

# VEO-XTT44 and VEO-XRT44

HDBaseT<sup>®</sup> EXTENDER

HDMI<sup>®</sup> HDBaseT<sup>®</sup> Extender with ARC

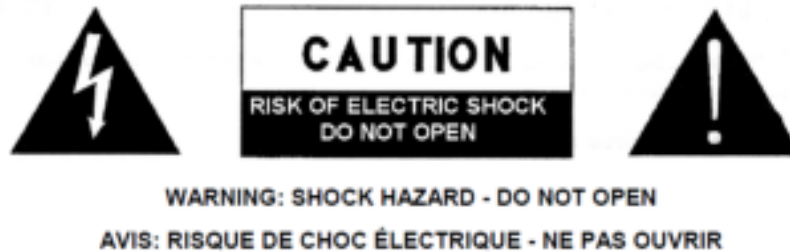


## USER MANUAL

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## 1. IMPORTANT REMARK



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING (If applicable):** The terminals marked with symbol of “” may be of sufficient magnitude to constitute a risk of electric shock. The external wiring connected to the terminals requires installation by an instructed person or the use of ready-made leads or cords.

**WARNING:** To prevent fire or shock hazard, do not expose this equipment to rain or moisture.

**WARNING:** An apparatus with Class I construction shall be connected to a mains socket-outlet with a protective earthing connection.

## 2. IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and at the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug the apparatus during lightening sorts or when unused for long periods of time.
13. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. Disconnecting from mains: Switching off the POWER switch all the functions and light indicators of the amplifier will be stopped, but fully disconnecting the device from mains is done unplugging the power cord from the mains input socket. For this reason, it always shall remain readily operable.
15. Equipment is connected to a socket-outlet with earthing connection by means of a power cord.
16. The marking information is located at the bottom of apparatus.
17. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on apparatus.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



**WARNING:** This product must not be discarded, under any circumstance, as unsorted urban waste. Take to the nearest electrical and electronic waste treatment centre.

**NEEC AUDIO BARCELONA, S.L.** accepts no liability for any damage that may be caused to people, animal or objects due to failure to comply with the warnings above.

### 3. IMPORTANT NOTE

Thank you for choosing our Ecler **VEO-XTT44** and **VEO-XRT44** HDMI® HDBaseT® Extenders with ARC!

It is **VERY IMPORTANT** to carefully read this manual and to fully understand its contents before any connection in order to maximize your use and get the best performance from this equipment.

To ensure optimal operation of this device, we strongly recommend that its maintenance be carried out by our authorised Technical Services.

All ECLER products are covered by warranty, please refer to [www.ecler.com](http://www.ecler.com) or the warranty card included with this product for the period of validity and conditions.

### 4. INTRODUCTION

Ecler VEO-XTT44 and VEO-XRT44 are professional HDBaseT® Transmitter and Receiver for HDMI® extension of High Dynamic Range (HDR) formats. The extenders support video signal at resolution up to 4K/UHD at 60Hz with 4:4:4 chroma sampling and HDMI® data rate up to 18Gbps. The scaler implemented on the TX allows to upscale fullHD input to 4K. Bidirectional PoH (Power Over HDBaseT®) allows to use only one power supply connected to the Transmitter or the Receiver, according to the installation needs. A 4 pin DIP switch allows managing EDID with multiple and customizable options. The extenders include audio de-embedding and ARC support, bi-directional IR and RS-232 pass-through. A video pattern generator is included in the transmitter for test purposes during installation. This product represents the ideal solution for residential and commercial applications that include the latest 4K/UHD and HDR sources and displays.

#### Features:

- Supports HDMI® and the HDMI® video resolution up to 4K@60Hz 4:4:4 HDR.
- HDCP 2.2 and 1.4 supported.
- Extends 4K signals to distances up to 40 meters (131 feet) and 1080P signals to distances up to 70 meters (230 feet) over a single CATx cable.
- Supports video resolution up-scaling, 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 or customized EDID can be selected.
- Test pattern provides a built-in 4K/1080P image for troubleshooting.
- Bidirectional IR, RS232 and 24V PoH.

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

## 5. PACKAGES CONTENT

### Transmitter

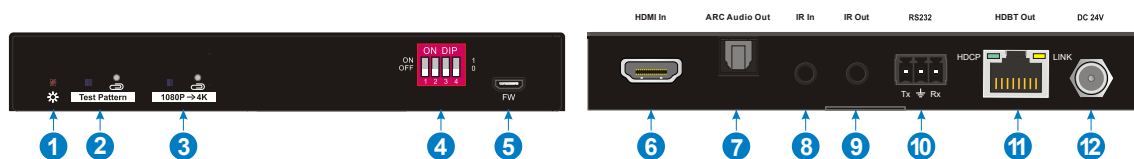
- 1 x **VEO-XTT44** Transmitter
- 2 x TX Mounting Ears with 4 Screws
- 4 x TX Rubber feet
- 1 x 3-pin Terminal Block
- 1 x Power Adapter (24V DC 1.25A)
- 1 x Quick guide and warranty

### Receiver

- 1 x **VEO-XRT44** Receiver
- 2 x RX Mounting Ears with 4 Screws
- 4 x RX Rubber feet
- 1 x RS232 Cable (3-pin to DB9)
- 1 x Power Adapter (24V DC 1.25A)
- 1 x Quick guide and warranty

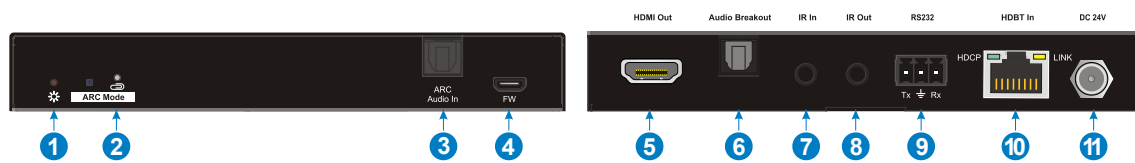
## 6. PANEL DESCRIPTIONS

### 6.1. Transmitter Frontal Panel and Rear Panel



1. **Power LED:** The LED illuminates red when power is applied.
2. **Test Pattern:** Pressing the button with paper clip or other pointed tool, the left LED illuminates blue and the device generates an image of 1080P/60Hz color bar to output; Pressing this button again, the left LED will blink blue at an interval of 500ms and the product generates an image of 4K/60Hz 4:4:4 color bar to output. Press and hold this button for three seconds again can exit the Test Pattern mode.
3. **1080P → 4K:** Press and hold the button at least three seconds with paper clip or other pointed tool to enable 1080P to 4K up-scaling, and then the left LED illuminates blue. Press and hold it again to exit.
4. **EDID:** 4-pin DIP switch for EDID setting and HDCP mode selection. Please refer to [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 a HDMI® source.
7. **ARC Audio Out:** Toslink connector to connect speaker or amplifier for ARC audio output.
8. **IR In:** 3.5mm jack to connect the IR receiver (not included) for IR pass-through.
9. **IR Out:** 3.5mm jack to connect the IR emitter (not included) for IR pass-through.
10. **RS232:** 3-pin terminal block to connect the RS232 control device (e.g. PC) or a third-party device to be controlled.
11. **HDBT Out:** RJ45 port to connect the HDBT input port of receiver by CATx 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.

## 6.2. Receiver Frontal and Rear Panel



1. **Power LED:** The LED illuminates red when power is applied.
2. **ARC Mode:** Pressing the button with paper clip or another pointed tool, the ARC mode will be enabled and then the left LED will illuminate blue. Pressing it again, the ARC mode will be disabled and the LED will be off.
3. **ARC Audio In:** Toslink connector to connect 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 HDMI® display (e.g.TV).
6. **Audio Breakout:** If the ARC mode is OFF, the Toslink connector is connected to speaker or amplifier for HDMI® source audio de-embedding. Note that if the ARC mode is ON, this port has no audio output.
7. **IR In:** 3.5mm jack to connect the IR receiver (not included) for IR pass-through.
8. **IR Out:** 3.5mm jack to connect the IR emitter (not included) for IR pass-through.
9. **RS232:** 3-pin terminal block to connect the RS232 control device (e.g. PC) or a third-party device to be controlled.
10. **HDBT In:** RJ45 port to connect the HDBT output port of transmitter by CATx 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.



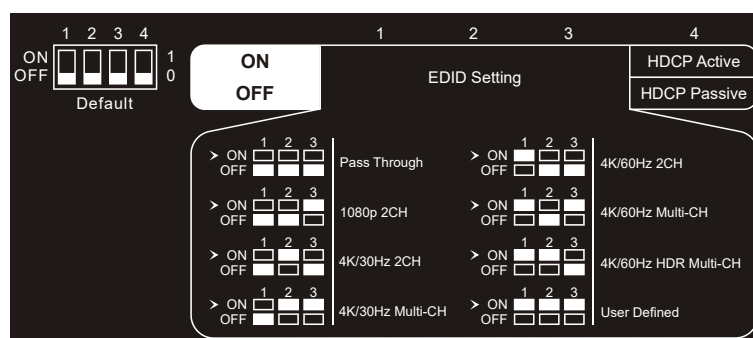
## 7. EDID MANAGEMENT

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. Meanwhile, since the displays with different capabilities can be connected to the extender, the DIP switch on the front panel of 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” while putting the switch in the upper (ON) position.



Switch 1~3 are used for EDID setting. The DIP switch status and its corresponding setting are shown at the back of the product.



Switch Status	Video Resolution	Audio Format
000	Pass Through	
001	1080P	2CH
010	3840x2160@30Hz	2CH
011	3840x2160@30Hz	Multi-CH
100	3840x2160@60Hz	2CH
101	3840x2160@60Hz	Multi-CH
110	3840x2160@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.

## 7.1. User-defined EDID Setting

Except directly selecting the built-in EDID, the specific EDID can be customized by following the below operation process.

1. Rename the user-defined EDID according 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 transmitter to the PC with USB cable, and then power on the transmitter, the PC will automatically detect a virtual disk named of "BOOTDISK".
3. Double-click to open the disk, a file named of "READY.TXT" will be showed.
4. Copy the user-defined EDID (such as **EC\_15\_3840x2160\_60Hz\_Dolby.bin**) to the "BOOTDISK" disk.
5. Reopen the disk to check the filename "READY.TXT" whether automatically becomes "SUCCESS.TXT", if yes, the user-defined EDID was imported into the transmitter and saved as its corresponding EDID ID successfully.
6. Remove the USB cable, and then reboot the transmitter.
7. Now the new EDID can be invoked by setting the DIP switch status to "111".

## 8. HDCP MODE

Set the switch **4** on 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 source device.
ON (1)	Active	<ul style="list-style-type: none"> <li>• If the input video has HDCP content, the HDCP version of HDMI® output is HDCP 1.4 for broader video solution.</li> <li>• If the input video has no HDCP content, the HDMI® output has no HDCP too.</li> </ul>

## 9. ARC MODE

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



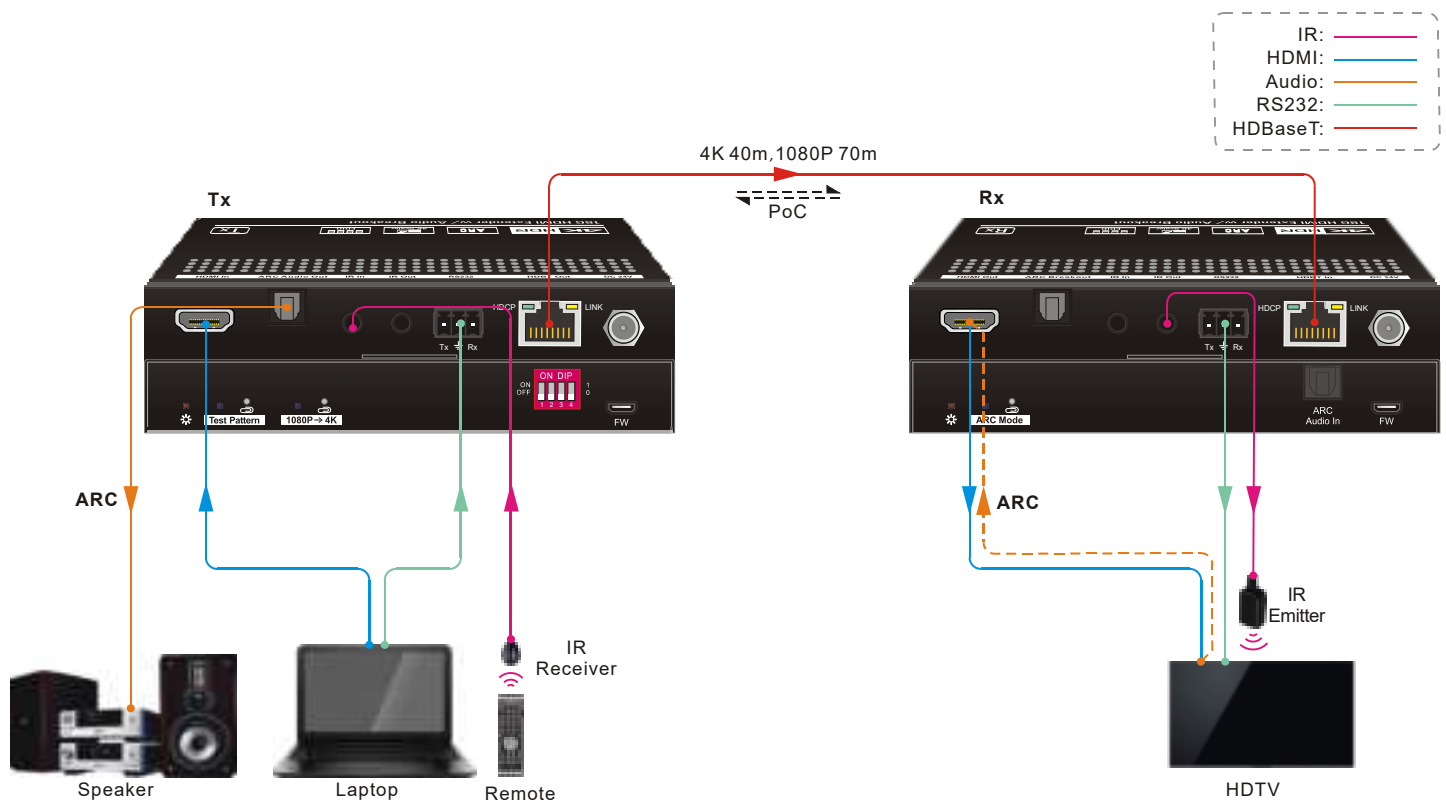
Press the button with paper clip or other pointed tool to enable the ARC mode: the left LED illuminates blue. Press it again to exit the ARC mode and the LED is off.

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 HDMI® cable, and then it will be output by the <b>ARC Audio Out</b> port of transmitter.
	ARC is not supported.	Connect the TV to the <b>ARC Audio In</b> port of receiver with an optic audio cable. The TV audio is transmitted from the TV back to the receiver via the audio cable, and then it will be output by the <b>ARC Audio Out</b> port of transmitter. <i>Note that if the ARC mode is ON, the <b>Audio Breakout</b> port of receiver has no audio output.</i>
OFF	/	The TV audio can't be back to the <b>ARC Audio Out</b> port of transmitter. The <b>Audio Breakout</b> port of receiver is connected to speaker or amplifier for HDMI® source audio de-embedding.

## 10. SYSTEM CONNECTION

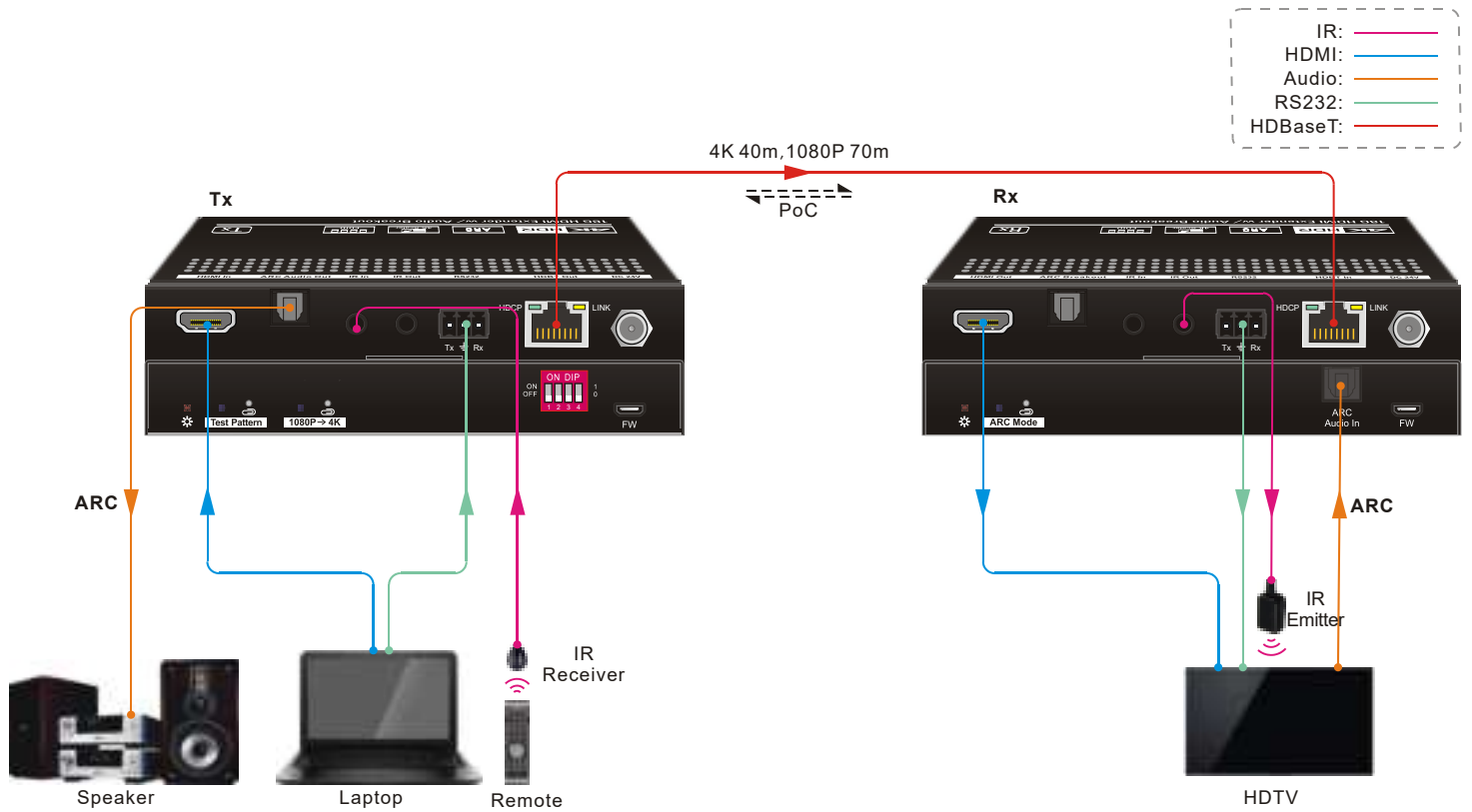
The following diagram illustrates the typical input and output connections of the extender:

1. ARC mode of 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, and then it will be output by the **ARC Audio Out** port of transmitter.



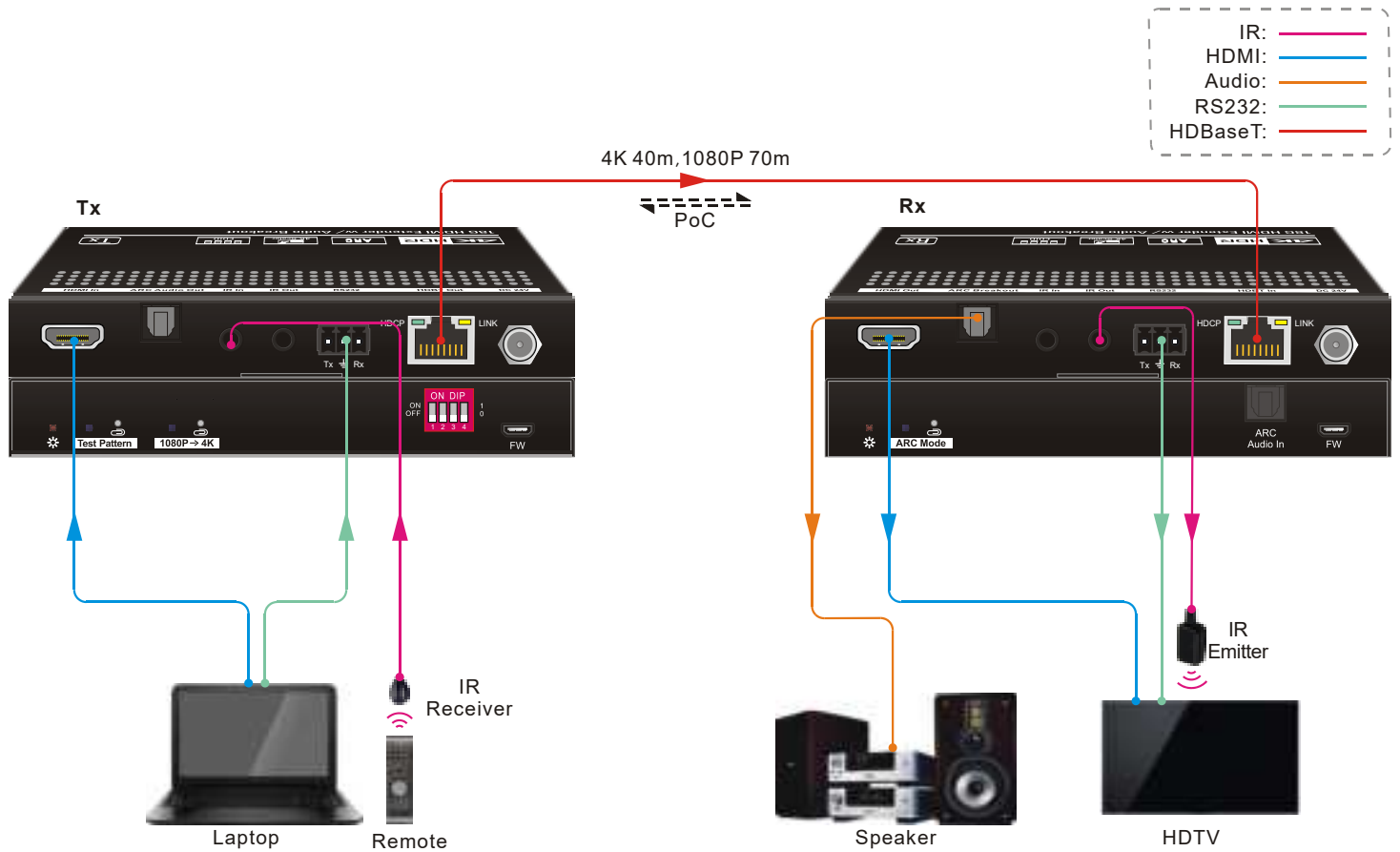
**Note:** STP cable is recommended to ensure optimal device performance in ARC mode.

- ARC mode of receiver is **ON**, but the display device (e.g. HDTV) doesn't support ARC. The TV audio is transmitted from the TV back to the receiver via optic audio cable, and then it will be output by the **ARC Audio Out** port of transmitter.



**Note:** STP cable is recommended to ensure optimal device performance in ARC mode.

3. ARC mode of receiver is **OFF**. The TV audio can't be 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.



## 11. TECHNICAL SPECIFICATIONS

### 11.1. Video performances

<b>Supported Resolutions</b>	480i, 480p, 720i, 720p, 1080i, 1080p up to 60Hz, 1200p up to 25/30Hz, 4K up to 60Hz
<b>Colorspace</b>	RGB, YCbCr
<b>Chroma Subsampling</b>	4:4:4, 4:2:0
<b>Color depth</b>	8-bit, 10-bit, 12-bit, 16-bit only @4K30
<b>Signal Bandwidth</b>	18 Gbps
<b>HDCP</b>	2.2/1.4 Compliant
<b>Video Connectors</b>	Transmitter: Type-A Female HDMI®  Receiver: Type-A Female HDMI®

### Audio performances

<b>Audio Formats</b>	PCM 2Ch, PCM 5.1, PCM 7.1, Dolby Digital, DTS, Dolby TrueHD, DTS-HD Master Audio
<b>Sample Rate</b>	32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz
<b>Bit rate</b>	up to 24-bit
<b>Frequency Response</b>	20Hz – 20KHz,           ±3dB
<b>Max Output Level</b>	2.0Vrms                   ± 0.5dB
<b>SNR</b>	> 85dB                   20Hz-20 kHz bandwidth
<b>Audio Connectors</b>	Transmitter:           Toslink (ARC output)  Receiver:               Toslink (Audio breakout)  Toslink (ARC input)

## 11.2. Control performances

<b>TX Control ports</b>	<b>Test Pattern</b>	<b>Button</b>
	1080P → 4K	Button,
	EDID	4-pin DIP switch,
	IR In, IR Out,	Minijack 3.5mm
	RS232	3-pin Euroblock
	FW	Micro USB
<b>RX Control ports</b>	ARC On/Off	Button
	IR In, IR Out,	Minijack 3.5mm
	RS232	3-pin Euroblock
	FW	Micro USB
<b>CEC</b>	Pass-through	



### 11.3. General

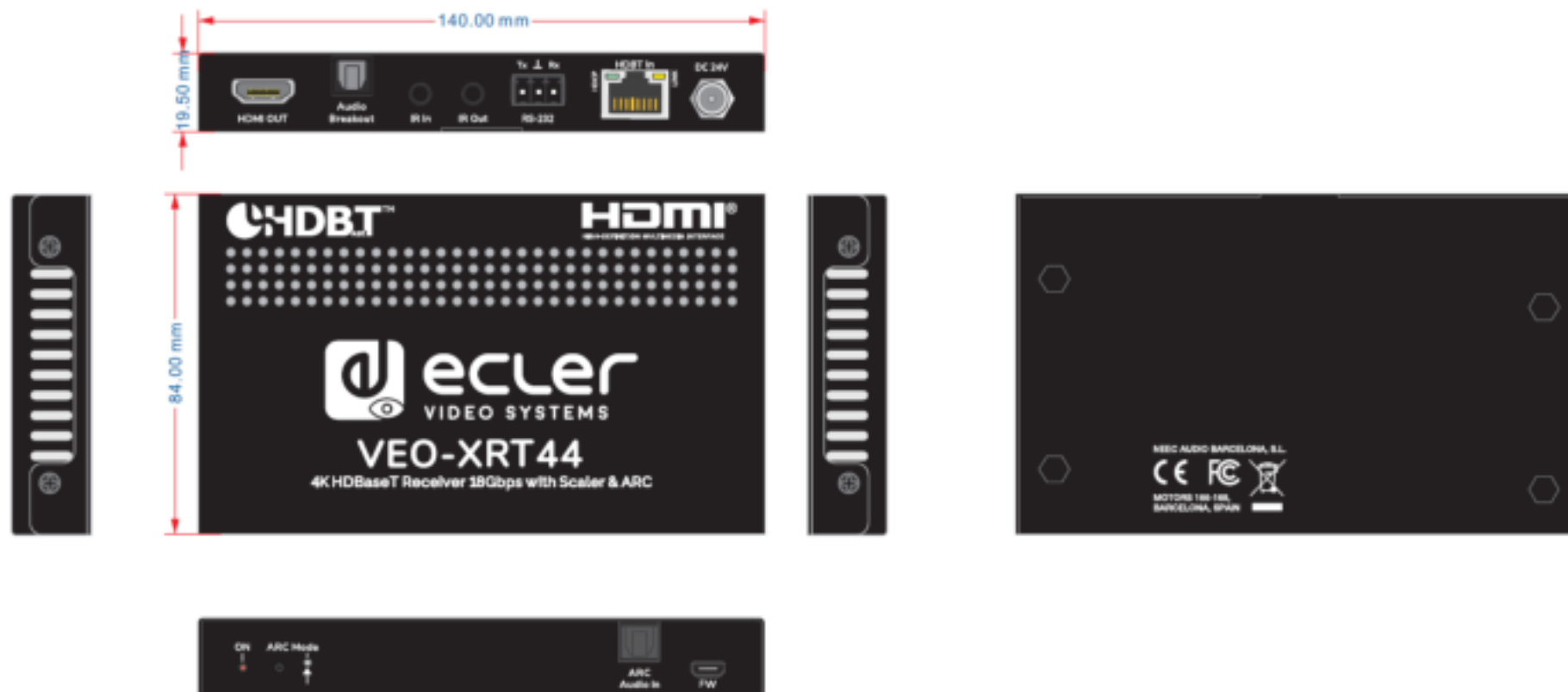
<b>HDMI® Distance</b>	up to 10 meters / 33 ft with Ecler VEO cables
<b>Transmission Standard</b>	HDbaseT®
<b>Cat.5e/6 Distance</b>	CAT5e/6 @ 4K up to 35 m / up to 115 feet CAT6a/7 @ 4K up to 40 m/ up to 130 feet CAT5e/6 @ 1080p up to 60 m / up to 197 feet CAT6a/7 @ 1080p up to 70 m / up to 230 feet
<b>Operating Temperature</b>	-5 to +55°C (23 to +131 °F)
<b>Humidity</b>	10 to 90 % RH (no condensation)
<b>Power Consumption</b>	12W (Maximum, TX+RX)
<b>Power Supply</b>	Input: AC 100V ~ 240V 50/60Hz Output: DC 24V---1.25A
<b>Dimensions</b>	TX and RX: 140mm × 84mm × 20mm (5.51" × 3.31" × 0.79")
<b>Weight</b>	TX: 275g (0.606 lbs) RX: 290g (0.640 lbs)

## 12. MECHANICAL DIAGRAMS

### 12.1. VEO-XTT44



12.2. VEO-XRT44



All product characteristics are subject to variation due to production tolerances. **NEEC AUDIO BARCELONA S.L.** reserves the right to make changes or improvements in the design or manufacturing that may affect these product specifications.

For technical queries contact your supplier, distributor or complete the contact form on our website, in [Support / Technical requests](#).

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