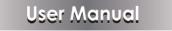


# VLIP-JP4K3K-DC

1G JPEG2000 HDMI 4K30 over IP w/Videowall Processing with KVM, IR, and RS-232 Receiver (Decoder)





**VER 1.2** 

## Thank you for purchasing this product

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

### Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. 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. Encoder input supports up to 4K60, audio embedding or audio out. Decoder output supports up to 4K30, audio extracting or audio in transmitted to Encoder audio out (only for point-to-point direct connection). 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, CEC supported. Built-in secondary H.265 stream which supports plenty API commands to achieve flexible configurations is useful 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 its 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, provides flexible control methods, that are based on the intelligent networking of 1G Ethernet Switch.

### 2. Features

- ☆ HDMI 2.0b, HDCP 2.2 compliant
- ☆ Supports 18Gbps video bandwidth
- ☆ Input supports up to 4K60 4:4:4, output supports 4K30 4:4:4
- $\, \And \,$  Supports unicast and multicast functions
- $\,\, \bigstar \,$  Supports point-to-point, video matrix and video wall functions (video wall supports up to 9x9)
- $\,\, \mathrm{trelligent}$  video wall class management
- ☆ JPEG2000 Mainstream and standard H.265 codec Secondary Stream (SS)

- $\Rightarrow$  Supports POE function
- $\, \, \mbox{ } \, \mbox{ Flexible control through Web GUI/TCP/RS-232/IR and third-party controller }$
- ☆ 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
- $\, \, \mathrm{ \ensuremath{ \ensurema$

### 3. Package Contents

Qty	ltem			
1	4K over IP 1GbE Decoder			
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			

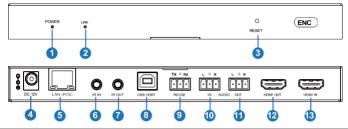
# 4. Specifications

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						
Decoder	Input: 1 x IR IN [3.5mm Audio Jack] 1 x MIC IN [3.81mm Phoenix connector] Output: 1 x HDMI OUT [Type A, 19-pin male] 1 x IR OUT [3.5mm Audio Jack] 1 x L/R AUDIO OUT [3.81mm Phoenix connector] Control: 1 x LAN [RJ45 jack] 2 x USB1.1 [USB-A male] 2 x USB2.0 [USB-A male] 1 x RS-232 [3.81mm Phoenix connector]					
Mechanical	-					
Housing	Metal enclosure					
Color	Black					
Dimensions	204mm [W] x 100	0mm [D] x 21.5mm	ו [H]			
Weight	496g	496g				
Power Supply		Input: AC100 - 240V 50/60Hz, Output: DC 12V/1A (US/EU standards, CE/FCC/UL certified)				
Power Consumption	< 4W					
Operating Temperature	32 - 104°F / 0 - 4	0°C				
Storage Temperature	-4 - 140°F / -20 -	60°C				
Relative Humidity	20 - 90% RH (no	n-condensation)				
Resolution / Cable Length	4K60 - Feet / Meters	4K30 - Feet / Meters	1080P60 - Feet / Meters			
HDMI IN / OUT	16ft / 5M	32ft / 10M	50ft / 15M			
The use of "Premium High-Speed HDMI" cable is highly recommended.						

# 5. Operation Controls and Functions

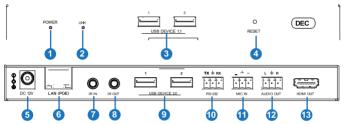
#### 5.1 Encoder Panel



No.	Name	Function Description
1	POWER LED	When the power is connected normally, Red LED flashes: the system is booting Red LED illuminates: booting successfully
2	LINK LED	When the system starts up normally, 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, which can be connected to a third-party network Switch to form a distributed system. Note: When network switch delivers POE power supply, DC 12V adapter doesn't need to apply on 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 loopout 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.

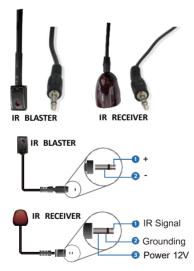
#### 5.2 Decoder Panel



No.	Name	Function Description
1	POWER LED	When the power is connected normally, Red LED flashes: the system is booting Red LED illuminates: booting successfully
2	LINK LED	When the Decoder and Encoder is connected normally, Green LED flashes: no signal Green LED illuminates: signal input
3	USB DEVICE 1.1	Two USB1.1 device interface.
4	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.
5	DC 12V	DC 12V/1A power input interface.
6	LAN (POE)	1G LAN port, which can be connected to a third-party network Switch to form a distributed system. Note: When network switch delivers POE power supply, DC 12V adapter doesn't need to apply on 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 interface.
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 of it on HDMI OUT in case audio format is LPCM.
13	HDMI OUT	HDMI signal output interface.

#### 5.3 IR Pin Definition



# 6. Rack Mounting Instruction

#### 6.1 6U Rack Mounting

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

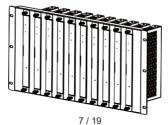
Step 1: Use included screws to fix two mounting ears on the product, as shown in the figure below:



**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:



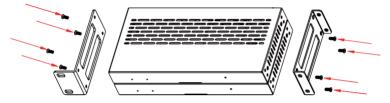
Step 3: Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below:



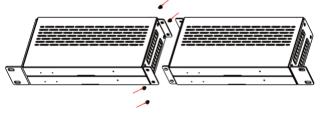
#### 6.2 1U Rack Mounting

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:

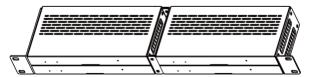
**Step 1:** Stack two products on top of each other, then use included screws to fix two 1U rack panels on the products, as shown in the figure below:



**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:

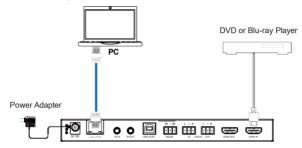


# 7. Preview Stream Introduction

#### 7.1 Connecting Web for Control

The product supports playing Secondary Stream on computer through the corresponding software such as **VLC media player**, simultaneously you can access the build-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 as below.

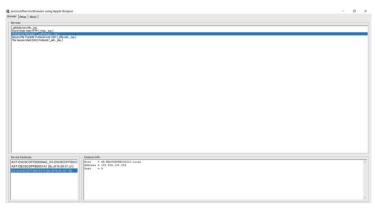


**Step 2:** Set the PC's IP address to be 169.254.100.100, and the Subnet mask to be 255.255.0.0.

Uccal Area Connection Properties	Internet Protocol Version 4 (TCP/IP	v4) Properties
Networking Sharing	General	
Connect using:	this capability. Otherwise, you nee for the appropriate IP settings.	utomatically if your network supports d to ask your network administrator tically
Y Client for Microsoft Networks     Good Shacket Scheduler     Good Shacket Scheduler     Hener Retrocol Version 6 (TCP/IP+6)     Listener Retrocol Version 6 (TCP/IP+6)     Listener Retrocol Version 4 (TCP/IP+6)     Listener Retrocol Version 4 (TCP/IP+6)	(e) Use the following IP address: IP address: Subnet mask: Default gateway:	169 . 254 . 100 . 100         255 . 255 . 0 . 0
Link-Layer Topology Discovery Responder      InstalUnistal Properties      Decorption      Transmission Critical Protocol The default wide area network protocol that networks communication	Obtain DNS server address au	
across diverse interconnected networks.	Validate settings upon exit	Advanced

**Step 3:** Install a bonjour protocol checking tool (such as zeroconfService Browser) on 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 Host name in Service-Instances, and find the IP address in the Address item in 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 displayed as two Host names with corresponding IP addresses.
- (2) The window in the lower right corner displays the Host name, IP address and Port number of the device.
- (3) The Host name of Encoder starts with AST-ENC; the Host name of Decoder starts with AST-DEC; the Host name of Encoder Secondary Stream chip (SS) starts with SS-ENC.
- (4) The Host name of Encoder contains the Host name of the Encoder Secondary Stream chip (SS).

**Step 4:** Set the PC's IP address to the same network segment with IP address of the Encoder Secondary Stream (SS). (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 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.

	P-Encoder C ▲ 不安全   16	x + 3254.100.254/4/status/status	- a × • * * • •
A	AVol P	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:0a:65:65	

#### Video Page

C ▲ 不安全   16	9.254.100.254/#/vide	ra/video		er &	\$ <b>8</b>
AVolP	Video				
Main Stream					
Encoding Format		Resolution		Bitrate (Kb/s)	
H264	~	Auto	OFF	4296 v	
		Horizontal (960-1920) 1230	Vertical (540-1030) 720	Acoly	
Sub Stream					
Encoding Format		Resolution		Bitrate (Kbis)	
H254	~	Horizontal (320-960) 400	Vertical (180-543) 270	Apply 1024 ~	

On the Video page, you can set the Main Stream and Sub Stream separately. 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 range 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 range 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

Avoi	P-Encoder >	+						-		×
		154.100.254/#/network/network				6	> 8≥	\$	* 0	1
A	AVol P	Settings								
0 #	Network									
æ	Mode	State: DHCP	l							
2	IP Address	169 254 100 254		Gateway	109.254.0.1					
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 Login.

Network can be set to Static or DHCP. When set to Static, you can enter 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) which 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 setting the IP address, the page 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           premo         Name         Na Sta datam           premo         Name         Na Sta datam	← →	C ▲ 不安全	169.254.100.25	4/#/update/update		•• ₽ ☆ <b>* @</b>	) :
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         No Te chann         Uption           2         Moli types         No Te chann         Uption           2         Tractory Read         Non         Non	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 then click "Update". When 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 picture in jpg format (the resolution of the picture 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.

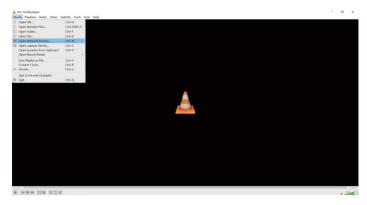
#### 7.2 VLC Media Player Instruction

After the Web GUI is successfully connected, open the VLC media player on PC. Please see the following icon.



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#### Click "Media > Open Network Stream"



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

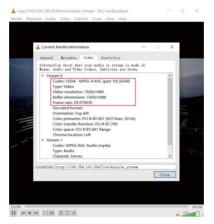
🖻 File	😏 Disc	🚏 Network	🖽 Capture I	Device		
Network	Protocol —					
	enter a net					-
rtsp://	169.254.100	). 254/live/mai	n/av_stream		`	1
rtsp:/	/server.examp	com/stream.asx ile.org:8080/tes .com/watch?v=gg				

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

<ul> <li>Casting of the attributes</li> <li>Participation of the attributes</li> <li>Payed</li> <li>2655 buffers</li> <li>Lost</li> <li>Displerid</li> <li>2166 finnes</li> <li>Lost</li> <li>15 finnes</li> <li>Lost</li> <li>16 finnes</li> <li>16 finnes</li></ul>	General Metadata Codec St	atistics
Decoded 65111 blocks Pleyed 22655 buffen Lost 0 buffers 'Vide Constant 2016 fames Lost 2117 blocks Displayed 22166 fames Lost 15 fames * Input/Read alsa kine 0 kits Demand data kine 0 kits Demand data kine 30007 Kits Content blorate 4360 kits Discated (compared) 1 Discated (compared) 0		
Pigred         22555 buffers           Lost         0 buffers           Video         2106 fames           Decoded         2317 blocks           Displayed         2106 fames           V profiled         15 fames           Personal faced         0 KBs           Demand data size         0 KBs           Demand data size         30007 KB           Contents bitrate         4460 kBs           Discaded (compared)         1           Discaded (compared)         0		65211 blocks
Lost 0 buffers Video 42317 blocks Displayed 2316 formes Lost 15 farmes Vigeo 0 kgb Media data de 3000 kgb Demande data de 3000 kgb Displayed 40,000		
Video     Video     Decodel 42172 blocks     Displayed 21166 frames     Lost     Video		
Displayed         2166 formes           Lot         15 formes           * Inpublicad         0 KB           > Inpublicad         0 KB           > Inpublicad         0 KB           Content bitrate         0 KB           Discaded (compated)         1           Discaded (compated)         0		
Displayed         2166 formes           Lot         15 formes           * Inpublicad         0 KB           > Inpublicad         0 KB           > Inpublicad         0 KB           Content bitrate         0 KB           Discaded (compated)         1           Discaded (compated)         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 (cl)</u> 4360 bb/s Demped (discontinued) 0 Dropped (discontinued) 0	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 (asternance)		
٤	Dropped (discontinued)	0
	<	>
1		

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

### 8. Switch Model

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

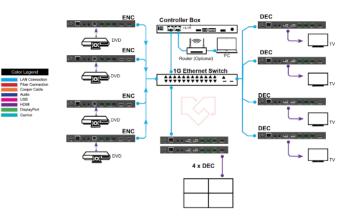
- 1. Type of layer 3/managed network Switch.
- 2. Gigabit bandwidth.
- 3. 8KB jumbo frame capability.
- 4. IGMP snooping.

The following Switch models are highly recommended.

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

### 9. 4K over IP System Control

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



### **10. Application Example**

Note:

- (1) For the default IP mode of Control LAN port of the Controller Box is DHCP, the PC also needs to be set to "Obtain an IP address automatically" mode, 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 Control LAN port. You need to set the IP address of the PC to be in the same network segment. For example, set PC's IP address as 192.168.0.88.
- (3) You can access the Web GUI by inputting 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 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 DC power adpater.



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