visual engineering
LIGHTWARE

Quick Start Guide

VINX-120AP-HDMI-ENC
VINX-210AP-HDMI-ENC
VINX-110AP-HDMI-DEC
VINX-120AP-HDMI-ENC-DNT

Important Safety Instructions

Please read the supplied safety instruction document before using the product and keep it available for future reference.

Introduction

The VINX 'AP-series' is the second generation of the VINX family. These products extend the features of the first generation with the following functions: VGA input port, Analog audio (de) embedding and transmission over SFP modules. The devices can also be powered over Ethernet (PoE). The built-in audio de-embedding feature allows the HDMI audio to be transmitted as a 2-channel Dante® or AES67 source from the DNT model via the extra RJ45 connector.

Compatible Devices

The VINX AP-series devices are compatible with the VINX-120-HDMI-ENC and VINX-110-HDMI-DEC (basic VINX) devices. Please note that certain features are not available when mixing VINX-AP and basic VINX devices:

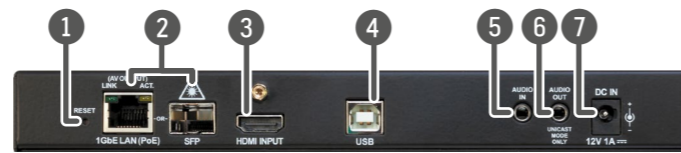|	Basic series	AP series
Video input port	HDMI	HDMI, VGA *
Analog audio (de)embedding	✘	✔
Return audio (mono) - in unicast mode	✘	✔
Dante® or AES67 audio de-embedding	✘	✔ **
Network interface	RJ45	RJ45, SFP
Powering modes	adapter	adapter, PoE

* VGA is available in VINX-210AP-HDMI-ENC model only.

** In VINX-120AP-HDMI-ENC-DNT model only.

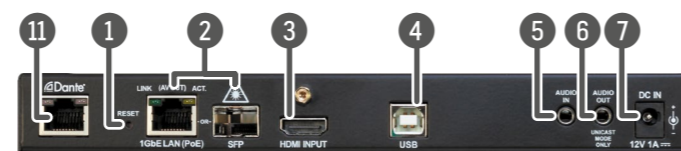Dante® is a registered trademark of Audinate Pty Ltd.

@Dante®

Box Contents

Encoder/decoder device	12V DC Power Adaptor, interchangeable plugs	Fixing screw for mounting (M3x4), 2 pcs.

Safety and Warranty info, Quick Start Guide

Front View of VINX-120AP-HDMI-ENC and VINX-120AP-HDMI-ENC-DNT *
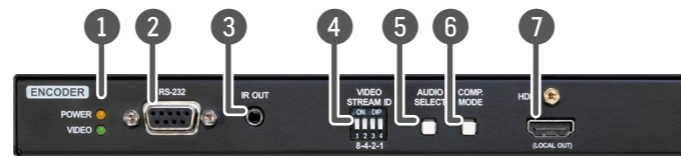
Front View of VINX-210AP-HDMI-ENC

Front View of VINX-110AP-HDMI-DEC

* The connectors and labels are shifted left by 11 mm in case of VINX-120AP-HDMI-ENC-DNT.
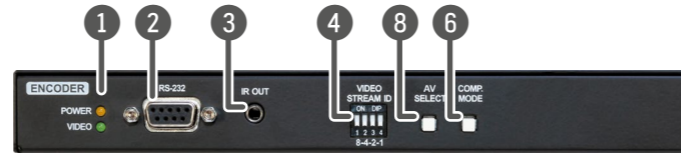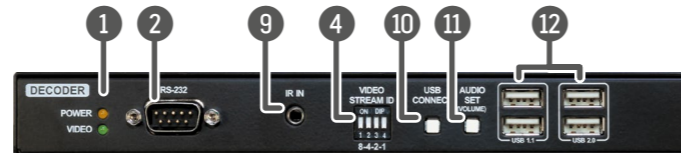
1	Status LEDs	See the attached list.
2	RS-232 Port	D-SUB9 connector for transparent serial communication (point-to-point or point-to-multi point).
3	IR Output Port	IR output signal connector (for 3.5 mm Jack, 2-pole, TS plug).
4	DIP Switch	Linking Encoder and Decoder devices (HW setting).
5	Audio Select button	Press the button to toggle between the following modes: Auto → HDMI → Analog audio. **Auto:** the Analog audio input port is selected when a plug is connected.
6	Compression Mode Button	**Short press**: switching between the Video and Graphics modes. **Long press** (more than 10 seconds): reset to factory default settings.
7	HDMI Output	For a local sink device (mirrored from the A/V output).

8	AV Select Button	Press the button to toggle between the following modes: Auto → HDMI+Embedded audio → VGA+Analog audio ← HDMI+Analog audio. **Auto mode:** the first connected source shall remain active as long as a signal is present on the respective input. If sync is lost for at least 3 seconds, it will be switched over to the other source. No automatic switch back to the original input takes place when the signal is restored.
9	IR Input Port	IR signal input connector (for 3.5 mm Jack, 3-pole, TRS plug).
10	USB Connect Button	**Short press:** acquire USB connection (this is required only in Multicast mode). **Long press** (more than 10 seconds): reset to factory default settings.
11	Audio Set Button	**Short press**: the analog audio output volume is increased by 10%. **Long press** (more than 5 seconds): the analog audio output volume is set to 0%.
12	USB Ports	USB 1.1 and 2.0 compatible A-type ports for transmitting USB HID and mass storage devices.

ⓘ *USB connection shall be acquired in the Decoder in Multicast mode. In Unicast mode, the USB connection is established automatically.*

Rear View of VINX-120AP-HDMI-ENC

Rear View of VINX-210AP-HDMI-ENC

Rear View of VINX-120AP-HDMI-ENC-DNT
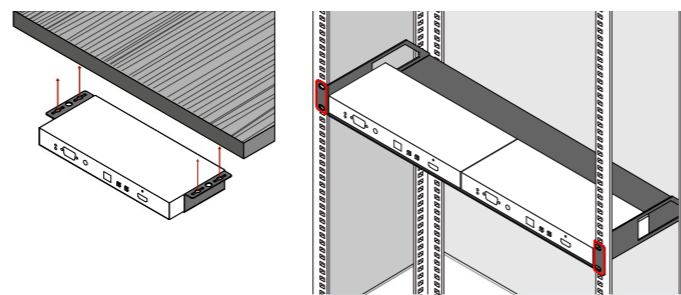
Rear View of VINX-110AP-HDMI-DEC

1	Reset Button	Reboots the device.
2	AV Input Ports	RJ45 connector and slot for an SFP module. One at a time is available for receiving an A/V signal. The device can be powered over the RJ45 connector (PoE-compatible).
3	HDMI Input Port	Video port for DVI or HDMI signal.
4	USB Port	B-Type connector for USB pass-through application (e.g. for connecting the Encoder to a computer).
5	Audio Input Port	3.5 mm jack connector for unbalanced analog audio signal.
6	Audio Output Port (Encoders)	Presenting the microphone signal coming from the Mic in input port of the connected **Encoder.** This feature is available only in **Unicast mode** and if Analog audio is selected to be embedded into the HDMI signal in the **Encoder.**
7	DC 12V Input	12V DC input for local power supply.

8	VGA Input Port	Video port for analog VGA signal on VINX-210AP-HDMI-ENC.
9	HDMI Output	HDMI output to a sink device on VINX-110AP-HDMI-DEC device.
10	Microphone Input Port	Mono input port for microphones including 20 dB gain in the signal path. The signal can be routed back to the Audio output port of the connected **Encoder** in **Unicast mode.**
11	Dante® Audio Output	RJ45 connector for de-embedding the HDMI audio, which can be transmitted as a 2-channel Dante® or AES67 source.
12	Audio Output Port (Decoder)	Presenting the audio signal coming from the connected **Encoder** (it can be enabled/disabled).

⚠ *The microphone input port applies a fixed bias to feed the connected electret (condenser) microphone. Thus, it is not suitable for dynamic microphones that do not contain isolation or an impedance matching transformer. (Danger of damage to the microphone.)*
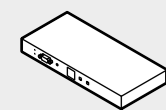

Mounting the Device (with optionally available accessories)

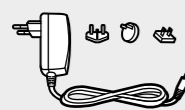The examples demonstrate the applications of the **UD Kit double** and **Rack Shelf** accessories:

⚠ *For fixing the device to a Rack shelf, use the screws supplied with the extender. Longer screws may touch internal parts and harm the device.*

Status LEDs

POWER		
🟡	on	The device is powered.
🟡	blinking	The device is booting.
○	off	No power source is connected to the device.

VIDEO		
🟢	on	The unit is connected to a network and video streaming is in progress.
🟢	blinking	The unit is connected to a network, but no video streaming is in progress.
○	off	The device is not connected to a network.

POWER and VIDEO LEDs together		
🟡🟢	blinking	There is a Video Stream ID clash in the network.

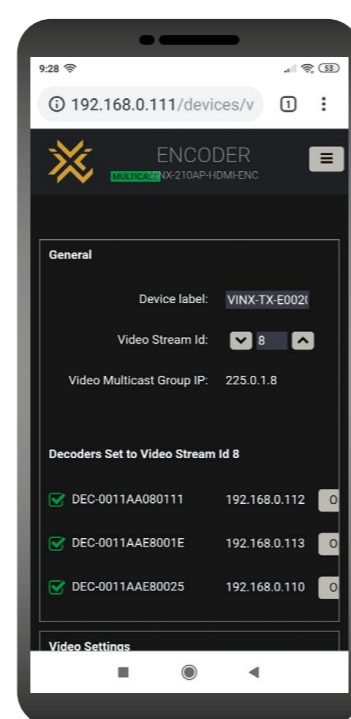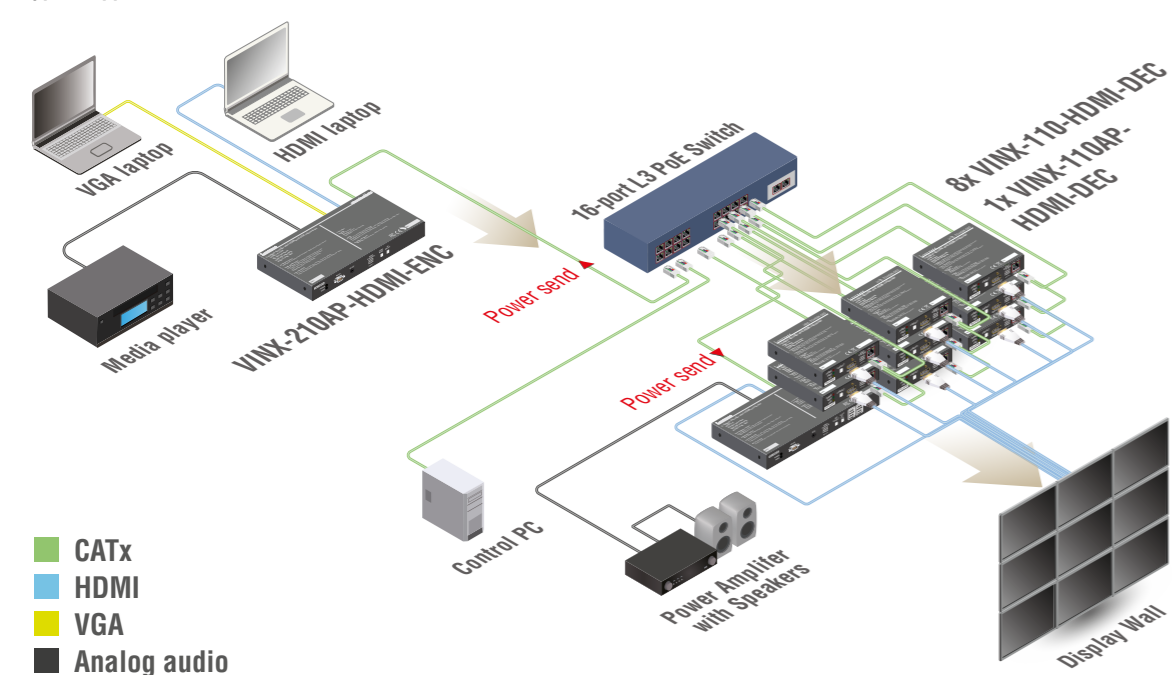## Further Information

The document is valid with the following package version: 2.0.0
The User's manual of this appliance is available on www.lightware.com.
See the Downloads section on the dedicated product page.

Contact Us

sales@lightware.com
+36 1 255 3800

support@lightware.com
+36 1 255 3810

Lightware Visual Engineering LLC.
Peterdy 15, Budapest H-1071, Hungary

Doc. ver.: 1.5
19200174

Typical Application (Multicast Mode)

- **CATx** (green)
- **HDMI** (blue)
- **VGA** (yellow)
- **Analog audio** (dark)

Labels in diagram: VGA laptop, HDMI laptop, Media player, VINX-210AP-HDMI-ENC, 16-port L3 PoE Switch, Power send, 8x VINX-110-HDMI-DEC / 1x VINX-110AP-HDMI-DEC, Control PC, Power Amplifier with Speakers, Display Wall

Mobile screen:
9:28 — 192.168.0.111/devices/v

ENCODER — MULTICAST VX-210AP-HDMI-ENC

General

Device label:	VINX-TX-E0020
Video Stream Id:	8
Video Multicast Group IP:	225.0.1.8

Decoders Set to Video Stream Id 8

✓ DEC-0011AA080111	192.168.0.112
✓ DEC-0011AAE8001E	192.168.0.113
✓ DEC-0011AAE80025	192.168.0.110

Video Settings

How to Connect to a VINX Device to Control?

When the VINX device and a control device (PC, laptop, mobile device) are connected to the same network, the VINX can be configured via a web browser (Google Chrome and Mozilla Firefox are recommended), or by running Lightware Device Controller (LDC).

Step 1 – Make the VINX and the control devices meet

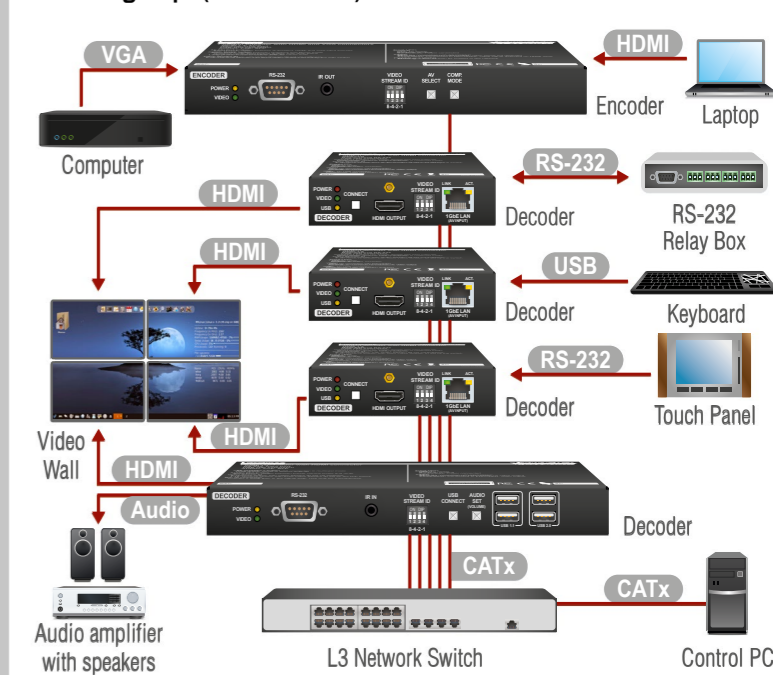The following cases may occur in case of a factory default device:

a. **There is a DHCP server** in the network: the VINX device got an IP address from the DHCP server. Make sure the control PC is connected to the same network.

b. **There is no DHCP server** in the network: the VINX device generates an IP address in the 169.254.x.x range (AutoIP). Set the IP address of the control PC to match with this range (with subnet mask 255.255.0.0).

Step 2 – Establish the connection

Connect to the VINX in any of the following ways:

a. Connecting by the Lightware Device Controller Software
Download the software from www.lightware.com, install and launch it. The Device Discovery screen will appear and list all the available devices.

b. Connecting via the Built-in Web Page
If you do not have the chance to install a software or you would access the built-in webpage from a mobile device, type the IP address of the desired device into the address line of the browser.

Connecting Steps (Multicast Mode)

Labels: VGA, Computer, HDMI, HDMI, Video Wall, HDMI, Audio, Audio amplifier with speakers, CATx, L3 Network Switch, HDMI, Encoder, Laptop, RS-232, Decoder, RS-232 Relay Box, Decoder, USB, Decoder, Keyboard, RS-232, Decoder, Touch Panel, Decoder, CATx, Control PC

Device Concept

The following signals are transmitted between the Encoder and the Decoder devices:

Signal	Unicast mode	Multicast mode
Video	E → D	E → D, D, D
Analog audio	E ⇄ D (*)	** E → D, D, D
USB	E ⇄ D	E → D, D, D
RS-232	E ⇄ D	E ⇄ D, D, D
IR	E ← D	E ← D, D, D

E Encoder D Decoder

* The indicated return audio is available only if the Analog audio input is selected in the Encoder to transmit towards the Decoder. Thus, the other analog audio signal (MIC IN) connected to the Decoder can be routed back to the Audio output of the Encoder.

** In this case, the analog audio signal can be selected in the Encoder to be embedded in the video stream in the Decoder.

ⓘ *The USB, Serial and IR data transmission works independently of the video signal presence.*

Video Transmission Quality

When the network bandwidth is not enough to transmit the video signal, the following modes are available in the Encoder:

- **Movie mode** (Lower image quality @ Less bandwidth): The image quality is adjusted to the available bandwidth. If the bandwidth is decreased, the image quality will be lower, but the video streaming will be continuous.
- **Graphics mode** (Best image quality @ High bandwidth): The image quality is kept at a high level. If the bandwidth is decreased, the image quality does not change, but frame dropping may appear.

The setting takes effect when the available bandwidth is less than required.

Preparing the Network – The Requirements of the Switch

The recommended type of network device: 1GbE network with Layer 2.5 or 3 switch, Gigabit Ethernet. In TCP/IP terminology, Layer 2 is the data link layer that is responsible for splitting up the information coming from higher layers in the TCP/IP stack into Ethernet frames. An Ethernet frame contains labeling information with source and destination physical addresses (called source and destination MAC address). These physical addresses uniquely identify the source and destination physical devices (e.g. a VINX encoder and a VINX decoder). Ethernet frames provide error resilience by incorporating a redundancy check field, through which transmission errors can easily be detected. The device that only uses the physical address information found in the Ethernet frame to root the packet from one of its input ports to one or more of it output ports is an unmanaged switch.

A managed switch, on the other hand, can handle the traffic and forward input packets to output packets by utilizing information from higher layers. This gives the managed switch more flexibility and also allows for more sophisticated functions like multicast forwarding. Since even a simple VINX network, where one VINX encoder supplies more VINX decoders, relies on multicasting, a multicast capable switch (i.e. a managed one) is a must. The managed switch shall offer the following capabilities:

- IGMPv2
- IGMP snooping, IGMP fast leave, IGMP querier
- Multicast filtering
- Jumbo frames

For more information about the requirements and technologies, please see the Application Note on our website.

Arranging the Extenders to Groups

Encoder and Decoder devices have to be assigned to each other in order to transfer the desired video and control signals – in any of the following ways:

1. **HW setting**: use the **DIP switch** at the front panel to set the Video stream ID: set the DIP switch states to the same value on the desired devices. If you set a DIP switch on a device, the other devices can be configured via the web page. Please note that the value of DIP switch assigned Video Stream ID can range from 1 to 15 inclusive.

   MULTICAST DIP SWITCH Dec_B1 ✎

2. **SW setting**: set the Video stream ID via the **built-in web page**. Connect to the device as described in the Software Control section. The Video Stream ID shall be between 1 and 255 inclusive. In this case make sure that the DIP switches of the affected devices are set to '0000'.

   MULTICAST Dec_A1 ✎

Video Stream ID Rules

The following rules are defined to avoid Video Stream ID conflicts:

- When the DIP switch is in **'0000'** position, the **SW setting** will be valid.
- When the DIP switch is **not in '0000'** position, the **HW setting** will be valid.
- When the DIP switch is set **back to '0000',** the SW setting will inherit the ID (the previous DIP switch value).
- **SW setting** and **HW setting** can be **combined** within the group, but in this case, the DIP switch value will determine the common Video Stream ID.

ⓘ *The DIP switch state can be ignored by an LW3 command, see the User's Manual.*

If You do not Know the IP Address

ⓘ *When a monitor/projector is connected to a Decoder, the IP address will be displayed in the splash screen.*

Find the **MAC address** of the desired device (located on the top of the extender) and launch the web browser:

a. In case of a **Decoder**, type the following into the address line:
http://LWR-clientAABBCCDDEEFF.local

b. In case of an **Encoder**, Type the following into the address line:
http://LWR-gatewayAABBCCDDEEFF.local

AABBCCDDEEFF is the MAC address of the device (without hyphens) – which can be seen on the housing of the extender.

Further Steps

When the connection is established to an Encoder, all the Decoders – with the same stream ID – will be visible in the **Main Settings** page. Set and apply the desired network parameters in the **Advanced Settings** page, then reboot the device.

ⓘ *LDC and the Built-in web page shows the same content and features, the only difference is the firmware upgrade, which is not available in the LDC.*

Factory Default Settings

IP address	Dynamic (AutoIP with DHCP fallback)
RS-232 port setting	115200 BAUD, 8, N, 1
DIP Switch state	0000
Video stream ID	1
Connecting method	Multicast mode
Selected video input (VINX-210AP-HDMI-ENC)	Auto
Selected audio input	Auto select analog
Emulated EDID (HDMI input)	F47 (Universal HDMI EDID) *
Emulated EDID (VGA input)	F89 (Universal Analog EDID) **
User EDID memory	Empty (cleared)
Output video mode (Encoder)	Movie mode
Output scaling (Decoder)	Auto detect from EDID, no rotation
Defined video walls	Empty (cleared)

* Universal HDMI EDID: allows many common resolutions. The preferred timing for F47 is 1920x1080p60 with 2ch LPCM audio support

** Universal analog EDID: allows many common resolutions. The preferred timing for F89 is 1920x1200p59.56Hz.

⚠ *First of all, please set the parameters of the L3 Switch to meet the requirements; see the list in the 'Preparing the Network' section.*

CATx	Connect CATx cables between the Extender devices and the L3 Switch.
HDMI	Connect an HDMI source device (e.g. a laptop) to the HDMI input port of the Encoder. Connect HDMI sink devices to the HDMI output port of the Decoder devices.
VGA	Connect a VGA source device (e.g. a computer) to the VGA input port of the Encoder.
RS-232	Optionally for RS-232 serial transmission: connect the desired devices (e.g. a Touch Control, Relay Box) to the RS-232 ports by the supplied serial cables.
USB	Optionally for USB extension: connect USB devices to the USB ports of the Decoders. Connect the desired host device (e.g. Computer) to the Encoder via the USB mini-B type port. Please pay attention to the indicated port types (USB 1.1 and USB 2.0 support).
Audio	Optionally for Audio extension: connect an audio amplifier to the Analog audio output port of the Decoder.
Power	Connect the power cord of the supplied adaptor to the DC input first, then to the AC power socket.
CATx	Connect a control PC to the L3 switch for fine tuning the VINX devices.

🗒 Installation Checkpoints

The following help to have a successful install: check the settings listed below.

Network and Switch-related Settings

○ Check the settings as described in the **Preparing the Network** section.

Connecting the Devices

○ Use CAT7 SFTP AWG23 cables; the maximum allowed cable length is 100m.
○ Supply the devices by local adaptors or by PoE; the feature is enabled on the RJ45 ports by default.

Powering Options

○ Power on the devices as the final step of the cabling:
   1. Power on the L3 switch first. Wait a few minutes for the device to be ready.
   2. Power on the VINX devices.

Port Settings

○ Check if the desired input port is selected to transmit.
○ Make sure that each Encoder has a unique video stream ID. **Set the same ID** in the desired Decoders and Encoder.
○ Pair the devices via the built-in website or by LDC and define the Video Wall.
○ Select the desired Decoder for USB transmission (see the **Device Concept** section).

EDID

○ Universal EDID is emulated on the input ports that supports many common resolutions. If necessary, emulate a specific resolution by selecting a factory pre-programmed EDID.