

Click here to access NetLinx

Introduction

NetLinx Studio is commonly used by system programmers to streamline the integration, programming, organization, and support of their AMX equipment. As the cornerstone of AMX's system design software tools, NetLinx Studio offers programmers the most flexible application capable of generating the most sophisticated code possible. Now equipment in our latest N-Series Networked AV Product comes equipped with NetLinx support. This addendum introduces the new configuration aspects necessary to bring all of your NetLinx-compatible equipment up to speed with the latest functionality. This addendum covers NetLinx functionality as it applies to AMX's N-Series product line and is designed to be used as a supplement to additional product documentation found on our website at http://www.amx.com/techcenter/.

Special Considerations

Netlinx operation requires multicast groups that may conflict with specific video stream numbers. When using Netlinx you must avoid these stream numbers to ensure proper operation:

Multicast Mode

Non-interleaved: Avoid streams 31482 and 31483. Interleaved: Avoid streams 32125 and 32126.

NetLinx Configuration Using the Unit's Webpage

From any main page of the unit webpage, click the NetLinx tab. See Figure 1. Table 1 provides descriptions for each configuration option.

NOTE: For instructions on how to log in to your unit for the first time, please see the Quick Start Guide (provided in shipment) or visit our website to view the unit's user manual.

ings <u>Crop/Pan/Zoo</u>	<u>m LocalPlay IR</u>	N-Act	<u>Serial</u>	<u>Security</u>	<u>KVM</u>	<u>EDID</u>	Logs	LLDP	NetLinx	
etlinx Setup										
nable										
Device Status:	Online		C	Configura	tion op	tions av	/ailable	e will		
laster Mode:	URL -			depend or shoose S	ו which ee Tabl	Maste	r Mode more (you Ietails		
P/URL	192.168.1.200						more e	ictuito.		
Port	1319 ‡									
Device Number	8001 \$									
System Number	0									
Jsername	administrator]							
assword	•••••]							

FIGURE 1 NetLinx Configuration Page

TABLE 1 NetLinx Page Options

Command	Description
Enable	Click to enable/disable NetLinx on this device.
Device Status	This status field will show the device to be Online , Connected , Offline , or Unknown .
Master Mode	Select Auto, Listen, or URL.
IP/URL	Enter the address of the Master Controller.
Port	This field should always be set to 1319.
Device Number	Defaults to a dynamic device number. May be set to a static range (e.g., 8000).
System Number	 Determines which system to connect. This setting is dependent upon the Master Mode selected (see above). If Master Mode is set to Auto, the System Number is set and the system discovers the Master Controller's IP address. If Master Mode is set to Listen, the device connects to any Master Controller. If Master Mode is set to URL, the IP of the Master Controller is set.
Username	Username for the Master Controller.
Password	Password for the Master Controller.
Save	Save settings made on this page.

Batch Configurations Using N-Able

One of the many benefits of using N-Able control is batch configuration. This is especially useful in larger deployments. Instead of using the individual unit web pages (discussed in the previous section), simply open N-Able and select **Tools > Batch Config**. See Figure 2.

N-Able	Tools	Documents Help	
VIDEO	C Re	efresh Network	F5
VIDEC	≡ Se	erial Commands	
N100	器 Network Troubleshooter		Ctrl+Shift+N
	 Broadcast IP Reset 		Ctrl+I
	■ Batch Config		
	KVM Wizard		
	- N	-Series EDID Configuration	

FIGURE 2 Selecting Batch Config in N-Able

The screen shown in figure xx displays and allows you to choose the units you would like to enable for NetLinx control. To select multiple units, hold down the **<Ctrl>** key. Once all of the units are selected, enable the NetLinx On button and click the OK button at the bottom of the screen.

Ba	atch Conng							
_								
		-		6				
et	Selected Units to: O AUTO-IP	O DHCP O Mode	Off O Factory Res	store 💿 Netlinx	On O Netlinx Of	ff 🔘 Set Multic	ast to: exam	Iple: 239.25 Clear
	Name	MAC	SN	Туре	IP	Subnet	Gateway	IP Type
1	(4) PAN COM ANALOG	00:19:0B:80:49:CB	N225A02000686	N1-DEC-KVM	169.254.121.225	255.255.0.0	169.254.1.1	Auto IP
,	00:19:0B:80:01:BD	00:19:0B:80:01:BD	N225A020000140	N1-DEC-KVM	192.168.1.205	255,255,255,0	192,168,1,1	DHCP
-								
3	Cameron 4K Decoder #2	00:19:0B:80:01:1B	N225A02000078	N1-DEC-KVM	169.254.213.187	255.255.0.0	169.254.1.1	Static IP
•	Cameron 4K Decoder #2	00:19:0B:80:01:1B 00:19:0B:80:01:EC	N225A020000078 N225A020000187	N1-DEC-KVM N1-DEC-KVM	169.254.213.187 169.254.229.244	255.255.0.0 255.255.0.0	169.254.1.1 169.254.1.1	Static IP Static IP
+	Cameron 4K Decoder #2 Cameron's 4K Decoder DPEG 4K Dec2	00:19:0B:80:01:1B 00:19:0B:80:01:EC 00:19:0B:80:01:D3	N225A020000078 N225A020000187 N225A020000162	N1-DEC-KVM N1-DEC-KVM N1-DEC-KVM	169.254.213.187 169.254.229.244 169.254.59.207	255.255.0.0 255.255.0.0 255.255.0.0	169.254.1.1 169.254.1.1 169.254.1.1	Static IP Static IP Auto IP
3 4 5 5	Cameron 4K Decoder #2 Cameron's 4K Decoder JPEG 4K Dec2 Lysle N2050 Dec	00:19:0B:80:01:1B 00:19:0B:80:01:EC 00:19:0B:80:01:D3 00:19:0B:7F:FF:06	N225A02000078 N225A020000187 N225A020000162 N225A010000006	N1-DEC-KVM N1-DEC-KVM N1-DEC-KVM N1-DEC-KVM	169.254.213.187 169.254.229.244 169.254.59.207 192.168.1.208	255.255.0.0 255.255.0.0 255.255.0.0 255.255.255.0	169.254.1.1 169.254.1.1 169.254.1.1 192.168.1.1	Static IP Static IP Auto IP DHCP

FIGURE 3 Enabling NetLinx on Multiple Units

NOTE: Items are not filtered. In other words, if you send a NetLinx command to a device that does not support it, the command is simply ignored.

Encoder/Decoder Commands

The following section provides information on native, string, IR, and serial commands for N-Series Encoders and Decoders as related to NetLinx management. Commands are issued on the following ports:

- Port 1: Native and String Commands
- Port 2: IR Commands
- Port 3: Serial Commands

Command	Description
CO <stream> Set the current Encoder stream number.</stream>	IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'CO <stream>' Variables: stream = The target stream number from 1 to 32767. NOTE: Stream number MOD 256 must not equal 0 or 255. Examples: SEND_COMMAND 5002:1:0, 'CO 2' Command the Encoder to transmit on stream 2.</stream></dev>
CI <stream> Set the current Decoder stream number.</stream>	IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'CI <stream>' Variables: stream = The target stream number from 0 to 32767. NOTE: Stream number MOD 256 must not equal 0 or 255. The only exception to this limitation is that the stream number can be 0 (no stream). Examples: SEND_COMMAND 5002:1:0, 'CI 2' Command the Decoder to receive stream 2.</stream></dev>
CA <stream> Set the current Decoder Audio stream number.</stream>	IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'CA <stream>' Variables: stream = The target stream number from 0 to 32767. Set to 0 for the audio stream to follow the video stream. Examples: SEND_COMMAND 5002:1:0, 'CA 2' Command the Decoder to receive audio stream 2.</stream></dev>
AUDOUT_MUTE Set the audio mute.	<pre>IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'AUDOUT_MUTE-<enable disable="" ="">' Variables: ENABLE = Enables audio mute. DISABLE = Disables audio mute. Examples: SEND_COMMAND 5002:1:0, 'AUDOUT_MUTE-ENABLE' Enable audio mute.</enable></dev></pre>
VIDOUT_MUTE Disable the Encoder/Decoder output stream.	<pre>IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'VIDOUT_MUTE-<enable disable>' Variables: ENABLE = Enables video mute. DISABLE = Disables video mute. Examples: SEND_COMMAND 5002:1:0, 'VIDOUT_MUTE-ENABLE' Enable video mute.</enable disable></dev></pre>
LIVE_PLAY Set the device into live play mode.	IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'LIVE_PLAY' Examples: SEND_COMMAND 5002:1:0, 'LIVE_PLAY' Enable live play.</dev>

Native Commands Port 1 (Cont.)

Command	Description
LOCAL_PLAY <playlist index=""> Enable Local Play on Decoders or Host Play on Encoders using the Playlist number.</playlist>	IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'LOCAL_PLAY index' Variables: Playlist index = Which Default Playlist index to enable. Examples: SEND_COMMAND 5002:1:0, 'LOCAL_PLAY 1' Enable local play with Default Playlist 1.</dev>
USB_HID_SERVICE Enable or disable USB.	IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'USB_HID_SERVICE-<enable disable>' Variables: ENABLE = Enables USB. DISABLE = Disables USB. Examples: SEND_COMMAND 5002:1:0, 'USB_HID_SERVICE-ENABLE' Enable USB.</enable disable></dev>
REBOOT Reboot the device.	Syntax: SEND_COMMAND <dev>, 'REBOOT' Variables: None Examples: SEND_COMMAND 5002:1:0, 'REBOOT' Reboots the device.</dev>
?VIDOUT_OUTPUT Request the Encoder current stream number.	Syntax: SEND_COMMAND <dev>, '?VIDOUT_OUTPUT' Examples: SEND_COMMAND 5002:1:0, '?VIDOUT_OUTPUT' Command Response: 'VIDOUT_OUTPUT-852'</dev>
?VIDIN_INPUT Request the Decoder current stream number.	Syntax: SEND_COMMAND <dev>, '?VIDIN_INPUT' Examples: SEND_COMMAND 5002:1:0, '?VIDIN_INPUT' Command Response: 'VIDIN_INPUT-852'</dev>
?AUDIN_INPUT Request the current audio stream number.	Syntax: SEND_COMMAND <dev>, '?AUDIN_INFUT' Examples: SEND_COMMAND 5002:1:0, '?AUDIN_INFUT' Command Response: 'AUDIN_INFUT-124'</dev>
?AUDOUT_MUTE Request the state of the audio mute.	Syntax: SEND_COMMAND <dev>, '?AUDOUT_MUTE' Examples: SEND_COMMAND 5002:1:0, '?AUDOUT_MUTE' Command Response: 'AUDOUT_MUTE-ENABLE'</dev>
?VIDOUT_MUTE Request the state of the Encoder stream transmission.	Syntax: SEND_COMMAND <dev>, '?VIDOUT_MUTE' Examples: SEND_COMMAND 5002:1:0, '?VIDOUT_MUTE' Command Response: 'VIDOUT_MUTE-DISABLE'</dev>

Native Commands Port 1 (Cont.)

Command	Description
?LIVE_PLAY Request the status of Live Play.	<pre>Syntax: SEND_COMMAND <dev>, '?LIVE_PLAY' Examples: SEND_COMMAND 5002:1:0, '?LIVE_PLAY' Command Response: 'LIVE_PLAY-live' or 'LIVE_PLAY-local'</dev></pre>
?LOCAL_PLAY Request the Local Play/Host Play Playlist number.	Syntax: SEND_COMMAND <dev>, '?LOCAL_PLAY' Examples: SEND_COMMAND 5002:1:0, '?LOCAL_PLAY' Command Response: 'LOCAL_PLAY-1'</dev>
?USB_HID_SERVICE Request the status of the USB.	Syntax: SEND_COMMAND <dev>, '?USB_HID_SERVICE' Examples: SEND_COMMAND 5002:1:0, '?USB_HID_SERVICE' Command Response: 'USB_HID_SERVICE-<0 1>'</dev>

IR/Serial Send Commands Port 3

Command	Description
GET BAUD Get the RS-232 port's communication parameters.	Syntax: SEND_COMMAND <dev>, 'GET BAUD' Example: SEND_COMMAND 5002:3:0, 'GET BAUD' Command Response: 'GET-9600,N,8,1'</dev>
SET BAUD Set the RS-232 port's communication parameters.	<pre>Syntax: SEND_COMMAND <dev>, 'SET BAUD <baud>, <parity>, <data>, <stop>' Variables: baud = baud rates are: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200. parity = N (none), O (odd), E (even). data = 8 data bits. stop = 1 and 2 stop bits. Example: SEND_COMMAND 5002:3:0, 'SET BAUD 9600, N, 8, 1' Command Response: 'SET- BAUD 9600, N, 8, 1'</stop></data></parity></baud></dev></pre>

Pass Through Commands

For other commands, the NetLinx String command will interpret any existing N-Series API command. For example, to enable the scaler, send the following string command:

SEND_STRING <DEV>, 'scalerenable'

Similarly, to disable the scaler, send the string command:

SEND_STRING <DEV>, 'scalerdisable'

The response to a pass through string command is the issued command followed by the status message. For example:

- Command string: SEND_STRING <DEV>, 'scalerenable'
- Response string

"'scalerenable-SVSI RXGEN2:N225A020000140',A,'NAME:00:19:0B:80:01:BD',A,'MAC:00:19:0B:80:01:BD'..."

NOTE: Multiple commands cannot be issued together separated by ' \r' . For more information, refer to the API documentation for the N-Series device.

IR Port 2

Using the NetLinx Studio application, download the appropriate IR file to the N-Series device to use the appropriate channels. Port 2 is used to send IR commands. Some tuning of the NetLinx **Pulse Time**, **IR Command Holdoff**, and **IR Repeat Holdoff** on the N-Series device may be required. The Pulse Time is controlled in the SNAPY code. The **IR Command Holdoff** and the **IR Repeat Holdoff** are controlled on the **Advanced** section of the N-Series device **Settings** web page. See Figure 4 to see where to find these options.

IR Command Holdoff

- This is the delay between IR commands portions.
- To set the IR Command Holdoff, issue the following string command: SEND_STRING <DEV>, 'setSettings:ircmdtime:<time in ms>'
- The default value is 25 ms.

IR Repeat Holdoff

- This is the repeat delay between IR commands.
- To set the IR Repeat Holdoff, issue the following string command:
 - SEND_STRING <DEV>, 'setSettings: irc2rtime:<time in ms>'
- The default value is 90 ms.

ngs Crop/Pan/Zoom L	ocalPlay IR N-Act Serial	Security EDID	Logs LLDP	NetLinx
Decoder Setup				
Device Name:	samsung 2chip digital	Network Setup		
Stream	2135 Video: 239.255.8.87:50002	IP Mode: IP address	AUTO IP	AUTO IP *
Audio Stream	0 Audio: 239.255.136.87:50003	Netmask	255.255.0.0	255.255.0.0
Audio Follows Video	🕏 Follows	Gateway address	169.254.1.1	169.254.1.1
5caler	🗹 Enable	Ping Test	169.254.1.1	Ping
Dutput Mode	1080p60 •			Trial Save
Live/Local	Live •			
/ideo Mute	Mute	Status		
Audio Mute	Mute	Input Resolution:	1280x720 (59.94 Hz)
Lineout Volume	-	Port 50001 Source	e IP: Disconnecte	ed Flush
Enable HDMI Audio	Auto V (is off)	Bert 50002 Source	a ID: Disconstant	Eluch
	Cancel Save	Fort 50002 Source	e in Disconnecte	
		Serial Source IP:	Disconnecte	ed Hush
Advanced Settings	- Enable	Port PU: Port P1:	Disconnecte	ed
input audio for LocalPlay	Enable	Change Passwor	al .	
/CbCr 4:2:2 Output	Off • (is off)		Change Passwo	ind
Simplified HDMI Detect	Enable			
.ast Frame Hold	Enable	Software		
ocal Play Holdoff	3 • secs	Serial:	N2222A30000	0139
Sen1 Compatibility	Auto 🕶 (is off)	MAC address	00:19:0B:80:	0A:1B
HDMI off on stream loss	Enable	Firmware Version:	v1.11.3 (8/31	/2016)
HDMI Enable	🗷 Enable	Web Version:	9/7/2016	
Invert HDMI Horizontal Sync	🗆 Enable	Factory R	lestore Rebo	oot
Invert HDMI Vertical Sync	🔲 Enable			
Gratuitous ARP	O Enable	Audio Downmixe		
ARP Interval(secs)	50 •	AL	udio Downmixer Se	ettings
Unsolicited Status	≮ Enable			
Send Status Address	0.0.0			
Status Interval(secs)	10 •			
Discovery Packet Transmit	🗹 Enable			
Discovery Interval(secs)	10 *			
Serial Master Enable	Enable			
Serial Slave Address	0.0.0.0			
R Command Holdoff	25 ms 🖒	\mathbf{i}		
R Repeat Holdoff	90 ms 🖒			
GMP Joins on Stream Loss	🖉 Enable			
IGMP Join Interval	3 • secs			
Auto Sync Control	🗆 Enable			

FIGURE 4 Advanced IR Port Settings

Serial Port 3

Port 3 is used for serial commands. Any string sent with the send string command will be output through the serial port. Data returned from the serial port will be from the device also on port 3.

Windowing Processor Commands

The following section provides information on native and string commands for N-Series Windowing Processors as related to NetLinx management. Native and string commands are issued on Port 1.

Command	Description
CO <stream></stream>	IMPORTANT: This command must be sent to D:P:S port 1.
Set the current output stream number.	Syntax:
	Variables:
	stream = The target stream number from 1 to 32767.
	SEND_COMMAND 5002:1:0, 'CO 2'
	Command the windowing processor to transmit on stream 2.
CI <window> <stream></stream></window>	IMPORTANT: This command must be sent to D:P:S port 1.
Set the current stream number for window.	Syntax: SEND COMMAND <dev>, 'CI <window> <stream>'</stream></window></dev>
	Variables:
	window = The target window from 0 to 3. stream = The target stream number from 1 to 32767.
	Examples:
	SEND_COMMAND 5002:1:0, 'CI 4 2' Command the windowing processor to receive stream 2 on window 4.
CA <stream></stream>	IMPORTANT: This command must be sent to D:P:S port 1.
Set the current Decoder Audio stream number.	Syntax:
	Variables:
	stream = The target stream number from 0 to 32767. Set to 0 for the audio stream to
	Examples:
	SEND_COMMAND 5002:1:0, 'CA 2'
	Command the Decoder to receive audio stream 2.
AUDOUT_MUTE Set the audio mute	Suntavi
	SEND_COMMAND <dev>, 'AUDOUT_MUTE-<enable disable>'</enable disable></dev>
	Variables:
	DISABLE = Disables audio mute.
	Examples:
	Enable audio mute.
VIDOUT_MUTE	IMPORTANT: This command must be sent to D:P:S port 1.
Disable the Encoder output stream.	Syntax:
Disable the Decoder video output stream.	Variables:
	ENABLE = Enables video mute.
	Examples:
	SEND_COMMAND 5002:1:0, 'VIDOUT_MUTE-ENABLE'
	Enable video mute.
?VIDOUT_OUTPUT Request the current output stream number	SEND COMMAND <dev>. '2VIDOUT OUTPUT'</dev>
	Examples:
	SEND_COMMAND 5002:1:0, '?VIDOUT_OUTPUT'
	'VIDOUT_OUTPUT-852'
?VIDIN_INPUT <window></window>	Syntax:
Request the current stream number.	SEND_COMMAND <dev>, '?VIDIN_INPUT <window>'</window></dev>
	window = The target window from 0 to 3.
	Examples:
	Command Response:
	'VIDIN_INPUT-852'

Native Commands Port 1 (Cont.)

Command	Description
?AUDIN_INPUT Request the current audio stream number.	Syntax: SEND_COMMAND <dev>, '?AUDIN_INPUT' Examples: SEND_COMMAND 5002:1:0, '?AUDIN_INPUT' Command Response: 'AUDIN_INPUT-124'</dev>
?AUDOUT_MUTE Request the state of the audio mute.	Syntax: SEND_COMMAND <dev>, '?AUDOUT_MUTE' Examples: SEND_COMMAND 5002:1:0, '?AUDOUT_MUTE' Command Response: 'AUDOUT_MUTE-ENABLE'</dev>
?VIDOUT_MUTE Request the state of the Encoder stream transmission.	Syntax: SEND_COMMAND <dev>, '?VIDOUT_MUTE' Examples: SEND_COMMAND 5002:1:0, '?VIDOUT_MUTE' Command Response: 'VIDOUT_MUTE-DISABLE'</dev>

Windowing Processor Pass Through Command Examples

For other commands, the NetLinx String command will interpret any existing N-Series API command. The following sequence of string commands exemplifies the pass through commands used to set up a quad window with white border of two pixels for windows 0 and 1 and no border for windows 2 and 3.

SEND_STRING <dev>, 'winon:0'</dev>
SEND_STRING <dev>, 'set:0:<stream 0="" window="">'</stream></dev>
SEND_STRING <dev>, 'setbordcol:0:255,255,255'</dev>
SEND_STRING <dev>, 'bordon:0'</dev>
SEND_STRING <dev>, 'setbord:0:2,2'</dev>
SEND_STRING <dev>, 'winset:0:0,0,959,539'</dev>
SEND_STRING <dev>, 'setz:0:1'</dev>
SEND_STRING <dev>, 'winon:1'</dev>
SEND_STRING <dev>, 'set:1:<stream 1="" window="">'</stream></dev>
SEND_STRING <dev>, 'setbordcol:1:255,255,255'</dev>
SEND_STRING <dev>, 'bordon:1'</dev>
SEND_STRING <dev>, 'setbord:1:2,2'</dev>
SEND_STRING <dev>, 'winset:1:960,0,1919,539'</dev>
SEND_STRING <dev>, 'setz:1:2'</dev>
SEND_STRING <dev>, 'winon:2'</dev>
SEND_STRING <dev>, 'set:2:<stream 2="" window="">'</stream></dev>
SEND_STRING <dev>, 'setbordcol:2:255,255,255'</dev>
SEND_STRING <dev>, 'bordoff:2'</dev>
SEND_STRING <dev>, 'winset:2:0,540,959,1079'</dev>
SEND_STRING <dev>, 'setz:2:3'</dev>
SEND_STRING <dev>, 'winon:3'</dev>
SEND_STRING <dev>, 'set:3:<stream 3="" window="">'</stream></dev>
SEND_STRING <dev>, 'setbordcol:3:255,255,255'</dev>
SEND_STRING <dev>, 'bordoff:3'</dev>
SEND_STRING <dev>, 'winset:3:960,540,1919,1079</dev>
SEND_STRING <dev>, 'setz:3:4'</dev>
SEND_STRING <dev>, 'setbkgd:0'</dev>
SEND_STRING <dev>, 'seta:333'</dev>

Network Video Recorder Commands

The following section provides information on native and string commands for the N-Series Network Video Recorder (NVR) as related to NetLinx management.

Command	Description
MODE <mode></mode>	IMPORTANT: This command must be sent to D:P:S port 1.
Set the recording and playback mode.	Syntax:
	SEND_COMMAND <dev>, 'MODE <mode>'</mode></dev>
	Variables:
	<pre><mode> = the desired recording/playback mode. Modes include:</mode></pre>
	1 = N1000 mode
	3 = N3000 mode
	Examples:
	SEND_COMMAND 5002:1:0, 'MODE 2'
	Command Response:
	'MODE-2'
	Command the NVR to N2000 mode.
MPEG_MODE <mode></mode>	IMPORTANT: This command must be sent to D:P:S port 1.
Set the conversion mode.	Syntax:
	SEND_COMMAND <dev>, 'MPEG_MODE <mode>'</mode></dev>
	variables:
	mp4 = Convert to mp4 format.
	mov = Convert to mov format.
	Examples:
	SEND_COMMAND 5002:1:0, 'MPEG_MODE mp4'
	Command Response:
	'MPEG_MODE-mp4'
PLAY	IMPORTANT: This command must be sent to D:P:S port 1.
Play a recorded stream.	Syntax:
	<pre>SEND_COMMAND <dev>, 'PLAY <channel>,<recording>, <loop>[, <single> [,</single></loop></recording></channel></dev></pre>
	Variables:
	$\langle channel \rangle = Number of the NVR channel to use for playback.$
	<recording> = Filename of recording in "f.########.index" format, or zero-based</recording>
	index number in list.
	<loop> = 1 for looping, 0 to play once.</loop>
	<pre><single> = 1 for first stream only (for dual recordings only), 0 to play all streams.</single></pre>
	(default). <start> = Number of seconds from start to end playing.</start>
	Examples:
	SEND COMMAND 5002:1:0, 'PLAY 0,0,1'
	Command Response:
	'PLAY-100000000'
	Indicates NVR is playing on channel 1.
PLAY_STOP	IMPORTANT: This command must be sent to D:P:S port 1.
Stop the current playback.	Syntax:
	SEND_COMMAND <dev>, 'PLAY_STOP [<channel>]'</channel></dev>
	Variables:
	all playing
	Examples:
	SEND COMMAND 5002:1:0, 'PLAY STOP'
	Command Response:
	'PLAY-000000000'
	Indicates NVR is not playing on any channel. Stops playback on all channels.

Command	Description
PLAY_PAUSE	IMPORTANT: This command must be sent to D:P:S port 1.
Pause the current playing video.	Syntax: SEND_COMMAND <dev>, 'PLAY_PAUSE [<channel>]' Variables: <channel> = Number of the NVR channel to use for pause. Use -1 or leave blank for all playing.</channel></channel></dev>
	Examples: SEND_COMMAND 5002:1:0, 'PLAY_PAUSE' Command Response: none Dause the current playing video
	Pause the current playing video.
PLAY_RESUME Resume the currently paused, rewinding, or fast forward video.	<pre>IMPORTANT: This command must be sent to D:P:s port 1. Syntax: SEND_COMMAND <dev>, 'PLAY_RESUME [<channel>]' Variables: <channel> = Number of the NVR channel to use for pause. Use -1 or leave blank for all playing. Examples: SEND_COMMAND 5002:1:0, 'PLAY_RESUME' Command Response: none Resume the video.</channel></channel></dev></pre>
PLAY FAST FORWARD	IMPORTANT: This command must be sent to D:P:S port 1.
Put the current playing video into fast forward using the last speed or the given <speed>.</speed>	Syntax: SEND_COMMAND <dev>, 'PLAY_FAST_FORWARD [<channel>[,<speed>]]' Variables: <channel> = Number of the NVR channel to control. Use -1 or leave blank for all playing. <speed> = Number of frames to jump forward per update. Examples: SEND_COMMAND 5002:1:0, 'PLAY_FAST_FORWARD' Command Response: none Start fast forwarding the playing video.</speed></channel></speed></channel></dev>
PLAY_REWIND	IMPORTANT: This command must be sent to D:P:S port 1.
	<pre>Syntax: SEND_COMMAND <dev>, 'PLAY_REWIND [<channel>[, <speed>]] Variables: <channel> = Number of the NVR channel to control. Use -1 or leave blank for all playing. <speed> = Number of frames to jump back per update. Examples: SEND_COMMAND 5002:1:0, 'PLAY_REWIND' Command Response: none Put the current playing video into rewind mode using the last speed.</speed></channel></speed></channel></dev></pre>
PLAY_SINGLE_STEP_FORWARD	IMPORTANT: This command must be sent to D:P:S port 1.
Skip a number of frames forward.	<pre>Syntax: SEND_COMMAND <dev>, 'PLAY_SINGLE_STEP_FORWARD [<channel>[,<frames>]]' Variables: <channel> = Number of the NVR channel to control. Use -1 or leave blank for all playing. <frames> = Number of frames to jump forward. Default is 1. Examples: SEND_COMMAND 5002:1:0, 'PLAY_SINGLE_STEP_FORWARD' Command Response: none Step a single frame forward.</frames></channel></frames></channel></dev></pre>

Command	Description
PLAY SINGLE STEP BACKWARD	IMPORTANT: This command must be sent to D:P:S port 1.
Skip a number of frames backward.	<pre>Syntax: SEND_COMMAND <dev>, 'PLAY_SINGLE_STEP_BACKWARD [<channel>[,<frames>]]' Variables: <channel> = Number of the NVR channel to control. Use -1 or leave blank for all playing. <frames> = Number of frames to jump backward. Default is 1. Examples: SEND_COMMAND_5002:1:0, 'PLAY_SINGLE_STEP_BACKWARD'</frames></channel></frames></channel></dev></pre>
	Command Response:
PLAY HOLD	IMPORTANT: This command must be sent to D:P:S port 1.
Hold a channel from playing videos until a "release" command is executed. Use "PLAY_STOP <channel>" to abort the hold.</channel>	Syntax: SEND_COMMAND <dev>, 'PLAY_HOLD [<channel>]' Variables: <channel> = Number of the NVR channel to control. Use -1 or leave blank for all</channel></channel></dev>
	Examples: SEND_COMMAND 5002:1:0, 'PLAY_HOLD' Command Response: none Hold all channels from playing video until released.
PLAY RELEASE	IMPORTANT: This command must be sent to D:P:S port 1.
Release a playback waiting to start. Used for playing multiple channels at the same synchronous time. Hold first, then do the commands for playback, then do the matching release command.	<pre>Syntax: SEND_COMMAND <dev>, 'PLAY_RELEASE' Examples: SEND_COMMAND 5002:1:0, 'PLAY_RELEASE' Command Response: none</dev></pre>
	Release all channels from play hold.
RECORD Start a single or dual recording on the given streams.	<pre>IMPORTANT: Inis command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'RECORD <channel>, <vid1stream>, <aud1stream>, [<vid2stream>, <aud2stream>,] <duration>, <description>' Variables: <channel> = Number of the NVR channel to use for this recording. <vid1stream> = Stream number of first video stream to record.</vid1stream></channel></description></duration></aud2stream></vid2stream></aud1stream></vid1stream></channel></dev></pre>
	<audistream> = Stream number of first audio stream to record, or 0 to follow vid1stream. <vid2stream> = Stream number of second video stream to record. <aud2stream> = Stream number of second audio stream to record, or 0 to follow vid2stream. <duration> = Length of recording in seconds. <description> = Text of description in ASCII (NO SPACES ARE ALLOWED IN</description></duration></aud2stream></vid2stream></audistream>
	DESCRIPTION). Examples: SEND_COMMAND 5002:1:0, 'RECORD 0,123,0,600, TestRecording' Start a recording on channel 0, video and audio stream 123, for 10 minutes (600 seconds).
RECORD_STOP Stop the current recording.	<pre>IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'RECORD_STOP [<channel>]' Variables: <channel> = Number of the NVR channel to control. Use -1 or leave blank for all playing. Examples: SEND_COMMAND 5002:1:0, 'RECORD_STOP' Command Response: none Stop recording video on all channels.</channel></channel></dev></pre>

Command	Description
RECORD_CONTINUOUS Start a continuous single or dual recording on the given streams. The recording contains the last <duration> time.</duration>	<pre>IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'RECORD_CONTINUOUS <channel>, <vidlstream>, <audlstream>, [<vid2stream>, <aud2stream>,] <duration>, <description>' Variables: <channel> = Number of the NVR channel to use for this recording. <vid1stream> = Stream number of first video stream to record. <aud1stream> = Stream number of first audio stream to record, or 0 to follow vid1stream. <vid2stream> = Stream number of second video stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record, or 0 to follow vid2stream. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record, or 0 to follow vid2stream. <aud2stream> = Stream number of second solutions <aud3stream> = Stream number of second solutions <aud3stream> = Stream number of second solutions <aud3stream> = Stream> = Stream number of seconds </aud3stream></aud3stream></aud3stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></vid2stream></aud1stream></vid1stream></channel></description></duration></aud2stream></vid2stream></audlstream></vidlstream></channel></dev></pre>
RECORD_CONVERT Start a single or dual recording on the given streams and convert the recording to either MP4 or MOV (based on MPEG_MODE) afterward.	<pre>IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'RECORD_CONVERT <channel>, <vidlstream>, <audlstream>, [<vid2stream>, <aud2stream>,] <duration>, <bitrate>, <description>' Variables: <channel> = Number of the NVR channel to use for this recording. <vid1stream> = Stream number of first video stream to record. <aud1stream> = Stream number of first audio stream to record, or 0 to follow vid1stream. <vid2stream> = Stream number of second video stream to record. <aud2stream> = Stream number of second video stream to record. <aud2stream> = Stream number of second video stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream> = Stream number of second audio stream to record. <aud2stream. <="" duration=""> = Length of recording in seconds. </aud2stream.></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></aud2stream></vid2stream></aud1stream></vid1stream></channel></description></bitrate></duration> = Text of description in ASCII (NO SPACES ARE ALLOWED IN DESCRIPTION). Examples: SEND_COMMAND 5002:1:0, 'RECORD_CONVERT 0,123,0,600,0,TestRecording' Command Response: none Start a recording on channel 0, video and audio stream 123, for 10 minutes. When the recording is complete, convert the recording at the default 7.5 Mbps video bitrate. </aud2stream></vid2stream></audlstream></vidlstream></channel></dev></pre>
RECORD_HOLD Holds a channel from recording videos until a "release" command is executed. Use "stop: <channel>" to abort the hold.</channel>	IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'RECORD_HOLD [<channel>]' Variables: <channel> = Number of the NVR channel to control. Use -1 or leave blank for all playing. Examples: SEND_COMMAND 5002:1:0, 'RECORD_HOLD' Command Response: none Hold all channel from recording video until released.</channel></channel></dev>
RECORD_RELEASE Release a recording waiting to start. Used for recording multiple channels at the same synchronous time. Hold first, then do the commands for record, then do the matching release command.	IMPORTANT: This command must be sent to D:P:S port 1. Syntax: SEND_COMMAND <dev>, 'RECORD_RELEASE' Examples: SEND_COMMAND 5002:1:0, 'RECORD_RELEASE' Command Response: none Release all channels from record hold.</dev>

Command	Description
?MODE	IMPORTANT: This command must be sent to D:P:S port 1.
Query the recording and playback mode.	Syntax:
	SEND_COMMAND <dev>, '?MODE'</dev>
	<mode> = The desired recording/playback mode.
	1 = N1000 mode
	2 = N2000 mode
	3 = N3000 mode
	SEND COMMAND 5002:1:0, '?MODE'
	Command Response:
	'MODE-2'
	<mode> The recording/playback mode (1 = N1000, 2 = N2000, and 3 = N3000).
2MPEG MODE < mode>	IMPORTANT: This command must be sent to D:P:S port 1.
Query the conversion mode.	Syntax:
	SEND_COMMAND <dev>, '?MPEG_MODE'</dev>
	Examples:
	SEND_COMMAND 5002:1:0, '?MPEG_MODE'
	'MPEG MODE-mp4'
	Variables:
	<pre><mode> = The desired conversion mode. mp4 = Convert to mp4 format</mode></pre>
	mp4 = Convert to mp4 format.
	IMPORTANT: This command must be sent to D:P:S port 1
Ouery the playback channels.	Syntax:
	SEND_COMMAND <dev>, '?PLAY'</dev>
	Examples:
	SEND_COMMAND 5002:1:0, '?PLAY'
	'PLAY-100000000'
	Indicating NVR is playing on channel 1.
?PLAY_HOLD	IMPORTANT: This command must be sent to D:P:S port 1.
Query the playback channels that are in play	Syntax:
noid.	SEND_COMMAND <dev>, '?PLAY_HOLD'</dev>
	SEND COMMAND 5002:1:0, 'PLAY HOLD'
	Command Response:
	'PLAY_HOLD-100000000'
?RECORD	IMPORTANT: This command must be sent to D:P:S port 1.
Query the recording channels.	SEND COMMAND CDEVS / 2RECORD/
	Examples:
	SEND_COMMAND 5002:1:0, '?RECORD'
	Command Response:
	Indicating NVR is recording on channel 1.
2RECORD HOLD	IMPORTANT: This command must be sent to D:P:S port 1.
Query the recording channels that are in	Syntax:
record hold.	SEND_COMMAND <dev>, '?RECORD_HOLD'</dev>
	Examples:
	SEND_COMMAND 5002:1:0, '?RECORD_HOLD'
	'PLAY HOLD-1000000000'
	Indicating NVR is holding recording on channel 1.

Audio over IP Transceiver Commands

The following section provides information on native and string commands for the N-Series Audio over IP Transceiver (ATC) as related to NetLinx management.

Command	Description
CO <stream></stream>	IMPORTANT: This command must be sent to D:P:S port 1.
Set the current output audio stream number.	<pre>Syntax: SEND_COMMAND <dev>, 'CO <stream>' Variables:</stream></dev></pre>
	<pre><stream> = the target stream number from 1 to 32767 Examples: SEND_COMMAND 5002:1:0, 'CO 2' Command the ATC to transmit audie on stream 2</stream></pre>
CA <stream> Set the current input audio stream number.</stream>	Syntax: SEND_COMMAND <dev>, 'CA <stream>' Variables: <stream> = The target stream number from 1 to 32767. Examples:</stream></stream></dev>
	SEND_COMMAND 5002:1:0, 'CA 2' Command the ATC to receive audio stream 2.
	IMPORTANT: This command must be sent to D:P:S port 1
Set the audio mute.	Syntax: SEND_COMMAND <dev>, 'AUDOUT_MUTE-<enable disable>' Variables: ENABLE = Enables audio mute. DISABLE = Disables audio mute. Examples: SEND_COMMAND 5002:1:0, 'AUDOUT_MUTE-ENABLE' Enables audio mute.</enable disable></dev>
REBOOT Reboot the device.	Syntax: SEND_COMMAND <dev>, 'REBOOT' Variables: None Examples: SEND_COMMAND 5002:1:0, 'REBOOT' Reboots the device.</dev>
?AUDOUT_OUTPUT Request the current output audio stream number.	Syntax: SEND_COMMAND <dev>, '?AUDOUT_OUTPUT' Examples: SEND_COMMAND 5002:1:0, '?AUDOUT_OUTPUT' Command Response: 'AUDIN_OUTPUT-123'</dev>
?AUDIN_INPUT Request the current input audio stream number.	Syntax: SEND_COMMAND <dev>, '?AUDIN_INPUT' Examples: SEND_COMMAND 5002:1:0, '?AUDIN_INPUT' Command Response: 'AUDIN_INPUT-124'</dev>
?AUDOUT_MUTE Request the state of the audio mute.	Syntax: SEND_COMMAND <dev>, '?AUDOUT_MUTE' Examples: SEND_COMMAND 5002:1:0, '?AUDOUT_MUTE' Command Response: 'AUDOUT_MUTE-ENABLE'</dev>

Pass Through Commands Port 1

For other commands, the NetLinx String command will interpret any existing N-Series API command. For example, to set the ATC's master volume level for the right channel to 50, send the following string command: SEND STRING 5002:1:0, 'mastervolright:50'

For more information, refer to the API documentation for the N4321.

N-Command

Pass Through Commands Port 1

The NetLinx String command will interpret any existing N-Series N-Command API command. For example, to switch the output stream to 30 of a decoder at IP address 169.254.22.30, send the following string command: SEND_STRING 5002:1:0, 'switch 169.254.22.30 25'

For more information, refer to the API documentation of N-Command.



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