



INSTRUCTION MANUAL

N2151/N2251 ENCODERS/DECODERS 4K DIGITAL MEDIA DISTRIBUTION & SWITCHING SOLUTION

NMX-ENC-N2151, NMX-DEC-N2251



IMPORTANT SAFETY INSTRUCTIONS

1. READ these instructions.
2. KEEP these instructions.
3. HEED all warnings.
4. FOLLOW all instructions.
5. DO NOT use this apparatus near water.
6. CLEAN ONLY with dry cloth.
7. DO NOT block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. DO NOT install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. DO NOT defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. PROTECT the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. ONLY USE attachments/accessories specified by the manufacturer.
12. UNPLUG this apparatus during lightning storms or when unused for long periods of time.
13. REFER all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. DO NOT expose this apparatus to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
15. To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
16. Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.
17. DO NOT overload wall outlets or extension cords beyond their rated capacity as this can cause electric shock or fire.



The exclamation point, within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to persons.



ESD Warning: The icon to the left indicates text regarding potential danger associated with the discharge of static electricity from an outside source (such as human hands) into an integrated circuit, often resulting in damage to the circuit.

- WARNING:** To reduce the risk of fire or electrical shock, do not expose this apparatus to rain or moisture.
- WARNING:** No naked flame sources - such as candles - should be placed on the product.
- WARNING:** Equipment shall be connected to a MAINS socket outlet with a protective earthing connection.
- WARNING:** To reduce the risk of electric shock, grounding of the center pin of this plug must be maintained.

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ESD WARNING

	<p>To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded before touching any internal materials.</p> <p>When working with any equipment manufactured with electronic devices, proper ESD grounding procedures must be followed to make sure people, products, and tools are as free of static charges as possible. Grounding straps, conductive smocks, and conductive work mats are specifically designed for this purpose.</p> <p>Anyone performing field maintenance on AMX equipment should use an appropriate ESD field service kit complete with at least a dissipative work mat with a ground cord and a UL listed adjustable wrist strap with another ground cord</p>
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	<p>WARNING: Do Not Open! Risk of Electrical Shock. Voltages in this equipment are hazardous to life. No user-serviceable parts inside. Refer all servicing to qualified service personnel.</p> <p>Place the equipment near a main power supply outlet and make sure that you can easily access the power breaker switch.</p>
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WARNING: This product is intended to be operated ONLY from the voltages listed on the back panel or the recommended, or included, power supply of the product. Operation from other voltages other than those indicated may cause irreversible damage to the product and void the products warranty. The use of AC Plug Adapters is cautioned because it can allow the product to be plugged into voltages in which the product was not designed to operate. If the product is equipped with a detachable power cord, use only the type provided with your product or by your local distributor and/or retailer. If you are unsure of the correct operational voltage, please contact your local distributor and/or retailer.

FCC AND CANADA EMC COMPLIANCE INFORMATION:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Approved under the verification provision of FCC Part 15 as a Class A Digital Device.

Caution: Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this device.

CAN ICES-3 (B)/NMB-3(B)

EU COMPLIANCE INFORMATION:

Eligible to bear the CE mark; Conforms to European Union Low Voltage Directive 2006/95/EC; European Union EMC Directive 2004/108/EC; European Union Restriction of Hazardous Substances Recast (RoHS2) Directive 2011/65/EU.

You may obtain a free copy of the Declaration of Conformity by visiting <http://www.amx.com/techcenter/certifications.asp>.

WEEE NOTICE:

	<p>This appliance is labeled in accordance with European Directive 2012/19/EU concerning waste of electrical and electronic equipment (WEEE). This label indicates that this product should not be disposed of with household waste. It should be deposited at an appropriate facility to enable recovery and recycling.</p>
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Chapter 1: Introducing Your New N2151/N2251 4K Devices

Product Overview

The NMX-ENC-N2151 4K Encoder and NMX-DEC-N2251 4K Decoder provide users with the industry's most versatile solution for distributing AV over a converged network at resolutions up to 4096×2160. JPEG2000 compression allows Ultra HD media to be switched and distributed over standard Gigabit Ethernet networks. Ultra HD signals from the NMX-ENC-N2151 Encoder are provided simultaneously as: 1) a JPEG2000-compressed 200-600 Mbps stream through the RJ45 connector or small-form-pluggable (SFP+) port (10Gb), and 2) an uncompressed stream through the SFP+ connector (via a fiber module). Any source can be sent to any number of displays by routing through managed switches. System scalability is limited only by uplink and stacking connector bandwidths.

Standard features like output scaling (Decoder), bi-directional serial, IR output, embedded 7.1 audio, and KVM-over-IP extension are included. The NMX-ENC-N2151-C and NMX-DEC-N2251-C form-factors are compatible with the NMX-ACC-N9206 card cage for high-density applications.

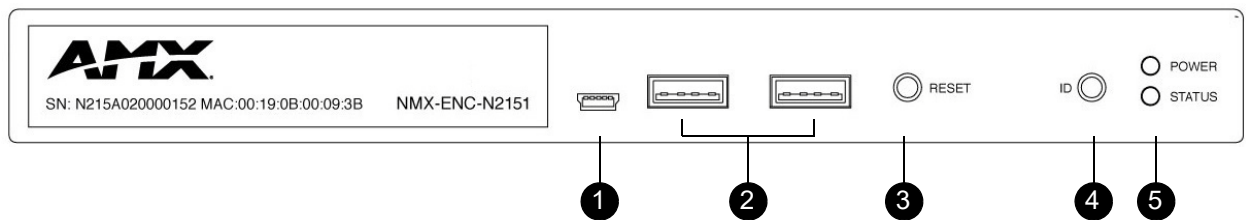
The NMX-ENC-N2151 and NMX-DEC-N2251 together create the perfect solution for video matrix applications where resolutions up to 4K are required. Common applications include classrooms, conference rooms, performing arts centers, and sports bars.

Features include:

- Output Scaling — Video scaling at the output (Decoder) allows seamless switching from any source, at any resolution, to any display or projector, while preserving video fidelity.
- Infrared (IR) — Infrared emitter connection allows control of low-cost, IR-only display devices.
- Onboard Control — All N-Series Encoders and Decoders have on-board, built-in control capability via events that can trigger any number of TCP/UDP commands to other IP controllable devices.
- Pass-through HDMI interface (Encoder) — allows easy installation with local display such as desktop PC applications.
- Unlimited Scalability — Grow the video matrix by adding Encoders or Decoders as needed (within the bandwidth limits of the uplink and stacking connectors).
- Stand Alone or Card — Available as a stand alone device, or card for use with NMX-ACC-N9206.

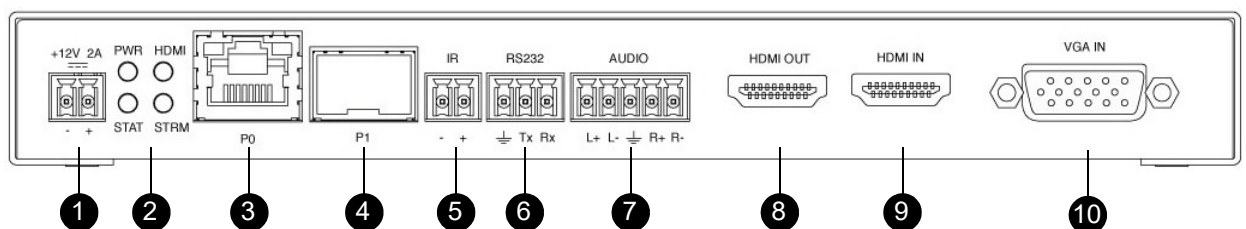
Hardware Overview

Refer to the following figures (front and rear panel drawings of these devices) and the [Front and Rear Panel Descriptions table](#) on page 7 for hardware details.



- 1) USB Mini-B Port
- 2) USB Standard-A Ports (inactive on Encoders)
- 3) Device Reset Button
- 4) Device ID Discovery Button
- 5) Power/Status Indicators

FIG. 1 Encoder Front Panel



- 1) 12VDC Input
- 2) Status Indicators
- 3) RJ45 Auto-Sensing Gigabit Ethernet Switch Port
- 4) 10G SFP+ Port
- 5) IR Emitter Connection
- 6) RS232 Connection
- 7) Analog Audio Input
- 8) Passthru HDMI Video
- 9) HDMI Video Input
- 10) DB-15 Analog Input

FIG. 2 Encoder Rear Panel

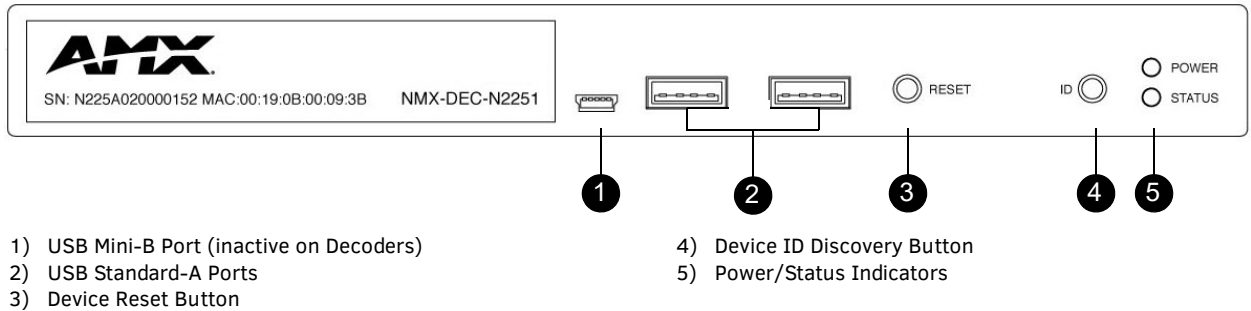


FIG. 3 Decoder Front Panel

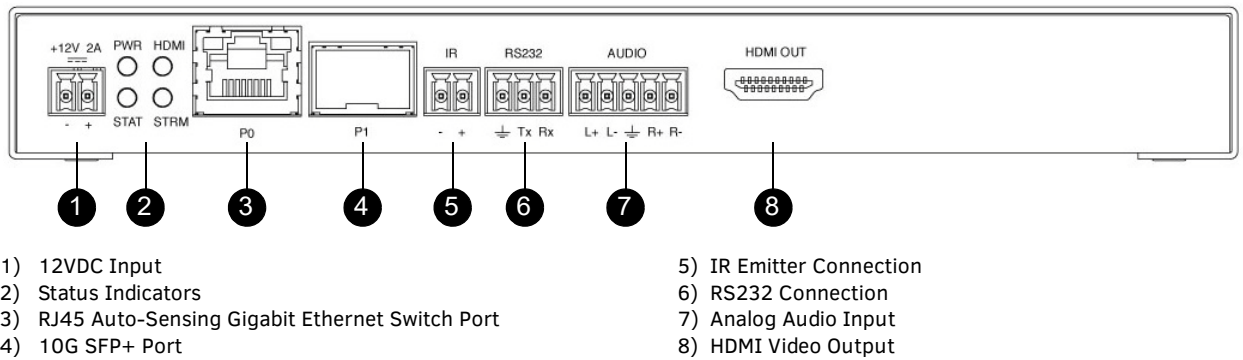


FIG. 4 Decoder Rear Panel

Front and Rear Panel Descriptions	
Front Panel	
USB Mini-B port	Connects the Encoder to the computer to be controlled.
USB Standard-A port (x2)	Connects the Decoder to keyboard and/or mouse or touchscreen.
RESET button	Recessed pushbutton. Press to initiate a “warm restart” which causes the processor to reset, but not lose power. A reset does NOT affect the current settings.
ID button	Recessed pushbutton. Press to send notification out on the network to identify the unit (the notification causes a pop-up dialog in N-Able and N-Command). Press and hold for 30 seconds to initiate a factory restore.
POWER LED	On solid (green) when operating power is supplied (via local power supply). This activity is also shown by the PWR LED on the rear panel.
STATUS LED	On flashing (green) when there is software activity. This activity is also shown by the STAT LED on the rear panel.
Rear Panel	
+12V 2A	12 Volt DC power input.
PWR LED	Same as POWER LED described above.
HDMI LED	On (green) when an HDMI connection is present.
STAT LED	Same as STATUS LED described above.
STRM LED	On (green) when the unit is streaming video.
P0	8-wire RJ45 female. 10/100/1000 Mbps 10/100/1000Base-T auto-sensing gigabit Ethernet switch port. Provides network connection to the Encoders and Decoders.
P1	10G SFP+ port which accepts compatible fiber transceivers or direct attach cables (copper or fiber). Modules sold separately. NOTE: This port does not accept 1G fiber. It supports 10G only. Multi-mode and single mode fiber options are available.
IR	2-pin terminal Phoenix connector which provides IR output (33 to 60 kHz). Emitter is not included.
RS232	3-pin terminal Phoenix connector which provides a serial control interface. Full duplex communication. Available terminal speed settings: 1200 to 115200 baud rate.

Front and Rear Panel Descriptions (Cont.)	
AUDIO	5-pin terminal Phoenix connector which provides user-selectable balanced/unbalanced, dedicated audio input (for Encoders) and output (for Decoders).
HDMI IN	HDMI video input (Encoders).
HDMI OUT	HDMI video output (Decoders). Pass thru HDMI video (Encoders).
VGA IN	DB-15 analog input. Allows for the use of analog video sources. <i>*Applies to Encoders only.</i>

Chapter 2: Installing and Configuring Your AV Equipment

This chapter provides an installation overview as well as a detailed step-by-step process for installation. If you encounter any problems, refer to the *Troubleshooting* section on page 61 for help.

Installation Overview

The N2X51 Encoders and Decoders have multiple configuration and installation options. For basic installation guidelines, see the tables below. For more detailed instructions, refer to *Step-by-Step Installation Instructions* on page 12.

Basic Installation Guidelines	
Connections	Options
Power	External power supply: Connect a 12V regulated power supply (included in shipment) to the unit's two-pin terminal block plug connector labeled +12V 2A .
Network	Connect either the P0 or P1 port to the network using the appropriate cable.
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). For local viewing of pass thru video, connect a digital display to the Encoder's HDMI OUT port using a video cable with an HDMI connector (or 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 HDMI audio embedded with the source connection. <p>NOTE: <i>Unit will not pass audio from the analog AUDIO input through the pass thru (HDMI OUT) port.</i></p>
	N2251 Decoders <ul style="list-style-type: none"> For audio decoding, connect a line level analog audio device to the Audio output terminal block plug connector, or Send the HDMI embedded audio to a connected display's speakers.

NOTE: *When the unit is not in use, remove the power cable and disconnect any other cables (e.g., Ethernet, audio, video) connected to the Encoders and Decoders.*

Acceptable Input/Output Types	
N2151 Encoder - Input	
Digital	HDMI - Native connection. No adapter necessary. DVI - Appropriate passive adapter required. DisplayPort- Appropriate passive adapter required.
Analog	VGA - Native connection. No adapter necessary. Component- Appropriate passive adapter required. RGBHV- Appropriate passive adapter required.
N2251 Decoder - Output	
Digital	HDMI - Native connection. No adapter necessary. DVI- Appropriate passive adapter required. DisplayPort - Appropriate ACTIVE adapter required. The N2251 will not output DisplayPort through a passive adapter.
NOTE: <i>For all other input/output types, an active adapter is required.</i>	

Mounting Options

The N2X51 units are available in stand-alone and card versions. The stand-alone version can be free standing, surface mounted, wall mounted, or rack mounted. All cards *must be rack mounted* using the NMX-ACC-N9206 Card Cage (sold separately).

Surface and Wall Mounting

To mount your N2X51 stand-alone unit to a flat surface or wall, follow these steps:

1. Remove the four screws from the bottom of the unit and use them to attach the mounting wings (sold separately - part number NMX-ACC-N9101). See [Figure 5](#).
2. Place the unit against the solid surface to which you want it mounted.
3. Using standard hardware, attach the unit through each of the slots of the newly-attached mounting wings.
4. Connect the appropriate cables necessary for your application. Refer to the sections : *Connecting Decoders to the Network* on page 14 and : *Connecting Encoders to the Network and Configuring Stream Settings* on page 15 for more information on these connections.

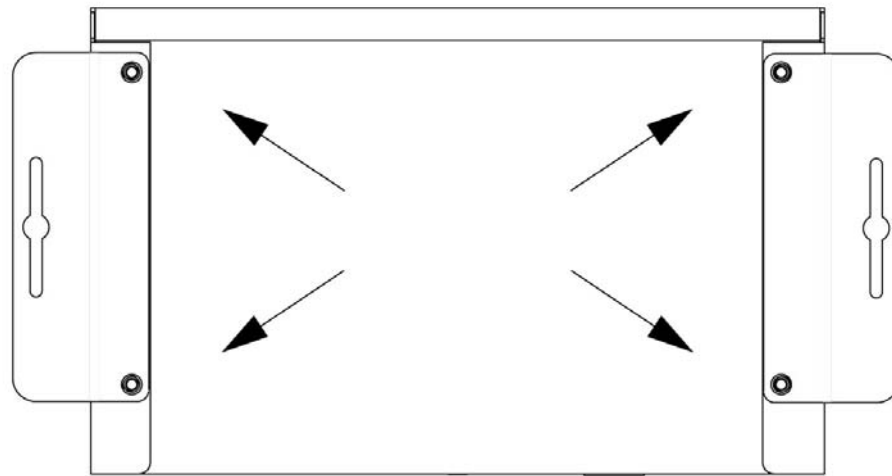


FIG. 5 Installing Mounting Wings

Rack Mounting

N2X51 Series Stand-Alone Units

The N-Series 1RU Rack Shelf (part number NMX-ACC-N9102) accommodates up to two stand-alone N-Series Encoders or Decoders, side by side (any combination of product series).

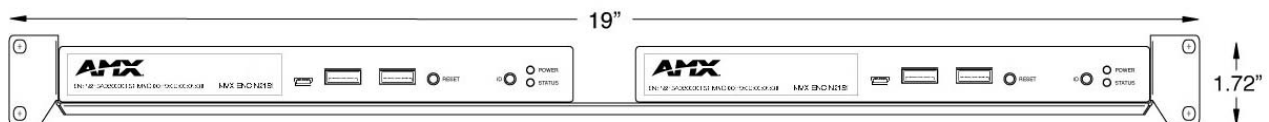


FIG. 6 Rack Mounting Stand-Alone Units

N2X51 Series Cards

The N-Series Card Cage (part number NMX-ACC-N9206) accommodates any combination of up to six N-Series Encoder/Decoder cards. The NMX-ACC-N9206 card chassis provides 12V connections to all cards (installed as the primary power source).

Use either of the following formulas to calculate how much power is required for the N9206. Formulas are based on the power requirements of each installed card (e.g., *Power_Slot1* = the power requirements for whatever card is installed in the first slot). These formulas adds a 20% margin to the power requirements of the cards to allow for the chassis cooling fan power consumption as well as any inherent power supply losses.

$$\text{Total Power} = (\text{Power_Slot1} + \text{Power_Slot2} + \text{Power_Slot3} + \text{Power_Slot4} + \text{Power_Slot5} + \text{Power_Slot6}) * 1.2$$

or

$$\text{Total BTU/hr} = (\text{BTU/hr_Slot1} + \text{BTU/hr_Slot2} + \text{BTU/hr_Slot3} + \text{BTU/hr_Slot4} + \text{BTU/hr_Slot5} + \text{BTU/hr_Slot6}) * 1.2$$

To install N2X51 Series cards into the N9206 Card Cage, follow these steps:

1. Gently slide the card into cage slot. Make sure the card is properly aligned with guides. The card's front LED indicators should align with holes in the cage's faceplate. See [Figure 7](#).

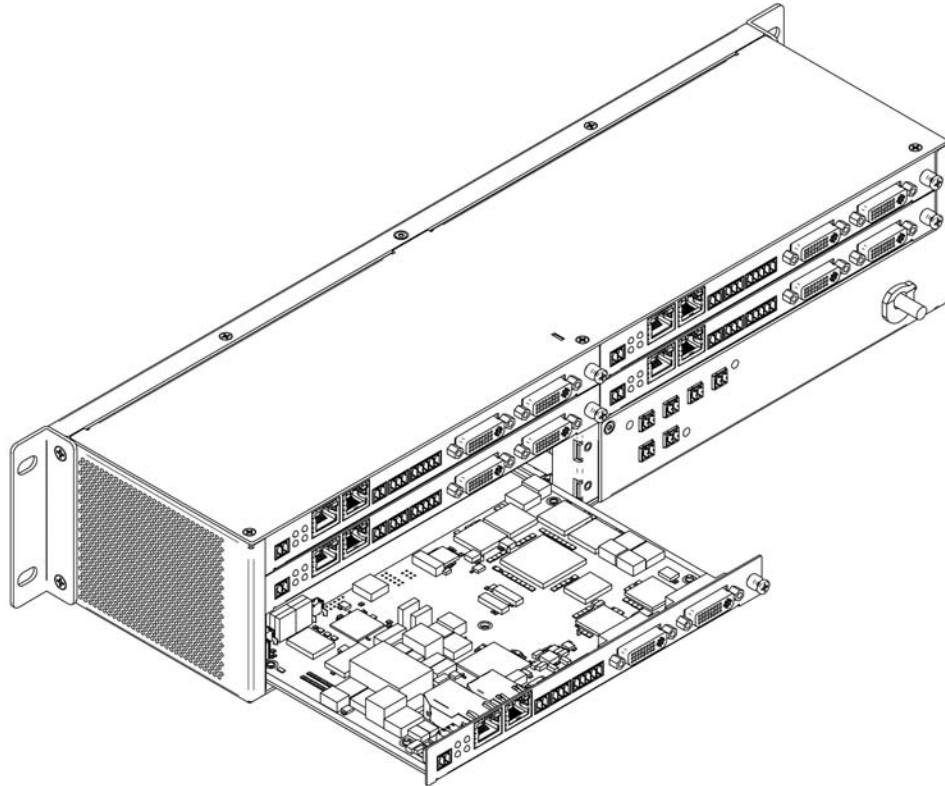


FIG. 7 Installing Cards

2. Align the thumb screw on back plate before seating card into cage.
3. Firmly seat the card and tighten the thumb screw by hand to secure card placement.
4. Use one of the six Phoenix connector cables (included in shipment with the Card Cage) to connect the card's 12VDC input Phoenix connector to one of the cage's six 12VDC outputs.
5. Repeat these steps until all cards are properly installed. See [Figure 8](#).

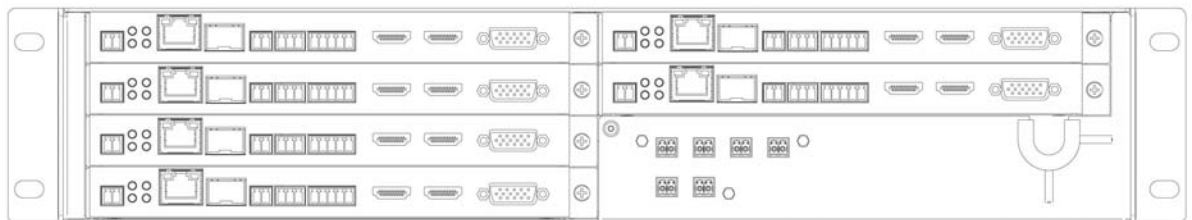


FIG. 8 Fully-Populated Card Cage

6. For proper airflow, cover any unused card slots with faceplate blanks. Blanks are sold separately (part number N9210).
7. Make sure the Card Cage's power cord is plugged in for proper cooling. The **POWER** LED on the front of the cage should always be on.

CAUTION: Keep the Card Cage's power cord plugged in at all times so that the internal fans are always running. Failure to do so could void the warranty of the cage and all installed cards. The card cage cooling fans cannot be powered by PoE in the event of a loss of main power to the card cage. Please remedy power losses immediately to avoid potential overheating hazards.

NOTE: Mounting accessories are sold separately and are compatible with most N-Series devices. Contact a sales representative or visit our website for details.

Step-by-Step Installation Instructions

This section provides step-by-step guidance for installing and configuring equipment from the N-Series product family on your network. The steps provided here assume the following to be true:

1. *There are switches operational on the network.*
N-Series equipment can operate on many different brands of networking equipment. The network itself needs to meet certain requirements to be able to support deployment. These instructions assume that you have purchased and installed a pre-configured switch from AMX or that your existing equipment meets the following physical and protocol requirements:
 - Layer 2 (with IGMP Multicast Protocol), OR Layer 3 (also known as “multi-layer”)
 - Gigabit Ethernet
 - IGMP Snooping
 - IGMP Snooping Querier (which only needs to be enabled on a single switch within the network)

NOTE: *To proceed with this installation, the switches must already be successfully connected to your network. If needed, refer to your product’s documentation for installation instructions.*
2. *Deployment considerations have been made for the addition of high-speed video.*
Our Networked AV solutions provide unsurpassed video and audio quality at bandwidths appropriate to any network segment or link. Matrix switches as large as 1200x800 have been constructed on a house network using N-Series equipment. Alternatively, many customers choose to deploy on physically separate networks in order to use low-cost network appliances but keep video traffic separate from data and voice.
3. *N-Able software has been loaded on the computer you are using to configure the equipment.*
From your host computer, download N-Able (our free setup utility software):
PC version - <http://www.amx.com/products/N-ABLE-PC.asp>
Mac version - <http://www.amx.com/products/N-ABLE-MAC.asp>

This software is designed to set up and control the equipment during initial deployment, however, it is not always the best solution for production-type or primary user control. Refer to *Control Options* on page 21 for details on the available control options.

NOTE: *For a more detailed requirements list, refer to Appendix A: Minimum Network Requirements on page 65.*

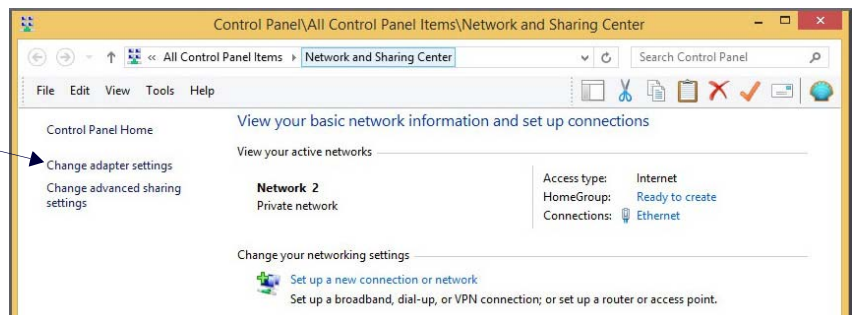
Step 1: Setting Up Your Host Computer

In order to communicate with N-Series products, your devices must be on the same subnet as the host computer. N2X51 units are shipped in **DHCP** mode and the IP address will be assigned automatically based on the network DHCP server. If no DHCP server is found, the unit will use **Auto IP** mode with a default IP address of 169.254.xxx.xxx.

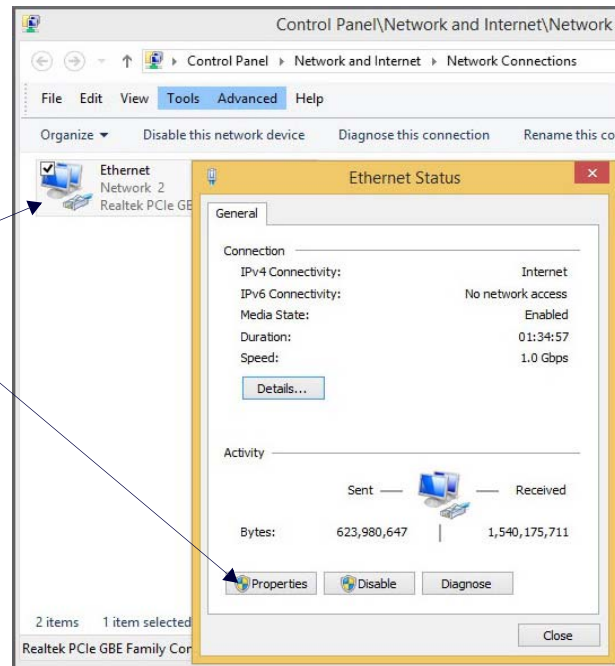
Before beginning installation, you may need to make some changes to the computer running N-Able. These steps show how this can be accomplished in a Microsoft Windows environment.

1. From the **Start** menu, select **Control Panel > Network and Sharing Center**.

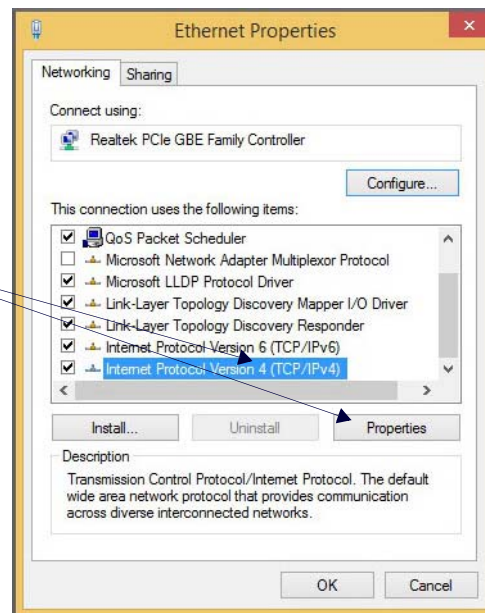
2. Select **Change adapter settings**.



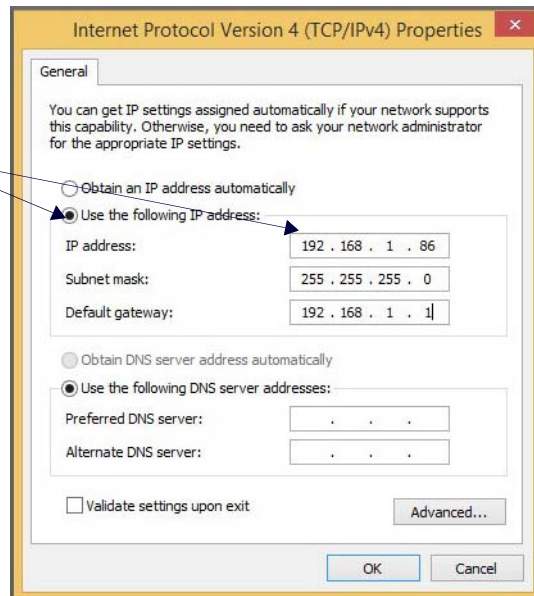
3. Double-click the wired interface to your AV network, and then click the **Properties** button.



4. Scroll down in the list to the **Internet Protocol Version 4 (TCP/IPv4)** option. Highlight it and click the **Properties** button.



5. 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. Contact your network administrator if you are unsure of how to configure the existing network. N-Series units will not self-assign in the 169.254.0.xxx range.

NOTE: If the computer has a statically-assigned IP address, click the **Advanced** button. Then click **Add** to enter a unique 169.254.xxx.xxx address with a Subnet Mask of 255.255.0.0 and a Default Gateway of 169.254.1.1.

Step 2: Connecting Decoders to the Network

The digital connection from a Decoder **HDMI OUT** port (female) to a display is accomplished using either an HDMI cable or DVI-D (through adapter). N2251 units support embedded audio input and output on the HDMI ports; however, some display devices (e.g., many monitors) *do not* support embedded audio. When using such a display, use the **AUDIO** port for separate transmission of sound and turn **HDMI Audio** off (on the **Settings** page) to avoid video display issues.

Power is supplied via an external power supply. Refer to the following steps and [Figure 9](#) for guidance.

1. Using a Cat-5e or higher cable, connect your N2251 Decoder's **P0** port to a switch (or connect SFP+ to the **P1** port).
2. Connect the 12V regulated power supply (included in shipment) to the two-pin terminal block plug connector (labeled **+12V 2A**).
3. Connect the display you would like to use for that Decoder (monitor, projector, etc.) to the Decoder's **HDMI OUT** port using an HDMI cable (or DVI through adapter). This must be a digital video connection.

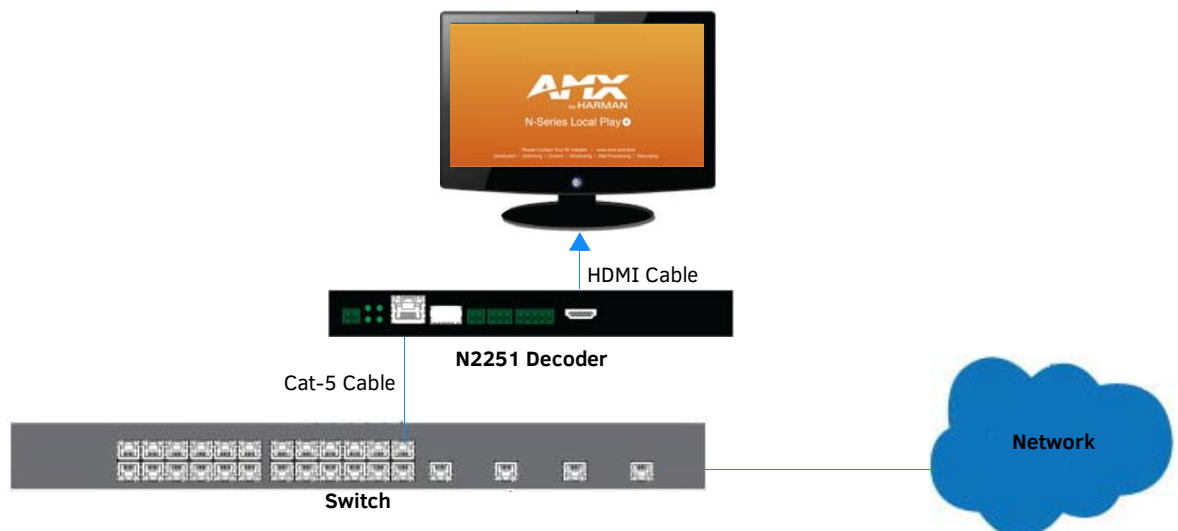


FIG. 9 Decoder Connections

4. Repeat Steps 1 and 2 until all Decoders are installed on the network.

- Once the Decoders and displays are connected and powered up, the LocalPlay screen appears on the displays.

NOTE: If the LocalPlay screen does not appear, refer to Chapter 5, *Troubleshooting* for more guidance.

Step 3: Connecting Encoders to the Network and Configuring Stream Settings

- Using a Cat-5e or higher cable, connect your N2151 Encoder's **P0** port to a switch (or connect SFP+ to the **P1** port).
- Connect the 12V regulated power supply (included in shipment) to the two-pin terminal block plug connector (labeled **+12V 2A**).
- In **N-Able**, select the **Unit Management** tab and click the **Auto Discover** button (if the table has not already populated itself with the installed units). See [Figure 10](#).

The screenshot shows the AMX N-Able software interface. The 'UNIT MANAGEMENT' tab is selected. The 'Auto Discover' button is highlighted with a red circle. Below the button, a status bar indicates: 'You have 22 ENC, 13 DEC, 0 ATR, 0 NVR, 0 WP, and 0 N-Touch.' A search bar and a 'Clear' button are also visible. The main area contains a table with the following data:

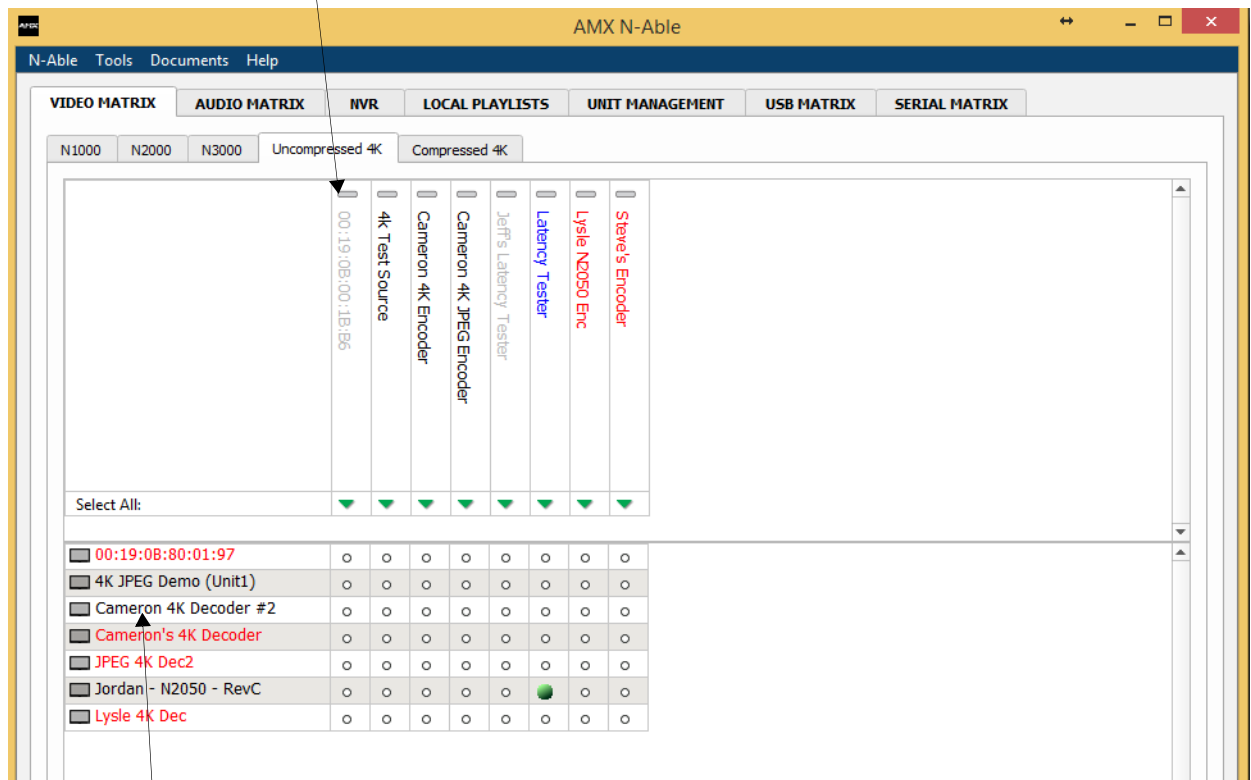
	Name	Type	MAC	IP	SN	Streams	Mode	Resolution
1	Board Room Display 505	N-Series 4K Decoder	00:19:0B:22:F3:17	192.168.1.211	N225A010000012	7	Off	
2	Conference Room Display 121	N-Series 4K Decoder	00:19:0B:22:F3:12	192.168.1.206	N225A010000007	13	Off	
3	Conference Room Display 122	N-Series 4K Decoder	00:19:0B:22:F3:13	192.168.1.207	N225A010000008	15	Off	
4	Conference Room Display 123	N-Series 4K Decoder	00:19:0B:22:F3:14	192.168.1.208	N225A010000009	16	Off	
5	Conference Room Display 206	N-Series 4K Decoder	00:19:0B:22:F3:15	192.168.1.209	N225A010000010	17	Off	
6	Conference Room Display 307	N-Series 4K Decoder	00:19:0B:22:F3:16	192.168.1.210	N225A010000011	18	Off	
7	Huddle Room Display 102	N-Series 4K Decoder	00:19:0B:22:F3:06	192.168.1.200	N225A010000001	7	Off	
8	Huddle Room Display 212	N-Series 4K Decoder	00:19:0B:22:F3:07	192.168.1.201	N225A010000002	8	Off	
9	Huddle Room Display 218	N-Series 4K Decoder	00:19:0B:22:F3:08	192.168.1.202	N225A010000003	9	Off	
10	Huddle Room Display 315	N-Series 4K Decoder	00:19:0B:22:F3:09	192.168.1.203	N225A010000004	22	Off	
11	Huddle Room Display 421	N-Series 4K Decoder	00:19:0B:22:F3:10	192.168.1.204	N225A010000005	11	Off	
12	Huddle Room Display 502	N-Series 4K Decoder	00:19:0B:22:F3:11	192.168.1.205	N225A010000006	12	Off	
13	Lobby Digital Signage Display	N-Series 4K Decoder	00:19:0B:22:F3:18	192.168.1.212	N225A010000013	22	Off	
14	Blu-Ray Player	N-Series 4K Encoder	00:19:0B:22:F8:04	192.168.1.33	N215A010000004	4		
15	Board Room Input 505	N-Series 4K Encoder	00:19:0B:22:F8:07	192.168.1.36	N215A010000007	7		
16	Cable Box 1	N-Series 4K Encoder	00:19:0B:22:F8:01	192.168.1.30	N215A010000001	1		
17	Cable Box 2	N-Series 4K Encoder	00:19:0B:22:F8:02	192.168.1.31	N215A010000002	2		
18	Cable Box 3	N-Series 4K Encoder	00:19:0B:22:F8:03	192.168.1.32	N215A010000003	3		

FIG. 10 Unit Management Page

- Find your Encoder in the list. N2X51 units are displayed on the following tabs:
 - Unit Management** tab — N2X51 units have **N-Series 4K Encoder/Decoder** listed in their **Type** fields.
 - Video Matrix** tab — N2X51 units are found on the **Uncompressed 4K** and **Compressed 4K** sub-tabs (as shown in [Figure 11](#)).

NOTE: If using multiple Encoders in your set up, it is important to plug in and configure one Encoder at a time. All Encoders come pre-configured to use stream 1. As you add Encoders to the network, you will need to set them up to use different streams.

Encoders are listed across the top of the page.



Decoders are listed down the left side of the page.

Red Text - No video source (Encoder) or no display (Decoder).

Red Exclamation Point (!) - N-Able cannot communicate with device.

Gray Text - Video network transmit for this unit is disabled.

Black Text - Unit is in live play mode.

Blue Text - Unit is playing locally-stored content.

FIG. 11 Video Matrix Page

- Double-click the Encoder's name in the list. The **N-Series Encoder Login** page is displayed (see [Figure 12](#)). If prompted, use the following default login credentials to log in for the first time. These can be changed later on the **Settings** page.
Default username: **admin**
Default password: **password**

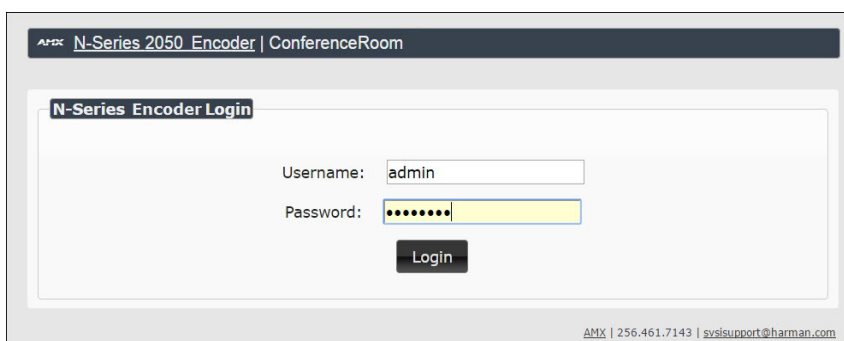


FIG. 12 Login Page

NOTE: The Login page is only displayed if N-Able's stored username/password does not match the unit's username/password. A default system will match. The default password for N-Able can be modified under N-Able>Settings.

- The **Settings** page is displayed (see [Figure 13](#)).
- Change the **Stream** setting. We recommend setting **Stream** to a number between 2 and 254 (it is *required* that the number be less than 32,512). Use the **P0** and **P1** check boxes to designate which port to send the stream over.

NOTE: Uncompressed streams (880-4250 Mbps) are only supported on the P1 port. Compressed streams (200-600 Mbps) are supported on either P0 or P1.

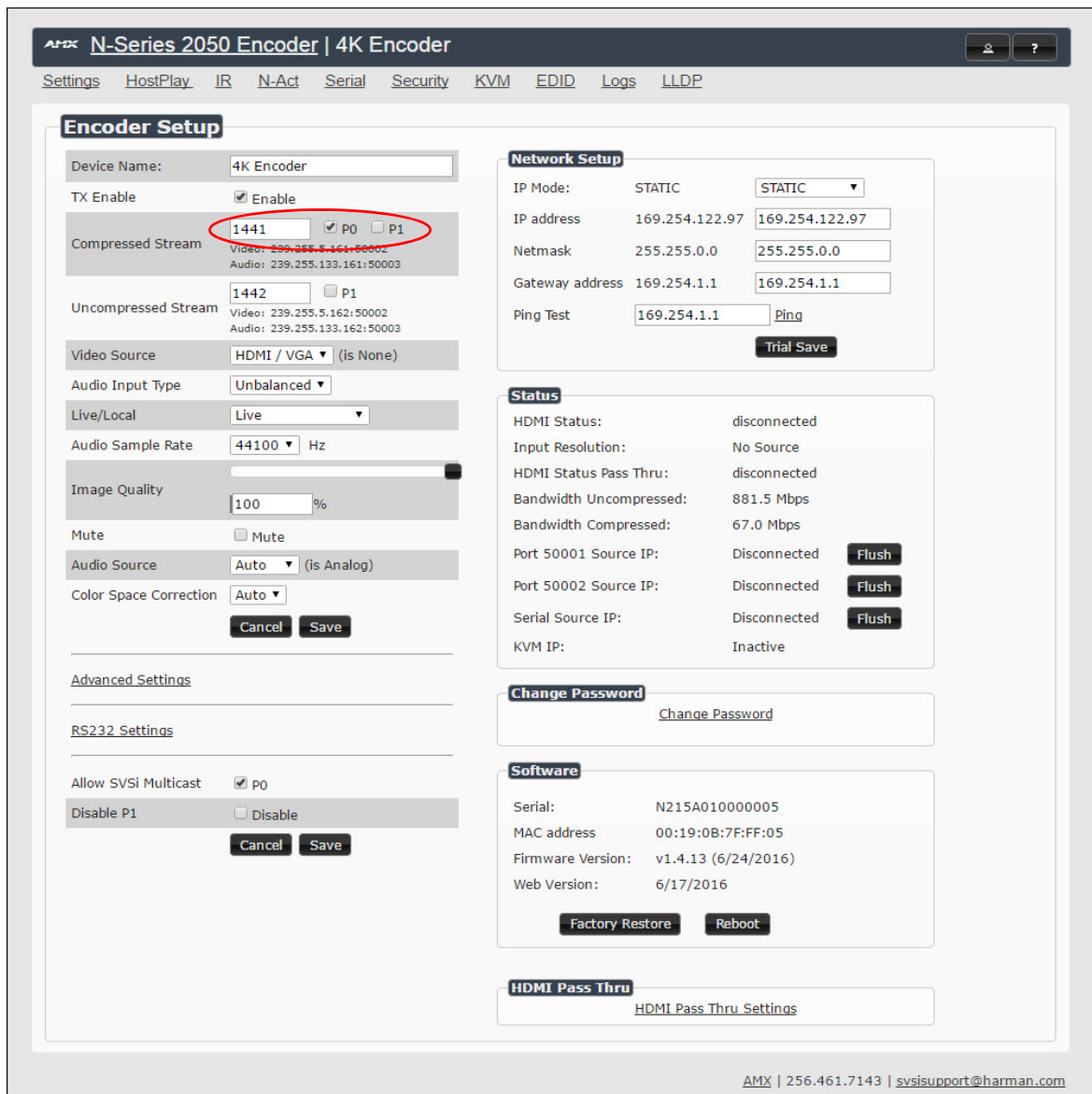


FIG. 13 Changing Stream Setting

8. Repeat these steps until all Encoders are connected to the network and configured with an appropriate **Stream** number.

NOTE: Each Encoder's Stream number must be unique to all other Encoders on the network.

NOTE: Screen-by-screen descriptions of the web interface options are provided for your reference in the [Encoder Configuration Options section on page 24](#) and the [Decoder Configuration Options section on page 42](#).

Step 4: Configuring Decoder and Encoder IP addresses (if needed)

By default, all Decoders and Encoders are preset to **DHCP** mode. When first connected to the network, an IP address is assigned automatically based on the network DHCP server. If no DHCP server is found, the unit will use **Auto IP** mode (with an IP address pre-configured to 169.254.xxx.xxx with a subnet mask of 255.255.0.0).

How IP Address Changes Affect Unit Control

As discussed previously, N-Able control is dependent upon the host computer being in the same IP address range as the N-Series devices. Therefore, before making any N2X51 IP address changes, we recommend having **two statically-assigned IP addresses on your computer**.

- Configure the first IP address to be in the range of the default N-Series IP settings (i.e., in the 169.254.xxx.xxx range), AND
- Configure a second IP address in the range of the IP address you are planning to assign to the units (or when using DHCP, an address within the defined range for your network).

Changing IP Addresses

There are two ways to assign new IP addresses to your N2X51 units using N-Able:

- **Option 1:** Log in to each unit individually and make the changes on the **Settings** page.
- **Option 2:** Export a comma-separated value (CSV) file, make changes to all units in the resulting file, and import the CSV file into N-Able to apply the changes.

Option 1: Assigning IP Addresses Individually (using the Settings page)

1. Find the unit you wish to change in the control matrix (either on the **Unit Management** tab or the **Video Matrix > Uncompressed/Compressed 4K** tab).
2. Double-click the unit and log in.
3. Go to the **Settings** page and make IP address changes for that unit either by setting a **STATIC** address or by enabling **DHCP** (see [Figure 14](#)).

Network Setup		
IP Mode:	AUTO IP	AUTO IP ▼
IP address	169.254.13.42	169.254.13.42
Netmask	255.255.0.0	255.255.0.0
Gateway address	169.254.1.1	169.254.1.1
Trial Save		

FIG. 14 Network Setup Section of the Settings Page

4. Click the **Trial Save** button.
5. Return to the **Settings** page through the newly-configured IP address.
6. Once the **Settings** page appears (successfully using the new IP address) click the **Confirm** button to lock in your changes.

NOTE: If you lose communication for any reason, remove power from the N2X51, wait one minute, and plug it back in. This restores the unit to the original IP address.

Option 2: Assigning IP Addresses to Multiple Units (using CSV files)

N-Able provides the ability to export and import CSV files. Once units are auto-discovered in N-Able, the CSV file can be exported into Excel where parameters such as IP address, subnet mask, gateway, stream number, audio settings, etc. can be configured. Once configured, import the CSV file back into N-Able to assign those parameters to the appropriate devices. Reboot the devices to activate the new settings. This procedure can be used to configure multiple networked AV devices at the same time. It can also provide valuable diagnostics by allowing you to see the last known device configuration as well as scan the network for new devices (regardless of IP configuration).

To configure units using a CSV file, follow these steps:

1. Make sure that you have performed an **Auto Discover** (on the **Unit Management** tab of N-Able) since connecting all of the new units to the network.
2. From N-Able's main menu bar, select **N-Able > Export CSV**.
3. Click **Yes** on the pop-up box informing you that a CSV file is about to be generated.

NOTE: A CSV file editor (e.g., Microsoft Excel) is necessary to proceed.

4. The folder containing your CSV file displays. Double-click the file to open it.
5. You can use this file to edit the IP mode, IP address, subnet mask, gateway IP address, stream number, etc. Once all changes have been made, save the file.

NOTE: Mac and Serial numbers must match and be present on the saved/modified version.

6. Go back into N-Able and select **N-Able > Import CSV**.
7. Browse to your saved CSV file and click **Import**.

Step 5: Connecting Encoders to an Input Source

Having already connected the Encoder(s) to the network and made the appropriate settings changes (as described in [Step 3](#) and [Step 4](#)), you can now connect to the appropriate AV source(s). This connection from an Encoder **HDMI IN** port (female) to an input source is accomplished using either an HDMI cable or DVI-I (through adapter).

1. Connect the source you would like to use for the Encoder (camera, laptop, etc.) to the Encoder's **HDMI IN** port using an HDMI cable. If the source has an analog video output (such as VGA) use a VGA cable or appropriate adapters and connect it to the **VGA IN** port.
2. Repeat until all Encoders are connected to their sources.

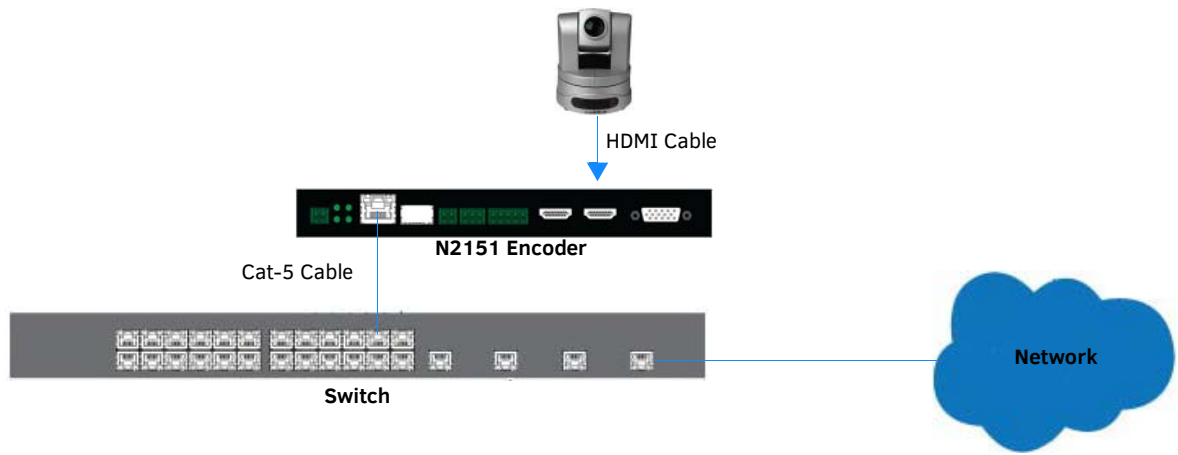


FIG. 15 Encoder Connection to Source

Switching and Scaling Options

N-Series Encoders and Decoders make up a true AV matrix solution. In other words, one input can go to any or all outputs. Both Encoders and Decoders have internal scaling capabilities. Keep the following in mind:

- The input of an Encoder is the video and/or audio signal going into the Encoder.
- The output of an Encoder is the network stream.
- The input of a Decoder is the network stream.
- The output of a Decoder is the digital video and/or audio being transmitted out to the display device.

NOTE: Cropping and scaling features are not available when input is 3840x2160@50, 3840x2160@59.97, 3840x2160@60, 4096x2160@50, 4096x2160@59.97, or 4096x2160@60.

Seamless Switching

The N2X51 Series supports seamless switching capability if the scalers in the Decoders are all set to the same resolution and refresh rate. If the scalers are off, all of the *sources* must have the same resolution and refresh rate.

To get streams onto a Decoder, use the **Video Matrix** tab to route video from an Encoder to a Decoder. This works seamlessly if the previously mentioned settings are true. All you have to do is click the intersecting cell on the matrix, and click the **Take** button. See [Figure 16](#) for an example.

Selecting this cell directs the **Conference Rm Decoder** to listen to the **Conference Rm Encoder**.

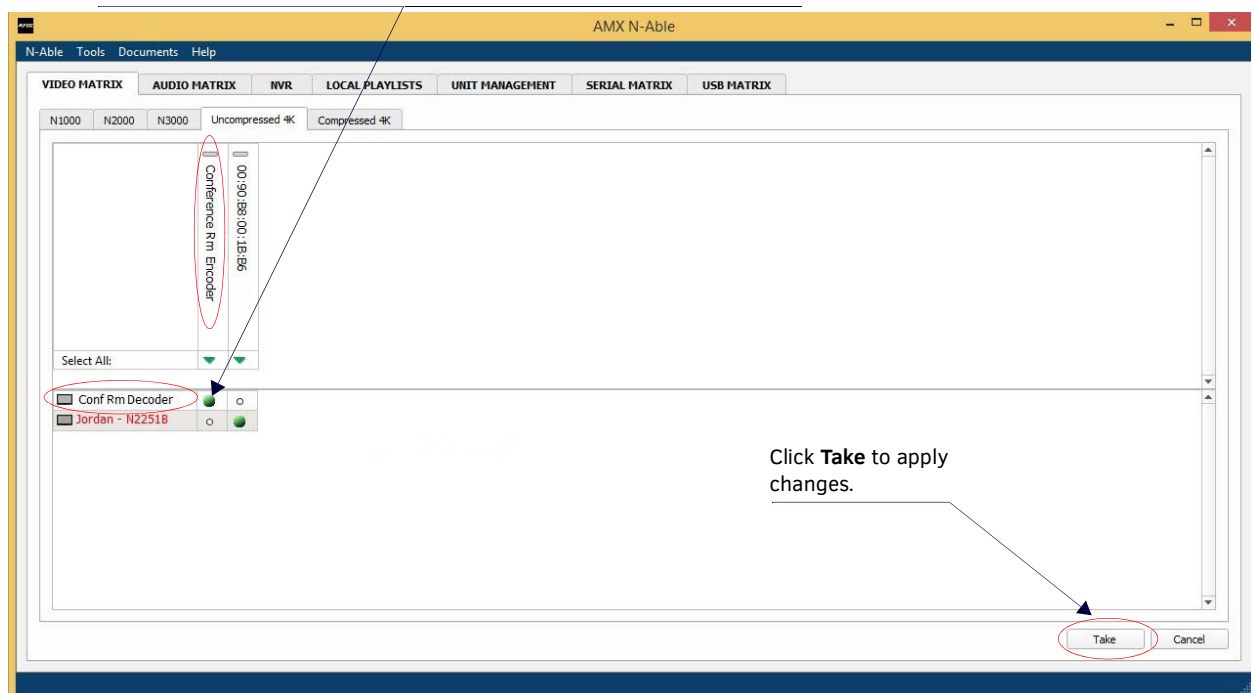


FIG. 16 Seamless Switching Using the Video Matrix

Control Options

For the most part, once the initial setup is complete, you will be primarily managing/configuring the Decoders. To better understand, think of Encoders as radio stations and Decoders as car radios. The Encoders are supplying the streams and, using the Decoders, you can “tune in” to the stream you want. Our N-Control solutions (N-Command, N-Act, and N-Touch) provide you with the most flexible management options available, ensuring you are getting the most from your digital media system.

Primary Control Options

During initial configuration and setup, the free N-Able setup utility is sufficient. However, N-Able is not recommended for production-level, primary-user control.

N-Command Controllers

These web-based hardware Controllers offer intuitive, powerful management of equipment, content, NVR recording/playback, and AV switching (using a web-based, point-and-click graphical matrix). The N-Command product line also offers:

- Simplified ASCII interface for third-party control via TCP/IP.
- N8002 and N8012 controllers have master/client failover protection.
- N8012 controller has hot-swappable drives and redundant power supplies.
- Graphical presentation of video network connections.
- Full configuration control: assign fixed IP addresses for each N-Series component, adjust variable bit-rate for each video stream, etc.
- Additional software bundles (free with N-Command) allow you to easily create attractive touch panels for N-Series and third-party equipment control, as well as build software design walls of any size. Visit our website for more details on the available N-Command Controllers.

Third-Party Controllers

For direct control of N2X51 units from any Third Party Control system, please use the Direct Control API (available on our website).

N-Act | On-Board, Built-In Control

All N-Series Encoders and Decoders have on-board, built-in control capability via events that can trigger any number of TCP/UDP commands to other IP controllable devices. Included free with all N-Series Encoders/Decoders. See the section *N-Act Page* on page 36 for more information.

N-Touch | IP Wall Controller

This 240 x 320 capacitive touch display has Wi-Fi and Bluetooth for expanding control to mobile devices. Programming is done individually through the built-in web server or collectively to multiple units using an N-Command N8000 Series Controller. Multi-page custom graphics can be created using the free Panel Builder software (stored internally).

KVM Configuration

The N2151 Encoders and N2251 Decoders are KVM-capable. By default, USB connections are enabled and configured to follow video switching.

Basic Setup

Follow these steps for basic KVM configuration:

1. On the N2151 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 N2251 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).

NOTE: For wireless devices, simply plug the wireless signal receivers into these ports.

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 intersecting cell for the desired Encoder/Decoder streaming combination.
9. Click the **Take** button to make the change to your matrix. The cell button turns green to indicate the connection was successful.

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.

Video/USB Switching Options

USB Follows Video: By default, units can be switched using N-Able without modifying the configuration. When you switch video streams (using the matrix) 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 *without* 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 Setup (With Added Security Features)

You can configure devices for more advanced KVM operation on the Encoder and Decoder using N-Able's **KVM Wizard**. To access the wizard, select **Tools > KVM Wizard** from the N-Able main menu (as shown below in [Figure 17](#)).

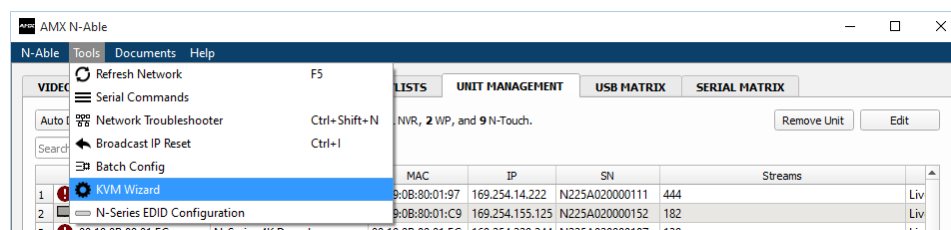


FIG. 17 KVM Wizard

The following table describes some of the more advanced functionality.

Passwords and Permission Levels	
Option	Description
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 (on the Decoder's KVM page) to: <ul style="list-style-type: none"> • Let the Decoder know the Encoder passwords it needs to establish communication. • 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 Settings 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.
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.

NOTE: These options can also be managed in the unit's GUI (by clicking KVM from the main menu as shown in [Figure 18](#)). 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. See [KVM Page](#) on page 58 for more details.

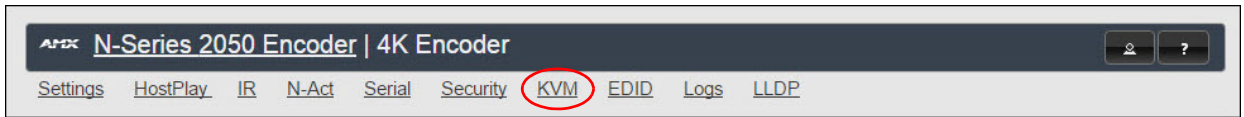


FIG. 18 Selecting the KVM Page

Chapter 3: Encoder Configuration Options

This chapter defines N2151 Encoder configuration options. For ease of navigation, it is organized to reflect the graphical user interface (GUI).

From any main page in the GUI, you can access all other main pages by clicking the links in the top navigation bar. [Figure 19](#) shows the navigation bar and provides hot links to the sections of this chapter which describe each main page.

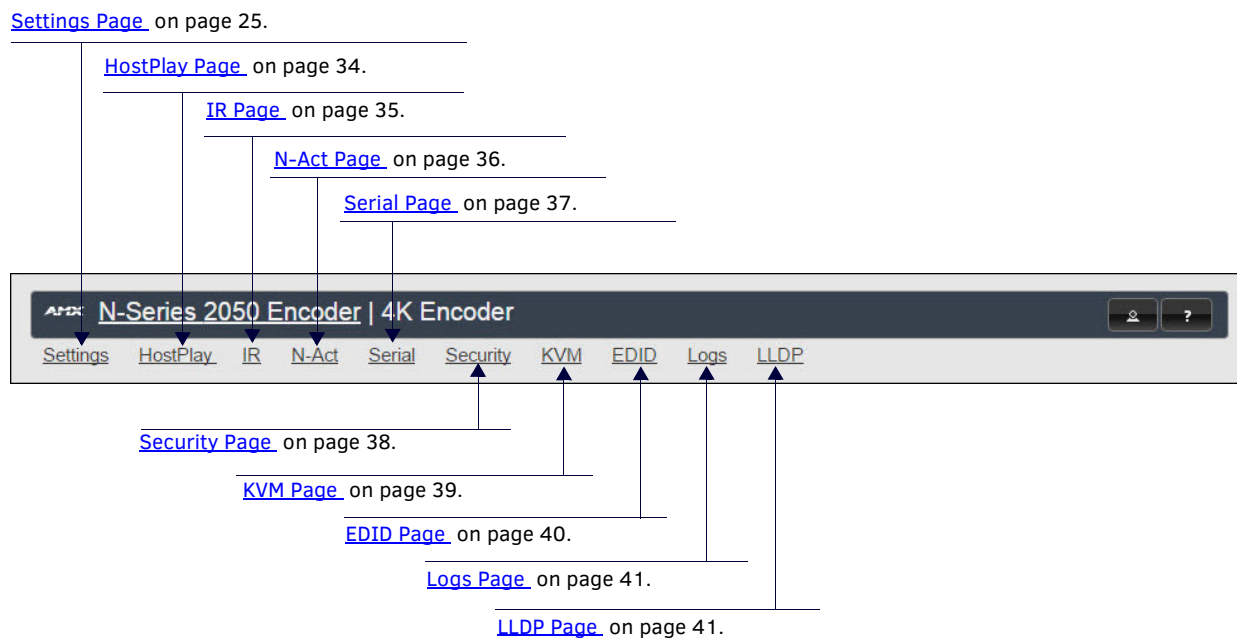


FIG. 19 Section Links

Settings Page

Click the **Settings** link at the top of any of the main web pages to access the page shown in [Figure 20](#). This page is divided into several sections and also has links to other dialog boxes for additional configuration options. Refer to the following sections for detailed descriptions:

- [Encoder Setup Section on page 26](#)
- [Advanced Settings on page 28](#)
- [RS232 Settings on page 30](#)
- [Network Setup Section on page 30](#)
- [Status Section on page 31](#)
- [Change Password Section on page 32](#)
- [Software Section on page 32](#)
- [HDMI Pass Thru Settings Section on page 33](#)

The screenshot shows the Settings Page for an AMX N-Series 2050 Encoder | 4K Encoder. The page is divided into several sections:

- Encoder Setup:**
 - Device Name: 4K Encoder
 - TX Enable: Enable
 - Compressed Stream: 1441 P0 P1
Video: 239.255.5.161:50002
Audio: 239.255.133.161:50003
 - Uncompressed Stream: 1442 P1
Video: 239.255.5.162:50002
Audio: 239.255.133.162:50003
 - Video Source: HDMI / VGA (is None)
 - Audio Input Type: Unbalanced
 - Live/Local: Live
 - Audio Sample Rate: 44100 Hz
 - Image Quality: 100%
 - Mute: Mute
 - Audio Source: Auto (is Analog)
 - Color Space Correction: Auto
 - Buttons: Cancel, Save
- Network Setup:**
 - IP Mode: STATIC (dropdown)
 - IP address: 169.254.122.97 (169.254.122.97)
 - Netmask: 255.255.0.0 (255.255.0.0)
 - Gateway address: 169.254.1.1 (169.254.1.1)
 - Ping Test: 169.254.1.1 (Ping)
 - Button: Trial Save
- Status:**
 - HDMI Status: disconnected
 - Input Resolution: No Source
 - HDMI Status Pass Thru: disconnected
 - Bandwidth Uncompressed: 881.5 Mbps
 - Bandwidth Compressed: 67.0 Mbps
 - Port 50001 Source IP: Disconnected (Flush)
 - Port 50002 Source IP: Disconnected (Flush)
 - Serial Source IP: Disconnected (Flush)
 - KVM IP: Inactive
- Change Password:**
 - Button: Change Password
- Software:**
 - Serial: N215A010000005
 - MAC address: 00:19:0B:7F:FF:05
 - Firmware Version: v1.4.13 (6/24/2016)
 - Web Version: 6/17/2016
 - Buttons: Factory Restore, Reboot
- HDMI Pass Thru:**
 - Button: HDMI Pass Thru Settings

At the bottom of the page, the contact information is displayed: AMX | 256.461.7143 | svsisupport@harman.com

FIG. 20 Settings Page

Encoder Setup Section

The **Encoder Setup** section of the **Settings** page is shown in [Figure 21](#). Options are described in [Table 1](#).

Encoder Setup

Device Name:

TX Enable Enable

Compressed Stream P0 P1
Video: 239.255.5.161:50002
 Audio: 239.255.133.161:50003

Uncompressed Stream P1
Video: 239.255.5.162:50002
 Audio: 239.255.133.162:50003

Video Source (is None)

Audio Input Type

Live/Local

Audio Sample Rate Hz

Image Quality %

Mute Mute

Audio Source (is Analog)

Color Space Correction

[Advanced Settings](#)

[RS232 Settings](#)

Allow SVSI Multicast P0

Disable P1 Disable

FIG. 21 Encoder Setup Section

TABLE 1 Settings Page: Encoder Setup Section

Option	Description	Notes
Device Name	Enter a user-friendly name for the unit.	More descriptive names in this field help you organize and manage the N-Series system efficiently. Names based on the unit's location and function are very useful. Some good examples are Lobby-Left-VGA (for left side of lobby, VGA input) or CR201-HDMI (for Conference Room 201, HDMI input). Keep in mind the matrices are organized alphanumerically. Avoid using special characters.
TX Enable	Enable to generate and transmit multicast streams.	
Compressed Stream	View/edit the current transmit compressed stream number. Enable the port you wish to transmit the stream on (P0 or P1).	To better understand this setting, think of Encoders more like a channel on a cable box, rather than a traditional AV Matrix. Each Encoder must have a unique stream number, just like every channel must have a unique channel number (e.g., Food Network and HGTV cannot both be on channel 201).
Uncompressed Stream	View/edit the current transmit uncompressed stream number. Enable the P1 checkbox if you want the unit to output an uncompressed stream.	P1 can stream both compressed and uncompressed, and it can do so simultaneously. If you prefer to use compressed video and disable uncompressed (so as not to overwhelm the network) disable this P1 checkbox.

TABLE 1 Settings Page: Encoder Setup Section (Cont.)

Option	Description	Notes
Video Source	Select which input port is encoding video.	Selecting HDMI/VGA declares HDMI as the primary port and VGA as the secondary port (when there is no HDMI input). Selecting VGA/HDMI declares VGA as the primary port and HDMI as the secondary port. Selecting VGA only or HDMI only disables the other video input port.
Audio Input Type	Select Unbalanced (single-ended) or Balanced analog audio input.	
Live/Local	Select live video or locally stored images for transmission onto the network. When video is not available, it automatically goes into local mode.	When video is not available, the most recently played local playlist is displayed.
Audio Sample Rate	Select the sample rate, in Hz, for the analog audio.	
Image Quality	Adjust the compression level of the image. The further to the left on the slider, the more compression which will display as pixelization of the image.	
Mute	Enable to stop the transmission of audio data onto the network.	
Audio Source	Set the audio source to be disabled, enabled or selected automatically (see note).	The AUTO setting always corresponds to HDMI audio as long as there is an HDMI source. If the source is unplugged, it will automatically fall back to analog audio (if there is an analog source plugged in).
Color Space Correction	Set the color space settings for the Encoder (YcbCr, RGB) to be disabled, enabled, or selected automatically based on the source.	If you see a pink/green washed out screen (across the entire image), this can be changed by modifying color space settings. Most sources function with Auto selected but (for problematic sources) hard-set the value to what the source requires. It is best to do hard-set for all permanently installed sources (e.g., cameras, cable boxes, etc), but leave Auto on for periodic sources (e.g., laptop inputs).
Advanced Settings	Refer to Advanced Settings on page 28 for details on the options available from this link.	
RS232 Settings	Refer to RS232 Settings on page 30 for details on the options available from this link.	
Allow SVSI Multicast	Disable this option to prevent the port from outputting multicast video traffic.	Particularly useful if you are connecting a non-SVSI device to a port for network-based control.
Disable P1	Completely disables the P1 port for all traffic.	Once disabled, anything connected to the P1 port will no longer be available on the network.
Cancel	Click to return all controls to the last saved configuration.	
Save	Click to accept changes made to these controls.	

Advanced Settings

The section of the **Settings** page shown in [Figure 22](#) is displayed when you click the **Advanced Settings** link. Options are described in [Table 2](#).

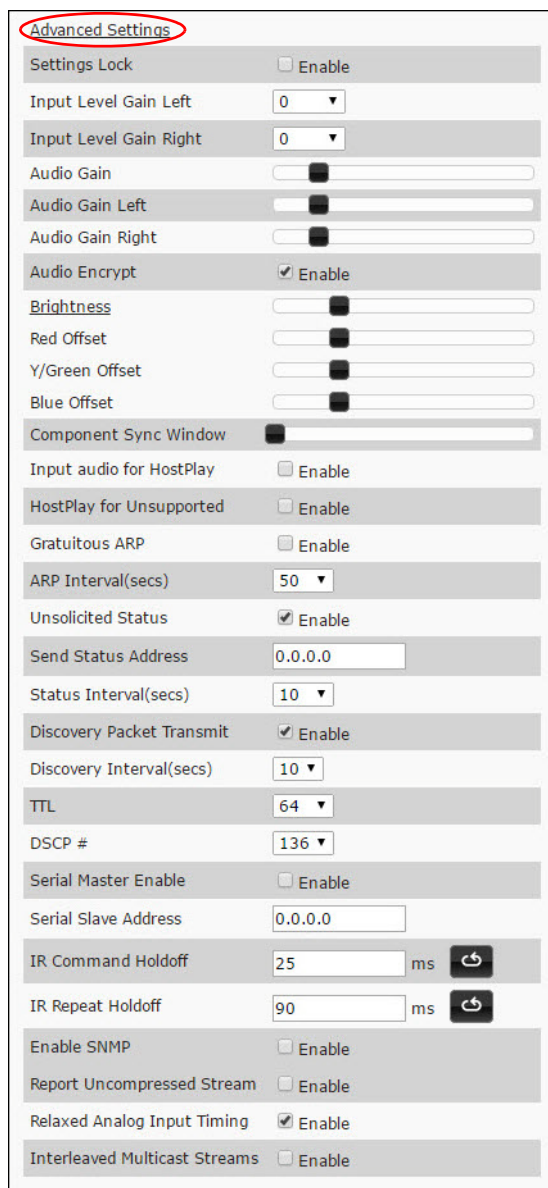


FIG. 22 Advanced Settings

TABLE 2 Settings Page: Advanced Settings

Option	Description	Notes
Settings Lock	Enable to lock the Encoder IP settings and stream number, preventing automated processes (from N-Able or N-Command) from occurring.	This does <i>not</i> prevent a control system from making changes or a user from manually making changes.
Input Level Gain Left/Right	Select a PRE-ENCODE cut in the audio signal.	This can help prevent distortion of the audio when the source is providing audio that is too loud/clipping. Setting does <i>not</i> affect digital audio.
Audio Gain	Slide right to provide a POST-ENCODE boost in the audio signal (to both left and right channels).	This can help compensate when the source is providing a weak audio signal. Does not affect digital audio.
Audio Gain Left/Right	Slide right to provide a POST-ENCODE boost in the left or right channel's audio signal.	This can help compensate when the source is providing a weak audio signal. Does not affect digital audio.

TABLE 2 Settings Page: Advanced Settings (Cont.)

Option	Description	Notes
Audio Encrypt	Enable to encrypt the audio stream.	Encryption is on by default. Turn off encryption to allow for compatibility with other devices that require a decrypted stream.
Brightness	Use sliders to raise or lower RGB values of the Encoder (POST-ENCODE).	Only affects analog video. Does not affect digital video.
Component Sync Window	Use this slider to configure the sync on green sensitivity.	Used for computer video input to help with screen flickering.
Input audio for HostPlay	Enable to activate the input audio when the Live/Local menu is set to one of the local images.	
HostPlay for Unsupported	Enable to cause the Encoder to use a custom image whenever an unsupported video mode is supplied to it.	
Gratuitous ARP	Enable the Encoder to send a periodic Address Resolution Protocol (ARP) packet to the network.	
ARP Interval (secs)	Determine how often (in seconds) the unit transmits gratuitous ARP packets.	
Unsolicited Status	Enable the Encoder to send a periodic status packet to the Send Status Address described below.	
Send Status Address	When Unsolicited Status is enabled, the Encoder sends a periodic status packet to the IP address specified here.	
Status Interval (secs)	Determine how often (in seconds) the unit transmits status packets.	
Discovery Packet Transmit	Enable the multicast discovery service (which is used to identify units).	This is useful for larger network integrations when multicast packets will not cover the entire network. Enabled by default.
Discovery Interval (secs)	Determine how often (in seconds) the unit transmits discovery packets.	
TTL	Select the Time To Live (TTL) for the transmit audio and video streams.	Limits the lifespan of data on the transmit audio and video streams (to improve performance).
DSCP #	Select the Differentiated Services Code Point (DSCP) for the transmit audio and video streams.	
Serial Master Enable	Enable this device to be the master to the designated client.	The unit stops responding to outside RS232 commands when in Serial Client Mode. Can be disabled to start responding again.
Serial Client Address	Enter the IP address of the serial client device.	
IR Command Holdoff	Set the delay between IR command portions. The default setting is 25 ms.	IR commands are sent in two parts. This setting is the time (in milliseconds) between transmission of part one and part two. The second part of the command is inverted for confirmation purposes.
IR Repeat Holdoff	Set the repeat delay between IR commands. The default setting is 90 ms.	This is the amount of time before a new command is sent. For example, when pressing and holding the volume button on a remote control, this is how long until the command is repeated.
Enable SNMP	Enable to allow the device to handle Simple Network Management Protocol (SNMP) queries.	
Report Uncompressed Stream	Enable to have the Encoder default to the uncompressed stream upon reboot.	
Relaxed Analog Input Timing	Enable to allow small variances in the analog input (to avoid video interruption).	
Interleaved Multicast Stream	Enables a multicast format which interleaves video and audio streams.	In order for N-Series devices to communicate with each other, their multicast settings must be compatible.

RS232 Settings

The section of the **Settings** page shown in [Figure 23](#) is displayed when you click the **RS232 Settings** link. Options are described in [Table 3](#).

FIG. 23 RS232 Settings

TABLE 3 Settings Page: RS232 Settings

Option	Description
RS232 Baud Rate	Select the appropriate baud rate for the RS232 serial interface. Default is 9600.
RS232 Data Bits	Select the appropriate data bit count for the RS232 serial interface. Default is 8.
RS232 Parity	Select the appropriate parity for the RS232 serial interface. Default is no parity (none).
RS232 Stop Bits	Select the appropriate number of stop bits for the RS232 serial interface. Default is 1.

Network Setup Section

The **Network Setup** section of the **Settings** page is shown in [Figure 24](#). Options are described in [Table 4](#).

FIG. 24 Network Setup Section

TABLE 4 Settings Page: Network Setup Settings

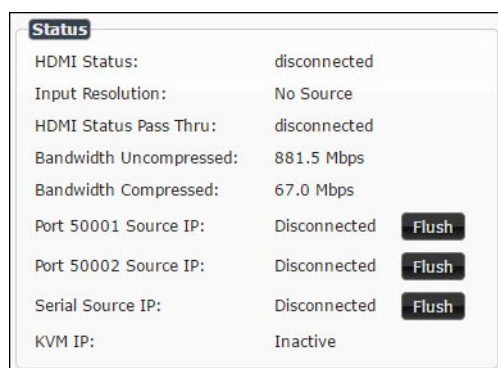
Option	Description	Notes
IP Mode	Configure the IP address mode. When set to AUTO IP , an IP Address in the range of 169.254.xxx.xxx with Netmask of 255.255.0.0 and Gateway address of 169.254.1.1 will be automatically assigned to the N2151 Encoder by the control software. When set to DHCP , an IP Address in the range of the DHCP server on the network will be automatically assigned to the N2151 Encoder. When set to STATIC , an IP address , Netmask , and Gateway address must be manually entered.	DHCP is the default setting. However, using DHCP beyond initial setup is generally not recommended. If the device is set to DHCP and fails to receive an address from the DHCP server in time, it will revert back to the AUTO IP Address (169.254.xxx.xxx) until the unit is rebooted.
IP address	View the current IP address of the N2151 Encoder. When in STATIC mode, enter a new IP address into this field.	No warnings are provided regarding improper addressing/subnetting. Be very careful to follow standardized network protocol guidelines when adjusting these settings.
Netmask	View the current Netmask of the N2151 Encoder. When in STATIC mode, enter a new Netmask into this field.	No warnings are provided regarding improper addressing/subnetting. Be very careful to follow standardized network protocol guidelines when adjusting these settings.
Gateway address	View the current Gateway address of the N2151 Encoder. When in STATIC mode, enter a new Gateway address into this field.	

TABLE 4 Settings Page: Network Setup Settings (Cont.)

Option	Description	Notes
Ping Test	Test connection by specifying an IP address or URL to ping. Click the Ping link to initiate the test.	
Trial Save	Click to initially save IP address changes. Once you log in to the unit using the new address, you will be able to confirm and accept the changes permanently.	

Status Section

The **Status** section of the **Settings** page is shown in [Figure 25](#). Options are described in [Table 5](#).

**FIG. 25** Status Section**TABLE 5** Settings Page: Status Section

Option	Description	Notes
HDMI Status	Indicates if a video source is connected to the Encoder.	
Input Resolution	Indicates the video resolution of the currently connected source.	
HDMI Status Pass Thru	Indicates if a display device is connected to the Encoder.	
Bandwidth Uncompressed	This is a snapshot of the unit as properties were loaded to the browser, not a live counter. Refresh the page to get an updated uncompressed bandwidth.	Output bandwidth shown even if transmit is disabled.
Bandwidth Compressed	This is a snapshot of the unit as properties were loaded to the browser, not a live counter. Refresh the page to get an updated compressed bandwidth.	Output bandwidth shown even if transmit is disabled.
Port 50001 Source IP	Shows the IP address of the currently connected device or displays Disconnected if no connection exists.	Port 50001 can only accept a single external connection at a time. If a device is currently showing the port occupied (by a control system or other device), then other connections will be rejected. However, connection attempts from the same IP will override the current connection.
Port 50002 Source IP	Shows the IP address of the currently connected device or displays Disconnected if no connection exists.	Port 50002 can only accept a single external connection at a time. If a device is currently showing the port occupied (by a control system or other device), then other connections will be rejected. However, connection attempts from the same IP will override the current connection.
Serial Source IP	Shows the IP address of the currently connected device or displays Disconnected if no connection exists.	Only a single external connection can be accepted on the port. If a device is currently showing the port occupied (by a control system or other device), then other connections will be rejected. However, connection attempts from the same IP will override the current connection.
Flush buttons	These buttons reset the port.	
KVM IP	Shows the IP address of the KVM Decoder currently connected to this Encoder.	

Change Password Section

To change the N2151 Encoder interface password (for admin-level access) enter the current password in the field labeled **Old Password**, and enter a new password in the **New Password** and **Confirm Password** fields. Click **Change PW** to accept the new password.

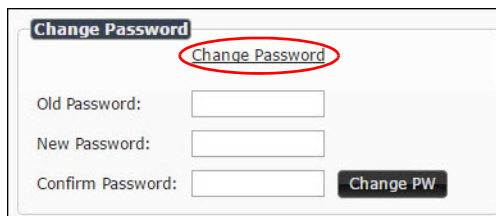


FIG. 26 Change Password

NOTE: This password needs to match N-Able's stored password to allow auto-login using N-Able.

Software Section

The **Software** section of the **Settings** page is shown in [Figure 27](#). Options are described in [Table 6](#).

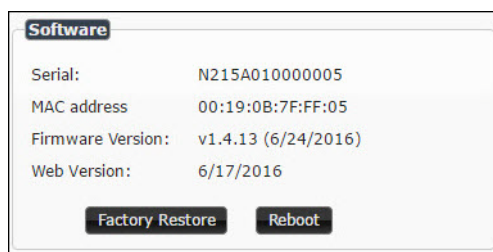


FIG. 27 Software Section

TABLE 6 Settings Page: Software Section

Option	Description
Serial	Displays the serial number of the N2151 Encoder.
MAC Address	Displays the MAC address of the network interface of the N2151 Encoder.
Firmware Version	Displays the date code for the currently running version of the N2151 Encoder internal firmware.
Web Version	Displays the date code for the currently running version of the web interface.
Factory Restore	Click to restore the device to the original factory settings. This resets everything except the IP address (including name, stream number, serial settings, etc.).
Reboot	Click to reboot the device (does not affect current configuration).

HDMI Pass Thru Settings Section

The section of the **Settings** page show in [Figure 28](#) is displayed when you click the **HDMI Pass Thru Settings** link. Options are described in [Table 7](#).

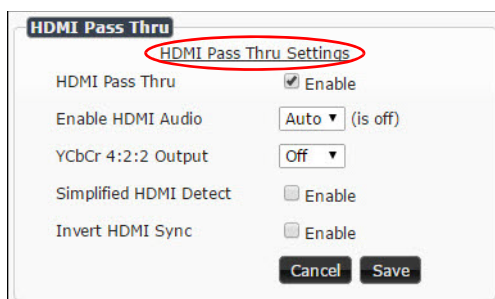


FIG. 28 HDMI Pass Thru Settings

TABLE 7 Settings Page: HDMI Pass Thru Settings

Option	Description
HDMI Pass Thru	Enables looped output.
Enable HDMI Audio	Determines if the unit will output audio over the HDMI connection. Selecting Auto bases audio output on the settings of the connected source device.
YCbCr 4:2:2 Output	For color conversion. Can force to RGB output based on connected device's reported settings. Default (and preferred setting) is Off .
Simplified HDMI Detect	When enabled, detects HDMI solely based on the hot plug detection. Enable to help prevent displays/monitors from going to sleep.
Invert HDMI Sync	Inverts horizontal and vertical synchronization to the output display. Used for non-standard displays.
Cancel	Click to return all controls to the last saved configuration.
Save	Click to accept changes made to these controls.

HostPlay Page

Click the **HostPlay** link at the top of any of the main web pages to access the page shown in [Figure 29](#). This page allows you to upload new images to the Encoders and configure the image playlists. The playlist will be shown on the display when no video is being transmitted or received. You can show a single image or set up multiple images to be displayed at a customized animation rate. Audio can be uploaded and set to play whenever HostPlay is active. See [Table 8](#) for option descriptions.

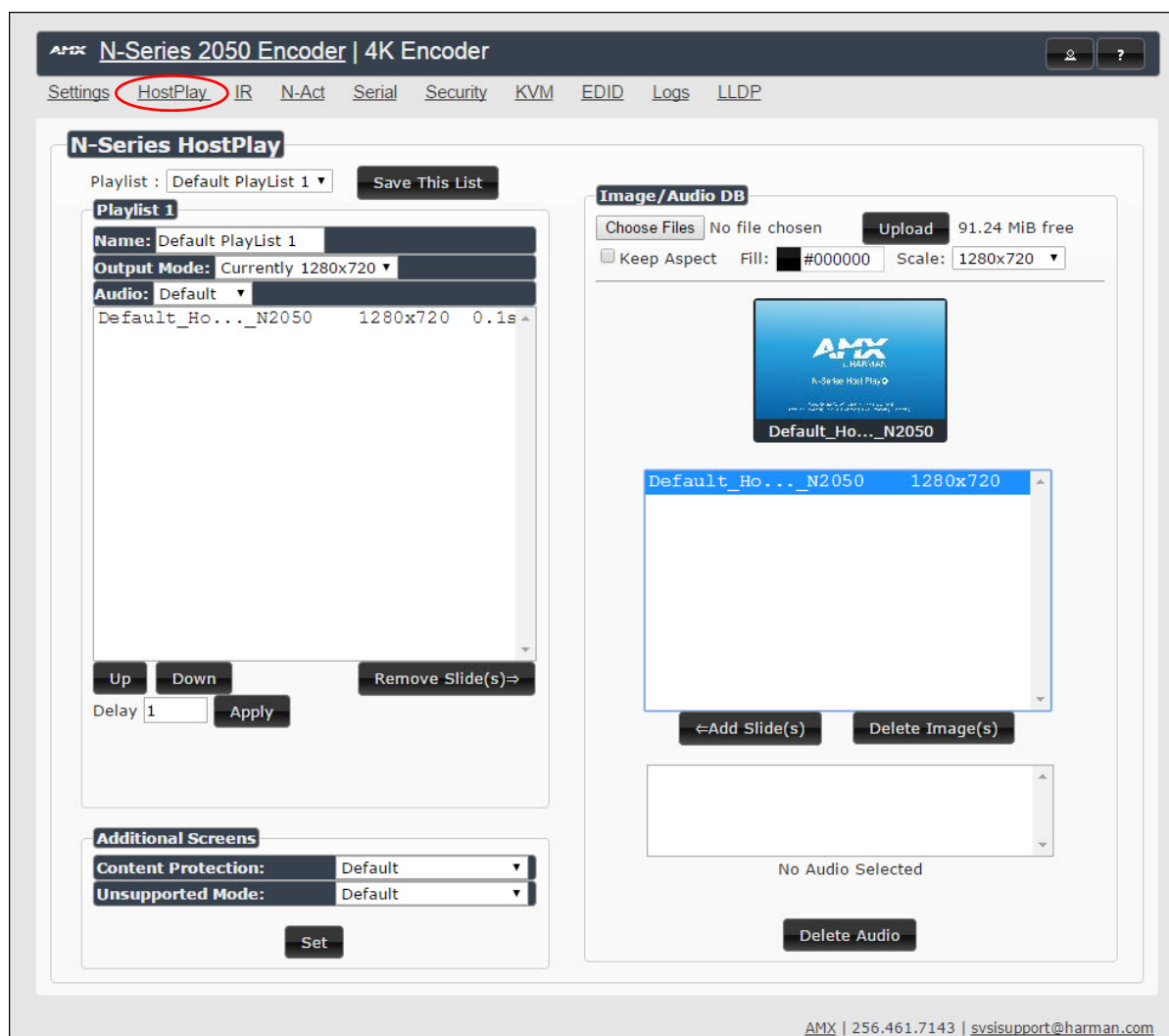


FIG. 29 HostPlay Page

TABLE 8 HostPlay Page Options

Option	Description
Playlist	Select a playlist from the drop-down menu to view/edit the images currently used in the chosen image playlists. If more than one image appears in the list, a transition time can be set for each image.
Save This List	Click to save the current configuration.
Name	Enter a name for the playlist.
Output Mode	Select the HostPlay output resolution. The playlists that were uploaded in that resolution are then displayed for your selection.
Audio	Choose an audio file to play while the HostPlay image is on the screen.
Image list	Allows you to customize what images are displayed, the transition time for each image, etc.
Additional Screens	Allows you to choose what is displayed as the HostPlay page if there is an unsupported mode or content protection issue.
Image/Audio DB	This section provides the ability to upload image and audio files to the N2151 Encoder database. You can also use the Fill field to customize the background color (used behind HostPlay images that do not take up the entire screen).
Delete Images	Delete the selected image file from the playlist.
Delete Audio	Delete the selected audio file from the playlist.

IR Page

Click the **IR** link at the top of any of the main web pages to access the page shown in [Figure 30](#). This page allows you to upload and execute IR Pronto codes so that other vendor's devices can be controlled through the Encoder's IR connector. Commands can be saved for future use and executed later. The **IR Code** menu lists all saved IR commands. See [Table 9](#) for option descriptions.



FIG. 30 IR Page

TABLE 9 IR Page Options

Option	Description
IR Code	Create/select IR codes. Different vendors have different IR Pronto codes and can usually be found through a web search. Copy/paste new IR commands directly into the input space.
Save	Save the current code.
Delete	Delete the current code.
Execute	Activate the selected code through the Encoder's IR connector.

N-Act Page

Click the **N-Act** link at the top of any of the main web pages to access the page shown in [Figure 31](#). This page allows you to create command lists which are performed automatically by the unit based on power or video connection (without the use of an outside controller). For example, you can tell a projector and lights to come on when the Encoder powers up. You can add multiple commands for each event. See [Table 10](#) for option descriptions.

FIG. 31 N-Act Page

TABLE 10 N-Act Page Options

Option	Description
Enable N-Act Events	Enable to activate the configured events.
Power on Event	Create/delete/test events to be performed when the Encoder powers on. Visit our website for more details on Application Programming Interface (API) commands.
Video Cable Connected Event	Create/delete/test events to be performed when the Encoder is connected to a video source. The Trigger Delay field specifies how long the device has to be connected for the command to be executed.
Video Cable Disconnected Event	Create/delete/test events to be performed when the Encoder is disconnected from a video source. The Trigger Delay field specifies how long the device has to be disconnected for the command to be executed. This keeps accidental (momentary) disconnects from triggering the command sequence. Video source must be active for event to trigger.
Save Events	Click to save changes made to this page.
Import/Export	Use this section of the page to import/export N-Act event configurations. from one unit to others.

Serial Page

Click the **Serial** link at the top of any of the main web pages to access the page shown in [Figure 32](#). This page allows you to upload and execute commands used for direct control of serial devices. Commands may be saved for future use and executed later. The **Serial Code** menu lists all saved commands. See [Table 11](#) for option descriptions.

NOTE: If the Port 5004/Serial Port is currently in use by another device, sending commands from the Serial page will always return a No Data message and fail to send the commands.

FIG. 32 Serial Page

TABLE 11 Serial Page Options

Option	Description
Serial Code	Create/select serial commands. Different vendors have different codes that can usually be found through a web search. Copy/paste new commands (in either ASCII or HEX) directly into the appropriate input space.
Save	Save the current code.
Delete	Delete the current code.
Execute	Apply the selected code to the Encoder's serial connection.
ASCII and HEX	Paste serial commands directly into either the ASCII or HEX field.
Response	View responses provided by the device receiving the serial command(s).

Security Page

Click the **Security** link at the top of any of the main web pages to access the page shown in [Figure 33](#). This page allows you to force HTTPS connections and set up a password for stream encryption. To successfully display an encrypted Encoder stream on a Decoder, the Decoder must match the Encoder password.

NOTE: This page only applies if connected to a web page via HTTPS.

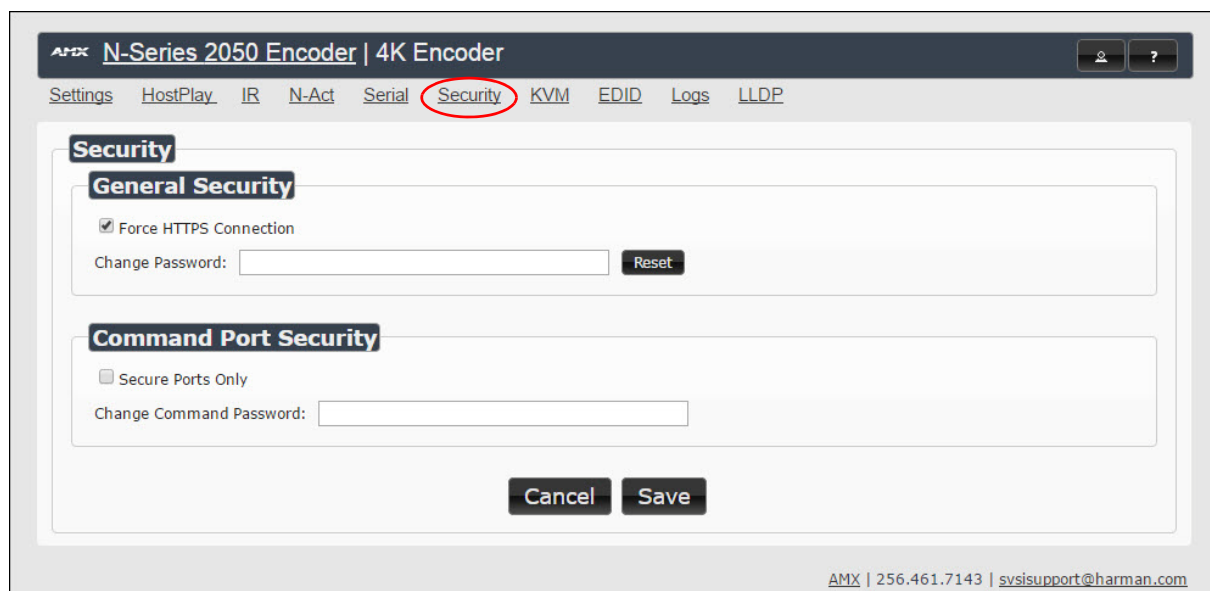


FIG. 33 Security Page

TABLE 12 Security Page Options

Option	Description
General Security	This section allows you to force HTTPS connections and set up a default password for stream encryption. To successfully communicate, the Decoder must know and match the Encoder password.
Command Port Security	This section allows you to secure the port connections for TCP port addresses 50101, 50102, and 50104. These ports are always secure and require an SSL connection. When Secure Ports Only is enabled, the Encoder will only accept commands through the secure ports. <ul style="list-style-type: none"> • 50101 is secure version of 50001. • 50102 is secure version of 50002. • 50104 is secure version of 50004.

KVM Page

Click the **KVM** link at the top of any of the main web pages to access the N-Series KVM page. You must check the **USB Enable** box at the top to see the page shown in [Figure 34](#). See [Table 13](#) for option descriptions.

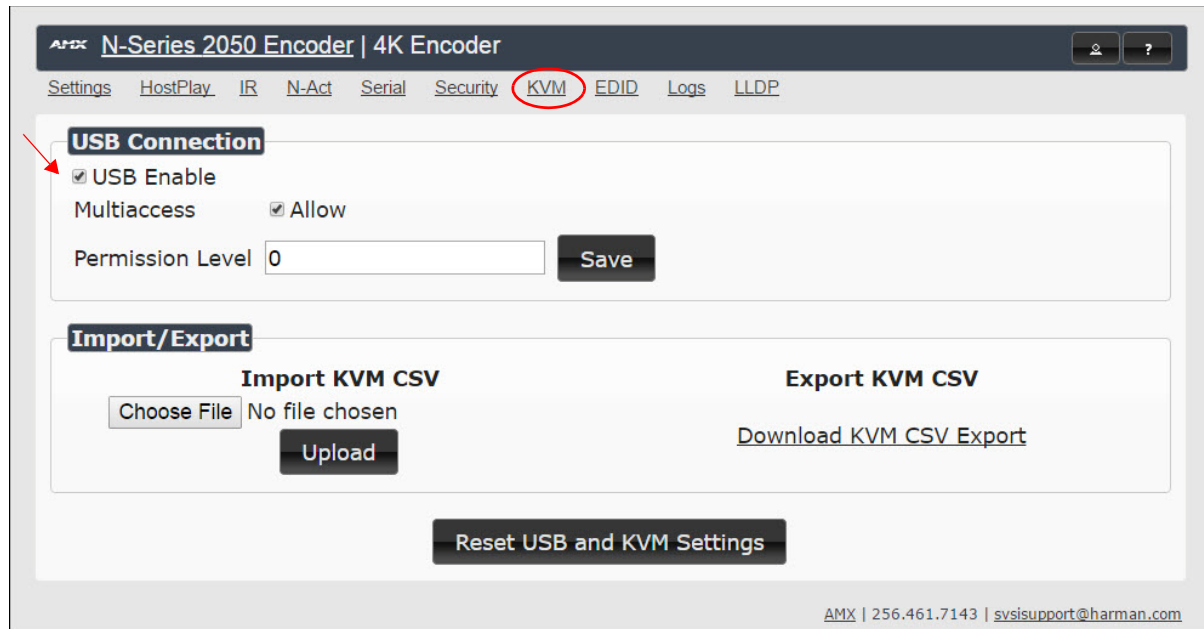


FIG. 34 KVM Page

TABLE 13 KVM Page Options

Option	Description
USB Enable	Enable to allow the ability to share mouse and keyboard over the network. Enabled by default. When disabled, the unit works like a non-KVM unit and ignores any keyboard or mouse activity.
Multiaccess	Enable to allow multiple Decoders to access this Encoder at the same time. (maximum is 100 connections). See the section Advanced KVM Setup (With Added Security Features) on page 22 for more information.
Permission Level	Set the permission level for the Encoder. Decoders can only establish USB connection to Encoders with the same or higher permission level. See the section Advanced KVM Setup (With Added Security Features) on page 22 for more information.
Import KVM CSV	Click the Choose File button and browse to the KVM CSV file on your computer that you would like to use to configure the unit. Then click Upload . For more information, see the section Advanced KVM Setup (With Added Security Features) on page 22.
Export KVM CSV	Click the Download KVM CSV Export link to retrieve the current KVM CSV configuration file.
Reset USB and KVM Settings	Resets all USB and KVM settings.

EDID Page

Click the **EDID** link at the top of any of the main web pages to access the page shown in [Figure 35](#). Every display has stored information that it communicates to the output device. This page allows you to view that information. Options are described in [Table 14](#). Edit the Encoder's EDID if you need to change the display options available to the source. There are four different ways to control the EDID of the Encoders.

Option 1: Use the default settings drop-down menu and select from the options available. Then click **Set EDID**. This will work for most sources and is most often set to **Stereo (2 channel)**.

Option 2: When using an EDID captured from a display connected to a Decoder, paste the data in to the white EDID block, overwriting existing EDID. Then click **Set EDID**.

Option 3: Make changes to the operating parameters displayed on the right side of the screen. Use the **Encode** button to translate the changes into a new EDID and click **Set EDID**.

Option 4: Connect a compatible display to the Encoder's **HDMI Out** port and click **Set EDID to Pass-thru**.

NOTE: The source will need to be disconnected while modifying EDID settings.

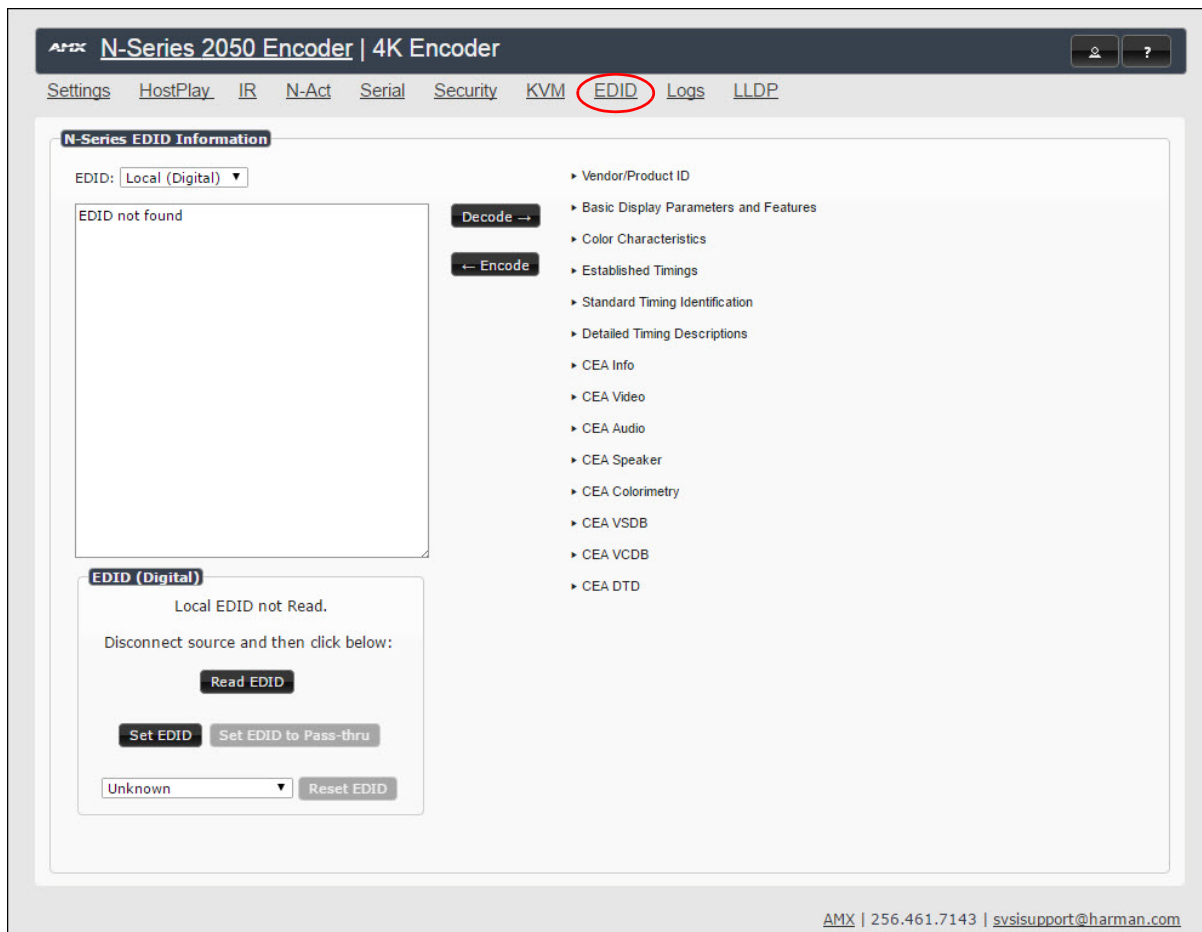


FIG. 35 EDID Page

TABLE 14 EDID Page Options

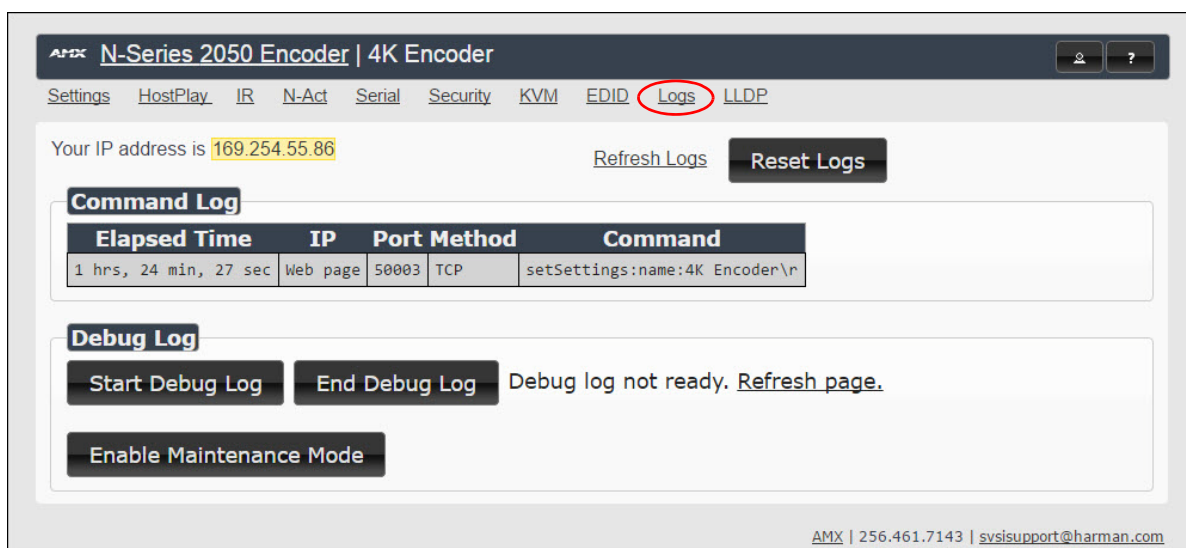
Option	Description
EDID drop-down box	Select what EDID information to display. Pass-thru: Displays EDID information for the display connected to the Encoder's pass thru port. Local (Digital/Analog): Displays EDID information for the Encoder. This information is being provided to the source connected to the Encoder.
Decode button	Click to translate the EDID currently displayed on the left to the operating parameters list on the right.
Encode button	After making any changes to the operating parameters list on the right, click this button to update the EDID information on the left. To store the new settings, click Set EDID .
Read EDID	Click to initially show the EDID or if the source EDID has changed (refreshes the EDID table).
Set EDID	If creating a custom EDID, click to apply the changes.

TABLE 14 EDID Page Options (Cont.)

Option	Description
Set EDID to Pass-thru	Set the EDID to the pass-thru EDID of the connected display to HDMI OUT .
Reset EDID	For Digital , choose a standard EDID from the drop-down menu and click Reset EDID to apply. For Analog , no selection is necessary.

Logs Page

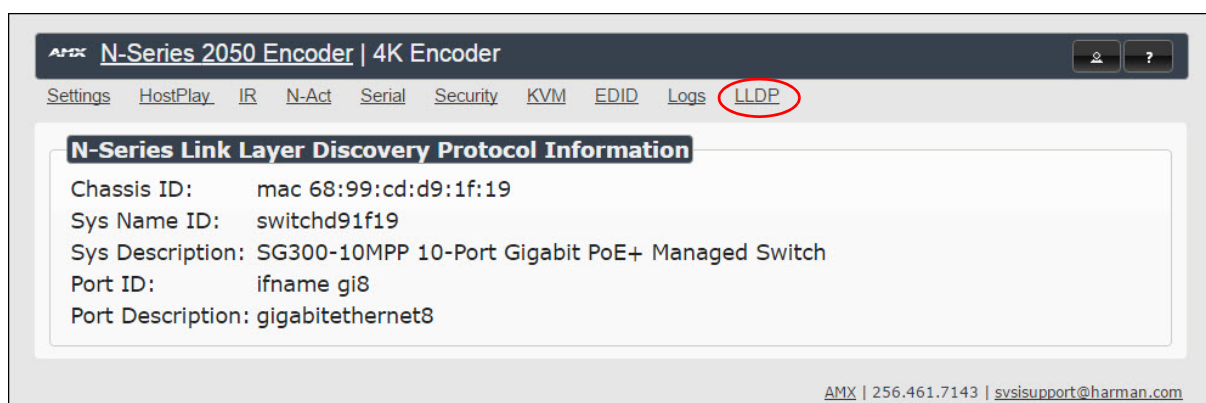
Click the **Logs** link at the top of any of the main web pages to access the page shown in [Figure 36](#). The **Logs** page displays a command log that lists all TCP and UDP messages the unit receives. It also displays the web browser's IP address and gives you options to **Refresh** and **Reset Logs**. When in need of assistance from tech support, use the **Debug Log** section to capture information useful for troubleshooting. Simply click **Start Debug Log**, wait at least one minute, and click **End Debug Log** to create the file. You can then download and send it to AMX support.

**FIG. 36** Logs Page

NOTE: For security reasons, only use the Enable Maintenance Mode if instructed to by SVSI/AMX Technical Support.

LLDP Page

Click the **LLDP** link at the top of any of the main web pages to access the page shown in [Figure 37](#). The **LLDP** page displays information from the Link Layer Discover Protocol (LLDP) packet which identifies the port number and switch the device is connected to.

**FIG. 37** LLDP Page

Chapter 4: Decoder Configuration Options

This chapter defines N2251 Decoder configuration options. For ease of navigation, it is organized to reflect the graphical user interface (GUI).

As explained previously in the [Encoder Configuration Options section on page 24](#), you can access the GUI main pages by clicking the links in the top navigation bar. [Figure 38](#) shows the navigation bar and provides hot links to the sections of this chapter which describe each main page.

[Settings Page](#) on page 43.

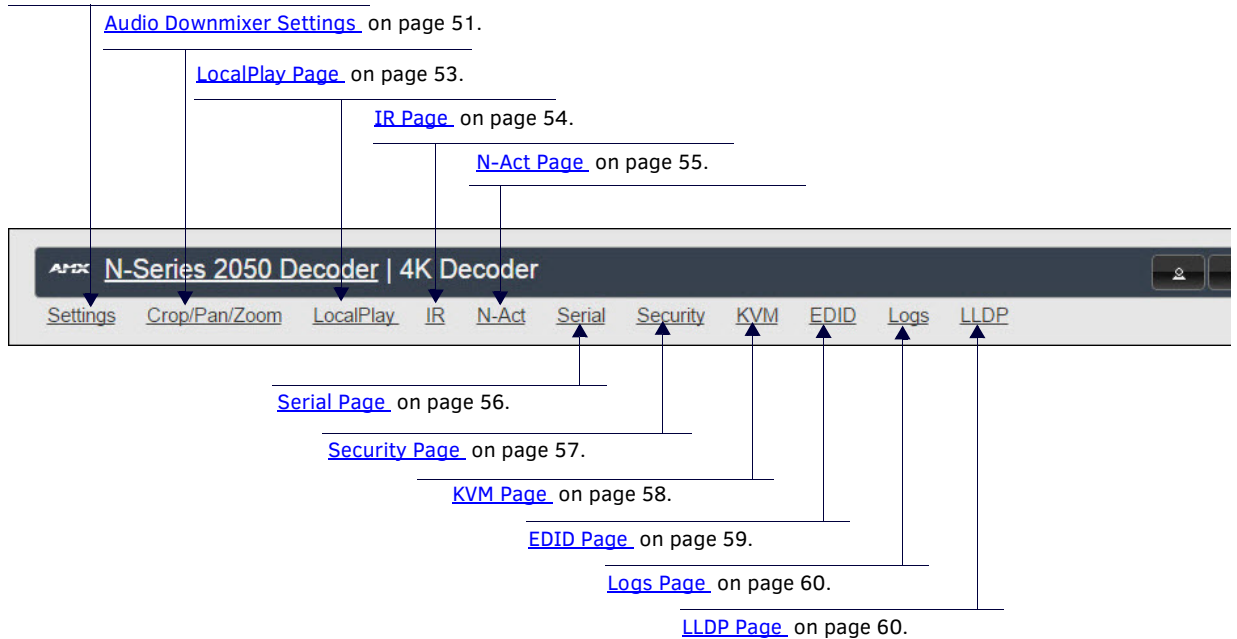


FIG. 38 Section Links

Settings Page

Click the **Settings** link at the top of any of the main web pages to access the page shown in [Figure 39](#). This page is divided into several sections and also has links to other dialog boxes for additional configuration options. Refer to the following sections for detailed descriptions:

- [Decoder Setup Section on page 44](#)
- [Advanced Settings on page 46](#)
- [RS232 Settings on page 48](#)
- [Network Setup Section on page 48](#)
- [Status Section on page 49](#)
- [Change Password Section on page 50](#)
- [Software Section on page 50](#)
- [Audio Downmixer Settings on page 51](#)

AMX N-Series 2050 Decoder | 4K Decoder

[Settings](#) [Crop/Pan/Zoom](#) [LocalPlay](#) [IR](#) [N-Act](#) [Serial](#) [Security](#) [KVM](#) [EDID](#) [Logs](#) [LLDP](#)

Decoder Setup

Device Name:

Stream:
Video: 239.255.5.161:50002

Audio Stream:
Audio: 239.255.133.161:50003

Audio Follows Video Follows

Scaler Enable

Output Mode:

Live/Local:

Mute Mute

Lineout Volume
Set Left/Right

Enable HDMI Audio: (is off)

[Advanced Settings](#)

[RS232 Settings](#)

Allow SVSi Multicast p0

Disable P1 Disable

Network Setup

IP Mode: AUTO IP

IP address: 169.254.25.218

Netmask: 255.255.0.0

Gateway address: 169.254.1.1

Ping Test:

Status

HDMI Status: disconnected

Input Resolution: 1280x720 (59.90 Hz)

Port 50001 Source IP: Disconnected

Port 50002 Source IP: Disconnected

Serial Source IP: Disconnected

KVM IP: Inactive

Change Password

[Change Password](#)

Software

Serial: N225A010000006

MAC address: 00:19:0B:7F:FF:06

Firmware Version: v1.4.11 (6/20/2016)

Web Version: 6/14/2016

Audio Downmixer

[Audio Downmixer Settings](#)

AMX | 256.461.7143 | svsisupport@harman.com

FIG. 39 Settings Page

Decoder Setup Section

The **Decoder Setup** section of the **Settings** page is shown in [Figure 40](#). Options are described in [Table 15](#).

Decoder Setup

Device Name:

Stream:
Video: 239.255.5.161:50002

Audio Stream:
Audio: 239.255.133.161:50003

Audio Follows Video Follows

Scaler Enable

Output Mode:

Live/Local:

Mute Mute

Lineout Volume
Set Left/Right

Enable HDMI Audio: (is off)

[Advanced Settings](#)

[RS232 Settings](#)

Allow SVSi Multicast P0

Disable P1 Disable

FIG. 40 Decoder Setup Section

TABLE 15 Settings Page: Decoder Setup Section

Option	Description	Notes
Device Name	Enter a user-friendly name for the unit.	More descriptive names in this field help you organize and manage the N-Series system efficiently. Names based on the unit's location and function are very useful. Some good examples are Lobby-Left-VGA (for left side of lobby, VGA input) or CR201-HDMI (for Conference Room 201, HDMI input). Keep in mind the matrices are organized alphanumerically. Avoid using special characters.
Stream	View/edit the current transmit stream number.	To better understand this setting, think of Decoders dialing up channels on a cable box, rather than a traditional AV matrix. Each Decoder can dial in a different active channel.
Audio Stream	View/edit the current audio receive stream number.	
Audio Follows Video	Enable to force the Audio Stream to the same as the video stream.	
Scaler	Enable to scale outgoing content to a fixed resolution or to use the Crop/Pan/Zoom functions.	Cropping and scaling features are not available when input is 3840x2160@50, 3840x2160@59.97, 3840x2160@60, 4096x2160@50, 4096x2160@59.97, or 4096x2160@60.
Output Mode	Select the output resolution of the video to be transmitted to the video output device (e.g., LCD). The Scaler check box must be enabled for this to be applicable).	
Live/Local	Select live video or locally stored images for transmission to the video output device (e.g., LCD). When video is not available, it automatically goes into local mode.	When video is not available, the most recently played local playlist is displayed.

TABLE 15 Settings Page: Decoder Setup Section (Cont.)

Option	Description	Notes
Mute	Enable to mute output audio.	
Lineout Volume	This slider controls the output gain on the analog audio output.	By default, this setting controls both the left and right lineout channels. Click the Set Left/Right link to control channels individually.
Enable HDMI Audio	Set HDMI audio to be disabled, enabled, or selected automatically based on the source.	ON forces audio on at all times. OFF disables audio completely. AUTO reads the EDID of the connected device to determine whether or not to send audio.
Advanced Settings	Refer to Advanced Settings on page 46 for details on the options available from this link.	
RS232 Settings	Refer to RS232 Settings on page 48 for details on the options available from this link.	
Allow SVSI Multicast	Disable this option to prevent the port from outputting multicast video traffic.	Particularly useful if you are connecting a non-SVSI device to a port for network-based control.
Disable P1	Completely disables the P1 port for all traffic.	Once disabled, anything connected to the P1 port will no longer be available on the network.
Cancel	Click to return all controls to the last saved configuration.	
Save	Click to accept changes made to these controls.	

Advanced Settings

The section of the **Settings** page shown in [Figure 41](#) is displayed when you click the **Advanced Settings** link. Options are described in [Table 16](#).

Advanced Settings	
Settings Lock	<input type="checkbox"/> Enable
Input audio for LocalPlay	<input type="checkbox"/> Enable
YCbCr 4:2:2 Output	Auto ▼ (is off)
Simplified HDMI Detect	<input type="checkbox"/> Enable
Last Frame Hold	<input type="checkbox"/> Enable
HDMI off on stream loss	<input type="checkbox"/> Enable
HDMI Enable	<input checked="" type="checkbox"/> Enable
Invert HDMI Horizontal Sync	<input type="checkbox"/> Enable
Invert HDMI Vertical Sync	<input type="checkbox"/> Enable
Gratuitous ARP	<input type="checkbox"/> Enable
ARP Interval(secs)	50 ▼
Unsolicited Status	<input checked="" type="checkbox"/> Enable
Send Status Address	0.0.0.0
Status Interval(secs)	10 ▼
Discovery Packet Transmit	<input checked="" type="checkbox"/> Enable
Discovery Interval(secs)	10 ▼
Serial Master Enable	<input type="checkbox"/> Enable
Serial Slave Address	0.0.0.0
IR Command Holdoff	25 ms
IR Repeat Holdoff	90 ms
IGMP Joins on Stream Loss	<input checked="" type="checkbox"/> Enable
IGMP Join Interval	3 ▼ secs
Auto Sync Control	<input type="checkbox"/> Enable
Auto Sync Rate	8000000
Maintain Aspect Ratio	<input checked="" type="checkbox"/> Enable
Enable SNMP	<input type="checkbox"/> Enable
Interleaved Multicast Streams	<input type="checkbox"/> Enable

FIG. 41 Advanced Settings

TABLE 16 Settings Page: Advanced Settings

Option	Description	Notes
Settings Lock	Enable to lock the Decoder IP settings and stream number, preventing automated processes (from N-Able or N-Command) from occurring.	This does <i>not</i> prevent a control system from making changes or a user from manually making changes.
Input audio for LocalPlay	Select to enable the input audio when the Live/Local menu is set to one of the local images.	
YCbCr 4:2:2 Output	Set YCbCr output to be disabled, enabled, or selected automatically based on the connected display.	
Simplified HDMI Detect	Select to enable the detection of a display device using a simple line level check.	
Last Frame Hold	Select to cause the Encoder to continue playing the last valid video frame if the network connection is lost.	When enabled, Local Play will not appear.
Gen 1 Compatibility	Set compatibility with the color space of legacy equipment to be disabled, enabled, or selected automatically based on the identifying information in the video stream.	

TABLE 16 Settings Page: Advanced Settings (Cont.)

Option	Description	Notes
HDMI off on stream loss	Select to disable the video output drive when the video stream is not available.	
HDMI Enable	Select to enable output video.	
Invert HDMI Horizontal Sync	Select to invert the polarity of the horizontal sync signal driven to the display device.	
Invert HDMI Vertical Sync	Select to invert the polarity of the vertical sync signal driven to the display device.	
Gratuitous ARP	Enable the Decoder to send a periodic Address Resolution Protocol (ARP) packet to the network.	
ARP Interval (secs)	Determine how often (in seconds) the unit transmits gratuitous ARP packets.	
Unsolicited Status	Enable the Decoder to send a periodic status packet to the Send Status Address described below.	
Send Status Address	When Unsolicited Status is enabled, the Decoder sends a periodic status packet to the IP address specified here.	
Status Interval (secs)	Determine how often (in seconds) the unit transmits status packets.	
Discovery Packet Transmit	Enable the multicast discovery service (which is used to identify units).	This is useful for larger network integrations when multicast packets will not cover the entire network. Enabled by default.
Discovery Interval (secs)	Determine how often (in seconds) the unit transmits discovery packets.	
Serial Master Enable	Enable this device to be the master to the designated client.	The unit stops responding to outside RS232 commands when in Serial Client Mode. Can be disabled to start responding again.
Serial Client Address	Enter the IP address of the serial client device.	
IR Command Holdoff	Set the delay between IR command portions. The default setting is 25 ms.	IR commands are sent in two parts. This setting is the time (in milliseconds) between transmission of part one and part two. The second part of the command is inverted for confirmation purposes.
IR Repeat Holdoff	Set the repeat delay between IR commands. The default setting is 90 ms.	This is the amount of time before a new command is sent. For example, when pressing and holding the volume button on a remote control, this is how long until the command is repeated.
IGMP Joins on Stream Loss	Enable to send Internet Group Management Protocol (IGMP) join messages when no incoming stream is detected.	
IGMP Join Interval	Delay in seconds between sending IGMP join messages (if IGMP Joins on Stream Loss is enabled).	
Auto Sync Control	Enable synchronization of vertical sync with the network.	Enable this option when using multiple Decoders (e.g. when building a video wall) that must be synchronized together.
Auto Sync Rate	Set the rate at which the vertical sync adjusts.	
Maintain Aspect Ratio	When scalers are enabled, enabling this check box maintains the source's aspect ratio.	
Enable SNMP	Enable to allow the device to send Simple Network Management Protocol (SNMP) packets.	
Interleaved Multicast Stream	Enables a multicast format which interleaves video and audio streams.	In order for N-Series devices to communicate with each other, their multicast settings must be compatible.

RS232 Settings

The section of the **Settings** page shown in [Figure 42](#) is displayed when you click the **RS232 Settings** link. Options are described in [Table 17](#).

RS232 Settings	
RS232 Baud Rate	9600 ▼
RS232 Data Bits	8 ▼
RS232 Parity	none ▼
RS232 Stop Bits	1 ▼

FIG. 42 RS232 Settings

TABLE 17 Settings Page: RS232 Settings

Option	Description
RS232 Baud Rate	Select the appropriate baud rate for the RS232 serial interface. Default is 9600.
RS232 Data Bits	Select the appropriate data bit count for the RS232 serial interface. Default is 8.
RS232 Parity	Select the appropriate parity for the RS232 serial interface. Default is no parity (none).
RS232 Stop Bits	Select the appropriate number of stop bits for the RS232 serial interface. Default is 1.

Network Setup Section

The **Network Setup** section of the **Settings** page is shown in [Figure 43](#). Options are described in [Table 18](#).

Network Setup	
IP Mode:	AUTO IP ▼
IP address	169.254.25.218
Netmask	255.255.0.0
Gateway address	169.254.1.1
Ping Test	169.254.1.1 Ping
Save	

FIG. 43 Network Setup Section

TABLE 18 Settings Page: Network Setup Settings

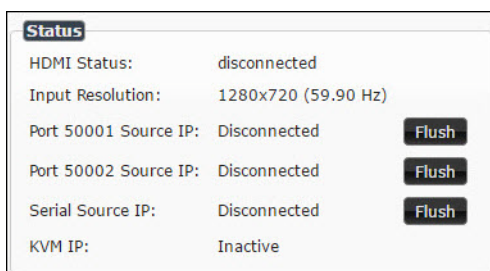
Option	Description	Notes
IP Mode	Configure the IP address mode. When set to AUTO IP , an IP Address in the range of 169.254.xxx.xxx with Netmask of 255.255.0.0 and Gateway address of 169.254.1.1 will be automatically assigned to the N2251 Decoder by the control software. When set to DHCP , an IP Address in the range of the DHCP server on the network will be automatically assigned to the N2251 Decoder. When set to STATIC , an IP address , Netmask , and Gateway address must be manually entered.	DHCP is the default setting. However, using DHCP beyond initial setup is generally not recommended. If the device is set to DHCP and fails to receive an address from the DHCP server in time, it will revert back to the AUTO IP Address (169.254.xxx.xxx) until the unit is rebooted.
IP address	View the current IP address of the N2251 Decoder. When in STATIC mode, enter a new IP address into this field.	No warnings are provided regarding improper addressing/subnetting. Be very careful to follow standardized network protocol guidelines when adjusting these settings.
Netmask	View the current Netmask of the N2251 Decoder. When in STATIC mode, enter a new Netmask into this field.	No warnings are provided regarding improper addressing/subnetting. Be very careful to follow standardized network protocol guidelines when adjusting these settings.
Gateway address	View the current Gateway address of the N2251 Decoder. When in STATIC mode, enter a new Gateway address into this field.	

TABLE 18 Settings Page: Network Setup Settings (Cont.)

Option	Description	Notes
Ping Test	Test connection by specifying an IP address or URL to ping. Click the Ping link to initiate the test.	
Trial Save	Click to initially save IP address changes. Once you log in to the unit using the new address, you will be able to confirm and accept the changes permanently.	

Status Section

The **Status** section of the **Settings** page is shown in [Figure 44](#). Options are described in [Table 19](#).

**FIG. 44** Status Section**TABLE 19** Settings Page: Status Section

Option	Description	Notes
HDMI Status	Indicates if video is connected to the Decoder.	
Input Resolution	Indicates the video resolution of the incoming video source.	
Port 50001 Source IP	Shows the IP address of the currently connected device or displays Disconnected if no connection exists.	Port 50001 can only accept a single external connection at a time. If a device is currently showing the port occupied (by a control system or other device), then other connections will be rejected. However, connection attempts from the same IP will override the current connection.
Port 50002 Source IP	Shows the IP address of the currently connected device or displays Disconnected if no connection exists.	Port 50002 can only accept a single external connection at a time. If a device is currently showing the port occupied (by a control system or other device), then other connections will be rejected. However, connection attempts from the same IP will override the current connection.
Serial Source IP	Shows the IP address of the currently connected device or displays Disconnected if no connection exists.	Only a single external connection can be accepted on the port. If a device is currently showing the port occupied (by a control system or other device), then other connections will be rejected. However, connection attempts from the same IP will override the current connection.
Flush buttons	These buttons reset the port.	
KVM IP	Shows the IP address of the KVM Encoder currently connected to this Decoder.	

Change Password Section

To change the N2251 Decoder interface password (for admin-level access) enter the current password in the field labeled **Old Password**, and enter a new password in the **New Password** and **Confirm Password** fields. Click **Change PW** to accept the new password.

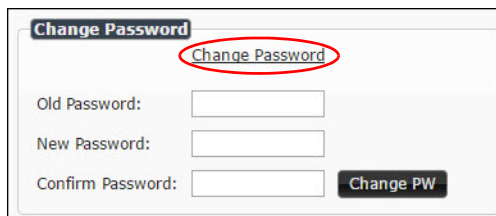


FIG. 45 Change Password

NOTE: This password needs to match N-Able's stored password to allow auto-login using N-Able.

Software Section

The **Software** section of the **Settings** page is shown in [Figure 46](#). Options are described in [Table 20](#).

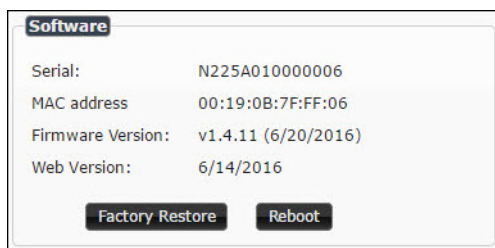


FIG. 46 Software Section

TABLE 20 Settings Page: Software Section

Option	Description
Serial	Displays the serial number of the N2251 Decoder.
MAC Address	Displays the MAC address of the network interface of the N2251 Decoder.
Firmware Version	Displays the date code for the currently running version of the N2251 Decoder internal firmware.
Web Version	Displays the date code for the currently running version of the web interface.
Factory Restore	Click to restore the device to the original factory settings. This resets everything except the IP address (including name, stream number, serial settings, etc.).
Reboot	Click to reboot the device (does not affect current configuration).

Audio Downmixer Settings

The section of the **Settings** page shown in [Figure 47](#) is displayed when you click the **Audio Downmixer Settings** link. Options are described in [Table 22](#).

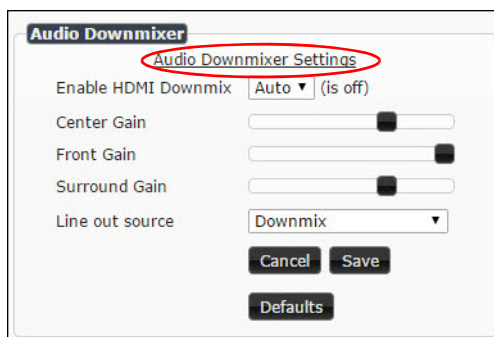


FIG. 47 Audio Downmixer Settings

TABLE 22 Settings Page: Audio Downmixer Settings

Option	Description
Enable HDMI Downmix	Set HDMI audio downmixing to be disabled, enabled, or selected automatically when receiving a 7.1 audio source.
Center Gain slider	Set percentage of audio on center channel mixed into left and right output when downmixing.
Front Gain slider	Set percentage of audio on front left and right channels mixed into left and right output (respectively).
Surround Gain slider	Set percentage of audio on surround when downmixing left and right channels mixed into left and right output (respectively).
Line out source	Select a line out source or select Downmix when using the downmixer.
Cancel	Click to return all controls to the last saved configuration.
Save	Click to accept changes made to these controls.
Defaults	Click to return all controls to their default settings.

Crop/Pan/Zoom Page

Click the **Crop/Pan/Zoom** link at the top of any of the main web pages to access the page shown in [Figure 48](#). This page allows you to customize the viewable portion of the input. See [Table 23](#) for option descriptions.

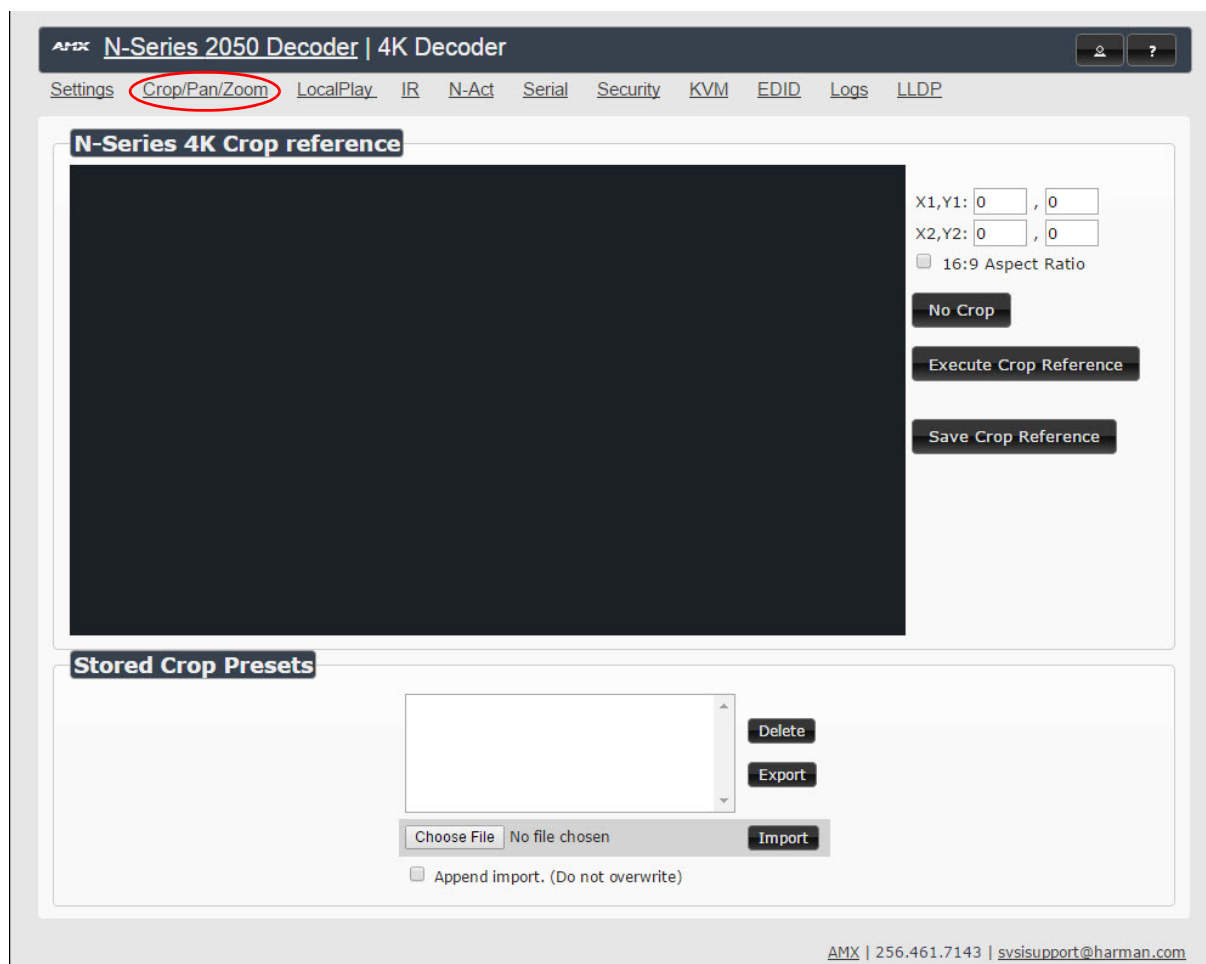


FIG. 48 Crop/Pan/Zoom Page

NOTE: The Scaler check box must be enabled for changes on this page to take effect. See the [Settings Page: Decoder Setup Section table](#) on page 44 for more information.

NOTE: Cropping and scaling features are not available when input is 3840x2160@59.97, 3840x2160@60, 4096x2160@59.97, or 4096x2160@60.

TABLE 23 Crop/Pan/Zoom Page Options

Option	Description
X1, Y1	Set pixel coordinates of viewing area (top left).
X2, Y2	Set pixel coordinates of viewing area (bottom right).
16:9 Aspect Ratio	Enable to force to a 16:9 ratio.
No Crop	Click to disable existing crop settings and return unit to default output settings.
Execute Crop Reference	Click to execute changes.
Save Crop Reference	Click to save the current settings and store them as a preset for later use. Presets can be used by third-party controllers.
Stored Crop Presets	Use this section of the page to select/delete/export/import cropping presets.

LocalPlay Page

Click the **LocalPlay** link at the top of any of the main web pages to access the screen shown in [Figure 49](#). This page allows you to upload new images to the Decoders and configure the image playlists. The playlist will be shown on the display when no video is being transmitted or received. You can show a single image or set up multiple images to be displayed at a customized animation rate. Audio can be uploaded and set to play whenever LocalPlay is active. See [Table 24](#) for option descriptions.

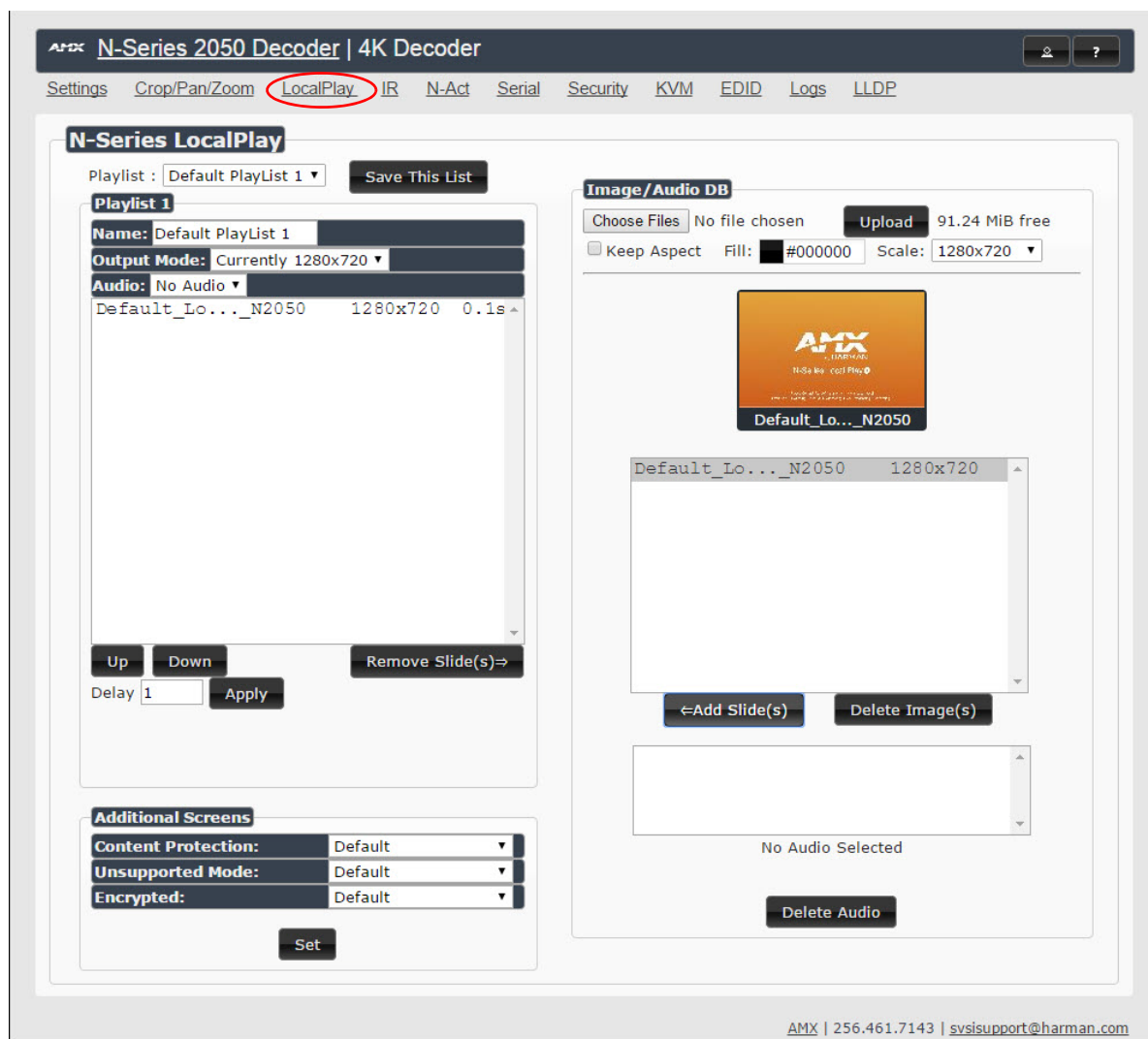


FIG. 49 LocalPlay Page

TABLE 24 LocalPlay Page Options

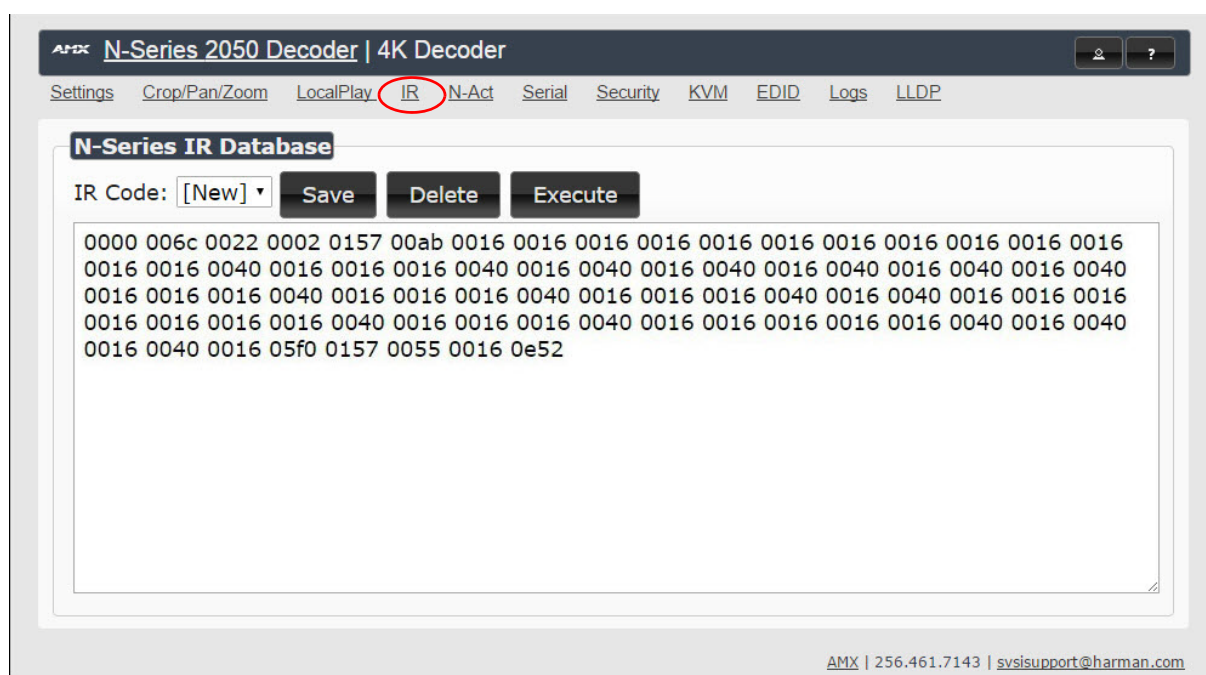
Option	Description
Playlist	Select a playlist from the drop-down menu to view/edit the images currently used in the chosen image playlists. If more than one image appears in the list, a transition time can be set for each image.
Save This List	Click to save the current configuration.
Name	View/edit playlist names.
Output Mode	Select the resolution you want the image(s) to play in.
Audio	Select an audio file to play while the LocalPlay image is on the screen.
Image List	Allows you to customize what images are displayed, the transition time for each image, etc.
Additional Screens	Allows you to choose what is displayed as the LocalPlay page if there is a communication or content protection issue.
Image/Audio DB	This section allows you to upload image and audio files to the N2251 Decoder database. You can also use the Fill field to customize the background color (used behind LocalPlay images that do not take up the entire screen).

TABLE 24 LocalPlay Page Options (Cont.)

Option	Description
Delete Image(s)	Delete the selected image file from the playlist.
Delete Audio	Delete the selected audio file from the playlist.

IR Page

Click the **IR** link at the top of any of the main web pages to access the page shown in [Figure 50](#). This page allows you to upload and execute IR Pronto codes so that other vendor's devices can be controlled through the Decoder's IR connector. Commands can be saved for future use and executed later. The **IR Code** menu lists all saved IR commands. See [Table 25](#) for option descriptions.

**FIG. 50** IR Page**TABLE 25** IR Page Options

Option	Description
IR Code	Create/select IR codes. Different vendors have different IR Pronto codes and can usually be found through a web search. Copy/paste new IR commands directly into the input space.
Save	Save the current code.
Delete	Delete the current code.
Execute	Activate the selected code through the Decoder's IR connector.

N-Act Page

Click the **N-Act** link at the top of any of the main web pages to access the page shown in [Figure 51](#). This page allows you to create command lists which are performed automatically by the unit based on power or video connection (without the use of an outside controller). For example, you can tell a projector and lights to come on when the Decoder powers up. You can add multiple commands for each event. See [Table 26](#) for option descriptions.

N-Act Events

- N-Act Events must first be enabled. See check box below.
- SVSI N-Series use TCP ASCII or UDP ASCII port 50002 for control.
- Conductor N8000s accept script commands on TCP ASCII port 50020.
- All control commands are terminated by a carriage return \r.
- SVSI N-Series use TCP HEX port 50004 for serial.
- The SVSI N-Series Serial page has an ASCII/HEX Converter.
- Trigger Delay can be 0 to 86400 seconds (24 hours).
- After the Trigger Delay, each command is executed in order with a Delay (ms) between each command.
- Macros are supported in ASCII mode with the {{Name}} notation (case-sensitive). Upon execution, Current value will be substituted.

Enable N-Act Events Events must be enabled for N-Act to work

Power On Event Test

Protocol: TCP ASCII Address: 127.0.0.1 Port: 50001 Data: Data Delay (ms): 1 Delete

[Add new...](#)

Video Cable Connected Event Trigger Delay: 1 Test

Protocol: TCP ASCII Address: 127.0.0.1 Port: 50001 Data: Data Delay (ms): 1 Delete

[Add new...](#)

Video Cable Disconnected Event Trigger Delay: 1 Test

Protocol: TCP ASCII Address: 127.0.0.1 Port: 50001 Data: Data Delay (ms): 1 Delete

[Add new...](#)

Save Events

Import/Export

Import **Export**

No file chosen

AMX | 256.461.7143 | svsisupport@harman.com

FIG. 51 N-Act Page

TABLE 26 N-Act Page Options

Option	Description
Enable N-Act Events	Enable to activate the configured events.
Power on Event	Create/delete/test events to be performed when the Decoder powers on. Visit our website for more details on Application Programming Interface (API) commands.
Video Cable Connected Event	Create/delete/test events to be performed when the Decoder is connected to an output display. The Trigger Delay field specifies how long the device has to be connected for the command to be executed.
Video Cable Disconnected Event	Create/delete/test events to be performed when the Decoder is disconnected from the output display. The Trigger Delay field specifies how long the device has to be disconnected for the command to be executed. This keeps accidental (momentary) disconnects from triggering the command sequence.
Save Events	Click to save changes made to this page.
Import/Export	Use this section of the page to import/export N-Act event configurations. from one unit to others.

Serial Page

Click the **Serial** link at the top of any of the main web pages to access the page shown in [Figure 52](#). This page allows you to upload and execute commands used for direct control of serial devices. Commands may be saved for future use and executed later. The **Serial Code** menu lists all saved commands. See [Table 27](#) for option descriptions.

NOTE: If the Port 5004/Serial Port is currently in use by another device, sending commands from the Serial page will always return a No Data message and fail to send the commands.

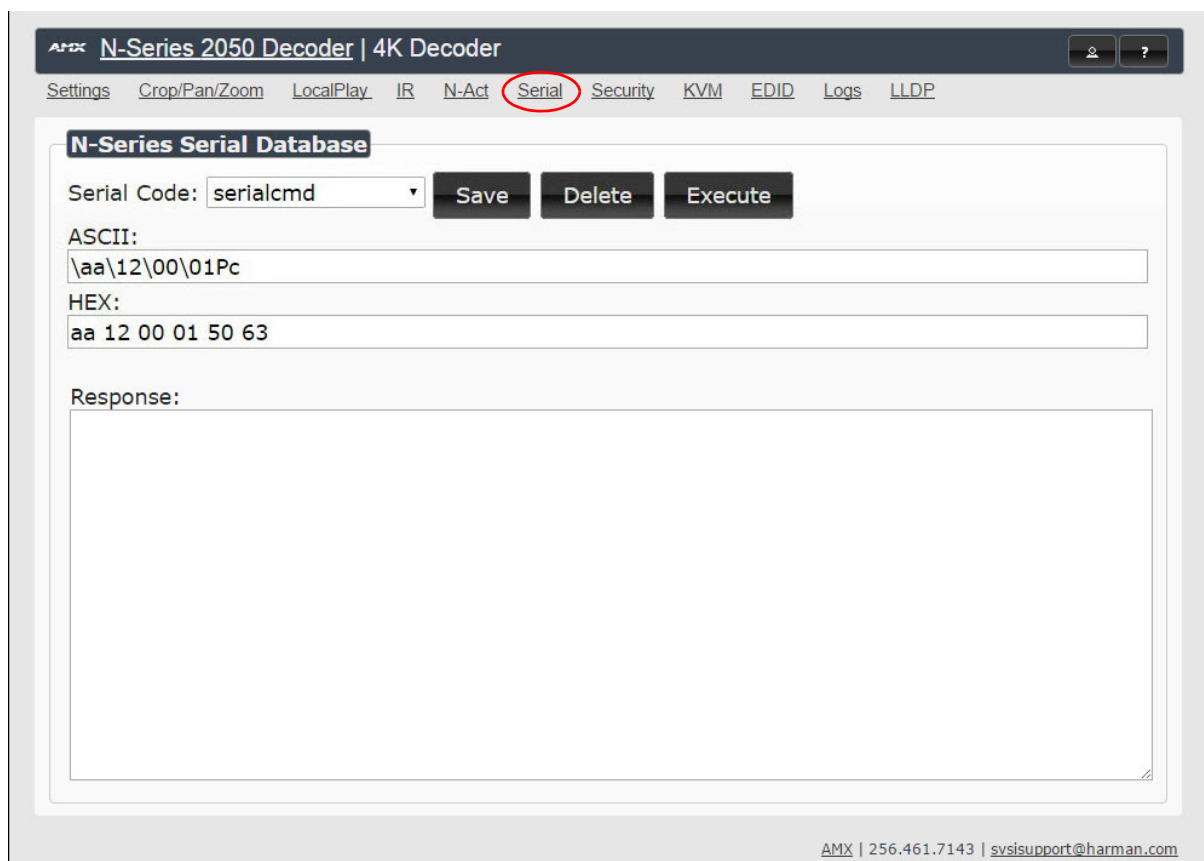


FIG. 52 Serial Page

TABLE 27 Serial Page Options

Option	Description
Serial Code	Create/select serial commands. Different vendors have different codes that can usually be found through a web search. Copy/paste new commands (in either ASCII or HEX) directly into the appropriate input space.
Save	Save the current code.
Delete	Delete the current code.
Execute	Send the selected code out the Decoder's serial connection.
ASCII and HEX	Paste serial commands directly into either the ASCII or HEX field.
Response	View responses provided by the device receiving the serial command(s).

Security Page

Click the **Security** link at the top of any of the main web pages to access the page shown in [Figure 53](#). This page allows you to force HTTPS connections and set up a password for stream encryption. To successfully display an encrypted Encoder stream on a Decoder, the Decoder must match the Encoder password.

NOTE: This page only applies if connected to a web page via HTTPS.

FIG. 53 Security Page

TABLE 28 Security Page Options

Option	Description
General Security	This section allows you to force HTTPS connections and set up a default password for stream encryption. To successfully communicate, the Decoder must know and match the Encoder password.
Command Port Security	This section allows you to secure the port connections for TCP port addresses 50101, 50102, and 50104. These ports are always secure and require an SSL connection. When Secure Ports Only is enabled, the Decoder will only accept commands through the secure ports. <ul style="list-style-type: none"> • 50101 is secure version of 50001. • 50102 is secure version of 50002. • 50104 is secure version of 50004.

KVM Page

Click the **KVM** link at the top of any of the main web pages to access the N-Series KVM page. You must check the **USB Enable** box at the top to see the page shown in [Figure 54](#). See [Table 29](#) for option descriptions.

FIG. 54 KVM Page

TABLE 29 KVM Page Options

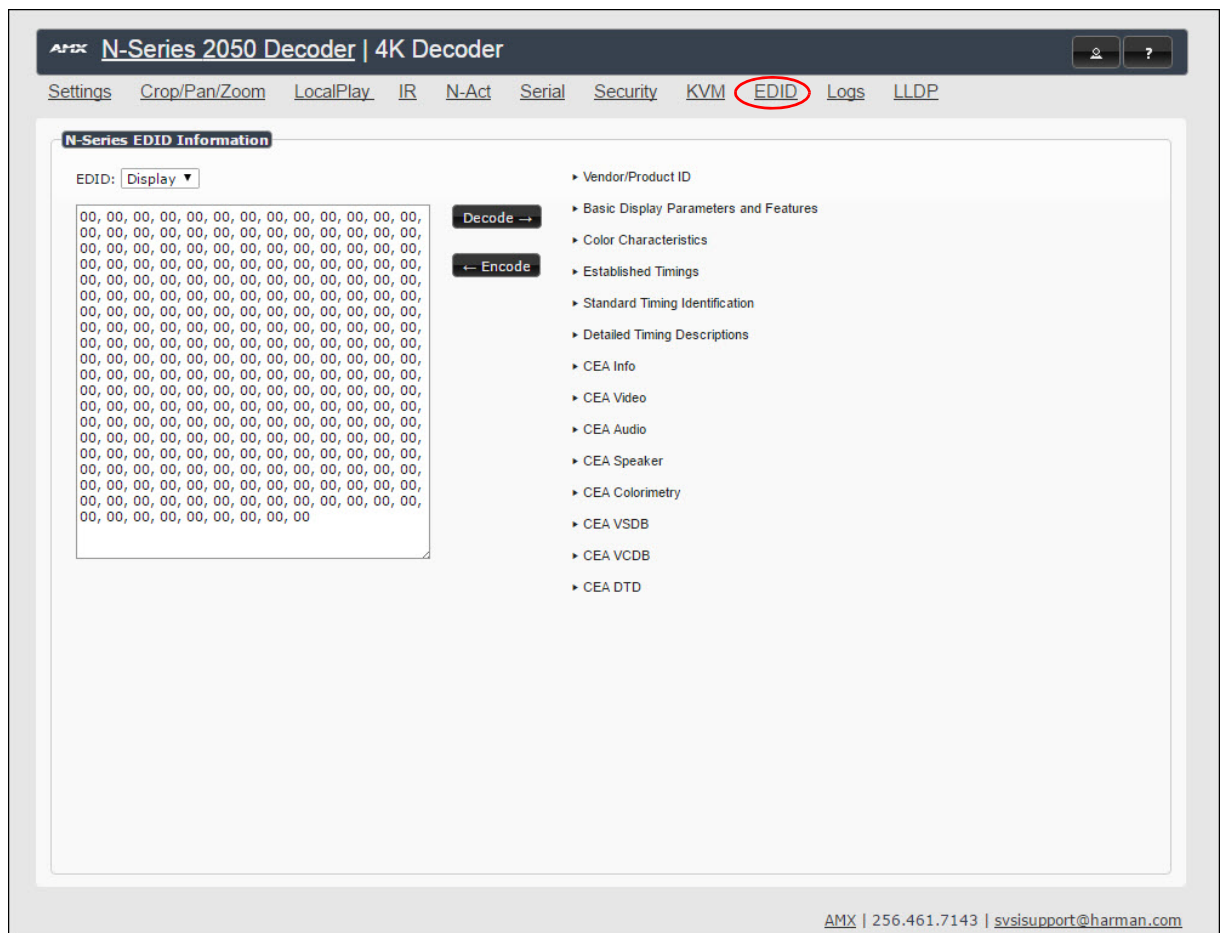
Option	Description
USB Enable	Enable to allow the ability to share mouse and keyboard over the network. Enabled by default. When disabled, the unit works like a non-KVM unit and ignores any keyboard or mouse activity.
Permission Level	Set the permission level for the Decoder. Decoders can only establish USB connection to Encoders with the same or higher permission level. See the section Advanced KVM Setup (With Added Security Features) on page 22 for more information.
Connect to Encoder IP Address	Enter the IP Address of an active Encoder. Use the Switch and Disconnect buttons to control the connection.
KVM Advanced Settings	Enable to access the KVM Encoders list.
KVM Encoders	View/edit the list of Encoders associated with this Decoder. Here you can Add new/overwrite Encoders to the list by Name or IP Address as well as assign Passwords . You can also end the Decoder/Encoder association by clicking the Remove button. Intended for use when different passwords are assigned to Encoders in your system.
Import KVM CSV	Click the Choose File button and browse to the KVM CSV file on your computer that you would like to use to configure the unit. Then click Upload . For more information, see the section Advanced KVM Setup (With Added Security Features) on page 22.

TABLE 29 KVM Page Options (Cont.)

Option	Description
Export KVM CSV	Click the Download KVM CSV Export link to retrieve the current KVM CSV configuration file.
Reset USB and KVM Settings	Resets all USB and KVM settings.

EDID Page

Click the **EDID** link at the top of any of the main web pages to access the page shown in [Figure 55](#). Every display has stored information that it communicates to the output device. This page allows you to view the EDID information of the connected output display.

**FIG. 55** EDID Page**TABLE 30** EDID Page Options

Option	Description
EDID Display	Shows the EDID of the display that is connected to the Decoder.
Decode button	Click to translate the EDID currently displayed on the left to the operating parameters list on the right.
Encode button	After making any changes to the operating parameters list on the right, click this button to update the EDID information on the left.

Logs Page

Click the **Logs** link at the top of any of the main web pages to access the page shown in [Figure 56](#). The **Logs** page displays a command log that lists all TCP and UDP messages the unit receives. It also displays the web browser's IP address and gives you options to **Refresh** and **Reset Logs**. When in need of assistance from tech support, use the **Debug Log** section to capture information useful for troubleshooting. Simply click **Start Debug Log**, wait at least one minute, and click **End Debug Log** to create the file. You can then download and send it to AMX support.

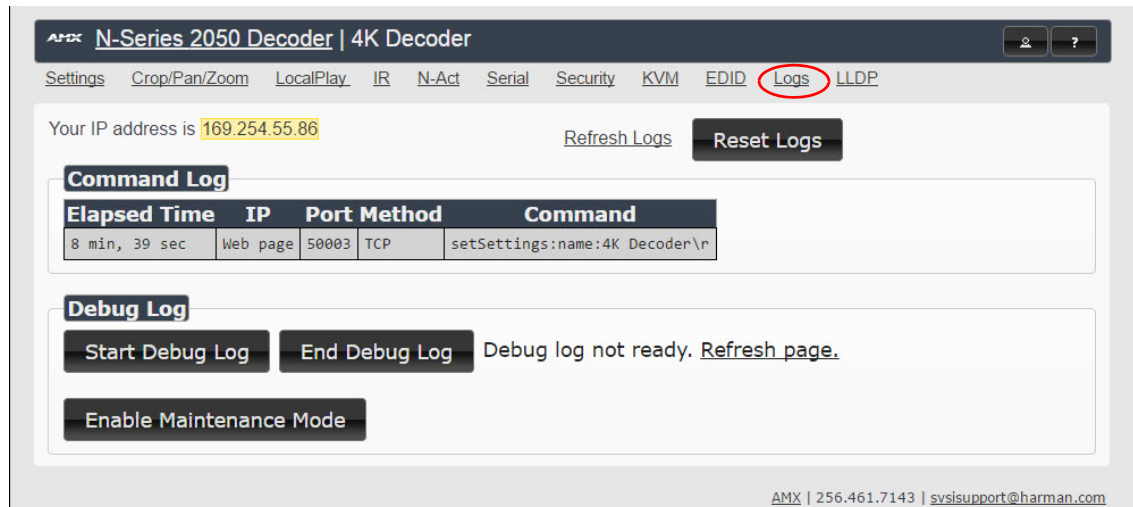


FIG. 56 Logs Page

NOTE: For security reasons, only use the Enable Maintenance Mode if instructed to by SVSI/AMX Technical Support.

LLDP Page

Click the **LLDP** link at the top of any of the main web pages to access the page shown in [Figure 57](#). The **LLDP** page displays information from the Link Layer Discover Protocol (LLDP) packet which identifies the port number and switch the device is connected to.

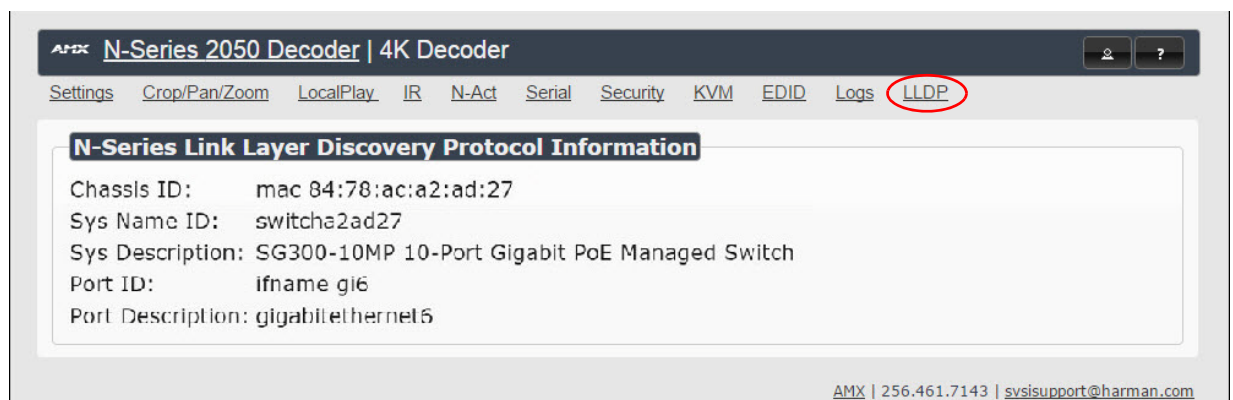


FIG. 57 LLDP Page

Chapter 5: Troubleshooting

This chapter contains possible solutions to some common issues. Should you encounter any problems not covered by these guidelines, please contact technical support via email (svsisupport@harman.com) or call 256.461.7143 x9900. You can also visit our support webpage at support.svsia.com.

Issues	Suggestions
LocalPlay screen displays instead of the stream from the Encoder.	<ul style="list-style-type: none"> Verify Decoder is assigned to view a valid stream (of an active Encoder). Verify Decoder is currently in Live play mode (its name will display in black text on the Video Matrix page). You can change to Live mode on the Settings page (see the Settings Page: Decoder Setup Section table on page 44 for more details). Verify network is properly configured and set up. If needed, connect Encoder's network port to Decoder to bypass the network. Verify that P0 and/or P1 is enabled on the Encoder's Settings page, next to the stream number settings. See the Settings Page: Encoder Setup Section table on page 26 for more details. P1 is disabled by default.
HostPlay screen displays instead of the video from the source.	<ul style="list-style-type: none"> Verify Encoder is in Live play mode (its name will display in black text on the Video Matrix page). You can change to Live mode on the Settings page (see Settings Page: Encoder Setup Section table on page 26 for more details). Verify source is attached and is outputting a valid signal (HDMI LED on Encoder is on).
Unsupported Input Resolution screen displays.	<ul style="list-style-type: none"> Change source resolution to a valid resolution (try 720p60). Verify cabling is correct.
Copy Protected Content screen displays.	<ul style="list-style-type: none"> Contact technical support.
Black screen/no screen displays.	<ul style="list-style-type: none"> Set Decoder to LocalPlay. If the LocalPlay screen does not appear, check the display input settings and cabling. As mentioned previously in this table, you can change to the Local mode on the Decoder's Settings page. If LocalPlay appears, set Decoder to Live play mode and verify network is configured properly.
No audio is detected.	<ul style="list-style-type: none"> If there is no audio on all Decoders, verify audio settings are correct on Encoder. If there is no audio on a single Decoder, verify audio settings are correct on Decoder.
Device has been discovered in N-Able, but the configuration pages do not open when double-clicking device name on the Video Matrix page.	<ul style="list-style-type: none"> Make sure your computer is in the same IP address range as the unit. See : Setting Up Your Host Computer on page 12 for more information.
When changing the audio type, there are problems with audio in/out.	<ul style="list-style-type: none"> Check the Audio Source (Encoder) and HDMI Audio (Decoder) settings on the Settings page. For example, if you are trying to change the audio type to make the input of the Encoder HDMI embedded audio in/analog audio out from the Decoder, these settings cannot be set to Auto. Set the Encoder to Audio Source > ON (embedded digital audio on an HDMI connection) and the Decoder to Enable HDMI Audio > OFF (analog output on the Phoenix connection).
Not receiving audio.	<ul style="list-style-type: none"> Check that the Decoder has proper audio stream setting (typically by enabling Audio follows Video).
Not receiving analog video through the Encoder.	<ul style="list-style-type: none"> If using a Y cable (N9420) and an HDMI source is already connected to the Encoder, disconnect the HDMI source. Encoders give preference to HDMI and will not allow analog signal to pass while it is connected.
Video output is stuttering.	<ul style="list-style-type: none"> This could be a network bandwidth issue where the full video stream is not reliably getting from Encoder to Decoder. Contact your network administrator for assistance.
Serial port is not working as expected.	<ul style="list-style-type: none"> Verify the RS232 Settings on the Settings page. Flush the serial port on the Settings page if another device is connected. Connecting the Tx and Rx pins on the RS232 connector creates a loopback that could also help when troubleshooting.

Series Default Local/Host Play Troubleshooting Screens

This section shows and defines the status screens displayed by N2x51 Series devices.



FIG. 58 Host Play Screen

Displayed when Decoder...	...and Encoder...	Notes
<ul style="list-style-type: none"> is set to view an Encoder stream on the network 	<ul style="list-style-type: none"> is set to HostPlay, or does NOT have a valid input video signal 	Seeing this screen means that the Decoder CAN communicate with the Encoder across the network. It is a good way to troubleshoot network communication between segments using only Encoders and Decoders (without the need for source video into an Encoder).



FIG. 59 Local Play Screen

Displayed when Decoder...	Notes
<ul style="list-style-type: none"> is set to LocalPlay mode 	If the Decoder is NOT set to Local Play mode, this screen could signify a network communication issue.



FIG. 60 Unsupported Input Resolution Screen

Displayed when Decoder...	...and Encoder...	Notes
<ul style="list-style-type: none"> is set to view an Encoder stream on the network 	<ul style="list-style-type: none"> is being fed a video resolution that it does not support 	<p>This screen can be useful to show you that the Decoder is receiving the stream from the intended Encoder. However, the video signal being sent to the Encoder is not supported. Please visit amx.com and refer to the product pages for the supported resolutions lists.</p>



FIG. 61 Restricted Content Not Supported Screen

Displayed when Decoder...	...and Encoder...	Notes
<ul style="list-style-type: none"> is receiving a stream from an Encoder is connected to a monitor that does NOT support Restricted Content (i.e., the monitor is NOT HDCP compliant) 	<ul style="list-style-type: none"> is transmitting HDCP-protected content to the Decoder 	<p>Once the Decoder detects that the monitor is not HDCP compliant, this screen is displayed. If you suspect that this message was displayed in error, please call Technical Support.</p>

NOTE: *The Encoder must first be set up to pass HDCP-protected content.*



FIG. 62 Video Source Outputting Restricted Content Screen

Displayed when Decoder....	...and Encoder...	Notes
<ul style="list-style-type: none"> is receiving a stream from an Encoder 	<ul style="list-style-type: none"> is receiving HDCP-protected content from the video source, but is not set up to pass it. 	Please call Technical Support to enable this feature.



FIG. 63 Video Encrypted Screen

Displayed when Decoder....	Notes
<ul style="list-style-type: none"> is receiving a stream from an Encoder it can not decrypt 	Make sure the Decoder has the correct password for decrypting the stream. To reset the password, go to the Security page on both the Encoder and Decoder and click the Reset button. Refer to the <i>Security Page</i> section on page 57 if you are not sure where to find this setting.

Appendix A: Minimum Network Requirements

The following list specifies the minimum network requirements that must be considered when deploying your equipment. These requirements cover the necessary protocols and features needed to drive an N2x51 stream.

NOTE: *Specific configuration recommendations are based off of the Cisco Catalyst series, however this may vary.*

1. **Managed Network Switch**
2. **Gigabit Ethernet (N1000/2000 Based Systems)**
3. **Internet Group Management Protocol (IGMP) Version 2**
 - IGMP Snooping
 - IGMP Snooping Querying
 - Network must include at least one IGMP Querier to maintain stream connections. It is recommended to have all capable switches with the querier enabled and allow IGMP auto-elect to determine the Designated Querier (DQ).
 - Query interval – 30 seconds. This is the interval between sending IGMP general queries.
 - Query Response Interval – 10 seconds. This is the maximum time the system waits for a response to general queries.
 - Last Member Query Interval – 100 milliseconds. This is the interval to wait for a response to a group specific or group-and-source-specific query message.
 - Immediate Leave (also know as Fast Leave, etc. depending on switch manufacturer).

NOTE: *If Immediate Leave is disabled, set IGMP Robustness to Default 2. Robustness can be adjusted generally from 2-10. The higher the value, the more leave latency is added.*

- Warnings/Notices
 - There is a known behavior within IGMP that Encoder streams, whether requested across an uplink or not, will be requested by the DQ and will be present on all uplinks between the stream source switch and the DQ.
 - This means that even though you may not be routing a stream to another switch, the DQ's request still puts the stream on the uplink. Therefore, it is important to account for all streams forwarding to the DQ.
 - The presence of a multicast router with PIM-Sparse configured to handle the multicast traffic may eliminate or limit this behavior.
- 4. **TCN Flood Off**

TCN flood protocol will cause unnecessary backplane and bandwidth usage when adding or removing a device on the network. This can cause stream interruptions as the flooding sweeps through the network.

Should you encounter any problems not covered by these guidelines, please contact technical support via email (svsisupport@harman.com) or call 256.461.7143 x9900.



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