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

VHX-ED8330

VHX-ED8330 Universal Encoder/Decoder

ENCODER
192.168.1.12

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ENC   DEC   LINK   100M(Y)/ 1000M(G)   READY   POWER

VHX-ED8330 Universal Encoder/Decoder

DC 12V   LAN(POE)   SFP   HDMI IN   HDMI OUT   OUT / IN — L+ L- R+ R- AUDIO   TX RX RS-232   1 2 USB DEVICE   USB HOST   RESET

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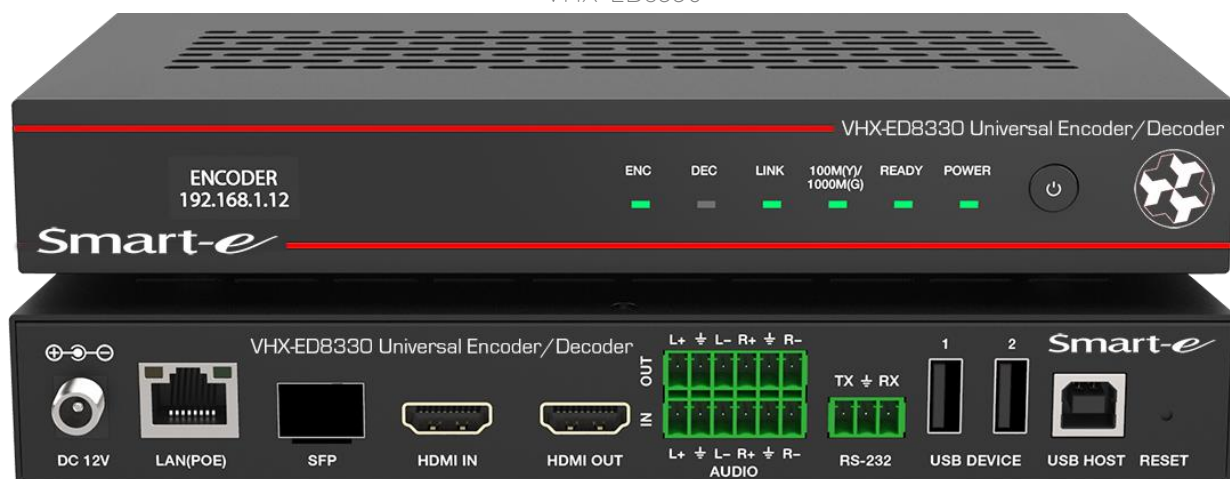
Features

4K 60Hz 4:4:4 HDR	**HDMi** V2.0b	**EDiD** Management	**Seamless switching**	**POE** Remote power	**Video wall**	**RS232** Full duplex & routing	**AUDIO** De/Embedding
HDCP V2.2	**Video splice**	**FBRE** Single & Multimode	**AUDIO** Stereo analogue	**USB** Local V2.0 port	**iR** Bi-dir & routing	**1Gbps** Ethernet	**SPS** Preview channel

The VHX-ED8330 is a flexible and cost-effective Audio and Video over Internet Protocol (AVoIP) universal encoder/decoder for HDMI, stereo audio, 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.

Tech spec

- HDMI 2.0b
- 4K@60Hz, 4:4:4
- 18Gbps
- HDCP 2.2 compliant
- RS232 & IR
- 1G Ethernet
- H.265 compression
- Dual encoder/decoder
- RS232 extension
- USB 1.1 & 2.0
- Copper and fibre
- H.264 preview

Features

- Scalable
- Low latency
- Unicast & Multicast
- Seamless switching
- Video matrixing
- Mounting brackets
- LPCM 2CH digital audio
- Near unlimited distance
- Video Wall 9x9 feature
- Video splicing
- POE – switch powered
- Free display O/P

Description

The VHX-ED8330 encoder/decoder allows the connected HDMI video to be compressed into 2 independent IP streams. The primary H.265 stream provides a very high quality video and audio transmission with low latency whilst the secondary H.264 stream can be used for monitoring via standard software or third party applications. The VHX-ED8330 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-ED8330 decoder which can provide the facility for up to 5 peripherals to be added. Other control signals can also be transmitted over the same network which can be used for RS232 and CEC signals.

The VHX-ED8330 provides a highly scalable and cost-effective solution for distributing HD video and control signals. Uniquely the system can is used for both video walls up to a 9x9 system but can also be used to display a single 4K image showing up to 16 channels simultaneously.

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Technical Specification

Video – Digital

Connectors	2 x HDMI (Type A) inpuT & output
Signal type	HDMI - TMDS
Standards	HDMI 2.0b. HDCP 2.2
Compression standard	H.265/H.264
Maximum data rate	4.5Gbps per colour
Maximum pixel clock	300MHz
Resolution range - DTV	Max 3840x2160 @60Hz
Resolution range - PC	Max 1920x1200 @60Hz
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
	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 2CH 48KHz 16 bit
Maximum audio channels	8
Maximum sample rate per channel	192 kHz
Sample size	16-24 bits

Audio – Analogue

Standards	Stereo – balanced differential signals
Bandwidth	20 - 20 kHz
Connector	3pin 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	As a 10.5W encoder and as a 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	204 x 132 x 30mm
Product weight	0.76Kg
MTBF	30,000 hours

Control – USB

Connector	USB type A & B
Signal type	USB - half duplex
Standards	USB 1.1 & 2.0
Maximum data rate USB	12 Mbits/s
USB signal level	0-3V3 logic zero or one
Impedance	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

Cat cable connectivity

Number of cables	4 x Cat 5e/6 screened twisted pair cables
Connectors	4 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

Fibre connection

SFP slot	Small form-factor pluggable transceiver option

Rack mounting options

The **VHX-ED8330** 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.

Rack mounting kit
x 10 (6U)
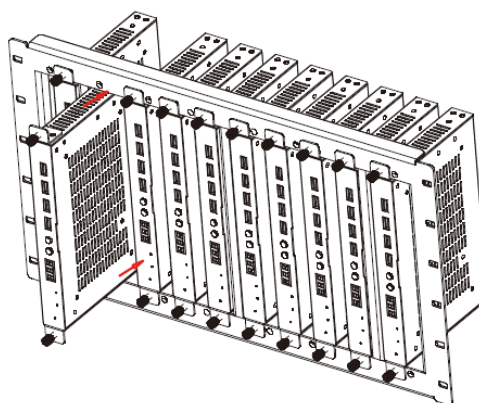
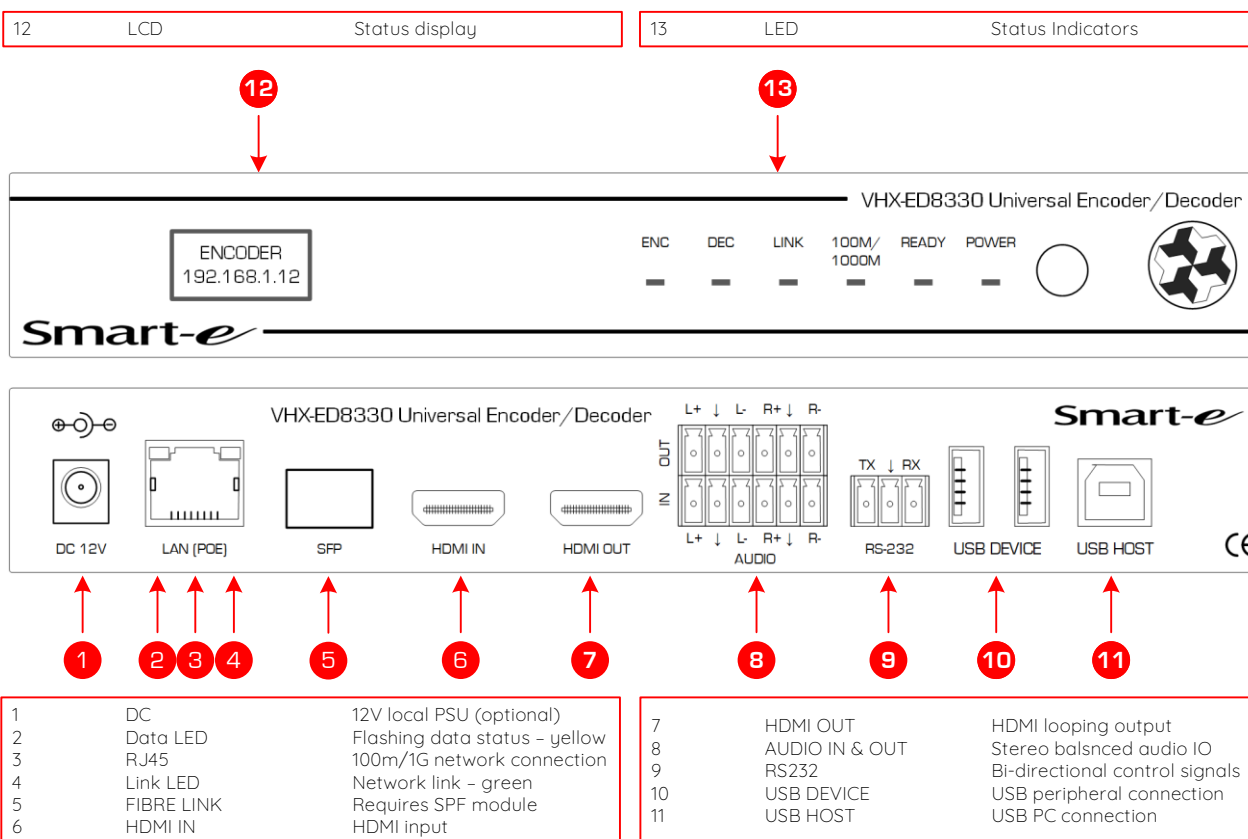Rack mounting kit
x 2 (1U)
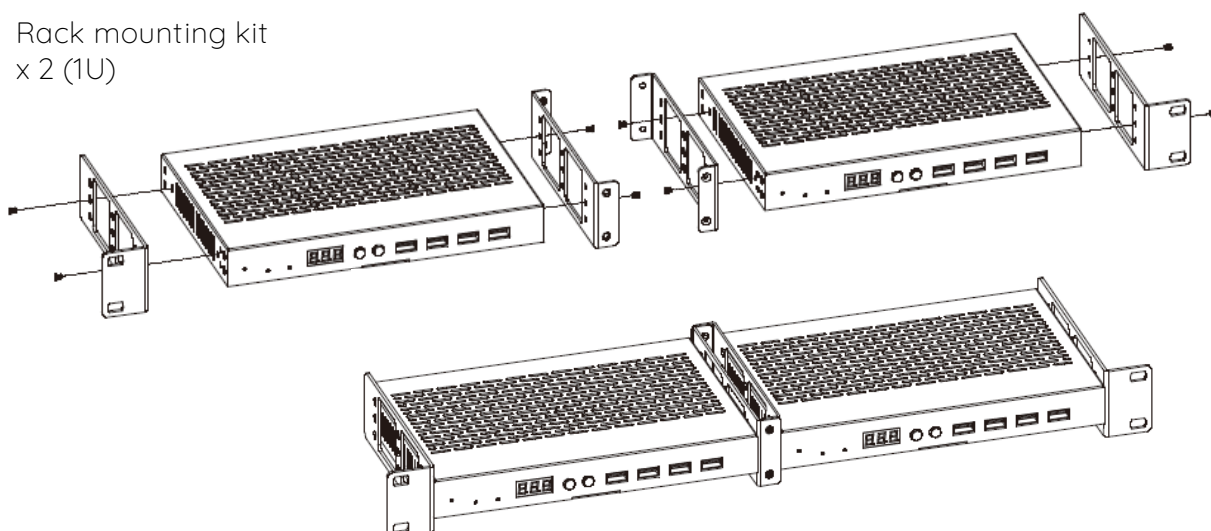
VHX-ED8330 – panel drawing

The **VHX-ED8330** encoder/decoder has connectors on the rear with a display and LED indicators on the front face. 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.
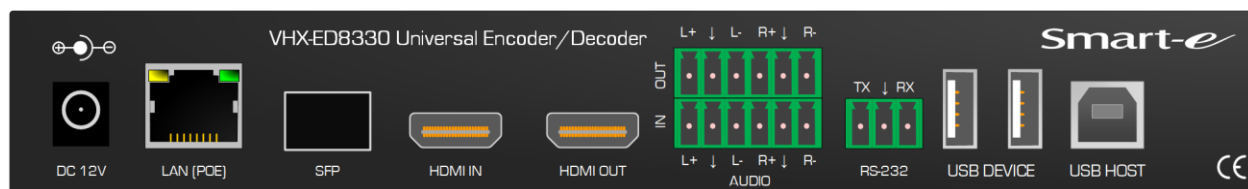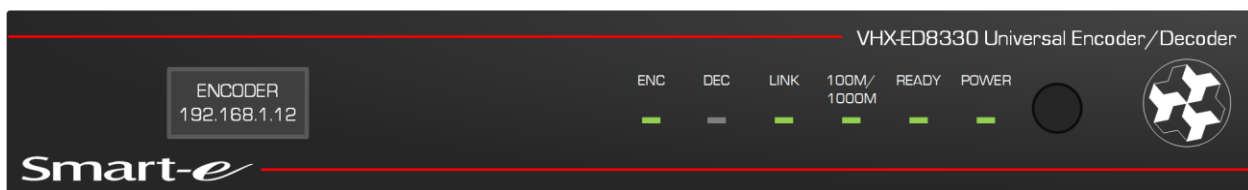
VHX-ED8330 - connectivity

Connection to the **VHX-ED8330** are via industry standard connectors where appropriate for HDMI, USB, Ethernet, fibre and power. Analogue audio and RS232 signals can be accessed via standard Phoenix 2-part connectors (mating parts are included in box).

12	LCD	Status display

13	LED	Status Indicators

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	HDMI IN	HDMI input

| 7	HDMI OUT	HDMI looping output
8	AUDIO IN & OUT	Stereo balsnced audio IO
9	RS232	Bi-directional control signals
10	USB DEVICE	USB peripheral connection
11	USB HOST	USB PC connection

Application drawing – point to point

The **VHX-ED8330** encoder/decoder can be used in a simple extension scenario as seen below. This method does not require a network switch and the two units are simply connected together with a single Cat 6 or Fibre cable. In this mode all features are enabled and can be used as required.
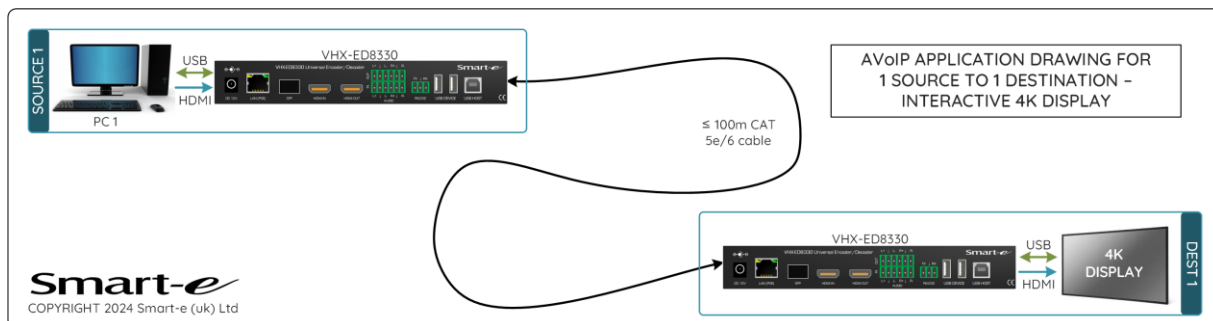
Application drawing – multicasting

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-H** 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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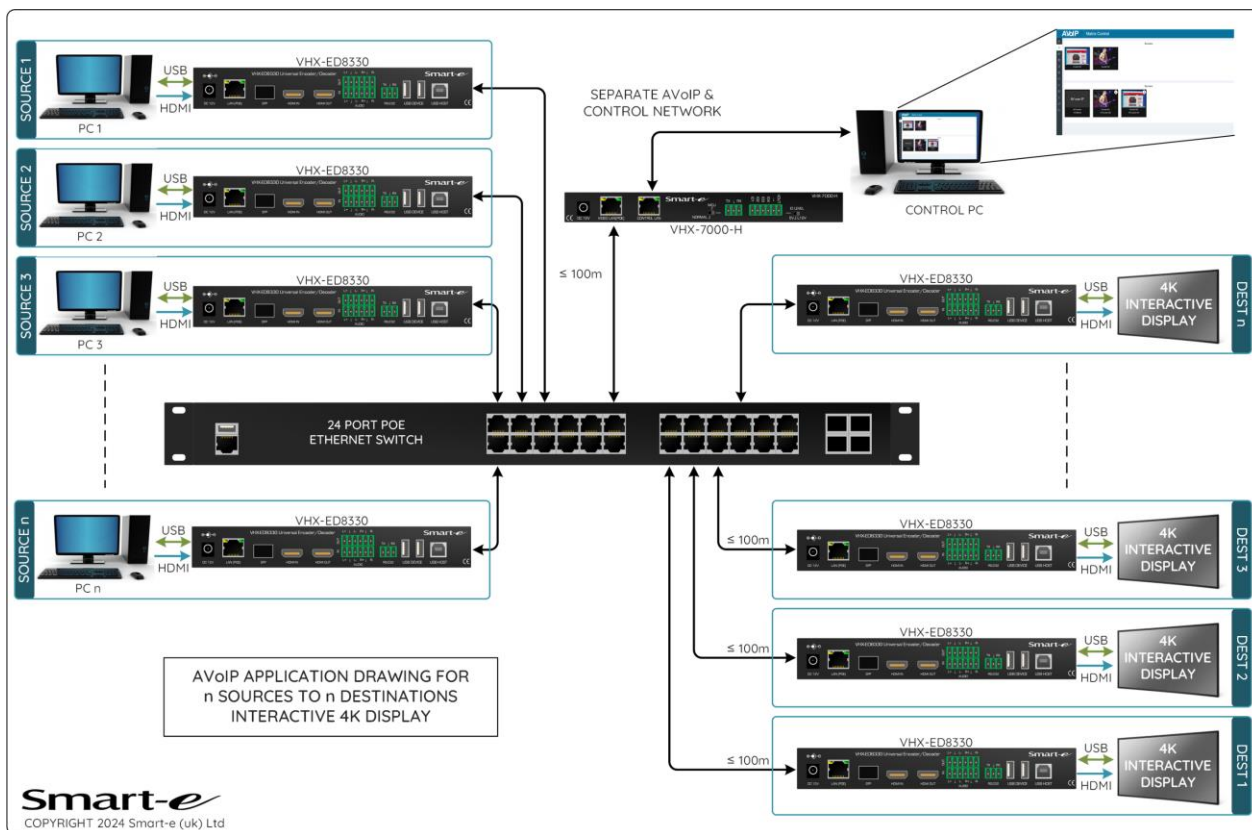
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Controller – VHX-7000-H

The VHX-7000-H controller allows the user to control and mange H.265/264 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-H** User Manual).
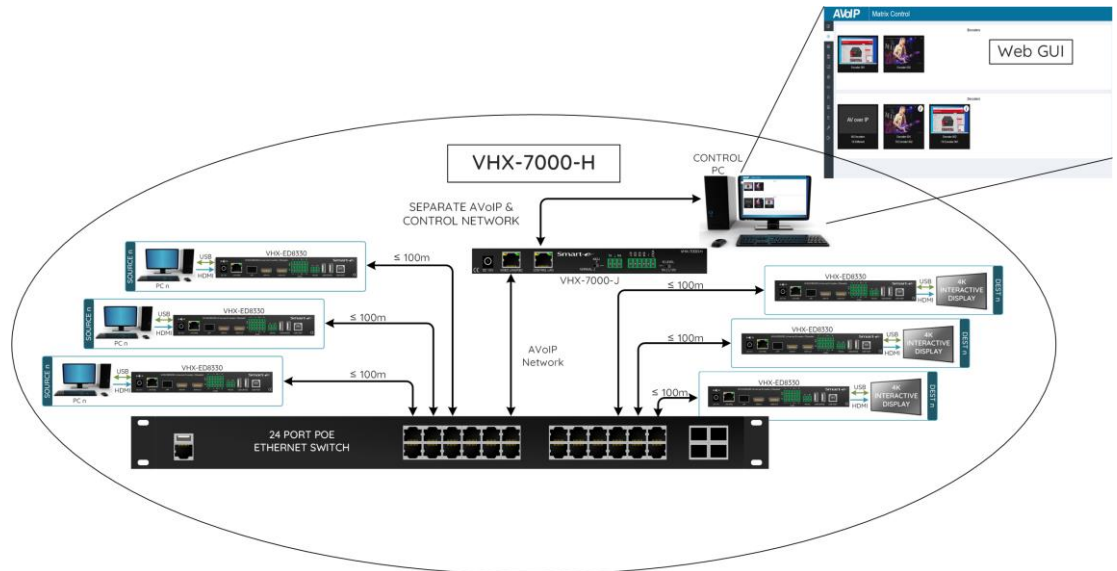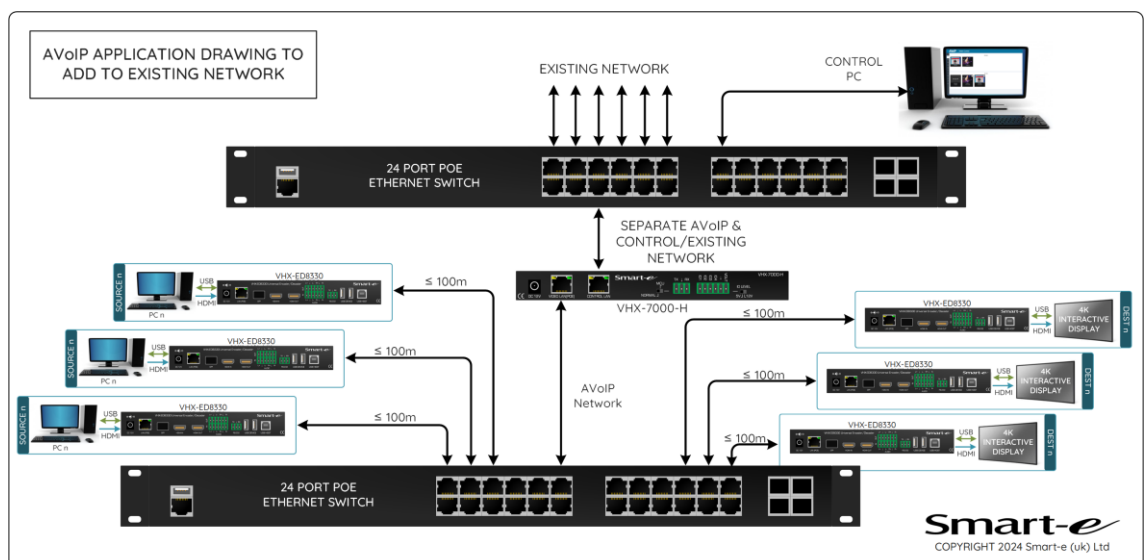

VHX-7000-H – panel drawing

VHX-7000-H – recommended system connection

The diagram below shows how to connect the VHX-7000-H controller to an existing network providing a separate video LAN whilst allowing control and setup through the web browser.

Special Functions – Video Wall & Multiviewer

Uniquely the system can is used for both video walls and multi-viewer functions. Video walls up to a 9x9 array of monitors can be achieved using advanced signal processing techniques providing frame synchronisation and individual bezel adjustment.

Alternatively, a single **VHX-ED8330** in decoder mode can be used as a free canvas, allowing up to 16 separate images to roam the available screen in different sizes and positions.
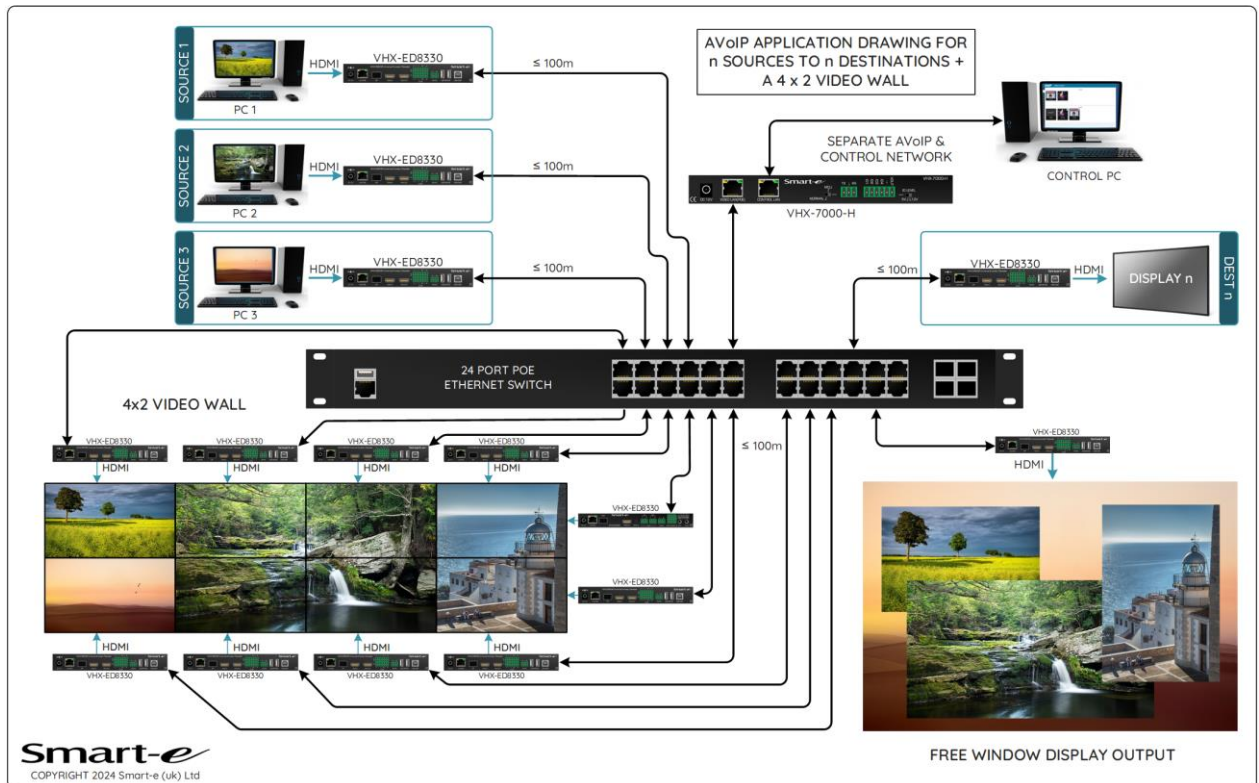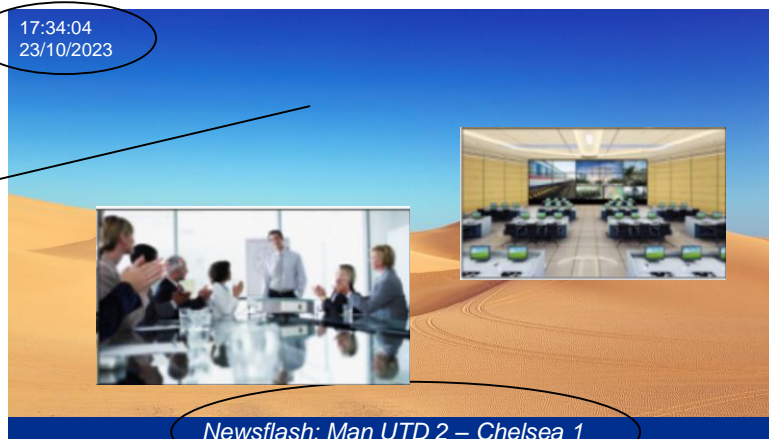

Special Functions – Scrolling text, logos & backgrounds

Each **VHX-ED8330** unit can provide a number of new features expanding the use of the system to other important applications. An additional image can be uploaded and stored locally for each output background. This image is in addition to the number of window layers available. Scrolling text with banner can be added to each output including the ability to adjust the colour, size, speed and direction of the text. Lastly system time and date stamp can be added to the image with position and size adjustable.

Output time and date stamp

Background image

Rolling subtitles

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