AV Access

Simplify your life

4KEX70-ARC-H2

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



User Manual

Disclaimers

The information in this manual has been carefully checked and is believed to be accurate. AV Access Technology Limited assumes no responsibility for any infringements of patents or other rights of third parties which may result from its use.

AV Access Technology Limited assumes no responsibility for any inaccuracies that may be contained in this document. AV Access Technology Limited also makes no commitment to update or to keep current the information contained in this document.

AV Access Technology Limited reserves the right to make improvements to this document and/or product at any time and without notice.

Copyright

Copy, Reproduce, Distribute and/or Edit of this document or part of it as well as utilization of its contents and communication thereof to others without express authorization are prohibited. Offenders will be held liable for payment of damages. All rights created by patent grant or registration of a utility model or design patent are reserved. Copyright ©2016 AV Access Technology Limited All rights reserved.

Trademarks Notice

All products or service names mentioned in this document may be trademarks of the companies with which they are associated.

Contact Us

Business inquiry: **services@avaccess.com**

Technical problems: **support@avaccess.com**

Important Safety Instructions

- Do not expose this apparatus to rain, moisture, dripping or splashing. No objects filled with liquids, such as vases, shall be placed on the apparatus.
- Do not install or place this unit in a bookcase, built-in cabinet, or in another confined space. Ensure the unit is well ventilated.
- To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, or similar items.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not place sources of naked flames, such as lighted candles, on the unit.
- Clean this apparatus only with dry cloth.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Protect the power cord from being walked on or pinched, particularly at plugs.
- Only use attachments/accessories specified by the manufacturer.
- Refer all servicing to qualified service personnel.

Table of Contents

Introduction **2**
- Overview 2
- Features 2
- Package Contents 3
- Panel 4
  - Transmitter 4
  - Receiver 5

Installation and Application **8**
- Brackets Installation 8
  - Steps to install the device in a suitable location: 8
- IR Cable Operation 9
  - Cable Type 9
  - Using the IR Emitter 9
- Typical Application 12

Audio DIP Switch Control **13**
- ARC Mode 13
- S/PDIF IN Mode 13

Operate with RS232 ..... **16**
- RS232 Pinout 16
- RS232 Pass Through 16

Specification **18**
- Transmission Distance 19

Trouble Shooting **20**
- Steps of Regular Troubleshooting Routine 20
- Typical Questions 20

Warranty **22**

Introduction

Overview

4KEX70-ARC-H2 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 40m/131ft 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 suit also provides an HDMI audio de-embedding with phoenix analog connector.

Its proprietary two way PoC technology, with LED indication for visual 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 60 meters (1080p) and 35 meters (4K@60Hz YUV 4:4:4) via a single Cat 5e/6 cable.
- Supports HD signal transmission up to 70 meters (1080p) and 40 meters

(4K@60Hz YUV 4:4:4) via a single Cat 6a/7 cable.

- Visual Lossless Compression enables 4K@60 HDR extension over HDBaseT.
- Receiver to transmitter audio return via ARC or digital coax pathway.
- HDMI audio de-embedding with phoenix analog connector.
- Extends RS232, IR control signals.
- Support nonstandard bi-directional PoC power supply.
- Automatic EDID management.
- Visual LED indication.

Package Contents

Before you start the installation of the product, please check the package contents:

- 1 x Transmitter
- 1 x Receiver
- 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)
- 4 x Mounting Brackets (with Screws)
- 1 x User Manual

Panel

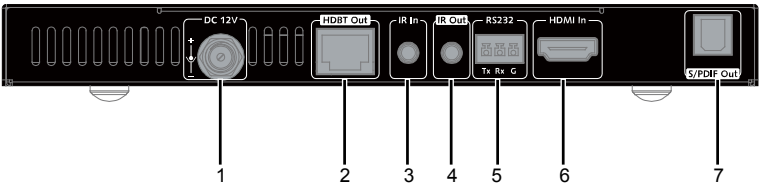
Transmitter

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, connect to audio system like AV receiver.

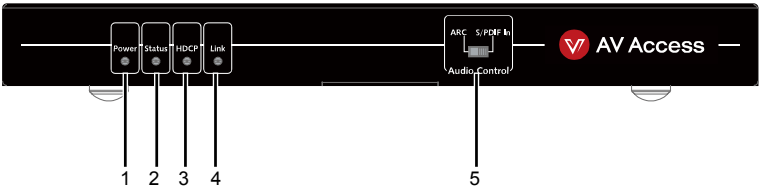
Rear Panel



No.	Name	Description
1	DC 12V	Connect to the power supply provided.
2	HDBT Out	Connect to HDBT IN port of receiver
3	IR In	Connect to IR receiver
4	IR Out	Connect to IR emitter
5	RS232	Connect to control system for RS232 Passing Trough
6	HDMI In	Connect to an HDMI source
7	S/PDIF Out	Connect to audio system like AV receiver

Receiver

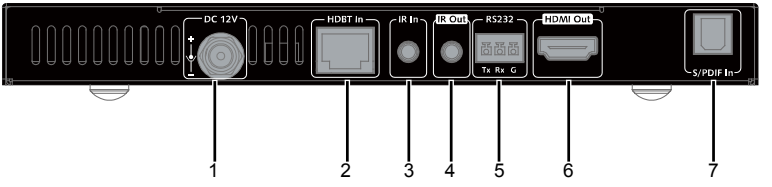
Front panel



No.	Name	Description
1	Power LED	**ON:** The receiver is powered on. **OFF:** The receiver is powered off.

No.	Name	Description
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**, configure ARC channel feed by TV • **S/PDIF In**, configure auxiliary S/PDIF input, pass optical audio from RX to TX unit

Rear Panel



No.	Name	Description
1	DC 12V	12V DC power input
2	HDBT In	Connect to HDBT OUT port of transmitter
3	IR In	Connect to IR receiver
4	IR Out	Connect to IR emitter
5	RS232	Connect to control system for RS232 Passing Trough

No.	Name	Description
6	HDMI Out	Connect to an HDMI display
7	S/PDIF In	Connect to audio system on S/PDIF IN mode

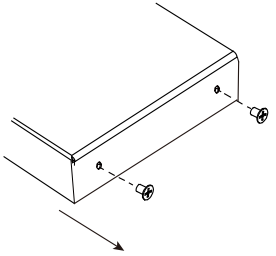
Installation and Application

Brackets Installation

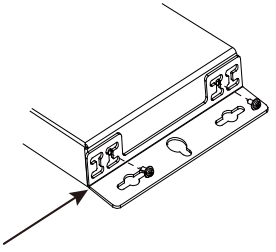
Note: Before installation, please ensure the device is disconnected from the power source.

Steps to install the device in a suitable location:

1. Remove the four screws that secure the side panels to the transmitter.



2. Position and install the mounting brackets with the four mounting screws provided.



3. Mount and secure the transmitter to a surface or a suitable location with the mounting screws.
4. Repeat steps 1, 2 and 3 to install the receiver.

IR Cable Operation

Cable Type

- IR Emitter: Connect to the "IR Out" port of the device.

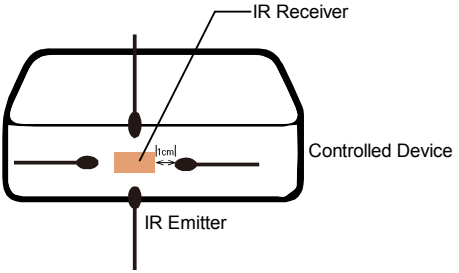


- Broadband IR Receiver (30-50 KHz): connect to the "IR In" port of the device.

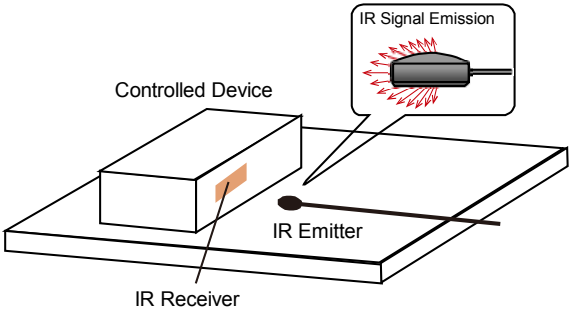


Using the IR Emitter

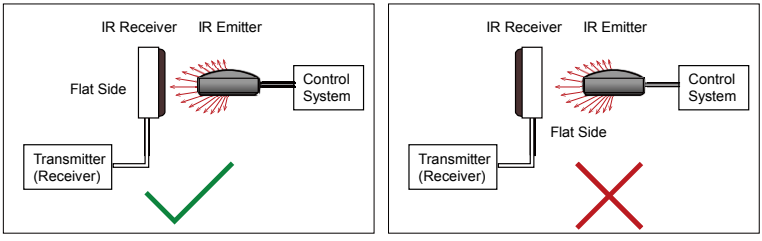
1. Insert the IR emitter plug into the “IR Out” jack located on the transmitter or receiver.
2. Example 1: Attach the IR emitter head directly with the adhesive tape provided near the IR receiver window (e.g. at the distance of 1cm) on the device you want to control.



Example 2: You can also place the IR emitter in front of the IR receiver window on the controlled device.

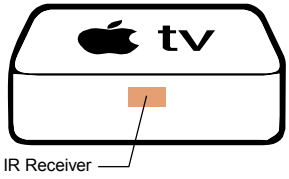


Example 3: When connected to control system, ensure the IR emitter is over against the IR receiver's front side instead of its flat side (see below picture):



Please refer to your device's user guide to find out where the IR receiver is on your connected device.

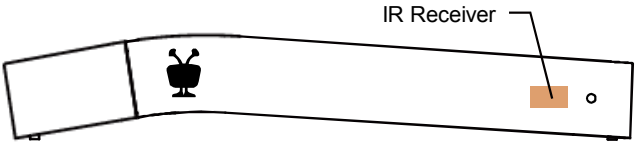
For example, the IR receiver for Apple TV/Amazon Fire TV/TIVO BOLT is shown as below:



Apple TV (3rd/4th generation)



Amazon Fire TV

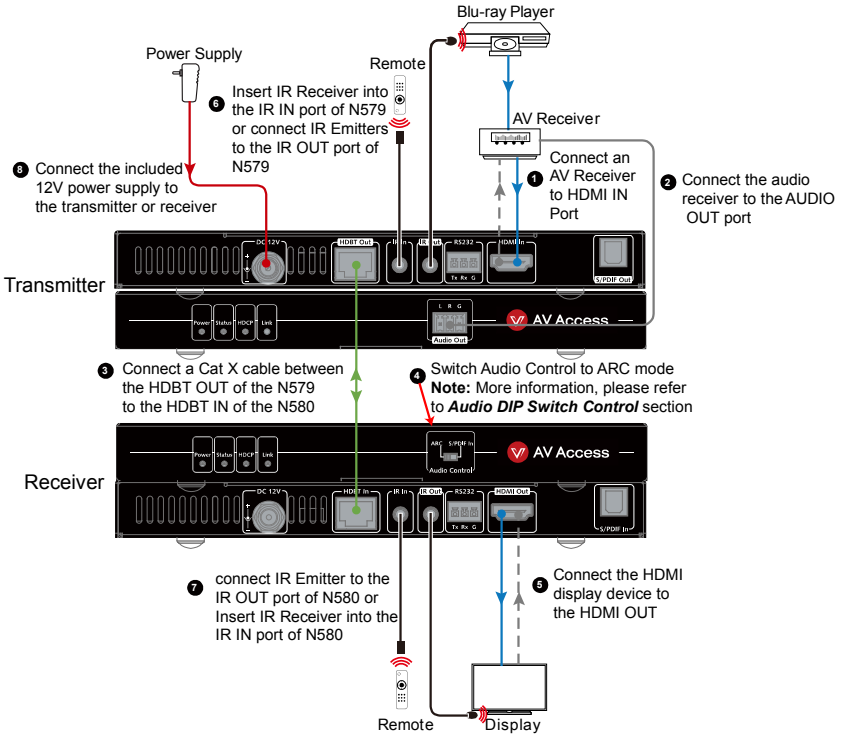


TIVO BOLT

Note: Products from AV Access do not support Bluetooth control, the introduction above applies to device with IR control capability only. Here is a list about different devices' control method.

No.	Device	Control Method
1	NVDIA 2571 Player	Bluetooth/USB
2	Amazon Fire TV with UHD HDR	Bluetooth
3	**Amazon Fire TV**	**IR**
4	ROKU Ultra Player	Bluetooth
5	**Apple TV 3rd**	**IR**
6	**Apple TV 4th**	**IR**
7	Apple 4K TV 5th	Bluetooth
8	Xbox one S	Bluetooth/USB
9	Xbox one X	Bluetooth/USB
10	**TIVO BOLT**	**IR**
11	NINTENDO SWITCH HAC-001 Game Console	Bluetooth/USB
12	PS4 Pro	Bluetooth/USB
13	Blu-ray Player	**IR**

Typical Application



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 open.

- Connect AV System and TV through ARC- enabled HDMI Ports of transmitter and receiver.
- Connect the transmitter and receiver. Switch the DIP switch to ARC mode.
- Set CEC function of TV to on.
- Switch the AV System to 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**)

S/PDIF IN Mode

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

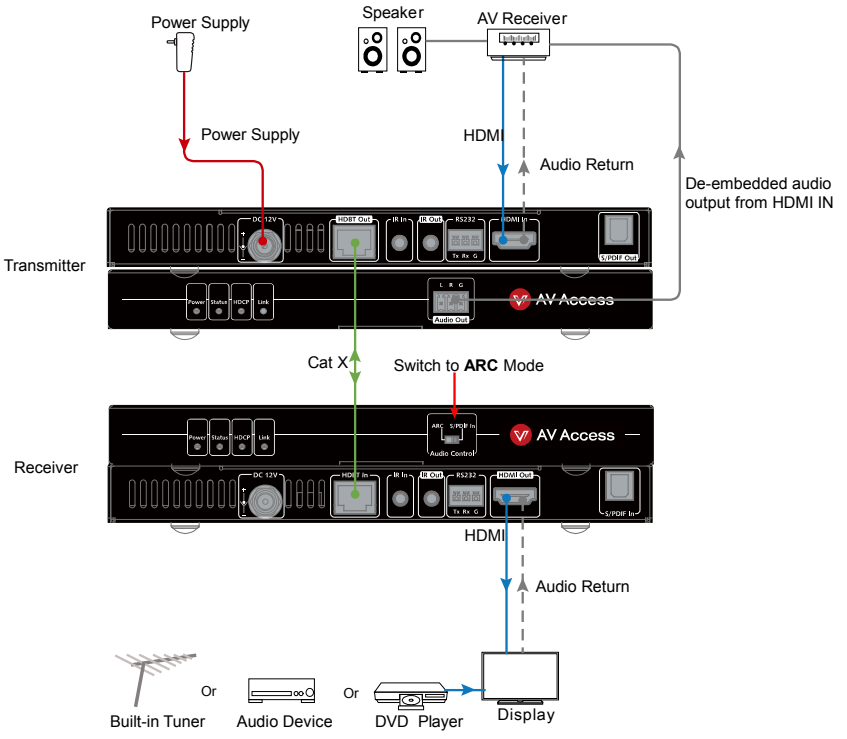


Figure 1 Audio Control switch to ARC Mode

Figure 1

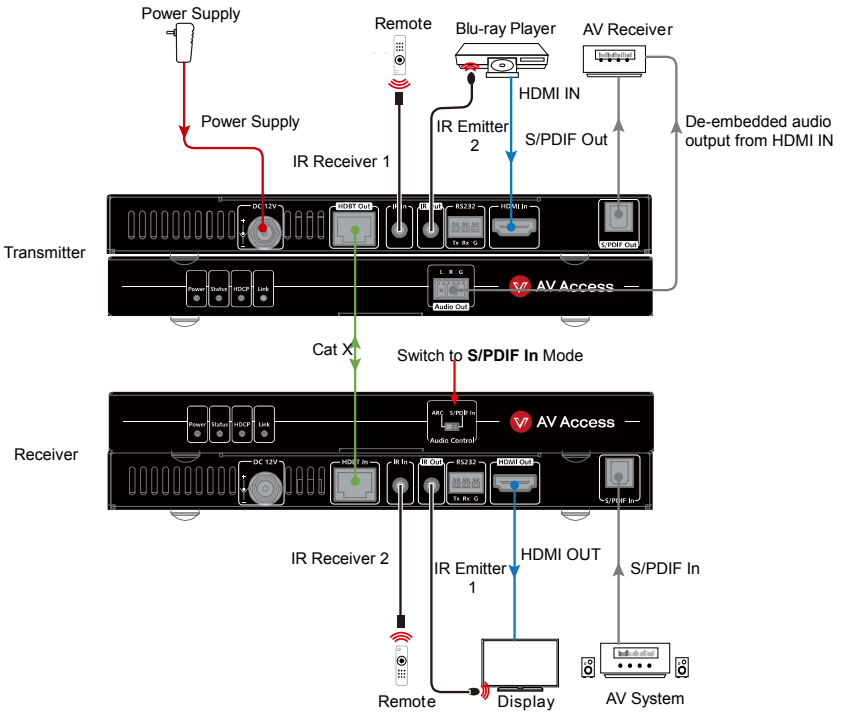


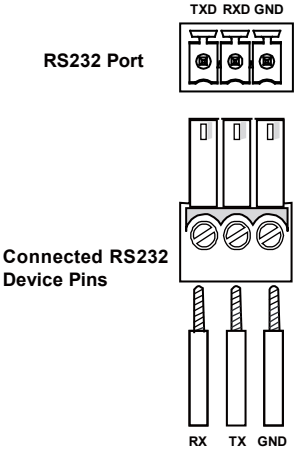
Figure 2 Audio Control switch to S/PDIF Mode

Figure 2

Operate with RS232

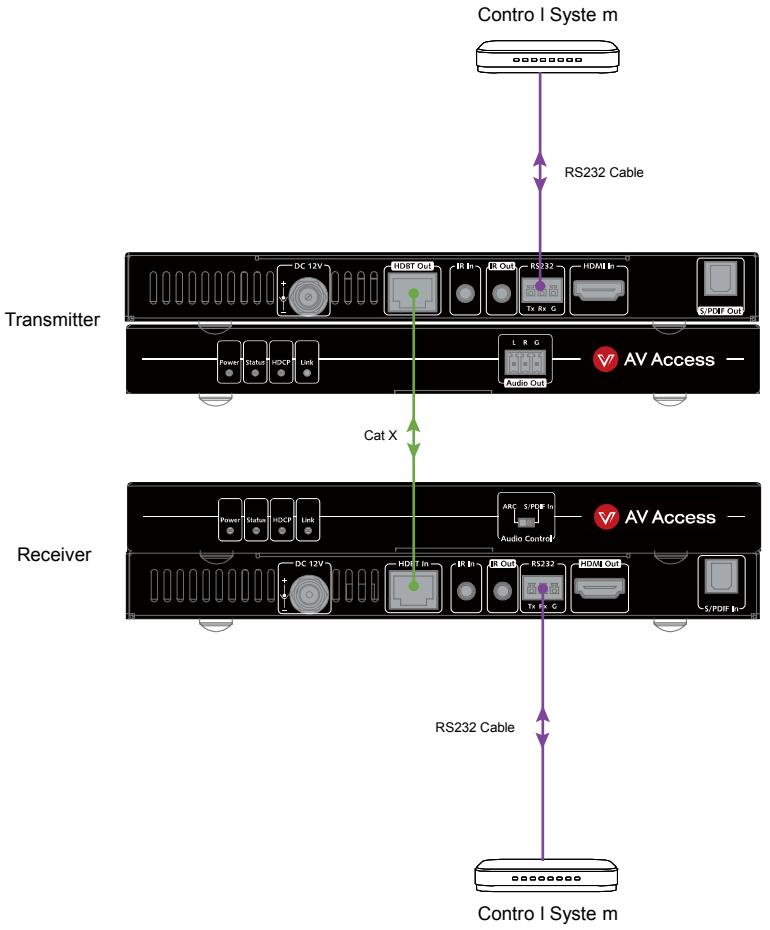
RS232 Pinout

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.


Contro l Syste m
RS232 Cable
Transmitter
DC 12V
HDBT Out
IR In
IR Out
RS232
HDMI In
S/PDIF Out
Tx Rx G
Power
Status
HDCP
Link
L R G
Audio Out
AV Access
Cat X
Receiver
ARC S/PDIF In
Audio Control
HDBT In
HDMI Out
RS232 Cable
Contro l Syste m

Specification

Technical	
Input	1 x HDMI, 1 x HDBT
Input Signal Type	HDMI with HDCP 2.2
Input/Output Resolution Supported	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[2,3,5,6,8], 4096x2160[2,3,5,6,8] 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;
Audio Format Supported	HDMI: Fully supports audio formats in HDMI 2.0 specification, including PCM, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio, DTS:X S/PDIF: PCM 2.0, Dolby Digital, DTS 5.1
Maximum Data Rate	18Gbps
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
Power Consumption (Max)	Receiver is powered by transmitter: 18.72W Transmitter is powered by receiver: 18.96W

	Transmitter and receiver are powered separately: Transmitter: 8.4W Receiver: 6.6W
Device Dimension (W x H x D)	Transmitter/Receiver: 195mm x 21mm x 94.8mm/7.68″ x 0.83″ x 3.73″
Product Weight	Transmitter/Receiver: 0.4kg/0.88lb

Transmission Distance

Cable Type	Range	Supported Video
HDMI	Input/Output: 15m/49ft	1080p@60Hz
	Input/Output: 10m/33ft	4K@30Hz 4:4:4
	Input/Output: 5m/16ft	4K@60Hz 4:4:4
Cat 5e/6	35m/115ft	4K@60Hz 4:4:4
	60m/197ft	1080P@60Hz
Cat 6a/7	40m/131ft	4K@60Hz 4:4:4
	70m/197ft	1080P@60Hz

Note: AV Access recommends the use of T568B straight-through category cables.

Trouble Shooting

Steps of Regular Troubleshooting Routine

1 **Power:** Ensure all devices are powered on (source, extender and display devices).

2 **Indicator:** Ensure LED indicators of the 4KEX70 extender are normal according to user manual.

3 **Devices**: Ensure picture can be shown normally when connecting source to display device directly.

4 **Cable**: Plug in and out HDMI/Cat X cable or try another HDMI/Cat X cable.

- Ensure the specific cable length is within the available transmission range according to Specification section.
- Cat 5e/6/6a/7 cable is recommended, do not use Cat 5 cable.
- Ensure the two connectors of one Cat X cable are at same standard (EIA/TIA 568B).

5 **Compatibility:** Please test other source and display devices to determine if it is a compatibility issue.

Typical Questions

1 **How can I fix video flash or cut off during the installation?**

- Power indicator should be solid on and status indicator should be blinking. If not, please check if the power adapter is securely connected.
- Link indicator should be solid on. If it is blinking or off, it is likely a problem with your Ethernet cable, please change to a qualified cable (Cat5e/6/7, EIA/TIA 568B) and ensure the cable length is within the maximum distance (230ft for 1080P, 131ft for 4K).
- HDCP indicator should be solid on or blinking. If it is off, it means no signal pass through, please check if the HDMI cables are securely connected to the source and TV, and the Ethernet cable that connects

transmitter to receiver is normal. Try a better HDMI cable or Ethernet cable.

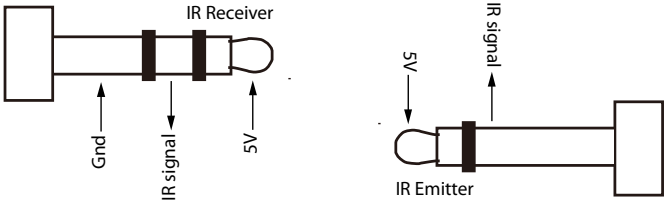
2 How can I fix the IR signal if it is weak or not working?

- Make sure the IR cables are correctly installed according to the diagrams in IR Pass Through section above.
- Check if the IR emitter head is secured over the center of the device IR receiver window. The best position may vary depending on the device, please refer to the device user manual. If the signal is weak, please try to adjust the position.
- Pay attention to the control angle and distance as below. The control signal will be better when your controller is pointed at the IR receiver head directly.

Enable Angle	**0**	**30°(Horizontal)**	**15°(Vertical)**
Distance	26ft (Max)	15ft (Max)	10ft (Max)

3 How can I make the IR work with third party control devices?

Please make sure the third party device follows our pin definition as below:



Warranty

Products are backed by a limited 3-year parts and labor warranty. For the following cases AV Access Technology Limited shall charge for the service(s) claimed for the product if the product is still remediable and the warranty card becomes unenforceable or inapplicable.

1. The original serial number (specified by AV Access Technology Limited) 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 an AV Access Technology Limited 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. AV Access Technology Limited preserves the right for interpretation of these cases above and to make changes to them at any time without notice.

Thank you for choosing products from AV Access.



AV Access Technology Limited

V1.0.2