

# 4K60 4:4:4 10GbE SDVoE Transceiver w/ PoE+, Video Wall, Multiview Processing & USB

**NHD-600-TRX**



## Quickstart Guide

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



### **IMPORTANT! Installation Requirements**

#### **WyreStorm Documentation and Firmware**

Download the following items from the product page on [wyrestorm.com](http://wyrestorm.com). They are essential for accurate configuration and use of the NetworkHD system.

- Latest NetworkHD Firmware
- Management Suite v1.9 or Higher
- NetworkHD Installation Guide
- NetworkHD Technical Reference Guide
- NetworkHD Certified Switches
- NetworkHD Switch Configuration Guides
- NetworkHD Switch Mapping Worksheet
- 3rd Party Control System Drivers

#### **Network Switch Requirements**

- WyreStorm highly recommends the use of switches listed in the NetworkHD Certified Switches. These switches have been verified by WyreStorm to meet the requirements of a NetworkHD system.
- NetworkHD requires a Layer 2+ / Layer 3 managed switch network with support for Multicast & IGMP Snooping. 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.

#### **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! Installation Requirements**

- The use of patch panels, wall plates, cable extenders, kinks in cables, and electrical or environmental interference will have an adverse effect on signal transmission which may limit performance. Steps should be taken to minimize or remove these factors completely during installation for best results.
- WyreStorm recommends using pre-terminated HDMI and DP 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.

#### **LAN Port Wiring**

The NetworkHD Series LAN port is a 1GbE link for connection to a 1000BASE-T Ethernet device port. Refer to IEEE 802.3ab for official guidance on the Ethernet link. Cables must be tested to 100MHz across the entire link. 1000BASE-T uses the IEC 60603-7 8P8C modular connector.

#### **HDMI/DVI Wiring**

WyreStorm recommends using pre-terminated HDMI and DVI 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.

#### **Warranty Information**

WyreStorm Technologies LLC warrants that its products to be free from defects in material and workmanship under normal use for a period of five (5) years from the date of purchase. Refer to the Product Warranty page on [wyrestorm.com](http://wyrestorm.com) for more details on our limited product warranty.



## RS-232 Wiring

The NetworkHD devices use a 3-pin or a 4-pin phoenix with no hardware flow control. 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.

	WyreStorm Connector		3rd Party Device
	Pin 1	TX (Transmit)	---> To ---> RX (Receive)
	Pin 2	RX (Receive)	---> To ---> TX (Transmit)
	Pin 3	G (Ground)	---> To ---> G (Ground)

## IR TX/RX Guidelines

- Using WyreStorm infrared emitters and receivers is the best way to ensure that most IR coding formats are transmitted and received by the NetworkHD system. Other 3rd party emitters and receivers can be used; however, these devices must operate in the same manner as the WyreStorm devices.
- Due to differences in IR across 3rd party control systems their IR ports should never be connected directly to a NetworkHD system as an incompatibility may exist. WyreStorm offers a cable that compensates for voltage differences as well adjusts for differences in the pins used within the port. Refer to the [CAB-IR-LINK](#) product page for more information.

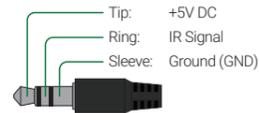
### IR TX Port Pinout

Connection for IR TX (transmit) uses a 3.5mm (1/8in) mono plug.



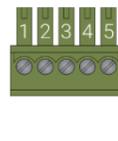
### IR RX Port Pinout

Connection for IR RX (receive) uses a 3.5mm (1/8in) stereo jack that outputs +5V DC to power the included IR receiver.



## Audio Wiring

NetworkHD uses three different audio outputs. A 3.5mm (1/8in) TRS Stereo Jack audio connection, a 3-pin phoenix unbalanced audio connection and a 5-pin phoenix balanced audio connection.

	WyreStorm Connector		3rd Party Device
	Pin 1	Left Positive (L+)	---> To ---> Left Positive (L+)
	Pin 2	Left Negative (L-)	---> To ---> Left Negative (L-)
	Pin 3	Ground (G)	---> To ---> Ground (G)
	Pin 4	Right Negative (R-)	---> To ---> Right Negative (R-)
	Pin 5	Right Positive (R+)	---> To ---> Right Positive (R+)

## Setup and Configuration

### ⚠ IMPORTANT! Installation Requirements

- Do not connect the power supply until all NetworkHD devices are connected to the network switch.
- NetworkHD Series uses DHCP to assign IP addresses by default. In the absence of a DHCP server an AutoIP address will be assigned in the subnet 169.254.0.0/16. Ensure the PC being used for configuration obtains an IP via DHCP or is set to an address in the AutoIP range prior to starting the configuration process.
- In order to configure the NetworkHD encoders and decoders, the AV port on the NHD-000-CTL MUST be connected to the same LAN/VLAN and Subnet as the NetworkHD encoders and decoders.
- In order for the devices in the system to be controlled via a 3rd party controller on a different VLAN, the CONTROL port MUST be connected to the same LAN/VLAN and Subnet 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

- Install NetworkHD devices to allow airflow through the product - WyreStorm recommends using the NetworkHD rack mounts. The install location should be dry, well ventilated and guaranteed to maintain the mandatory operating temperature range of the product.
- Connect sources to the NetworkHD encoders using a DisplayPort or HDMI cable from a quality brand such as WyreStorm Essentials ensuring a firm port connection.
- Connect the HDMI display to the NetworkHD decoders using an HDMI cable from a quality brand such as WyreStorm Essentials ensuring a firm port connection.
- Connect NetworkHD encoders, decoders, and CTL to the network switch using well terminated and tested category cable, whilst ensuring compliance with IEEE 802.3an (10GbE encoder/decoder port) or IEEE 802.3ab (for CTL, encoder, and decoder 1GbE ports).
- Optionally connect the LAN port to equipment following the guidance in the LAN Port Wiring section.
- Optionally connect the encoder/decoder RS-232 port to equipment following the pinout in the RS-232 Wiring section.
- Optionally connect the Audio In or Out to an audio device following the pinout in the Audio Wiring section.

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

## NetworkHD Console Configuration

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

- Connect a computer running Windows™ to the same LAN/VLAN as the NetworkHD components and ensure its IP is within the same subnet as the NetworkHD 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.
- Power On the NetworkHD devices by connecting the included power supplies to the **Power Input** or by powering On the PoE switch.
- 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 encoders/decoders, CTL and PC are within the same subnet scope and within the same range of the CTLs AV Port and disable or create an exception for the **NetworkHD Console** in the **Windows Firewall**.
- Configure the system as per the instructions in the [NetworkHD Installation Guide](#). Right Click on the NHD-x00-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 IN1, IN2, etc. This also applies to decoders, OUT1, OUT2, etc. For example, IN1-Satellite Receiver 1.
- Upload to the configuration to the NHD-000-CTL by right clicking the CTL in the **Other Devices** section and selecting Upload.
- Configure the scaling, HDCP values of each decoder based on the requirements of the content and display using the settings found in the **Video** tab in the **Batch Settings** screen.

## Specifications

<b>Audio and Video</b>	
<b>Inputs</b>	1x HDMI 2.0 1x 5-pin Balanced Analog Audio 1x 10GbE 8-pin RJ45
<b>Outputs</b>	1x HDMI 2.0 1x 5-pin Balanced Analog Audio
<b>Output Video Encoding</b>	SDVoE Pixel Pipeline
<b>Encoding Data Rate</b>	1080p@60Hz 12bit - 3.4Gbps 4K UHD @30Hz 4:4:4 8bit - 6.6Gbps 4K UHD @60Hz 4:4:4 8bit - 9Gbps (with light compression)
<b>Max End to End Latency</b>	Genlock Mode: Uncompressed = 30us, Compressed <120us Fast Switch Mode: 1~2 video frames = min. between 16.7 – 33.4ms @ 60fps
<b>Max Video Resolutions</b>	4096x2160p @ 60Hz 8bit 4:4:4 or RGB 3840x2160p @ 60Hz 12bit 4:2:2 Dolby Vision 3840x 2160p @ 60Hz 10bit 4:2:2 HDR10/HLG 1920x1080p @60Hz 12bit
<b>3D</b>	HDMI 1.4b 3D: TnB, Sbs, F.P
<b>Maximum Pixel Clock</b>	600MHz
<b>Supported Standards</b>	RGB   DCI
<b>Communication and Control</b>	
<b>HDMI</b>	HDCP 2.2 & 1.x compliant
<b>Ethernet</b>	1x 1GbE LAN 8-pin RJ45
<b>RS-232</b>	1x 3-pin Phoenix Connector   2 Way   Broadcast   Routed   API Programmable
<b>IR</b>	1 x IR TX 3.5mm TS Mono Jack   API Programmable 1 x IR RX 3.5mm TRS Stereo Jack   API Programmable
<b>USB</b>	3 x USB 1.1 Type A 1 x USB 1.1 Type B Host
<b>Power</b>	
<b>Power Supply</b>	12V 2A DC PSU   802.3at PoE+ compliant
<b>Power Consumption</b>	Max: 24w   Average: 10w
<b>Environmental</b>	
<b>Operating Temperature</b>	32°F ~ 104°F (0°C ~ 40°C), 10% ~ 90%, non-condensing
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ +60°C), 10% ~ 90%, non-condensing
<b>Maximum BTU</b>	34 BTU/hr
<b>Dimensions &amp; Weight</b>	
<b>Length x Width x Height</b>	140mm x 215mm x 25mm
<b>Weight</b>	1.75lbs
<b>Regulatory</b>	
<b>Safety and Emission</b>	CE   FCC   RoHS   EAC   RCM

**Note:** WyreStorm reserves the right to change product specification, appearance or dimensions of this product at any time without prior notice. For full specifications for individual NetworkHD products, visit [wyrestorm.com](http://wyrestorm.com).