

Overview

The NMX-ENC-N2151 Encoder and NMX-DEC-N2251 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 3840x2160. JPEG2000 compression allows Ultra HD media to be switched and distributed over standard gigabit Ethernet networks.

HD signals from the N2151 Encoder are provided simultaneously as:

- JPEG2000-compressed 900-Mbps stream through the RJ-45 or small-form-pluggable (SFP+) connector.
- Uncompressed stream through the SFP+ connector compatible with fiber or copper.

Any source can be sent to any number of displays by routing through layer-3 switches. System scalability is limited only by up-link and stacking connector bandwidths.

Standard features like input and output scaling, bi-directional serial, IR, embedded 7.1 audio, and KVM-over-IP extension are included. The N2151 and N2251 cards are compatible with SVSi's N9206 card cage for high-density applications.

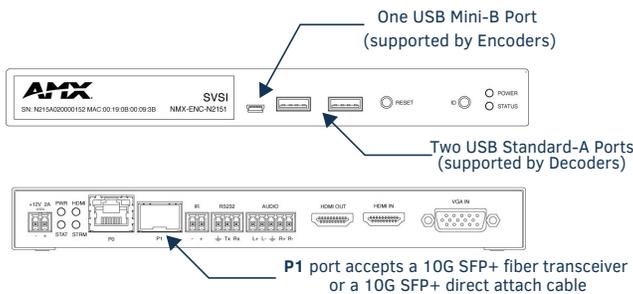


FIG. 1 N2X51 USB AND SFP+ PORTS

Basic Installation Guidelines

Connections	Options
Power:	Connect a 12V regulated power supply (included in shipment) to the unit's two-pin terminal block plug connector labeled +12V 2A .
Network:	Connect the P0 port to the network using an Ethernet cable, or connect the P1 port to the network (fiber transceiver or direct attach cable required as explained in FIG. 1).
Video:	N2151 Encoders <ul style="list-style-type: none"> • For video encoding of a <i>digital</i> source, connect the source to the Encoder's HDMI IN port using a video cable with an HDMI connector (or adapter). • For video encoding of an <i>analog</i> source, connect the source to the Encoder's VGA IN port using a video cable with a VGA connector (or component adapter).
	N2251 Decoders <ul style="list-style-type: none"> • For video decoding, connect a digital display to the Decoder's HDMI OUT port using a video cable with an HDMI connector (or adapter).
Audio:	N2151 Encoders <ul style="list-style-type: none"> • For audio encoding, connect a line level analog audio source to the Audio input terminal block plug connector, or • Use the embedded audio from the video source.
	N2251 Decoders <ul style="list-style-type: none"> • For analog audio decoding, connect a line level analog audio device to the Audio output terminal block plug connector, or • Send embedded digital audio (embedded in the HDMI connection) to a monitor's speakers.

NOTE: Connecting both network connections to the same network simultaneously can create a network loop. Therefore, for uncompressed or fiber applications, only use the SFP+ port.

Product Specifications	
Models Available (in stand-alone or card versions):	NMX-ENC-N2151 Encoders NMX-DEC-N2251 Decoders
Power Requirements:	2.0 Amp @ 12 Volts DC; 100-240 Volts AC power supply with country-specific power cord (included in shipment)
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 NTRL
Environmental:	Temperature: 32° to 104°F (0° to 40°C) Humidity: 10% to 90% RH (non-condensing)
Mounting Options:	Stand alone, surface mount, wall mount, or rack mount.*
<i>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.</i>	

Establishing Connection

Before using your N2X51 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. N-Series devices are shipped in Auto-IP mode with a default IP address of 169.254.xxx.xxx. 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 (for Windows 7 and 8):

1. From the **Control Panel > Network and Internet** dialog box, select **Network and Sharing Center**.
2. Select **Change adapter settings**.
3. Select the wired interface connected to your AV network.
4. Click the **Properties** button.
5. Scroll down in the list to the **Internet Protocol Version 4 (TCP/IPv4)** option. Highlight it and click the **Properties** button.
6. 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:

1. 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>
2. Attach your N2X51 unit(s) to the layer-3 network switch.
3. Disable the wireless adapter on your computer (it must be hard-wired to the switch).
4. Connect the host computer to the layer-3 network switch.
5. 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 N2X51 units from the following tabs:

- **Unit Management** tab - **N-Series 4K Encoder/Decoder** is listed in the **Type** field.
- **Video Matrix** tab - N2X51 units are found on the **Uncompressed 4K** and **Compressed 4K** sub-tabs of this screen.

Double-click the unit's name (in one of the lists mentioned above) to view its control page. If prompted, enter **admin** and **password** for the default username and password. Once logged in, you can change the username and password (using the options on the unit's **Settings** page).

NOTE: 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: N2X51 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 N2151 Encoders and N2251 Decoders are KVM-capable. By default, USB connections are enabled and configured to follow video switching. Follow these steps for basic KVM setup. To learn about some of the more advanced KVM capabilities, see the section *Advanced KVM Setup (with added security features)*.

- On the N2151 Encoder, connect the USB Mini-B port to the computer to be controlled.
- Connect the computer's video output to the Encoder's **HDMI IN** port.
- On the N2251 Decoder, connect the **HDMI OUT** to the display.
- Connect a USB keyboard and mouse to the Decoder's USB Standard-A ports (they can be plugged into either port).
- Using N-Able, click the **Unit Management** tab.
- Click the **Auto Discover** button to discover your new devices (if you have not already done so).
- Once discovery is complete (and you see the new units listed in N-Able), click the **Video Matrix** tab.
- On the matrix, click the common cell for the desired Encoder/Decoder streaming combination. See the screen shot below for an example.
- Click the **Take** button to make the change to your matrix. The radio button turns green to indicate the connection was successful.

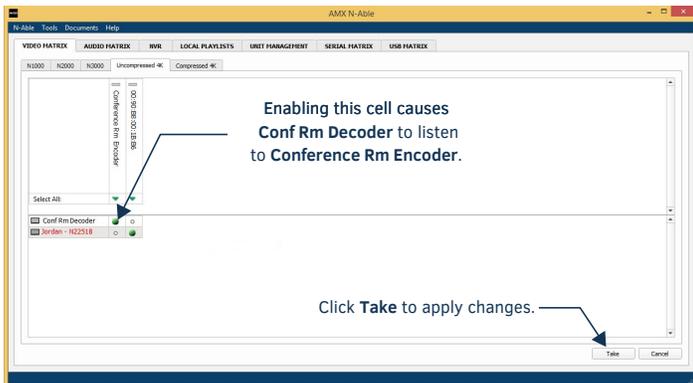


FIG. 2 CREATING STREAMING COMBINATIONS

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 USB Matrix tab to switch USB control (without affecting video).
Independent Video Switching	To switch video streams <i>without</i> affecting USB control, first select N-Able > Settings from N-Able's main menu. When the N-Able Settings dialog box is displayed, disable the USB follows Video switching for KVM units . Now you can use the Video Matrix to switch video streams only.
Advanced KVM Functionality	To have the ability to use KVM hotkeys for switching, KVM Advanced Settings must be enabled on the individual Decoder (select KVM from the top of the unit's web interface). The next section discusses these settings in more detail.

Advanced KVM Setup (with added security features)

You can configure devices for more advanced KVM operation on the Decoder **KVM** page. To access this page, double-click the unit's name in the matrix and click **KVM** at the top of the **Settings** page (see below).



FIG. 3 SELECTING THE KVM PAGE

NOTE: Many of these options are easier to manage in N-Able's KVM Wizard (especially in large configurations). Select Tools > KVM Wizard from the N-Able main menu to access the wizard.

The following table describes some of the more advanced functionality. It is important to note that many of these options only appear on the **KVM** page when **USB** is enabled as well as **KVM Advanced Settings**.

Options	Descriptions
Permission Levels	Determines which Decoders can communicate with which Encoders. A Decoder must have a permission level that is <i>equal to or greater than</i> the Encoder in order for communication to be successful.
KVM Encoders table	Use the KVM Encoders table to: <ul style="list-style-type: none"> Let the Decoder know the Encoder passwords it needs to establish communication. Assign Encoder hotkeys. Add/remove Encoders from the Decoder's list.
Passwords	By default, KVM streams are encrypted with a common password. You can change the password on the Security page of the Encoder. If you change Encoder passwords, you will need to supply the new information to the Decoders to allow communication to continue. A Decoder only receives password information for the Encoders on the network that have been associated with that Decoder as mentioned previously.
Hotkeys	To use hotkeys for easy switching, enable KVM Directory Screen Enable on the Decoder's KVM page. You can now access the KVM Directory Screen at any time by pressing the <Scr Lk> button (two or three times) on the keyboard connected to the Decoder. This screen displays all Encoders associated with that Decoder and their corresponding hotkeys.
Import and export KVM CSV files	Multiple Encoders and Decoders can be configured from a single CSV file (which is generated using the KVM Wizard in N-Able). Once all changes are made, upload the file to each unit using its KVM page. Click the Choose File button, browse to the CSV file you exported from the wizard, and click the Upload button.

Warning! You must assign KVM passwords to your Encoders and Decoders (as well as change the default login password from admin/password) in order for your system to be secure.

Troubleshooting Guidelines

Problem	Possible Solution
Video is not transmitting.	<ul style="list-style-type: none"> Verify that the Encoder TX Enable setting is turned on. (Encoders ship from the factory with their video output turned off by default.)
Local Play graphic is displayed.	<ul style="list-style-type: none"> Verify Decoder is assigned to view a valid stream in the N-Able matrix. Verify Decoder is currently in live play mode (black text on matrix view). Verify network is properly configured and set up. If needed, connect Encoder directly to Decoder to verify network issues.
Host Play graphic is displayed.	<ul style="list-style-type: none"> Verify Encoder is in live play mode (black text in matrix). Verify source is attached and is outputting a valid signal (HDMI LED on Encoder is on).
Unsupported Resolution graphic is displayed.	<ul style="list-style-type: none"> Change source resolution to a valid resolution (try 720p60). Verify cabling is correct.
Copy Protected Content screen is displayed.	<ul style="list-style-type: none"> Contact technical support.
Black screen/no graphic is displayed.	<ul style="list-style-type: none"> Set Decoder to local play. If the local play graphic does not appear, check the display input settings and cabling. If local play appears, set Decoder to live play and verify network is configured properly.
No audio is detected.	<ul style="list-style-type: none"> If there is no audio on <u>all</u> Decoders, verify audio settings are correct on Encoder. If there is no audio on a <u>single</u> Decoder, verify audio settings are correct on Decoder.

Please contact SVSI technical support at svsisupport@harman.com or 256.461.7143 (x9900) for assistance with any installation issues.



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