

VLIP-JPH4k3K-EC

1G JPEG2000 HDMI 4K30 over IP w/Videowall Processing with KVM, IR, RS-232, and Preview video Transmitter (Encoder)



User Manual

VER 1.2

Thank you for purchasing this product

Please read these instructions carefully for optimum performance and safety before connecting, operating, or adjusting this product. Please keep this manual for future reference.

A surge protection device is recommended.

This product contains sensitive electrical components that electrical spikes may damage, surges, electric shocks, lightning strikes, etc. The use of surge protection systems is highly recommended to protect and extend the life of your equipment.

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1. Introduction

This product is based on JPEG2000 technology. The encoder input supports up to 4K60, audio embedding, or audio out. The product supports USB2.0/KVM, 1G Ethernet, bidirectional RS-232, two-way IR control, and POE function. Guest mode control of RS-232, IR, and CEC supported. Built-in secondary H.265 stream, which supports plenty of API commands to achieve flexible configurations, is helpful for 3rd party control Apps to preview video content. As the H.265 stream can be accessed in a different domain from JPEG2000 mainstream via tagged LAN ID, this makes it possible to isolate the network systems of mainstream which works in Video LAN, and secondary stream, which works in Control LAN.

The system is based on Linux for software development and provides flexible control methods based on the intelligent networking of a 1G Ethernet Switch.

Features

- ☆ HDMI 2.0b, HDCP 2.2 compliant
- ☆ Support 18Gbps video bandwidth
- ☆ Input supports up to 4K60 4:4:4, output supports 4K30 4:4:4
- ☆ Transmit video, audio, IR, RS-232, CEC, and USB signals over Ethernet
- \Rightarrow Supports unicast and multicast functions
- $\not \approx \,$ Supports point-to-point, video matrix, and video wall functions (video wall supports up to 9x9)
- ☆ Intelligent video wall class management
- ☆ JPEG2000 Mainstream and standard H.265 codec Secondary Stream (SS)

- ☆ Supports POE function
- ☆ Flexible control through Web GUI/TCP/RS-232/IR and third-party controller
- ☆ HDMI audio formats: LPCM 2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, Dolby Atmos, DTS, DTS-96/24, DTS-EX DSD, DTS High Res, DTS-HD Master, DTS:X
- \Rightarrow Smart networking design for easy and flexible installation.

2. Package Contents

Qty	Item
1	4K over IP 1GbE Encoder
1	IR Receiver cable (1.5 meters)
1	IR Blaster cable (1.5 meters)
3	3-pin 3.81mm Phoenix
5	connectors
1	12V/1A Locking Power adapter
2	Mounting ears
4	Machine screws (KM3*4)
1	User Manual

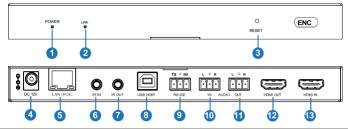
3. Specifications

Technical				
HDMI Compliant	HDMI 2.0b			
HDCP Compliant	HDCP 2.2			
Video Bandwidth	18Gbps			
Video Compression Standard	JPEG2000			
Video Network Bandwidth	1G			
Video Resolution	480i ~1080p@50/60Hz, 4K@24/30Hz, support 4K@50/60Hz input			
Color Depth	8/10/12-bit			
Color Space	RGB, YCbCr 4:4:4 / 4:2:2, YUV 4:2:0			
HDMI Audio Formats	LPCM 2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, Dolby Atmos, DTS, DTS-96/24, DTS-EX DSD, DTS High Res, DTS-HD Master, DTS:X			
Transmission Distance	100M CAT5E/6/6A/7			
IR Level	12Vp-p			
IR Frequency	Wideband 20K - 60KHZ			
ESD Protection	Human body model — ±8kV (Air-gap discharge) & ±4kV (Contact discharge)			

Connection						
Encoder	Input: 1 x HDMI IN [Type A, 19-pin male] 1 x L/R AUDIO IN [3.81mm Phoenix connector] 1 x IR IN [3.5mm Audio Jack] Output: 1 × HDMI OUT [Type A, 19-pin male] 1 x L/R AUDIO OUT [3.81mm Phoenix connector] 1 x IR OUT [3.5mm Audio Jack] Control: 1 x RS-232 [3.81mm Phoenix connector] 1 x LAN [RJ45 jack] 1 x USB [USB TypeB]					
Mechanical	-					
Housing	Metal enclosure					
Color	Black					
Dimensions	204mm [W] x 100mm [D] x 21.5mm [H]					
Weight	TX:509g, RX:496g					
Power Supply	Input: AC100 - 240V 50/60Hz, Output: DC 12V/1A (US/EU standards, CE/FCC/UL certified)					
Power Consumption	< 8W					
Operating Temperature	32 - 104°F / 0 - 4	0°C				
Storage Temperature	-4 - 140°F / -20 -	60°C				
Relative Humidity	20 - 90% RH (no	condensing)				
Resolution / Cable Length						
HDMI IN / OUT	16ft / 5M 32ft / 10M 50ft / 15M					
The use of the "Prem	The use of the "Premium High-Speed HDMI" cable is highly recommended.					

4. Operation Controls and Functions

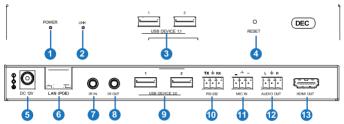
4.1 Encoder Panel



No.	Name	Function Description
1	POWER LED	When the power is connected, typically, a Red LED flashes: the system is booting. Red LED illuminates: bouncing successfully.
2	LINK LED	When the system starts up typically, a Green LED flashes: no signal Green LED illuminates: signal input
3	RESET button	After powering on the device, press and hold the RESET button until the POWER LED and LINK LED flash simultaneously. Release the button to reset the device to factory settings.
4	DC 12V	DC 12V/1A power input interface.
5	LAN (POE)	1G LAN port can be connected to a third-party network Switch to form a distributed system. Note: When the network switch delivers the POE power supply, the DC 12V adapter doesn't need to apply to the unit.
6	IR IN	12V IR signal input interface.
7	IR OUT	IR signal output interface.
8	USB HOST	USB-B connector for connecting a PC as KVM function.
9	RS-232	Bidirectional serial signal interface.
10	AUDIO IN	Analog audio input interface, which can be embedded into the HDMI stream for pass-through over to HDMI output and Audio out on Decoder, or be loop out by the AUDIO OUT port on Encoder.

11	AUDIO OUT	Analog audio output interface. It can output the audio extracted from the HDMI IN port or the audio from the local AUDIO IN port of the Encoder. Also, it can output the audio transmitted from the MIC IN port of the Decoder in unicast mode (point-to-point direct connection).
12	HDMI OUT	HDMI loop out for display.
13	HDMI IN	HDMI signal input interface.

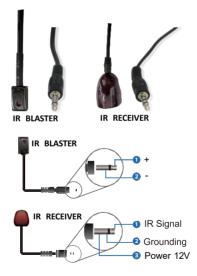
4.2 Decoder Panel



No.	Name	Function Description
1	POWER LED	When the power is connected, typically, a Red LED flashes: the system is booting. Red LED illuminates: bouncing successfully.
2	LINK LED	When the Decoder and Encoder are connected typically, Green LED flashes: no signal. Green LED illuminates: signal input.
3	USB DEVICE 1.1	Two USB1.1 device interfaces.
4	RESET button	After powering on the device, press and hold the RESET button until the POWER LED and LINK LED flash simultaneously, And release the button to reset the device to factory settings.
5	DC 12V	DC 12V/1A power input interface.
6	LAN (POE)	1G LAN port can be connected to a third-party network Switch to form a distributed system. Note: When the network switch delivers the POE power supply, the DC 12V adapter doesn't need to apply to the unit.
7	IR IN	12V IR signal input interface.

8	IR OUT	IR signal output interface.
9	USB DEVICE 2.0	Two USB2.0 device interfaces.
10	RS-232	Bidirectional serial signal interface.
11	MIC IN	Microphone interface (only for point-to-point direct connection).
12	AUDIO OUT	Analog audio output interface. It outputs the same audio on HDMI OUT in case the the audio format is LPCM.
13	HDMI OUT	HDMI signal output interface.

4.3 IR Pin Definition



5. Rack Mounting Instruction

5.1 6U Rack Mounting

This product can be mounted in a standard 6U rack (Please contact your supplier for a 6U rack sale). The mounting steps are as follows:

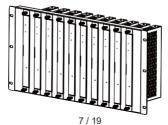
Step 1: Use included screws to fix two mounting ears on the product, as shown in the figure below:



Step 2: Insert the product with mounting ears into a 6U rack (up to 10 units can be installed vertically), as shown in the figure below:



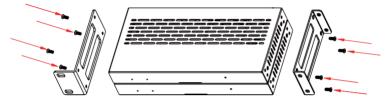
Step 3: Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below:



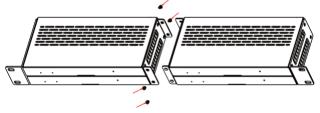
5.2 1U Rack Mounting

This product also can be mounted in a standard 1U rack (up to 4 units can be installed horizontally). The mounting steps are as follows:

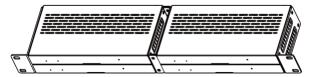
Step 1: Stack two products on top of each other, then use included screws to fix two 1U rack panels on the products, as shown in the figure below:



Step 2: Fix two 1U rack panels on another two stacked products in the same way, then use screws to fix two 1U rack panels together, as shown in the figure below:



Step 3: Fasten screws between two 1U rack panels so that four products are mounted in a 1U rack, as shown in the figure below:



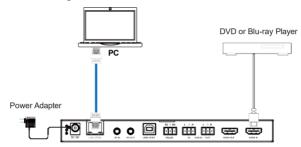
6. Preview Stream Introduction

6.1 Connecting Web for Control

The product supports playing Secondary Stream on the computer through the corresponding software, such as a **VLC media player**; simultaneously, you can access the built-in Web GUI to configure the Secondary Stream.

Follow the steps below to enter the Web GUI.

Step 1: Connect Encoder with a PC, HDMI source device, and power supply. The connection diagram is shown below.

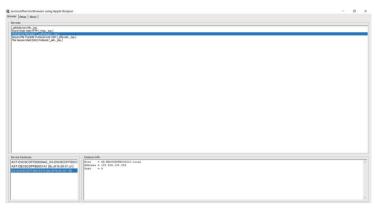


Step 2: Set the PC's IP address to 169.254.100.100 and the Subnet mask to 255.255.0.0.

Uccal Area Connection Properties	Internet Protocol Version 4 (TCP//Pv4) Properties
Networking Sharing	General
Connect using:	You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
This connection uses the following items:	 Obtain an IP address automatically
Client for Microsoft Networks	Use the following IP address:
🗹 🚚 QoS Packet Scheduler	IP address: 169 . 254 . 100 . 100
Bile and Printer Sharing for Microsoft Networks Internet Protocol Version 6 (TCP/IPv6)	Subnet mask: 255 . 255 . 0 . 0
	Default gateway:
Link-Layer Topology Discovery Responder	Obtain DNS server address automatically
	Use the following DNS server addresses:
Instal Uninstal Properties	Preferred DNS server:
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication	Alternate DNS server:
across diverse interconnected networks.	Validate settings upon exit Advanced
OK Cancel	Cancel
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Step 3: Install a bonjour protocol checking tool (such as zeroconfService Browser) on a PC to find the IP address of the Encoder.

Take zeroconfServiceBrowser as an example. After opening the software, you can select "Workgroup Manager" in Services of Browser, select the Hostname in Service-Instances, and find the IP address in the Address item of Instance-Info.



Note:

- (1) The window in the lower left corner displays the Host names of all devices in the current network. Because Encoder contains a Secondary Stream chip (SS), it will be said as two Hostnames with corresponding IP addresses.
- (2) The window in the lower right corner displays the device's host name, IP address, and Port number.
- (3) The Host name of the Encoder starts with AST-ENC; the Host name of the Decoder starts with AST-DEC; the Host name of the Encoder Secondary Stream chip (SS) starts with SS-ENC.
- (4) Encoder's Host name containse of the Encoder Secondary Stream chip (SS).

Step 4: Set the PC's IP address to the same network segment as the Encoder Secondary Stream (SS) IP address. (If these two IP addresses are in the same network segment, you can skip this step.)

Step 5: Input the IP address of the Encoder Secondary Stream (SS) found through the bonjour protocol checking tool into the web browser on a PC. The following login interface will appear.



Please select the fixed user name "admin" and Input the default password "admin." Then click "Log In" to enter the Status page.

Status Page

The Status page provides basic information about the installed firmware version and the network settings.

AVOR	-Encoder	x +	- a ×
		1254.100.254/I//status/status	
A	VolP	Information	
0	Status		
≆	Firmware Versio	n 1.01.10	
£	IP Address	169.254.100.254	
₽	Subnet Mask	255.255.0.0	
	Gateway	169.254.0.1	
	MAC Address	6c:df:fb:0ar65:65	

Video Page

VolP	Video			아 월 ☆
Main Stream				
Encoding Format		Resolution		Bitrate (Kb/s)
H264	~	Auto ON	OFF	4006 ~
		Horizontal (980~1920)	Vertical (640-1080) 720 App	ły
Sub Stream				
Encoding Format		Resolution		Ditrate (Kb/s)
H264	~	Horizontal (320-960) 400	Vertical (180-543) 270 App	ly 1024 ~

You can set the Main Stream and Sub Stream separately on the Video page. The encoding Format can be set to H.265/H.264 according to the decoding protocol used in the 3rd party software, which decodes the Secondary Stream. Pull the drop-down box to select it to take effect.

The Resolution of the Main Stream includes Auto, Horizontal, and Vertical. If Auto is set to ON, the resolution will follow the input resolution. At this time, Horizontal and Vertical display the current input resolution and are grayed out.

And cannot be set. If Auto is set to OFF, then Horizontal and Vertical can be set to the resolution of the Main Stream encoding. The horizontal range is 960~1920, the vertical content is 540~1080, and it needs to be an even number. Click the "Apply" button to take effect.

The Resolution of the Sub Stream includes Horizontal and Vertical. Horizontal and Vertical can be set to the resolution of the Sub Stream encoding. The horizontal range is 320~960, the vertical content is 180~540, and it needs to be an even number. Click the "Apply" button to take effect.

Bitrate is used to set the bit rate of the encoding.

Setting Page

	P-Encoder >							a ×
		154.100.254/#/network/network				> € ☆) #	0:
4	VolP	Settings						
•	Network							
æ	Mode	State DHCP	l .					
2	IP Address	169 254 100 254		Gateway	169 254 0.1			
Đ	Subnet Mask			Web Port	80			
	Login							
	Old Password							
	New Password							
	Confirm Password							
			Set Network Defaults	Save				

The Setting page includes two parts: Network and logs in.

The network can be set to Static or DHCP. When set to Static, you can enter the IP address, gateway, and subnet mask; When set to DHCP, the IP address, gateway, and subnet mask are grayed out and cannot be edited. A DHCP server (e.g., network router) that automatically assigns IP-related settings should be installed in the system. Web Port is the port of the Web page. After setting, click "Save" to take effect. After selecting the IP address, the carrier will automatically

switch to the set IP address. Click "Set Network Defaults"; it will be restored to the default DHCP state.

The Web login password can be changed on the "Login" part. Enter the old password in "Old Password," enter the new password in "New Password," enter the new password again in "Confirm Password," and click the "Save" button to

take effect.

Update Page

	A- AV	olP-Encoder	× +			- 0	×
Transmitter soc lpace Premo Na Sta datam addition Name Na Sta datam addition Name Na Sta datam premove Name Na Sta datam premove Name Na Sta datam	← →	C ▲ 不安全	169.254.100.25	4/#/update/update		•• ₽ ☆ * @) :
Fransmitter Soci Spaces Source Not Spaces Source Not Spaces Not Sta closure Transmitter Transmitter	4	AVol P	Updat	e			
2 Soc types None No Te chann Quadr 2 Moli types Nome No Te chann Update 2 Moli types Nome No Te chann Update 2 Moli types Nome Nome Nome	0	-					
Rectification Rectification Rectification Rectification Rectification Rectification Rectification Rectification	ø	Transmitter					
C Factory Reset	÷	SOC Update	Browse	No file chosen	Update		
	2	IMG Update	Browse	No file shosen	Update		
	Ð	Factory Reset			Reset		
Reboot Reboot		Reboot			Reboot		

The SOC Update column is used to upgrade firmware. Click the "Browse" button to select the firmware, and click "Update". Wh." the progress bar reaches 100%, the upgrade completes, and the machine restarts automatically.

The IMG Update column is used to upload the no-signal picture; click the "Browse" button to select the image in jpg format (the resolution of the photograph should be less than or equal to 1920x1080, and the width should be a multiple of 8, the height should be a multiple of 2, and the size of the picture should

be less than 512kB), and then click "Update." When the progress bar reaches 100%, the upload completes, and the machine takes effect without rebooting.

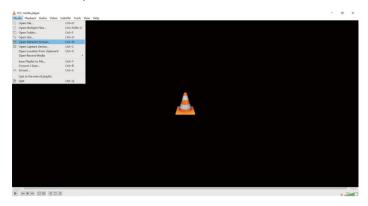
6.2 VLC Media Player Instruction

After the Web GUI is successfully connected, open the VLC media player on the



PC. Please see the following icon.

Click "Media > Open Network Stream."



After clicking the "Open Network Stream" option, the following page will appear.

File Network	S Disc	🍄 Network	Capture	Device	
	enter a net	work URL:			
rtsp:/	/169.254.100). 254/live/mai	n/av_stream		
		ble.org:8080/tes a.com/watch?v=gg			

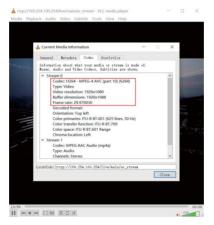
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Enter a MainStream or SubStream network URL, then click the "Play" button.

Stream	Network URL
Mainstream	rtsp://169.254.100.254/live/main/av_stream
SubStream	rtsp://169.254.100.254/live/sub/av_stream.

Note: The default IP address of the Secondary Stream is 169.254.100.254. When the IP address of the Encoder Secondary Stream (SS) found through the bonjour protocol checking tool is different from the default IP address, please use it instead of the default IP address.

On the VLC media player, you can check Secondary Main Stream or Sub Stream settings that are configured on the "Video Page" (Please refer to "7.1 Connecting Web for Control" for details). Choose "**Tools>Codec information**"; a pop-up window will display and show you Stream information, as shown in the figure below.



Choose **"Tools>Codec information>Statistics**" to check current Bitrate. Please see the following picture.

 Casting of the attributes Participation of the attributes Payed 2655 buffers Lost Displerid 2166 finnes Lost 15 finnes Lost 15 finnes Moda data 8 kö Despect dissonitioned 0 Dispept dissonitioned 0 	General Metadata Codec St	atistics
Decoded 65111 blocks Pleyed 22655 buffen Lost 0 buffers Video 22166 frames Lost 15 frames Lost 15 frames • tepa/fraed data site 0 kGn <u>Demaned data site 30007 KB</u> <u>Content bitrate 4450 kbb</u> <u>Demaned data site 30007 KB</u> <u>Demaned data site 30007 KB</u>		
Pigred 22555 buffers Lost 0 buffers Video 2106 fames Decoded 2317 blocks Displayed 2106 fames V profiled 15 fames Personal faced 0 KBs Personal data size 0 KBs Demanded data size 30007 KB Contente bitrate 4460 kBs Discarded (comparind) 1 Discarded (contentiond) 0		65211 blocks
Lost 0 buffers Video 42317 blocks Displayed 2316 formes Lost 15 farmes Vigeo 0 kgb Personal data tel 0 kgb Demand data tel 0 bogo 0 kgb Displayed 40,000 kgb Displayed		
Video Video Decodel 42172 blocks Displayed 21166 frames Lost 15 frames V Media data size 0 KB Demaned data size 300077 KB Demaned data size 300077 KB Discated (compare) 1 Disped (discatinued) 0		
Displayed 2166 formes Lot 15 formes * Inpublicad 0 KB > Inpublicad 0 KB > Inpublicad 0 KB > Inpublicad 0 KB Demand data size 30007 KB Contente Unitade 4360 kbb Discarded (compated) 1 Discarded (continued) 0		
Displayed 2166 formes Lot 15 formes * Inpublicad 0 KB > Inpublicad 0 KB > Inpublicad 0 KB > Inpublicad 0 KB Demand data size 30007 KB Contente Unitade 4360 kbb Discarded (compated) 1 Discarded (continued) 0	Decoded	42317 blocks
Lost 15 frames Media data size 0 KB > Input Nata data size 0 Kb/s Demand data size 300007 KB <u>Content biotra (not 0 kb/s</u>) Demand data size 300007 KB <u>Content biotra (not 0 kb/s</u>) Demand data size 300007 KB <u>Content biotra (not 0 kb/s</u>) Demand data size 300007 KB <u>Content biotra (not 0 kb/s</u>) <u>Content biotra (not 0 kb/s)</u> <u>Content biotra (not 0 kb/s)</u> <u>Cont</u>	Displayed	
Media data size 0 KB > Input bitrate 0 kb/s Demozed data size 360007 KB Context bitrate 4360 kb/s Discarded (compted) 1 Dropped (discontinued) 0		15 frames
> Input birate 0 kby/s Demond data size 3360007 KB Content birate 4360 kby/s Discarded (compred) 1 Dropped (discontinued) 0	✓ Input/Read	
Demuned data size 360087 KiB Content bitrate 4360 kb/s Discarded (corrupted) 1 Dropped (discontinued) 0	Media data size	0 KiB
Content bitrate 4360 kb/s Discarded (corrupted) 1 Dropped (discontinued) 0	> Input bitrate	0 kb/s
Discarded (corrupted) 1 Dropped (discontinued) 0	Demuxed data size	360087 KiB
Dropped (discontinued) 0	Content bitrate	4360 kb/s
biopped (asternanded)		
٤	Dropped (discontinued)	0
	<	>
1		

Note: The Bitrate is floating up and down when you check it. This is a normal phenomenon.

7. Switch Model

A network Switch used to set up the system should support the below features:

- 1. Type of layer 3/managed network Switch.
- 2. Gigabit bandwidth.
- 3. 8KB jumbo frame capability.
- 4. IGMP snooping.

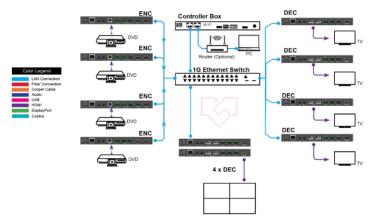
The following Switch models are highly recommended.

Manufacturer	Model Number
CISCO	CISCO SG500
CISCO	CATALYST series
HUAWEI	S5720S-28X-PWR-LI-AC

8. 4K over IP System Control

Controller Box or a third-party controller can control this product. For details of 4K over IP system control, please refer to the user manual of "Video over IP Controller."

9. Application Example



Note:

- (1) For the default IP mode of the Control LAN port of the Controller Box is DHCP, the PC also needs to be set to "Obtain an IP address automatically" way, and a DHCP server (e.g., network router) is required in the system.
- (2) If there is no DHCP server in the system, 192.168.0.225 will be used as the IP address of the Control LAN port. You must set the PC's IP address in the same network segment. For example, set the PC's IP address as 192.168.0.88.
- (3) You can access the Web GUI by inputting the Control LAN port IP address (192.168.0.225) or URL "http://controller.local" on your computer's browser.
- (4) No need to care about settings of the Video LAN port of the Controller Box; they are managed by Controller automatically (Default).
- (5) When the Network Switch does not support PoE, the Encoder, Decoder, and Controller Box should be powered by a DC power adapter.



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