

**!** WyreStorm recommends reading through this document in its entirety to become familiar with the product's features prior to starting the installation process.

NETWORK HD HDMI® PoE HDCP

### **!** IMPORTANT! Installation Requirements

### WyreStorm Documentation and Firmware

Download the following items from the product page on WyreStorm.com. They are essential for accurate configuration and use of the NetworkHD system.

- Latest NetworkHD Firmware
- Management Suite v1.1.0 or Higher
- NetworkHD Installation Guide
- NetworkHD Switch Recommendations
- NetworkHD Switch Configuration Guides
- NetworkHD Switch Mapping Worksheet
- NetworkHD Touch Installation Guide
- NetworkHD Touch User Guide
- 3rd Party Control System Drivers

### Installation and Configuration

- Verify that all NHD devices contain the latest version of firmware. This will ensure that all devices are up to date and working at their highest performance level.

- NetworkHD uses AutoIP to assign IP addresses in the range of 169.254.x.x out of the box. Set the PC being used for configuration to an address in this range prior to starting the configuration process.
- WyreStorm recommends the use of the NHD-000-RACK for installations containing multiple NetworkHD devices. Use of this product provides an enclosure to mount and secure all NetworkHD devices in a rack.

### Network Switch Requirements

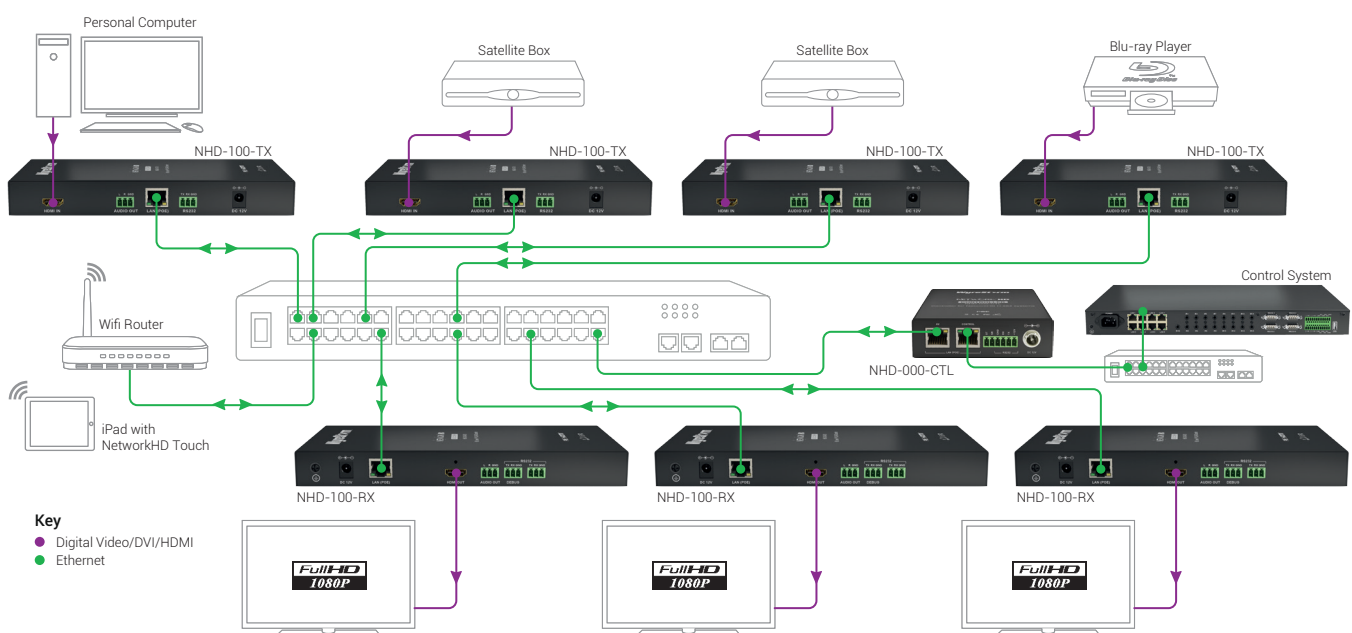
- WyreStorm highly recommends the use of switches listed in the [NetworkHD Switch Recommendation Guide](#). These switches have been verified by WyreStorm to meet the requirements of a NetworkHD system.
- NetworkHD requires a Layer 2 managed switch network with support for Multicast & IGMP snooping enabled. Ensure that the switch being used supports these features and that they are configured prior to connecting the NetworkHD system.
- Configure all network switches to the exact specifications contained in the WyreStorm Switch Configurations Guides prior to connecting the NetworkHD system. This will ensure proper operation from startup.

### In The Box

- 1x NHD-100-TX or NHD-100-RX
- 1x 12v DC 1A. Power Supply
- 3x 3-pin Phoenix Connector

- 2x Mounting Ears
- 1x Quickstart Guide (This Document)

### Basic Wiring Diagram



## Wiring and 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 this entirety before running or terminating the wires to ensure proper operation and to avoid damaging equipment.

### IMPORTANT! Wiring Guidelines

- The use of patch panels, wall plates, cable extenders, kinks in cables, and electrical or environmental interference will have an adverse effect on HDMI and Ethernet transmission limiting performance. Steps should be taken to minimize or remove these factors completely during installation for best results.
- WyreStorm recommends using high quality HDMI cables such as WyreStorm Express to ensure the highest content performance available.
- The type of category cable and length used can restrict the available video resolution. While Cat5e can be used, WyreStorm recommends using Cat6 or higher to ensure the highest content performance available. See **Video Resolutions** in the **Specifications** table before determining cable type and length.

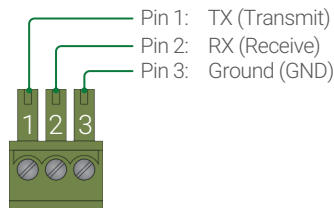
Ethernet Cable Performance Guide										NHD-100 Series		
0m	10m	20m	30m	40m	50m	60m	70m	80m	90m	100m		
0ft	32ft	65ft	98ft	131ft	164ft	197ft	230ft	262ft	295ft	328ft		

## HDMI Wiring

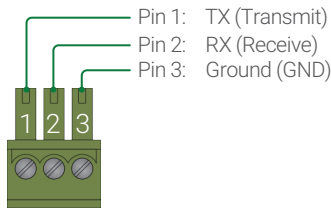
WyreStorm recommends using pre-terminated HDMI cables due to the complexity of these connector types. Using pre-terminated cables will ensure that these connections are accurate and will not interfere with the performance of the product.

## RS-232 Wiring

Most control systems and computers are DTE where pin 2 is RX, 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.



## Audio Wiring



## Setup and Configuration

### **IMPORTANT! Installation Guidelines**

- Do not connect the power supply or power on the PoE switch until all NetworkHD devices are connected to the network switch.
- NetworkHD uses AutoIP to assign IP addresses in the range of 169.254.x.x out of the box. Set the PC being used for configuration to an address in this range prior to starting the configuration process.
- In order for NetworkHD encoders and decoders to be controlled by the NHD-000-CTL, the AV port on the CTL MUST be connected to the same LAN/VLAN as the NHD encoders and decoders.
- In order for the devices in the system to be controlled via a 3rd party controller, the CONTROL port MUST be connected to the same LAN/VLAN as the control system.
- The NHD-000-CTL's two Ethernet ports are designed to be used in different Networks or VLANs. When using a single Network or VLAN for example when using NetworkHD Touch – do not connect both ports – only use the AV port of the CTL.

## Installation and Connections

1. Install NHD devices to allow airflow through the product, for encoders it is recommended to use the NHD-000-RACK. The install location should be dry, well ventilated, and out of direct sunlight.
2. Connect sources to the NetworkHD encoders using an HDMI cable from a quality brand such as [WyreStorm Express](#) ensuring a firm port connection.
3. Connect the HDMI display to the NetworkHD decoders using an HDMI cable from a quality brand such as [WyreStorm Express](#) ensuring a firm port connection.
4. Connect NetworkHD encoders, decoders, and CTL to the network switch using well terminated and tested category cable of no more than 100m/328ft.
5. Connect the decoders RS-232 port to the display following the pinout in the [RS-232 Wiring](#) section.
6. Connect the Audio Out to an amplifier with analog audio in following the pinout in the [Audio Wiring](#) section.

 Download the **NetworkHD Switch Mapping Worksheet** from any NetworkHD product page to keep track of Mac addresses, device and alias names for later reference. This will aid in any reconfiguration or troubleshooting.

## NetworkHD 000 Series Console Configuration

In addition to the steps below more information on configuration can be found in the [NetworkHD 100-200-400 Series Installation Guide](#).

1. Connect a PC to the same LAN/VLAN as the NetworkHD components and ensure it is within the same subnet/IP range as the components default 169.254.x.x IP addresses. The NHD-000-CTL is set to a static address of 169.254.1.1 by default – do not choose this address for your PC.
2. Power **On** the NHD devices by connecting the included power supplies to the **Power Input** or by powering **On** the PoE switch.
3. Open the WyreStorm Management Suite (Available from the [WyreStorm](#) website) and launch the **NetworkHD 000 Series Console** and press **Search**.

**Note:** If a no devices are discovered, verify that the CTL and PC are on the same LAN/VLAN and that the IP address of the PC is within the same subnet/IP range as the CTLs default 192.168.11.243 IP address and disable or create an exception for the **NetworkHD Console** in the **Windows Firewall**.

4. Configure the system as per the instructions in the User Reference Guide (Available from the NHD-100-TX/RX Product Pages.) Right Click on the NHD-100-TX/RX to see its available options, including setting the devices IP address and setting an Alias name. You will also find other configuration options under the **Batch Settings** window.

**Note:** If a 3rd Party control system with a WyreStorm driver for NetworkHD is going to be used, the encoders must use the names Input1, Input2, etc. This also applies to decoders, Output1, Output2, etc.

5. Upload to the configuration to the NHD-000-CTL by right clicking the CTL in the **Other Devices** section and selecting Upload.
6. Configure the scaling, HDCP values of each decoder based on the requirements of the content and display using the **H.264** settings found in the Video tab in the **Batch Settings** screen.

## Using NetworkHD

### NetworkHD Touch

1. For fast and easy switching of encoders to decoders download and install NetworkHD Touch on an iPad from the [App Store](#). This award winning app provide one touch operation to send the output of a source to a display or video wall and does not require an external control system.
2. Refer to the [NetworkHD Touch Installation Guide](#) for configuration located on [wyrestorm.com](#) for operation once installed.


### Enado or 3rd Party Control Systems

1. In addition to NetworkHD Touch for one touch switching an Enado or 3rd party control system expands the capability of the system by providing control of sources for changing channels or switching inputs. Control of sources using an Enado is easily accessible right from the NetworkHD Touch app.
2. Enado templates are downloadable from within the configuration and 3rd party drivers for popular control system are available on [wyrestorm.com](#).

## Specifications

Audio and Video	
<b>Inputs</b>	TX: 1x HDMI In 19-pin HDMI type A female RX: 1x LAN (PoE) 8-pin RJ-45 female   10/100Base-T
<b>Outputs</b>	TX: 1x LAN (PoE) 8-pin RJ-45 female   10/100Base-T RX: 1x HDMI Out 19-pin HDMI type A female TX/RX: 1x Audio Out: 3-pin Phoenix
<b>Output Video Encoding</b>	H.264/MPEG-4 AVC
<b>Encoding Data Rate</b>	2~30Mb/s
<b>End to End Latency</b>	60~90 ms (Low latency mode)   250~300 ms (High quality mode)
<b>Audio Formats</b>	2ch PCM
<b>Video Resolutions (Max)</b>	<b>Note:</b> Interlaced content at any resolution is not supported, all source content must be progressive. TX: HDMI: 1920x1200p @60Hz 8bit (15m/50ft)   Cat6/6a/7: 1920x1200p @60Hz 8bit (100m/328ft Point to Point) <b>Note:</b> The v2 of the NHD-100-RX cannot support resolutions higher than 1920x1080p @60Hz. RX: HDMI: 1920x1080p @60Hz 8bit (15m/50ft)   Cat6/6a/7: 1920x1080p @60Hz 8bit (100m/328ft Point to Point)
<b>Color Depth</b>	8bit
<b>Maximum Pixel Clock</b>	150MHz
Communication and Control	
<b>HDMI</b>	HDMI   HDCP 1.4
<b>Ethernet</b>	1x 8-pin RJ-45 female   10/100Base-T   PoE
<b>RS-232</b>	1x RS-232: 3-pin Phoenix
Power	
<b>Power Supply</b>	12V DC 1A
<b>PoE</b>	IEEE 802.3af   12V 1A 12.95W
<b>Max Power Consumption</b>	6W (DC adapter)
Environmental	
<b>Operating Temperature</b>	32°F ~ 113°F (0°C ~ 45°C)   10% ~ 90%, non-condensing
<b>Storage Temperature</b>	-4°F to ~ 158°F (-20°C ~ +70°C)   10% ~ 90%, non-condensing
<b>Maximum BTU</b>	20.47 BTU/hr
Dimensions and Weight	
<b>Rack Units/Wall Box</b>	<1U
<b>Height</b>	25mm/0.98in
<b>Width</b>	200mm/7.87
<b>Depth</b>	94mm/3.7in
<b>Weight</b>	0.6kg/1.32lbs
Regulatory	
<b>Safety and Emission</b>	CE   FCC   RoHS

## Troubleshooting

 Verify that all NHD devices contain the latest version of firmware. This will ensure that all devices are up to date and working at their highest performance level.

### NetworkHD Software fails to locate TX/RX/CTL Devices

- Verify that all NHD and Network devices are powered On.
- Adjust Windows Firewall Settings – Create an exception for Configuration Tool for WyreStorm NetworkHD 000 Series or disable completely.
- Verify that the PC, the CTL, and NHD encoders and decoders are on the same LAN/VLAN.
- Verify that all network switches share the same VLAN configuration.
- Reboot all components including the NHD-000-CTL and the PC/Mac.
- Ensure that only one CTL port is connected per LAN/VLAN. If only one LAN/VLAN exists only use the AV port.
- Ensure the network switch is fully configured per the appropriate switch configuration guide.

## Warranty Information

This product is covered by a 3 year limited parts and labor warranty. During this period there will be no charge for unit repair, component replacement or complete product replacement in the event of malfunction. The decision to repair or replace will be made by the manufacturer. This limited warranty only covers defects in materials or workmanship and excludes normal wear and tear or cosmetic damage. Visit the product page located at [wyrestorm.com](http://wyrestorm.com) for additional information on this product including important technical information not provided in this document and warranty terms & conditions.

