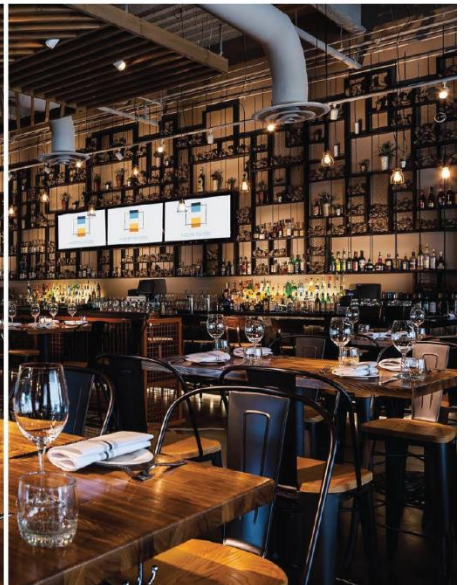![WyreStorm ProAV Solutions logo] **Product Technical Data**

Audio Visual System - Using WyreStorm NetworkHD and Enado Products
NHD-100-TX | NHD-100-RX | NHD-200-TX | NHD-200-RX | NHD-210-RX | NetworkHD Touch app | ENA-MINI-010

# Contents

# Introduction

This document defines and specifies an Audio Visual & Control System using WyreStorm, NetworkHD, NetworkHD Touch and Enado products.

# Part 1 - General

## 1.1 Summary

A. Provide a complete, integrated room Audio Visual system using wired technology for the following:

- Public Areas
- Conference and meeting rooms
- Hospitality venues
- Retail facilities

## 1.2 Submittals

A. Product Data: Submit the Manufacturer's product data and installation instructions for each component and system.

B. Shop Drawings: Submit list of components and equipment to be supplied, including proposed locations, clearances, and power requirements.

C. Operations and Installation Manual: Submit the Manufacturer's standard operations and maintenance manual, including emergency maintenance provider.

D. Qualifications: Submit documentation from the Manufacturer and Installer indicating qualifications listed in Section 1.4, Quality Assurance.

E. Warranty: Submit the Manufacturer's standard warranty

## 1.3 Quality Assurance

A. Qualifications of Manufacturer: The Manufacturer shall be a specialist in manufacture of high-definition audio/video distribution technology. It should produce Audio Visual products working on multiple platforms. It should have offices in at-least three continents and a proven track record of minimum 6 years in the AV industry. Companies whose core business is not Audio Visual systems and are not specialist in AV systems manufacturing shall not be accepted.

B. Qualifications of Installer: Submit a letter signed by the Manufacturer stating that the Installer is licensed by or acceptable to the Manufacturer of the integrated Audio visual and control system.

## 1.4 Delivery | Storage | Handling

A. Deliver materials and products in unopened, factory-labelled packages. Store and handle in strict compliance with the Manufacturer's instructions and recommendations. Protect from damage. Sequence deliveries to avoid delays, but minimize on-site storage.

## 1.5 Coordination

A. Conference: Convene a pre-installation meeting/conference to establish procedures to coordinate this work with related and adjacent work.

B. Coordination: Furnish inserts and fixations that must be built into other work. Work closely with installers so that units are properly installed and positioned with adjacent materials.

# Part 2 - Products

## 2.1 Manufacturer

Acceptable Manufacturer: Wyrestorm Technologies GB EMEA Office: 22 Ergo Business Park, Kelvin Road, Swindon, United Kingdom SN3 3JW

WyreStorm is a manufacturer of high-definition audio/video distribution technology. We specialize in the design, development and sales of innovative AV transmission solutions for commercial and residential applications, proudly serving customers around the globe. Our award-winning products include a comprehensive range of HDMI, AV over IP and HDBaseT extenders, switchers, splitters, converters and test equipment. We also offer WyreStorm Enado™, a unique browser based AV control system.

With offices in the U.S., U.K, Asia and distribution partners around the world, we are committed to serving our customers wherever they may be. WyreStorm, prides itself in listening to our customers, understanding the problems they face and developing solutions with the most effective technology available

## 2.2 SYSTEM DESCRIPTION

Overview: The system shall provide the connection of high definition AV sources and displays to a standard IP network using H.264 supporting resolutions up to 1920x1200 @60HZ and seamlessly distribute content from any source to any display at any time. It shall provide scalable high performance using only three devices: encoder, decoder and controller. The system shall have the capability to do video walls that can display single sources as well as multiple sources in different configurations. Systems without video wall capability shall not be accepted.

Modular: The system shall be able to grow by adding new displays and sources as needed. Displays and sources can be located in the same building. Using fibre optic cabling between buildings, the system shall be expandable for multi-location applications. The system shall be completely modular, it shall have modular individual encoders and decoders which are not part of a chassis and work over an IP network. Systems with fixed 4x4, 6x6, 8x8, 16x16 or 32x32 matrices shall not be accepted, this is to ensure future expansion of the system is not affected.

Technology: As a proven method for efficiently encoding and decoding video content, H.264 compression standards shall be leveraged across the System, in addition to PoE, CEC and 2-way RS-232 control should be available. The system shall work over an existing or dedicated IP network. Systems using legacy matrix systems shall not be accepted.

Audio/Video: Encoders and decoders must allow de-embedding audio for use with amplifiers and other distributed audio devices. The system shall connect to Both Analog and digital video sources using 200-Series NetworkHD™ products: DVI, VGA and HDMI inputs. The system shall work over standard Cat5e/Cat 6 network cables. Systems requiring special cables for AV distribution shall not be accepted.

Setup/Control: For Auto-device-discovery capabilities a Network HD controller shall be specified and menu-driven configuration software, that can be used with or without a separate control system and is fully compatible with most major brands, including the Enado Control System. Systems that are not compatible and do not have a possibility to make drivers for other brands shall not be accepted.

## 2.3 Control System description ENADO

The WyreStorm Enado Control Solution is a 1RU unit that combines both hardware and innovative software to provide integrators and end users with an easy-to-use control system that is suitable for both commercial and residential environments.

It is a cross-platform unit for control devices with a web browser sitting on the network, phones, tablets, iOS, Android, PC, and Mac.

The web-based setup interface is intuitive and template-driven that is customizable and allows expansion with the associated installation.

The Enado unit allows you too remotely and securely access, configure, add to or control the A/V system from anywhere and through any Internet browser.

## 2.4 System Components

### 2.4.1 NetworkHD AV over IP

#### Encoders

NetworkHD TX Encoders enable the transmission of AV signals up to 100m/328FT onto the network. They connect to source components such as Set-top boxes, PC's, Blu-ray and media players and convert the input into network packets for transmission over the Local Area Network (LAN). All NetworkHD Encoders support the direct connection of DVI and HDMI devices, whilst the 200 series enables Component and VGA to be encoded

#### Decoders

NetworkHD RX Decoders receive IP transmissions from the network and convert the signal back to an HDMI signal. Connection is via HDMI to VDU's such as TVs, monitors and projectors.

The NetworkHD decoder units are able to output content formatted correctly for its connected display, through transcoding or scaling, no effect to the source transmission, all displays show the content in its optimum resolution

#### Controller

The NetworkHD CTL Controller is the control interface that enables a single point of contact for all NetworkHD components through a single, intuitive web-based user interface (UI). The Controller Interfaces to major control systems through a freely available API that is used in the free to use drivers for market leading systems including WyreStorm Enado.

#### Network HD Console

The NetworkHD Console is a software tool for Windows PCs enabling the configuration of NetworkHD components and the construction of video walls for use in projects. Ideal for configuring "set & forget" systems where a control system is not required. It offers fast, powerful configuration options and an intuitive UI for setting up all system settings whilst helping build a collection of video-wall configurations for use with capable NetworkHD components.

**One Encoder to one Decoder**

In the simplest of installation scenarios, a single encoder and decoder can be linked directly or via the LAN, to send video from a source to a display in another location. If linked directly the devices must each be powered with a power supply and the CAT5e/6 cable linking them should not run more than 100m/328ft.

The devices will not automatically connect and must first be connected via a NetworkHD Controller or the Console software application. This will require connection to a network although once linked the devices can then be connected directly.

**One/multiple encoder/s to multiple decoders**

The modular nature of the NetworkHD system topology allows an AV distribution of almost any number of sources and displays. Multiple switches can be linked by fibre to expand the size and reach of the system to accommodate an almost limitless scale.

**Video Wall**

NetworkHD provides video wall capabilities lets a collection of displays display multiple images or a single image and any combination in between, utilising specific decoders such as NetworkHD 200 series.

**Ethernet Switch**

The Ethernet switches in a NetworkHD installation must support the following functions:

- Multicast forwarding or filtering
- IGMP Snooping
- IGMP Querier
- IGMP snooping fast leave
- If the Ethernet switches are used for cascading networking, they must also support the following functions:
- Dynamic multicast router port
- Forwarding unknown multicast to multicast router ports only

## 2.4.2 Enado Controller

1RU design allows for installation flexibility in a rack, cabinet or on a shelf

- Extensive I/O to control devices through multiple IR, RS-232 serial, IP, contacts and relays
- Instantaneous control from a smartphone, tablet, TV, PC or Mac browser
- Full remote access, enables control and programming from any web enabled device including smartphones, tablets, Smart TVs
- PC and Mac compatible
- On screen optional video integration function to facilitate visual control. Requires WS-EN-VID-IP-1 for each video feed
- Advanced processor delivers high performance and control of connected devices including video, audio, lighting etc.
- 8 x high speed Ethernet ports (10/100)
- 1 x USB 2.0 port
- 16 x IR ports, with 1 x 3.5mm IR learner, 1 x learning window and IR Blaster
- 4 x RS-232 serial ports

# Part 3 - Infrastructure

## 3.1  Cabling

The system shall be a wired system utilizing Category cable to carry both the data, PoE (power) and control via a single category cable up to a maximum of 100 meters from a suitable PoE Network switch. This shall insure complete stability of the system; wireless connectivity systems or systems using nonstandard cables shall not be accepted.

Multiple Switches can be utilized in larger projects and where larger distances are required between switches an optical link is recommended.

Source devices are connected to an appropriate TX encoder and are often installed in an equipment rack along with PoE network switch/s to distribute to the encoded data to the room/zone RX decoder.

The room/zone display/s will have an RX decoder connected to the respective display for playback of the desired source device and content.

Where Video walls are specified then the appropriate RX encoders are installed to enable a single image or multiple images across the video wall - i.e. two by two. The systems without video wall capability shall not be accepted.

Category cable will be of high quality cat5e or cat 6 paying attention to layout and position ensuring it is mechanically well installed and away from any high voltage cabling/trays.

Any shielded category cable should be installed with the appropriate RJ 45 connections and some slack is desirable to ensure any "shrinkage" is catered for.

## 3.2  Component installation

NHD TX and SW encoders would be positioned in an appropriate comms room rack with a TX rack mount to facilitate multiple units room as with any comms room and rack installation adequate ventilation should be factored and temperature controlled fans and or air conditioning units installed to ensure ambient temperatures are within specification taking note of any "hotspots" from associated equipment that emits higher levels of heat such as Amplifiers.

Source devices and network switches would also be located within the same rack system however remote TX units and source devices can be located up to 100 meters away as a remote input to that switch.

Larger installations with extensive networking facilities can allow greater distances overall depending on the distance between switches.

The RX decoders will be installed in proximity to the display/s with final connection of an HDMI cable to the respective display/s power is provide by PoE from the installed PoE switch installed at the rack/comms room.

Ensure the RX unit is well ventilated not in direct sunlight and orientated to ensure the ventilation grilles are at the top/bottom of the unit for correct convection. Systems using products with built-in cooling fans shall not be accepted.

Where an NHD CTL (controller) is required for multiple encoders and decoders this would be installed at the rack comms room.

For systems utilizing the ENADO controller this is a 1RU rack mount design unit for encoders and should be installed as such care should be taken that it is visible on the network to enable control of the system including associated connected devices and required control formats such as IR serial etc.

## 3.2.1 Basic System Diagram

North America: 844.280.WYRE (9973) | EMEA/ROW: 44 (0) 1793 230 343
support@wyrestorm.com
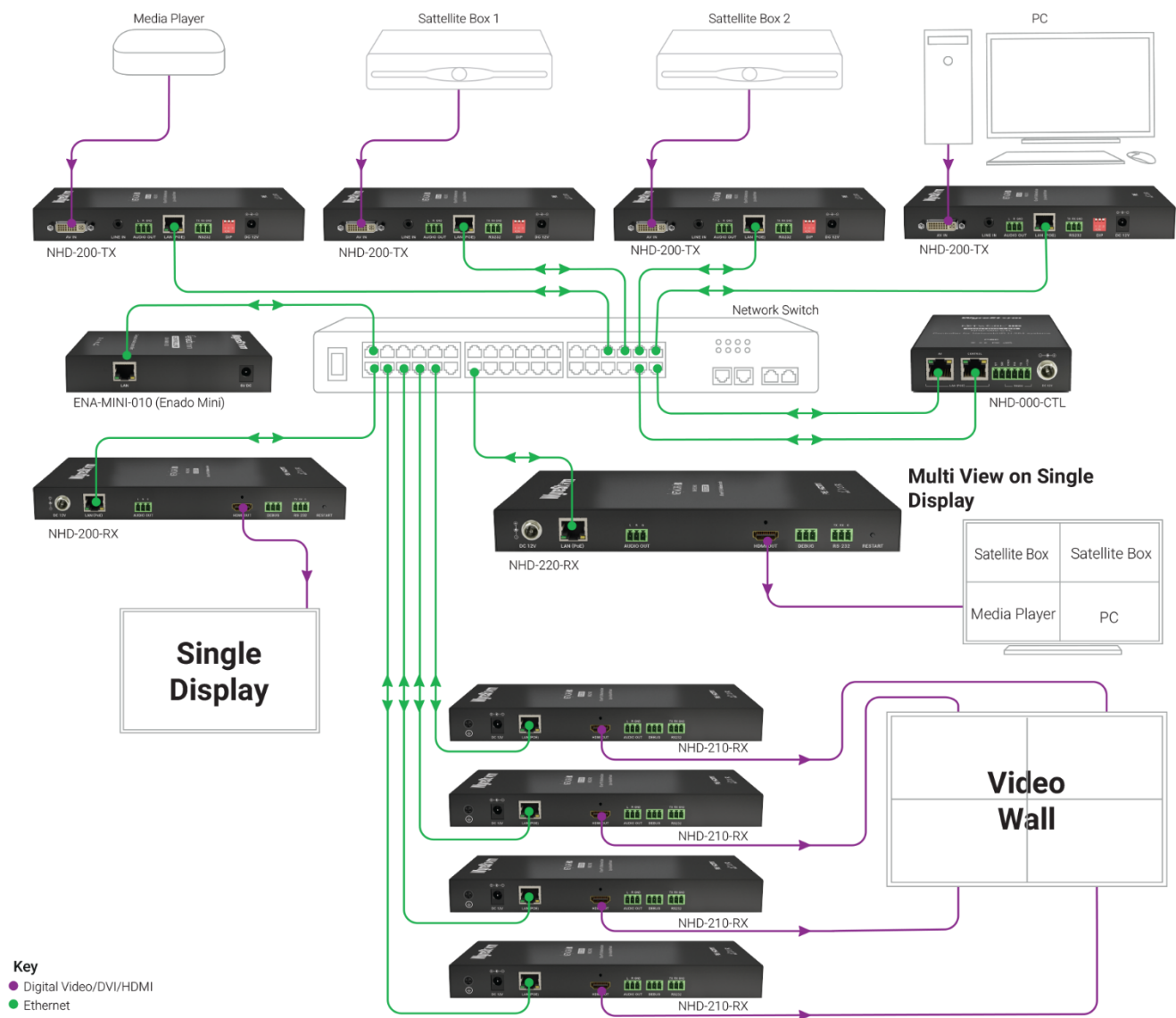
# Part 4 - Control

## 4.1 QR Codes

The Enado control system is recommended as it has the ability to generate QR codes, these can be generated per Project, Room or Activity. Once a QR code has been scanned Enado will immediately load into the corresponding location in the Enado UI. QR codes provide a solution in commercial environments where multiple Rooms/Zones are configured on Enado. By giving users access to Room/Zone QR codes they, can quickly and effortlessly scan the QR code from a mobile device and be directed seamlessly into the User Interface.

- Allows quick and seamless access to any location in Enado's UI
    o Auto generated QR Codes for Room & Activities
    o QR codes can be scanned from virtually any mobile device with a camera

The Audio Visual System can be integrated with WyreStorm Enado and NetworkHD Touch solutions.

The functionality includes the following features in each zone, area, room as applicable:

I.     Video Source Selection
II.    Video Source Control
III.   Display Control
IV.    CEC support
V.     Lighting control
VI.    Audio control
VII.   *NetworkHD Touch
VIII.  RS-232 device control
IX.    HDMI Support
X.     DVI Support ( 200 series)
XI.    VGA Support ( 200 series)
XII.   Component support ( 200 series)

\* NetworkHD Touch™ App for iPad puts an entire NetworkHD 100 or 200-Series AV over IP system applicable for both single screen and video wall applications.

Provides the operator to see what you're switching with live video source and display previews, drag and drop content selection, Enado integration adding source control.

Features shall be controlled by the Network HD Touch or Enado Control System.

Achieve a flexible, expandable audio video distribution system that is both simple to operate scalable for future needs, the following features are recommended for each display(s), zone, room:

I.    Display/Television
II.   Wyrestorm Receiver
III.  Access to Wi-Fi.
IV.   Tablet, IOS or Android device FOR Enado Control system.
V.    *QR Code set

The system settings configuration will be according to Displays/Zones and source devices available.

These specifications cover room controls & operation.

### Control and Operation Methodology
    C.   Room Controller: The intelligence of the Enado system

It will control the Display(s), Network HD Components and source devices available/applicable. The WyreStorm Enado allows different types of Room Controller devices.

    D.   Configuration tool for Room Control
        a)   The WyreStorm Enado Room Control

- It shall be programmed by WyreStorm Enado Editor in order to create different scenarios in function of the installations needs and expectations.
- System configuration is by the editor web interface built into the WyreStorm Enado Controllers.
- Each room/zone shall be configured with room information in function of Video source devices/inputs, and display/sync devices as appropriate.
- Provide extensive I/O to control devices through multiple IR, RS-232 serial, IP, contacts and relays
- It allows creating different scenarios per room/zone.
- Instant Configuration with QR scan/code.

    E.   The Network HD Touch room Controller

- It shall be configured with NetworkHD 00 Series Console Application software. (bus, or manually)
- Selection of video inputs via DIP switches (NHD-200 series)
- Select operating mode via operating mode button on the thermostat
- Temporary Comfort mode extension

- 1- or 3-speed fan control (automatically or manual)

The Room/zone Control System of WyreStorm/Enado improves comfort of the guest by creating various scenarios with its Flexible Web Based multi-platform control options.

## 4.2  SYSTEM ARCHITECTURE

The System Architecture shall consist of two levels:

A.  Control Level

The system offered shall be completely modular in structure and freely expandable at any stage.

The system shall be consistent with the latest industry standards. To enable efficient functional system integration and to provide maximum flexibility and to respond to changes in the building use.

B.  Management Level
a)  Enado/NetworkHD: Supervision software

Each system will communicate in real time with an IOS, Android or windows based devices.

VI.  System Architecture: The supervision software shall be capable of interfacing directly (IT standards, such as TCP/IP, compatible with latest LAN/WAN technology) with the Room Control System based on IP, and via an IP gateway with a Room Control System based on NetworkHD.

VII.  Room Control Display: The software shall provide access to management to view and control such parameters as room Display device/s, AV source devices. In general, the software application shall provide access to any function of the room control system that is available to the guest in the room.

VIII.  Remote Diagnostics: The software shall provide and allow diagnostics of the System.

IX.  Device/Projects: The application software shall be programmable to provide the required available control mediums for the installation hardware.

X.  The application software shall open to a pre-determined default language. It shall also be possible to choose another language.

# Part 5 - Product Specifications

## 5.1 NHD-200-TX - NetworkHD™ 200-Series HD over IP Encoder

### Key Features

- Multi-format HD over IP AV distribution solution utilising H.264 compression for matrix switching
- Matrix switching functionality
- Multi-Format input supports DVI, HDMI, Component & VGA input
- Instant switching between video sources with both high quality and low latency modes
- Plug and Play configuration with auto IP addressing and Bonjour discovery of components
- NetworkHD Touch iPad control app for live video previews and drag and drop source selection

### Specifications

| Audio and Video | |
|---|---|
| Inputs | 1x AV In DVI-I HDMI Supported with Included Adaptor<br>1x Line In 3.5mm (1/8in) Stereo Jack |
| Outputs | 1x LAN (PoE) 8-pin RJ-45 female \| 10/100 Mbps auto-negotiating<br>1x Audio Out 3-pin Phoenix Connector |
| Audio Formats | 2ch PCM |
| Output Video Type | H.264/MPEG-4 AVC |
| Output Video Resolutions | 640x480p @60Hz~1920x1080p @60Hz |
| Encoding Data Rate | Up to 30 Mbps, configurable |
| End to End Latency | Low Latency Mode: 60~90ms \| High Latency Mode: 250~300ms |

| Communication and Control | |
|---|---|
| HDMI | Max Cable Run: 15m \| DVI/D supported with adapter |
| Ethernet | 1x 8-pin RJ-45 female \| 10/100 Mbps auto-negotiating |
| RS-232 | 1x RS-232 3-pin Phoenix Connector<br>1x Debug 3-pin Phoenix Connector |

| Power | |
|---|---|
| Power Supply | Input: 100~240V AC 50/60Hz \| Output: 18V DC 1A |
| PoE | <15.4W \| 802.3af |
| Max Power Consumption | 7.2W |

| Environmental | |
|---|---|
| Operating Temperature | 32°F ~ 113°F (0°C ~ 45°C)<br>10% ~ 90%, non-condensing |
| Storage Temperature | -4°F to ~ 158°F (-20°C ~ +70°C)<br>10% ~ 90%, non-condensing |
| Maximum BTU | 60 BTU/hr |

| Dimensions and Weight | |
|---|---|
| Rack Units/Wall Box | 1U |
| Height | 25mm/0.99in |
| Width | 200mm/7.88in |
| Depth | 94mm/3.71in |
| Weight | 0.48kg/1.06lbs |

| Regulatory | |
|---|---|
| Safety and Emission | CE \| FCC \| RoHS |

## 5.2 NHD-200-RX - NetworkHD™ 200-Series HD over IP Decoder

### Key Features

- Multi-format HD over IP AV distribution solution utilising H.264 compression for matrix switching
- Up to 4x4 video wall functionality over the LAN
- HDMI and analog audio breakout outputs
- Plug and Play configuration with auto IP addressing and Bonjour discovery of components
- Instant switching between video sources with both high quality and low latency modes
- NetworkHD Touch iPad control app for live video previews and drag and drop source selection

### Specifications

| Audio and Video | |
| --- | --- |
| Inputs | 1x LAN (PoE) 8-pin RJ-45 female \| 10/100 Mbps auto-negotiating |
| Outputs | 1x HDMI Out 19-pin type A \| DVI/D supported with adapter<br>1x Audio Out 3-pin Screw Down Phoenix Connector |
| Audio Formats | 2ch PCM |
| Output Video Type | H.264/MPEG-4 AVC |
| Output Video Resolutions | 640x480p @60Hz~1920x1080p @60Hz |
| Encoding Data Rate | Up to 30 Mbps, configurable |
| End to End Latency | Low Latency Mode: 60~90ms \| High Latency Mode: 250~300ms |

| Communication and Control | |
| --- | --- |
| HDMI | Max Cable Run: 15m \| DVI/D supported with adapter |
| Ethernet | 1x 8-pin RJ-45 female \| 10/100 Mbps auto-negotiating |
| RS-232 | 1x RS-232 3-pin Phoenix Connector<br>1x Debug 3-pin Phoenix Connector |

| Power | |
| --- | --- |
| Power Supply | Input: 100~240V AC 50/60Hz \| Output: 18V DC 1A |
| PoE | <15.4W \| 802.3af |
| Max Power Consumption | 6W |

| Environmental | |
| --- | --- |
| Operating Temperature | 32°F ~ 113°F (0°C ~ 45°C)<br>10% ~ 90%, non-condensing |
| Storage Temperature | -4°F to ~ 158°F (-20°C ~ +70°C)<br>10% ~ 90%, non-condensing |
| Maximum BTU | 20.47 BTU/hr |

| Dimensions and Weight | |
| --- | --- |
| Rack Units/Wall Box | 1U |
| Height | 25mm/0.99in |
| Width | 228mm/8.98in |
| Depth | 111mm/4.38in |
| Weight | 0.6kg/1.32lbs |

| Regulatory | |
| --- | --- |
| Safety and Emission | CE \| FCC \| RoHS |

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support@wyrestorm.com

## 5.3 NHD-210-RX - NetworkHD™ 200-Series HD over IP Decoder with Video Wall Processor

### Key Features

- Multi-format HD over IP AV distribution solution utilising H.264 compression for matrix switching
- Up to 4x4 video wall functionality over the LAN
- Multi-Format input supports DVI, HDMI, Component & VGA input
- Plug and Play configuration with auto IP addressing and Bonjour discovery of components
- Instant switching between video sources with both high quality and low latency modes
- NetworkHD Touch iPad control app for live video previews and drag and drop source selection

### Specifications

**Audio and Video**

| | |
|---|---|
| Inputs | 1x LAN (PoE) 8-pin RJ-45 female \| 10/100 Mbps auto-negotiating |
| Outputs | 1x HDMI Out 19-pin type A \| DVI/D supported with adapter<br>1x Audio Out 3-pin Screw Down Phoenix Connector |
| Audio Formats | 2ch PCM |
| Output Video Type | H.264/MPEG-4 AVC |
| Output Video Resolutions | 640x480p @60Hz~1920x1080p @60Hz |
| Encoding Data Rate | Up to 30 Mbps, configurable |
| End to End Latency | Low Latency Mode: 60~90ms \| High Latency Mode: 250~300ms |

**Communication and Control**

| | |
|---|---|
| HDMI | Max Cable Run: 15m \| DVI/D supported with adapter |
| Ethernet | 1x 8-pin RJ-45 female \| 10/100 Mbps auto-negotiating |
| RS-232 | 1x RS-232 3-pin Phoenix Connector<br>1x Debug 3-pin Phoenix Connector |

**Power**

| | |
|---|---|
| Power Supply | Input: 100~240V AC 50/60Hz \| Output: 18V DC 1A |
| PoE | <15.4W \| 802.3af |
| Max Power Consumption | 6W |

**Environmental**

| | |
|---|---|
| Operating Temperature | 32°F ~ 113°F (0°C ~ 45°C)<br>10% ~ 90%, non-condensing |
| Storage Temperature | -4°F to ~ 158°F (-20°C ~ +70°C)<br>10% ~ 90%, non-condensing |
| Maximum BTU | 20.47 BTU/hr |

**Dimensions and Weight**

| | |
|---|---|
| Rack Units/Wall Box | 1U |
| Height | 25mm/0.99in |
| Width | 228mm/8.98in |
| Depth | 111mm/4.38in |
| Weight | 0.6kg/1.32lbs |

**Regulatory**

| | |
|---|---|
| Safety and Emission | CE \| FCC \| RoHS |

## 5.4 NHD-220-RX - HD over IP Streaming Decoder for Multi View processing (up to 8 Streams)

**Key Features**

- Multi-view capable of displaying 1 to 8 simultaneous NetworkHD Encoder streams on a single display
- Multiple layouts to choose from including grid view and special layouts
- 4K output for high quality scaling of single images or native display of multiple 1080p images
- Instant switching with WyreStorm QuickSync™
- Integration with leading 3rd party control systems, including WyreStorm Enado and the new NetworkHD Touch app for Ipad

**Specifications**

### Audio and Video

| | |
|---|---|
| Outputs | 1x HDMI Out 19-pin type A |
| Audio Formats | 2ch PCM |
| Output Video Type | H.264/MPEG-4 AVC |
| Output Video Resolutions | 640x480p @60Hz~3840x2160p @60Hz |
| Encoding Data Rate | Up to 30 Mbps, configurable |
| End to End Latency | Low Latency Mode: 60~90ms | High Latency Mode: 250~300ms |

### Communication and Control

| | |
|---|---|
| HDMI | Max Cable Run: 15m | DVI/D supported with adapter (not included) |
| Ethernet | 1x 8-pin RJ-45 female | 10/100 Mbps auto-negotiating |
| RS-232 | 1x RS-232 3-pin Phoenix Connector | 1x Debug 3-pin Phoenix Connector |

### Power

| | |
|---|---|
| Power Supply | Input: 100~240V AC 50/60Hz | Output: 18V DC 1A |
| PoE | 18V [Need to verify and get PoE standard used] |
| Max Power Consumption | 7.2W |

### Environmental

| | |
|---|---|
| Operating Temperature | 32°F ~ 113°F (0°C ~ 45°C)<br>10% ~ 90%, non-condensing |
| Storage Temperature | -4°F to ~ 158°F (-20°C ~ +70°C)<br>10% ~ 90%, non-condensing |
| Maximum BTU | 60 BTU/hr |

### Dimensions and Weight

| | |
|---|---|
| Rack Units/Wall Box | 1U |
| Height | 25mm/0.99in |
| Width | 220mm/8.67in |
| Depth | 130.2mm/5.13in |
| Weight | 0.17kg/0.37lbs [Verify] |

### Regulatory

| | |
|---|---|
| Safety and Emission | CE | FCC |

## 5.5  NHD-SW-0501 - 5x1 IP Steaming Presentation Switcher/Scaler with ScreenLink™

**Key Features**

- 4 HDMI and 1 VGA with audio source inputs to duplicate HDMI and H.264 IP streamed outputs
- Features fixed and auto scaling resolution output from 640x480 to 1920x1200 @ 60Hz based on the EDID of the display
- CEC supports on/off commands to screens that enable all connected displays enter standby mode and return to their normal working state without user intervention
- Microphone input with phantom power, stereo audio inputs and auto-mix stereo audio output
- Separate or combined RS-232 ports for controlling and managing the NHD-SW-0501 or controlling external devices
- Multiple control methods: front panel display buttons, built in Web UI, contact closure panels, and RS-232 or IP control systems.
- ScreenLink™ content sharing software for Windows/Mac for wired or wireless collaboration
- Compatible with all NetworkHD 100 and 200 Series components, including the award-winning free NetworkHD Touch for iPad control app

**Specifications**

### Audio and Video

| | |
|---|---|
| Outputs | 1x HDMI Out 19-pin type A |
| Audio Formats | 2ch PCM |
| Output Video Type | H.264/MPEG-4 AVC |
| Output Video Resolutions | 640x480p @60Hz~3840x2160p @60Hz |
| Encoding Data Rate | Up to 30 Mbps, configurable |
| End to End Latency | Low Latency Mode: 60~90ms \| High Latency Mode: 250~300ms |

### Communication and Control

| | |
|---|---|
| HDMI | Max Cable Run: 15m \| DVI/D supported with adapter (not included) |
| Ethernet | 1x 8-pin RJ-45 female \| 10/100 Mbps auto-negotiating |
| RS-232 | 1x RS-232 3-pin Phoenix Connector \| 1x Debug 3-pin Phoenix Connector |

### Power

| | |
|---|---|
| Power Supply | Input: 100~240V AC 50/60Hz \| Output: 18V DC 1A |
| PoE | 18V [Need to verify and get PoE standard used] |
| Max Power Consumption | 7.2W |

### Environmental

| | |
|---|---|
| Operating Temperature | 32°F ~ 113°F (0°C ~ 45°C)<br>10% ~ 90%, non-condensing |
| Storage Temperature | -4°F to ~ 158°F (-20°C ~ +70°C)<br>10% ~ 90%, non-condensing |
| Maximum BTU | 60 BTU/hr |

### Dimensions and Weight

| | |
|---|---|
| Rack Units/Wall Box | 1U |
| Height | 25mm/0.99in |
| Width | 220mm/8.67in |
| Depth | 130.2mm/5.13in |
| Weight | 0.17kg/0.37lbs [Verify] |

### Regulatory

| | |
|---|---|
| Safety and Emission | CE \| FCC |

## 5.6  NHD-000-CTL - NetworkHD™ 100 & 200 IP Controller

### Key Features

- Provides auto discovery of all NetworkHD 100 and 200 components
- Interface to major control systems through powerful drivers including the WyreStorm Enado Control System
- Dual PoE Ethernet Ports for complete isolation of control and AV network traffic
- NetworkHD Touch iPad control app for live video previews and drag and drop source selection

### Specifications

| Audio and Video | |
| --- | --- |
| Inputs/Outputs | 1x LAN AV(PoE) -  8-pin RJ-45 female<br>1x LAN Control -  8-pin RJ-45 female |
| **Communication and Control** | |
| HDMI | Max Cable Run: 15m \| DVI/D supported with adapter (not included) |
| Ethernet | 10/100 Mbps auto-negotiating |
| RS-232 | 1x RS-232 5pin Phoenix Connector |
| **Power** | |
| Power Supply | Input: 100~240V AC 50/60Hz \| Output: 12V DC 1A |
| PoE | <15.4W \| 802.3af |
| Max Power Consumption | 1.6W |
| **Environmental** | |
| Operating Temperature | 32°F ~ 113°F (0°C ~ 45°C)<br>10% ~ 90%, non-condensing |
| Storage Temperature | -4°F to ~ 158°F (-20°C ~ +70°C)<br>10% ~ 90%, non-condensing |
| Maximum BTU | 5.45 BTU/hr |
| **Dimensions and Weight** | |
| Rack Units/Wall Box | 1U |
| Height | 26mm/1.03in |
| Width | 141mm/5.56in |
| Depth | 115mm/4.53in |
| Weight | 0.6kg/1.32lbs |
| **Regulatory** | |
| Safety and Emission | CE \| FCC \| RoHS |

## 5.7 ENA-MINI-010 - Enado™ Mini IP Control Solution

**Key Features**

- Provides an intuitive, customizable user interface to control WyreStorm devices and other AV components
- Web server-based design allows for easy setup, operation, maintenance and management of the system
- Highly scalable to allow for control of any AV component (WyreStorm or other manufacturer) over the network
- Multi-platform ie. iOS, Android, Macs and PC control with an unlimited number of user control devices without any licensing costs
- Wizard-based setup for all connected displays and sources allows for quick setup and template-driven integration with WyreStorm products

**Specifications**

| Audio and Video | |
|---|---|
| Inputs/Outputs | 1x LAN -  8-pin RJ-45 female |
| **Communication and Control** | |
| HDMI | Max Cable Run: 15m \| DVI/D supported with adapter (not included) |
| Ethernet | 10/100 Mbps auto-negotiating |
| **Power** | |
| Power Supply | Input: 100~240V AC 50/60Hz \| Output: 5V DC 2A |
| Max Power Consumption | 1.4W |
| **Environmental** | |
| Operating Temperature | 32°F ~ 113°F (0°C ~ 45°C)<br>10% ~ 90%, non-condensing |
| Storage Temperature | -4°F to ~ 158°F (-20°C ~ +70°C)<br>10% ~ 90%, non-condensing |
| Maximum BTU | 4.77 BTU/hr |
| **Dimensions and Weight** | |
| Rack Units/Wall Box | 1U |
| Height | 26mm/1.03in |
| Width | 141mm/5.56in |
| Depth | 115mm/4.53in |
| Weight | 0.42kg/0.92lbs |
| **Regulatory** | |
| Safety and Emission | CE \| FCC \| RoHS |

## 5.8  NHD-000-RACK - 5U Rack Mount for NetworkHD™ 100/200 Series

**Key Features**

- Compact design, specifically designed for NetworkHD 100/200- Series Components
- 12 slot capacity supporting controller/encoder/decoder and the Enado Mini webserver
- Provides ideal heat dissipation - a key factor in increasing reliability and product lifespan
- Installers can pre-built the system into the NHD-000-RACK prior to arriving on site to improve speed and efficiency of installations

**Specifications**

### Dimensions and Weight

| | |
|---|---|
| Rack Units | 5U |
| Height | 221mm/8.71in |
| Width | 482mm/18.98in |
| Depth | 143.6mm/5.66in |
| Weight | 1.85kg/4.07lbs |
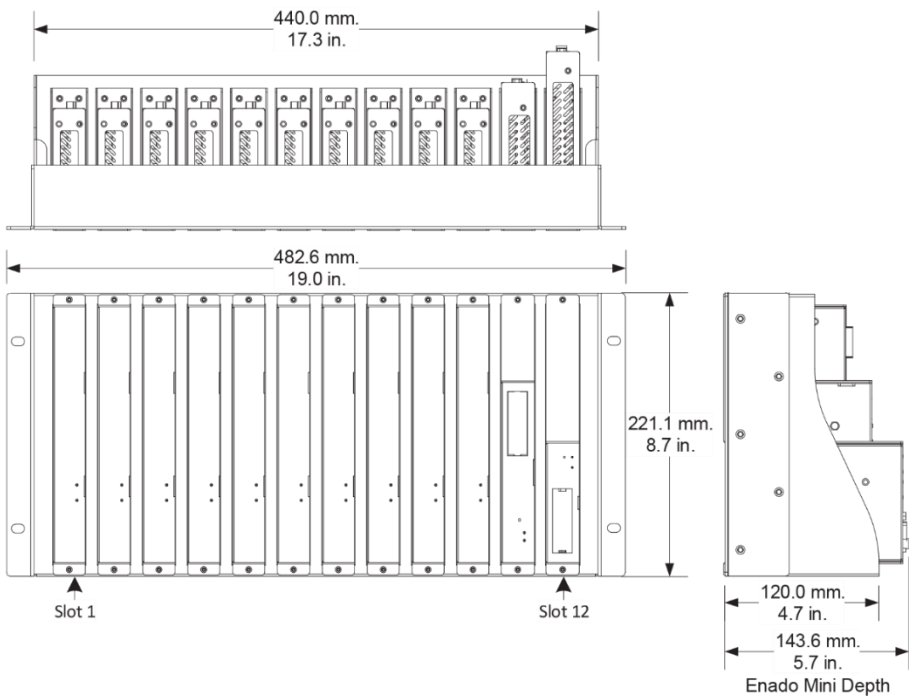


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