

4K/UHD In-line HDMI Scaler with Dolby TrueHD™ & DTS-HD™ Audio Downmixing

EXP-CON-H2-DD

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



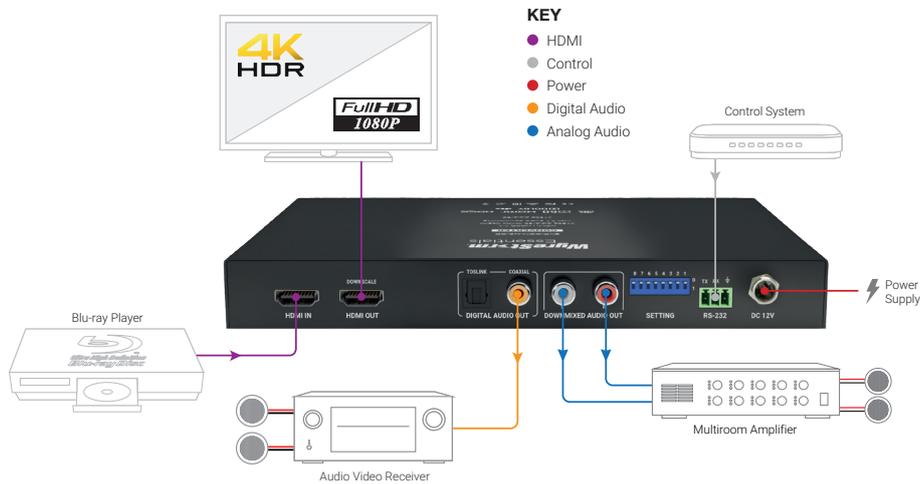
IMPORTANT! Installation Requirements

- Visit the product page to download the latest firmware, document version, additional documentation, and configuration tools.
- Read through the [Wiring and Connections](#) section for important wiring guidelines before creating or choosing premade cables.

In the Box

- 1x EXP-CON-H2-DD Downmixer/scaler
- 1x 12V DC 1A Power supply with wall adaptors (US/UK/EU/AU)
- 2x Rack mounting brackets (for NHD-000-RACK4)
- 1x 3-pin Phoenix connector
- 1x Quickstart guide (this document)

Basic Wiring Diagram



Wiring and Connections

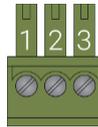
WyreStorm recommends that all wiring for the installation is run and terminated prior to making connections to the scaler. Read through this section in it's entirety before running or terminating the wires to ensure proper operation and to avoid damaging equipment.

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 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 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

The EXP-CON-DAC-DD uses a 3-pin RS-232 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.

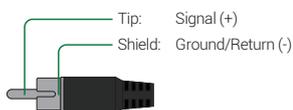


| WyreStorm Connector | | 3rd Party Device |
|---------------------|---------------|----------------------------|
| Pin 1 | TX (Transmit) | ---> To ---> RX (Receive) |
| Pin 2 | RX (Receive) | ---> To ---> TX (Transmit) |
| Pin 3 | G (Ground) | ---> To ---> G (Ground) |

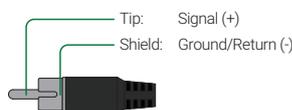
Audio Wiring

This scaler contains audio connections for Analog Audio as well as S/PDIF digital.

Analog Audio



S/PDIF Digital Coax Audio



Setup and Configuration

EDID and Scaling

EDIDs can be configured to request the correct content from the source device. It is recommended that you set an EDID appropriate to the maximum capability of the source device then configure the video & audio output settings to match the connected TV, projector or AVR.

- When set to Auto-scale, the scaler will scan the EDID of the device connected to HDMI OUT, then dynamically adjust the output to the optimum resolution.
- When EDID settings are changed, ensure the source device is connected but powered off, then power on once all DIP switches have been set.
- Ensure that a display or AVR is connected and powered on before copying EDIDs or the copy will fail.
- Power to the scaler must be cycled (Off/On) after changing dip switches in order for the setting to take effect.

EDID Switch Location

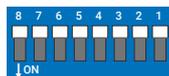


Setting EDIDs

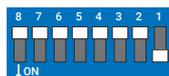
1. Ensure the EXP-CON-H2-DD and connected source devices are powered OFF
2. Set the desired switch configuration according to the illustrations below or the EDID table which is printed on the base of the unit.
3. Power ON the EXP-CON-H2-DD
4. Power ON the source device
5. Ensure the input status light is lit on the front of the EXP-CON-H2-DD

HDMI Output 1 Scaling

Force Downscale



Auto Downscale



HDMI Output 1 Audio

Bypass

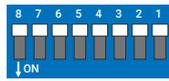


Downmix 2ch

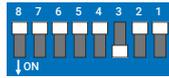


S/PDIF Audio Output

Bypass (max 5.1ch)

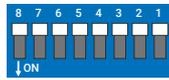


Downmix 2ch

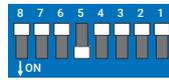


EDID Management

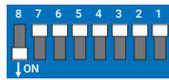
1080p/60 2ch PCM (default)



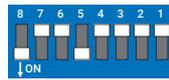
2160p/60 4:2:0 HDR 7.1ch Dolby/DTS HD



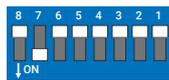
1080p/60 5.1ch Dolby/DTS



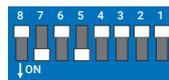
2160p/60 4:4:4 Static HDR 2ch PCM



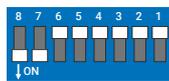
1080p/60 7.1ch Dolby/DTS HD



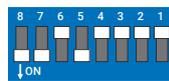
2160p/60 4:4:4 Static HDR 5.1ch Dolby/DTS



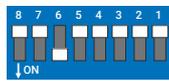
1080i/60 2ch PCM



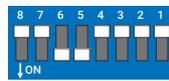
2160p/60 4:4:4 Static HDR 7.1ch Dolby/DTS HD



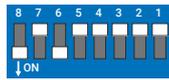
1080i/60 5.1ch Dolby/DTS



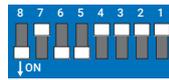
DVI 1280x1024 60Hz | No Audio



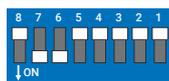
1080i/60 7.1ch Dolby/DTS HD



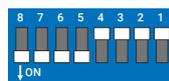
Copy EDID from HDMI output



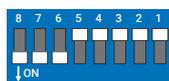
2160p/60 4:2:0 HDR 2ch PCM



API managed EDID



2160p/60 4:2:0 HDR 5.1ch Dolby/DTS



Troubleshooting

Video loss or quality issues

- Verify that power is being supplied to the scaler device.
- Verify that all HDMI connections are well seated in the HDMI ports.
- Verify that both the output resolution of the source and display are supported by this scaler.
- For 4K content, verify that high-speed HDMI cables are being used.
- Ensure that the video scaler output setting is set according to the capability of your display.

Audio loss or quality issues

- Ensure that the audio cables are of good quality and are capable of passing the signal.
- Verify that the audio output settings are set appropriate to the connected equipment (HDMI output and S/PDIF output can be set independently).

- When using the S/PDIF output, ensure that the signal does not exceed 6ch LPCM or bitstream.
- The EXP-CON-H2-DD will only downmix bitstream or LPCM audio up to a maximum of 8ch (7.1 Dolby TrueHD™ or DTS-HD™) from a connected source

No or Intermittent 3rd party Device Control

- Verify that the RS-232 cables are properly terminated following the [Wiring and Connections](#) section.

Troubleshooting Tips:

- WyreStorm recommends using a cable tester or connecting the cable to other devices to verify functionality.

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 two (2) years from the date of purchase. Refer to the Product Warranty page on wyrestorm.com for more details on our limited product warranty.



Specifications

| Video | | |
|---|--|---|
| HDMI | v2.0b TMDS | |
| Inputs | 1x HDMI In: 19-pin type A | |
| Output | 1x HDMI Out: 19-pin type A Scaling output 3840x2160p > 1920x1080p only | |
| Maximum Transmission Bit Rate | 17.8Gbps | |
| Maximum Pixel Clock | HDMI: 600MHz | |
| Video Resolutions (Max) | Resolution | HDMI |
| | 1920x1080p @60Hz | 15m/49ft |
| | 3840x2160p @60Hz 8bit 4:4:4 | 3m/10ft |
| | 3840x2160p @60Hz 10bit 4:2:0 HDR | 3m/10ft |
| | 3840x2160p @60Hz 12bit 4:2:2 HDR | 3m/10ft |
| Supported Standards | DCI RGB HDR HDR10 Dolby Vision up to 60Hz HLG BT.2020 BT.2100 | |
| Audio | | |
| Outputs | 1 x HDMI Out: 19-pin type A 1 x Audio Out: RCA Stereo 2 x Audio Out: Mirrored S/PDIF (Coaxial & Toslink) | |
| Audio Formats (Passthrough) | HDMI: 8ch LPCM Multichannel bitstream up to Dolby Atmos and DTS-X | |
| Audio Formats (Downmix) | 8ch LPCM Dolby TrueHD™ DTS Master HD | |
| Maximum Sampling Rate | 192KHz | |
| Maximum Audio Channels | Inputs HDMI: 7.1Ch PCM Dolby True HD DTS-HD | Outputs Stereo RCA: 2ch analog Digital S/PDIF: 5.1ch PCM Dolby Digital DTS |
| Enhanced Audio Return Channel (eARC) | Not Supported | |
| Communication and Control | | |
| RS-232 | 1x RS-232: 3-pin Phoenix API control | |
| HDCP | Pass-through, 2.2 Supported | |
| EDID | Managed | |
| Consumer Electronics Control (CEC) | Not Supported | |
| Auto Low Latency Mode (ALLM) | Not Supported | |
| Variable Refresh Rate (VRR) | Not Supported | |
| Power | | |
| Power Supply | 12V DC 1A supplied | |
| Max Power Consumption | 8W | |
| Environmental | | |
| Operating Temperature | 32°F ~ 110°F (0°C ~ 40°C) 10% ~ 90%, non-condensing | |
| Storage Temperature | -4°F to ~ 140°F (-20°C ~ +60°C) 10% ~ 90%, non-condensing | |
| Maximum BTU | 27.2 BTU/hr | |
| Dimensions and Weight | | |
| Installation | <1U Wall mounted Free standing | |
| Height | 25mm/0.98in | |
| Width | 215mm/8.46in | |
| Depth | 118mm/4.64in | |
| Weight | 0.42kg/0.92lbs | |
| Regulatory | | |
| Safety and Emission | CE FCC RoHS RCM EAC | |

Note: WyreStorm reserves the right to change product specification, appearance or dimensions of this product at any time without prior notice.