LINK

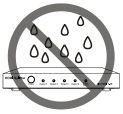
LINK EXT70-4KUHDE

4K@60 4:4:4 HDR HDBaseT Extender with ARC

User Manual

Version: V1.0.0

Important Safety Instructions



1. Do not expose this apparatus to rain, moisture, dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

2. Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure the unit is well ventilated.

3. To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.

4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

5. Do not place sources of naked flames, such as lighted candles, on the unit.

6. Clean this apparatus only with dry cloth.

7. Unplug this apparatus during lightning storms or when unused for long periods of time.

8. Protect the power cord from being walked on or pinched particularly at plugs.

9. Only use attachments / accessories specified by the manufacturer.

10. Refer all servicing to qualified service personnel.

Warnings of FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Table of Contents

Introduction

Overview

LINK EXT70-4KUHDE is an HDBaseT Extender. It supports 4K@60 4:4:4 with HDR and HDCP 2.2 compliant, offers the distribution of uncompressed UHD video, audio, power, and IR together up to 100m/330ft over a single Cat X cable.

With a feature set including transmission of uncompressed 4K@60Hz UHD video, HDCP 2.2 compatibility, Dolby and DTS HD audio, bi-directional IR control, it offers the added benefit of an incredibly low-profile for a greatly reduced form factor behind the screen for even more convenience and ease of installation at the display zone.

By the DIP switch of Audio Output on the receiver, it's able to configure the ARC channel feed by TV (with ARC support), or auxiliary S/PDIF Input port. This unit also provides an HDMI audio de-embedding with phoenix analog connector.

Its proprietary one way PoE technology ensures that the transmitter unit powers the receiver unit, with visual LED indication for power supply to units and signal status to show established connection between connected devices.

Features

- 4K/UHD capability @60 Hz with 4:4:4 Chroma sampling, plus support for HDR formats.
- HDCP 2.2 compliant.
- Supports HD signal transmission up to 100 meters (1080p) and 70 meters (4K@60Hz YUV 4:4:4) via a single Cat 5e/6 cable.
- Supports HD signal transmission up to 100 meters (1080p) and 100 meters (4K@60Hz YUV 4:4:4) via a single Cat 6a/7 cable.
- Receiver to transmitter audio return via ARC or optical coax pathway.
- HDMI audio de-embedding with phoenix analog connector.
- Extends RS232, IR and Ethernet control signals.
- Automatic EDID management.
- Visual LED indication.

Package Contents

- 1 x Transmitter EXT70-4KUHDE
- 1 x Receiver EXT70-4KUHDE
- 1 x Power Adapter (DC 12V 3A)
- 3 x Phoenix Male Connector (3.5mm 3 Pin)
- 1 x IR Emitter Cable
- 1 x IR Broadband Receiver Cable (30KHz~50KHz)
- 1 x AC IR Coupler Cable
- 4 x Mounting Brackets

Specifications

Transmitter

Technical	
Input	1 x HDMI
Input Signal Type	HDMI with 4K
Input/Output Resolution Support	800x600[8], 1024x768[8], 1280x768[8], 1280x800[8], 1280x960[8], 1280x1024[8], 1360x768[8], 1366x768[8], 1440x900[8], 1600x900[8], 1600x1200[8], 1680x1050[8], 1920x1080[8], 1920x1200[8], 3840x2160[2,3,5,8], 4096x2160[2,3,5,8] 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz, 9 = at 75 Hz;
Maximum Data Rate	18 Gbps
Input Video Level	0.5-1.0 V p-p
Input DDC Signal	5V p-p
Maximum Pixel Clock	594MHz
Output	1 x HDBT
Output Signal Type	HDBT
Video Impedance	100 Ω
General	
Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing

ESD Protection	±8kV(Air-gap discharge)/ ±4kV(Contact discharge)
Surge Protection	Voltage: ±1 kV
Electrical Fast Transient/Burst	Data communication cord: 1 kV Power cord : 2 kV
Power Supply	DC 12V 3A
Power Consumption (Maximum)	Receiver is powered by transmitter: • 22.38W (1080P) • 27W (4K@60Hz YUV 4:4:4) Transmitter and receiver are powered separately: • 6.32W (1080P) • 8.68W (4K@60Hz YUV 4:4:4)
Device Dimension (W x H x D)	195mm x 21mm x 94.8mm/7.68” x 0.83” x 3.73”
Product Weight	0.4kg/0.88lb

Receiver

Video	
Input	1 x HDBT
Input Signal Type	HDBT
Input/Output Resolution Support	800x600[8], 1024x768[8], 1280x768[8], 1280x800[8], 1280x960[8], 1280x1024[8], 1360x768[8], 1366x768[8], 1440x900[8], 1600x900[8], 1600x1200[8], 1680x1050[8], 1920x1080[8], 1920x1200[8], 3840x2160[2,3,5,8], 4096x2160[2,3,5,8]

	1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz, 9 = at 75 Hz;
Maximum Data Rate	18Gbps
Input Video Level	0.5-1.0 V p-p
Input DDC Signal	5V p-p
Maximum Pixel Clock	594MHz
Output	1 x HDMI
Output Signal Type	HDMI with 4K
Video Impedance	100 Ω
General	
Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing
ESD Protection	±8kV(Air-gap discharge)/ ±4kV(Contact discharge)
Surge Protection	Voltage: ±1 kV
Electrical Fast Transient/Burst	Data communication cord: 1 kV Power cord : 2 kV
Power Supply	DC 12V 3A
Power Consumption (Maximum)	Transmitter is powered by receiver: • 20.46W (1080P) • 26.45W (4K@60Hz YUV 4:4:4) Transmitter and receiver are powered separately: • 9.6W (1080P) • 10.69W (4K@60Hz YUV 4:4:4)
Device Dimension (W x H x D)	195mm x 21mm x 94.8mm/7.68” x 0.83’’ x 3.73”

Product Weight	0.4kg/0.88lb
Certification	CE, FCC

Cable Specifications

Note: LINK recommends use of straight-through Category cables wired to T568B standard.

Cable Type	Range	Supported Video
Cat5e/6	100m	1080P@60Hz 36bpp
	70m	1080P@60Hz 48bpp
Cat6a/7	100m	1080P@60Hz 3D 4K@60Hz YUV 4:4:4

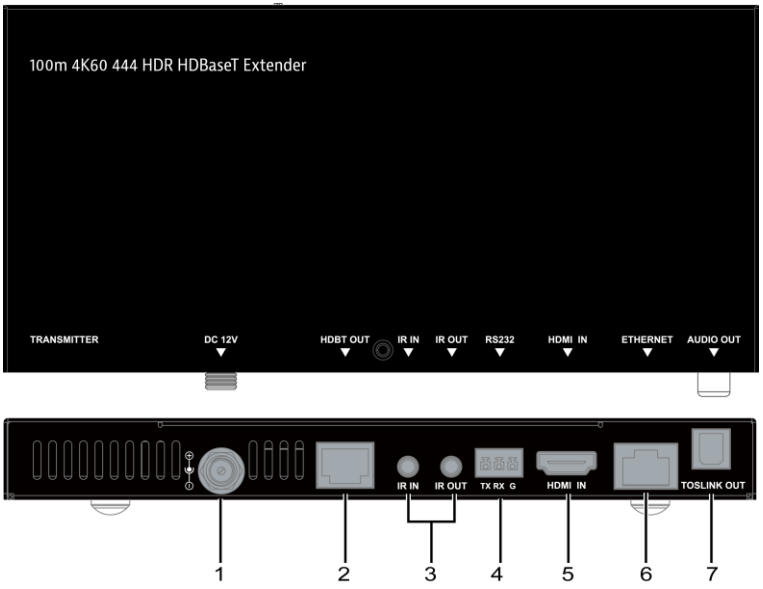
Panel Layout

Transmitter

Front Panel

No.	Name	Description
1	POWER LED	**ON:** The transmitter is powered on. **OFF:** The transmitter is powered off.
2	STATUS LED	**Flashing Slowly:** The transmitter is working properly. **OFF:** The transmitter is not working properly.
3	HDCP LED	**ON:** HDCP video is being transmitted. **Flashing Quickly:** Non-HDCP video is being transmitted. **OFF:** No HDMI signal.
4	LINK LED	**ON**: HDBT link is normal **OFF:** No HDBT Link
5	AUDIO OUT	HDMI audio de-embedding, connects to audio system like AV receiver.

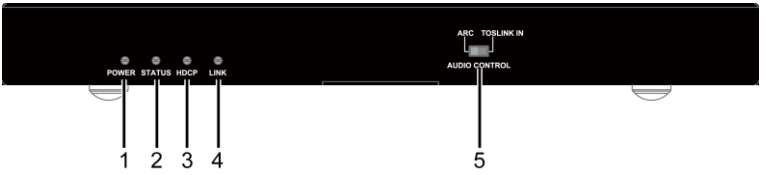
Rear Panel



No.	Name	Description
1	Power	12V DC power input
2	HDBT OUT	Connects to HDBT IN port of receiver
3	IR IN	Connects to IR receiver
	IR OUT	Connects to IR emitter
4	RS232	Connects to control system for RS232 Pass Through
5	HDMI IN	Connects to an HDMI source
6	ETHERNET	Passes Ethernet connections from TX unit to RX unit.
7	TOSLINK OUT	Connects to audio system like AV receiver

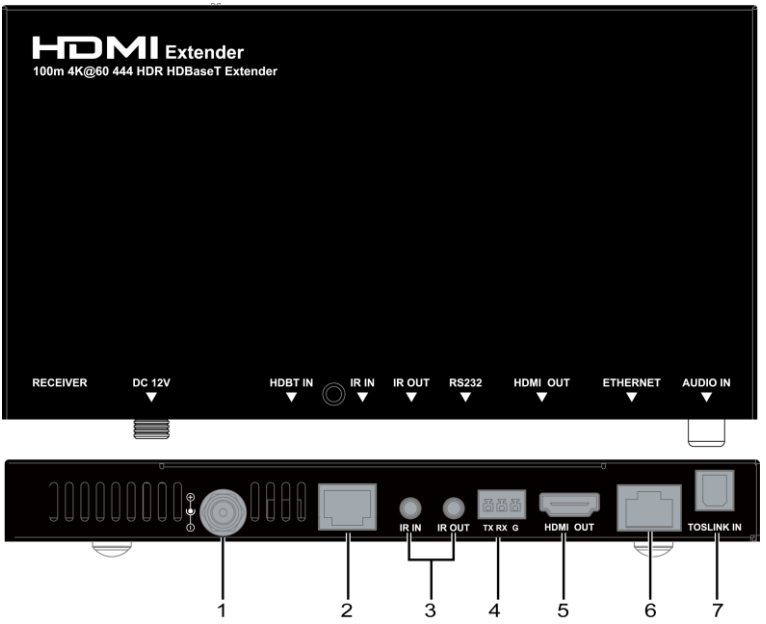
Receiver

Front Panel



No.	Name	Description
1	POWER LED	**ON:** The receiver is powered on. **OFF:** The receiver is powered off.
2	STATUS LED	**Flashing Slowly:** The receiver is working properly. **OFF:** The receiver is not working properly.
3	HDCP LED	**ON:** HDCP video is being transmitted. **Flashing Quickly:** Non-HDCP video is being transmitted. **OFF:** No HDMI signal.
4	LINK LED	**ON**: HDBT link is normal **OFF:** No HDBT Link
5	AUDIO CONTROL	• ARC, use ARC utilizing HDMI • TOSLINK IN, passes optical audio from RX to TX unit

Rear Panel

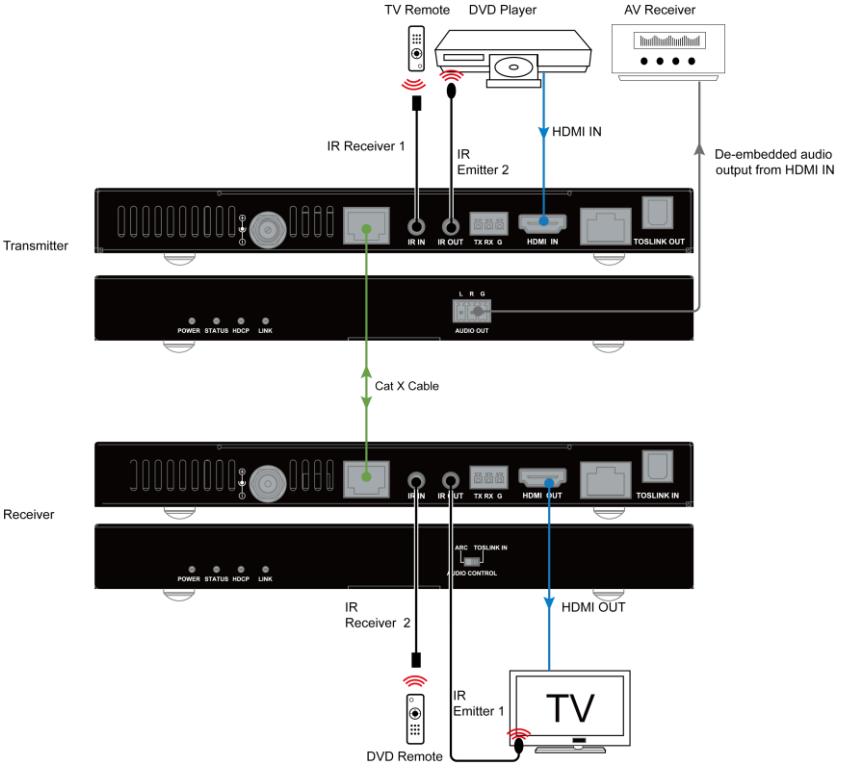


No.	Name	Description
1	Power	12V DC power input
2	HDBT IN	Connects to HDBT OUT port of transmitter
3	IR IN	Connects to IR receiver
	IR OUT	Connects to IR emitter
4	RS232	Connects to control system for RS232 Pass Through
5	HDMI OUT	Connects to an HDMI display
6	ETHERNET	Passes Ethernet connections from TX unit to RX unit
7	TOSLINK IN	Connects to audio system on TOSLINK IN mode

Connections and Installations

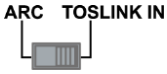
1. Using quality HDMI cables, connect an HDMI source (such as Blu-ray, games console, satellite/cable TV, media server etc.) to HDMI IN port of Transmitter.
2. Connect the audio system in the figure to the AUDIO OUT port of the Transmitter.
3. Connect a good quality, terminated Cat X cable between the HDBT OUT of the Transmitter to the HDBT IN of the Receiver.
4. Connect the HDMI display device such as TV in the figure to the HDMI OUT of the Receiver.
5. For two-way IR control of connected sources and displays from either location, first, connect IR Emitters to the IR OUT ports of the Transmitter and Receiver, and then insert IR Receivers into the IR IN ports of the Transmitter and Receiver.
6. For the audio DIP switch output on the receiver, please refer to the **Audio DIP Switch Control** Section.
7. Connect the included 12V power supply to the transmitter or receiver. The PoE function carries power along the length of the cable to power the other one.

Check Power, Status, and HDCP & Link lights are illuminated on both units to indicate successful connection, with a lit HDCP light illustrating the presence of encryption within the signal. Power and Link are static lights. Status should be blinking.


TV Remote
DVD Player
AV Receiver
IR Receiver 1
IR
Emitter 2
HDMI IN
De-embedded audio
output from HDMI IN
Transmitter
IR IN
IR OUT
TX RX G
HDMI IN
TOSLINK OUT
POWER STATUS HDCP LINK
L R G
AUDIO OUT
Cat X Cable
Receiver
IR IN
IR OUT
TX RX G
HDMI OUT
TOSLINK IN
POWER STATUS HDCP LINK
ARC TOSLINK IN
AUDIO CONTROL
IR
Receiver 2
HDMI OUT
IR
Emitter 1
TV
DVD Remote

Audio DIP Switch Control

The Extender features an Audio DIP Switch that can be used to control audio output.



ARC Mode

Note: When you want to configure ARC channel feed by TV:

- Ensure AV System and TV support ARC function and CEC should be ON.
- Connect AV System and TV through ARC- enabled HDMI Ports.

Connect the AV System to HDMI IN port of Transmitter, connect a TV to HDMI Out port of Receiver. Switch the DIP switch to **ARC** mode, switch TV to the audio source you want to be sent back, and set the AV System to the ARC channel. The audio signal of TV through HDMI OUT port will be transmitted to the AV System connected to HDMI IN Port of Transmitter. (Figure 1)

TOSLINK IN Mode

When you configure the auxiliary optical input, please switch it to TOSLINK IN mode and connect an audio system to the TOSLINK IN port of Receiver, and an Audio System such as an AV Receiver to TOSLINK OUT port of Transmitter. Audio signal from TOSLINK IN port will pass through to TOSLINK OUT port. (Figure 2)

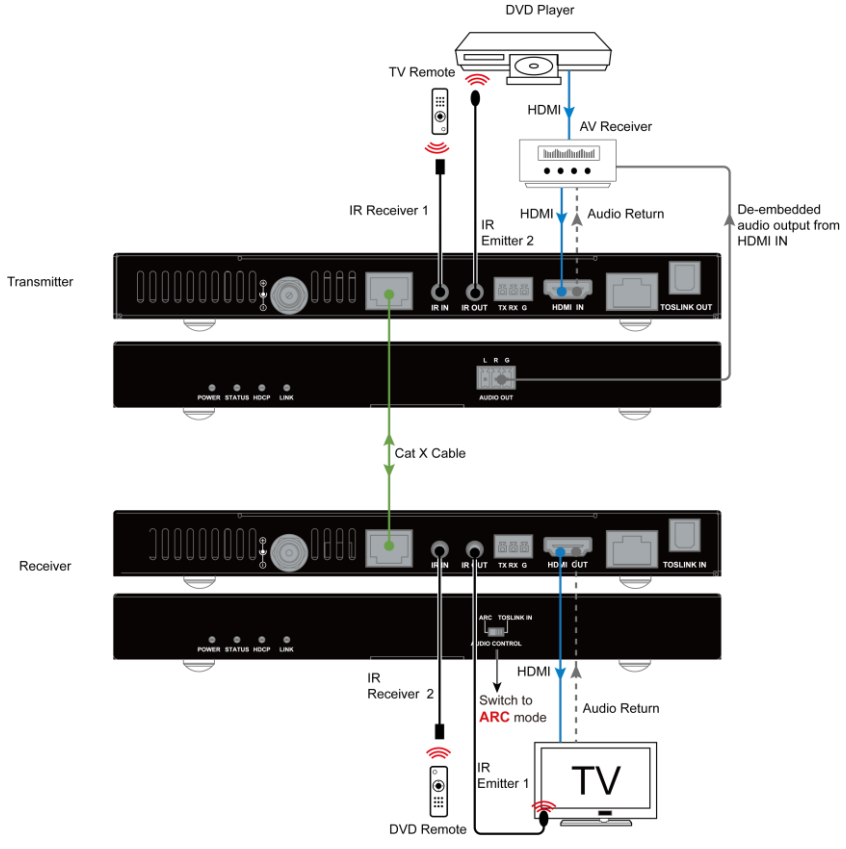

DVD Player
TV Remote
HDMI
AV Receiver
IR Receiver 1
HDMI
Audio Return
De-embedded
audio output from
HDMI IN
IR
Emitter 2
Transmitter
IR IN
IR OUT
TX RX G
HDMI IN
TOSLINK OUT
POWER STATUS HDCP LINK
L R G
AUDIO OUT
Cat X Cable
Receiver
TOSLINK IN
ARC TOSLINK IN
POWER STATUS HDCP LINK
HDMI
IR
Receiver 2
Switch to
ARC mode
Audio Return
IR
Emitter 1
TV
DVD Remote

Figure 1

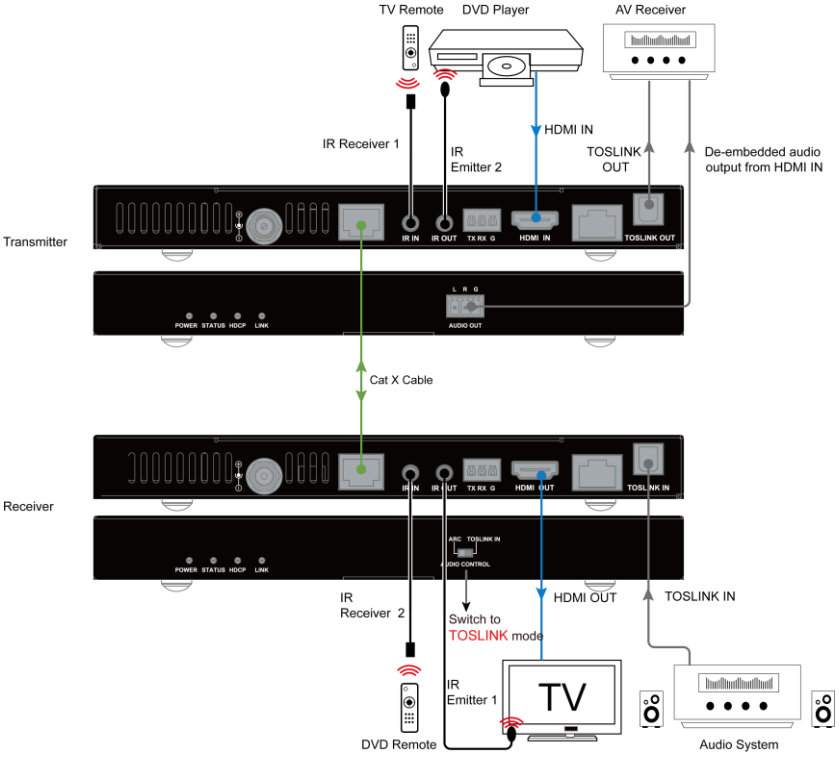

TV Remote
DVD Player
AV Receiver
IR Receiver 1
IR
Emitter 2
HDMI IN
TOSLINK
OUT
De-embedded audio
output from HDMI IN
Transmitter
IR IN
IR OUT
TX RX G
HDMI IN
TOSLINK OUT
POWER STATUS HDCP LINK
L R G
AUDIO OUT
Cat X Cable
Receiver
IR IN
IR OUT
TX RX G
HDMI OUT
TOSLINK IN
POWER STATUS HDCP LINK
ARC TOSLINK IN
AUDIO CONTROL
IR
Receiver 2
Switch to
TOSLINK mode
HDMI OUT
TOSLINK IN
IR
Emitter 1
TV
DVD Remote
Audio System

Figure 2

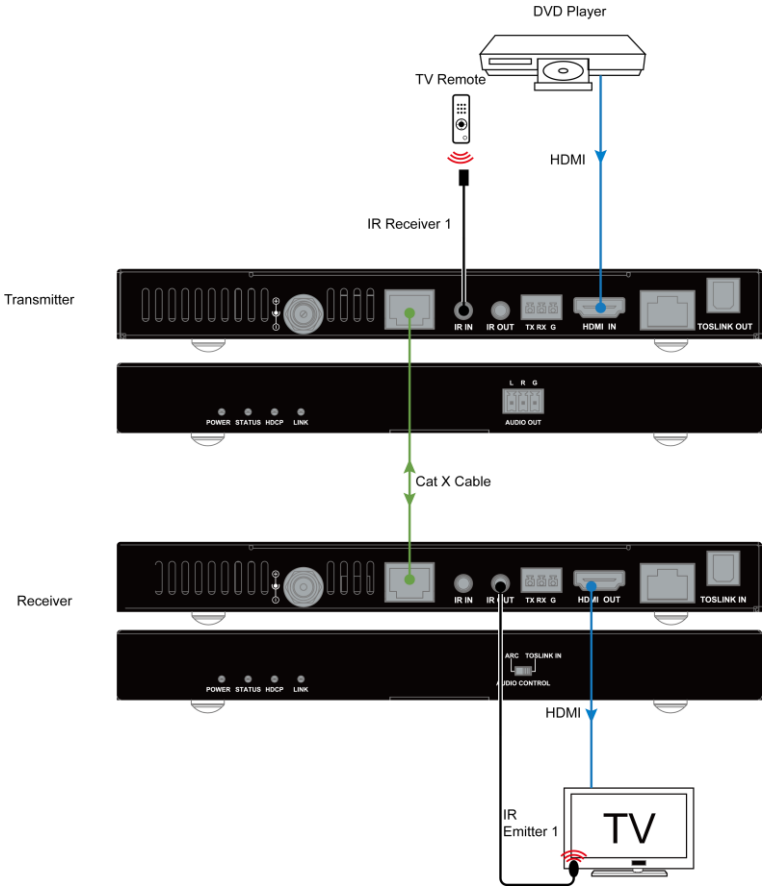
Operating with IR

IR Control

IR pass-through function allows you to control the source from the display location or control the display from source location.

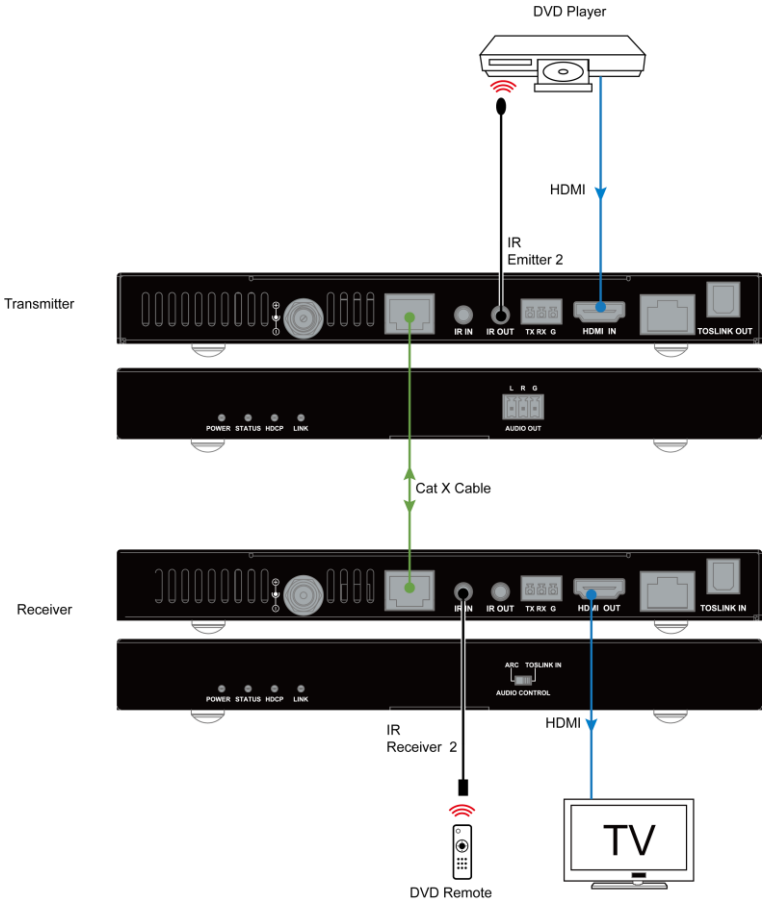
Control the Display

In this case, **IR IN** port in Transmitter is connected to a broadband IR receiver and **IR OUT** port in Receiver is connected to an IR emitter. You can control the TV from the DVD location with the TV remote.



Control the Source

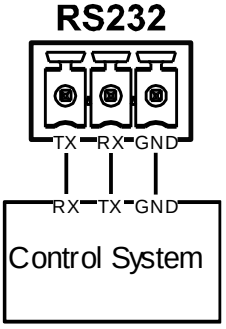
In this case, **IR OUT** port in Transmitter is connected to an IR emitter and **IR IN** port in Receiver is connected to a broadband IR receiver. You can control the DVD player from the TV location with the DVD remote.


DVD Player
HDMI
IR
Emitter 2
Transmitter
IR IN
IR OUT
TX RX G
HDMI IN
TOSLINK OUT
POWER STATUS HDCP LINK
L R G
AUDIO OUT
Cat X Cable
Receiver
IR IN
IR OUT
TX RX G
HDMI OUT
TOSLINK IN
POWER STATUS HDCP LINK
ARC TOSLINK IN
AUDIO CONTROL
HDMI
IR
Receiver 2
TV
DVD Remote

Operate with RS232

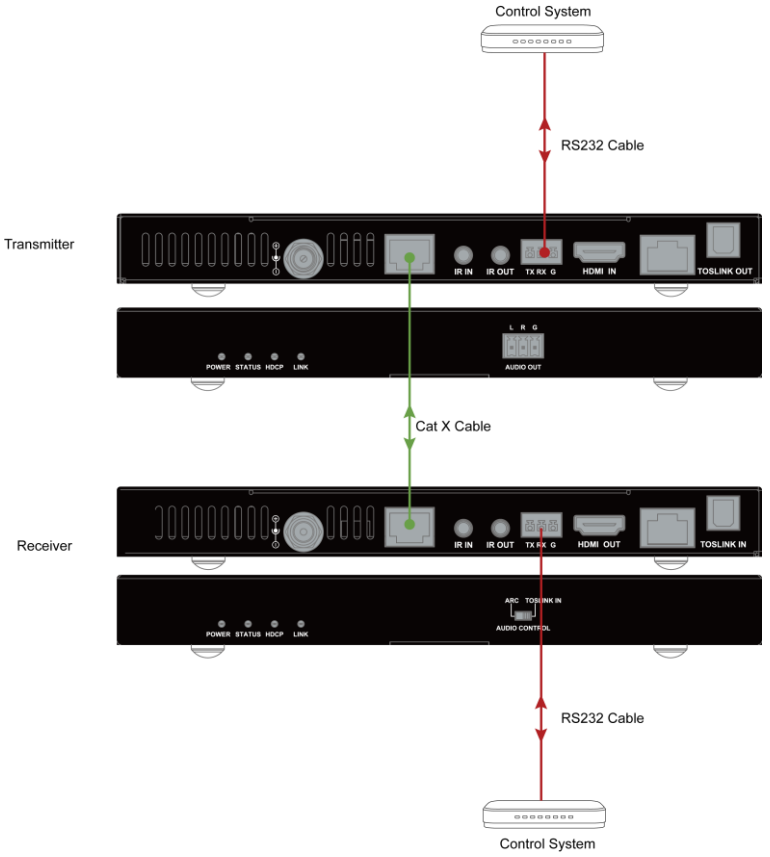
RS232 Pinout

The following figure shows the RS232 pinout. Please connect with Phoenix Connectors provided.



RS232 Pass Through

According to the bi-direction RS232 pass through function, you can use two RS232 control systems for serial communication by connecting to the devices via serial cables in order to control the source device or the display.


Control System
RS232 Cable
Transmitter
IR IN
IR OUT
TX RX G
HDMI IN
TOSLINK OUT
POWER STATUS HDCP LINK
L R G
AUDIO OUT
Cat X Cable
Receiver
IR IN
IR OUT
TX RX G
HDMI OUT
TOSLINK IN
POWER STATUS HDCP LINK
ARC TOSLINK IN
AUDIO CONTROL
RS232 Cable
Control System

Trouble Shooting

Troubleshooting Steps

1. **Power:** Please make sure all devices are powered on (the sources, extender and display).
2. **Indicator:** Please make sure LED indicators of the extender are normal according to user manual.
3. **Devices:** Please make sure picture can be shown normally when connecting source to display devices directly.
4. **Cable:** Plug in and unplug HDMI/Cat X cable or try another HDMI/Cat X cable. Please make sure the specific cable length is within the transmission range in the user manual **Specification** section. Cat 5e/6/6a/7 cable is recommended, do not use Cat 5 cable. Please make sure the two connectors of one Cat X cable are the same standard (EIA/TIA 568B).
5. **Compatibility:** Please test other source and display devices to determine if it is a compatibility issue.

Warranty Terms and Conditions

For the following cases LINK shall charge for the service(s) claimed for the products if the product is still remediable and the warranty card becomes unenforceable or inapplicable.

1. The original serial number (specified by LINK) labeled on the product has been removed, erased, replaced, defaced or is illegible.
2. The warranty has expired.
3. The defects are caused by the fact that the product is repaired, dismantled or altered by anyone that is not from a LINK authorized service partner. The defects are caused by the fact that the product is used or handled improperly, roughly or not as instructed in the applicable User Guide.
4. The defects are caused by any force majeure including but not limited to accidents, fire, earthquake, lightning, tsunami and war.
5. The service, configuration and gifts promised by salesman only but not covered by normal contract.
6. LINK preserves the right for interpretation of these cases above and to make changes to them at any time without notice.

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