

USER MANUAL

DL-HD70-H3 Owners Manual



Digitalinx Series HDBaseT 3.0 70m Extension Set

18G HDBaseT 3.0 HDMI 2.0 Extender set extends uncompressed resolutions up to 4K60 4:4:4, IR,RS232 & Power up to 40m or 70m with built in test pattern generator and adjustable bandwidth mode for maximum cable compatibility.

Liberty

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PRODUCT OVERVIEW

The Digitalinx DL-HD70-H3 HDBaseT 3.0 extender set transmits video, audio, IR, and RS232 over single category 6a F/UTP or better twisted pair cable. The DL-HD70-H3 can transmit uncompressed 4K resolutions up to 4K@60Hz 4:4:4 up to 40m / 131' and 4K30 or below up to 70m / 230'. The Digitalinx DL-HD70-H3 supports HDMI 2.0 and is HDCP 2.2/2.3 compliant and supports CEC pass through. The Digitalinx DL-HD70-H3 supports multiple audio formats including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X. The Digitalinx DL-HD70-H3 supports any HDR format, including Dolby Vision and HDR10+.

DL-HD70-H3 purchased after 2/15/25 offer two bandwidth modes and allow to transmit via not only Cat 6A or above cables, but also lower specification cables, such as Cat 5e and Cat 6. The extender kit includes a test pattern generator with both non-HDCP and HDCP 2.2 encryption to test setup HDCP capabilities.

The DL-HD70-H3 is sold only as a set with a single power supply, and can be powered on either end.

PACKAGE CONTENTS

- DL-HD70-H3 extender set
- (2) 3pin-3.81mm Phoenix Connectors (Male)
- (4) Mounting Ears with Mounting Screws
- 12V 2A Power Adapter with US, UK, AU AND EU Power Adapters
- (1) IR Emitter
- (1) IR Receiver (30kHz - 50kHz)
- (1) IR-AC Coupler Cable

Transmission Distance

Note:

- Straight-through category cable wired to T568B standard is recommended.
- For max HDMI 2.0 performance, recommended cable is: Cat 6A U/FTP or F/FTP.
- The extender supports two transmission modes: High-bandwidth and Low-bandwidth.

When the extender is set to High-bandwidth mode (set the pin4 of the DIP switches of the transmitter and receiver to “Up” position):

| Cable Type | Range | Supported Video |
|-------------------------|-----------|---------------------|
| Cat 5e/6 (UTP) | 40m/131ft | 4K@60Hz 4:4:4 24bpp |
| Cat 6A (F/FTP or U/FTP) | | |

When the extender is set to Low-bandwidth mode (set the pin4 of the DIP switches on the transmitter and receiver to “Down” position):

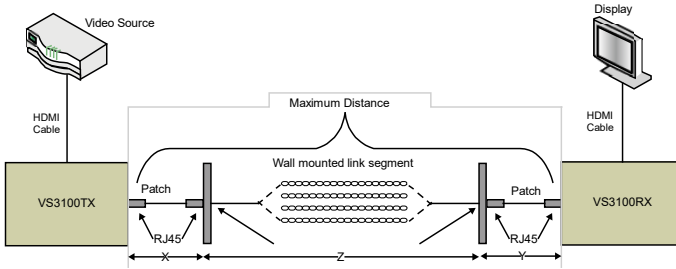
| Cable Type | Range | Supported Video |
|-------------------------|-----------|---------------------|
| Cat 5e/6 (UTP) | 60m/197ft | 4K@60Hz 4:4:4 24bpp |
| Cat 6A (F/FTP or U/FTP) | 70m/230ft | |

Note: Check the DIP settings on how to configure the high and low bandwidth mode.

Use Patches

Patches may be used in the installation, and the patches will obviously affect the transmission distance. Limits and distances are as follows:

- Support up to 2 patch cables, each not exceeding 5m.
- Patches must be installed on both ends of the device, refer to the following pictures:



The standard specifies the following lengths for the three-segment cable installation:

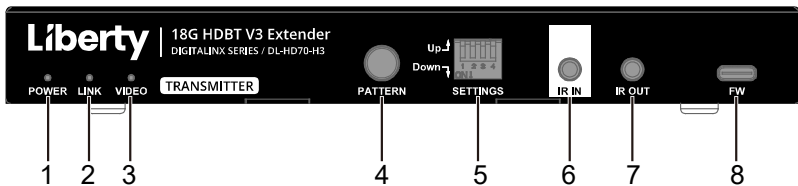
- X = Left-side patch cable length ≤ 5 [meter]
- Y = Right-side patch cable length ≤ 5 [meter]
- Z = Wall segment \leq Maximum Distance – X – Y [meter]

Note: The use of patches introduces a transmission distance loss of 10m.

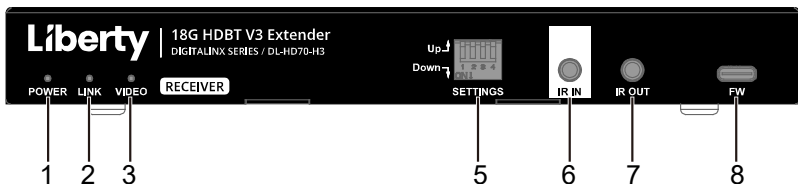
Panel Descriptions

Front Panel

Transmitter



Receiver

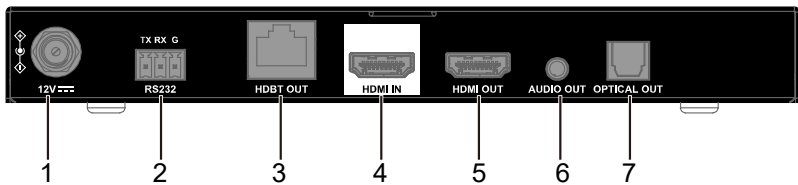


| No. | Name | Description |
|-----|-----------|--|
| 1 | POWER LED | On/Off: The device is powered on/off. |

| No. | Name | Description |
|-----|--------------------------------------|---|
| 2 | LINK LED | On: HDBT link is normal. Off: No HDBT link or link error. |
| 3 | VIDEO LED | Green: Source video is being transmitted. Red: Pattern video with HDCP 2.2 is being transmitted. Blue: Pattern video without HDCP is being transmitted. Off: No video is being transmitted. |
| 4 | PATTERN Button (Transmitter only) | The default mode is Source video mode. <ul style="list-style-type: none"> Hold the button for about 3s to enter/exit Pattern video mode. Short press the button to switch between HDCP-encrypted and no HDCP-encrypted signals in Pattern mode. Pattern video mode is usually used for testing video transmission of the extender. Detail information, please refer to " Test Pattern Generation " section. |
| 5 | DIP Switch | Four pins DIP switch. For audio mode configurations and firmware upgrade configurations. See " DIP Switch Settings " section to get detail information. |
| 6 | IR IN | Connect to the IR receiver provided. |
| 7 | IR OUT | Connect to the IR emitter provided. |
| 8 | FW | USB Type-C port. Connect to a PC for firmware upgrade. |

Rear Panel

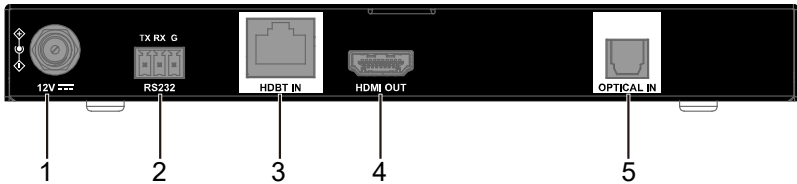
Transmitter



| No. | Name | Description |
|-----|--------|---|
| 1 | DC 12V | Connect to the power adapter provided. With bi-directional PoC, whether the power adapter is connected to the transmitter or receiver, it can power both the units. |
| 2 | RS232 | Connect to RS232 enabled devices, for RS232 pass-through. |

| No. | Name | Description |
|-----|-------------|--|
| 3 | HDBT OUT | Connect to the HDBT IN port of the receiver. |
| 4 | HDMI IN | Connect to an HDMI source device. |
| 5 | HDMI OUT | Connect to an HDMI display for video looping out. Note: When input 4K@60Hz signal in Low-bandwidth mode, this loop-out port doesn't support downscaler function. |
| 6 | AUDIO OUT | Connect to an audio receiver. When set the extender to OPTICAL audio return mode, this port will output the audio comes from OPTICAL IN. When set the extender to Audio de-embedded mode, this port will output the de-embedded audio from HDMI IN. |
| 7 | OPTICAL OUT | Connect to the optical in port of an audio receiver. |

Receiver



| No. | Name | Description |
|-----|------------|---|
| 1 | DC 12V | Connect to the power adapter provided. With bi-directional PoC, whether the power adapter is connected to the transmitter or receiver, it can power both the units. |
| 2 | RS232 | Connect to RS232 enabled devices, for RS232 pass-through. |
| 3 | HDBT IN | Connect to the HDBT OUT port of the transmitter. |
| 4 | HDMI OUT | Connect to an HDMI display. |
| 5 | OPTICAL IN | Connect to an optical out port of a display. |

Installation and Wiring

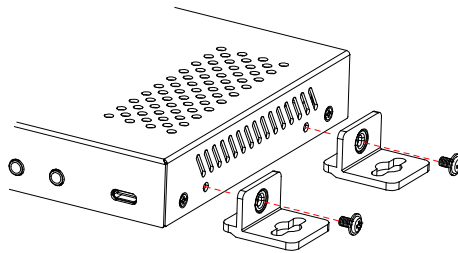
Installation

Warnings:

- Before wiring, disconnect the power from the device.
- During wiring, connect and disconnect the cables gently.

Steps to install the device:

1. Attach the installation bracket to the enclosure using the screws provided in the package separately.
2. The bracket is attached to the enclosure as shown.



3. Repeat the steps from 1 to 2 for the other side of the unit.
4. Attach the brackets to the surface you want to hold the unit against using the screws (provided by others).
5. Repeat the steps from 1 to 4 to install the receiver.

Wiring

Warnings:

- Before wiring, disconnect the power from all devices.
- During wiring, connect and disconnect the cables gently.
- The Cat x cable should not exceed the maximum cable length, refer to the specifications section for details.

Audio and Video Extender Mode:

1. Connect an HDMI source to HDMI IN port of the transmitter, and connect an HDMI display to HDMI OUT port of the receiver.
2. Connect the transmitter and the receiver.
3. Connect the provided power adapter to the transmitter or receiver.
4. Power on all attached devices. The audio and video signal from the HDMI source will be transmitted to the HDMI display (See Figure 1).

Note: Users can set audio input EDID through DIP switch on the transmitter, see [“DIP Switch Settings”](#) to get detail information.

OPTICAL audio return mode:

1. Set the DIP switch of transmitter to Audio return mode (See [“DIP Switch Settings”](#) section).
2. Connect an audio receiver to the OPTICAL OUT port of transmitter.
3. Connect an audio source to OPTICAL IN port of receiver.
4. Connect the transmitter and the receiver.
5. Connect the provided power adapter to the transmitter or receiver.
6. Power on all attached devices. Audio signal from OPTICAL IN port will be transmitted to OPTICAL OUT port (See Figure 1).

Note: In this mode, audio signal from OPTICAL IN port will also be transmitted to AUDIO OUT port, and output analog audio signal. If audio signal is compressed audio, AUDIO OUT port will be muted.

OPTICAL audio de-embedded mode:

When set the DIP Switches to OPTICAL audio de-embedding mode (see [“DIP Switch Settings”](#) to get detail information), the audio receiver connected to OPTICAL OUT port and AUDIO OUT port will output the de-embedding audio from HDMI IN (See Figure 2).

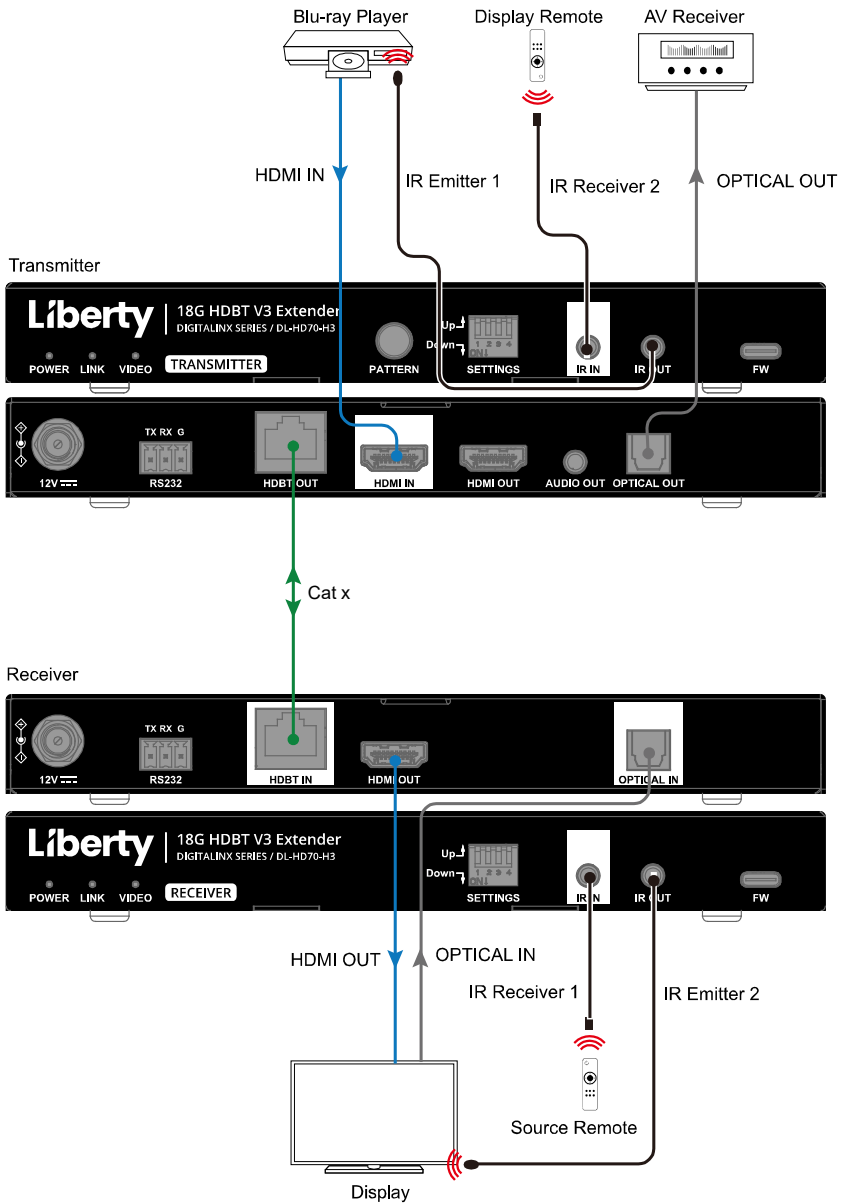


Figure 1

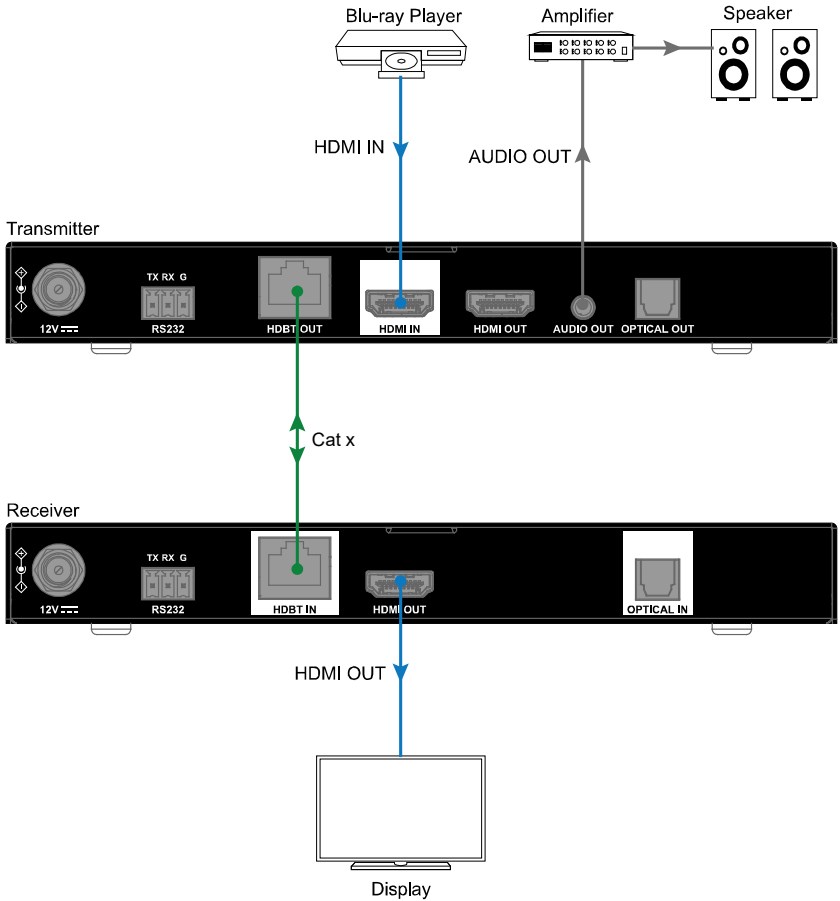


Figure 2

Additional control connection selection:

- **RS232 Pass-through:** Connect a RS232 control system/controlled device to the transmitter/receiver, and connect a RS232 controlled/control system device to the receiver/transmitter for serial communication. See [“RS232 Pass-Through”](#) section to get detail information.
- **IR Pass-through:** Connect the IR emitter cable provided to IR OUT port of the transmitter/receiver. Connect the IR receiver cable provided to IR IN

port of the receiver/transmitter. Users can control the source at the receiver side using source remote or control the display at the transmitter side using display remote (See Figure 1).

Test Pattern Generation

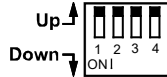
DL-HD70-H3 extender kits purchased after 2/15/25 can generate a test pattern video signal, with different HDCP capabilities. This feature is usually used to test setup before use and help troubleshooting.

The “Pattern” button on front panel of the transmitter is used to switch different pattern generation.

- Hold the button for about 3s to enter test pattern generation. In this mode, short press the button to switch between non-HDCP video and HDCP 2.2 encrypted video. When test pattern is with non-HDCP, the VIDEO LED will light blue, and extender will output a black and white bar image. When test pattern is with HDCP 2.2, the VIDEO LED of the extender will light red, and extender will output a black and white chessboard image.
- To exit the pattern mode, hold the button for about 3s and extender will exist the pattern mode.

DIP Switch Settings

Using DIP Switches on front panel of the transmitter and receiver to set audio mode, set upgrade function and bandwidth rate.



Please refer to the following table to set:

Transmitter:

| 1 | 2 | 3 | 4 | Function |
|------|------|------|------|--|
| Up | - | - | - | Audio EDID 2CH (default) |
| Down | - | - | - | Audio EDID pass-through |
| - | Up | - | - | Audio de-embed (default) |
| - | Down | - | - | Audio return (from OPTICAL IN of the receiver) |
| - | - | Up | - | Upgrade Valens (default) |
| - | - | Down | - | Upgrade MCU |
| - | - | - | Up | High-bandwidth mode (default) |
| - | - | - | Down | Low-bandwidth mode |

Receiver:

| 1 | 2 | 3 | 4 | Function |
|---|---|------|------|-------------------------------|
| - | - | Up | - | Upgrade Valens (default) |
| - | - | Down | - | Upgrade MCU |
| - | - | - | Up | High-bandwidth mode (default) |
| - | - | - | Down | Low-bandwidth mode |

Note: “-” indicates the position of this pin doesn’t affect the current function.

Instructions of DIP Switches:

- When the DIP switch on front panel of the transmitter is “Up, x, x, x”, the extender will automatically filter EDID and only supports PCM 2.0CH. When set the DIP switch on front panel of the transmitter to “Down, x, x, x”, the audio input EDID is set to copy display’s EDID.
- When set the DIP switch on front panel of the transmitter to “x, Up, x, x”, the AUDIO OUT port and OPTICAL OUT port of the transmitter will output the de-embedded audio from HDMI IN. When the DIP switch on front panel of the transmitter is “x, Down, x, x”, the AUDIO OUT port and OPTICAL IN port of the transmitter will output the audio from OPTICAL IN

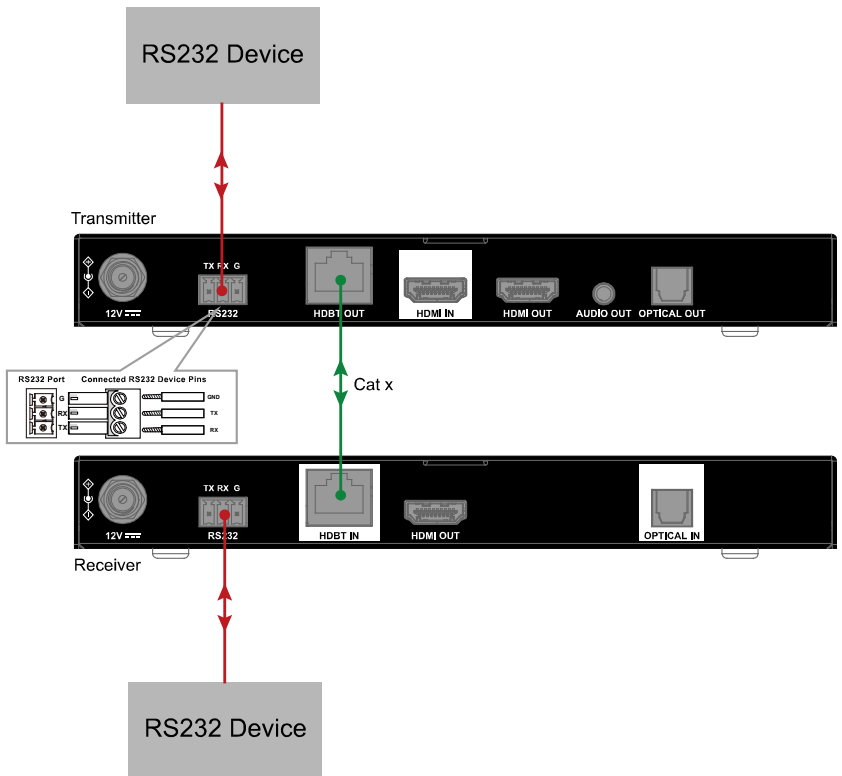
port of the receiver. If audio source signal is compressed audio, AUDIO OUT port will be muted.

- Both Valens firmware of the transmitter and receiver can be upgraded through FW port of the transmitter/receiver. Set the DIP switch of the transmitter/receiver to “x, x, Up, x”. Connect a PC to FW port of the transmitter/receiver, and connect the transmitter and receiver, users can upgrade Valens firmware of transmitter and receiver through the FW port of the transmitter/receiver.
- Set the DIP switch of the transmitter/receiver to “x, x, Down, x” position, and connect a PC to FW port of the transmitter/receiver to upgrade the MCU firmware of the transmitter/receiver.
- When both transmitter and receiver DIP switches are set pin 4 “Up”, the extender will work in high-bandwidth mode. In this mode, the extender transmits uncompressed AV signal using Cat 6A (foiled twisted pair) cable up to 40m/131ft. When set both transmitter and receiver DIP switches pin 4 to “Down”, the extender enters low-bandwidth mode. In this mode, it transmits visually lossless AV signal using Cat 6A cable up to 70m/230ft. For more detail information, please refer to “[Transmission Distance](#)” part in “Specification” section.

RS232 Pass-Through

RS232 ports can be used for bi-directional RS232 signal pass-through between the transmitter and receiver.

1. Connect a RS232 master/slave Device to RS232 port of transmitter /receiver and connect a slave/master device to RS232 port of receiver/transmitter.
2. Connect HDBT OUT of the transmitter to HDBT IN of the receiver.
3. When all is set, RS232 signal can be passed through bi-directionally between two RS232 devices.



Cabling Requirements

HDBaseT Cabling

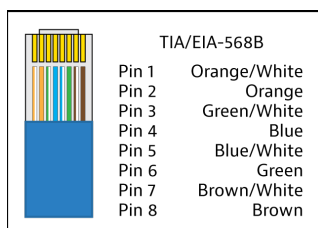
HDBaseT3.0 Specification is made using high quality Cat6a F/UTP cabling. For maximum full capability performance, ensure Cat6a F/UTP or above is used. To ensure proper performance of the DL-HD70-H3, it is recommended that you use solid core, shielded Category 6a F/UTP or above cabling. Category 6 or 5e F/UTP may work but may not support power over HDBaseT reliably and may only work over short distances, or will require the use of Low Bandwidth Mode



When using shielded category cabling **ALWAYS...**

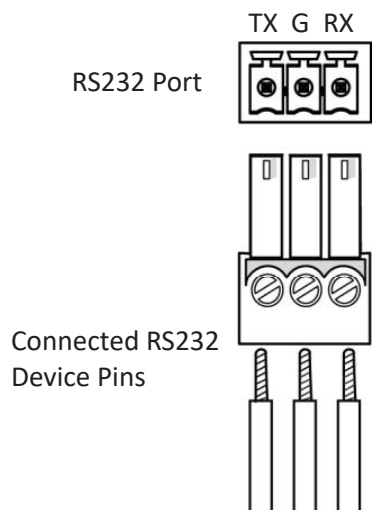
....use shielded connectors

....properly ground the category cable



Twisted Pair Wiring

Use TIA/EIA-568B wiring for Category 6a connection between send and receive units.



RS232 Wiring

Connect the controller or device RX signal to TX on the DL-HD70-H3 extender. Connect the controller or device TX signal to Rx on the DL-HD70-H3 extender.

TECHNICAL SPECIFICATIONS

| | | |
|----------------------------|---|--|
| Model | DL-HD70-H3 | |
| Physical Parameter | | |
| Case Material | Receiver: Industrial-grade metal chassis with metal brackets Transmitter: Industrial-grade metal chassis with metal brackets | |
| Dimensions | Transmitter: 190mm [W] x 115mm [D] x 23mm [H] Receiver: 190mm [W] x 115mm [D] x 23mm [H] | |
| Weight | Transmitter: 265g Receiver: 265g | |
| Power Protection | ESD protection with human body model — ±8kV (Air-gap discharge) & ±4kV (Contact discharge) | |
| Power Output | DC 12V 2A | |
| Power Input | AC 100-240V 50/60Hz | |
| Power Consumption | 14.28W (Max) | |
| Operating Temperature | 32- 113°F / 0- 45°C | |
| HDMI Specifications | | |
| HDMI | 2.0b | |
| HDCP | 2.3/2.2/1.4 | |
| Video Bandwidth | 18 Gbps | |
| Video Resolutions | 4096x2160@24/25/30/50/60Hz, 3840x2160@24/25/30/50/60Hz, 1920x1080p, 1080p@23.98/24/25/29.97/30/50/59.94/60Hz, 1080i@50/59.94/60Hz, 720p@50/59.94/60Hz, 576p, 576i, 480p, 480i | |
| Color Space | RGB, YCbCr 4:4:4 / 4:2:2. YUV 4:4:4 | |
| Color Depth | 8/10/12-bit | |
| Analog Audio Format | LPCM 2.0 | |
| HDMI Audio Formats | HDMI IN/OUT: Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X | |
| Connectivity | | |
| Inputs | Inputs: 1x HDMI 1x IR IN 1x DC 12V Rx : 1xHDBT IN [RJ45, Female] 1x IR IN 1x DC 12V | |
| Outputs | Outputs: 1x HDBT OUT [RJ45, 8-pin female] 1x RS-232 Phoenix jack 3 pin (3.81mm) 1x IR OUT Rx: 1xHDMI Type A-Female 1x IR OUT | |
| Transmission | | |
| Max Distance (4K30) | 230ft / 70m over CAT6a 60m over Cat6 | |
| Max Distance (4K60 4:4:4) | 131ft / 40m over CAT6a/7 in max bandwidth (Uncompressed) mode | |

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