Data sheet

AVoIP Models

VHX-EN9330-WP
VHX-DC9330

VHX
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Professional high definition AVoIP 4K encoder and decoder for HDMI, Audio, IR, RS232 & USB with POE

VHX-EN9330-WP





Features

4K 60Hz 4:4:4 HDR	HDMI V2.0b	EDID Management	USB V2.0 for WCam	POE Remote power	1Gb/s Ethernet	RS232 Full duplex & routing	AUDIO De/Embedding
HDCP V2.2	FIBRE Single & Multimode	JPEG2000 Compression	SPS Preview channel	USB Local V2.0 port	iR Bi-dir & routing	AUDIO HD digital audio	Video wall

The VHX-EN9330-WP is a Wall plate mounted flexible Audio and Video over Internet Protocol (AVoIP) encoder for HDMI, audio, infrared, R232 and USB 1.1 / 2.0 signals. The unit enable high definition HDMI signals up to 4K resolutions to be transmitted over a 100M of 1G Ethernet network with minimal latency and excellent visual quality.

Tech spec

- HDMI 2.0b
- 4K@60Hz, 4:4:4
- 18Gbps
- HDCP 2.2 compliant
- RS232 & IR
- 1G Ethernet
- JPEG 2000 compression
- Monitoring H.265 stream
- RS232 extension
- USB 1.1 & 2.0
- USB Webcam
- Dante audio option

Features

- Scalable
- Low latency
- Unicast & Multicast
- Wall plate mounted
- Video matrixing
- Mounting brackets
- HD digital audio
- Near unlimited distance
- Video Wall 9x9 feature
- Secure DC connection
- POE – switch powered
- Compact metal box

Description

The **VHX-EN9330-WP** encoder allows the connected HDMI video to be compressed into 2 independent IP streams. The primary JPEG 2000 stream provides a very high quality video and audio transmission with less than a frame duration latency whilst the secondary H.265 stream can be used for monitoring via standard software or third party applications. The VHX-EN9330 can accept HDMI signals up to 4K resolutions and up to 60Hz frame rate.

Video streaming is compatible with a standard 1G Ethernet IGMP switcher using the Unicast and Multicast protocols. Point to point, point to multipoint and matrix switching can be achieved easily using industry standard Ethernet switchers and installation enhanced with the POE feature. A USB host connection allows a connected computer to extend both USB V1.1 and V2.0 signal to a VHX-DC9330 decoder which can provide the facility for up to 5 peripherals to be added including webcams and printers. Other control signals can also be transmitted over the same network which can be used for RS232, infrared and CEC signals.

The **VHX-EN9330-WP** together with the decoder **VHX-DC9330** provide a highly scalable and cost-effective solution for distributing HD video and control signals for a multitude of applications. Video walls can also be created with multiple decoders up to a 9x9 system.

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The VHX-DC9330 is a flexible and cost-effective Audio and Video over Internet Protocol (AVoIP) encoder for HDMI, audio, infrared, R232 and USB 1.1 / 2.0 signals. The units enable high definition HDMI signals up to 4K resolutions to be transmitted over a 100M of 1G Ethernet network with minimal latency and excellent visual quality.

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- Low latency
- Unicast & Multicast
- Point to point
- Video matrixing
- Mounting brackets
- HD digital audio
- Near unlimited distance
- Video Wall 9x9 feature
- Secure DC connection
- POE – switch powered
- Compact metal box

Description

The **VHX-DC9330** decoder provides the interface and conversion between the IP stream present on the Ethernet network and the HDMI and control signal outputs. The VHX-DC9330 is able to convert the compressed JPEG 2000 stream back to the original HDMI signal and output it as a 4K resolution video up to 60Hz frame rate. The unit also has an output scaler enabling the video to be adjusted to the native resolution of the connected display.

Video streaming is compatible with a standard 1G Ethernet IGMP switcher using the Unicast and Multicast protocols. Point to point, point to multipoint and matrix switching can be achieved easily using industry standard Ethernet switchers and installation enhanced with the POE feature. Four USB peripheral connections allow for 2 x USB V1.1 devices (keyboard and mouse) and 2 x USB V2.0 devices (webcams, printers and flash drives). Each port also provides a charging/powering 5V at 500mA. Other control signals can also be transmitted over the same network and can be used for RS232, infrared and CEC signals.

The **VHX-DC9330** together with the encoder **VHX-EN9330-WP** provide a highly scalable and cost-effective solution for distributing HD video and control signals for a multitude of applications. Video walls can also be created with multiple decoders up to a 9x9 system.

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Technical Specification

Video – Digital

Connectors	1 x HDMI (Type A) i/p EN9330-WP, o/p DC9330
Signal type	HDMI - TMDS
Standards	HDMI 2.0b. HDCP 2.2
Compression standard	JPEG 2000/H.265
Maximum data rate	4.5Gbps per colour
Maximum pixel clock	300MHz
Resolution range - DTV	Max 3840x2160 @60Hz EN9330, @60Hz DC9330
Resolution range - PC	Max 1920x1200 @60Hz EN9330, @60Hz DC9330
Frame rate	24, 25, 30, 50 & 60 Hz
Gain	0 dB
Formats	RGB and YCrCb
Colour space	4:4:4, 4:2:2 & 4:2:0
Colour depth	Input: 8-bit, 10-bit, 12-bit (1080p@60Hz) Output: 8-bit
Clock jitter	<0.15T bit
Rise time	<0.3T bit (20-80%)
Fall time	<0.3T bit (20-80%)
Maximum transmission delay	5ns (+/- 1ns)
Signal strength	TMDS +/- 0.4V pk-pk
TMDS signal level	2.9V – 3.3V
Impedance	50R
Maximum DC offset	15mV
Maximum input cable length	15m 24 AWG
Maximum output cable length	15m 24 AWG

Audio – Digital

Standards	Embedded in HDMI - LPCM 2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-96/24, DTS-EX DSD, DTS High Res, DTS-HD Master
Maximum audio channels	8
Maximum sample rate per channel	192 kHz
Sample size	16-24 bits

Audio – Analogue

Standards	Stereo - unbalanced
Bandwidth	20 - 20 kHz
Connector	3 pin phoenix

Power

POE	802.3af Class 3, PD mode
Optional DC Voltage	External 12V/1A PSU
DC connector	2.1mm jack with screw fitting
AC Voltage (External Supply)	100-230 VAC
AC frequency (External Supply)	50/60 Hz
Power consumption	8.5W encoder and 7W decoder
Operating temperature	(-10) to 45 degrees C
Storage temperature	(-20) to (-60) degrees C
Relative humidity	20 to 90% RH (no condensing)
Dimensions	205 x 136 x 25.5mm
Product weight	0.64Kg
MTBF	30,000 hours

Control – USB

Connector	USB type A & B (encoder) type A (decoder)
Signal type	USB - half duplex
Standards	USB 1.1 & 2.0
Maximum datarate USB 1.1	12 Mbits/s
Maximum datarate USB 2.0	480 Mbits/s
USB signal level	0-3V3 logic zero or one
Impedence	100R

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Technical Specification (cont)

Control – RS232

Connector	3pin Phoenix
Signal type	Full duplex
Signal level	+/- 5V
Baud rate	Up to 115200
Data bits	8
Stop bits	1
Parity	None
Pinout	1-RX, 2-0V, 3-TX

Control – IR

Connector	3.5mm mini-jack socket
Signal type	Full duplex (via 2 connections)
Signal bandwidth	20-60KHz

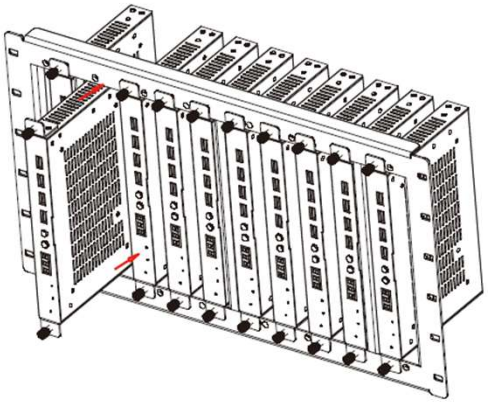
Cat cable connectivity

Number of cables	1 x Cat 5e/6 screened twisted pair cables
Connectors	1 x female screened RJ45 connectors per unit
Termination standard	TIA/EIA T568B
Cable requirements	Solid conductor, 24 AWG or better
Cable recommendations	400 MHz bandwidth STP (shielded twisted pair)
Transmission distance	100m 1GE Ethernet

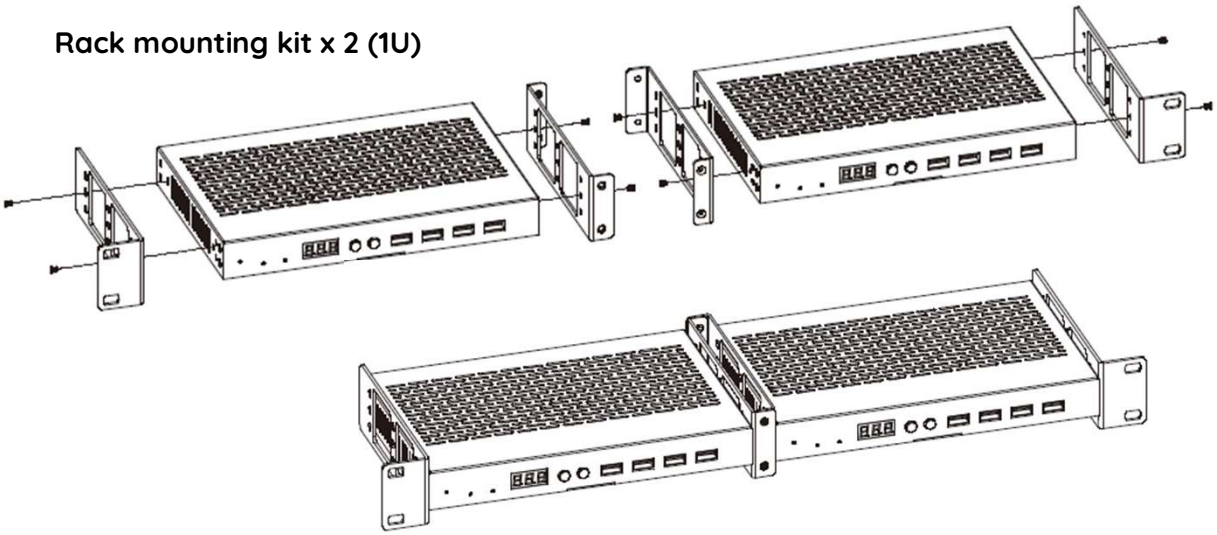
Rack mounting options

The VHX-DC9330 Decoder can be mounted conveniently in standard 19" cabinets. Mounting kits are available for a 6U vertical frame capable of accepting up to 10 units and a 1U solution for up to 2 units. As the encoder and decoder are the same size both products can use the same frame and therefore be mixed together.

Rack mounting kit x 10 (6U)



Rack mounting kit x 2 (1U)



VHX-EN9330-WP – panel drawing

The VHX-EN9330-WP encoder Is formed as a wall or floor plate construction with the main connectors on the front plate. This method allows for convenient connection to the various input and output signals whilst maintaining a compact robust casing.

Connection to the Cat 6 cable is on the rear allowing for a convenient interconnect to the structured cabling of the building.



VHX-EN9330-WP - connectivity

Connection to the VHX-EN9330-WP are via industry standard connectors where appropriate for HDMI and USB. There is a selection button which chooses between the HDMI or USB connection for video input or use the auto sense feature. RS232 and IR can be linked via standard Phoenix 2-part connectors (mating parts are included in box) on the rear of the plate. The Infrared signals are accessed via external cable ended receivers and emitters also supplied in the box.

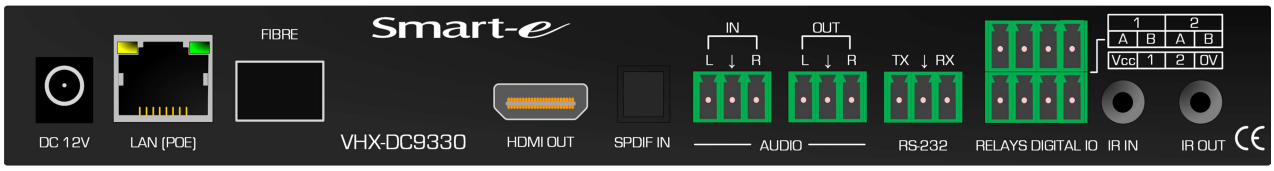


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VHX-DC9330 – panel drawing

The VHX-DC9330 decoder has connectors on both the front and rear faces. This method allows for convenient connection to the various input and output signals whilst maintaining a compact robust casing. There is a space for an optional fibre SFP module (widely available) allowing for single or multimode fibre interfaces.



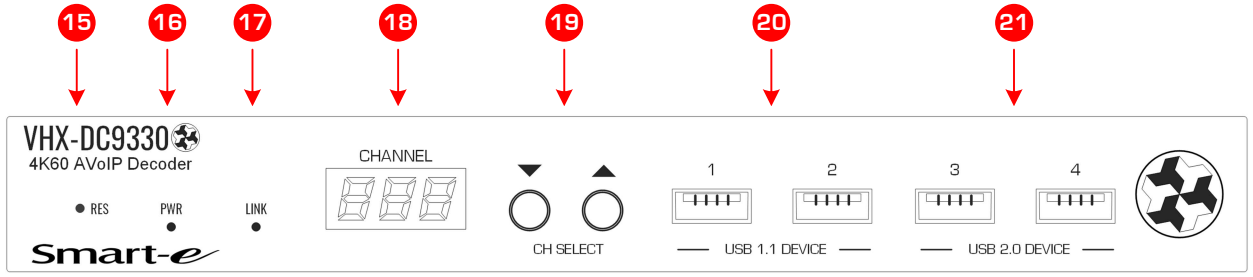


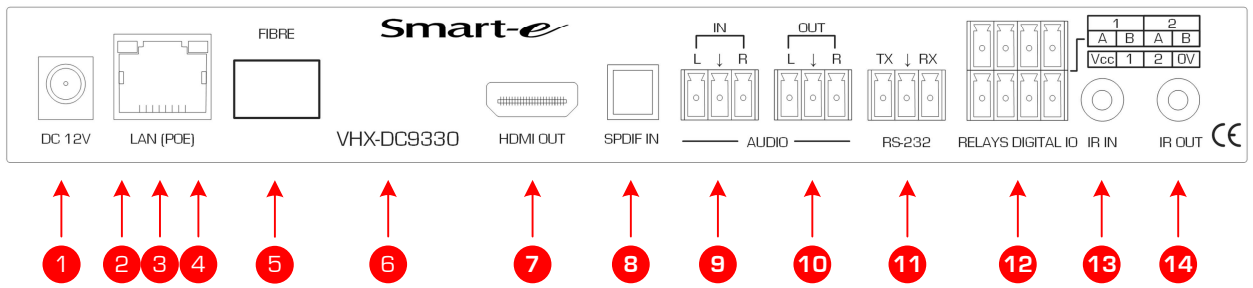
VHX-DC9330 - connectivity

Connection to the VHX-DC9330 are via industry standard connectors where appropriate for HDMI, USB, IR, digital audio and power. Analogue audio, RS232 and the relay/digital IO signals can be linked via standard Phoenix 2-part connectors (mating parts are included in box). The Infrared signals are accessed via external cable ended receivers and emitters also supplied in the box.

15	RESET	Factory reset button
16	Power LED	Power on status - red
17	Network LED	Network status – green
18	7 Seg LED	Channel ID and setup

19	CH SELECT	Button control for setup
20	USB V1.1 DEVICE	USB A device connection
21	USB V2.0 DEVICE	USB A device connection





1	DC	12V local PSU (optional)
2	Data LED	Flashing data status – yellow
3	RJ45	100m/1G network connection
4	Link LED	Network link – green
5	FIBRE LINK	Requires SPF module
6		
7	HDMI OUT	HDMI looping output

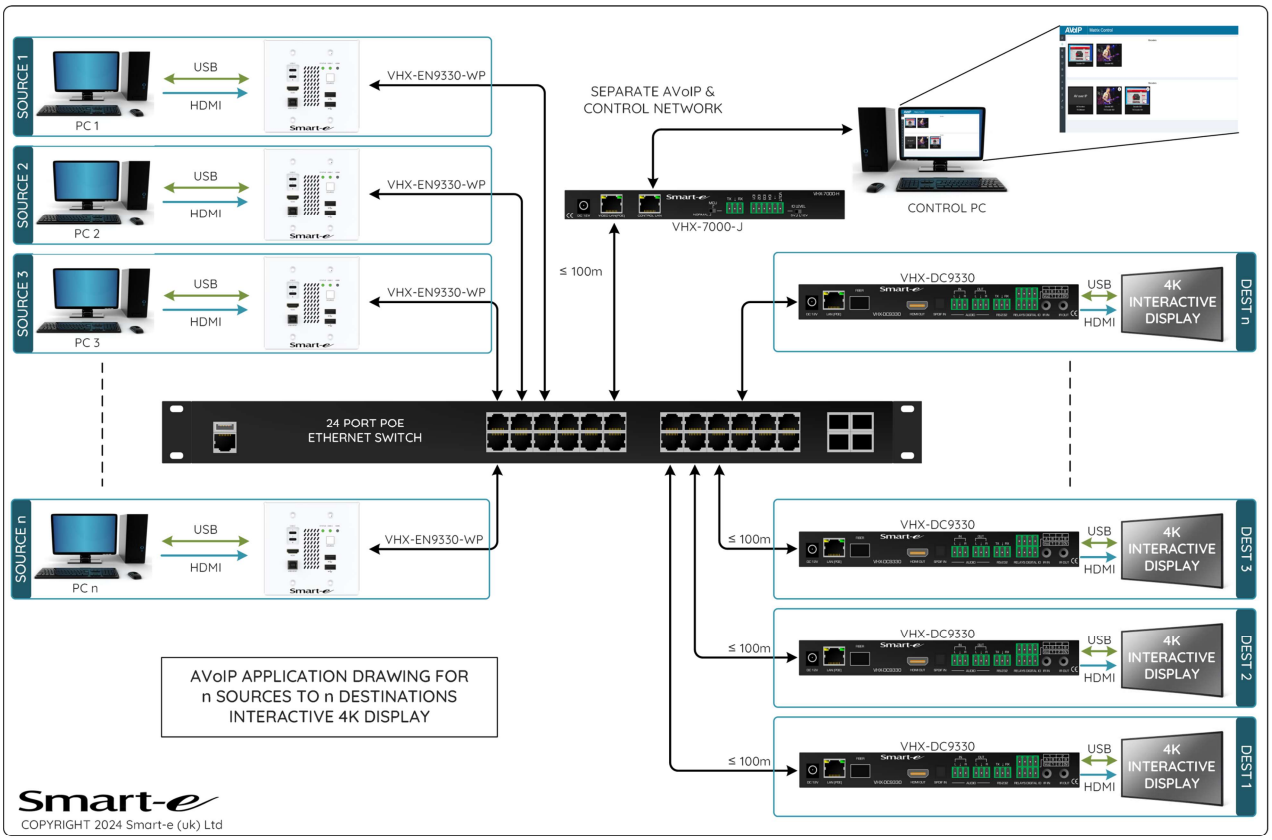
8	SPDIF IN	Return audio from decoder
9	AUDIO IN	Stereo analogue audio i/p
10	AUDIO OUT	Stereo analogue audio o/p
11	RS232	Bi-directional control signals
12	RELAY/D IO	Relay & digital IO connection
13	IR IN	Infrared input via receiver
14	IR OUT	Infrared output via emitter

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Application drawing – multicasting

When multiple encoders and decoders are required, the system needs to be connected as a multicasting solution. There are several ways to achieve this but the recommended method is seen below (other methods are detailed in the User Manual). In the scenario below a Video LAN is created separated from any existing company LAN/WAN. The VHX-7000-J Controller acts as the DHCP server whilst also isolating the Video LAN improving security and preventing data flooding of the existing network. The Controller also provides a web based interface for configuring and setup and an API allowing control via third party systems.

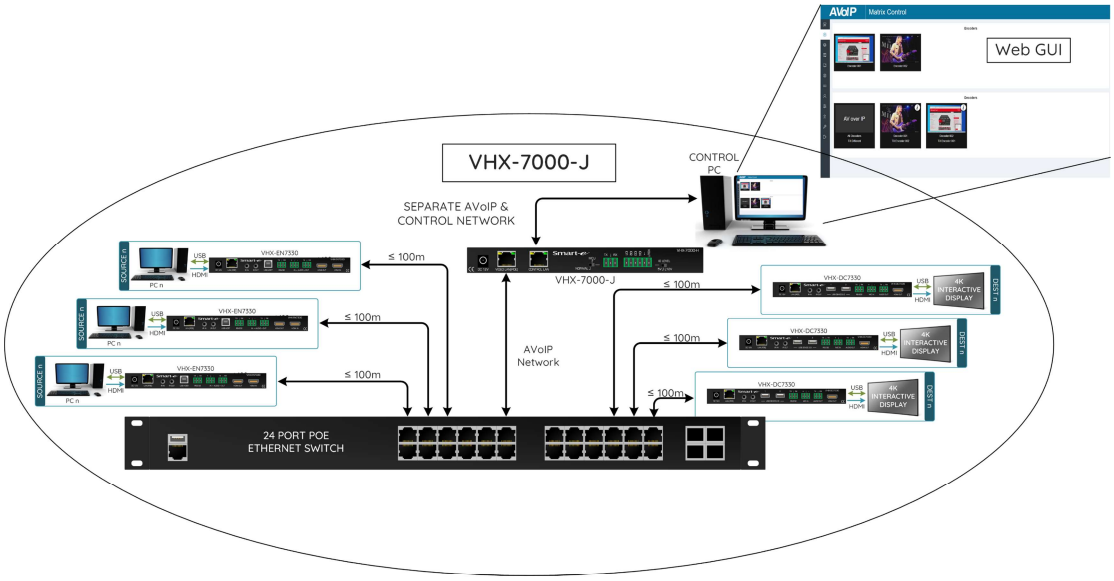


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Controller – VHX-7000-J

The VHX-7000-J controller allows the user to control and mange JPEG 2000 IP streams within an Ethernet network environment; this is achieved through a convenient internal Web GUI. The unit also provides the necessary network isolation between the Multicast video system and any existing network infrastructure (more detailed information is available in the VHX-7000-J User Manual).







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