



AEMEX-HDMI-R2

Audio Embedder/De-embedder - HDMI 2.0

Extract audio from an HDMI stream or embed a separate audio signal to an HDMI stream.



Contact Information

Order toll-free in the U.S. or for FREE 24/7 Technical Support:
Call 877-877-BBOX (outside U.S. call 724-746-5500)
www.blackbox.com • E-mail: info@blackbox.com

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FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication.

It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

Normas Oficiales Mexicanas (NOM) Electrical Safety Statement INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
- A: El cable de poder o el contacto ha sido dañado; u
- B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
- C: El aparato ha sido expuesto a la lluvia; o
- D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
- E: El aparato ha sido tirado o su cubierta ha sido dañada.

Safety Notice

Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on the unit.
- Do not attempt to service the unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device away from it, and place the unit on stable surfaces.
- Only use the power adapter, power cords, and connection cables designed for the unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

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1. Specifications

Approvals	HDMI 2.0, HDCP, CE, FCC, RoHS2, WEEE, UL
Audio Support	Supports HDMI, 3.5-mm analog audio, TOSLINK optical audio inputs and outputs; Embeds audio from either 3.5-mm or optical source to an HDMI or DVI-D signal
Video Bandwidth	Single-link 594 MHz (18 Gbps)
Video Support	Up to 4K @ 60 Hz 4:4:4 8 bits or 4K @ 60 4:2:0 10 bits (HDR)
CEC Channel	Bypass
ESD Protection	Human body model: ± 19 kV (air-gap discharge) and 12 kV (contact discharge); Core chipset: ± 2 kV
Enclosure	Metal
Firmware Update	via USB Mini B Port
PCB Stackup	4-layer board (impedance control— differential 100 ohms, single 50 ohms)
Connectors	Input: (1) HDMI (19-pin female), (1) 3.5-mm analog audio, (1) TOSLink digital optical audio; Output: (1) HDMI (19-pin female), (1) 3.5-mm analog audio, (1) TOSLink digital optical audio; For power and Firmware Updates: (1) USB Mini B
User Controls	(1) 2-position DIP switch; (1) 4-position DIP switch

1. Specifications (continued)

Environment	Temperature Tolerance: Operating: 32 to 104° F (0 to 40° C); Storage: -4 to +140° F (-20 to +60° C) Relative Humidity: 20–90%, noncondensing; Maximum Altitude: 10,000 feet (3125 m)
Power	Power supply (wallwart style): Input: 100 to 240 VAC, 50/60 Hz, 0.58 A; Output: 5-VDC, 4-A locking barrel plug
Dimensions	1.03"H x 3.74"W x 2.61"D (2.61 x 9.49 x 6.62 cm)
Weight	0.57 lb. (0.26 kg)

2. Overview

2.1 Introduction

The Audio Embedder/De-Embedder - HDMI 2.0 (AEMEX-HDMI-R2) is compatible with HDMI 2.0. It embeds audio from either a 3.5-mm or optical source to an HDMI or DVI-D source or camera. It also de-embeds (extracts) audio from an HDMI signal and outputs it to 3.5-mm analog and/or digital optical sound systems.

2.2 Features

- Supports HDMI, 3.5-mm analog audio, TOSLINK optical audio inputs and outputs.
- Using HDMI 2.0, the unit supports a maximum resolution of 4K @ 60 Hz 4:4:4 8 bits or 4K @ 60 4:2:0 10 bits (HDR).
- Embeds audio from either a 3.5-mm or an optical source to an HDMI or DVI-D signal.
- Creates an audio channel where one did not exist, such as in a DVI-D source or camera system.
- De-embeds (extracts) audio from HDMI signal and outputs it to 3.5-mm analog and/or digital optical sound systems. Audio is output to analog, optical, and HDMI at the same time.
- Requires no HDMI video output to extract audio.
- Supports embedding and de-embedding at the same time.
- Supports HDCP 2.2 for content protection.
- Power through either a wallmount power supply or USB connector.
- Easy to configure via DIP switches.

2.3 What's Included

- Audio Embedder/De-Embedder - HDMI 2.0 (AEMEX-HDMI-R2)
- 5-VDC, 4-A power supply with adapter clips

To download this user manual from the Black Box web site:

1. Go to www.blackbox.com
2. Enter the part number (AEMEX-HDMI-R2) in the search box.
3. Click on the product in the "Product Results" page.
4. Click on the "Support" tab on the product page, and select the document you wish to download.

If you have any trouble accessing the Black Box site to download the manual, you can contact our Technical Support at 877-877-2269 or info@blackbox.com.

2.4 Hardware Description

Figures 2-1 and 2-2 show the front and back panels of the unit. Table 2-1 describes its components.



Figure 2-1. Front panel.



Figure 2-2. Back panel.

Table 2-1. AEMEX-HDMI-R2 components in Figures 2-1 and 2-2.

Number	Component	Description
1	(1) TOSLINK Audio OUT connector	Connects to digital S/PDIF audio output.
2	(1) 3.5-mm connector	Stereo OUT
3	(1) 4-position DIP switch	See Table 2-3.
4	(1) HDMI female connector	HDMI OUT
5	(1) mini-USB connector	• Used for firmware update • Connects to 5 VDC power supply unit
6	(1) Power LED	Lights when power is ON.
7	(1) Barrel connector	+5 V power
8	(1) Pushbutton	For factory reset.
9	(1) HDMI female connector	HDMI IN
10	(1) 2-position DIP switch	See Table 2-2.
11	(1) 3.5-mm connector	Stereo IN
12	(1) TOSLINK Audio IN	Connects to audio source.

Chapter 2: Overview

DIP Switch Settings

Table 2-2. 2-Position DIP switch (shown in Figure 2-2).

Switch Number	Position	Description
1	ON (DOWN)	Enable Audio Embedder function.
	OFF (UP)	Disable Audio Embedder function.
2	ON (DOWN)	S/PDIF connector selected on Audio Embedder.
	OFF (UP)	3.5-mm connector selected on Audio Embedder.

Table 2-3. 4-Position DIP switch (shown in Figure 2-1).

Switch Number	Position	Description
1	ON (DOWN)	Enable Audio Extractor function via S/PDIF and 3.5-mm connectors.
	OFF (UP)	Disable Audio Extractor function.
2	ON (DOWN)	Enable ARC function.
	OFF (UP)	Disable ARC function.
3	ON (DOWN)	Reserved for future use.
	OFF (UP)	Reserved for future use.
4	ON (DOWN)	Firmware update mode.
	OFF (UP)	Normal mode.

NOTES:

1. ARC audio extraction is always via S/PDIF TOSLink output.
2. The audio will only extract via 3.5-mm stereo if you enable the ARC function.

3. Connection Diagrams

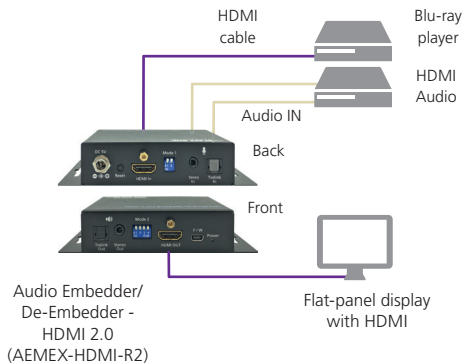


Figure 3-1.

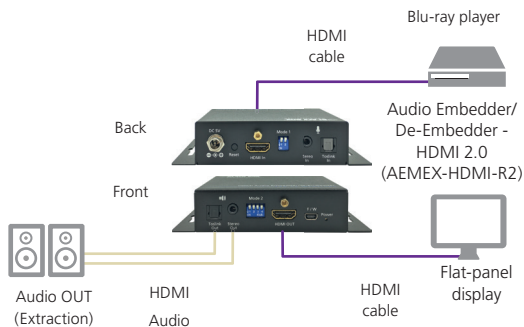


Figure 3-2.

4. Contacting Black Box

If you determine that your Audio Embedder/De-Embedder - HDMI 2.0 (AEMEX-HDMI-R2) is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

Shipping and Packaging

If you need to transport or ship your Audio Embedder/De-Embedder - HDMI 2.0 (AEMEX-HDMI-R2):

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.

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way it should be.



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