

Presentation Switchers

NHD-SW-0501 | SW-0501-HDBT | SW-1001-HDBT

Application Programming Interface

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1. Overview

The following document contains the Application Program Interface (API) commands to control an NHD-SW-0501, SW-0501-HDBT or SW-1001-HDBT presentation switcher via serial and IP commands. Read this document in its entirety before starting any communication with the product.

Note: This document is intended to provide the information required to control a configured and installed Presentation Switcher. Configure and install the switcher before performing the steps contained in this document.

1.1 Before You Begin

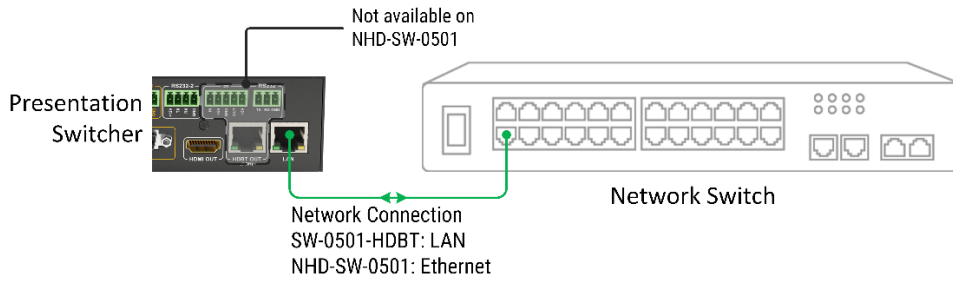
Verify that the following items are on hand and that all documentation is reviewed before continuing.

- NHD-SW-0501, SW-0501-HDBT or SW-1001-HDBT
- Control System and Control System Documentation
- PC or Mac for Configuring Product and Telnet Communications
- Network Connection with Network Passwords
- Visit the Product Page on WyreStorm.com to download firmware and additional product information

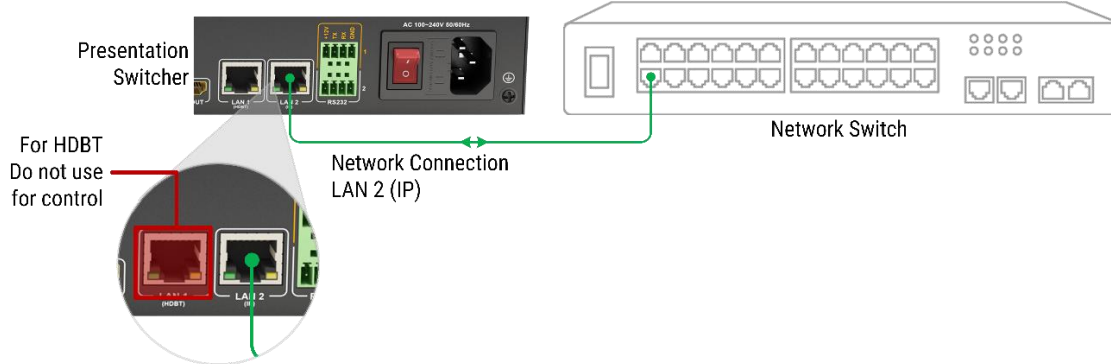
2. Network Connections for IP Control

The network connections on the switchers vary from model to model and some have additional ports that are used for other purposes. Connection the switcher to a network using the appropriate ports as defined below.

SW-0501-HDBT and NHD-SW-0501 Network Connection



SW-1001-HDBT Network Connection



3. RS-232 Connections

WyreStorm recommends that all wiring for the installation is run and terminated prior to making connections to the switcher. Read through this section in its entirety before running or terminating the wires to ensure proper operation and to avoid damaging equipment.

The following wiring diagrams show the pinouts for the switcher. While not shown, connect the TX (transmit) to RX (receive) pins at the control system or PC side of the cable. Most control systems and computers are configured for Digital Terminal Equipment (DTE) where pin 2 is RX and pin 3 is TX. This can vary from device to device, refer to the documentation for the connected device for pin functionality to ensure that the correct connections can be made.

The RS-232 connections vary based on the product and the type of control that is being used. Follow each sub section below based on the product and type of control being used.

Switcher Control Ports

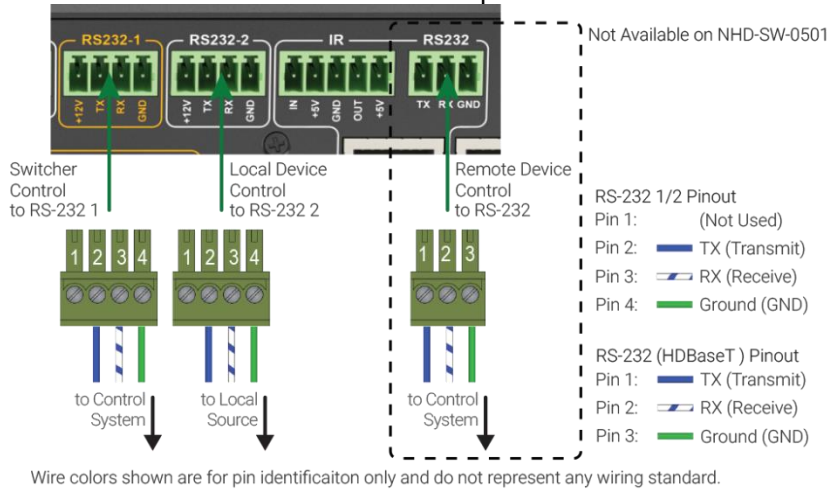
- RS-232 1 - Control of the switcher using a 4-pin phoenix connector.
- RS-232 2 - Control of local devices using a 4-pin phoenix connector.
- RS-232 (SW-0501-HDBT and SW-1001-HDBT only)- Control of devices in a remote location by sending control signals via HDBaseT using a 3-pin phoenix connector.

1.3 Simple Method - Individual Ports for Switcher and Device Control

This is the preferred method for switcher, local, and remote device control when there are multiple ports available on the control system.

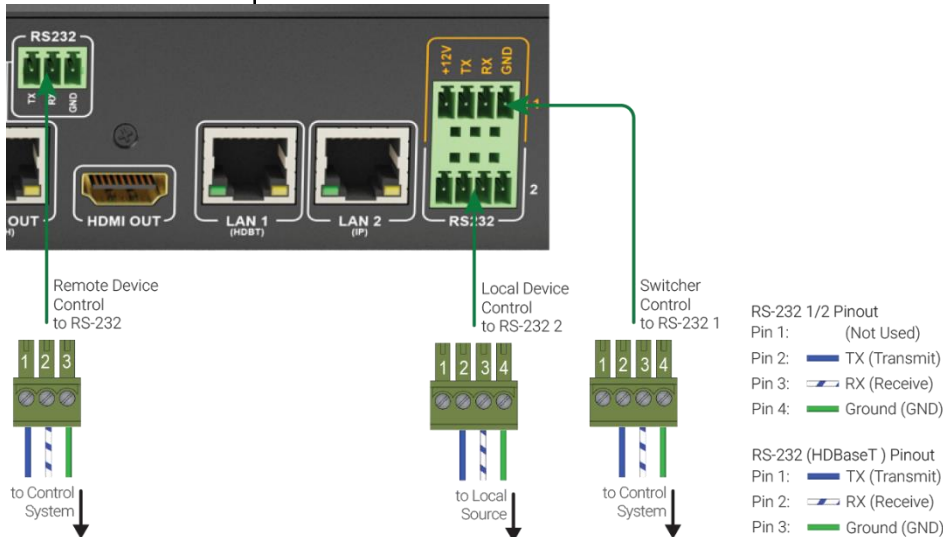
Use **Complex Method - Shared Port for Switcher and Remote Device Control** to control the switcher and remote devices via a single RS-232 port on the control system.

NHD-SW-0501 and SW-0501-HDBT Simple Method



Wire colors shown are for pin identification only and do not represent any wiring standard.

SW-1001-HDBT Simple Method



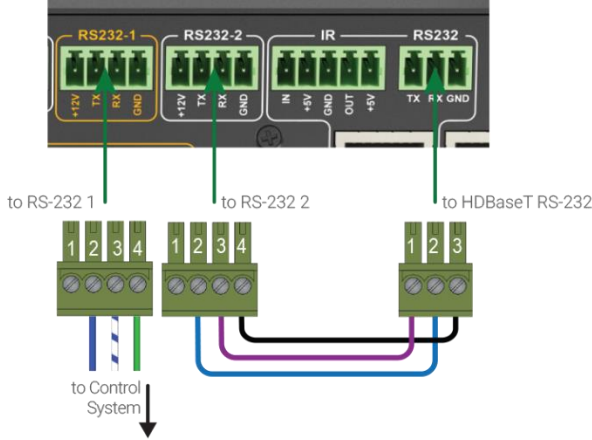
Wire colors shown are for pin identification only and do not represent any wiring standard.

2.3 Complex Method - Shared Port for Switcher and Remote Device Control

Use this method for switcher and remote device control when there is a single port available on the control system. This method can only be used if the switcher will not be controlling a local device using RS-232 2 as the port will be used to jump the signal to the HDBaseT RS-232. Note that this method is not applicable for the NHD-SW-0501 as there is no port for remote device control.

Use [Simple Method - Individual Ports for Switcher and Device Control](#) to control the switcher, local, and remote devices via multiple RS-232 ports on the control system.

SW-0501-HDBT Single Control System Port

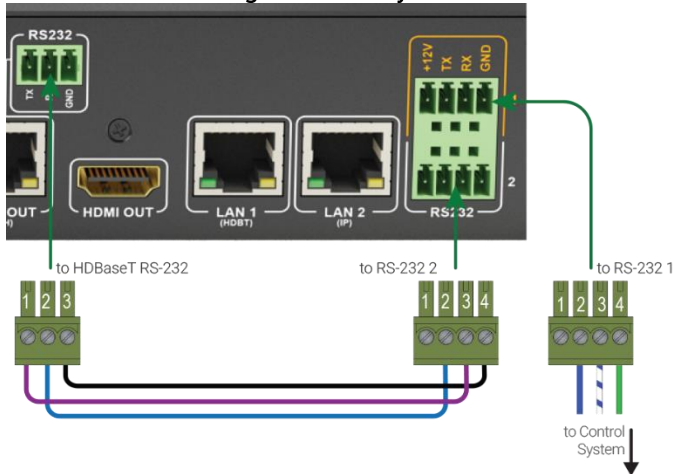


RS-232 1 Pinout
 Pin 1: (Not Used)
 Pin 2: TX (Transmit)
 Pin 3: RX (Receive)
 Pin 4: Ground (GND)

Jumper Pinout
 4-pin Connector
 Pin 1: (Not Used)
 Pin 2: TX (Transmit) to Pin 2: RX (Receive)
 Pin 3: RX (Receive) to Pin 1: TX (Transmit)
 Pin 4: Ground (GND) to Pin 3: Ground (GND)

Wire colors shown are for pin identification only and do not represent any wiring standard.

SW-1001-HDBT Single Control System Port



Jumper Pinout
 4-pin Connector
 Pin 1: (Not Used)
 Pin 2: TX (Transmit) to Pin 2: RX (Receive)
 Pin 3: RX (Receive) to Pin 1: TX (Transmit)
 Pin 4: Ground (GND) to Pin 3: Ground (GND)

RS-232 1 Pinout
 Pin 1: (Not Used)
 Pin 2: TX (Transmit)
 Pin 3: RX (Receive)
 Pin 4: Ground (GND)

Wire colors shown are for pin identification only and do not represent any wiring standard.

4. Communication Configuration

The following settings will allow for proper communication with the unit to ensure access. Configure these settings before attempting to communicate with the unit.

1.4 Communicating via RS-232

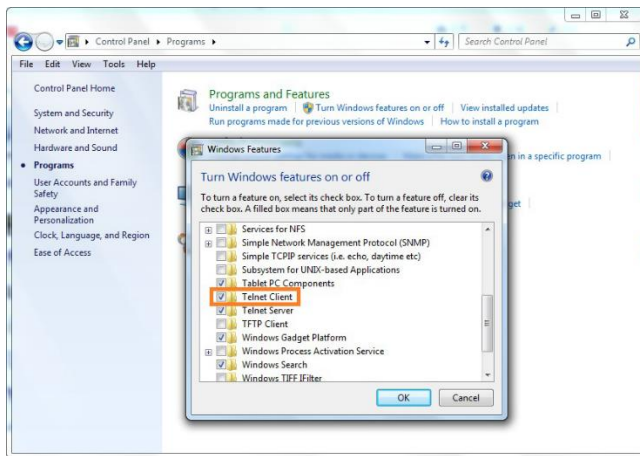
Baud Rate:	9600
Parity:	None
Data Bit:	8
Stop Bit:	1

2.4 Communicating via IP

Enabling Telnet Client in the PC

By default, the Telnet client is disabled within Windows. Follow the steps below to enable the Telnet client.

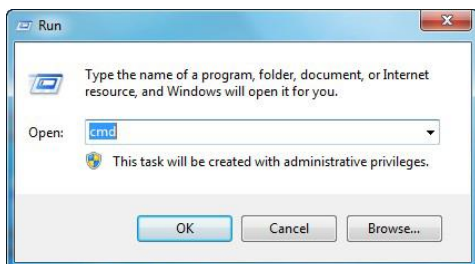
1. Navigate to: Control Panel > Programs.
2. In Programs and Features area box, click Turn Windows features on or off.
3. In the Windows Features dialog box, select the Telnet Client check box.



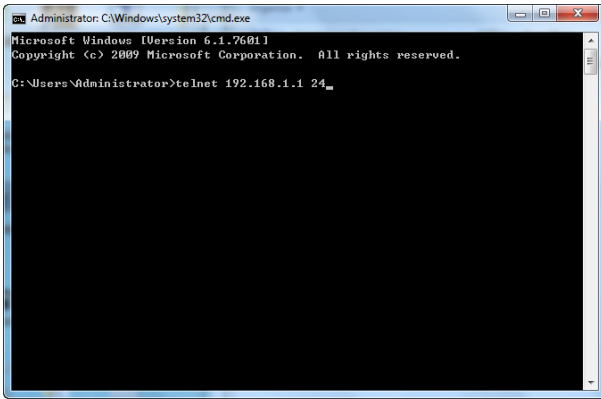
Logging into the Switcher

The switcher is accessed via a command-line (CMD). The following steps are specific to Windows 7, actual path to the command line may vary based on operating system.

1. Navigate to: Start > Run.
2. In the Run dialog box, enter cmd then click OK.



3. Enter telnet 192.168.1.1 24 if the switchers IP address is 192.168.1.1, and then press Enter.



4. Enter user name root and press Enter. When the following screen information appears, connection to switcher is successful. API commands to control the switcher may be entered in the command-line interface.

5. Commands Strings

While the commands below will control an NHD-SW-0501 they do not provide the selection of the switcher for NetworkHD decoders. Refer to the [NetworkHD 100-200 Series API](#) for commands to select the NHD-SW-0501 as a source on a decoder.

1.5 Source Switching Commands

Source Selection (Source Connections)

Syntax:	gbconfig --source-select [Source]
Description:	Switches one input to all outputs.
Accepted Values:	SW-0501-HDBT/NHD-SW-0501: HDMI1 HDMI2 HDMI3 HDMI4 VGA1 NULL SW-1001-HDBT: HDMI1 HDMI2 HDMI3 HDMI4 HDMI5 HDMI6 DP VGA1 VGA2 HDBT
Example Command:	gbconfig --source-select HDMI3
Response:	none

ScreenLink Start Page

Note: ScreenLink is not available on the SW-1001-HDBT and was added to the SW-0501-HDBT. Ensure that the latest version of firmware is installed before using this command. Refer to the [ScreenLink Installation App Note](#) for details.

Syntax:	gbset vi NULL
Description:	Switches to the ScreenLink start page.
Accepted Values:	n/a
Example Command:	gbset vi NULL
Response:	none

Query Current Source

Syntax:	gbconfig --show --source-select
Description:	Obtains the current input selected.
Returned Values:	SW-0501-HDBT/NHD-SW-0501: HDMI1 HDMI2 HDMI3 HDMI4 VGA1 NULL ScreenLink SW-1001-HDBT: HDMI1 HDMI2 HDMI3 HDMI4 HDMI5 HDMI6 DP VGA1 VGA2 HDBT Note: Each value will be followed by a Y (Active) or N (inactive)
Example Command:	gbconfig --show --source-select
Response:	Currently selected source Example: HDMI3 Y

2.5 Audio Commands

Set Audio Output Volume Level (Discrete)

Syntax:	<code>gbconfig --line-out=1 --level-control=[Value]</code>
Description:	Sets the volume level of AUDIO OUT port.
Accepted Values:	-100 to 12
Example Command:	<code>gbconfig --line-out=1 --level-control=-56</code>
Response:	none

Increase Volume Level

Syntax:	<code>gbconfig --line-out=1 --level-up</code>
Description:	Increases volume by a single step
Accepted Values:	NA
Example Command:	<code>gbconfig --line-out=1 --level-up</code>
Response:	none

Decrease Volume Level

Syntax:	<code>gbconfig --line-out=1 --level-down</code>
Description:	Decreases volume by a single step
Accepted Values:	NA
Example Command:	<code>gbconfig --line-out=1 --level-down</code>
Response:	none

Set Audio Output Volume Level (Incremental)

Note: SW-0501-HDBT and NHD-SW-0501 Only

Syntax:	<code>gbconfig --line-out=1 --level-[Value]</code>
Description:	Sets the volume level of AUDIO OUT port.
Accepted Values:	up down
Example Command:	<code>gbconfig --line-out=1 --level-up</code>
Response:	none

Query Audio Output Volume Level

Syntax:	<code>gbconfig --show --line-out=1 --level-control</code>
Description:	Obtains the current volume level of AUDIO OUT port.
Accepted Values:	
Example Command:	<code>gbconfig --show --line-out=1 --level-control</code>
Response:	Current volume level. Example -56

Mute Audio Output

Syntax:	<code>gbconfig --line-out=1 --mute=[Value]</code>
Description:	Mutes or unmutes the output of AUDIO OUT port.
Accepted Values:	Y: Audio output muted N: Audio output unmuted
Example Command:	<code>gbconfig --line-out=1 --mute=y</code>
Response:	none

Query Audio Output Mute State

Syntax:	<code>gbconfig --show --line-out=1 --mute</code>
Description:	Queries that the output of AUDIO OUT port is muted or not.
Accepted Values:	n/a
Example Command:	<code>gbconfig --show --line-out=1 --mute</code>
Response:	Y: Audio output muted N: Audio output unmuted

Link Audio In to Video Input

Syntax:	<code>gbconfig --audio-in-bind=[Source]</code>
Description:	Links audio from the audio in with video from a designated video input.
Accepted Values:	HDMI1 HDMI2 HDMI3 HDMI4 VGA1 NULL ScreenLink
Example Command:	<code>gbconfig --audio-in-bind=HDMI2</code>
Response:	None

Query Audio In link to Video Input

Syntax:	<code>gbconfig --show --audio-in-bind</code>
Description:	Queries that the output of AUDIO OUT port is muted or not.
Accepted Values:	HDMI1 HDMI2 HDMI3 HDMI4 VGA1 NULL ScreenLink
Example Command:	<code>gbconfig --show --audio-in-bind</code>
Response:	Returns the source as defined in Accepted Values. Example: HDMI2

6. Video Commands

Configure Video Output Resolution

Syntax:	gbset fvo [Value]
Description:	Sets a desired resolution for HDMI and HDBT outputs.
Accepted Values:	AUTO 1080P_60 1080P_50 1080P_30 1080P_25 1080P_24 720P_60 720P_50 576P_50 480P_60 640X480_60 800X600_60 1024X768_60 1280X720_60 1280X768_60 1280X800_60 1280X1024_60 1366X768_60 1440X900_60 1600X1200_60 1680X1050_60 1920X1080_60 1920X1200_60
Example Command:	gbset fvo 1920X1080_60
Response:	none

Query Video Output Resolution

Syntax:	gbget fvo
Description:	Obtains the resolution set for HDMI and HDBT outputs.
Accepted Values:	gbget fvo
Example Command:	[Value]=Output Resolution Example: 1920X1080_60
Response:	See Query Audio Output Mute State for details.

7. Control Commands

Power On (Wake Up) CEC Enabled Device

Syntax:	e e_cec_one_touch_play
Description:	Wakes up a CEC-enabled device such as a display device connected through HDMI or HDBT port.
Accepted Values:	
Example Command:	e e_cec_one_touch_play
Response:	none

Power Off (Sleep) CEC Enabled Device

Syntax:	e e_cec_system_standby
Description:	Makes a CEC-enabled device such as a display device connected through HDMI or HDBT port enter standby mode.
Accepted Values:	
Example Command:	e e_cec_system_standby
Response:	none

Enable/Disable Auto Switching

Syntax:	gbconfig --plug-detect=[Value]
Description:	Enables or disables auto switching.
Accepted Values:	Y : Auto switching enabled N : Auto switching disabled
Example Command:	gbconfig --plug-detect=y
Response:	none

Query Auto Switching State (Enabled/Disabled)

Syntax:	gbconfig --show --plug-detect
Description:	Queries that auto switch is enabled or disabled.
Accepted Values:	
Example Command:	gbconfig --show --plug-detect
Response:	Y : Auto switching enabled N : Auto switching disabled

Switcher Reboot

Syntax:	reboot
Description:	Reboots the switcher.
Accepted Values:	n/a

Example Command:	reboot
Response:	none

Restore Factory Defaults

Syntax:	reset_to_default.sh
Description:	Restores SWITCHER to its factory defaults. Note: The switcher requires a manual reboot (cycle power) after restoring defaults.
Accepted Values:	
Example Command:	reset_to_default.sh
Response:	none

3rd Party Device Control (RS-232 2 Port)

Syntax:	<code>soip2 -f /dev/ttyS0 -b PARAM [-r] [-H] -s "CONTENT"</code>
Description:	Controls a third party serial device connected to RS232-2 port.
Accepted Values:	<p>-f: sets serial device file which is /dev/ttyS0 and cannot be changed.</p> <p>-b: sets the serial parameters like 115200-8n1 according to a controlled third party serial device and replace PARAM with them.</p> <p>115200-8n1 contains the following parts:</p> <p>Baud Rate: 115200 bps (115200 for short), chosen from 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600 or 115200</p> <p>Data Bits: 8 bits (8 for short), chosen from 5, 6, 7 or 8</p> <p>Parity: None (n for short), chosen from n (None), e (Even) or o (Odd)</p> <p>Stop Bits: 1 (1 for short), chosen from 1 or 2</p> <p>[-r]: automatically adds a carriage return in the end of this command for execution. Used if needed.</p> <p>[-H]: indicates CONTENT are equivalent hexadecimal representations of a command of a controlled third party device. Used if needed. For details, see -s below.</p> <p>-s: sends a command to a controlled third party device for controlling it. If -H is not added, the command of a controlled third party device must be printable ASCII characters and it will be passed through to the third party device. In this case, you need to replace CONTENT with this command. If -H is added, the command of a controlled third party device must be converted to its equivalent hexadecimal representations and replace CONTENT.</p> <p>Double quotation marks must be used to include CONTENT. Otherwise, spaces cannot be recognized by switcher.</p>
Example Command:	<code>soip2 -f /dev/ttyS0 -b 115200-8n1 -r -H -s "10 00 02 00 03 91 01 00 01 EF EF 08 01 05 01 01 FF 03 F0 00 00 00 00 00 00 00 00 00 00 00 17"</code>
Response:	none

8. Contacting Support

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Email: Support@WyreStorm.com

On Line Chat (Accessible through website): <http://WyreStorm.com/Contact-Tech-Support>

9. Revision History

Section	Update
v3.2.0- 180618 June 2018 (Support for v3.2.0 or Higher)	
Source Selection Command	Source Selection - Added NULL as a value for selection to allow for selecting a blank screen. Query Current Source - Added NULL and ScreenLink as returned values and active/inactive status of the connection. Requires v3,2.0 or higher.
Audio Commands	Added Increase and Decrease volume commands. Added Link Audio In to Video and Query Audio In link to Video. Requires v3,2.0 or higher.
v1.1 – 180327 – March 2018	
Various	Added NHD-SW-0501 as supported product.
2.5 Audio Commands	Added Set Audio Output Volume Level (Incremental) Command
1.5 Source Switching Commands	Added ScreenLink Start Page
v1.0 - 151021-1044 - October 2016	
All	Original Release

Publication Disclaimer

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