AMX
by HARMAN

NMX-ENC
H.264 ENCODER

NMX-ENC-1100, NMX-ENC-1105

AV FOR AN IT WORLD®

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. USE ONLY with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. UNPLUG this apparatus during lightning storms or when unused for long periods of time.
14. 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.
15. 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.
16. To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
17. Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.
18. 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.

COPYRIGHT NOTICE

LIABILITY NOTICE

AMX WARRANTY AND RETURN POLICY

The AMX Warranty and Return Policy and related documents can be viewed/downloaded at www.amx.com.

ESD WARNING

To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded before touching any internal materials.

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. These items should not be manufactured locally, since they are generally composed of highly resistive conductive materials to safely drain static discharges, without increasing an electrocution risk in the event of an accident.

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

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CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

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.

Place the equipment near a main power supply outlet and make sure that you can easily access the power breaker switch.

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 B 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 B 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)

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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; European Union WEEE (recast) Directive 2012/19/EU; European Union Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Directive 2006/121/EC

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

WEEE NOTICE:

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.

Table of Contents

Overview

The NMX-ENC H.264 encoder is an audio/video encoder which supports high-definition video and H.264 encoding from sources including PCs, cameras, and set-top boxes. The encoder can stream either unicast and multicast streams.

The NMX-ENC is available in two different versions: NMX-ENC-1100 (**FG3201-01**) and NMX-ENC-1105 (**FG3201-02**). The NMX-ENC-1105 has the same features as the NMX-ENC-1100 and adds SDI input and pass-thru ports on its rear panel.
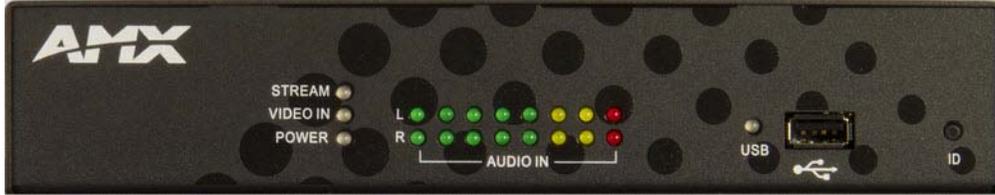
FIG. 1 NMX-ENC H.264 encoder

Specifications

The following table lists the specifications for the NMX-ENC H.264 encoder:

NMX-ENC H.264 Encoder Specifications	
Active Power Requirements	
Power Connector:	1 2-pin 3.5mm locking Phoenix connector
Power Capabilities:	• Maximum Current Draw: 13W • Typical Current Draw: 10W • Operating Voltage: 10VDC to 18VDC
Front Panel Components	
LEDs:	All LEDs appear in green (active) or red (alarm state). • STREAM - shows streaming status • VIDEO IN - notes video input status • POWER - notes power and alarm state • USB - notes data copying state See the *LEDs* section on page 11 for more information.
AUDIO IN:	2 sets of AUDIO IN LEDs indicating the signal strength of the audio input with separate sets of indicators for the left (L) and right (R) channels. See the *AUDIO IN* section on page 12 for more information.
USB:	1 Type-A USB connector. The port has an LED beside it which indicates the state of sending data to a connected USB storage device. See the *USB* section on page 12 for more information.
ID:	1 ID pushbutton to assign a device address to the encoder or copy a configuration information file to a connected USB drive. See the *ID* section on page 12 for more information.
Rear Panel Components	
SDI:	These connectors are only available on the NMX-ENC-1105. • 1 BNC connector for video input (INPUT) • 1 BNC connector for video output (PASS THRU) See the *SDI* section on page 13 for more information.
MULTI FORMAT VIDEO INPUTS:	1 DVI connector for multi-format video inputs. See the *MULTI FORMAT VIDEO INPUTS* section on page 14 for more information.
AUDIO:	• 1 3.5mm mini-phono connector for audio input (INPUT) • 1 3.5mm mini-phono connector for audio output (PASS THRU) See the *AUDIO* section on page 14 for more information.
VIDEO PASS THRU:	1 HDMI connector for video output. See the *VIDEO PASS THRU* section on page 15 for more information.
KEYPAD:	1 3-pin 3.5mm Phoenix connector for RS-232 ports. See the *KEYPAD* section on page 15 for more information.
INDICATORS:	1 4-pin 3.5mm relay port. The port features a 2-pin Recording port (Port 2) and a 2-pin Streaming port (Port 1). See the *INDICATORS* section on page 16 for more information.
USB:	1 Type-A USB connector. See the *USB* section on page 16 for more information.
LAN 10/100:	4 RJ-45 LAN ports for network connections via Cat5 cabling. **NOTE:** *You should ALWAYS connect your main network artery to the port 1 LAN port.* See the *LAN 10/100* section on page 16 for more information.

NMX-ENC H.264 Encoder Specifications (Cont.)	
Environmental	
Temperature (Operating):	32° to 104° F (0° to 40° C)
Temperature (Storage):	–4º to 158ºF (–20º to 70ºC)
Humidity (Operating):	5% to 85%, non-condensing
General	
Dimensions (HWD):	1 5/8" x 8 3/4" x 5 1/8" (4.2cm x 22.16cm x 13.08cm)
Weight:	• NMX-ENC-1100: 2.25 lbs. (1.02kg) • NMX-ENC-1105: 2.3 lbs. (1.04kg)
Certifications:	• RoHS • FCC Part 15 Class B • CE • IEC60950 • UL
Included Accessories:	• 1 Power Supply, 4.4A, 13.5VDC, 3.5mm retained Phoenix connector (**FG423-46**) • 1 NMX-ENC-1100/1105 H.264 Encoder Quick Start Guide (93-3201-01)
Optional Accessories:	• CC-DVI-5BNCM DVI to 5 BNC adapter cable (**FG10-2170-08**) • CC-DVI-RCA3M DVI to 3 Male RCA adapter cable for component and composite connections (**FG10-2170-09**) • CC-DVI-SVID DVI to S-Video adapter cable (**FG10-2170-10**) • CC-DVIM-VGAF DVI to HD15 female adapter cable (**FG10-2170-13**) • NMX-VRK V-Style Rack Shelf (**FG3201-60**) • AVB-VSTYLE-SURFACE-MNT V-Style Single Module Surface Mount Kit (**FG1010-722**)

Minimum Performance Specifications

A client PC playing back streams from the encoder should have the following minimum specifications:

- 2.4 GHz Core2 Duo
- 4 GB RAM

Mounting the Encoder

You can mount the encoder in a rack by using an NMX-VRK V-Style Rack Shelf (**FG3201-60**). In addition to the encoder, you can also use wire ties to mount the encoder's power supply on the rack shelf. The encoder also has rubber feet you can attach to the bottom of the unit for table-top mounting.
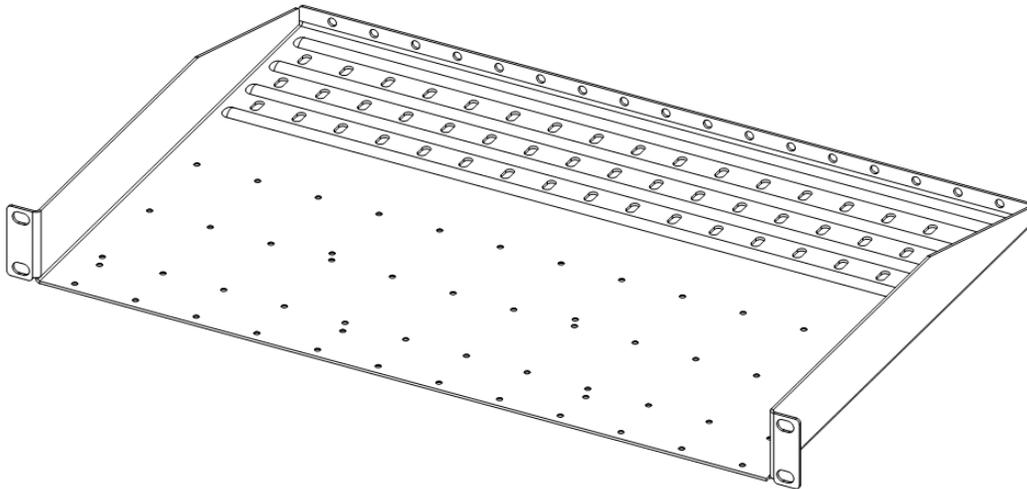
FIG. 2 NMX-VRK V–Style Rack Shelf

Perform these steps to mount the encoder using the NMX-VRK Rack Shelf:

1. Invert the encoder and the rack shelf for ease of installation.

2. Attach the rack shelf to the bottom of the encoder using the #4-40 3/16 inch undercut flat head screws (provided). Insert the screws through the underside of the rack shelf and into the holes on the bottom of the encoder. Note that only two screws are required.

3. Install the rack shelf in a standard EIA 19 in. (48.26 cm) rack and secure with rack-mounting screws.

4. (This step is optional.) Attach fill plates using the #4-40 3/16 inch undercut flat head screws (provided). Be sure to use the screw holes closest to the front of the tray.

5. Use wire ties (not provided) to mount the power supply to the rear section of the rack shelf. This step is optional.

Wiring and Device Connections

Overview

This section describes the front and rear panel components for the NMX-ENC-1100 and NMX-ENC-1105. Wiring information for port connectors is listed in each connector's corresponding section.

Front Panel Components

The following section lists the components on the front panel of the NMX-ENC encoder.
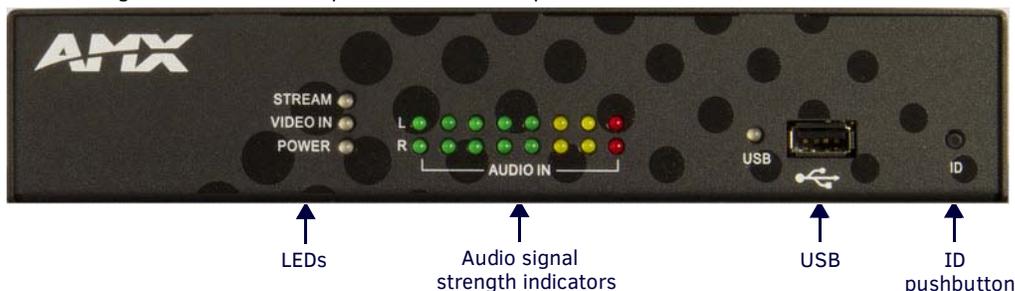
FIG. 3 NMX-ENC (front panel)

LEDs

All LEDs appear in green or red, and in solid or blinking states. Consult the LED States table on page 11 for more information.

- STREAM - shows streaming status
- VIDEO IN - notes video input status
- POWER - notes power and alarm state
- USB - notes record and file copying state, and the USB mounting status

NOTE: *The LEDs can be dimmed by selecting an option in the WebConsole pages. See the System section on page 35 for more information.*

FIG. 4 displays the LEDs on the front panel.

FIG. 4 Front panel LEDs

Consult the following table for the meaning of each LED indicator:

LED States						
LED	**OFF**	**Green**	**Slow Blinking Green**	**Fast Blinking Green**	**Red**	**Slow Blinking Red**
STREAM	Not streaming	Streaming in progress	N/A	N/A	N/A	Streaming has been suspended.
VIDEO IN	No video input signal detected	Valid video signal	Unknown Signal. This signifies that the selected format does not match the detected format.	N/A	Unsupported resolution	An encrypted video signal is being used as the video input.
POWER	No power applied	Power applied	System is booting	N/A	N/A	Network failure or failure to retrieve IP address (see note below)
USB	Neither drive is present, or the inserted drive is not mounted or there is an issue with the inserted drive.	Device is successfully connected and mounted. Attached drive can be removed without damaging its contents.	N/A	Writing configuration file to the front USB port.	Device is currently recording.	Error in record, or device is full.

NOTE: *Failure to retrieve an IP address LED indication is only valid in a DHCP-configured network.*

AUDIO IN

The audio signal strength indicators show the signal strength of the selected audio source. The encoder has separate indicators for the left and right channels. The indicators are updated every half second.

FIG. 5 displays the audio signal strength indicators.

FIG. 5 Audio Signal Strength Indicators

USB

The front panel features one Type-A USB connector for a connecting storage device. With a storage device connected to the port, retrieve the configuration file or copy recorded video stream files to the storage device. Storage devices should be a FAT32-formatted external hard disk drive (HDD) of 500GB or higher. NTFS-formatted drives are not supported.

The port has an LED beside it which indicates the state of writing files to an attached USB drive. See the *LEDs* section on page 11 for information about the LED indicator.

FIG. 6 displays the USB port and LED indicator.

FIG. 6 USB port

NOTE: *You can only retrieve information about IP configuration for the encoder from the front panel USB port. It is not possible to retrieve IP configuration information by using the rear panel USB port. The encoder is capable of writing to devices connected to the front and rear panel.*

ID

The front panel features an ID pushbutton which allows you to retrieve the IP address and network configuration information for the encoder. You can retrieve this information by inserting a USB drive into the encoder. Once the encoder recognizes the USB drive, the USB LED turns green. After the USB LED turns green, press the ID pushbutton. The encoder creates and copies a text (.txt) file to the USB drive with a list of configuration information including the IP address of the encoder.

NOTE: *When a USB drive is attached to the encoder, the ID pushbutton is limited to only retrieving IP address information. You cannot use the ID pushbutton with Identity Mode in NetLinx Studio unless there is no USB drive present.*

FIG. 7 displays the ID pushbutton.

FIG. 7 ID pushbutton

The ID pushbutton functions as follows:

- **To use in conjunction with the ID Mode feature in NetLinx Studio**, press the button once to assign a device address to the device.
- **To retrieve the configuration information about the device**, press the button to write the configuration file to a USB drive connected to the front panel USB port. To enter this mode, connect a USB device to the USB port on the front panel of the encoder and wait for the USB LED to turn green. When the LED flashes green, the encoder is copying a .txt file to the USB drive. The encoder is finished transferring the file to the USB drive when the LED stops flashing.

IMPORTANT: *It is not recommended to retrieve the configuration information while the encoder is streaming or recording.*

- **To toggle between a DHCP or static IP address**, press the ID pushbutton for two seconds until the USB LED starts to fast blink. If you release the pushbutton within 10 seconds of the start of the fast blink, the network configuration toggles from DHCP to static with a default IP address of 192.168.1.100 (or vice versa if the encoder is currently set to a static IP address.) If a static IP address previously had been assigned to the encoder, this function reverts the encoder to the previous IP address.

NOTE: *In this mode, there should not be a USB drive present in either USB port.*

- **To restore the device configuration to its factory default settings**, press the ID pushbutton for 10 seconds during a boot cycle. The USB LED turns green and starts blinking slowly. Releasing the pushbutton while the LED is slow blinking causes the factory default configuration of the device to be restored. If you keep the pushbutton pressed for another 10 seconds, the device configuration does not restore, however, you can restore the factory firmware version (see next bullet.)

CAUTION: *Restoring the factory default results in complete loss of the user configuration.*

- **To restore the factory firmware version**, press the ID pushbutton during boot cycle for 20 seconds during a boot cycle. The USB LED turns green and start a fast blink. Releasing the pushbutton while the LED is fast blinking causes the factory firmware to be restored. Holding the button past the 10 seconds time window of fast blinking results in normal boot of the system without restoring the factory device configuration or firmware.

CAUTION: *Restoring the factory firmware version results in full loss of the device's user configuration and the current firmware.*

Rear Panel Components

The following section lists the components on the rear panel of the encoder. FIG. 8 displays the rear panel of the NMX-ENC-1100.
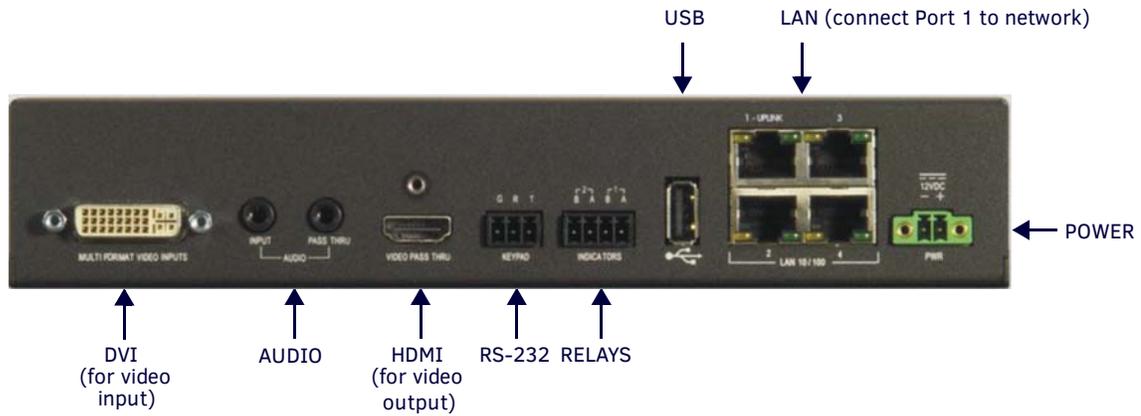
FIG. 8 NMX-ENC-1100 (rear panel)

FIG. 9 displays the rear panel of the NMX-ENC-1105.

FIG. 9 NMX-ENC-1105 (rear panel)

SDI

NMX-ENC-1105 model encoders feature two SDI connectors for video input/output. The SDI input can receive HDMI non-HDCP video with 2 channel LPCM audio at 48 kHz sampling frequency. These ports support SD-SDI and HD-SDI. The SDI connectors are as follows:

- 1 BNC connector for video input (INPUT)
- 1 BNC connector for video output (PASS THRU)

FIG. 10 SDI connectors

For a list of supported input resolutions for the SDI ports, see the *SDI Supported Input Resolutions* section on page 51.

MULTI FORMAT VIDEO INPUTS

The encoder features one DVI connector for video input. There are several options for connecting audio and video sources to the encoder.

- The multi-format video input source can accept DVI Video sources directly with audio connected to corresponding audio input.
- You can connect HDMI, component video, composite video, S-Video, and RGB sources to DVI-I by using appropriate adapter cables. You can connect the audio associated with these sources to the appropriate audio jack on the rear panel of the encoder.
- Digital audio embedded in HDMI through the DVI connector can be multiplexed and used for encoding and pass through to monitor output.
- On the NMX-ENC-1105, the SDI input can receive video with 2 channel LPCM audio at 48kHz sampling frequency.

FIG. 11 displays the MULTI FORMAT VIDEO INPUTS connector.

FIG. 11 MULTI FORMAT VIDEO INPUTS connector

The following table lists the audio options for each video type:

Audio Options per Video Type			
	Digital Audio	**Analog Audio (through Audio inputs)**	**No Audio**
Multi-format (DVI)	Only if embedded in an HDMI signal	✓	✓
SDI	✓	✓	✓

The following table describes the pinout configuration of the MULTI-FORMAT VIDEO INPUT connector:

MULTI-FORMAT VIDEO INPUT Connector - Pinouts and Signals					
Pin	**Signal**	**Pin**	**Signal**	**Pin**	**Signal**
1	TMDS Data2-	9	TMDS Data1-	17	TMDS Data0-
2	TMDS Data2+	10	TMDS Data1+	18	TMDS Data0+
3	TMDS Data2/4 Shield	11	TMDS Data1/3 Shield	19	TMDS Data0/5 Shield
4	n/c	12	n/c	20	n/c
5	n/c	13	n/c	21	n/c
6	DDC Clock [SCL]	14	+5 V Power	22	TMDS Clock Shield
7	DDC Data [SDA]	15	Ground (for +5 V)	23	TMDS Clock +
8	Analog vertical sync	16	Hot Plug Detect	24	TMDS Clock -
C1	Analog Red				
C2	Analog Green				
C3	Analog Blue				
C4	Analog Horizontal Sync				
C5	Analog Ground				

AUDIO

The encoder features two audio ports for receiving and delivering audio. Audio received through the audio INPUT port will be output through the audio PASS THRU port. The PASS THRU connector enables you to "daisy-chain" connect to another encoder. The encoder supports daisy-chaining up to two units together. The audio ports on the encoder are as follows:

- 1 3.5mm mini-phono connector for audio input (INPUT)
- 1 3.5mm mini-phono connector for audio output (PASS THRU)

NOTE: *Any volume adjustments you want to make to an audio stream must be made at the audio source or on the audio output.*

FIG. 12 AUDIO connectors

VIDEO PASS THRU

The encoder features one HDMI connector for video output. The output replicates the video signal currently being encoded when it comes from the multi-format connector or the SDI input connector (NMX-ENC-1105 only). The VIDEO PASS THRU connector enables you to "daisy-chain" connect to another encoder. The encoder supports daisy-chaining up to two units together.

FIG. 13 VIDEO PASS THRU connector

NOTE: *Only embedded digital audio is passed through to the output port, and not analog audio. If you want to monitor analog audio, use the analog Audio Pass Thru port.*

The following table describes the pinout configuration of the VIDEO PASS THRU connector:

VIDEO PASS THRU Connector - Pinouts and Signals			
Pin	**Signal**	**Pin**	**Signal**
1	TMDS Data 2+	11	TMDS Clock Shield
2	TMDS Data 2 Shield	12	TMDS Clock-
3	TMDS Data 2-	13	CEC
4	TMDS Data 1+	14	Reserved, HEC Data
5	TMDS Data 1 Shield	15	SCL
6	TMDS Data 1-	16	SDA
7	TMDS Data 0+	17	DDC/CEC/HEC Ground
8	TMDS Data 0 Shield	18	+5V Power (max 50mA)
9	TMDS Data 0-	19	Hot Plug Detect, HEC Data+
10	TMDS Clock+		

FIG. 14 displays the pin locations for the HDMI connector:
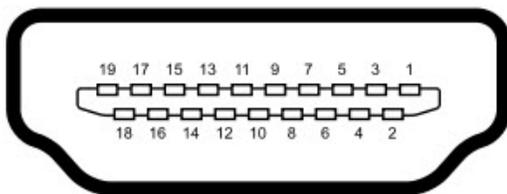
FIG. 14 HDMI pinouts

KEYPAD

The rear panel features one 3-pin 3.5mm Phoenix connector for RS-232 ports for controlling the encoder by keypad or ControlPad. **This connector is reserved for future use.** The pin-outs for this port are as follows:

- Pin 1: GND (G)
- Pin 2: RXD (R)
- Pin 3: TXD

FIG. 15 displays the KEYPAD port.

FIG. 15 KEYPAD port

The KEYPAD port supports the following data rate and format:

- Baud rate: 115200
- Parity: None
- Data Bits: 8
- Stop Bits: 1
- Software handshaking with XON & XOFF: Off

INDICATORS

The rear panel features one 4-pin 3.5mm relay port for connecting up to two independent relay devices. The port features a 2-pin Streaming port (Port 1) and a Recording port (Port 2). Each respective relay port is "ON" when the encoder is streaming. When a relay is "OFF", terminals A and B are open-circuit. FIG. 16 displays the INDICATORS port.

FIG. 16 INDICATORS ports

- Each relay is isolated and normally open.
- Each relay is independently controlled
- Each relay can switch up to 24 VDC or 28 VAC peak @ 1 A

USB

The rear panel features one Type-A USB connector. With a storage device connected to this port, you can record video stream files to the storage device. FIG. 17 displays the USB port.

FIG. 17 USB port

LAN 10/100

The encoder features four RJ-45 LAN 10/100 ports for connecting to a network, digital media switcher, presentation switcher, or video distribution device via Cat5 cabling.
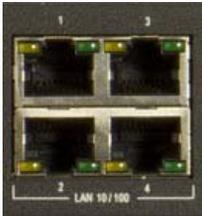
FIG. 18 LAN 10/100 ports

IMPORTANT: *You must have access to a DHCP server to initially configure the encoder.*

CAUTION: It is possible to disable LAN ports 2-4 and leave only port 1 enabled. Since it is possible to turn off these ports, you should ALWAYS connect your main network artery to port 1.

NOTE: *The Ethernet switch in the encoder is intended to be used as a workgroup extender switch for conveniently connecting devices such as PCs, touch panels, and other network-connected A/V equipment. It is not a smart switch, and as such other encoders or streaming devices should not be connected to the switch ports on the encoder. If multiple encoders are to be used in a location they should each have a dedicated facility network connection or a smart switch should be added that can have multiple encoders connected to it.*

FIG. 19 provides the pinouts and signals for the LAN connector and cable.
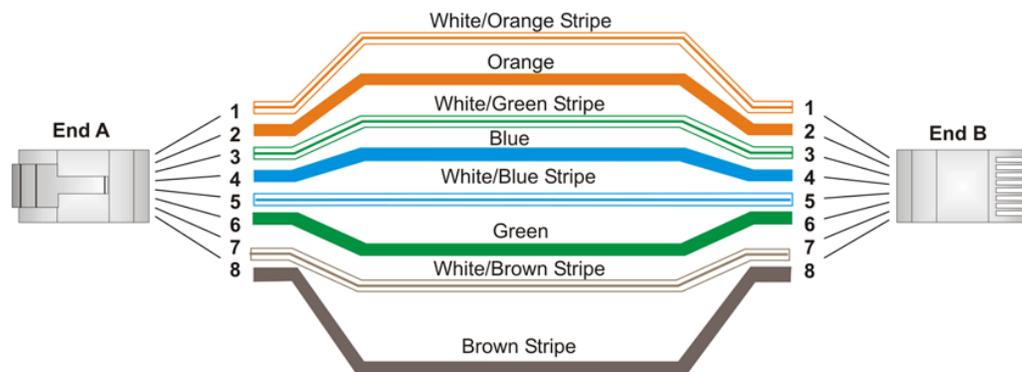
FIG. 19 RJ-45 wiring diagram

Link LED (amber) lights when the LAN cables are connected and terminated correctly.

Activity LED (green) lights when receiving or transmitting LAN data packets.
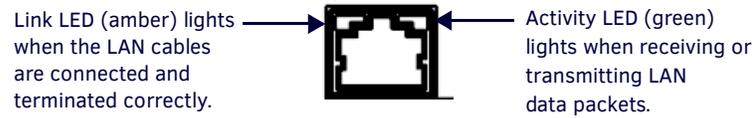
FIG. 20 LAN connector/LEDs

PWR

Power to the encoder is provided via a 2-pin 3.5mm locking Phoenix connector. Use the provided power supply with the power connector. See the procedures below if you prefer to use a different power supply. FIG. 21 displays the power connector.
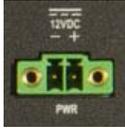
FIG. 21 Power connector

Preparing Captive Wires

You will need a wire stripper and flat-blade screwdriver to prepare and connect the captive wires.

NOTE: *Never pre-tin wires for compression-type connections.*

1. Strip 0.25 inch (6.35mm) of insulation off all wires.

2. Insert each wire into the appropriate opening on the connector (according to the wiring diagrams and connector types described in this section).

3. Tighten the screws to secure the wire in the connector. Do not tighten the screws excessively, as doing so may strip the threads and damage the connector.

Wiring a Power Connection

To use the 2-pin 3.5mm mini-Phoenix connector with a 12 VDC-compliant power supply, the incoming PWR and GND cables from the external source must be connected to their corresponding locations on the connector (FIG. 22).

PWR +

GND -

Power Supply

To the rear of the NMX-ENC
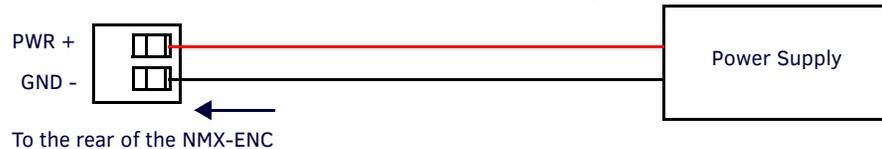
FIG. 22 2-pin mini-Phoenix connector wiring diagram (direct power)

Cable Details and Pinout Information

Overview

The DVI-I Input connector on the rear panel is used to connect video source input devices to the encoder (FIG. 23). The encoder routes video from connected source input devices to the connected output device. Each connector supports DVI as well as VGA, S-Video, Composite, and Component inputs.

To connect non-DVI input source devices (S-Video, Composite, VGA, and Component) to the MULTI FORMAT VIDEO INPUTS connector, the following (optional) adapter cables are required:

FIG. 23 MULTI FORMAT VIDEO INPUTS port

DVI Input Adapter Cables			
Name	**Description**	**Length**	**FG#**
CC-DVI-5BNCM	DVI-to-5 BNC Male **NOTE:** *Used for VGA, Component, or Composite inputs. When used for composite inputs, connect the green plug on the adapter cable to the composite video output jack on the source device.*	6' (1.828m)	FG10-2170-08
CC-DVI-RCA3M	DVI-to-3 RCA Male **NOTE:** *Used for Component or Composite inputs. When used for composite inputs, connect the green plug on the adapter cable to the composite video output jack on the source device.*	6' (1.828m)	FG10-2170-09
CC-DVI-SVID	DVI-to-S-Video	9' (2.743m)	FG10-2170-10
CC-DVIM-VGAF	DVI-to-VGA (up to 1920x1200)	6' (1.828m)	FG10-2170-13

DVI-D Male to DVI-D Male Single-Link Cable

Cable to be composed of the following:

- Four UL20276 (28AWG twisted pair + drain wire + aluminum foil/mylar shield) for TMDS signals and shields
- Five UL1589 (28AWG) for DDC_CLK, DDC_DATA, Hot_Plug_Detect, +5VDC, and GROUND
- The above bundles jacketed together in aluminum foil shield and 85% (minimum) braid
- EMI shield metal can on both DVI connectors and connected to braid

DVI-to-DVI Cable Pinout Information

The following table lists DVI-to-DVI cable pinouts:

DVI-to-DVI Cable Pinout Information				
DVI-D Connector Pin	Signal Name	Signal Name	DVI-D Connector Pin	Notes:
1	TMDS DATA 2 N	TMDS DATA 2 N	1	28AWG twisted pair 2
2	TMDS DATA 2 P	TMDS DATA 2 P	2	28AWG twisted pair 2
3	TMDS SHIELD 2/4	TMDS SHIELD 2/4	3	28AWG twisted pair 2 drain
4	TMDS DATA 4 N	TMDS DATA 4 N	4	Pin not populated in DVI-D connector
5	TMDS DATA 4 P	TMDS DATA 4 P	5	Pin not populated in DVI-D connector
6	DDC CLOCK	DDC CLOCK	6	28AWG
7	DDC DATA	DDC DATA	7	28AWG
8	ANALOG VERTICAL SYNC	ANALOG VERTICAL SYNC	8	Pin populated in DVI-D connector, but not connected for this cable
9	TMDS DATA 1 N	TMDS DATA 1 N	9	28AWG twisted pair 1
10	TMDS DATA 1 P	TMDS DATA 1 P	10	28AWG twisted pair 1
11	TMDS SHIELD 1/3	TMDS SHIELD 1/3	11	28AWG twisted pair 1 drain
12	TMDS DATA 3 N	TMDS DATA 3 N	12	Pin not populated in DVI-D connector
13	TMDS DATA 3 P	TMDS DATA 3 P	13	Pin not populated in DVI-D connector
14	+5VDC	+5VDC	14	28AWG
15	GROUND	GROUND	15	28AWG
16	HOT PLUG DETECT	HOT PLUG DETECT	16	28AWG
17	TMDS DATA 0 N	TMDS DATA 0 N	17	28AWG twisted pair 0
18	TMDS DATA 0 P	TMDS DATA 0 P	18	28AWGtwisted pair 0
19	TMDS SHIELD 0/5	TMDS SHIELD 0/5	19	28AWGtwisted pair 0 drain
20	TMDS DATA 5 N	TMDS DATA 5 N	20	Pin not populated in DVI-D connector
21	TMDS DATA 5 P	TMDS DATA 5 P	21	Pin not populated in DVI-D connector
22	TMDS CLOCK SHIELD	TMDS CLOCK SHIELD	22	28AWG twisted pair CLK drain
23	TMDS CLOCK P	TMDS CLOCK P	23	28AWGtwisted pair CLK
24	TMDS CLOCK N	TMDS CLOCK N	24	28AWGtwisted pair CLK
C1	C1 ANALOG RED	C1 ANALOG RED	C1	Pin not populated in DVI-D connector
C2	C2 ANALOG GREEN	C2 ANALOG GREEN	C2	Pin not populated in DVI-D connector
C3	C3 ANALOG BLUE	C3 ANALOG BLUE	C3	Pin not populated in DVI-D connector
C4	C4 ANALOG HSYNC	C4 ANALOG HSYNC	C4	Pin not populated in DVI-D connector
C5	C5 ANALOG GROUND	C5 ANALOG GROUND	C5	Pin populated in DVI-D connector, but not connected for this cable
BACKSHELL	SHIELD	SHIELD	BACKSHELL	Outer braid

DVI-A Male to 5-BNC Male Cable

Cable to be composed of the following:

- Five 75ohm 28 AWG mini-coax cables for the Red, Green, Blue, VSync, and HSync signals and returns
- EMI shield metal can on DVI connector

NOTE: *This cable type corresponds to the CC-DVI-5BNCM DVI-to-Component cable (**FG10-2170-08**), available from AMX.*

DVI-to-5-BNC Cable Pinout Information

The following table lists DVI--to-5-BNC cable pinouts:

DVI-to-5-BNC Cable Pinout Information				
DVI-A Connector Pin	**Signal Name**	**Signal Name**	**BNC connector pin**	**Notes:**
1	TMDS DATA 2 N			Pin populated in DVI-A connector, but not connected for this cable
2	TMDS DATA 2 P			Pin populated in DVI-A connector, but not connected for this cable
3	TMDS SHIELD 2/4			Pin not populated in DVI-A connector
4	TMDS DATA 4 N			Pin not populated in DVI-A connector
5	TMDS DATA 4 P			Pin not populated in DVI-A connector
6	DDC CLOCK			Pin populated in DVI-A connector, but not connected for this cable
7	DDC DATA			Pin populated in DVI-A connector, but not connected for this cable
8	ANALOG VERTICAL SYNC	VSync Signal	Black BNC center pin	
9	TMDS DATA 1 N			Pin not populated in DVI-A connector
10	TMDS DATA 1 P			Pin not populated in DVI-A connector
11	TMDS SHIELD 1/3			Pin not populated in DVI-A connector
12	TMDS DATA 3 N			Pin not populated in DVI-A connector
13	TMDS DATA 3 P			Pin not populated in DVI-A connector
14	+5VDC			Pin populated in DVI-A connector, but not connected for this cable
15	GROUND	VSync, HSync Returns (shields)	Black/Grey BNC shields	
16	HOT PLUG DETECT			Pin populated in DVI-A connector, but not connected for this cable
17	TMDS DATA 0 N			Pin populated in DVI-A connector, but not connected for this cable
18	TMDS DATA 0 P			Pin populated in DVI-A connector, but not connected for this cable
19	TMDS SHIELD 0/5			Pin not populated in DVI-A connector
20	TMDS DATA 5 N			Pin not populated in DVI-A connector
21	TMDS DATA 5 P			Pin not populated in DVI-A connector
22	TMDS CLOCK SHIELD			Pin not populated in DVI-A connector
23	TMDS CLOCK P			Pin populated in DVI-A connector, but not connected for this cable
24	TMDS CLOCK N			Pin populated in DVI-A connector, but not connected for this cable
C1	C1 ANALOG RED	Red Signal	Red BNC center pin	
C2	C2 ANALOG GREEN	Green Signal	Green BNC center pin	
C3	C3 ANALOG BLUE	Blue Signal	Blue BNC center pin	
C4	C4 ANALOG HSYNC	HSync Signal	Grey BNC center pin	
C5	C5 ANALOG GROUND	Red, Green, Blue Returns (shields)	Red/Green/Blue BNC shields	
BACKSHELL	SHIELD			Pin populated in DVI-A connector, but not connected for this cable

DVI-A Male to Triple RCA Male Cable

Cable to be composed of the following:

- Three 75ohm 28 AWG mini-coax cables for the Red, Green, and Blue signals and returns
- EMI shield metal can on DVI connector

NOTE: *This cable type corresponds to the CC-DVI-RCA3M DVI-to-Component/Composite cable (**FG10-2170-09**), available from AMX.*

DVI-to-Triple RCA Cable Pinout Information

The following table lists the DVI-to-Triple RCA cable pinouts:

DVI-to-Triple RCA Cable Pinout Information				
DVI-A Connector Pin	**Signal Name**	**Signal Name**	**RCA connector pin**	**Notes:**
1	TMDS DATA 2 N			Pin populated in DVI-A connector, but not connected for this cable
2	TMDS DATA 2 P			Pin populated in DVI-A connector, but not connected for this cable
3	TMDS SHIELD 2/4			Pin not populated in DVI-A connector
4	TMDS DATA 4 N			Pin not populated in DVI-A connector
5	TMDS DATA 4 P			Pin not populated in DVI-A connector
6	DDC CLOCK			Pin populated in DVI-A connector, but not connected for this cable
7	DDC DATA			Pin populated in DVI-A connector, but not connected for this cable
8	ANALOG VERTICAL SYNC			Pin populated in DVI-A connector, but not connected for this cable
9	TMDS DATA 1 N			Pin not populated in DVI-A connector
10	TMDS DATA 1 P			Pin not populated in DVI-A connector
11	TMDS SHIELD 1/3			Pin not populated in DVI-A connector
12	TMDS DATA 3 N			Pin not populated in DVI-A connector
13	TMDS DATA 3 P			Pin not populated in DVI-A connector
14	+5VDC			Pin populated in DVI-A connector, but not connected for this cable
15	GROUND			Pin populated in DVI-A connector, but not connected for this cable
16	HOT PLUG DETECT			Pin populated in DVI-A connector, but not connected for this cable
17	TMDS DATA 0 N			Pin populated in DVI-A connector, but not connected for this cable
18	TMDS DATA 0 P			Pin populated in DVI-A connector, but not connected for this cable
19	TMDS SHIELD 0/5			Pin not populated in DVI-A connector
20	TMDS DATA 5 N			Pin not populated in DVI-A connector
21	TMDS DATA 5 P			Pin not populated in DVI-A connector
22	TMDS CLOCK SHIELD			Pin not populated in DVI-A connector
23	TMDS CLOCK P			Pin populated in DVI-A connector, but not connected for this cable
24	TMDS CLOCK N			Pin populated in DVI-A connector, but not connected for this cable
C1	C1 ANALOG RED	Component Pr / CVBS 1 Signal	Red RCA connector center pin	
C2	C2 ANALOG GREEN	Component Y / CVBS 2 Signal	Green RCA connector center pin	
C3	C3 ANALOG BLUE	Component Pb / CVBS 3 Signal	Blue RCA connector center pin	
C4	C4 ANALOG HSYNC			Pin populated in DVI-A connector, but not connected for this cable

DVI-to-Triple RCA Cable Pinout Information (Cont.)				
DVI-A Connector Pin	Signal Name	Signal Name	RCA connector pin	Notes:
C5	C5 ANALOG GROUND	Pr, Y, Pb / CVBS Returns (shields)	Red/Green/Blue RCA connector shields	
BACKSHELL	SHIELD			Pin populated in DVI-A connector, but not connected for this cable

DVI-A Male to S-Video Male Cable

Cable to be composed of the following:

- Two 75ohm 28 AWG mini-coax cables for the Luminance (Y) and Chrominance (C) signals and returns
- EMI shield metal can on DVI connector

NOTE: *This cable corresponds to the CC-DVI-SVID DVI-to-S-Video adapter cable (***FG10-2170-10***), available from AMX.*

DVI-to-S-Video Cable Pinout Information

The following table lists the DVI-to-S-Video cable pinouts:

DVI-to-S-Video Cable Pinout Information				
DVI-A Connector Pin	Signal Name	Signal Name	S-Video Connector Pin	Notes:
1	TMDS DATA 2 N			Pin populated in DVI-A connector, but not connected for this cable
2	TMDS DATA 2 P			Pin populated in DVI-A connector, but not connected for this cable
3	TMDS SHIELD 2/4			Pin not populated in DVI-A connector
4	TMDS DATA 4 N			Pin not populated in DVI-A connector
5	TMDS DATA 4 P			Pin not populated in DVI-A connector
6	DDC CLOCK			Pin populated in DVI-A connector, but not connected for this cable
7	DDC DATA			Pin populated in DVI-A connector, but not connected for this cable
8	ANALOG VERTICAL SYNC			Pin populated in DVI-A connector, but not connected for this cable
9	TMDS DATA 1 N			Pin not populated in DVI-A connector
10	TMDS DATA 1 P			Pin not populated in DVI-A connector
11	TMDS SHIELD 1/3			Pin not populated in DVI-A connector
12	TMDS DATA 3 N			Pin not populated in DVI-A connector
13	TMDS DATA 3 P			Pin not populated in DVI-A connector
14	+5VDC			Pin populated in DVI-A connector, but not connected for this cable
15	GROUND			Pin populated in DVI-A connector, but not connected for this cable
16	HOT PLUG DETECT			Pin populated in DVI-A connector, but not connected for this cable
17	TMDS DATA 0 N			Pin populated in DVI-A connector, but not connected for this cable
18	TMDS DATA 0 P			Pin populated in DVI-A connector, but not connected for this cable
19	TMDS SHIELD 0/5			Pin not populated in DVI-A connector
20	TMDS DATA 5 N			Pin not populated in DVI-A connector
21	TMDS DATA 5 P			Pin not populated in DVI-A connector
22	TMDS CLOCK SHIELD			Pin not populated in DVI-A connector
23	TMDS CLOCK P			Pin populated in DVI-A connector, but not connected for this cable

DVI-to-S-Video Cable Pinout Information (Cont.)				
DVI-A Connector Pin	Signal Name	Signal Name	S-Video Connector Pin	Notes:
24	TMDS CLOCK N			Pin populated in DVI-A connector, but not connected for this cable
C1	C1 ANALOG RED			Pin populated in DVI-A connector, but not connected for this cable
C2	C2 ANALOG GREEN	Luminance (Y) Signal (center conductor)	3	
C3	C3 ANALOG BLUE	Chrominance (C) Signal (center conductor)	4	
C4	C4 ANALOG HSYNC			Pin populated in DVI-A connector, but not connected for this cable
C5	C5 ANALOG GROUND	Y, C Returns (shields)	1, 2	
BACKSHELL	SHIELD			Pin populated in DVI-A connector, but not connected for this cable

DVI-A Male to HD15 (VGA) Male Adapter

Cable to be composed of the following:

- Three 75ohm 28 AWG mini-coax cables for the Red, Green, and Blue signals and returns
- Seven UL1589 (28AWG) for VSYNC, HSYNC, DDC_CLK, DDC_DATA, Hot_Plug_Detect, +5VDC, and GROUND
- The above bundles jacketed together in aluminum foil shield and 85% (minimum) braid
- EMI shield metal can on both DVI and HD15 connectors and connected to braid

NOTE: *This cable type corresponds to the CC-DVIM-VGAF DVI-to-VGA adapter (**FG10-2170-13**), available from AMX.*

DVI-to-VGA Cable Pinout Information

The following table lists the DVI-to-VGA cable pinouts:

DVI-to-VGA Cable Pinout Information				
DVI-A Connector Pin	Signal Name	Signal Name	HD15 (VGA) Pin	Notes:
1	TMDS DATA 2 N			Pin populated in DVI-A connector, but not connected for this cable
2	TMDS DATA 2 P			Pin populated in DVI-A connector, but not connected for this cable
3	TMDS SHIELD 2/4			Pin not populated in DVI-A connector
4	TMDS DATA 4 N			Pin not populated in DVI-A connector
5	TMDS DATA 4 P			Pin not populated in DVI-A connector
6	DDC CLOCK	DDC CLOCK	15	28AWG
7	DDC DATA	DDC DATA	12	28AWG
8	ANALOG VERTICAL SYNC	VSYNC Signal	14	28AWG
9	TMDS DATA 1 N			Pin not populated in DVI-A connector
10	TMDS DATA 1 P			Pin not populated in DVI-A connector
11	TMDS SHIELD 1/3			Pin not populated in DVI-A connector
12	TMDS DATA 3 N			Pin not populated in DVI-A connector
13	TMDS DATA 3 P			Pin not populated in DVI-A connector
14	+5VDC	+5VDC	9	28AWG
15	GROUND	GND, HS Return	5	28AWG
16	HOT PLUG DETECT	+5VDC	9	28AWG
17	TMDS DATA 0 N			Pin populated in DVI-A connector, but not connected for this cable
18	TMDS DATA 0 P			Pin populated in DVI-A connector, but not connected for this cable

DVI-to-VGA Cable Pinout Information (Cont.)

DVI-A Connector Pin	Signal Name	Signal Name	HD15 (VGA) Pin	Notes:
19	TMDS SHIELD 0/5			Pin not populated in DVI-A connector
20	TMDS DATA 5 N			Pin not populated in DVI-A connector
21	TMDS DATA 5 P			Pin not populated in DVI-A connector
22	TMDS CLOCK SHIELD			Pin not populated in DVI-A connector
23	TMDS CLOCK P			Pin populated in DVI-A connector, but not connected for this cable
24	TMDS CLOCK N			Pin populated in DVI-A connector, but not connected for this cable
C1	C1 ANALOG RED	RED Coax Signal	1	Red mini-coax signal
C2	C2 ANALOG GREEN	GREEN Coax Signal	2	Green mini-coax signal
C3	C3 ANALOG BLUE	BLUE Coax Signal	3	Blue mini-coax signal
C4	C4 ANALOG HSYNC	HSYNC Signal	13	28AWG
C5	C5 ANALOG GROUND	RGB Coax, VSync/DDC Returns	6, 7, 8, 10, 11	Red, Green, Blue mini-coax returns; VSync/DDC return; NC used as GND
BACKSHELL	Braided Shield	Braided Shield	BACKSHELL	Outer braid, tied to 6, 7, 8, 10, 11

Web Configuration

NMX-ENC WebConsole

The NMX-ENC WebConsole interface is provided for configuration. Using a standard web browser, enter the IP address of the NMX-ENC for WebControl. The primary page is presented as the NMX-ENC Configuration Manager, where you are required to log on. The NMX-ENC supports Internet Explorer (9+), Firefox (21.0+), and Chrome (27+).

NOTE: *You must reload your browser when upgrading the encoder's firmware from version 1.2.1 to version 1.5.x. The user interface will not update until you reload the browser after upgrading the firmware.*

Accessing the WebConsole

You can access the WebConsole by opening a supported web browser from a PC and entering the IP address of the encoder in the location bar in the browser.

Retrieving the IP Address of the Encoder

You can retrieve the IP address and other configuration information for the encoder by inserting a USB drive into the encoder and pressing the ID pushbutton. The encoder creates and copies a text (.txt) file to the USB drive with a list of configuration information including the IP address of the encoder. Perform these steps to locate the IP address of the encoder:

1. Insert a USB drive into the USB port on the front panel of the encoder. The USB LED beside the port appears green once the USB drive is mounted.

2. Press and hold the ID pushbutton for two seconds until the USB LED appears green. When the LED flashes green, the encoder is copying a .txt file to the USB drive. The encoder is finished transferring the file to the USB drive when the LED stops flashing.

3. Remove the USB drive from the encoder and insert it into a PC or any other device which can read the file.

4. On the PC, navigate to the USB drive. The filename contains the encoder's serial number, IP address, and IP type (DHCP or Static). You can open the file to view the MAC address, subnet mask, and gateway address.

NOTE: *If the encoder is unable to receive the IP address at the time of retrieval, the filename will have "unavailable" listed in place of the IP address.*

FIG. 24 displays an example of a configuration file.

The filename contains the encoder's serial number, IP address, IP type, and a time stamp.

```
320101CT13E0089_10 35 84 12_DHCP_03-20-2015 14-07-47 39.txt - Notepad
File   Edit   Format   View   Help
Auto generated config file for NMX-ENC-1100 H.264 Encoder with serial no: 320101CT13E0089
MAC Address: 00:60:9F:9A:E0:5F
IP:          10.35.84.12   [DHCP]
mask:        255.255.254.0
gw:          10.35.84.1
```

IP Address   IP Type   Serial Number

FIG. 24 Encoder configuration file

NOTE: *Writing the configuration file to the USB drive can only occur once per drive insertion. If you need the encoder to copy the file another time, you must remove the USB drive and insert it again into the USB port on the front panel.*

WebConsole Interface

The encoder features an on-board WebConsole that allows you to configure the device and make various adjustments to audio/video settings. The WebConsole is accessed via a web browser on a PC that has network access to the encoder. You can access the WebConsole by entering the IP address of the encoder into a web browser.

Accessing the WebConsole

From any PC that has access to the LAN that the target encoder resides on:

1. Open a web browser and type the IP Address of the encoder in the Address Bar. (See the *Retrieving the IP Address of the Encoder* section on page 25 for more information.)

NOTE: *Due to some web browsers retaining stale DNS data, it is recommended you manage the encoder by using the IP address of the encoder in the web browser.*

2. Press **Enter** to access WebConsole for the encoder. A security dialog opens.

3. Enter the user name and password for the encoder into their respective text boxes. The user name is **admin** and the password is **1988**. The WebConsole page opens (FIG. 25).
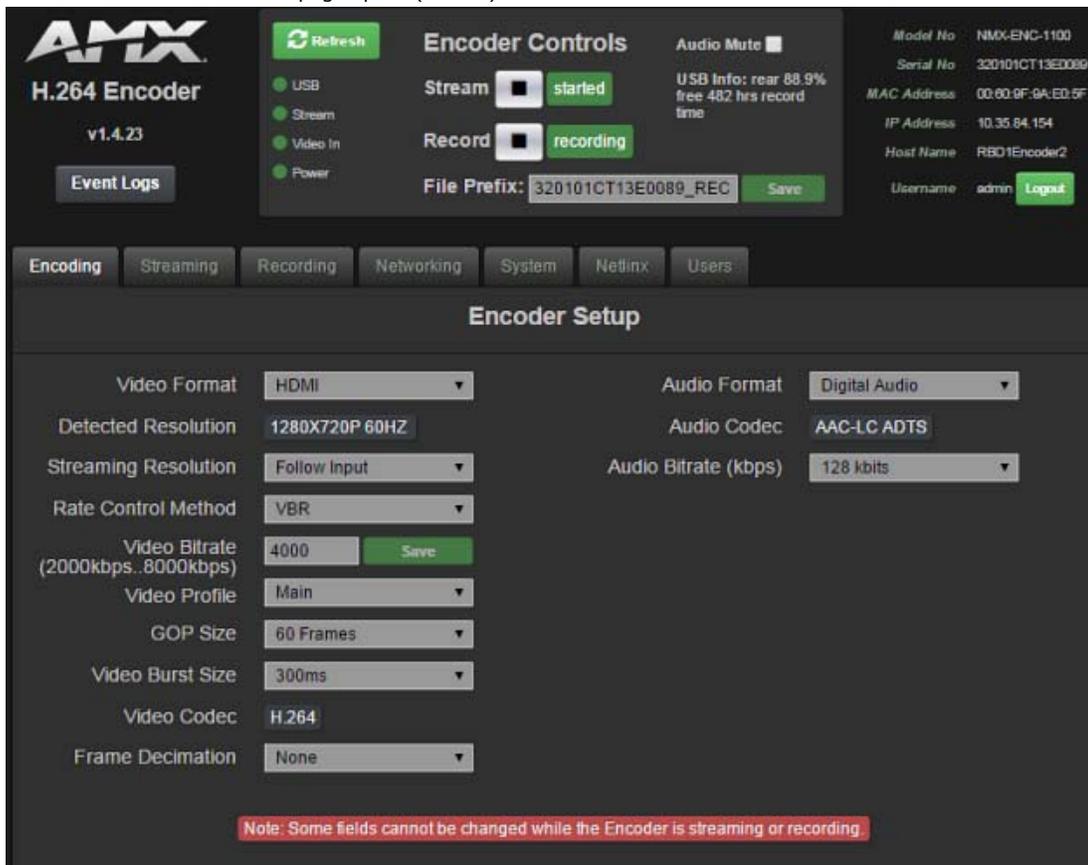
FIG. 25 NMX-ENC WebConsole

The following sections describe the configuration options and functionality of the NMX-ENC WebConsole.

Encoder Controls

FIG. 26 displays the encoder controls on the NMX-ENC WebConsole page. These controls are always accessible when navigating through the option tabs on the WebConsole.
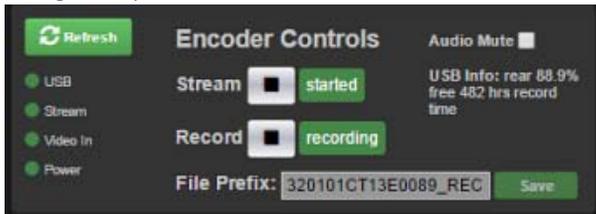
FIG. 26 Encoder Controls

The following options are available in the Encoder Controls section:

Encoder Control Options	
Refresh	Click to reload all settings and status information on the current tab.
LEDs	Displays the current state of the USB, Stream, Video In, and Power LEDs. See the *LEDs* section on page 11 for a table describing the LED states.
Stream Controls	The interface features a Play/Stop button. Clicking Play starts streaming video and audio. Clicking Stop halts the stream. The streaming control button changes depending on the active state of the stream. While streaming, the Stop button appears. When the streaming stops, the button reverts to Play. See the Streaming Controls States table below for more information on the Stream controls.
Record Controls	The interface features a Record button. Clicking Record starts recording video and audio. The recording control button changes depending on the active state of the recording. While recording, the Stop button appears. When the recording stops, the button reverts to Play. **NOTE:** *Simultaneously streaming and recording is permitted, however, if you are dual streaming, recording is not permitted.*
File Prefix	Enter the prefix you want to use for recording. Click Save to append the prefix with a stamp that identifies the time and date of the recording. The prefix you enter in this field overrides the prefix you enter in the Default Filename Prefix field on the Recording tab. This option is only active for the current session. It reverts back to its default on logout, reboot, session timeout, or the recording has been stopped. The minimum file prefix length is 6 characters.
Audio Mute	Click the check box to mute the audio stream. Clicking this option only mutes the audio on the stream. It does not mute the audio on the pass-through. **NOTE:** *While it is possible to mute the audio on the stream, it is not possible to adjust the volume on the stream. If you want to adjust the volume, you must adjust it at the audio source or on the audio output.*
USB Info	USB Info stats also estimates the available recording duration based on free space down to hours and minutes. Minutes do not get displayed if the estimated free space exceeds 24 hours. When the connected USB device has sufficient free space, the USB info text appears white. The USB info text transitions to orange when the USB device begins to fill with data and is close being full. The info text changes to red when nearly full. If you stop recording while the USB info text is red, you will not be able to restart recording as it transitions FULL. **NOTE:** *USB Info may report the drive as being full even if there is space still available on the drive. In this case, the drive is reported as full due to overhead calculations performed in the encoder to guarantee there will be no file errors. The hard drive is considered full when less than 9% of its capacity is free space.*

The following table describes the different states of the Streaming controls.

Streaming Control States	
State	**Description**
Stopped	The stream can be started.
Starting	The Stream button is disabled and does not allow the user to send multiple stream start/stop commands.
Started	The Stream button can only be used to stop the currently active stream.
Suspended	The stream has been interrupted mostly due to a change in input video signal or an internal error. Once the error is corrected, the stream automatically restarts. In this state, the WebConsole only allows you to stop the suspended stream, in which case, the status changes to Stopped and the stream must be manually restarted.
Stopping	While in this state, the stream button is inactive.
Not Allowed	The Stream button should remain inactive in this state. This happens if one of the following occurs: • The network is not connected • Neither of the stream destinations are enabled • The input resolution is not supported • No signal is detected at the video input • NTP is in progress

You can view these states via the Tool Tips that appear when you hover the mouse pointer over the text to the right of the Stream and Record buttons. If you cannot start or enable streaming or recording, the Tool Tips provide the reason why the action is prohibited.

Event Logs

Clicking the Event Logs button on the main WebConsole page opens a another tab in your browser with a list of recent alarms on the encoder sorted by time stamp. If you click the Event Logs button again without closing the tab, the tab refreshes itself with new information. It does not open another tab. FIG. 27 displays an example of an event log.

```
01-28-2015 15:25:44.26,SYSTEM,7,1,Unsupported video input
01-28-2015 15:25:45.00,STRM,14,3,Output Resolution Follow Input
01-28-2015 15:25:45.00,STRM,15,3,udp stream: 10.35.84.182:1040
01-28-2015 15:25:45.00,STRM,15,3,udp stream: 10.35.82.107:1070
01-28-2015 15:25:48.21,STRM,5,1,Stream Started
01-28-2015 15:25:56.66,SYSTEM,4,0,No Input Video Signal Detected!
01-28-2015 15:26:06.74,STRM,1,1,Stream Suspended
01-28-2015 15:40:49.22,SYSTEM,8,2,Valid Input Video Signal Detected!
01-28-2015 15:41:03.47,STRM,14,3,Output Resolution Follow Input
01-28-2015 15:41:03.47,STRM,15,3,udp stream: 10.35.84.182:1040
01-28-2015 15:41:03.47,STRM,15,3,udp stream: 10.35.82.107:1070
01-28-2015 15:41:06.69,STRM,5,1,Stream Started
01-28-2015 15:41:22.44,SYSTEM,4,0,No Input Video Signal Detected!
01-28-2015 15:41:32.71,STRM,1,1,Stream Suspended
01-28-2015 15:42:06.06,SYSTEM,8,2,Valid Input Video Signal Detected!
01-28-2015 15:43:25.07,FORWARD,10,3,Store and Forward Enabled
01-28-2015 15:43:25.07,FORWARD,13,3,Forwarding Hold Cleared
01-28-2015 15:43:43.07,FORWARD,11,3,Store and Forward Disabled
01-28-2015 15:44:26.67,STRM,14,3,Output Resolution Follow Input
01-28-2015 15:44:26.67,STRM,15,3,udp stream: 10.35.84.182:1040
01-28-2015 15:44:26.67,STRM,15,3,udp stream: 10.35.82.107:1070
01-28-2015 15:44:29.89,STRM,5,1,Stream Started
01-28-2015 15:50:39.50,STRM,6,2,Stream Stopped
01-28-2015 15:50:45.13,STRM,14,3,Output Resolution Follow Input
01-28-2015 15:50:48.33,STRM,5,1,Record Started on:rear disk
01-28-2015 15:50:50.33,STRM,5,1,Stream Started
01-28-2015 15:50:53.84,STRM,6,2,Stream Stopped
```

FIG. 27 Event Log

For a list of alarm codes and descriptions, see *Appendix C - Alarms* section on page 54.

Encoding

FIG. 28 displays the encoder controls on the NMX-ENC WebConsole page. The encoder controls allow you to configure the audio and video options for the encoder. The web console automatically prevents any changes when the stream is running by graying out all configuration options. When the signal is ready with its new settings, you can start the stream again.
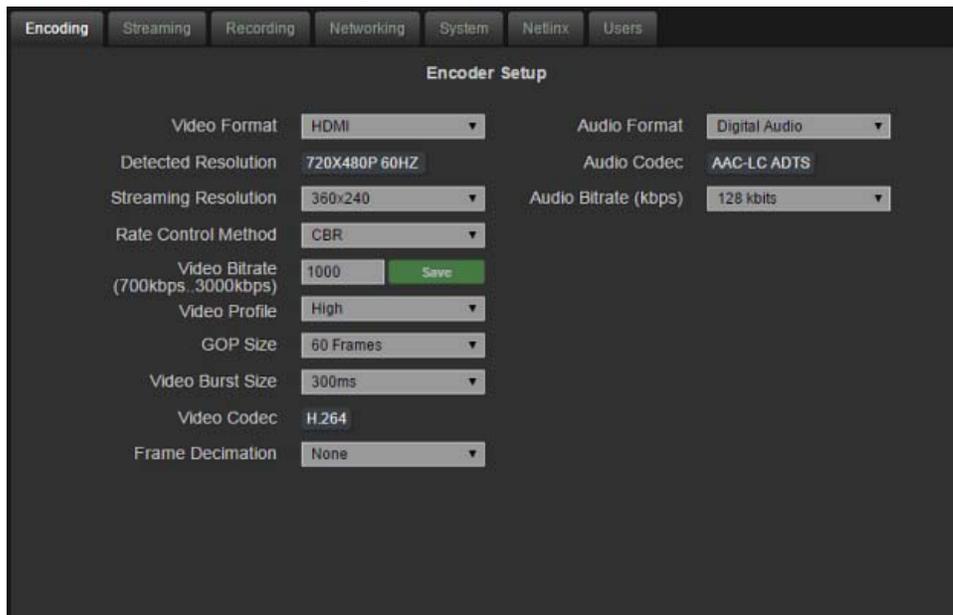
FIG. 28 Encoding tab

The following options are available on the Encoding tab:

Encoding Options	
Video Format	Select from the menu the video format you want to be encoded. You can choose from **SDI, HDMI**, **DVI**, **VGA**, **Component**, **S-Video**, or **Composite**. SDI is only available with the NMX-ENC-1105.
	NOTE: *The NMX-ENC does NOT support streaming encrypted content. If HDCP is disabled on the video source, some encrypted sources send black video, which will be streamed by the encoder. If HDCP is enabled on the source, the encoder streams a red screen when an encrypted video source is present.*
Detected Resolution	Displays the detected resolution from the video source. This field is view-only. It is recommended that you start and restart the stream if the source resolution will be changed.
	NOTE: *On some devices, this field may continue to display the detected resolution even when the stream is suspended or removed.*
Streaming Resolution	This option allows you to stream the same resolution as the Detected Resolution, or you can choose 1 of 3 scaled resolutions. For a list of scaled output resolutions, see the *Available Scaled Output Resolutions* section on page 52.
Rate Control Method	Select an option from the menu to assign the encoder rate control method. You can choose from **CBR** or **VBR**.
	• **CBR** Constant bit rate encoding means that the bitrate of the encoded video is constant. This type of encoding is recommended for streaming applications where the bandwidth is constrained. Also, some playback devices struggle with Variable Bit Rate content, in which case CBR should be used. The disadvantage of constant bit rate streaming is that video quality can decrease during periods of high motion while wasting bandwidth during periods of low motion.
	• **VBR** Variable bit rate encoding varies the amount of output data in each time segment based on the complexity of the input data in that segment. VBR encoding is recommended for applications where image quality needs to be maintained regardless of the amount of motion in the video, even if it requires additional bandwidth. The goal is to maintain constant quality instead of maintaining a constant data rate.
Video Bitrate	Enter the target video bit rate for the encoded video. Higher bit rates will result in higher quality encoded video. Enter the bit rate in kilobytes per second (kbps). Press ENTER or click Save to submit the value to the encoder. You can enter a value between 100 and 20,000 kbps. The default setting varies based upon the input resolution of the injected signal. For a list of recommended bit rates for output resolution, see the *Recommended Bit Rates for Output Resolutions* section on page 53.
	NOTE: *Higher bit rates can cause network congestion resulting in video issues.*

Encoding Options (Cont.)	
Video Profile	Select the encoding profile. The profile defines the subset of H.264 encoding techniques that will be used during the encode process. Not all decoders support all profiles; therefore, it is important to select a profile that is supported by all playback devices for a given application. You can choose from **Baseline**, **Main**, or **High**. The default setting is High. • The **Baseline** profile uses only a limited subset of encoding techniques, requiring less processing power to decode, making it well suited for use with mobile devices. • The **Main** profile uses most of the encoding techniques, which requires more processing power to decode, making it well suited for use with set top boxes. • The **High** profile uses almost all of the encoding techniques. It is designed for HD encoding and works well with HD set top boxes and software decoders.
GOP Size	Select from the menu the Group of Pictures (GOP) size. GOP size determines the distance between two full image frames (I-frames) in the encoded video. Larger GOP sizes result in greater compression efficiency, but it takes longer for the video to recover from errors. You can choose from **15**, **30**, **60**, **120**, or **240** frames. The default setting is 60.
Video Burst Size	The video burst size specifies a duration in which a collection of frames can be sent at a given moment. The value you can select is in milliseconds. You can select from several values between 150ms and 2000ms. The default setting is 300ms.
Video Codec	Shows the video codec the encoder is using. This field is view-only.
Frame Decimation	Frame decimation reduces the number of input frames to increase the quality of the video image. When you select a value, you are selecting a value which indicates the fraction by which you want to reduce the input bit rate. You can choose from **None**, **1/2**, **1/3**, or **1/4**. The default setting is None.
Audio Format	Select from the menu the type of audio source you want to encode. You can choose from **Digital Audio**, **Analog Audio**, or **No Audio**. Digital Audio is only available if you select HDMI or SDI from the Video Format menu. Selecting Analog Audio activates the Audio Sampling Rate option. **NOTE:** *Since the default video format is HDMI, the default audio format is digital. If you change the video format to analog (VGA), the audio format automatically changes to analog audio. However, if you switch from an analog video format to digital (HDMI), the audio format video format does not automatically switch to digital.*
Audio Sampling Rate	Shows the audio sampling rate the encoder is using. This field is only available if you set the audio source to Analog Audio and is view-only.
Audio Codec	Shows the audio codec the encoder is using. This field is view-only.
Audio Bitrate (kbps)	Enter the target video bit rate for the encoded audio. Higher bit rates will result in higher quality encoded audio.The options are in kilobytes per second (kbps). You can choose from **64**, **96**, **128**, or **192** kbits. The default setting is 128 kbits.

IMPORTANT: *The detected resolution for a source stream from an SPX model XPress Player must be 720x480p@60Hz. The source must be SD.*

IMPORTANT: *The detected resolution for a source stream from a touch panel must be no higher than 1280x720p@60Hz. You must also set the Frame Decimation to 1/2.*

Streaming

FIG. 29 displays the streaming controls on the NMX-ENC WebConsole page. The streaming controls allow you to set the output format for the stream and whether the stream is unicast or multicast.

FIG. 29 Streaming tab

The following options are available on the Streaming tab:

Streaming Options	
Output Format	Select an output format from the menu. You can choose from **RTP** or **UDP**. • **UDP** (User Datagram Protocol) allows transporting both MPEG-2 video and audio inside a single stream that is encapsulated as part of a standard MPEG-2 Transport Stream. To view UDP address in a media player such as VLC, use the following syntax: *udp://@<multicast IP>:<port>*. • **RTP** (Real-time Transport Protocol) defines a standardized packet format for delivering audio and video over the Internet. By transferring video and audio over separate streams, RTP allows audio only players to receive separated content as their audio/video player counterparts receive it. Selecting RTP activates the RTP Session Description Information options and summons an SDP File URL button into the Unicast and Multicast areas. Use the RTP Session Description Information options to describe the current stream. Click **Save** to save the information you enter. This information is used in the Session Description Protocol (SDP) used with RTP. Click the SDP File URL button to download the .sdp file. Open the .sdp file using VLC to view the RTP stream.
Enable Unicast	Click the Enable check box in this area to activate unicast. The unicast IP is the destination address for the stream (for example, the destination address of the PC running a VLC client.) Uncheck the Enable check box to enter the IP address and port. Click the Save button to save the values.
Enable Unicast/Multicast	Click the Enable check box in this area to activate multicast. Uncheck the Enable check box to enter the IP address and port. Click the Save button for either Unicast or Multicast to save the values.

NOTE: *Enter the unicast/multicast IP address and port information before enabling the stream. Dual streaming is supported. The encoder can stream to either two unicast addresses or one unicast and one multicast address. Simultaneous streaming and recording are supported, however, when dual streaming, recording is not permitted.*

Recording

FIG. 30 displays the recording controls on the NMX-ENC WebConsole page.

FIG. 30 Recording tab

The following options are available on the Recording tab:

Recording Options	
Default Filename Prefix	Enter the prefix you want to use for recording. The encoder appends the prefix with a stamp that identifies the time and date of the recording. You can override the prefix you enter in this field by entering a different prefix in the File Prefix field in the Encoder Controls at the top of the page. The minimum file prefix length is 6 characters. The default name cannot end in "_REC". Click **Save** to save any changes.
Record to USB	Use the menu to select which USB port you want to use for recording a video stream. You can choose from **Front**, **Rear**, or **Front/Rear**. If you select Front/Rear, the front USB port has priority over the rear port. If the encoder detects no valid USB device on the front port, it uses the rear USB port to record the video stream. Using Front/Rear, if the device on the front port is full, the encoder will not switch to the rear port. If the encoder does not detect a valid USB device on either port, recording the video stream is not allowed. **NOTE:** *Recording times will vary depending on the video resolution you are using (the higher the resolution, the faster the file grows.) A recorded file will be saved into separate segmented files if the file's size reaches 3GB or the recording duration is more than two hours. If the recorded file reaches either of these limits, the encoder will stop recording the current file and begin saving a new file to the attached drive.*

Recording Options (Cont.)	
Enable Store and Forward	Check this box to configure an FTP server to which the encoder will automatically upload a recorded file when the recording is complete. Forwarding is only supported through the USB port on the rear panel of the encoder. Video files of the USB port are deleted from the USB device once forwarding is successful. **NOTE:** *If you have a storage device connected to the rear USB port and you do not have Store and Forward enabled, the drive will eventually fill with data. When filled, you must manually remove the drive to clear its data. Store and Forward does not work without a USB drive connected to the encoder as there is not internal memory dedicated to temporarily storing video before it is forwarded to the FTP server.* When you check this box, the following options appear: • **Forwarding Schedule**: Select from the menu a time window in which you want to transfer the recorded contents to the FTP server. You can choose from **Immediate**, **Specified Time**, and **Specified Start Window**. You must enable an NTP server before configuring either of the latter two choices. If you choose Immediate, the FTP process starts as soon as a there is no active recording session in progress. If you select the forwarding schedule for a specified time or start window, use the options menus that appear to indicate recording times. If you select a time when a file transfer is In Progress, the files are transferred at a random time within the forwarding window to decrease the potential for network congestion or load on the FTP server. • **FTP URL**: Enter the URL or IP address of the FTP server. • **FTP Port**: Enter the port of the FTP server. • **Username**: Enter the username for access to the FTP server. • **Password**: Enter the password for access to the FTP server.
Enable NTP	Check this box to enable the encoder to embed the time in the video stream and support time-based store-and-record operations. Though you can have multiple predefined NTP servers, the encoder only queries the selected NTP server for the current time. The encoder will not attempt to query the other predefined NTP servers in the event the selected NTP server is not available. **NOTE:** *If NTP is enabled when the encoder reboots and an invalid date and time is set on the encoder, the encoder will be in a Not Allowed state for streaming or recording. Waiting for the encoder to retrieve a valid date and time or disabling NTP will allow the encoder to stream and record again.*
Zone	Use the menu to select the time zone.
Enable DST	Check this box to enable Daylight Savings Time (DST) on the encoder. Enabling DST opens a series of additional options. You must select a Type, and you can choose from **Fixed** or **By Occurrence**. For each option you can indicate the following parameters: • **Offset**: Set the number of hours and minutes in the time adjustment. • **Starts**: Set the time of day when the time adjustment should take effect. • **Ends**: Set the time of day when the time adjustment should end. • **Month**: Set the month of the year when the time adjustment should start and end. • **Day**: Set the day of the week when the time adjustment should start and end. This option is only available when you select Fixed. • **WoM**: Set the week of the month when the time adjustment should start and end. This option is only available when you select By Occurrence. • **DoW**: Set the day of the week when the time adjustment should start and end. This option is only available when you select By Occurrence.

Networking

FIG. 31 displays the network controls on the NMX-ENC WebConsole page. The network controls allow you to set up your DHCP or Static network.

FIG. 31 Networking tab

The following options are available on the Networking tab:

Networking Options	
DHCP/Static	Click the corresponding option button to select a **DHCP** or **Static** communication mode. • **DHCP** (Dynamic Host Configuration Protocol) assigns IP addresses from client stations logging onto a TCP/IP network via a DHCP server. • **Static** IP is a permanent IP address that is assigned to a node in a TCP/IP network.
IP Address	Enter the IP address or URL used by the encoder. The target address must be in IPv4 dot notation (ex: X.X.X.X). This option is only available if you select a static network.
Subnet Mask	Enter the subnet mask address in the provided field. This option is only available if you select a static network.
Gateway	Enter a value for the gateway in the provided field. This option is only available if you select a static network.
DNS	Enter the up to three DNS addresses in the provided fields. You must enter each DNS address separately in the three available fields. These fields are optional. These options are only available if you select a static network.
Save & Reboot	Click to save any changes you have made and reboot the encoder so the changes can take effect.

System

FIG. 32 displays the system controls on the NMX-ENC WebConsole page. The system controls allow you to update the firmware, reboot, or restore the default settings for the encoder.
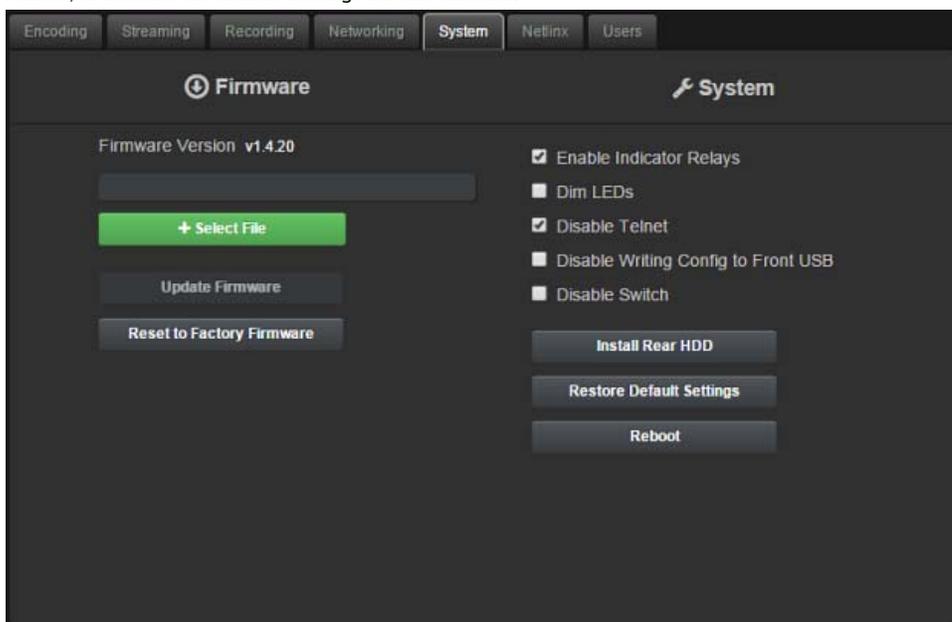
FIG. 32 System Management tab

The following options are available on the System tab:

System Options	
Firmware Version	The Firmware area displays the current firmware version.
Select File	Click to select a firmware .kit file from a local or network drive.
Update Firmware	Click to update the device's firmware using the .kit file you indicated with Select File.
Reset to Factory Firmware	Click to restore the device's firmware to its factory default version.
Enable Indicator Relays	Click the check box to enable the streaming relay on the encoder. The streaming relay is the INDICATORS port labeled (1) on the rear panel.
Dim LEDs	Click the check box to dim the LEDs on the front panel of the encoder.
Disable Telnet	Click the check box to disable Telnet access on the encoder. See the *Accessing the Encoder via Telnet* section on page 48 for more information on using Telnet.
Disable Writing Config to Front USB	Click the check box to disable the ability to write IP configuration files to the USB port on the front of the encoder. This option prevents the encoder from writing the IP configuration data to the front USB port when a drive is present and the ID button is pressed.
Disable Switch	Click the check box to disable LAN ports 2-4. ***CAUTION:** Since it is possible to turn off these ports, you should ALWAYS connect your main network artery to port 1.*
Install Rear HDD	Click to format the device connected to the rear USB port.
Restore Default Settings	Click to restore the factory default settings for the device. This option only restores the default settings. It does not revert to a previous firmware version. **NOTE:** *Restoring the default settings could result in a network address change.*
Reboot	Click to reboot the device.

Updating Firmware

You can view your current firmware in the Firmware Version field on the System Management tab. Follow these steps to upgrade the firmware on the NMX-ENC:

1. Download the latest firmware kit file for the NMX-ENC from *www.amx.com*. Save or copy the kit file to a hard drive, USB drive, or flash drive accessible by the encoder.
2. Open WebConsole in a web browser. See the *Accessing the WebConsole* section on page 25 for more information.
3. Select the **System** tab.
4. Click **Select File**.
5. Navigate to the directory where the kit file is saved or stored, and select the kit file.
6. Click **Update Firmware**. The 4 LEDs on the front panel of the encoder (Stream, Video In, Power, and USB) begin flashing indicating the firmware is processing. If a streaming session is in progress when the firmware update begins, it will be terminated. When the firmware update is complete, all LEDs stop flashing.

NOTE: *You must reload your browser when upgrading the encoder's firmware from version 1.2.1 to version 1.5.x. The user interface will not update until you reload the browser after upgrading the firmware.*

NetLinx

FIG. 33 displays the NetLinx controls on the NMX-ENC WebConsole page. The NetLinx controls allow you to set up a connection to a central controller.

FIG. 33 NetLinx tab

The following options are available on the NetLinx tab:

NetLinx Options	
Device Status	Displays the status of the Master connection.
Master Mode	Select the NetLinx Master mode from the menu. You can choose from **URL**, **Auto**, or **Listen**. • **URL** instructs the encoder to connect to a specific NetLinx Master at the defined URL. This setting is used when the IP Address of the target NetLinx Master is known. In this system, the encoder acts as a client and the Master acts as a server (in that clients attach to it). In URL mode, you can only enter the IP/URL of the target Master. The System Number is 0 (for an unknown System Number) and the port number defaults to 1319. • **Auto** is used to instruct the encoder to search for a Master that both uses the same System Number (assigned within this page's System No field) and resides on the same Subnet as itself. In this case, the Master has its UDP feature enabled. • **Listen** is used to listen for Masters that reside on the same subnet as the encoder.
IP/URL	Enter the IP Address or URL used by the target Master in the provided field. **NOTE:** *This is the same IP Address used by NetLinx Studio to communicate with the Master.*
Port	Enter the port number used by the NetLinx Master in the provided field. The default value is 1319.
Device No	Enter a current device value (non-duplicated) in the provided field. You must use a value which is not currently being used by another device currently communicating with the target Master. In NetLinx Studio, use the Online Tree tab to review what device values are already being used by the target Master.

NetLinx Options (Cont.)	
System No	Enter a system number in the provided field. This option is not available if you set the NetLinx Master mode to Auto.
Username	Enter the username for access to the NetLinx Master, if required by the Master.
Password	Enter the password for access to the NetLinx Master, if required by the Master.

Users

FIG. 33 displays the Users controls on the NMX-ENC WebConsole page. The Users controls allow you to enable user privileges on the encoder.
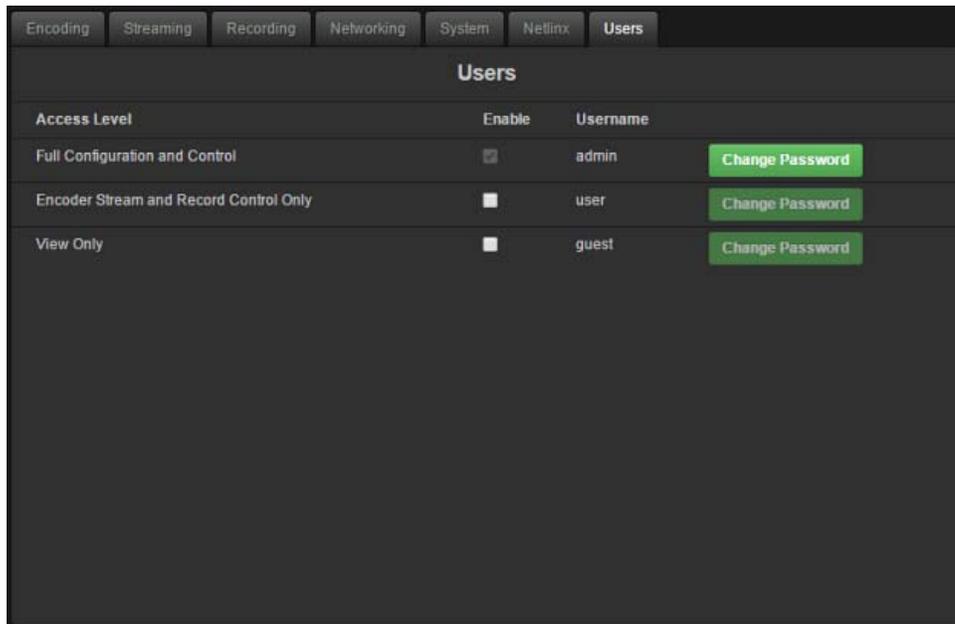
FIG. 34 Users tab

The user privileges are as follows:

- **admin** - This user is always enabled and cannot be disabled. Admin level has access to the entire operation of the encoder and can configure all parameters on it.
- **user** - This user can be enabled or disabled by an admin. User level can only control the items contained within the Encoder Controls. Admin level can set a password for this level. All items in control tabs are read-only when logged in as a user.
- **guest** - This user can be enabled or disabled by an admin. Admin level can set a password for this level. Guest level is view-only and cannot control the encoder at all.

The following options are available on the Users tab:

Users Options	
Enable	Click the box to enable privileges for the corresponding user level.
Change Password	Click to enter a new password for the corresponding user level. Valid passwords are between 4 and 30 alpha-numeric characters including "-" and "_". To remove the password requirement for a user, leave the password fields empty. Click Save to confirm the password change.

Programming

Overview

This chapter defines all programming commands available for the NMX-ENC encoder.

SEND_COMMANDS

The commands listed in the following sections are for the encoder only. For generic NetLinx commands, see the *NetLinx Integrated Controllers WebConsole and Programming Guide* available at *www.amx.com*.

- The commands derive their input/output port addressing from the target D:P:S.
- Input and Output functional distinctions are disambiguated from the overlapped port numbers by combining them with the command name.

NetLinx Channels

The following table lists the control channels supported by the encoder:

NetLinx Channels		
Channel	**Ports**	**Description**
26	1	Volume Mute Cycle
101	1	LED Dim Enabled
199	1	Volume Mute State
206	1-2	Indicates status of USB ports (1 = Front, 2 = Rear)
208	1	Unicast stream enabled
209	1	Multicast stream enabled

NetLinx Levels

The following table lists the control levels supported by the encoder:

NetLinx Levels			
Level	**Port**	**Level Values (Range)**	**Description**
20	1	0-7	Stream Status
22	1	0-3	Video Input Status (see table below)
23	1	0-7	Record Status
27	1	0-5	Video Input Format (see table below)

Levels 20 and 23 Stream and Record Status Level Descriptions	
Level Value	**Description**
0	Stopped
1	Paused
2	Started
3	Starting
4	Stopping
5	Pausing
6	Suspended
7	Not Allowed

Level 22 Input Video Status Level Description	
Level Value	Description
0	Valid video signal
1	Unknown format or mismatch format
2	No signal

Level 27 Input Video Status Level Description	
Level Value	Description
0	SDI when ?VIDOUT_ASSIGN = 2
0	HDMI when ?VIDOUT_ASSIGN = 1
1	DVI
2	VGA
3	Component
4	S-Video
5	Composite

Port Functionality Mapping

The following table lists the port functionality mapping for the audio/video ports on the encoder:

Port Functionality Mapping		
Port Number	Description	Address
1	Multi-Format In	DevID:1:0
2	SDI In	DevID:2:0
11	Audio Input Line 1	DevID:11:0
1	Audio Output	DevID:1:0
1	HDMI Output 1	DevID:1:0
2	SDI Output 1	DevID:2:0
1	USB Port 1 (Front)	DevID:1:1
2	USB Port 2 (Rear)	DevID:2:1

Encoding Commands

The following table lists the encoding commands available for the encoder:

Encoding Commands	

?AUDIN_FORMAT	Requests the format of the audio input.
	Syntax:
	`SEND_COMMAND <DEV>, "'?AUDIN_FORMAT'"`
	Example:
	`SEND_COMMAND AUDIO_1, "'?AUDIN_FORMAT'"`
	Returns a COMMAND string of the form: AUDIN_FORMAT-<options>.

AUDIN_FORMAT	Specifies the audio input format for port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'AUDIN_FORMAT-<options>'"`
	Variable:
	   option = Digital, Analog, No Audio
	Example:
	`SEND_COMMAND AUDIO_1, "'AUDIN_FORMAT-Digital'"`
	Sets audio format for input port (#1 based on the D:P:S) to Digital.

?AUDIN_SAMPLING _RATE	Queries the current selected audio input sampling rate.
	Syntax:
	`SEND_COMMAND <DEV>, "'?AUDIN_SAMPLING_RATE'"`
	Example:
	`SEND_COMMAND AUDIO_1, "'?AUDIN_SAMPLING_RATE'"`
	Returns a COMMAND string of the form: AUDIN_SAMPLING_RATE-<rate>.

?AUDSTRM_CODEC	Requests the audio codec currently used by the input port.
	Syntax:
	`SEND_COMMAND <DEV>, "'?AUDSTRM_CODEC'"`
	Example:
	`SEND_COMMAND AUDIO_1, "'?AUDSTRM_CODEC'"`
	Returns a COMMAND string of the form: AUDIN_FORMAT-<codec>.

?AUDSTRM_MUTE	Request the encoder if the audio stream is muted.
	Syntax:
	`SEND_COMMAND <DEV>, "'?AUDSTRM_MUTE'"`
	Example:
	`SEND_COMMAND AUDIO_1, "'?AUDSTRM_MUTE'"`
	Returns a COMMAND string of the form: AUDSTRM_MUTE-<enable|disable>.

AUDSTRM_MUTE	Sets the audio muting on the stream.
	Syntax:
	`SEND_COMMAND <DEV>,"'AUDSTRM_MUTE-<setting>'"`
	Variables:
	   setting = ENABLE or DISABLE
	Example:
	`SEND_COMMAND AUDIO_1,"'AUDSTRM_MUTE-DISABLE'"`
	Disables the audio muting on the stream.

?AUDSTRM_RATE	Requests current audio bit rate that is being streamed out by the input port.
	Syntax:
	`SEND_COMMAND <DEV>, "'?AUDSTRM_RATE'"`
	Example:
	`SEND_COMMAND AUDIO_1, "'?AUDSTRM_RATE'"`
	Returns a COMMAND string of the form: AUDIN_FORMAT-<rate>.

AUDSTRM_RATE	Specifies the audio stream bit rate for port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'AUDSTRM_RATE-<rate>'"`
	Variable:
	   rate = 64, 96, 128, 192 (all rates in kbps)
	Example:
	`SEND_COMMAND AUDIO_1, "'AUDSTRM_RATE-192'"`
	Sets audio rate for output port (#1 based on the D:P:S) to 192kb per second.

Encoding Command (Cont.)

?VIDIN_FORMAT	Requests the input format of the video port addressed by the D:P:S.
	NOTE: *Queries sent to port 2 will not receive a response from the encoder. All queries should be sent to port 1.*

	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDIN_FORMAT'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDIN_FORMAT'"`
	Returns a COMMAND string of the form: VIDIN_FORMAT-<format>.

VIDIN_FORMAT	Sets the input format of the video port addressed by the D:P:S to <format>.
	Syntax:
	`SEND_COMMAND <DEV>, "'VIDIN_FORMAT-<format>'"`
	Variables:
	    format = SDI, HDMI, DVI, S-VIDEO, COMPONENT, COMPOSITE, VGA for Multi-Format inputs.
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDIN_FORMAT-COMPONENT'"`
	Sets the format of video input port (#1 based on D:P:S) to COMPONENT.

?VIDIN_RES_REF	Requests the resolution of the video input port addressed by the D:P:S.
	NOTE: *Queries sent to port 2 will not receive a response from the encoder. All queries should be sent to port 1.*

	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDIN_RES_REF'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDIN_RES_REF'"`
	Returns a COMMAND string of the form: VIDIN_RES_REF-<h>x<v>,<rate>.

?VIDSTRM_BURST	Requests the selected video frame burst size for streamed video output port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_BURST'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_BURST'"`
	Returns a COMMAND string of the form: VIDSTRM_BURST-<burst>.

VIDSTRM_BURST	Sets the video frame burst size for streamed video port addressed by D:P:S to <rate>.
	Syntax:
	`SEND_COMMAND <DEV>, "'VIDSTRM_BURST-<burst>'"`
	Variables:
	    burst = 150, 200, 300, 400, 500, 600, 800, 1000, 1200, 1400, 1600, 1800, 2000 (in milliseconds)
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_BURST-300'"`

?VIDSTRM_CODEC	Requests the selected video encoder codec for streamed video output port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_CODEC'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_CODEC'"`
	Returns a COMMAND string of the form: VIDSTRM_CODEC-<format>.

?VIDSTRM_FRAME	Requests the selected frame decimation for streamed video output port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_FRAME'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_FRAME'"`
	Returns a COMMAND string of the form: VIDSTRM_FRAME-<value>.

VIDSTRM_FRAME	Frame decimation reduces the number of input frames to increase the quality of the video image.
	Syntax:
	`SEND_COMMAND <DEV>,"'VIDSTRM_FRAME-<frame>'"`
	Variable:
	    frame = The amount you want to reduce the bit rate (NONE, 1/2, 1/3, or 1/4)
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_FRAME-1/2'"`

?VIDSTRM_GOP	Requests the selected group of pictures (GOP) for streamed video output port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_GOP'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_GOP'"`
	Returns a COMMAND string of the form: VIDSTRM_GOP-<gop>.

Encoding Commands (Cont.)	

VIDSTRM_GOP	GOP size determines the distance between two full image frames (I-frames) in the encoded video.
	Syntax:
	`SEND_COMMAND <DEV>,"'VIDSTRM_GOP-<gop>'"`
	Variable:
	　gop = 15, 30, 60, 120, 240
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_GOP-60'"`

?VIDSTRM_PROFILE	Requests the selected encoding profile selected for streamed video output port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_PROFILE'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_PROFILE'"`
	Returns a COMMAND string of the form: VIDSTRM_PROFILE-<profile>.

VIDSTRM_PROFILE	The profile defines the subset of H.264 encoding techniques that will be used during the encode process. Not all decoders support all profiles; therefore, it is important to select a profile that is supported by all playback devices for a given application.
	Syntax:
	`SEND_COMMAND <DEV>,"'VIDSTRM_PROFILE-<profile>'"`
	Variable:
	　profile = The encoding profile (BASELINE, MAIN, or HIGH)
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_PROFILE-HIGH'"`

?VIDSTRM_RATE	Requests the bit rate selected for streamed video output port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_RATE'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_RATE'"`
	Returns a COMMAND string of the form: VIDSTRM_RATE-<rate>.

VIDSTRM_RATE	Higher bit rates will result in higher quality encoded video. The bit rate is in kilobytes per second (kbps).
	Syntax:
	`SEND_COMMAND <DEV>,"'VIDSTRM_RATE-<bitrate>'"`
	Variable:
	　bitrate = The bit rate in kbps. Can be from 100 to 8000.
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_RATE-8000'"`

?VIDSTRM_RATE_CTRL	Requests the rate control selected for the streamed video output port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'?STRM_RATE_CTRL'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_RATE_CTRL'"`
	Returns a COMMAND string of the form: VIDSTRM_RATE_CTRL-<rate>.

VIDSTRM_RATE_CTRL	Sets the rate control method for the video stream.
	Syntax:
	`SEND_COMMAND <DEV>,"'VIDSTRM_RATE_CTRL-<method>'"`
	Variable:
	　method = The rate control method (CBR or VBR)
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_RATE_CTRL-VBR'"`

?VIDSTRM_RES	Requests the resolution for the streamed video output port addressed by the D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>,"'?VIDSTRM_RES'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_RES'"`
	Returns a COMMAND string of the form: VIDSTRM_RES-<resolution>.

Encoding Commands (Cont.)	

VIDSTRM_RES	If you set the resolution to Follow Input, the video is output at the same resolution as the detected input from the video source. Setting another option scales the video output down by the indicated fraction. See the *Available Scaled Output Resolutions* section on page 52 for a list of scaled output resolutions.
	Syntax:
	`SEND_COMMAND <DEV>,"'VIDSTRM_RES-<option>'"`
	Variable:
	option = 0=Follow Input, 1=Scaled Resolution1, 2=Scaled Resolution 2, and 3=Scaled resolution
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_RES-0'"`

Record Commands

The following table lists the record commands for the encoder:

Record Commands	

?USB_CONNECT_STATUS	Requests the state USB ports in the encoder device addressed by D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>, "'?USB_CONNECT_STATUS'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?USB_CONNECT_STATUS'"`
	Returns a COMMAND string of the form: USB_CONNECT_STATUS-CONNECTED.

?USB_PRIORITY	Requests the state of record control set by the user in the encoder device addressed by D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>,"'?USB_PRIORITY'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'?USB_PRIORITY'"`
	Returns a COMMAND string of the form: USB_PRIORITY-REAR.

USB_PRIORITY	Controls the USB priority to record to in the encoder device addressed by D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>,"'USB_PRIORITY-<option>'"`
	Variable:
	option = Front, Rear, Front/Rear
	Example:
	`SEND_COMMAND ENCODER_1,"'?USB_PRIORITY-FRONT/REAR'"`

?VIDREC	Requests the state of record control set by the user in the encoder device addressed by D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>,"'?VIDREC'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'?VIDREC'"`
	Returns a COMMAND string of the form: VIDREC-START.

VIDREC	Controls the state of recording for the encoder device addressed by D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>,"'VIDREC-<option>'"`
	Variable:
	option = Start, Stop
	Example:
	`SEND_COMMAND ENCODER_1,"'VIDREC-start'"`

?VIDREC_CUR_FILE	Requests the current file prefix.
	Syntax:
	`SEND_COMMAND <DEV>,"'?VIDREC_CUR_FILE'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'?VIDREC_CUR_FILE'"`
	Returns a COMMAND string of the form: VIDREC_CUR_FILE-320101CT13E0089_REC.

VIDREC_CUR_FILE	Sets the file prefix you want to use for recording. This option is only active for the current session. It reverts back to its default on logout, reboot, session timeout, or the recording has been stopped. The maximum file prefix length is 31 characters.
	Syntax:
	`SEND_COMMAND <DEV>,"'VIDREC_CUR_FILE-<prefix>'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'VIDREC_CUR_FILE-320101CT13E0089_REC'"`

Record Commands (Cont.)	

?VIDREC_STATUS	Requests the state of recording by the encoder addressed by D:P:S.
	 Syntax:
	 `SEND_COMMAND <DEV>,"'?VIDREC_STATUS'"`
	 Example:
	 `SEND_COMMAND ENCODER_1,"'?VIDREC_STATUS'"`
	 Returns a COMMAND string of the form: VIDREC_STATUS-<status>. The following statuses may be reported: STARTING, STARTED, STOPPING, STOPPED, SUSPENDED, and NOT ALLOWED.

?VIDREC_STATUS_STR	Requests the recording status string. This query command provides specific status for recording.
	 Syntax:
	 `SEND_COMMAND <DEV>,"'?VIDREC_STATUS_STR'"`
	 Example:
	 `SEND_COMMAND ENCODER_1,"'?VIDREC_STATUS_STR'"`
	 Returns a COMMAND string of the form: VIDREC_STATUS_STR-<status>. The following statuses may be reported: STARTING, STARTED, STOPPING, STOPPED, SUSPENDED, and NOT ALLOWED.

Streaming Commands

The following table lists the streaming commands for the encoder:

Streaming Commands	

?STRM_FORMAT	Requests the selected stream format or container for streamed video output port addressed by the D:P:S.
	 Syntax:
	 `SEND_COMMAND <DEV>, "'?STRM_FORMAT'"`
	 Example:
	 `SEND_COMMAND VIDEO_INPUT_1,"'?STRM_FORMAT'"`
	 Returns a COMMAND string of the form: STRM_FORMAT-<format>.

STRM_FORMAT	Sets the streaming format for the encoded video to be streamed at port addressed by D:P:S.
	 Syntax:
	 `SEND_COMMAND <DEV>, "'STRM_FORMAT-<format>'"`
	 Variables:
	    value = UDP, RTP
	 Example:
	 `SEND_COMMAND VIDEO_INPUT_1, "'STRM_FORMAT-UDP'"`

?VIDSTRM	Retrieve the status of the stream.
	 Syntax:
	 `SEND_COMMAND <DEV>, "'?VIDSTRM'"`
	 Example:
	 `SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM'"`
	 Returns a COMMAND string of the form: VIDSTRM-<status>.

VIDSTRM	Starts or stops the video stream. If video stream is set to auto it automatically resumes streaming when input signal is changed.
	 Syntax:
	 `SEND_COMMAND <DEV>, "'VIDSTRM-<status>'"`
	 Variable:
	    status = STOP or START
	 Example:
	 `SEND_COMMAND VIDEO_INPUT_1, "'VIDSTRM-START'"`

?VIDSTRM_EN	Requests the unicast streaming state.
	 Syntax:
	 `SEND_COMMAND <DEV>, "'?VIDSTRM_EN'"`
	 Example:
	 `SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM_EN'"`
	 Returns a COMMAND string of the form: VIDSTRM_EN-<option>.

VIDSTRM_EN	Enables or disables unicast streaming.
	 Syntax:
	 `SEND_COMMAND <DEV>, "'VIDSTRM_EN-<option>'"`
	 Variables:
	    option = ON or OFF
	 Example:
	 `SEND_COMMAND VIDEO_INPUT_1, "'VIDSTRM_EN-ON'"`

Streaming Commands (Cont.)

?VIDSTRM_IP	Retrieves the unicast IP address used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_IP'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM_IP'"`
	Returns a COMMAND string of the form: VIDSTRM_IP-<validIP>.

VIDSTRM_IP	Sets the Unicast IP address used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'VIDSTRM_IP-<validIP>'"`
	Variables:
	   validIP = xxx.xxx.xxx.xxx
	Example:
	`SEND_COMMAND VIDEO_INPUT_1, "'VIDSTRM_IP-192.168.1.1'"`

?VIDSTRM_PORT	Retrieves the unicast port used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_PORT'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM_PORT'"`
	Returns a COMMAND string of the form: VIDSTRM_PORT-<port>.

VIDSTRM_PORT	Sets the unicast port used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'VIDSTRM_PORT-<port>'"`
	Variables:
	   port =any port number between 1024 and 32768
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_PORT-9000'"`

?VIDSTRM_MC_EN	Requests the state of multicast IP streaming.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_MC_EN'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM_MC_EN'"`
	Returns a COMMAND string of the form: VIDSTRM_MC_EN-<option>.

VIDSTRM_MC_EN	Enables or disables multicast streaming.
	Syntax:
	`SEND_COMMAND <DEV>, "'VIDSTRM_MC_EN-<option>'"`
	Variables:
	   option = ON or OFF
	Example:
	`SEND_COMMAND VIDEO_INPUT_1, "'VIDSTRM_MC_EN-ON'"`

?VIDSTRM_MC_IP	Retrieves the multicast IP used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_MC_IP'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_MC_IP'"`
	Returns a COMMAND string of the form: VIDSTRM_MC_IP-<validIP>.

VIDSTRM_MC_IP	Sets the multicast IP used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'VIDSTRM_MC_IP-<validIP>'"`
	Variables:
	   validIP = xxx.xxx.xxx.xxx
	Example:
	`SEND_COMMAND VIDEO_INPUT_1, "'VIDSTRM_MC_IP-224.239.1.1'"`

?VIDSTRM_MC_PORT	Retrieves the multicast port used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_MC_PORT'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_MC_PORT'"`
	Returns a COMMAND string of the form: VIDSTRM_MC_PORT-<port>.

Streaming Commands (Cont.)	

VIDSTRM_MC_PORT	Sets the multicast port used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'VIDSTRM_MC_PORT-<Port>'"`
	Variables:
	   port = any port number between 1024 and 32768
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_MC_PORT-9000'"`

?VIDSTRM_MC_TTL	Retrieves the multicast Time to Live (TTL) used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_MC_TTL"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'?VIDSTRM_MC_TTL'"`
	Returns a COMMAND string of the form: ?VIDSTRM_MC_TTL-3.

VIDSTRM_MC_TTL	Sets the multicast TTL used to stream the encoded video and audio.
	Syntax:
	`SEND_COMMAND <DEV>, "'VIDSTRM_MC_TTL-<ttl>'"`
	Variables:
	   ttl = a value between 2 and 15
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"'VIDSTRM_MC_TTL-3'"`

?VIDSTRM_STATUS	Requests the status of the video stream.
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDSTRM_STATUS'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1,"' VIDSTRM_STATUS-<status>'"`
	Returns a COMMAND string of the form: VIDSTRM_STATUS-<status>. The following statuses may be reported: STARTING, STARTED, STOPPING, STOPPED, SUSPENDED, and NOT ALLOWED.

?VIDSTRM_STATUS_STR	Requests the streaming status string. This query command provides specific status for streaming.
	Syntax:
	`SEND_COMMAND <DEV>,"'?VIDSTRM_STATUS_STR'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'?VIDSTRM_STATUS_STR'"`
	Returns a COMMAND string of the form: VIDSTRM_STATUS_STR-<status>. The following statuses may be reported: STARTING, STARTED, STOPPING, STOPPED, SUSPENDED, and NOT ALLOWED.

Status Commands

The following table lists the status commands for the encoder:

Status Commands	

?DISK_QUOTA	Retrieves the current amount of free drive space on the USB port currently selected for recording by the USB_PRIORITY command.
	Syntax:
	`SEND_COMMAND <DEV>,"'?DISK_QUOTA'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'?DISK_QUOTA'"`
	Returns a COMMAND string of the form: DISK_QUOTA-rear 36.4% free 16:18 record time.

?DISABLE_SWITCH	Retrieves the current state of LAN ports 2-4.
	Syntax:
	`SEND_COMMAND <DEV>,"'?DISABLE_SWITCH'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'?DISABLE_SWITCH'"`
	Returns ON or OFF.

DISABLE_SWITCH	Sets the state of ports 2-4 of the LAN switch.
	Syntax:
	`SEND_COMMAND <DEV>,"'DISABLE_SWITCH-<option>'"`
	Variable:
	   option = ON or OFF
	Example:
	`SEND_COMMAND ENCODER_1,"'DISABLE_SWITCH-ON'"`
	Disables ports 2-4 of the switch output.

Status Commands (Cont.)

?FWVERSION	Requests the firmware version of the encoder.
	Syntax:
	`SEND_COMMAND <DEV>,"'?FWVERSION'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'?FWVERSION'"`
	Returns a COMMAND string of the form: FWVERSION-<version>.

?LED_CTRL	Retrieves the current state of the LEDs.
	Syntax:
	`SEND_COMMAND <DEV>,"'?LED_CTRL'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'?LED_CTRL'"`
	Returns ON, meaning 10% brightness, or OFF, meaning full brightness.

LED_CTRL	Dims all LEDs to 10% of their nominal brightness.
	Syntax:
	`SEND_COMMAND <DEV>,"'LED_CTRL-<option>'"`
	Variable:
	   option = ON or OFF
	
	Example:
	`SEND_COMMAND ENCODER_1,"'LED_CTRL-ON'"`
	Dims the LEDs to 10%.

REBOOT	Forces a soft reboot of the device indicated by D:P:S.
	Syntax:
	`SEND_COMMAND <DEV>,"'REBOOT'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'REBOOT'"`

?RELAY_CTRL	Retrieves the current state of relay control.
	Syntax:
	`SEND_COMMAND <DEV>,"'?RELAY_CTRL'"`
	Example:
	`SEND_COMMAND ENCODER_1,"'?RELAY_CTRL'"`
	Returns a COMMAND string of the form: RELAY-CTRL-<option>.

RELAY_CTRL	Instructs the behavior relays for streaming.
	Syntax:
	`SEND_COMMAND <DEV>,"'RELAY_CTRL-<option>'"`
	Variable:
	   option = ON or OFF
	
	Example:
	`SEND_COMMAND ENCODER_1,"'RELAY_CTRL-ON'"`
	Turns on relay control, which means that when streaming the streaming relay is engaged.

?SSN_TIMEOUT	Requests the number of minutes set until an inactive session is terminated.
	Syntax:
	`SEND_COMMAND <DEV>, "'?SSN_TIMEOUT'"`
	Example:
	`SEND_COMMAND ENCODER_1, "'?SSN_TIMEOUT'"`
	Returns a COMMAND string of the form: SSN_TIMEOUT-<time>.

SSN_TIMEOUT	Sets the number of minutes until an inactive session is terminated.
	Syntax:
	`SEND_COMMAND <DEV>,"'SSN_TIMEOUT-<time>'"`
	Variables:
	   time = number of minutes
	
	NOTE: *Entering 0 for the number of minutes sets no timeout.*
	
	Example:
	`SEND_COMMAND ENCODER_1,"'SSN_TIMEOUT-30'"`

?VIDIN_STATUS	Requests the video input status of the video input port addressed by the D:P:S.
	
	NOTE: *Queries sent to port 2 will not receive a response from the encoder. All queries should be sent to port 1.*
	
	Syntax:
	`SEND_COMMAND <DEV>, "'?VIDIN_STATUS'"`
	Example:
	`SEND_COMMAND VIDEO_INPUT_1, "'?VIDIN_STATUS'"`
	Returns a COMMAND string of the form: VIDIN_STATUS-<status string>
	status string = NO SIGNAL, UNKNOWN SIGNAL, or SIGNAL IS OK.

Accessing the Encoder via Telnet

The NMX-ENC encoders provide a Telnet interface which allows modifications to parameters without using NetLinx code or accessing the WebConsole. You can access the encoder via any Telnet client on the same network as the encoder. Follow these steps to Telnet into the encoder:

1. Open your Telnet client.

2. Telnet into the encoder using the command: *Telnet <IP address of the encoder>*. "Welcome to NMX-ENC-110x" appears followed by a command prompt.

3. At the prompt (>) you can issue NetLinx Send_Commands using *sc* for send command. The syntax for the sc command is sc <port> <sendcommand>.

The following tables provides some examples of using the sc command with NetLinx Send_Commands:

Telnet Command Examples	
Command	**Function**
sc 1 VIDIN_FORMAT-DVI	Set video input format for port 1 to DVI.
sc 1 VIDIN_FORMAT-COMPONENT	Set video input format for port 1 to Component.
sc 1 VIDSTRM_IP-192.168.1.20	Set video stream IP address to Unicast IP.
sc 1 VIDSTRM_PORT-8000	Set video stream port to Unicast port.
sc 1 VIDSTRM_MC_IP-225.1.2.3	Set video stream IP address to Multicast IP.
sc 1 VIDSTRM_MC_PORT-5500	Set video stream port to Multicast port.
sc 1 VIDSTRM-stop|start	Start/Stop the video stream.

Telnet Commands

The following Telnet commands are available for the encoder:

Telnet Commands	
Command	**Description**
? or Help	Displays the list of available commands.
exit	Closes the Telnet session.
getencoder	Displays the status of the encoder. Attributes displayed include: ARM load, video fps, audio sampling frequency, bytes written to file, bytes written to network for streaming, etc.
getip	Displays the IP address of the encoder.

log	Usage:
	`log <list|on|off|level> <all|logger>`
	Options:
	list - Displays list of all loggers
	`> log list`
	on - Sets log level to DEBUG
	`> log on`
	off - Sets log level to FATAL
	`> log off NetManagerManager`
	level - debug, info, warn, error, fatal
	`> log warn NetManagerManager`
	all - Modifies all loggers
	`> log warn all`

msg	Enables/disables extended diagnostic messages. Usage: `> msg <on|off>`
netdiag	Displays the MIB counters for the 5 Ethernet ports on the network switch.
portinfo	Displays information about the port. Options: -p: port number -i: input type <audio, video, IR> -o: output type <audio, video, IR, IO>
ps	Displays the active processes in the application.
reboot	Reboots the encoder.

Telnet Commands (Cont.)

Command	Description

sc	Internally issues a NetLinx SEND_COMMAND to the encoder.
	Usage:
	`> sc <port> <SEND_COMMAND>`
	Example:
	`> sc 1 VIDIN_FORMAT-HDMI`
	Sets the video input format for port 1 to HDMI. See the *Accessing the Encoder via Telnet* section on page 48 for more examples on using the sc command.

session	Lists the session parameters.
ssntimeout	Sets the number of minutes until the inactive session is terminated. You can set any amount of time up to 24 hours. Usage: `> ssntimeout <number of minutes>` **NOTE:** *Entering 0 for the number of minutes sets no timeout.*

Appendix A - Input Resolutions

Available Pixel Display and Refresh Rates

The available pixel display and refresh rates for the input devices on the encoder are listed in the following sections.

Supported Input Video Resolutions

DVI, HDMI, and VGA Supported Input Resolutions						
Resolution Name	Horizontal Active Pixels	Vertical Active Lines	Refresh (Hz)	HDMI & DVI Support	VGA Support	Video Standard
720x480p@60	720	480	60	✔	✔	VESA DMT
800x600@60	800	600	60	✔	✔	VESA DMT
800x600@72	800	600	72	✔	✔	VESA DMT
800x600@75	800	600	75	✔	✔	VESA DMT
800x600@85	800	600	85	✔	✔	VESA DMT
1024x768@60	1024	768	60	✔	✔	VESA DMT
1024x768@70	1024	768	70	✔	✔	VESA DMT
1024x768@75	1024	768	75	✔	✔	VESA DMT
1280x720@50	1280	720	50	✔	✔	CEA 861
1280x720@60	1280	720	60	✔		VESA CVT
1280x720p@50	1280	720	50	✔		CEA 861
1280x720p@60	1280	720	60	✔		CEA 861
1280x768@59	1280	768	59	✔	✔	VESA CVT
1920x1080i@50	1920	540	50	✔		CEA 861
1920x1080i@60	1920	540	60	✔		CEA 861
1920x1080p@24	1920	1080	24	✔		CEA 861
1920x1080p@25	1920	1080	25	✔		CEA 861
1920x1080p@30	1920	1080	30	✔		CEA 861

Composite and S-Video Supported Input Resolutions

Composite and S-Video Supported Input Resolutions				
Resolution Name	Horizontal Active Pixels	Vertical Active Pixels	Refresh (Hz)	Video Standard
720x480i@60	720	240	60	CEA
720x576i@50	720	288	50	CEA

Component Video Supported Input Resolutions

Component Video Supported Input Resolutions				
Resolution Name	**Horizontal Active Pixels**	**Vertical Active Pixels**	**Refresh (Hz)**	**Video Standard**
720x480i@60	720	240	60	CEA
720x480p@60	720	240	59.9	CEA 770.2 SMPTE 293M ITU-R BT.1358
720x576i@50	720	288	50	CEA
720x576p@50	720	576	50	ITU-R BT.1358
1280x720p@50	1280	720	50	SMPTE 296M
1280x720p@60	1280	720	59.9	SMPTE 296M CEA 770.3
1920x1080i@50	1920	540	50	SMPTE 274M
1920x1080i@60	1920	540	59.9	SMPTE 274M CEA 770.3
1920x1080p@60	1920	1080	59.9	SMPTE 274M

SDI Supported Input Resolutions

SDI Supported Input Resolutions			
Resolution Name	**Horizontal Active Pixels**	**Vertical Active Pixels**	**Refresh (Hz)**
720x480i@60	720	480	60
720x576i@50	720	576	50
1280x720p@50	1280	720	50
1280x720p@60	1280	720	60
1920x1080i@50	1920	1080	50
1920x1080i@60	1920	1080	60
1920x1080p@24	1920	1080	24
1920x1080p@25	1920	1080	25
1920x1080p@30	1920	1080	30

Appendix B - Output Resolutions

Available Scaled Output Resolutions

The available scaled resolutions for the output devices on the encoder are listed below. The NMX-ENC encoder is capable of following the input and producing the same resolution as the input. It can also scale down the input to the resolutions shown in the table below. With Scaled Resolution 1, text information remains legible. Scaled Resolutions 2 and 3 may result in enough degradation of text that the text may not be legible.

NOTE: *These resolutions are encoder output stream resolutions based on the inputs specified in the tables, and not what is output on the monitor port. Video transmitted to the monitor port is a copy of the input submitted to the encoder. There is no scaling incorporated in the monitor output.*

Supported Output Resolutions				
Resolution	**Output**			
	Follow Input	**Scaled Res 1**	**Scaled Res 2**	**Scaled Res 3**
720x480i@60	Y	540x360	450x300	360x240
720x480i@60	Y	540x360	450x300	360x240
720x480p@60	Y	540x360	450x300	360x240
720x480p@60	Y	540x360	450x300	360x240
720x756i@50	Y	540x432	450x360	360x288
720x756i@50	Y	540x432	450x360	360x288
720x756p@50	Y	540x432	450x360	360x288
720x756@50	Y	540x432	450x360	360x288
800x600@60	Y	600x450	500x375	400x300
1024x768@60	Y	800x600	640x480	512x384
1280x720p@50	Y	960x540	800x450	640x360
1280x720p@60	Y	960x540	800x450	640x360
1280x720p@60	Y	960x540	800x450	640x360
1280x720@50	Y	960x540	800x450	640x360
1280x720@50	Y	960x540	800x450	640x360
1920x1080p@30	Y	1280x720	960x540	800x450
1920x1080p@24	Y	1280x720	960x540	800x450
1920x1080p@24	Y	1280x720	960x540	800x450
1920x1080p@25	Y	1280x720	960x540	800x450
1920x1080i@50	Y	1280x720	960x540	800x450
1920x1080i@50	Y	1280x720	960x540	800x450
1920x1080i@60	Y	1280x720	960x540	800x450
1920x1080p@24	Y	1280x720	960x540	800x450

Recommended Bit Rates for Output Resolutions

The following table lists the recommended bit rates you can set for various video output qualities. You can set the video bit rate on the Encoder tab in the NMX-ENC WebConsole (see *NMX-ENC WebConsole* section on page 25 for more information.)

Recommended Bit Rates for Output Resolutions		
Resolution	**Bit Rate kbps**	
	Max	**Low**
320x240	3	1
360x240	3	1
360x288	3	1
400x300	3	1.5
450x300	3	1.5
480x360	3	1.5
500x375	3	1.5
512x384	3	1.5
540x360	3	1.5
540x432	3	1.5
600x450	3	1.5
640x360	3	1.5
640x384	3	1.5
640x480	3	1.5
720x480	4	1.5
720x576	4	1.5
800x450	5	1.5
800x480	5	1.5
800x600	5	1.5
960x540	6	1.5
960x576	6	1.5
1024x768	7	2
1280x720	8	2
1280x768	8	2
1920x1080	20	2

Appendix C - Alarms

Alarms

This section provides a list of alarm codes, alarm priorities, and descriptions for any alarms that may occur on the encoder. You can view a listing of recent alarms on the encoder by clicking the Event Logs button on the WebConsole (see the *Event Logs* section on page 28 for more information.)

FIG. 35 displays an Event Log with several different alarms.

```
04-17-2015 12:29:03.43,RECORD,22,C,Recording is not permitted
04-17-2015 12:29:04.47,STREAM,14,L,Output Resolution 480x360
04-17-2015 12:29:04.47,STREAM,15,L,udp stream: 239.8.7.6:5500
04-17-2015 12:29:06.03,STREAM,5,L,Stream started
04-17-2015 12:29:06.53,STREAM,6,L,Stream stopped duration [0 days 0:0:0 ]
04-17-2015 12:29:07.93,SYSTEM,5,H,Conflicting video input format
04-17-2015 12:29:08.67,STREAM,8,C,Invalid video bit rate: 6000 [100 .. 1200]
04-17-2015 12:29:09.96,SYSTEM,5,H,Conflicting video input format
04-17-2015 12:29:10.73,SYSTEM,5,H,Conflicting video input format
04-17-2015 12:29:10.86,SYSTEM,5,H,Conflicting video input format
04-17-2015 12:29:12.42,RECORD,25,C,Dual streaming: Record not allowed
04-17-2015 12:29:17.22,STREAM,14,L,Output Resolution 480x360
04-17-2015 12:29:17.22,STREAM,15,L,udp stream: 192.168.1.100:1025
04-17-2015 12:29:17.22,SYSTEM,5,H,Conflicting video input format
04-17-2015 12:29:18.80,STREAM,5,L,Stream started
04-17-2015 12:29:18.81,SYSTEM,5,H,Conflicting video input format
04-17-2015 12:29:19.30,STREAM,6,L,Stream stopped duration [0 days 0:0:0 ]
04-17-2015 12:29:19.31,SYSTEM,5,H,Conflicting video input format
04-17-2015 13:47:09.23,SYSTEM,4,C,No Input Video Signal Detected!
04-17-2015 13:47:09.23,STREAM,26,C,No input signal: Stream not allowed
```

FIG. 35 Event Log with Alarms

In the Event Log, an alarm lists the date and time the alarm occurred followed by the alarm category, alarm code, priority, and the alarm text. Alarms are organized and labeled in the Event Log in the following categories:

- STRM (Streaming)
- REC (Record)
- WEB
- SYSTEM
- DISK
- NET (Network)
- FORWARD
- NTP

The alarm priority levels are as follows:

- Critical
- High
- Major
- Low

Consider the following alarm as an example:

```
02-09-2015 02:13:18.59,STRM,5,H,Stream Started
```

This alarm lists a streaming alarm, code 5, of high priority (H). The alarm simply indicates that streaming started at the indicated date and time.

Alarm Codes

The following sections list the alarm codes for each alarm category.

Streaming Alarms

The following table list the Streaming alarms.

Streaming Alarms			
Code	**Priority**	**Text**	**Description**
1	C	Stream suspended duration [x days xx:xx:xx]	Some anomaly has suspended streaming: • Network cables are unplugged • Loss of input signal
2	C	Invalid encoding parameters	Invalid parameters selected for encoding.
3	C	Invalid arguments	
4	C	Unsupported resolution	Input resolution is not supported by the encoder.
5	L	Stream started	Stream has successfully started.
6	L	Stream stopped duration [x days xx:xx:xx]	Stream has successfully stopped.
7	H	Input resolution changed from <current> to <new>	Input resolution changed to a new resolution.
8	C	Invalid video bit rate: <bitrate> [<minrate>.. <maxrate>]	The current bit rate is out of range for the input resolution.
9	M	Adjusted video bit rate: <bitrate> to Max: <maxrate>	The current bit rate was clipped to the maximum bit rate supported for the current resolution.
10	M	Adjusted video bit rate: <bitrate> to Min: <minrate>	The current bit rate was clipped to the minimum bit rate supported for the current resolution.
11	M	Stream audio mute disabled	Streaming and recording audio is unmuted.
12	M	Stream audio mute enabled	Streaming and recording audio is muted.
13	L	Timeout: Stop the record/stream	The streaming or recording session failed to start.
14	L	Output Resolution <scaled resolution>	The scaled output resolution.
15	L	UDP stream: <IP:port>	Indicates the transport stream IP and port.
16	L	RTP stream: <IP:port>	Indicates the RTP stream IP and port.
17	C	No stream destination: Stream not allowed	Neither streaming destinations are selected, therefore, streaming is disabled.
18	C	Encoder stopped: Stream suspended	While streaming some change in the input signal, such as resolution or signal loss, forced the encoding engine to stop. This will result in streaming to be suspended.
19	C	Encoder exited: Stream suspended duration [x days xx:xx:xx]	While streaming, some error condition forced the encoding engine to stop. This will result in streaming to be suspended.
20	C	Encoder restarted: Stream suspended	While streaming, the encoder crashed and restarted. The stream is suspended, but will be restarted within 30 seconds.
21	C	Stream autorestart <attempt> of <max attempts>	The encoder has unexpectedly stopped and the stream will automatically restart. This can happen <attempts> of <max attempts> times. Currently, the Max Attempt setting is 3.
22	C	Streaming is not permitted	A streaming start command was received while streaming was in a "not allowed" state.
26	C	No input signal: Stream not allowed	The input signal has been disrupted causing stream to be disabled.
28	C	Exceeded maximum number of <max num> auto restarts	Too many attempts to auto restart have been made so streaming has been suspended.
29	H	Encoder forced restart: Too many underruns	Stream session was restarted due to too many underruns.
30	H	Encoder forced restart: AV time drift	Stream session was restarted due to diverging audio and video time stamps.
50	C	Encoder forced restart	Encoding engine has been terminated due to lack or sluggish response.

Recording Alarms

The following table lists the Recording alarms.

Recording Alarms			
Code	Priority	Text	Description
1	C	Record terminated due to file I/O	Due to file write error or creation error, the current record session was terminated.
4	L	Recording: <full file name>	A full path name of the file being recorded.
5	L	Record started on: <disk location> <video bitrate>	A record session has started. The content is being stored in <disk location> at <video bitrate> rate.
6	L	Record stopped duration [x days xx:xx:xx]	The record session has been stopped by the user.
17	C	RTP Stream: Record not allowed	The RTP stream has been selected but recording is disabled.
19	C	Encoder exited: Record terminated duration [x days xx:xx:xx]	The encoding engine has stopped due to some reason while recording.
20	C	Encoder restarted: Record suspended duration [x days xx:xx:xx]	While streaming, the encoder crashed and restarted. The stream is suspended, but will restart within 30 seconds.
21	C	Record autorestart <attempt> of <max attempts>	The encoder has unexpectedly stopped and the stream will auto restart. This can happen <attempts> of <max attempts> times. Currently, the Max Attempt setting is 3.
22	C	Recording is not permitted	A record start command was sent when record was in "not allowed" state.
23	C	<usb location> USB is full	The USB drive in <usb location> is full. Record is disabled.
25	H	Dual streaming: Record not allowed	Dual streaming is selected but recording is disabled.
26	C	No input signal: Record not allowed	The input signal has been disrupted causing recording to be disabled.
27	C	Record terminated duration [x days xx:xx:xx]	The record session has been terminated by the user.
28	C	Exceeded maximum number of <max num> auto restarts	Too many attempts were made to auto restart. Recording sessions are suspended.
29	H	Encoder forced restart: Too many underruns	Stream session was restarted due to too many underruns.
30	H	Encoder forced restart: AV time drift	Stream session was restarted due to diverging audio and video time stamps.

HTTP Alarms

The following table lists the HTTP alarms.

HTTP Alarms			
Code	Priority	Text	Description
2	H	HTTP: Port <port number> failed to open	Web server did not initiate due to port being in use, or the network is down.
3	H	Unsupported web API PUT command <url>	The PUT command is not a valid v1 command.
4	H	Unsupported web API GET command <url>	The GET command is not a valid v1 command.
5	M	Session expired	The UI session has had no activity in the time specified by the user.
6	M	Maximum clients exceeded	The Maximum of 6 client sessions has been reached.
7	M	Login user is not enabled	This alarm occurs while attempting to log in to the Encoder. The login credential for the user or guest is not enabled.
8	L	Password changed	From the User Management page this alarm occurs when the password for a login type has changed.
9	L	User logged in	From the User Management page this alarm occurs when the user client is enabled.
10	L	User disabled	From the User Management page this alarm occurs when the user client is disabled.
12	H	Login credentials are out of range	This alarm occurs during the log in process. The user name of password has exceeded the maximum number of 30 characters.

System Alarms

The following table lists the System alarms.

Code	Priority	Text	Description
System Alarms			
1	M	Encoder starting up	The encoder has started after a reboot or power cycle.
2	L	Canceling network config change	The ID button was not released at the interval to allow network configuration to be toggled.
3	L	Toggling network config	Network config has toggled between static and DHCP in response to the ID button press.
4	C	No input video signal detected	No input signal was detected at the selected input.
5	H	Conflicting video input format	The selected video format does not match the detected video format.
6	M	Encrypted video input detected	The input has an encrypted signal.
8	L	Valid input video signal detected	A valid input signal has been detected at the selected input.
10	L	Writing network config to front disk	The network configuration file is written to the front USB drive in response to an ID button push.
11	H	Writing network config is not allowed	An ID button push to write network config has not succeeded since this feature is disabled by the admin.
12	C	Cannot format: rear drive is not present	Install HDD could not proceed since the drive was removed.
13	L	Telnet is disabled	Telnet is disabled by the Admin.
14	L	Telnet is enabled	Telnet is enabled by the Admin.
15	M	Preparing to reboot for firmware upgrade	The FW file(s) are successfully downloaded and the unit is about to reboot to proceed with FW upgrade.
16	H	Restoring factory defaults	Indicates that all settings and the system configuration have been restored to their default values.
98	C	Low memory: Preparing for reboot	Memory has fallen below its watermark and the encoder will reboot.
99	M	Encoder shutting down	Encoder is preparing to reboot.

Disk Alarms

The following table lists the Disk alarms.

Code	Priority	Text	Description
Disk Alarms			
1	M	<location> USB drive mounted	The USB drive in <loaction> has successfully been mounted.
2	M	<location> USB drive unmounted	The USB drive in <loaction> has successfully been unmounted.
3	C	Could not mount <location> USB drive	The mounted USB drive in <location> could not be mounted because the disk is corrupted or the file system is not supported.
4	C	Could not unmount <location> USB drive	Could not unmount the drive in <location> since it is busy. This is an unusual and unlikely alarm.
5	C	<location> File system is read only	The mounted drive in <location> has a read only file system.
6	M	<location> USB drive removed	The drive in <location> has been removed.
7	L	Starting HDD format	The rear HDD drive is starting to be formatted in response to install HDD command.
8	L	HDD format done	The rear HDD drive has been successfully formatted.
9	C	HDD format failed	Formatting the rear HDD has failed. This could be due to irreversible errors on the disk or disk removal.

Network Alarms

The following table lists the Network alarms.

Code	Priority	Text	Description
1	M	Port <num> is plugged in	Port <num> is connected to a valid network capable device.
2	M	Port <num> is unplugged	Port <num> is connected to a valid network capable device.
3	C	All Ethernet ports are disconnected	None of the ports are connected to a network device.
4	M	Added multicast route to routing table	Route table was modified to add the multicast path.

Forward Alarms

The following table lists the Forward alarms.

Code	Priority	Text	Description
1	H	One or more FTP parameters is invalid	The forwarding URL, port number, or user name is blank.
2	H	Internal communication error	There is a problem with coordinating the internal activities necessary to conduct FTP file forwarding.
3	H	Recording directory not found	The directory containing the files to forward could not be located.
4	H	Error attempting to FTP file <filename>	An error occurred while transferring one of the files.
5	H	Unknown forwarding error	An error occurred during the FTP forwarding activity, but the error could not be identified.
6	H	FTP transfer terminated	Files were being transferred when an external event caused the FTP forwarding to be stopped before completion.
7	H	<ftpput error log>	Printout of an FTP error as reported by the ftpput process.
8	H	Forwarding task is unresponsive	The process associated with FTP forwarding is in an unknown state.
9	L	Forwarding paused	FTP file forwarding has been configured to run when applicable.
10	L	Store-and-forward enabled	FTP file forwarding has been configured to run when applicable.
11	L	Store-and-forward disabled	FTP file forwarding has been configured not to run.
12	L	Forwarding paused	FTP file forwarding activity has been blocked by some external event.
13	L	Forwarding resumed	FTP file forwarding has been unblocked by an external event.
14	M	Forwarding scheduling interval not between 1 and 12 hours	Warning that the entered values for interval scheduling are not within the allowed limits.
15	L	Forwarding successfully completed	After forwarding has been initiated, all files appear to be successfully transferred.
16	L	Forwarding initiated	Conditions for file forwarding have been met and an attempt to FTP the files is being made.
17	L	Forwarding interrupted by disable or configuration changes	A change in one or more FTP forwarding configuration values has caused re-evaluation of the forwarding requirements and reset the forwarding process.

NTP Alarms

The following table lists the NTP alarms.

NTP Alarms			
Code	Priority	Text	Description
1	L	NTP active	System believes that NTPD is running and working correctly.
2	H	Cannot Reach NTP Server <server URL>	The system was unable to establish a successful NTP communication with the selected NTP server.
3	L	NTP disabled	NTP service has been selected to not run.
4	L	NTP enabled	NTP service has been selected to run; does not imply that NTPD is active (i.e. running and working.)
5	L	User changed NTP server to <URL>	The NTP client has intentionally been redirected through a configuration change to connect with a different NTP server.

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