

# HPNE9000U

## HEVC/AVC Network Media Encoder



# User Manual

## (v2.1)

## Outline

HPNE9000U HEVC/AVC HD Network Media Encoder adopts advanced H.265/HEVC, H.264/AVC video compression algorithm and MPEG4 AAC audio compression algorithm. It also has excellent video performance and audio reproducibility under ultra low bandwidth network. It can achieve perfect presentation of 1080P60/50 HD video under 1Mbps video code rate and 30kbps audio code rate. It supports low latency encoding technology, 1080P60 encoding delay is less than 160ms.

In order to adapt to various complex network audio and video application environments, HPNE9000U provides multiple streaming media protocols, such as HLS/HTTP/RTMP/RTP/RTSP/UDP/SRT protocol (SRT is optional). This full function device makes it ideal for point to point transmission over LAN/Internet, Network live video broadcast, IPTV broadcast, emergency video, mobile video broadcast, remote conference, hotel VOD, campus radio broadcast, hospital expert consultation, etc

## Key Feature

1. High reliability, embed process, low power
2. H.265/HEVC, H.264/AVC video encoding & AAC audio encoding
3. High quality @ low bit rate, 1080P60 1Mbps, under H.265/HEVC encoding
4. Ultra low latency processing, less than 160ms
5. Advanced compressing Algorithm, enhance picture quality.  
Triple B-frame prediction, minimize 75% bandwidth under excellent picture quality
6. HDMI, HD/SD-SDI, CVBS video input, embeded HDMI & HD/SD-SDI audio, analog XLR audio input
7. IP output, HLS/HTTP, RTSP/RTP, RTMP, UDP, SRT protocol (SRT is optional )
8. Support 4 streams simultaneously output, each stream has 4 push stream address to push stream or client pull stream access
9. Support audio volume adjustment,
10. Support two-way voice intercom
11. Support 1080P, 1080I, 720P and PAL NTSC video input
12. Support downscale resolution, any down-conversion resolution input and output, support vertical screen encoding
13. Compatible publishing stream to Adobe FMS, Wowza, RED5 media server
14. Web-NMS management

## Specification

Input	Video	HD/SD-SDI (BNC)
		HDMI (HDCP Support)
		CVBS (BNC)
		720x480i/p 720x576i/p 1280x720p 1920x1080i/p
	Audio	HD/SD-SDI (BNC)
		HDMI
		Analog R-L (XLR)
		Analog R-L (3.5mm)
Video Encoding	Maximum Video	1920x1080P@60 1280x720P@60
	Pre-process	De-interlace, noise filter
	Encoding Format	H.265/HEVC H.264/MPEG4-AVC
	Compress performance	1080P60 1Mbps
	Encoding Delay	less than 160ms
	Resolution	352x288 ~ 1920x1080 Adjustable
	Frame Rate	8Hz – 60Hz Adjustable
	Encoding Profile	H.265/HEVC, H.264/AVC High Profile, Main Profile, Baseline Adjustable
	Encoding Level	H.265/HEVC, H.264/AVC Level 1.0~ 4.1 Adjustable
	Bit rate	100kbps ~ 20Mbps Adjustable
	Bit rate mode	CBR/VBR
	GOP Structure	I IP IBP IBBP IBBBBP
	GOP Length	Ajustable
Audio Encoding	Sample length	24 bit
	Sample Rate	32KHz 44.1KHz 48KHz
	Track	Stereo Mono-L Mono-R
	Compress STD	AAC
	Bitrate	30Kbps ~ 384Kbps
Output	Interface	RJ45 10/100/1000Mbps
	Stream Protocol	TS Over UDP/HTTP、FLV Over HTTP
		RTSP/RTP,
		RTMP
		HLS
SRT optional		
Two-way voice	Input	3.5mm microphone input
	Output	3.5mm headphone output
Management	Front Panel	7 Keys + LCD indicator
	Network	Web-NMS

General	Weight	3 KG
	Size	1U standard
	Power	AC 110V~ 220V 50/60Hz
	Consumption	10W

## Chapter 1: Getting Start Guide

### About This Guide

This Guide gives step-by-step instructions for setting up encoders and relative Warranty, Safety, Regulatory, and Environment Notice. Please note that the model you have purchased may appear slightly different from those shown in the illustrations.

### Step 1 Unpack the equipment package

Open the shipping carton and carefully unpack its content. Please check the following packing list

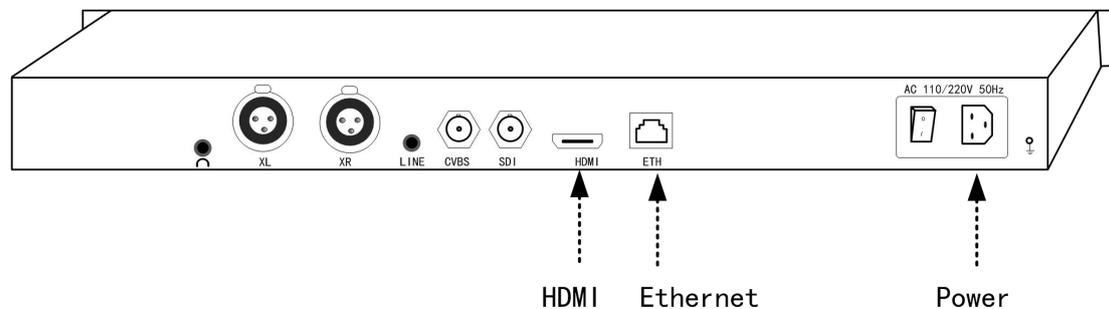
1. HPNE9000U Network Media Encoder
2. Power Cord

### Step 2 Installation the equipment

For safe encoder installation and operation, it is recommended that you:

- Visual inspect the power cord to see that it is secured fully to the AC power connector
- Make sure that there is proper heat dissipation and adequate ventilation around the encoder
- Do not place heavy objects on the encoder

#### 1. Connecting Cables and Power Cord



- 1). Connecting the Ethernet cable
- 2). Connecting the HDMI cable
- 3). Connecting the power cord

#### 2. Power ON

Turning on the switch, and waiting about 1 minute. IF the login light becoming green, the equipment is starting finished

### Step 3 Setting the IP address by front panel

1. Pressing the Confirm/Enter button about 3 milliseconds, the LCD display will show the setting menu.

```
[1]:IP Address State    <-  
[2]:IP Address Config
```

2. Selecting the “IP Address Config” menu, and pressing the Confirm/Enter button to enter the IP address configuration sub menu.

```
[1]:IP Address State  
[2]:IP Address Config  <-
```

Selecting the “Manual Set IP address” and confirm

```
[2.1]:Auto IP Get  
[2.2]:Manual IP Set    <-
```

```
[2.2.1]:IP ADDR: 192.168.001.011  <-  
[2.2.2]:NETMASK: 255.255.255.000
```

Pressing the Confirm/Enter button entering the edit mode, and next edit the IP address

```
[2.2.1]:IP ADDR: 192.168.001.012  <-  
[2.2.2]:NETMASK: 255.255.255.000
```

After edit finished, pressing the Confirm/Enter button to active the change  
Use the same way to edit the net mask and the gateway

```
[2.2.3]:GATEWAY: 192.168.001.001  <-  
[2.2.1]:IP ADDR: 192.168.001.012
```

#### Step 4 Setting encoder parameter by equipment web

In the internet explorer address field, Input the IP address of the equipment, which last step configured



The internet explorer will pop up a login dialog box. The user name is “admin” and the default password is “admin”.



If username and password are both correct, the web page will be shown like following

Serial No. vxsf43758d2  
 Mac 00:4F:E2:69:51:CE

### Network Media Encoder

» [Status](#)

\* [Encode](#)

\* [Stream](#)

\* [System](#)

\* [Preview](#)

\* [Update](#)

#### Equipment Status

Source Status			
Video		Audio	
Interface	HDMI	Interface	HDMI
Active	Yes	Active	Yes
Picture Resolution	1920x1080@50	Sample Frequency (Hz)	48000

Encoding Status			
Video Encode 0	Yes	Video Encode 2	Yes
Video Encode 1	Yes	Video Encode 3	Yes
		Audio Encode	Yes

System Status			
DHCP Mode	Disable	Network Submask	255.255.255.0
Local IP Address	192.168.1.12	Default Gateway	192.168.1.1
Hardware Version	v0.2.1	Software Version	v0.5

1. Click the “Encoder” on the left bar  
Select the video interface and audio interface to HDMI

Network Media Encoder

Serial No. vxxf43758d2  
Mac 00:AF:E2:69:51:CE

Encoder Configuration

[» Status](#)  
[\\* Encode](#)  
[\\* Stream](#)  
[\\* System](#)  
[\\* Preview](#)  
[\\* Update](#)

Video Interface	HDMI	Audio Interface	HDMI
		Audio Bitrate	64 kbps

Encoder	Video Enable	Video Std	Video Bitrate	Audio Enable
Enc0	Yes	H264	2000 kbps	Yes
Enc1	Yes	H264	3000 kbps	Yes
Enc2	Yes	H264	2500 kbps	Yes
Enc3	Yes	H264	2000 kbps	Yes

Advanced Configure >>

OK Cancel

2. Click the Status” on the left bar, and Click the “Misc Status” on the submenu

Network Media Encoder

Serial No. vxxf43758d2  
Mac 00:AF:E2:69:51:CE

Equipment Status

[\\* Status](#)  
[\\* MISC](#)  
[• PUSH](#)  
[• PULL](#)  
[\\* Encode](#)  
[\\* Stream](#)  
[\\* System](#)  
[\\* Preview](#)  
[\\* Update](#)

Source Status			
Video		Audio	
Interface	HDMI	Interface	HDMI
Active	Yes	Active	Yes
Picture Resolution	1920x1080i/50	Sample Frequency (Hz)	48000

Encoding Status			
Video Encode 0	Yes	Video Encode 2	Yes
Video Encode 1	Yes	Video Encode 3	Yes
		Audio Encode	Yes

System Status			
DHCP Mode	Disable	Network Submask	255.255.255.0
Local IP Address	192.168.1.12	Default Gateway	192.168.1.1
Hardware Version	v0.2.1	Software Version	v0.5

Check the interface status. IF both video and audio interface “Active” is “Yes”, the encoder is working normally.

**Step 5 Using VLC player view the stream output from encoder**

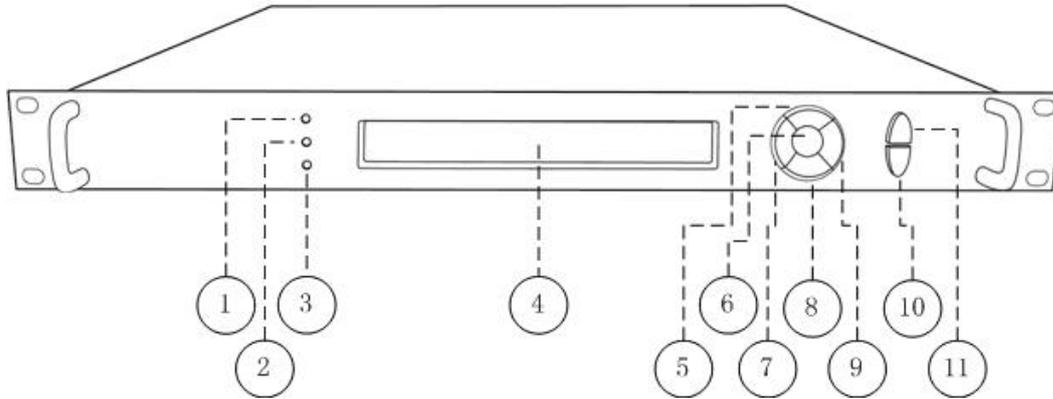
1. Open VLC player, click the “Media” on the menu bar and click the “Open Network Stream” on the submenu
2. In the URL field, input the stream URL (for example `http://192.168.1.12:8010/enc0`)



Now player will show the real time video which is streaming out from the encoder.

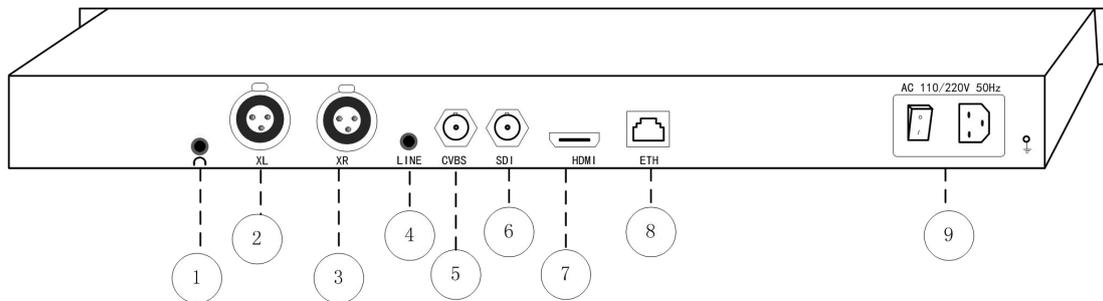
## Chapter 2: Equipment Structure

### 1. Front



1	Equipment power LED indicator	2	Equipment system login LED indicator
3	Equipment running status LED indicator	4	LCD display
5	Navigator UP button	6	Confirm/Enter button
7	Navigator LEFT button	8	Navigator DOWN button
9	Navigator RIGHT button	10	Confirm/Enter button
11	Cancel/Escape button		

### 2. Back



1	Real time talking port	2	XL audio input port
3	XR audio input port	4	Analog audio input port (3.5mm)
5	CVBS video input port	6	SDI input port
7	HDMI input port	8	10/100/1000M Ethernet port
9	Power switch		

If you want to use the Real time talking function, Please contact us.



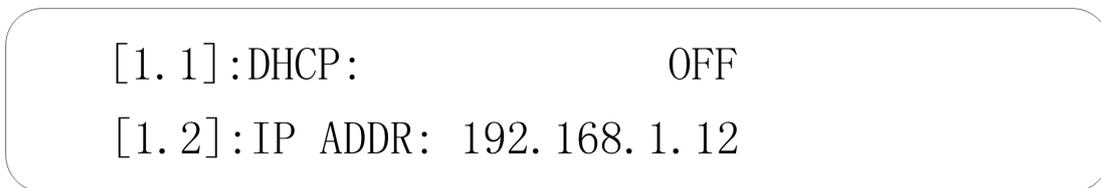
If the users long press the confirm/enter key about 3 seconds, the LCD display enter into the configuration mode, and if there is not any operation about 20 seconds, the LCD display will return to the standby mode.



there are 3 option in the primary menu:

1	IP Address State	inspect the equipment IP, net mask, gateway and dhcp mode
2	IP Address Config	configuration the equipment IP, net mask, gateway
3	Factory Default	reset the equipment to preset state, and the equipment will auto restart

*IP Address State*



1	DHCP	ON: IP address is auto get by DHCP; OFF: IP address is manual configured
2	IP ADDR	IP address of the equipment
3	NETMASK	net sub mask of the equipment
4	GATEWAY	default gateway of the equipment

*IP Address Config*



1	Auto IP Get	Set the equipment IP automatic by DHCP. If press the confirm/enter key, the DHCP mode is enabled.
2	Manual IP Set	Set the equipment IP, net mask, gateway by user. Press the confirm/enter key, into the IP details submenu

[2. 2. 1] : IP ADDR: 192. 168. 001. 012 <-  
 [2. 2. 2] : NETMASK: 255. 255. 255. 000

1	IP ADDR	Set the IP address of the equipment
2	NETMASK	Set the net sub mask of the equipment
3	GATEWAY	Set the default gateway of the equipment

- Press the confirm/enter key into edit mode.
- Use left and right key to move the cursor to the character which you want change.
- Use up and down navigator key to change the value.
- Press the confirm/enter key to active the changes

*Factory Default*

[3. 1] : Cancel <-  
 [3. 2] : Confirm

1	Cancel	Discard reset all parameters
2	Confirm	Active the reset process, if cursor selected and press the confirm/enter key

If active the reset process, the equipment will auto restart, and all parameters will be reset to the factory preset.

## Chapter 4: Equipment Web Control

For compatible reason, the following internet explorers are recommended.

1	Microsoft IE 6.0 or above
2	Google Chrome
3	Mozilla Firefox
4	Opera

Users visit the web control pages need username and password. The factory default user name is “admin” and password is “admin”

Web control pages include several areas

### Network Media Encoder

Serial No. vxsf43758d2  
Mac 00:4F:E2:69:51:CE

**Equipment Status**

\* [Status](#)

- [MISC](#)
- [PUSH](#)
- [PULL](#)

\* [Encode](#)

\* [Stream](#)

\* [System](#)

\* [Preview](#)

\* [Update](#)

Source Status			
Video		Audio	
Interface	HDMI	Interface	HDMI
Active	Yes	Active	Yes
Picture Resolution	1920x1080i/50	Sample Frequency (Hz)	48000
Encoding Status			
Video Encode 0	Yes	Video Encode 2	Yes
Video Encode 1	Yes	Video Encode 3	Yes
		Audio Encode	Yes
System Status			
DHCP Mode	Disable	Network Submask	255.255.255.0
Local IP Address	192.168.1.12	Default Gateway	192.168.1.1
Hardware Version	v0.2.1	Software Version	v0.5

In the Navigation Area, there are 6 menus.

1	Status	Provide the many of the equipment’s status and information
2	Encoder	Used to set the encoding parameters, like AV interface, bit rate, etc
3	Stream	Used to set the push stream parameters, like push protocol, targets, etc
4	System	Used to set the equipments system parameter, like IP, web control password, etc.
5	Preview	Used to preview input video
6	Update	Used to upgrade the equipment’s firmware

## 1. Status

Status including 3 submenus, “Misc Status” “Push Status” and “Pull Status”

Equipment Status				
* <a href="#">Status</a>	Source Status			
	Video		Audio	
	Interface	HDMI	Interface	HDMI
	Active	Yes	Active	Yes
* <a href="#">Encode</a>	Picture Resolution	1920x1080i/50	Sample Frequency (Hz)	48000
* <a href="#">Stream</a>	Encoding Status			
* <a href="#">System</a>	Video Encode 0	Yes	Video Encode 2	Yes
	Video Encode 1	Yes	Video Encode 3	Yes
			Audio Encode	Yes
* <a href="#">Preview</a>	System Status			
* <a href="#">Update</a>	DHCP Mode	Disable	Network Submask	255.255.255.0
	Local IP Address	192.168.1.12	Default Gateway	192.168.1.1
Hardware Version		v0.2.1	Software Version	v0.5

Misc status provides audio and video interface status, encoding status, equipment IP status, equipment temperature.

Stream Push Status			
Targets			
Encoding	Protocol	Connecting	Target
Enc0	RTMP	Yes	rtmp://192.168.2.250:1935/OzEa4/livex0

Push status provides the push protocol (UDP, RTP, RTMP PUSH) status, connected or disconnected

Stream Pull Status			
Service			
Protocol	Client Count	Service Port	Access Point
RTSP	0	554	enc0
RTSP	0	554	enc1
RTSP	0	554	enc2
RTSP	0	554	enc3
RTMP	0	1935	live/enc0
RTMP	0	1935	live/enc1
RTMP	0	1935	live/enc2
RTMP	0	1935	live/enc3
HTTP-TS	0	8010	enc0
HTTP-TS	0	8010	enc1
HTTP-TS	0	8010	enc2
HTTP-TS	0	8010	enc3
HTTP-FLV	0	8020	enc0
HTTP-FLV	0	8020	enc1
HTTP-FLV	0	8020	enc2
HTTP-FLV	0	8020	enc3
HLS	0	8030	enc0.m3u8
HLS	0	8030	enc1.m3u8

Pull status provides the pull protocols access information and client counts status. Each pull protocol of each channel can serve maximum 4 clients.

## 2. Encoder

### Network Media Encoder

Serial No. vxs43758d2  
Mac 00:AF:E2:69:51:CE

Encoder Configuration

» [Status](#)  
\* [Encode](#)  
\* [Stream](#)  
\* [System](#)  
\* [Preview](#)  
\* [Update](#)

Video Interface	HDMI	Audio Interface	HDMI
		Audio Bitrate	64 kbps

Encoder	Video Enable	Video Std	Video Bitrate	Audio Enable
Enc0	Yes	H264	2000 kbps	Yes
Enc1	Yes	H264	3000 kbps	Yes
Enc2	Yes	H264	2500 kbps	Yes
Enc3	Yes	H264	2000 kbps	Yes

[Advanced Configure >>](#)

[OK](#) [Cancel](#)

There are 3 buttons on the encoder page.

- Advanced Configure: Open or close the advanced encoding parameters.
- OK: Active the parameter changes
- Cancel: Discard the parameter changes

This equipment provide 4 video bitrate output, though the advanced configure buttons can set more paraketers.

## 3. Stream

### Network Media Encoder

Serial No. vxs43758d2  
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Push Stream Configuration

» [Status](#)  
\* [Encode](#)  
\* [Stream](#)  
\* [System](#)  
\* [Preview](#)  
\* [Update](#)

Target			
Encoding	0	Protocol	TSUDP
Address		Port	
App Name	N/A	Stream Name	N/A
Username		RTMP Authen	Disable
Password			<a href="#">Add Target</a>

Encoding	Protocol	Address	Port	App	stream	Auth	Delete
0	RTMP	192.168.2.250	1935	OzEa4	livex0		<a href="#">Del</a>

[OK](#) [Cancel](#)

Add the push protocol for the stream. This equipment provide 3 push protocols (UDP TS, RTP TS, RTMP PUSH). Select Encoding, It has 0123 four parameters, representing 4 bit rate video stream. Each protocol can add maximum 4 targets.

- Select the Encoding Number
- Select the protocol
- Fill the Target IP Add, Target Port, Target Application, and Target Stream Name. (Target Application and Stream Name is only available by RTMP)
- Click ADD button on the right to add this target
- Click Del on right of the added target to delete this target, if you do not need this target any more

-- Click OK to active all of the changes, or click Cancel if you want to discard the changes

## 4. System

System Configuration

» [Status](#)

\* [Encode](#)

\* [Stream](#)

\* [System](#)

\* [Preview](#)

\* [Update](#)

Equipment Address			
IP address	192.168.1.12	IP submask	255.255.255.0
DHCP	Disable	Gate way	192.168.1.1
OK		Cancel	

Reboot System	Parameter Rese	Set DNS>>	Change Password>>
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In the System content, users can change the equipment IP, web control password, and reboot equipment, reset all parameters.

reboot equipment and reset parameter will cause the equipment auto restart

## 5. Preview

### Network Media Encoder

Serial No. vxsf43758d2  
Mac 00:4F:E2:69:51:CE

Video Preview

» [Status](#)

\* [Encode](#)

\* [Stream](#)

\* [System](#)

\* [Preview](#)

\* [Update](#)



rtmp://192.168.1.12:1935/live/enc0

enc0

enc1

enc2

enc3

Emit infrared code

- Insert the IR emitter cable in to the correspond channel
- Make sure the Study Mode filed is unchecked
- Press the button which you want to emit
- If success, pop out “OK”.
- If pop out “Key is not study”, this key code is not learned, and need learn the infrared code first

## 6. Update

Equipment Update

Update Packet	<input type="button" value="选择文件"/> 未选择文件	<input type="button" value="Update"/> <input type="button" value="Reset"/>
---------------	---	--

Click the “Choose” to select the firmware package which Catcast provided, and Click “Update”.

If success, the web page will show “File upload success”, and the equipment will auto restart. If Failed, the web page will show “File upload Failed”, and users need to double check the firmware package just selected is from Catcast and suitable for this equipment.