see page 2).

1. Connect a Windows 7,8,10 or 11 computer to the same subnet as the HD-ENC-H264 unit.

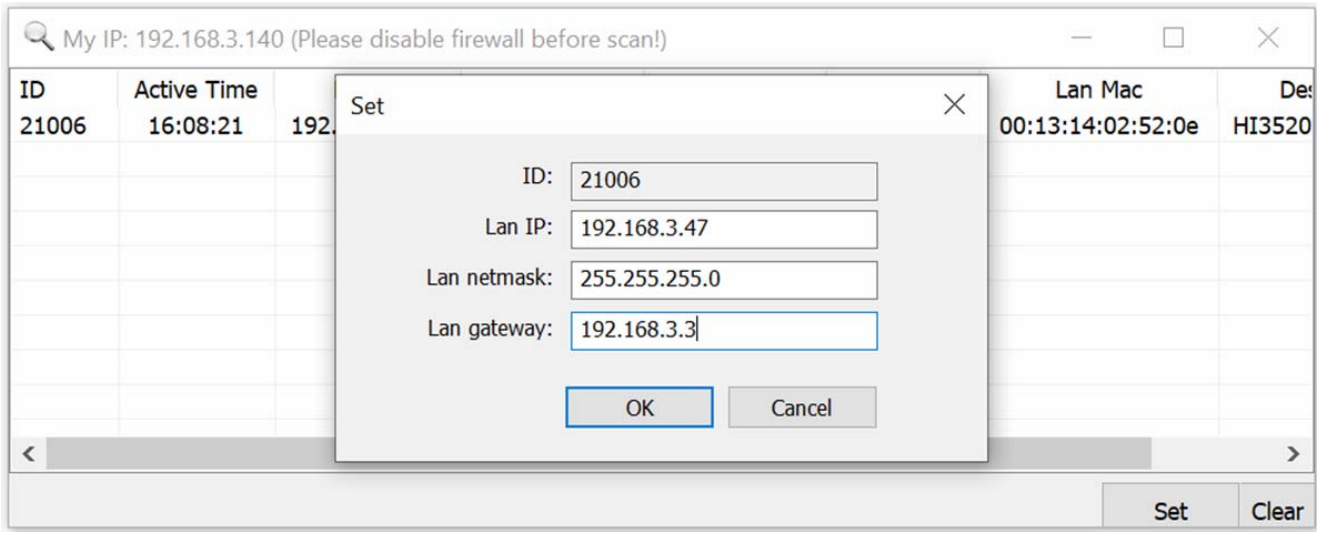
2. Download the application from the website and save the file to your desktop. Double click the application. The user should see the unit is discovered and listed in the chart. The "LAN IP" is the DHCP IP address assigned by the DHCP server on the local network. Double click this row, the web management page will pop up.



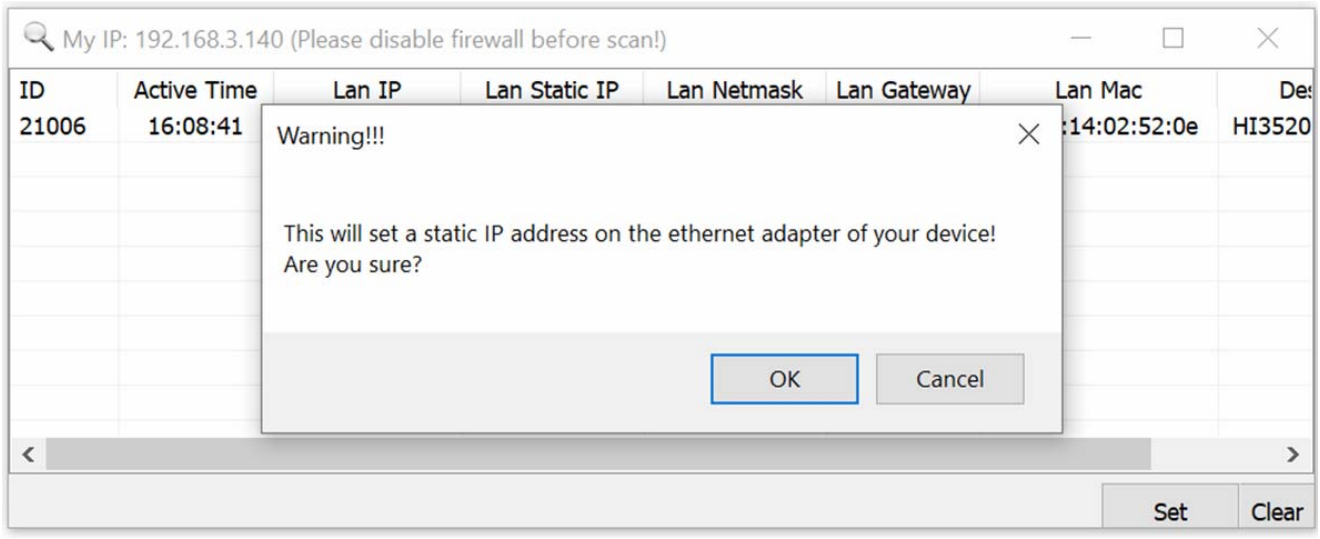

### Changing the Static IP Address

If DHCP is disabled in the unit's web management page, the IP address will still be shown provided the unit is on the same network as the computer running the Discover Tool. The user can modify the Static IP of the unit using the Discover Tool.

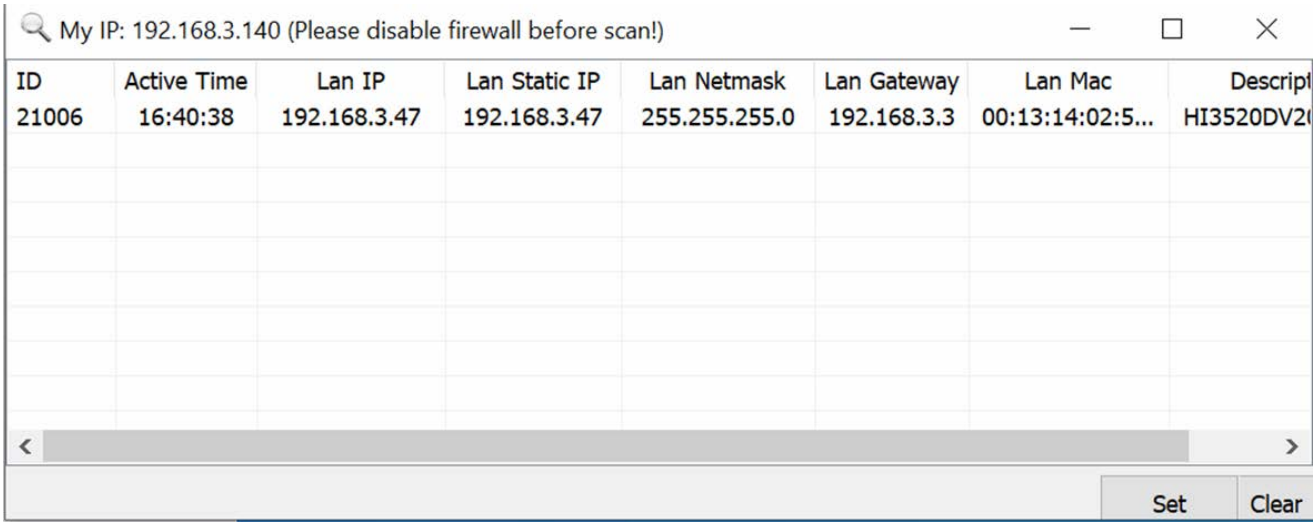
1. Select the unit in the chart. Click the "Set" button. In the pop-up window, enter the desired Static IP settings. Click "OK"



2. Click “OK” in the next window to confirm.




3. Close the software and reopen it, OR click the “Clear” button. Within 30 seconds, the user should see that the unit’s IP settings (Lan IP, Lan Static IP, Lan Netmask, and Lan Gateway) are updated.




**Note: The Discover Tool CANNOT enable/disable DHCP for a unit. If the user sets a static IP for a DHCP-enabled unit using this tool, it will not take effect. The unit will still have the DHCP IP address under "Lan IP".**

## ONVIF Discovery Tool

ONVIF is enabled on the HD-ENC-H264 by default. Users can also use an ONVIF discovery tool to discover the device's IP address (for example https://sourceforge.net/projects/onvifdm/).

## 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

**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).

**Note:** The MTU (Maximum Transmission Unit) setting for the HD-ENC-H264 cannot be changed and is not variable.

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