



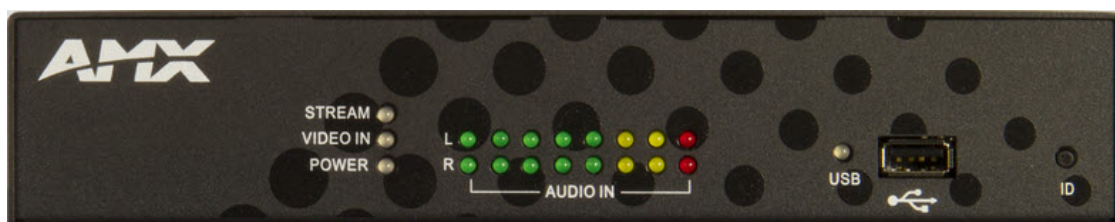
Instruction Manual

# NMX-ENC

H.264 Encoder

NMX-ENC-1100

NMX-ENC-1105



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# 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.

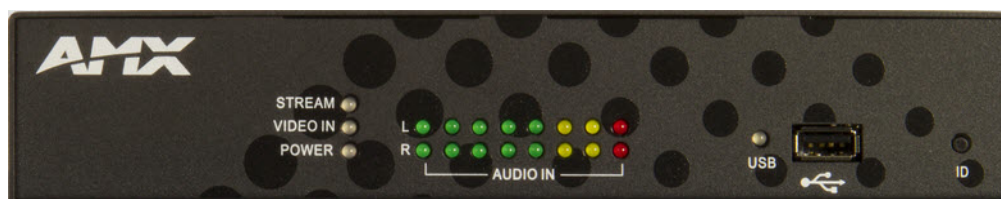


FIG. 1 NMX-ENC H.264 encoder

## Specifications

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

NMX-ENC H.264 Encoder Specifications	
<b>Active Power Requirements</b>	
Power Connector:	1 2-pin 3.5mm locking Phoenix connector
Power Capabilities:	<ul style="list-style-type: none"> <li>Maximum Current Draw: 13W</li> <li>Typical Current Draw: 10W</li> <li>Operating Voltage: 10VDC to 18VDC</li> </ul>
<b>Front Panel Components</b>	
LEDs:	All LEDs appear in green (active) or red (alarm state). <ul style="list-style-type: none"> <li>STREAM - shows streaming status</li> <li>VIDEO IN - notes video input status</li> <li>POWER - notes power and alarm state</li> <li>USB - notes data copying state</li> </ul> See the <i>LEDs</i> section on page 5 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 <i>AUDIO IN</i> section on page 6 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 <i>USB</i> section on page 6 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 <i>ID</i> section on page 7 for more information.
<b>Rear Panel Components</b>	
SDI:	These connectors are only available on the NMX-ENC-1105. <ul style="list-style-type: none"> <li>1 BNC connector for video input (INPUT)</li> <li>1 BNC connector for video output (PASS THRU)</li> </ul> See the <i>SDI</i> section on page 8 for more information.
MULTI FORMAT VIDEO INPUTS:	1 DVI connector for multi-format video inputs. See the <i>MULTI FORMAT VIDEO INPUTS</i> section on page 9 for more information.
AUDIO:	<ul style="list-style-type: none"> <li>1 3.5mm mini-phono connector for audio input (INPUT)</li> <li>1 3.5mm mini-phono connector for audio output (PASS THRU)</li> </ul> See the <i>AUDIO</i> section on page 10 for more information.

NMX-ENC H.264 Encoder Specifications (Cont.)	
VIDEO PASS THRU:	1 HDMI connector for video output. See the <i>VIDEO PASS THRU</i> section on page 10 for more information.
KEYPAD:	1 3-pin 3.5mm Phoenix connector for RS-232 ports. See the <i>KEYPAD</i> section on page 11 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 <i>INDICATORS</i> section on page 11 for more information.
USB:	1 Type-A USB connector. See the <i>USB</i> section on page 12 for more information.
LAN 10/100:	4 RJ-45 LAN ports for network connections via Cat5 cabling. <b>Note:</b> You should ALWAYS connect your main network artery to the port 1 LAN port. See the <i>LAN 10/100</i> section on page 12 for more information.
<b>Environmental</b>	
Temperature (Operating):	32° to 104° F (0° to 40° C)
Temperature (Storage):	-4° to 158°F (-20° to 70°C)
Humidity (Operating):	5% to 85%, non-condensing
<b>General</b>	
Dimensions (HWD):	1 5/8" x 8 3/4" x 5 1/8" (4.2cm x 22.16cm x 13.08cm)
Weight:	<ul style="list-style-type: none"> <li>NMX-ENC-1100: 2.25 lbs. (1.02kg)</li> <li>NMX-ENC-1105: 2.3 lbs. (1.04kg)</li> </ul>
Certifications:	<ul style="list-style-type: none"> <li>RoHS</li> <li>FCC Part 15 Class B</li> <li>CE</li> <li>IEC60950</li> <li>UL</li> </ul>
Included Accessories:	<ul style="list-style-type: none"> <li>1 Power Supply, 4.4A, 13.5VDC, 3.5mm retained Phoenix connector (<b>FG423-46</b>)</li> <li>1 NMX-ENC-1100/1105 H.264 Encoder Quick Start Guide (93-3201-01)</li> </ul>
Optional Accessories:	<ul style="list-style-type: none"> <li>CC-DVI-5BNM DVI to 5 BNC adapter cable (<b>FG10-2170-08</b>)</li> <li>CC-DVI-RCA3M DVI to 3 Male RCA adapter cable for component and composite connections (<b>FG10-2170-09</b>)</li> <li>CC-DVI-SVID DVI to S-Video adapter cable (<b>FG10-2170-10</b>)</li> <li>CC-DVIM-VGAF DVI to HD15 female adapter cable (<b>FG10-2170-13</b>)</li> <li>NMX-VRK V-Style Rack Shelf (<b>FG3201-60</b>)</li> <li>AVB-VSTYLE-SURFACE-MNT V-Style Single Module Surface Mount Kit (<b>FG1010-722</b>)</li> </ul>

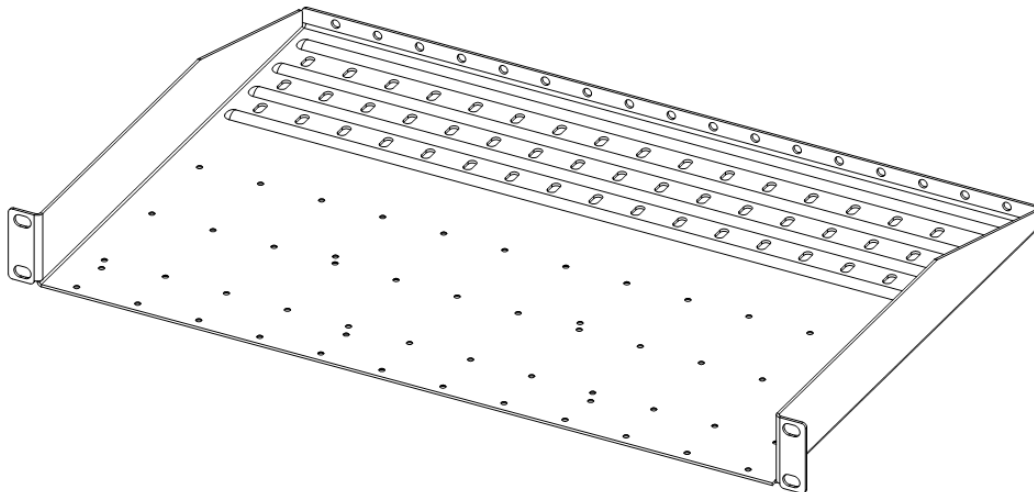
## Minimum Performance Specifications

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.



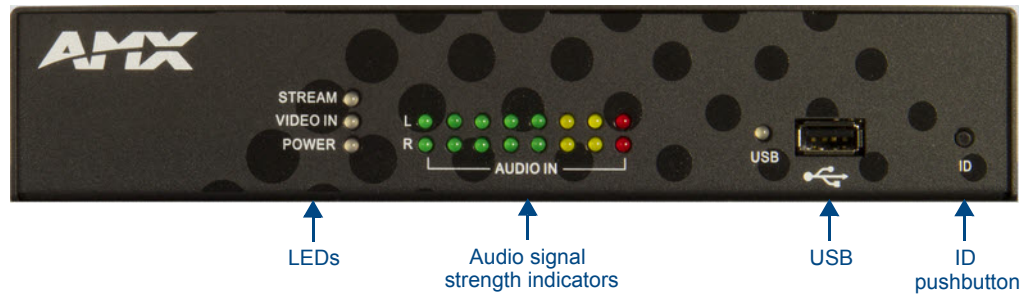
# Wiring and Device Connections

## 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 6 for more information.

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

**Note:** The LEDs can be dimmed by selecting an option in the WebConsole pages. See the System Management section on page 30 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	Blinking Green	Red	Blinking Red
<b>STREAM</b>	Not streaming	Streaming in progress	N/A	Streaming active and there are one or more streaming errors	The streaming engine has stopped.
<b>VIDEO IN</b>	No video signal of the selected format present	Video signal of the format is present and synchronized	Unknown Signal. This signifies that the selected format does not match the detected format.	While actively streaming, an issue with the video signal occurred.	An encrypted video signal is being used as the video input.
<b>POWER</b>	No power applied	Power applied and there are no system hardware errors	System is booting	Power applied and there are one or more system hardware errors	Network failure or failure to retrieve IP address.
<b>USB</b>	No device attached.	Attached drive can be removed without damaging its contents.	N/A	Data is being written to the attached device. Do not remove the device.	N/A

## 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 and loading preset configuration files. The port has an LED beside it which indicates the state of copying files to an attached USB drive. See the *LEDs* section on page 5 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 front USB port can only be used to retrieve encoder configuration information. A future firmware update will add support for additional features that utilize both USB ports.

**Note:** The encoder is capable of simultaneously copying 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 other configuration information for the encoder. You can retrieve this information 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.

**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

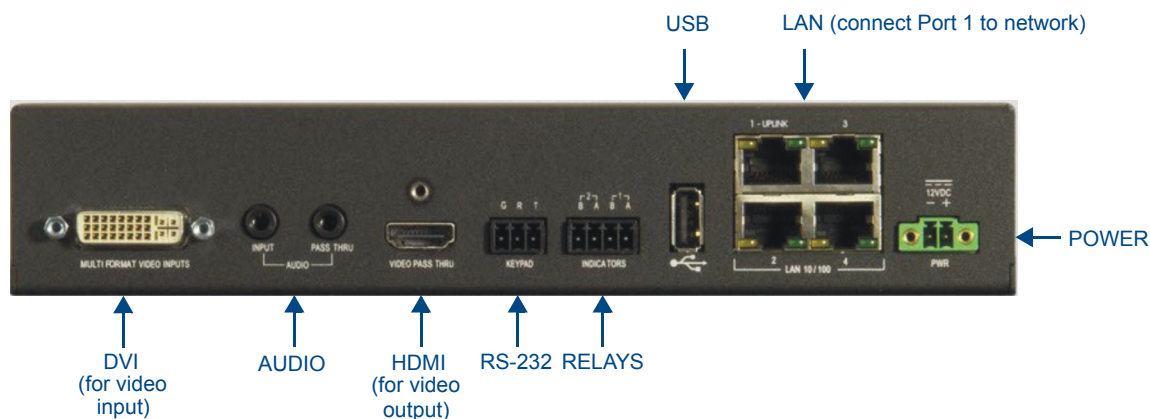
The ID pushbutton performs as follows:

- 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 and hold the button to write the configuration file to a USB drive connected to one of the front panel USB ports.

**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.

## 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 44.



## 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 audio ports on the encoder are as follows:

- 1 3.5mm mini-phonon connector for audio input (INPUT)
- 1 3.5mm mini-phonon 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).



FIG. 13 VIDEO PASS THRU connector

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:

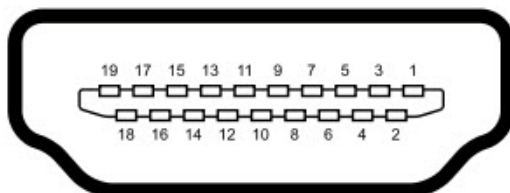


FIG. 14 HDMI pinouts

## 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 (T)

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). **Port 2 is reserved for future use.** Each respective relay port is "ON" when the encoder is streaming or recording. 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

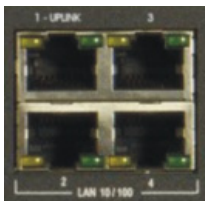
The rear panel features one Type-A USB connector. **This port is reserved for future use.** FIG. 17 displays the USB port.



**FIG. 17** USB port

## LAN 10/100

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



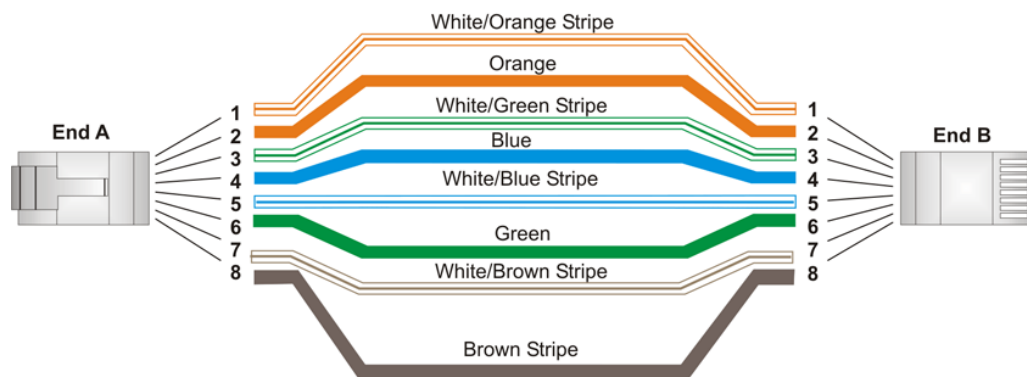
**FIG. 18** LAN ports

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

**WARNING!** 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.

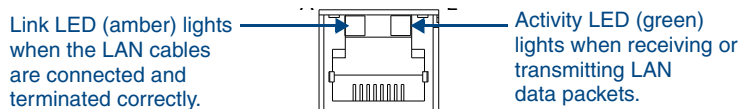
**Note:** The Ethernet switch in the encoder is intended to be used as a workgroup extender switch for conveniently connecting devices such as PCs, touch panels, and other network-connected A/V equipment. It is not a smart switch, and as such other encoders or streaming devices should not be connected 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

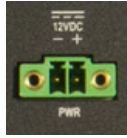
FIG. 20 describes the blink activity for the LAN connector and cable.



**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

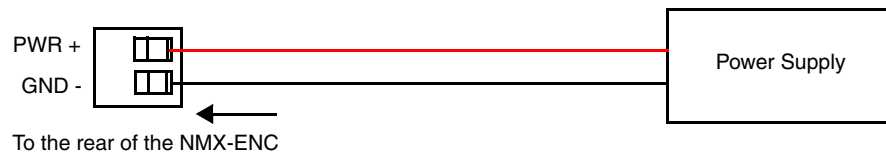
You will need a wire stripper and flat-blade screwdriver to prepare and connect the captive wires.

**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).



**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.



**FIG. 23** MULTI FORMAT VIDEO INPUTS port

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:

DVI Input Adapter Cables			
Name	Description	Length	FG#
CC-DVI-5BNCM	DVI-to-5 BNC Male <i>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.</i>	6' (1.828m)	FG10-2170-08
CC-DVI-RCA3M	DVI-to-3 RCA Male <i>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.</i>	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	28AWG twisted pair 0
19	TMDS SHIELD 0/5	TMDS SHIELD 0/5	19	28AWG twisted 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	28AWG twisted pair CLK
24	TMDS CLOCK N	TMDS CLOCK N	24	28AWG twisted 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	

DVI-to-5-BNC Cable Pinout Information (Cont.)				
DVI-A Connector Pin	Signal Name	Signal Name	BNC connector pin	Notes:
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

DVI-to-Triple RCA Cable Pinout Information (Cont.)				
DVI-A Connector Pin	Signal Name	Signal Name	RCA connector pin	Notes:
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
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

DVI-to-S-Video Cable Pinout Information (Cont.)				
DVI-A Connector Pin	Signal Name	Signal Name	S-Video Connector Pin	Notes:
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			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

DVI-to-VGA Cable Pinout Information (Cont.)				
DVI-A Connector Pin	Signal Name	Signal Name	HD15 (VGA) Pin	Notes:
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
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 (unless security is enabled, in which case you will see user login page). The NMX-ENC supports Internet Explorer 9 or better, Firefox (21.0+), and Chrome (27+).

## Accessing the WebConsole

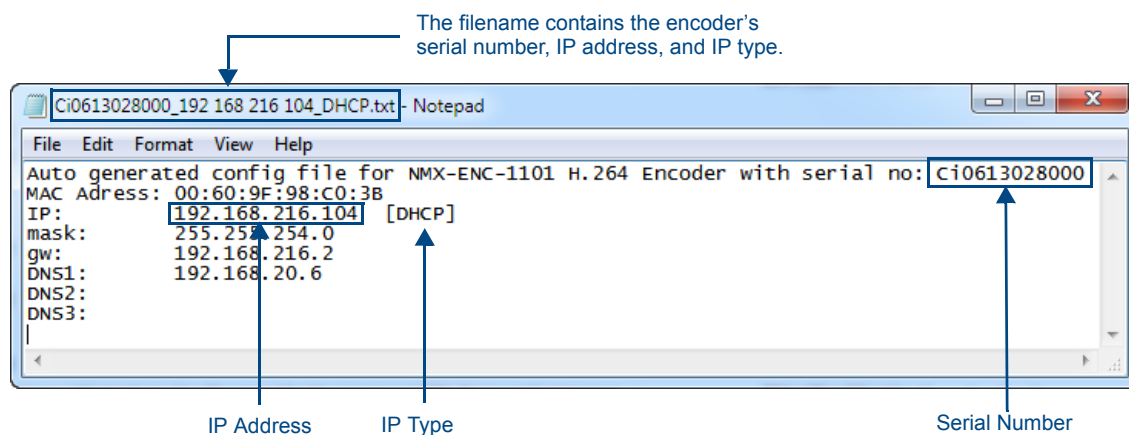
You can access the WebConsole by opening a supported web browser from a PC and entering the IP address of the encoder in the location bar in the browser.

### 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 red. When the LED appears red, 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 appears green again.
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. You can open the file to view the MAC address, subnet mask, gateway, and DNS. FIG. 24 displays an example of a configuration file.

**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** 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 23 for more information.)
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).

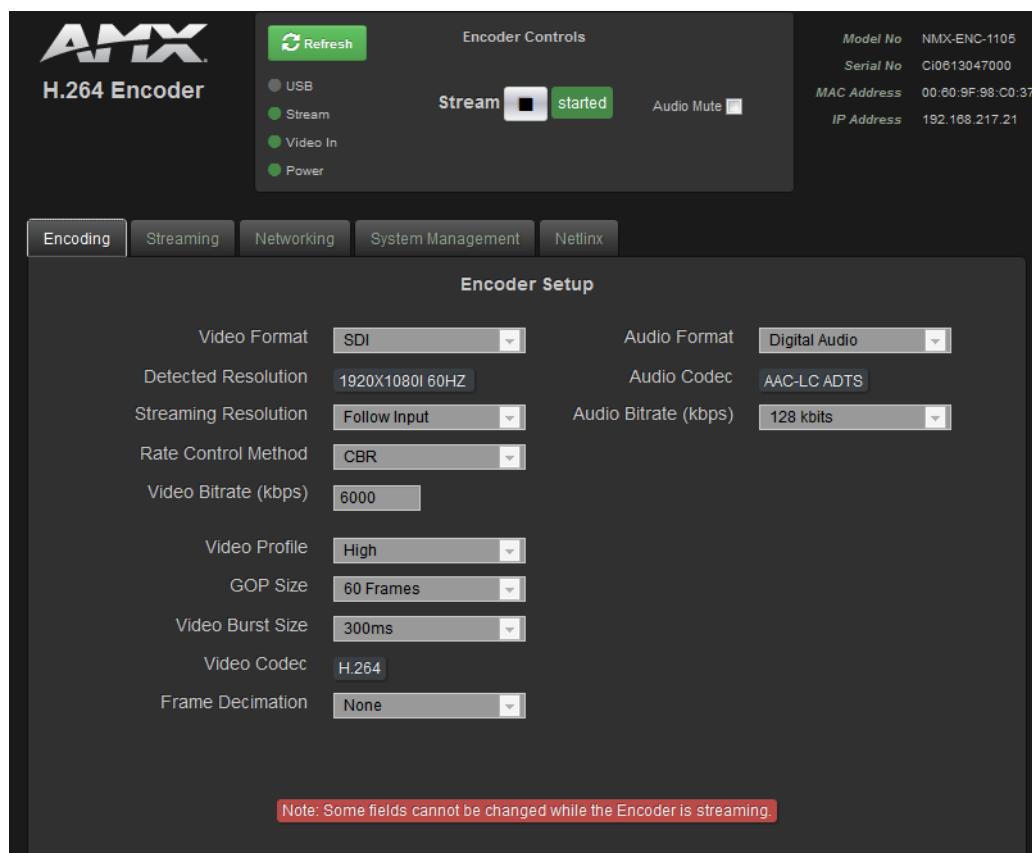


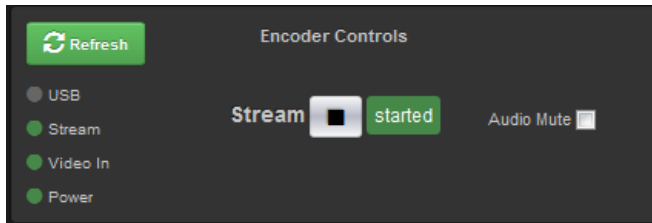
FIG. 25 NMX-ENC WebConsole



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 this area:

Encoder Control Options	
Refresh	Click to reload all settings and status information on the current tab.
LEDs	Displays the current state of the Video, Stream, USB, and Power LEDs. See the <i>LEDs</i> section on page 5 for a table describing the LED states.
Stream Controls	The interface features 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.
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. <b>Note:</b> 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.

Encoding

FIG. 27 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. If a stream is running, it is best to stop the stream before making any changes to it. When the signal is ready with its new settings, you can start the stream again.

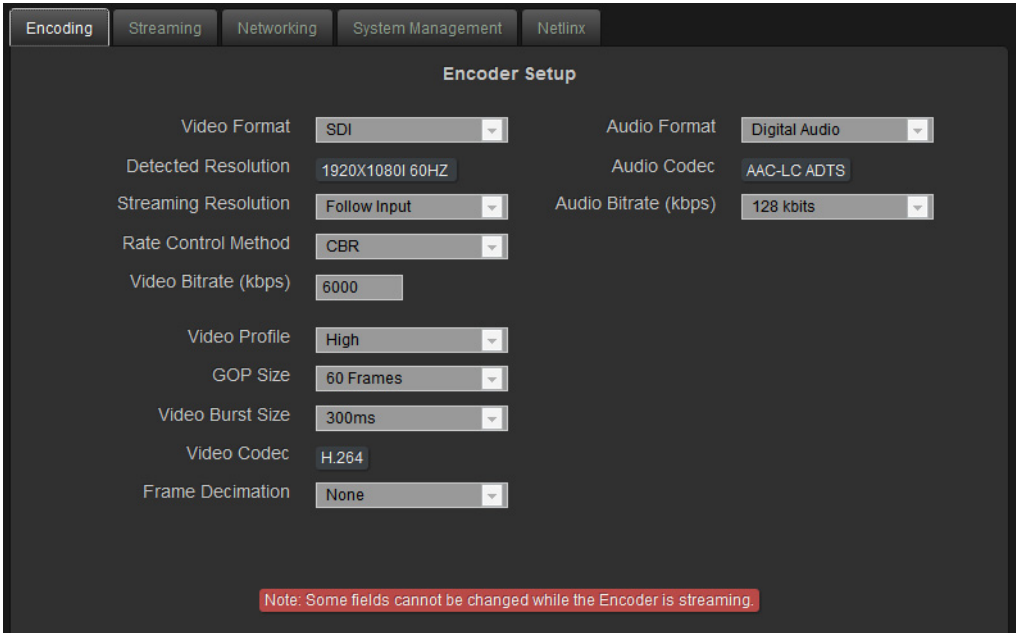


FIG. 27 Encoding tab

The following options are available in this area:

Encoding Options	
Video Format	Select from the menu the video format you want to be encoded. You can choose from <b>SDI</b> , <b>HDMI</b> , <b>DVI</b> , <b>VGA</b> , <b>Component</b> , <b>S-Video</b> , or <b>Composite</b> . SDI is only available with the NMX-ENC-1105.
Detected Resolution	Displays the detected resolution from the video source. This field is view-only.
Streaming Resolution	This option indicates that the video is output at the same resolution as the detected input from the video source. This option is view-only. For a list of scaled output resolutions, see the <i>Available Scaled Output Resolutions</i> section on page 45.
Rate Control Method	<div>Select an option from the menu to assign the encoder rate control method. You can choose from <b>CBR</b> or <b>VBR</b>.</div> <ul style="list-style-type: none"><li>• <b>CBR</b> 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.</li><li>• <b>VBR</b> 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.</li></ul>

Encoding Options (Cont.)	
Video Bitrate (kbps)	<p>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. The default setting is 6000. For a list of recommended bit rates for output resolution, see the <i>Recommended Bit Rates for Output Resolutions</i> section on page 46.</p> <p><b>Note:</b> Higher bit rates can cause network congestion resulting in video issues.</p>
Video Profile	<p>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 <b>Baseline</b>, <b>Main</b>, or <b>High</b>. The default setting is High.</p> <ul style="list-style-type: none"> <li>The <b>Baseline</b> profile uses only a limited subset of encoding techniques, requiring less processing power to decode, making it well suited for use with mobile devices.</li> <li>The <b>Main</b> profile uses most of the encoding techniques, which requires more processing power to decode, making it well suited for use with set top boxes.</li> <li>The <b>High</b> 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.</li> </ul>
Gop Size	<p>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 <b>15</b>, <b>30</b>, <b>60</b>, <b>120</b>, or <b>240</b> frames. The default setting is 60.</p>
Video Burst Size	<p>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.</p>
Video Codec	Shows the video codec the encoder is using. This field is view-only.
Frame Decimation	<p>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 <b>None</b>, <b>1/2</b>, <b>1/3</b>, or <b>1/4</b>. The default setting is None.</p>
Audio Source	<p>Select from the menu the type of audio source you want to encode. You can choose from <b>Digital Audio</b>, <b>Analog Audio</b>, or <b>No Audio</b>. 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.</p>
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)	<p>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 <b>64</b>, <b>96</b>, <b>128</b>, or <b>192</b> kbits. The default setting is 128 kbits.</p>

Streaming

FIG. 28 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.

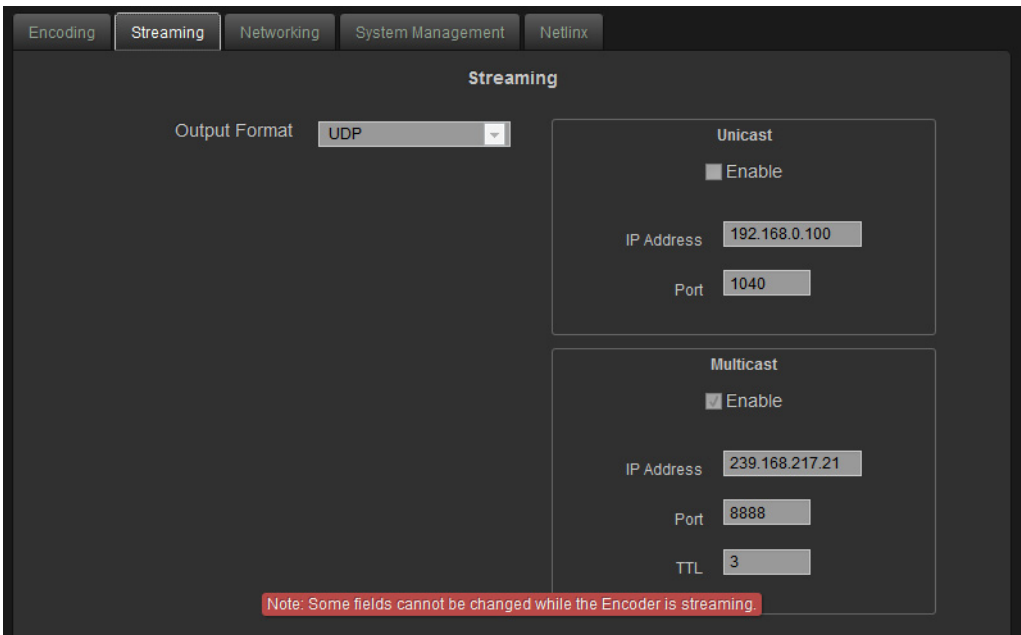


FIG. 28 Streaming tab

The following options are available in this area:

Streaming Options	
Output Format	<p>Select an output format from the menu. You can choose from <b>RTP</b> or <b>UDP</b>.</p> <ul style="list-style-type: none"><li>• <b>UDP</b> (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.</li><li>• <b>RTP</b> (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. Use these options to describe the current stream. Click <b>Save</b> to save the information you enter. This information is used in the Session Description Protocol (SDP) used with RTP.</li></ul>
Unicast	<p>Click the Enable check box in this area to activate unicast. Uncheck the Enable check box to enter the IP address and port. Check the Enable check box again to save the values.</p> <p><b>Note:</b> You can only select unicast OR multicast for streaming. When one is selected, you cannot select the other until the first option is unselected.</p>
Multicast	<p>Click the Enable check box in this area to activate multicast. Uncheck the Enable check box to enter the IP address and port. Check the Enable check box again to save the values.</p>

## Networking

FIG. 29 displays the network controls on the NMX-ENC WebConsole page. The network controls allow you to set up your DHCP or Static network.

The screenshot shows the 'Networking' tab selected in the top navigation bar. Below the navigation bar, the 'Network Setup' section is visible. It features two radio buttons: 'DHCP' (selected) and 'Static'. Below these are input fields for 'Hostname' (localhost), 'IP Address' (192.168.216.35), 'Subnet Mask' (255.255.254.0), 'Gateway' (192.168.216.2), 'DNS1' (192.168.20.6), 'DNS2' (192.168.20.5), and 'DNS3' (empty). A green 'Save & Reboot' button is at the bottom.

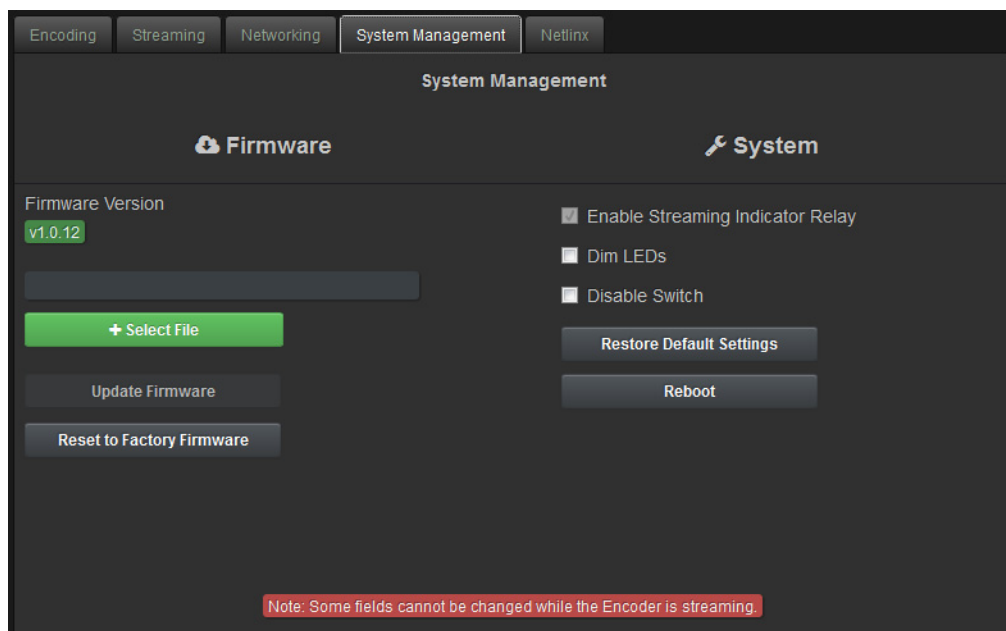
**FIG. 29** Networking tab

The following options are available in this area:

Networking Options	
DHCP/Static	<p>Click the corresponding option button to select a <b>DHCP</b> or <b>Static</b> communication mode.</p> <ul style="list-style-type: none"> <li><b>DHCP</b> (Dynamic Host Configuration Protocol) assigns IP addresses from client stations logging onto a TCP/IP network via a DHCP server.</li> <li><b>Static</b> IP is a permanent IP address that is assigned to a node in a TCP/IP network.</li> </ul>
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.

## System Management

FIG. 30 displays the system management controls on the NMX-ENC WebConsole page. The system management controls allow you to update the firmware, reboot, or restore the default settings for the encoder.



**FIG. 30** System Management tab

The following options are available in this area:

System Management Options	
Firmware	The Firmware area displays the current firmware version. Click Update Firmware to update the device's firmware to the latest version. Click Reset to Factory Firmware to restore the device's firmware to its factory default version.
Enable Streaming Indicator Relay	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 Switch	Click the check box to disable LAN ports 2-4. <b>WARNING!</b> <i>Since it is possible to turn off these ports, you should ALWAYS connect your main network artery to port 1.</i>
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.
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](http://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 23 for more information.
3. Select the **System Management** 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.

## NetLinx

FIG. 31 displays the NetLinx controls on the NMX-ENC WebConsole page. The NetLinx controls allow you to set up a connection to a central controller.

The screenshot shows the 'NetLinx' tab in the NMX-ENC WebConsole. The tab is titled 'ICSP Setup'. It contains the following fields and values:

- Master Mode: URL (dropdown menu)
- IP/URL: 192.168.216.215
- Port: 1319
- Device No: 13001
- System No: 13

A green 'Save' button is located at the bottom of the form.

**FIG. 31** NetLinx tab

The following options are available in this area:

NetLinx Options	
Master Mode	<p>Select the NetLinx Master mode from the menu. You can choose from <b>URL</b> or <b>Auto</b>.</p> <ul style="list-style-type: none"> <li><b>URL</b> 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.</li> <li><b>Auto</b> 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.</li> </ul>
IP/URL	<p>Enter the IP Address or URL used by the target Master in the provided field.  <b>Note:</b> This is the same IP Address used by NetLinx Studio to communicate with the Master.</p>
Port	<p>Enter the port number used by the NetLinx Master in the provided field. The default value is 1319.</p>
Device No	<p>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.</p> <p>In NetLinx Studio, use the Online Tree tab to review what device values are already being used by the target Master.</p>
System No	<p>Enter a system number in the provided field. This option is not available if you set the NetLinx Master mode to Auto.</p>





# 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 switcher only. For generic NetLinx commands, see the [NetLinx Integrated Controllers WebConsole and Programming Guide](#) available at [www.amx.com](http://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.

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
1	SDI In	DevID:1:0
1	Audio Input Line 1	DevID:1:0
1	HDMI Output 1	DevID:1:0
1	Relay Output 1	DevID:1:0
1	Keypad Output	DevID:1:0

## Encoding Commands

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

Encoding Commands	
<b>?AUDIN_FORMAT</b> Requests the format of the audio input.	Requests the currently selected audio input format. Syntax: <code>SEND_COMMAND &lt;DEV&gt;, "'?AUDIN_FORMAT'"</code> Example: <code>SEND_COMMAND AUDIO_1, "'?AUDIN_FORMAT'"</code> Returns a COMMAND string of the form: AUDIN_FORMAT-<options>.
<b>AUDIN_FORMAT</b> Sets the audio input format for the port.	Specifies the audio input format for port addressed by the D:P:S. Syntax: <code>SEND_COMMAND &lt;DEV&gt;, "'AUDIN_FORMAT-&lt;options&gt;'"</code> Variable: option = Digital, Analog, No Audio Example: <code>SEND_COMMAND AUDIO_1, "'AUDIN_FORMAT-Digital'"</code> Sets audio format for input port (#1 based on the D:P:S) to Digital.
<b>?AUDIN_SAMPLING_RATE</b> Requests the current sampling rate of the audio input.	Queries the current selected audio input sampling rate. Syntax: <code>SEND_COMMAND &lt;DEV&gt;, "'?AUDIN_SAMPLING_RATE'"</code> Example: <code>SEND_COMMAND AUDIO_1, "'?AUDIN_SAMPLING_RATE'"</code> Returns a COMMAND string of the form: AUDIN_SAMPLING_RATE-<rate>.

Encoding Command (Cont.)	
<b>?AUDSTRM_CODEC</b> 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>.
<b>?AUDSTRM_MUTE</b> Requests the audio mute status.	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>.
<b>AUDSTRM_MUTE</b> Sets the audio muting on the stream.	Enable or disable audio muting on the stream. Syntax: SEND_COMMAND <DEV>, "'AUDSTRM_MUTE-<setting>'" Variables: setting = desired mute state, either ENABLE or DISABLE Example: SEND_COMMAND AUDIO_1, "'AUDSTRM_MUTE-DISABLE'"
<b>?AUDSTRM_RATE</b> Requests the audio bit rate for the input port.	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>.
<b>AUDSTRM_RATE</b> Sets the audio bit rate for the input port.	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.
<b>?VIDIN_FORMAT</b> Requests the input format of the video port.	Requests the input format of the video port addressed by the D:P:S. <b>Note:</b> 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>.
<b>VIDIN_FORMAT</b> Sets the input format of the video port.	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.

Encoding Commands (Cont.)	
<b>?VIDIN_RES_REF</b> Requests the resolution of the video input port.	Requests to resolution of the video input port addressed by the D:P:S. <i><b>Note:</b> Queries sent to port 2 will not receive a response from the encoder. All queries should be sent to port 1.</i> Syntax: <pre>SEND_COMMAND &lt;DEV&gt;, "'?VIDIN_RES_REF'"</pre> Example: <pre>SEND_COMMAND VIDEO_INPUT_1, "'?VIDIN_RES_REF'"</pre> Returns a COMMAND string of the form: VIDIN_RES_REF-<h>x<v>,<rate>.
<b>?VIDSTRM_BURST</b> Requests the video burst size for the video stream.	Requests the selected video frame burst size for streamed video output port addressed by the D:P:S. Syntax: <pre>SEND_COMMAND &lt;DEV&gt;, "'?VIDSTRM_BURST'"</pre> Example: <pre>SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM_BURST'"</pre> Returns a COMMAND string of the form: VIDSTRM_BURST-<burst>.
<b>VIDSTRM_BURST</b> Sets the video burst size for the video stream.	Sets the video frame burst size for streamed video port addressed by D:P:S to <rate>. Syntax: <pre>SEND_COMMAND &lt;DEV&gt;, "'VIDSTRM_BURST-&lt;burst&gt;'"</pre> Variables: burst = 150, 200, 300, 400, 500, 600, 800, 1000, 1200, 1400, 1600, 1800, 2000 (in milliseconds) Example: <pre>SEND_COMMAND VIDEO_INPUT_1, "VIDSTRM_BURST-burst"</pre>
<b>?VIDSTRM_CODEC</b> Requests the video codec for the video stream.	Requests the selected video encoder codec for streamed video output port addressed by the D:P:S. Syntax: <pre>SEND_COMMAND &lt;DEV&gt;, "'?VIDSTRM_CODEC'"</pre> Example: <pre>SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM_CODEC'"</pre> Returns a COMMAND string of the form: VIDSTRM_CODEC-<format>.
<b>?VIDSTRM_FRAME</b> Requests the frame decimation for the video stream.	Requests the selected frame decimation for streamed video output port addressed by the D:P:S. Syntax: <pre>SEND_COMMAND &lt;DEV&gt;, "'?VIDSTRM_FRAME'"</pre> Example: <pre>SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM_FRAME'"</pre> Returns a COMMAND string of the form: VIDSTRM_FRAME-<value>.
<b>VIDSTRM_FRAME</b> Sets the frame decimation for the video stream.	Frame decimation reduces the number of input frames to increase the quality of the video image. Syntax: <pre>SEND_COMMAND &lt;DEV&gt;, "'VIDSTRM_FRAME-&lt;frame&gt;'"</pre> Variable: frame = The amount you want to reduce the bit rate (NONE, 1/2, 1/3, or 1/4) Example: <pre>SEND_COMMAND VIDEO_INPUT_1, "'VIDSTRM_FRAME-1/2'"</pre>
<b>?VIDSTRM_GOP</b> Requests the GOP size for the video stream.	Requests the selected group of pictures for streamed video output port addressed by the D:P:S. Syntax: <pre>SEND_COMMAND &lt;DEV&gt;, "'?VIDSTRM_GOP'"</pre> Example: <pre>SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM_GOP'"</pre> Returns a COMMAND string of the form: VIDSTRM_GOP-<gop>.

Encoding Commands (Cont.)	
<b>VIDSTRM_GOP</b> Sets the GOP size for the video stream.	<p>GOP size determines the distance between two full image frames (I-frames) in the encoded video.</p> <p>Syntax:</p> <pre>SEND_COMMAND &lt;DEV&gt;, ""VIDSTRM_GOP-&lt;gop&gt;' "</pre> <p>Variable:</p> <p>gop = 15, 30, 60, 120, 240</p> <p>Example:</p> <pre>SEND_COMMAND VIDEO_INPUT_1, ""VIDSTRM_GOP-60' "</pre>
<b>?VIDSTRM_PROFILE</b> Requests the encoding profile for the video stream.	<p>Requests the selected encoding profile selected for streamed video output port addressed by the D:P:S.</p> <p>Syntax:</p> <pre>SEND_COMMAND &lt;DEV&gt;, ""?VIDSTRM_PROFILE' "</pre> <p>Example:</p> <pre>SEND_COMMAND VIDEO_INPUT_1, ""?VIDSTRM_PROFILE' "</pre> <p>Returns a COMMAND string of the form: VIDSTRM_PROFILE-&lt;profile&gt;.</p>
<b>VIDSTRM_PROFILE</b> Sets the encoding profile for the video stream.	<p>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.</p> <p>Syntax:</p> <pre>SEND_COMMAND &lt;DEV&gt;, ""VIDSTRM_PROFILE-&lt;profile&gt;' "</pre> <p>Variable:</p> <p>profile = The encoding profile (BASELINE, MAIN, or HIGH)</p> <p>Example:</p> <pre>SEND_COMMAND VIDEO_INPUT_1, ""VIDSTRM_PROFILE-HIGH' "</pre>
<b>?VIDSTRM_RATE</b> Requests the bit rate for the video stream.	<p>Requests the bit rate selected for streamed video output port addressed by the D:P:S.</p> <p>Syntax:</p> <pre>SEND_COMMAND &lt;DEV&gt;, ""?VIDSTRM_RATE' "</pre> <p>Example:</p> <pre>SEND_COMMAND VIDEO_INPUT_1, ""?VIDSTRM_RATE' "</pre> <p>Returns a COMMAND string of the form: VIDSTRM_RATE-&lt;rate&gt;.</p>
<b>VIDSTRM_RATE</b> Sets the bit rate for the video stream.	<p>Higher bit rates will result in higher quality encoded video. The bit rate is in kilobytes per second (kbps).</p> <p>Syntax:</p> <pre>SEND_COMMAND &lt;DEV&gt;, ""VIDSTRM_RATE-&lt;bitrate&gt;' "</pre> <p>Variable:</p> <p>bitrate = The bit rate in kbps. Can be from 100 to 8000.</p> <p>Example:</p> <pre>SEND_COMMAND VIDEO_INPUT_1, ""VIDSTRM_RATE-8000' "</pre>
<b>?VIDSTRM_RATE_CTRL</b> Requests the rate control method for the video stream.	<p>Requests the rate control selected for the streamed video output port addressed by the D:P:S.</p> <p>Syntax:</p> <pre>SEND_COMMAND &lt;DEV&gt;, ""?STRM_RATE_CTRL' "</pre> <p>Example:</p> <pre>SEND_COMMAND VIDEO_INPUT_1, ""?VIDSTRM_RATE_CTRL' "</pre> <p>Returns a COMMAND string of the form: VIDSTRM_RATE_CTRL-&lt;rate&gt;.</p>
<b>VIDSTRM_RATE_CTRL</b> Sets the rate control method for the video stream.	<p>Syntax:</p> <pre>SEND_COMMAND &lt;DEV&gt;, ""VIDSTRM_RATE_CTRL-&lt;method&gt;' "</pre> <p>Variable:</p> <p>method = The rate control method (CBR or VBR)</p> <p>Example:</p> <pre>SEND_COMMAND VIDEO_INPUT_1, ""VIDSTRM_RATE_CTRL-VBR' "</pre>

Encoding Commands (Cont.)	
<b>?VIDSTRM_RES</b> Requests the video resolution for the video stream.	Requests the resolution for the streamed video output port addressed by the D:P:S. <b>Syntax:</b> <pre>SEND_COMMAND &lt;DEV&gt;, "'?VIDSTRM_RES' "</pre> <b>Example:</b> <pre>SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM_RES' "</pre> Returns a COMMAND string of the form: VIDSTRM_RES-<resolution>.
<b>VIDSTRM_RES</b> Sets the video resolution for the video stream.	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. <b>Syntax:</b> <pre>SEND_COMMAND &lt;DEV&gt;, "'VIDSTRM_RES-&lt;resolution&gt;' "</pre> <b>Variable:</b> resolution = FOLLOW INPUT, 640x480, or 640x360 <b>Example:</b> <pre>SEND_COMMAND VIDEO_INPUT_1, "'VIDSTRM_RES-FOLLOW INPUT' "</pre>

## Streaming Commands

The following table lists the streaming commands for the encoder:

Streaming Commands	
<b>?STRM_FORMAT</b> Requests the streaming format for the video output port.	Requests the selected stream format or container for streamed video output port addressed by the D:P:S. <b>Syntax:</b> <pre>SEND_COMMAND &lt;DEV&gt;, "'?STRM_FORMAT' "</pre> <b>Example:</b> <pre>SEND_COMMAND VIDEO_INPUT_1, "'?STRM_FORMAT' "</pre> Returns a COMMAND string of the form: STRM_FORMAT-<format>.
<b>STRM_FORMAT</b> Sets the streaming format for the video output port.	Sets the streaming format for the encoded video to be streamed at port addressed by D:P:S. <b>Syntax:</b> <pre>SEND_COMMAND &lt;DEV&gt;, "'STRM_FORMAT-&lt;format&gt;' "</pre> <b>Variables:</b> value = UDP, RTP <b>Example:</b> <pre>SEND_COMMAND VIDEO_INPUT_1, "'STRM_FORMAT-UDP' "</pre>
<b>?VIDSTRM</b> Retrieve the status of the stream.	<b>Syntax:</b> <pre>SEND_COMMAND &lt;DEV&gt;, "'?VIDSTRM' "</pre> <b>Example:</b> <pre>SEND_COMMAND VIDEO_INPUT_1, "'?VIDSTRM' "</pre> Returns a COMMAND string of the form: VIDSTRM-<status>.
<b>VIDSTRM</b> Starts or stops the video stream.	If video stream is set to auto it automatically resumes streaming when input signal is changed. <b>Syntax:</b> <pre>SEND_COMMAND &lt;DEV&gt;, "'VIDSTRM-&lt;status&gt;' "</pre> <b>Variable:</b> status = auto, stop, or start <b>Example:</b> <pre>SEND_COMMAND VIDEO_INPUT_1, "'VIDSTRM-START' "</pre>

Streaming Commands (Cont.)	
<b>?VIDSTRM_EN</b> 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>.
<b>VIDSTRM_EN</b> 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'"
<b>?VIDSTRM_IP</b> Requests the unicast IP address used for streaming.	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>.
<b>VIDSTRM_IP</b> Sets the unicast IP address to be used for streaming.	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'"
<b>?VIDSTRM_PORT</b> Requests the unicast port used for streaming.	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>.
<b>VIDSTRM_PORT</b> Sets the unicast port to be used for streaming.	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'"
<b>?VIDSTRM_MC_EN</b> 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>.
<b>VIDSTRM_MC_EN</b> 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'"

Streaming Commands (Cont.)	
<b>?VIDSTRM_MC_IP</b> Requests the multicast IP address used for streaming.	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>.
<b>VIDSTRM_MC_IP</b> Sets the multicast IP address to be used for streaming.	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'"
<b>?VIDSTRM_MC_PORT</b> Requests the multicast port used for streaming.	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>.
<b>VIDSTRM_MC_PORT</b> Sets the multicast port to be used for streaming.	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'"
<b>?VIDSTRM_MC_TTL</b> Requests the multicast Time to Live (TTL) used for streaming.	Retrieves the multicast 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.
<b>VIDSTRM_MC_TTL</b> Sets the multicast TTL used for streaming.	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'"
<b>?VIDSTRM_STATUS</b> Requests the status of the video stream.	Syntax: SEND_COMMAND <DEV>, "'VIDSTRM_STATUS-<status>'" Variables: status = started, stopped, or suspended Example: SEND_COMMAND VIDEO_INPUT_1, "'VIDSTRM_STATUS-started'"

## Status Commands

The following table lists the status commands for the encoder:

Status Commands	
<b>?DISABLE_SWITCH</b> Requests the state of LAN ports 2-4.	Retrieves the current state of LAN ports 2-4. Syntax: <code>SEND_COMMAND &lt;DEV&gt;,"'?DISABLE_SWITCH'"</code> Example: <code>SEND_COMMAND ENCODER_1,"'?DISABLE_SWITCH'"</code> Returns ON or OFF.
<b>DISABLE_SWITCH</b> Sets the state of LAN ports 2-4.	Controls ports 2-4 of the LAN switch. Syntax: <code>SEND_COMMAND &lt;DEV&gt;,"'DISABLE_SWITCH-&lt;option&gt;'"</code> Variable: option = ON or OFF Example: <code>SEND_COMMAND ENCODER_1,"'DISABLE_SWITCH-ON'"</code> Disables ports 2-4 of the switch output.
<b>?RELAY_CTRL</b> Requests the state of the relay control.	Retrieves the current state of relay control. Syntax: <code>SEND_COMMAND &lt;DEV&gt;,"'?RELAY_CTRL'"</code> Example: <code>SEND_COMMAND ENCODER_1,"'?RELAY_CTRL'"</code> Returns a COMMAND string of the form: RELAY-CTRL-<option>.
<b>RELAY_CTRL</b> Sets the status of the relay for streaming.	Instructs the behavior relays for streaming. Syntax: <code>SEND_COMMAND &lt;DEV&gt;,"'RELAY_CTRL-&lt;option&gt;'"</code> Variable: option = ON or OFF Example: <code>SEND_COMMAND ENCODER_1,"'RELAY_CTRL-ON'"</code> Turns on relay control, which means that when streaming the streaming relay is engaged.
<b>?VIDIN_HDCP</b> Requests the HDCP compliance state for the port.	Retrieves the state of HDCP compliance for input. Syntax: <code>SEND_COMMAND &lt;DEV&gt;,"'?VIDIN_HDCP'"</code> Example: <code>SEND_COMMAND VIDEO_INPUT_1,"'?VIDIN_HDCP'"</code> Returns a COMMAND string of the form: VIDIN_HDCP-<option>.
<b>VIDIN_HDCP</b> Sets the HDCP compliance for a video port.	Sets the video input to present itself as HDCP compliant or not to a source. <b>Note:</b> This command simply impacts whether or not the video input reports whether it is HDCP compliant. The encoder does NOT stream HDCP-protected content. <b>Note:</b> When VIDIN_HDCP is toggled, the video source should be disconnected from and reconnected to the encoder video input to ensure that both the encoder and the video source adapt to the change in state. Syntax: <code>SEND_COMMAND &lt;DEV&gt;,"'VIDIN_HDCP-&lt;option&gt;'"</code> Variables: option = enable or disable Example: <code>SEND_COMMAND VIDEO_INPUT_1,"'VIDIN_HDCP-enable'"</code>



Status Commands (Cont.)	
<b>?VIDIN_STATUS</b> Requests the status of the video input port.	Requests the video input status of the video input port addressed by the D:P:S. <b>Note:</b> <i>Queries sent to port 2 will not receive a response from the encoder. All queries should be sent to port 1.</i> Syntax: <code>SEND_COMMAND &lt;DEV&gt;, "'?VIDIN_STATUS' "</code> Example: <code>SEND_COMMAND VIDEO_INPUT_1, "'?VIDIN_STATUS' "</code> Returns a COMMAND string of the form: VIDIN_STATUS-<status string> status string = NO SIGNAL, UNKNOWN SIGNAL, or SIGNAL IS OK.



# 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
1024x768@85	1024	768	85	✓	✓	VESA DMT
1280x720@50	1280	720	50	✓	✓	CEA 861
1280x720@60	1280	720	60	✓		VESA CVT
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@30	720	480	30
720x576i@25	720	576	25
1280x720p@50	1280	720	50
1280x720p@60	1280	720	60
1920x1080i@25	1920	1080	25
1920x1080i@30	1920	1080	30
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 in the following sections.

**Important:** Currently, the scaled resolution always follows the input resolution.

**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.

## DVI, HDMI, and VGA Supported Output Video Resolutions

**Note:** Scaled resolutions will be available in a future release. Currently, the video is output at the same resolution as the detected input from the video source.

DVI, HDMI, and VGA Supported Output Resolutions				
Resolution	Output			
	Follow Input	1/2	1/4	1/8
720x480p@60	Y	360x240	180x120	X
800x600@60	Y	400x300	200x150	X
800x600@72	Y	400x300	200x150	X
800x600@75	Y	400x300	200x150	X
800x600@85	Y	400x300	200x150	X
1024x768@60	Y	512x384	256x192	128x96
1024x768@70	Y	512x384	256x192	128x96
1024x768@75	Y	512x384	256x192	128x96
1024x768@85	Y	512x384	256x192	128x96
1280x720@50	Y	640x360	320x180	X
1280x720@60	Y	640x360	320x180	X
1280x720p@60	Y	640x360	320x180	X
1280x768@59	Y	640x384	320x192	160x96
1920x1080i@50	Y	960x540	480x270	240x135
1920x1080i@60	Y	960x540	480x270	240x135
1920x1080p@24	Y	960x540	480x270	240x135
1920x1080p@25	Y	960x540	480x270	240x135

## Composite and S-Video Supported Output Resolutions

**Note:** Scaled resolutions will be available in a future release. Currently, the video is output at the same resolution as the detected input from the video source.

Composite and S-Video Supported Output Resolutions				
Resolution	Output			
	Follow Input	1/2	1/4	1/8
720x480i@60	Y	360x240	180x120	X
720x576i@50	Y	360x288	180x144	X

## Component Video Supported Output Resolutions

**Note:** Scaled resolutions will be available in a future release. Currently, the video is output at the same resolution as the detected input from the video source.

Component Video Supported Output Resolutions				
Resolution	Output			
	Follow Input	1/2	1/4	1/8
720x480i@60	Y	360x240	180x120	X
720x480p@60	Y	360x240	180x120	X
	Y	360x240	180x120	X
	Y	360x240	180x120	X
720x576i@50	Y	360x288	180x144	X
720x576p@50	Y	360x288	180x144	X
1280x720p@50	Y	640x360	320x180	X
1280x720p@60	Y	640x360	320x180	X
	Y	640x360	320x180	X
1920x1080i@50	Y	960x540	480x270	240x135
1920x1080i@60	Y	960x540	480x270	240x135
	Y	960x540	480x270	240x135
1920x1080p@60	Y	960x540	480x270	240x135

## 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 23 for more information.)

Recommended Bit Rates for Output Resolutions					
Resolution	Bit Rate kbps				
	Max	High Quality	Medium Quality	Low Quality	Lowest
128x96	1024	512	205	205	205
160x96	1024	512	205	205	205
180x120	1024	512	512	205	205
180x144	2048	1024	512	205	205
200x150	2048	1024	1024	205	205
240x135	3072	2048	1024	307	205
256x192	3072	2048	1024	307	205
320x180	6144	2048	1536	307	205
360x240	6144	2048	1536	512	205
360x288	6144	2048	1536	512	205
480x270	9216	3072	2048	1024	205
640x360	12288	4096	2048	1024	205
720x576p@50	12288	4096	2048	1024	205
720x576p@50	12288	4096	2048	1024	205
720x480i@60	12288	4096	2048	1024	205
720x480p@60	12288	5120	2048	1024	205
720x576i@50	12288	5120	2048	1024	205

Recommended Bit Rates for Output Resolutions (Cont.)					
Resolution	Bit Rate kbps				
	Max	High Quality	Medium Quality	Low Quality	Lowest
720x576p@50	12288	5120	2048	1024	205
800x600@60	12288	5120	2048	1024	307
800x600@72	12288	5120	2048	1024	307
800x600@75	12288	5120	2048	1024	307
800x600@85	12288	5120	2048	1024	307
960x540	12288	6144	3072	1536	512
1024x768@60	12288	6144	3072	1536	512
1024x768@70	12288	6144	3072	1536	512
1024x768@75	12288	6144	3072	1536	512
1024x768@85	12288	6144	3072	1536	512
1280x720@50	12288	6144	3072	1536	512
1280x720@60	12288	6144	3072	1536	512
1280x720p@60	12288	6144	3072	1536	512
1280x768@59	12288	6144	3072	1536	512
1920x1080i@50	12288	6144	4096	2048	819
1920x1080i@60	12288	6144	4096	2048	819
1920x1080p@24	12288	6144	4096	2048	819
1920x1080p@25	12288	6144	4096	2048	819
1920x1080p@30	12288	6144	4096	2048	819









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