Manuals+ — User Manuals Simplified.

ALFATRON 18G HDMI Extender with Audio Breakout ALF-TPUK610 User Manual

Contents

ALFATRON 18G HDMI Extender with Audio Breakout ALF-TPUK610

NOTE: 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. There is however, 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.

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

Radiation Exposure
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:
(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Statement

Thank you for choosing this product, please read this user manual carefully before using this product. The functions described in this version are updated May 2019. In the constant effort to improve our product, we reserve the right to make functions or parameters changes without notice or obligation.

Safety Precaution

- Do not dismantle the housing or modify the module to avoid electrical shock or burn.
- Using supplies not meeting the products' specifications may cause damage, deterioration or malfunction.

- Do not expose the unit to liquid, moisture or install this product near water.
- Install the device in a place with adaquate ventilation.
- Do not twist or forcefully pull ends of the optical cable. It may cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit.
- Always unplug the power to the device before cleaning.
- Unplug the power when not used for a long time.
- Refer all servicing to qualified service personnel.

Packing List

- 1x TPUK610 Transmitter
- 2x TX Mounting Ears with 4 Screw
- 4x TX Plastic Cushions
- 1x 3-pin Terminal Block
- 1x Power Adapter (24V DC 1.25A)
- 1x TPUK610 Receiver
- 2x RX Mounting Ears with 4 Screws
- 4x RX Plastic Cushions
- 1x RS232 Cable (3-pin to DB9)
- 1x User Manual

Note: Please contact your distributor immediately should any damage or defect in the components is found.

Product Introduction

The Alfatron ALF-TPUK610 HDMI 2.0 Extender consists of a transmitter and a receiver. It can extends 4K video to a distance of up to 131 feet (40 meters) and 1080P video up to a distance of 230 feet (70 meters) over a single CAT6 cable. It supports audio de-embedding and ARC. It also supports bidirectional IR and RS232 pass-through to control source or display device remotely. PoC feature allows the transmitter and the receiver to be powered from each other and only one power adapter is needed in the system. Apart from passing EDID information from the display, there are multiple built-in EDID settings that can be selected via the 4-pin DIP switch on the front panel of transmitter. The extender also supports convenient firmware upgrade through a Micro-USB port.

Features

- Supports HDMI 2.0 and the HDMI video resolution up to 4K@60Hz 4:4:4 HDR.
- HDMI input supports HDCP 2.2 and the output support HDCP Active or HDCP Passive mode.
- Extends 4K signals up to distances up to 131 feet (40 meters) and 1080P signals up to distances of 230 feet (70 meters) over a single CAT6 cable.
- Supports video resolution up-scaling, so the 1080P input can be automatically upgraded to 4K output.
- SPDIF out on receiver for source audio de-embedding.
- 18Gbps high bandwidth.
- Advanced EDID management: multiple built-in EDID settings can be selected.
- Test pattern provides a built-in 4K/1080P image for troubleshooting.
- Bidirectional IR, RS232 and 24V PoC.

- Supports ARC.
- Supports CEC pass-through.
- Provides LEDs to indicate the current operating status.
- Firmware upgrade by Micro-USB port.

Transmitter Panel Description
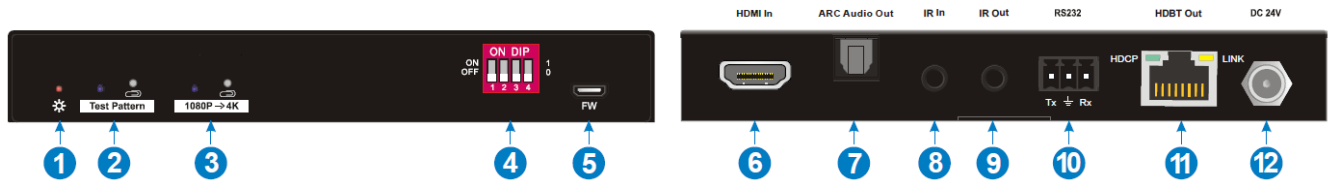
1. Power LED: The LED illuminates red when power is applied.
2. Test Pattern: Press the button with a paper clip or similar tool to enable the test pattern, the left LED will illuminate blue. The product then generates an image of 1080P/60Hz colour bar to output. Press this button again and the left LED will blink blue at an interval of 500ms. The product then generates an image of 4K/60Hz 4:4:4 colour bar to output. Press and hold this button for three seconds again to exit the Test Pattern mode.
3. 1080P → 4K: Press and hold the button for at least three seconds with a paper clip or similar tool to enable 1080P to 4K up-scaling, the left LED will then illuminate blue. Press and hold it again to exit.
4. EDID: 4-pin DIP switch for EDID setting and HDCP mode selection. Please refer to the EDID Management for more details.
5. FW: Micro-USB port for firmware upgrade and user-defined EDID upload.
6. HDMI In: Type-A female HDMI input port to connect an HDMI source.
7. ARC Audio Out: Toslink connector to connect to speaker or amplifier for ARC audio output.
8. IR In: 3.5mm jack to connect into the IR receiver for IR pass-through.
9. IR Out: 3.5mm jack to connect into the IR emitter for IR pass-through.
10. RS232: 3-pin terminal block to connect to the RS232 control device (e.g. PC) or a third-party device which needs to be controlled.
11. HDBT Out: RJ45 port to connect to the HDBT input port of receiver via a CAT6 Ethernet cable. The LINK LED illuminates orange when there is a valid HDBaseT link between the transmitter and the receiver. The HDCP LED illuminates green when the video contains HDCP content.
12. DC 24V: DC connector for the power adapter connection.

Receiver Panel Description
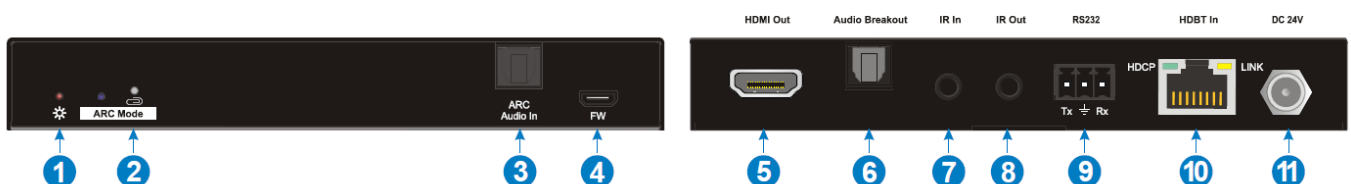
1. Power LED: The LED illuminates red when power is applied.
2. ARC Mode: Press the button with a paper clip or similar tool to enable the ARC mode. The left LED then illuminates blue. Press it again to exit the ARC mode and the LED will turn off.
3. ARC Audio In: Toslink connector to connect to an ARC audio source device (e.g.TV).

4. FW: Micro-USB port for firmware upgrade.

5. HDMI Out: Type-A female HDMI output port to connect to an HDMI display (e.g.TV).

6. Audio Breakout: If the ARC mode is OFF, the Toslink connector connects to a speaker or amplifier for HDMI source audio de-embedding. Note: If the ARC mode is ON, this port has no audio output.

7. IR In: 3.5mm jack to connect to the IR receiver for IR pass-through.

8. IR Out: 3.5mm jack to connect to the IR emitter for IR pass-through.

9. RS232: 3-pin terminal block to connect to the RS232 control device (e.g. PC) or a third-party device which needs to be controlled.

10. HDBT In: RJ45 port to connect to the HDBT output port of the transmitter via a CAT6 Ethernet cable. The LINK LED illuminates orange when there is a valid HDBaseT link between the transmitter and the receiver. The HDCP LED illuminates green when the video contains HDCP content.

11. DC 24V: DC connector for the power adapter connection.

DIP Switch Operation

EDID Management

The Extended Display Identification Data (EDID) is used by the source device to match its video resolution with the connected display. By default, the source device obtains its EDID from the first connected display. Should the displays with different capabilities be connected to the extender, the DIP switch on the front panel of the transmitter can be used to set the EDID to a fixed value to ensure the compatibility in video resolution.
The switch represents "0" when in the lower (OFF) position, and it represents "1" when the switch in is the upper (ON) position.

Switch 1~3 are used for EDID setting. The DIP switch status and its corresponding setting is shown at the back of the product.
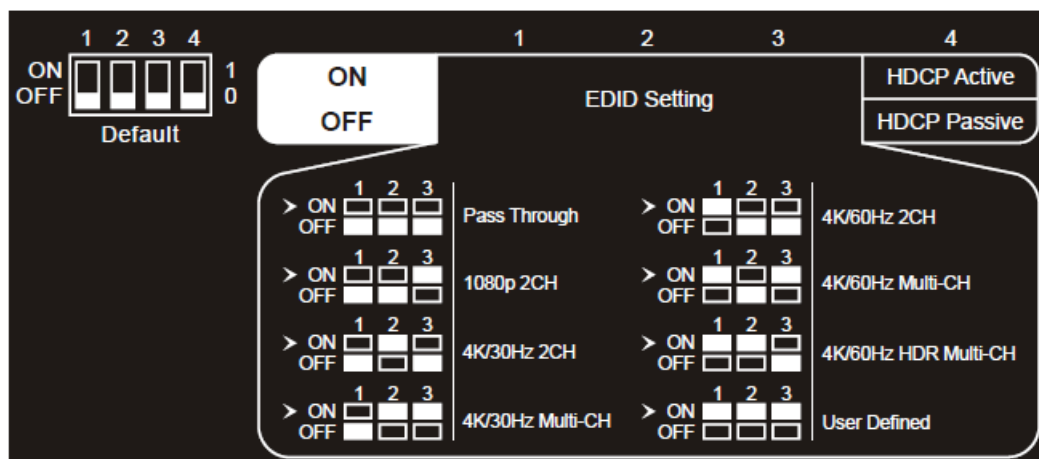
Switch Status	Video Resolution	Audio Format
000	Pass-Through	
001	1080P	2CH
010	3840×2160@30Hz	2CH
011	3840×2160@30Hz	Multi-CH
100	3840×2160@60Hz	2CH
101	3840×2160@60Hz	Multi-CH
110	3840×2160@60Hz HDR	Multi-CH (Supports PCM 2CH, PCM5.1, Dolby Digital 5.1,DTS 2CH)
111	User-defined EDID (Upload the EDID by Micro-USB port)	

Note:

- 2CH: Supports LPCM 2CH.
- Multi-CH: Supports LPCM 8CH, Dolby TrueHD, DTS-HD, Dolby Digital5.1, DTS 5.1, Dolby Digital Plus.

User-defined EDID Setting
Apart from directly using the built-in EDID, the specific EDID can be customized by following the below operation process.

1. Rename the user-defined EDID according to the following format.

   EC_xx_xxxxx_xxxx_xxx.bin

   - EC: Fixed value
   - xx: EDID ID. It is "15".
   - xxxxx: Video resolution.
   - xxxx: Refresh rate.
   - xxx: Audio format.
     Example: EC_15_3840x2160_60Hz_ Dolby.bin
2. Connect the FW port of the transmitter to the PC with a USB cable, then power on the transmitter. The PC will automatically detect a virtual disk named "BOOTDISK".
3. Double-click to open the disk, a file named "READY.TXT" will be shown.
4. Copy the user-defined EDID (such as EC_15_3840x2160_60Hz_Dolby.bin) to the "BOOTDISK" disk.
5. Reopen the disk to check if the filename "READY.TXT" automatically converts to "SUCCESS.TXT", if yes, the user-defined EDID has been written into the transmitter and saved as its corresponding EDID ID successfully.
6. Remove the USB cable, then reboot the transmitter.
7. The new EDID can be used by setting the DIP switch status to "111".

HDCP Mode
Put DIP switch 4 to the "ON" position to select HDCP Active mode, or on the "OFF" position for HDCP Passive mode.

Switch Status	Mode	HDCP
OFF (0)	Passive (Default)	Automatically follows the HDCP version of the source device.
ON (1)	Active	l If the input video has HDCP content, the HDCP version of HDMI output is HDCP 1.4 for a broader video solution. l If the input video has no HDCP content, the HDMI output has no HDCP too.

ARC Mode

The front panel of the receiver provides buttons to enable or disable ARC mode, as the below figure shows:


Press the button with a paper clip or similar tool to enable the ARC mode, the left LED then illuminates blue. Press it again to exit the ARC mode and the LED will be off.

| ARC Mode	Display (e.g.TV)	Audio Transmission Path
ON	ARC is supported.	The TV audio is transmitted from the TV back to the receiver via the HDMI cable, it will then be output via the **ARC Audio Out** port of the transmitter.
	ARC is not supported.	Connect the TV to the **ARC Audio In** port on the receiver with an audio cable. The TV audio is transmitted from the TV back to the receiver via the audio cable, it will then be output by the **ARC Audio Out** port of transmitter. *Note that if the ARC mode is ON, the **Audio Breakout** port of the receiver has no audio output.*
OFF	/	The TV audio cannot route back to the **ARC Audio Out** port of transmitter. The **Audio Breakout** port of the receiver is connected to a speaker or amplifier for HDMI source audio de-embedding.

System Connection

The following diagram illustrates the typical input and output connections of the extender:

1. The ARC model of the receiver is ON, and the display device (e.g. HDTV) supports ARC. The TV audio is transmitted from the TV back to the receiver via HDMI cable, it will then be output by the ARC Audio Out port of transmitter.
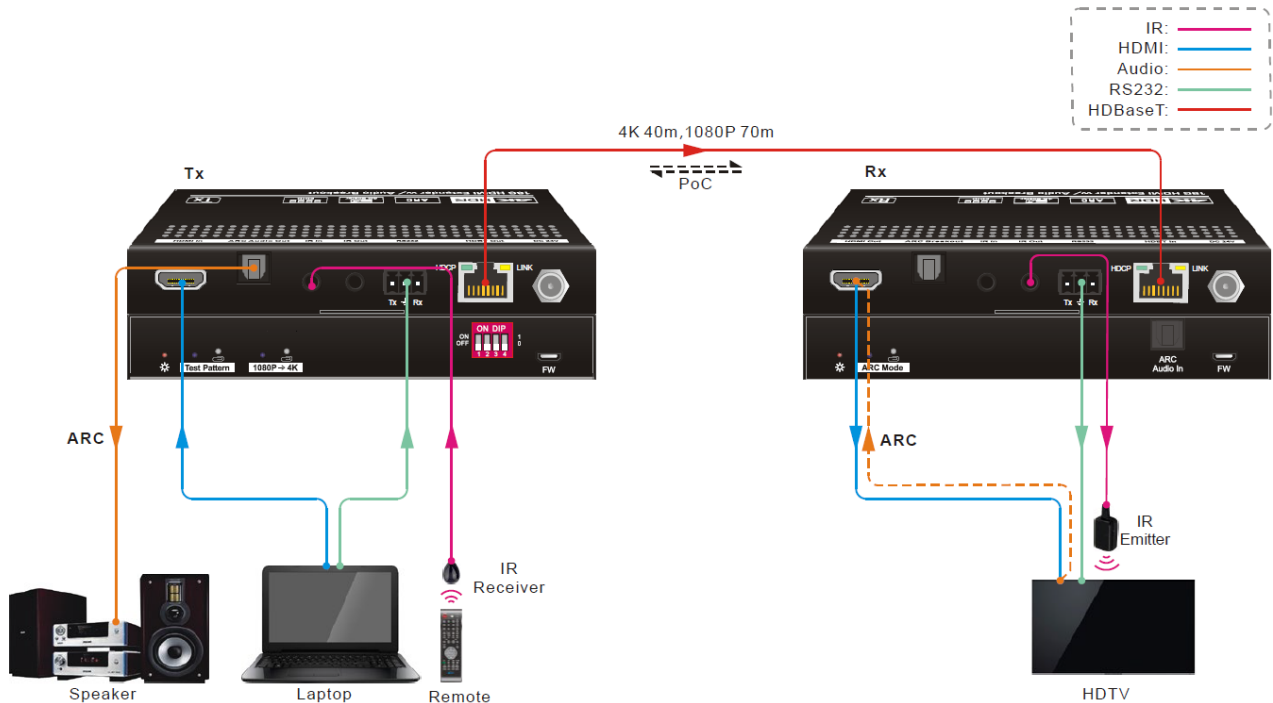

Note: The STP cable is recommended to be used to ensure optimal machine performance in ARC mode.

2. The ARC mode of the receiver is ON, but the display device (e.g. HDTV) does not support ARC. The TV audio is transmitted from the TV back to the receiver via the audio cable, it will then be output by the ARC Audio Out port of transmitter.
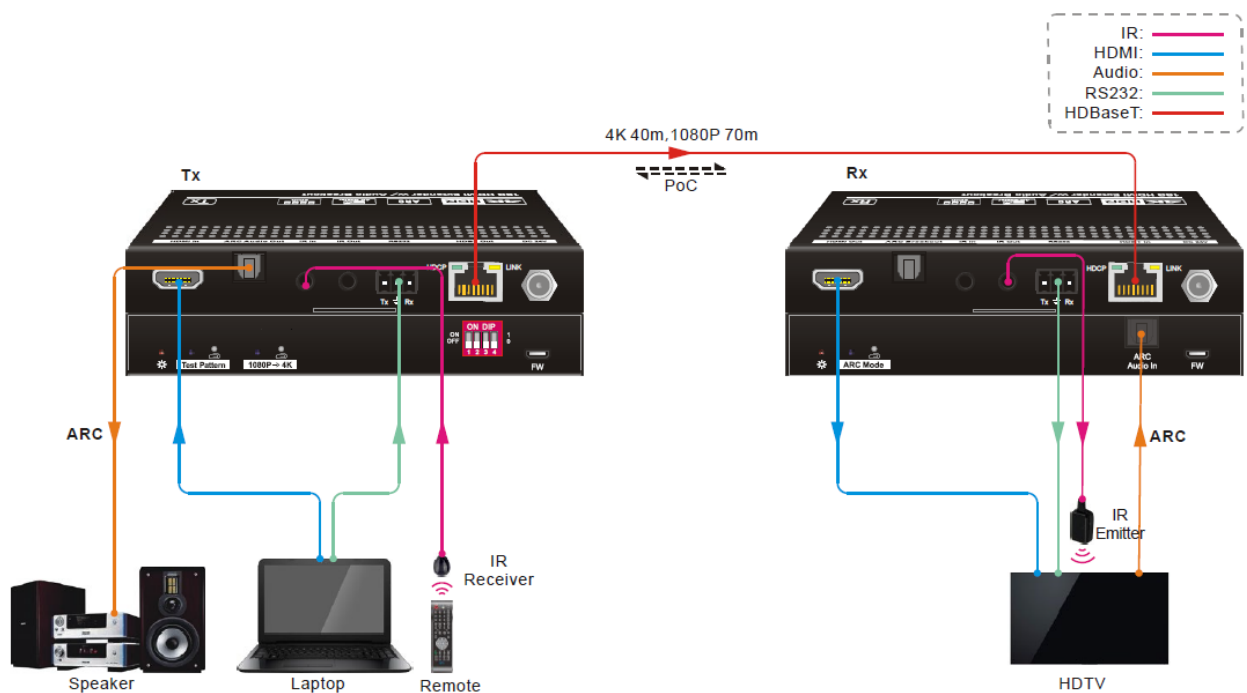
Note: The STP cable is recommended to be used to ensure optimal machine performance in ARC mode.

3. The ARC mode of the receiver is OFF. The TV audio cannot be routed back to the ARC Audio Out port of transmitter. The Audio Breakout port of receiver is connected to speaker or amplifier for HDMI source audio de-embedding.
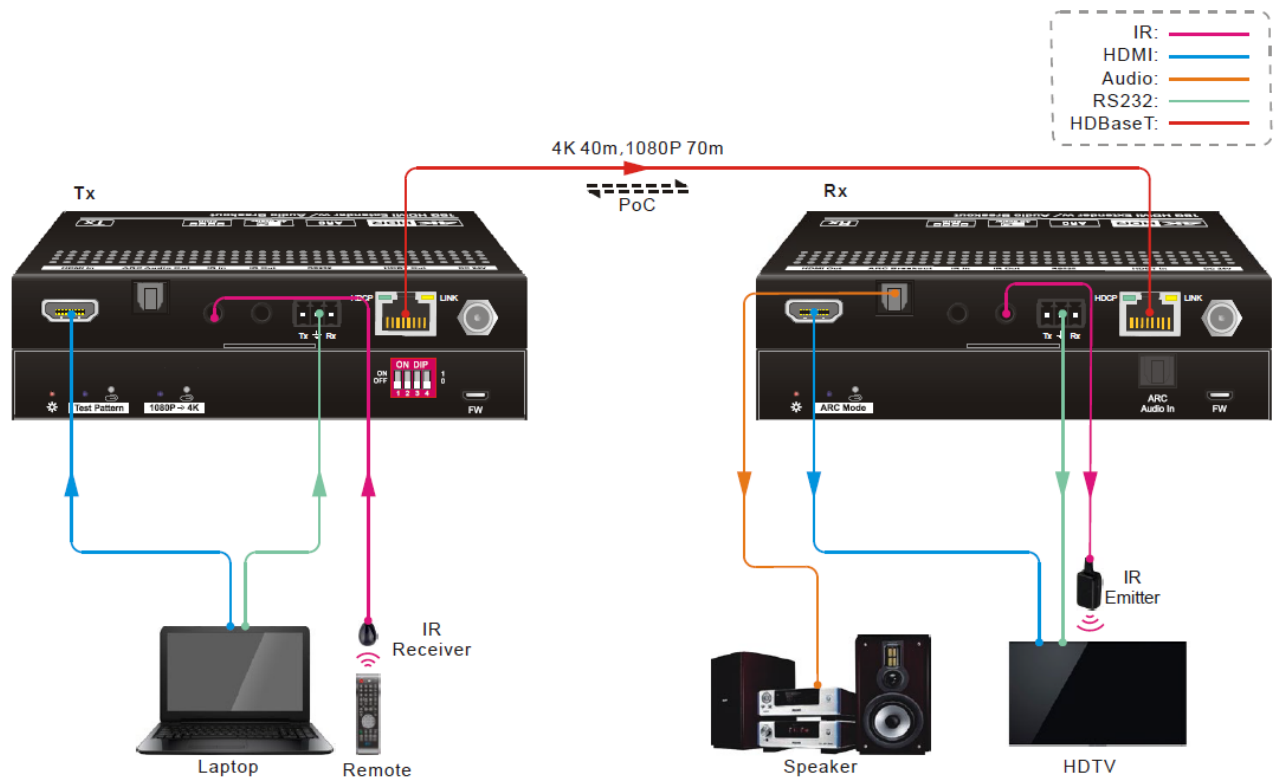
Technical Specification

	Transmitter	Receiver
Video		
Input	(1) HDMI	(1) HDBT
Input Connector	(1) Type-A female HDMI	(1) RJ45
Input Resolution	Up to 4Kx2K@60Hz 4:4:4 8bit HDR10	Up to 4Kx2K@60Hz 4:2:0
Output	(1) HDBT Out	(1) HDMI
Output Connector	(1) RJ45	(1) Type-A female HDMI
Output Resolution	Up to 4Kx2K@60Hz 4:2:0	Up to 4Kx2K@60Hz 4:4:4 8bit HDR10
Audio		
Input	–	(1) ARC Audio In
Input Connector	–	(1) Toslink Connector
Output	(1) ARC Audio Out	(1) Audio Breakout

Output Connector	(1) Toslink connector	(1) Toslink connector
Audio Format	Supports PCM, Dolby Digital, Dolby True-HD, DTS and DTS-HD.	
Frequency Response	20Hz – 20KHz, ±3dB	
Max Output Level	2.0Vrms ± 0.5dB. 2V = 16dB headroom above -10dBV (316mV) nominal consumer line level signal	
THD+N	< 0.05% (-80dB), 20Hz – 20KHz bandwidth, 1KHz sine at 0dBFS level (or max level)	
SNR	> 85dB, 20Hz-20 kHz bandwidth	
Crosstalk Isolation	> 70dB, 10KHz sine at 0dBFS level (or max level before clipping)	
L-R Level Deviation	< 0.3dB, 1KHz sine at 0dBFS level (or max level before clipping)	
Frequency Response Deviation	< ± 0.5dB 20Hz – 20KHz	
Output Load Capability	1KΩ and higher (Supports 10x paralleled 10KΩ loads)	
Stereo Channel Separation	>70dB@1KHz	
Control		
Control Part	(1) Test Pattern button, (1)1080P → 4K button, (1) EDID 4-pin DIP switch, (1) FW, (1) IR In, (1) IR Out, (1) RS232	(1) ARC Mode button, (1) FW, (1) IR In, (1) IR Out, (1) RS232
Control Connector	(1) Micro-USB port, (2) 3.5mm jacks,	(1) Micro-USB port, (2) 3.5mm jacks,

	(1) 3-pin terminal block	(1) 3-pin terminal block
General		
Bandwidth	18Gbps	
HDMI Standard	2.0	
HDCP Version	2.2, 1.4 compliant	
CEC	Pass-through	
Bidirectional PoC	Supported	
HDMI 2.0 Cable Length	4K@60Hz 4:4:4 ≤ 5m, 4K@60Hz 4:2:0 ≤ 15m, 1080P ≤ 20m	
Transmission Standard	HDBaseT	
Transmission Distance	1080P@60Hz ≤ 230 feet (70 meters), 4K@60Hz ≤ 131 feet (40 meters)	
Operation Temperature	-5~ +55℃	
Storage Temperature	-25 ~ +70℃	
Relative Humidity	10%-90%	
Power Supply	Input:100V~240V AC; Output:24V DC 1.25A	
Power Consumption	12W (Max)	
Dimension (W*H*D)	TX/RX: 140mm x 19.5mm x 84mm	
Net Weight	TX:275g, RX:290g	

Note: Please use a high-quality HDMI cable which is fully compliant with HDMI 2.0 for reliable transmission and connection.

Warranty

1. This limited warranty covers defects in materials and workmanship in this product.
2. Should warranty service be required, proof of purchase must be presented to the Company. The serial number on the product must be visible and not have been tampered with in any way whatsoever.
3. This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by the Company to make such repairs or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover equipment enclosures, cables or accessories used in conjunction with this product.

   This limited warranty does not cover the cost of normal maintenance. Failure of the product due to insufficient or improper maintenance is not covered.

4. The Company does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

5. Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

6. Unless otherwise specified, the goods are warranted in accordance with the manufacturer's product specific warranties against any defect attributable to faulty workmanship or materials, fair wear and tear being excluded.

7. This limited warranty only covers the cost of faulty goods and does not include the cost of labor and travel to return the goods to the Company's premises.

8. In the event of any improper maintenance, repair or service being carried out by any third persons during the warranty period without the Company's written authorization, the limited warranty shall be void.

9. A7 (seven) year limited warranty is given on the aforesaid product where used correctly according to the Company's instructions, and only with the use of the Company's components.

10. The Company will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

11. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition.; or

12. Replace this product with a direct replacement or with a similar product deemed by the Company to perform substantially the same function as the original product; or

13. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

14. The Company is not obligated to provide the Customer with a substitute unit during the limited warranty period or at any time thereafter.

15. If this product is returned to the Company this product must be insured during shipment, with the insurance and shipping charges prepaid by the Customer. If this product is returned uninsured, the Customer assumes all risks of loss or damage during shipment. The Company will not be responsible for any costs related to the removal or reinstallation of this product from or into any installation. The Company will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

16. Please be aware that the Company's products and components have not been tested with competitor's products and therefore the Company cannot warrant products and/or components used in conjunction with competitor's products.

17. The appropriateness of the goods for the purpose intended is only warranted to the extent that the goods are used in accordance with the Company's installation, classification and usage instructions.

18. Any claim by the Customer which is based on any defect in the quality or condition of the goods or their failure to correspond with specification shall be notified in writing to the Company within 7 days of delivery or (where the defect or failure was not apparent on reasonable inspection by the Customer) within a reasonable time after discovery of the defect or failure, but, in any event, within 6 months of delivery.

19. If delivery is not refused, and the Customer does not notify the Company accordingly, the Customer may not reject the goods and the Company shall have no liability and the Customer shall pay the price as if the goods had been delivered in accordance with the Agreement.

20. THE MAXIMUM LIABILITY OF THE COMPANY UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED

THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT.

Documents / Resources

	ALFATRON 18G HDMI Extender with Audio Breakout ALF-TPUK610 [pdf] User Manual ALFATRON, 18G, HDMI, Extender, Audio, Breakout, ALF-TPUK610