

## Overview

The NMX-ENC-N2312 Encoder and NMX-DEC-N2322 Decoder provide a flexible, feature-rich, and simple-to-deploy Digital Media Distribution and Switching solution which satisfies the most demanding 4K applications with resolutions up to 4096x2160. Distribution and switching is over standard gigabit Ethernet networks.

HD signals from the N2312 Encoder are provided as a compressed 200-Mbps stream through the RJ-45 or small-form-pluggable (SFP) connector.

Any source can be sent to multiple displays by routing through appropriate switches. System scalability may be limited by up-link and stacking connector bandwidths. Standard features like output scaling, bi-directional serial, IR, embedded 7.1 audio, and KVM-over-IP extension are included. The N2312 and N2322 cards are compatible with the N-Series N9206 card cage for high-density applications.

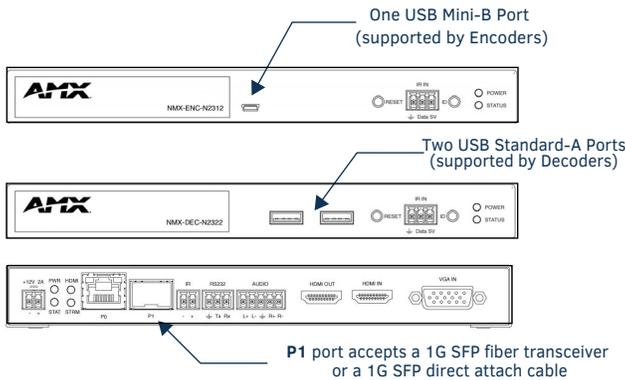


FIG. 1 N23X2 USB AND SFP PORTS

NOTE: The SFP port supports 1000BASE-X or 1000BASE-T connections only.

## Basic Installation Guidelines

Connections	Options
Power:	<p><b>PoE:</b> Connect the unit's <b>P0</b> port to an active, PoE-enabled network switch.</p> <p><b>External power supply:</b> If not using PoE for power, connect a 12V regulated power supply (part number N9312) to the unit's two-pin terminal block plug connector labeled <b>+12V 2A</b>.</p>
Network:	<p><b>PoE units:</b> If using PoE to power the unit, you should already have a network connection.</p> <p><b>Externally powered units:</b> If not using PoE, connect the <b>P0</b> port to the network using an Ethernet cable, or connect the <b>P1</b> port to the network with the appropriate cable (fiber transceiver or direct-attach cable is required).</p> <p>NOTE: All switches through which the N2312 stream routes must be configured to support jumbo frames.</p>
Video:	<p><b>N2312 Encoders</b></p> <ul style="list-style-type: none"> <li>For video encoding of a <i>digital</i> source, connect the source to the Encoder's <b>HDMI IN</b> port using a video cable with an HDMI connector (or adapter).</li> <li>For video encoding of an <i>analog</i> source, connect the source to the Encoder's <b>VGA IN</b> port using a video cable with a VGA connector (or component adapter).</li> </ul> <p><b>N2322 Decoders</b></p> <ul style="list-style-type: none"> <li>For video decoding, connect a digital display to the Decoder's <b>HDMI OUT</b> port using a video cable with an HDMI connector (or adapter).</li> </ul>
Audio:	<p><b>N2312 Encoders</b></p> <ul style="list-style-type: none"> <li>For audio encoding, connect a line level analog audio source to the <b>Audio</b> input terminal block plug connector, or</li> <li>Use the embedded audio from the video source.</li> </ul> <p><b>N2322 Decoders</b></p> <ul style="list-style-type: none"> <li>For analog audio decoding, connect a line level analog audio device to the <b>Audio</b> output terminal block plug connector, or</li> <li>Send embedded digital audio (embedded in the HDMI connection) to a monitor's speakers.</li> </ul>

NOTE: Connecting both network connections to the same network simultaneously can create a network loop.

## Product Specifications

Models Available (in stand-alone or card versions):	NMX-ENC-N2312 Encoders NMX-DEC-N2322 Decoders
Power Requirements:	<p><b>PoE:</b> Can be powered via a PoE switch or other equipment with a PoE source. Conforms to IEEE 802.3af Class 3 (802.3at Type 1).</p> <p><b>External power supply:</b> 2.0 Amp @ 12 Volts DC; 100-240 Volts AC power supply; Part number N9312 (sold separately).</p>
Dimensions (HWD):	1.05" x 7.888" x 5.5" (2.67cm x 20.04cm x 14cm)
Weight:	1.55 lbs (0.7kg)
Certifications:	FCC, CE, and UL
Environmental:	<p><b>Temperature:</b> 32° to 104°F (0° to 40°C)</p> <p><b>Humidity:</b> 10% to 90% RH (non-condensing)</p>
Mounting Options:	Stand alone, surface mount, wall mount, or rack mount.*
<p>NOTE: *Mounting wings (part number N9101) required for surface and wall mounting. Rack shelf (part number N9102) or card cage (part number N9206) required for rack mounting. Shelf accommodates two side-by-side N-Series stand-alone Encoders and Decoders. Card cage accommodates up to six N-Series Encoder and Decoder cards (mix and match any series). Mounting accessories sold separately and are compatible with most N-Series devices.</p>	

## Establishing Connection

N23X2 devices are shipped with **DHCP** as their default IP mode. The IP address is assigned automatically based on the network DHCP server. If no DHCP server is found, the unit will use **Auto IP** mode instead (with a default IP address of 169.254.xxx.xxx).

Before using your N23X2 unit, it must be configured using the free N-ABLE device management software. However, you will not be able to configure units until they are in the same subnet as the host computer.

The sample steps below show how the required changes (to the host computer's IP settings) are made in a Windows environment.

### Steps for IP address configuration:

- From the **Control Panel > Network and Internet** dialog box, select **Network and Sharing Center**.
- Select **Change adapter settings**.
- Select the wired interface connected to your AV network.
- Click the **Properties** button.
- Scroll down in the list to the **Internet Protocol Version 4 (TCP/IPv4)** option. Highlight it and click the **Properties** button.
- Enable the **Use the following IP address** option, and enter the static IP address *provided to you by your network administrator*.

NOTE: If the computer does not need Internet access, you can simply enter a unique 169.254.xxx.xxx IP address with a 255.255.0.0 Subnet mask. Please contact your network administrator if you are unsure of how to configure the existing interface. If the computer has a statically-assigned IP address, click on the **Advanced** button. Then click **Add** to enter a unique 169.254.xxx.xxx address with a subnet of 255.255.0.0.

### Steps for auto discovering devices on the network:

- Use the host computer to download and install the latest version of N-ABLE:  
PC version - <http://www.amx.com/products/N-ABLE-PC.asp>  
Mac version - <http://www.amx.com/products/N-ABLE-MAC.asp>
- Attach your N23X2 unit(s) to the layer-3 network switch.  
NOTE: Any switch handling the N23X2 video streams must be configured to support jumbo frames.
- Disable the wireless adapter on your computer (it must be hard-wired to the switch).
- Connect the host computer to the layer-3 network switch.
- Open the N-ABLE application.

If all devices do not appear automatically, click the **Auto Discover** button on the **Unit Management** tab. This issues a broadcast command that will discover all units even if they are not in the same IP subnet.

## Logging in Using N-Able Software

Once the host IP address is configured properly, you can view all discovered units using the N-Able software. Access the N23X2 units from the following tabs:

- **Unit Management** tab - **N2300 Encoder/Decoder** is listed in the **Type** field.
- **Video Matrix** tab - N23X2 units are found on the **N2300** sub-tab of this screen.

Double-click the unit's name (in one of the lists mentioned above) to view its webpage GUI. Configuration options for Encoders and Decoders can be modified through their webpage. If prompted, enter **admin** and **password** for the default username and password. Once logged in to the webpage, you can change the username and password (using the options on the unit's **Settings** page). If you would like for N-Able to support auto-login to your units, make sure N-Able's Device Auto-login settings match the unit's username and password (by selecting N-Able > Settings from the N-Able tool bar).

*NOTE: N23X2 units force HTTPS connections, so your web browser may give you a security warning. N-Able on Windows will ask you to download OpenSSL for Windows to connect HTTPS. You can disable the Force HTTPS Connection checkbox on the unit's Security page if desired.*

## Basic KVM Setup

The N2312 Encoders and N2322 Decoders are KVM-capable. By default, USB connections are enabled and configured to follow video switching. Follow these steps for basic KVM setup.

1. On the N2312 Encoder, connect the USB Mini-B port to the computer to be controlled.
2. Connect the computer's video output to the Encoder's **HDMI IN** port.
3. On the N2322 Decoder, connect the **HDMI OUT** to the display.
4. Connect a USB keyboard and mouse to the Decoder's USB Standard-A ports (they can be plugged into either port).
5. Using N-Able, click the **Unit Management** tab.
6. Click the **Auto Discover** button to discover your new devices (if you have not already done so).
7. Once discovery is complete (and you see the new units listed in N-Able), click the **Video Matrix** tab.
8. On the matrix, click the common cell for the desired Encoder/Decoder streaming combination. See the screen shot below for an example.
9. Click the **Take** button to make the change to your matrix. The radio button turns green to indicate the connection was successful.

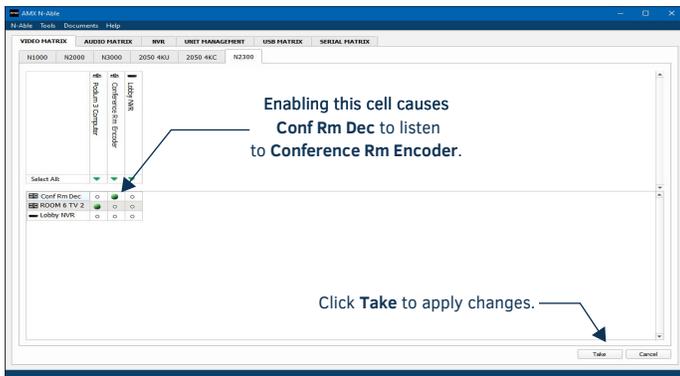


FIG. 2 CREATING STREAMING COMBINATIONS

## Video/USB Switching Options

Switching Option	Description
USB Follows Video	By default, units can be switched using N-Able without modifying the configuration. When you switch video streams (using the matrix as shown above) the USB functionality will follow the video.
Independent USB Switching	Use N-Able's <b>USB Matrix</b> tab to switch USB control (without affecting video).
Independent Video Switching	To switch video streams <i>without</i> affecting USB control, first select <b>N-Able &gt; Settings</b> from N-Able's main menu. When the <b>N-Able Settings</b> dialog box is displayed, disable the <b>USB follows Video switching for KVM units</b> . Now you can use the <b>Video Matrix</b> to switch video streams only.

## Troubleshooting Guidelines

Problem	Possible Solution
Video is not transmitting.	<ul style="list-style-type: none"> <li>• Verify that the Encoder <b>TX Enable</b> setting is turned on. (Encoders ship from the factory with their video output turned off by default.)</li> </ul>
Local Play graphic is displayed.	<ul style="list-style-type: none"> <li>• Verify Decoder is assigned to view a valid stream of an active Encoder.</li> <li>• Verify that Encoder and Decoder are on the same subnet.</li> <li>• Verify Decoder is currently in live play mode (black text on matrix view).</li> <li>• Verify network is properly configured and set up. If needed, connect Encoder directly to Decoder to bypass network.</li> </ul>
Host Play graphic is displayed.	<ul style="list-style-type: none"> <li>• Verify Encoder is in live play mode (black text in matrix).</li> <li>• Verify source is attached and is outputting a valid signal (<b>HDMI LED</b> on Encoder is on).</li> </ul>
Copy Protected Content screen is displayed.	<ul style="list-style-type: none"> <li>• Contact technical support.</li> </ul>
Black screen/no graphic is displayed.	<ul style="list-style-type: none"> <li>• Set Decoder to local play. If the local play graphic does not appear, check the display input settings and cabling.</li> <li>• If local play appears, set Decoder to live play and verify network is configured properly.</li> <li>• If screen is black with a slight sparkle effect, verify that your switch has Jumbo Frame support enabled.</li> </ul>
No audio is detected.	<ul style="list-style-type: none"> <li>• If there is no audio on <b>all</b> Decoders, verify audio settings are correct on Encoder.</li> <li>• If there is no audio on a <b>single</b> Decoder, verify audio settings are correct on Decoder.</li> </ul>
Serial port is not working as expected.	<ul style="list-style-type: none"> <li>• Verify the <b>RS232 Settings</b> on the <b>Settings</b> page.</li> <li>• Connecting the Tx and Rx pins on the RS232 connector creates a loopback that could also help when troubleshooting.</li> <li>• If NetLinux is enabled, it will take the serial port over.</li> </ul>

Please contact technical support at [svsupport@harman.com](mailto:svsupport@harman.com) or 256.461.7143 (x9900) for assistance with any installation issues.