

## ► SM11EARC-8K User Manual

**Thank you for purchasing this product.**

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.



**Surge Protection Device Recommended**

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

**Safety And Performance Notice**

Do not substitute or use any other power supply other than the enclosed unit, or a Blustream approved replacement.

Do not disassemble Blustream hardware for any reason. Doing so will void the manufacturer’s warranty.

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# Introduction

Our SM11EARC-8K HDMI signal manager has been designed to help solve HDMI compatibility, HDCP2.3, clock stretching, EDID and handshaking issues that are common problems when distributing HDMI signals, especially 4K and higher.

The SM11EARC-8K features an independent audio only HDMI output for ARC/eARC audio breakout, and audio de-embedding or embedding within the HDMI signal path, allowing breakout of up to 7.1ch audio signals. The SM11EARC-8K supports all HDMI2.1 video resolutions to 40Gbps, and is HDCP2.3 compliant.

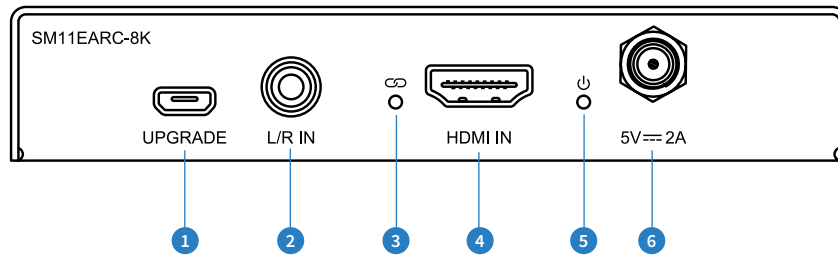
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## FEATURES:

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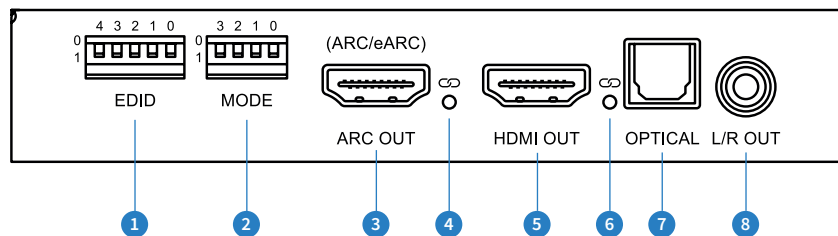
- Can help to solve most HDMI EDID, HDCP, compatibility, and handshaking issues
- Supports HDMI2.1 40Gbps specification, including HDR
- Supports up to 8K 60Hz YCbCr 4:2:0 10bit, 8K 30Hz RGB/YCbCr 4:4:4 10bit, or 4K 120Hz RGB/YCbCr 4:4:4 10bit
- Supports ALLM (Auto Low Latency Mode) & VRR (Variable Refresh Rate)
- Supports pass-through of all known HDMI audio formats including Dolby Atmos, Dolby TrueHD, Dolby Atmos, Dolby Digital Plus and DTS-HD Master
- Can be configured to work as either a HDMI audio de-embedder, or audio embedder
- Independent audio only HDMI output for ARC/eARC audio breakout
- HDMI audio de-embedded to both analogue L/R audio and optical digital outputs concurrently (analogue audio supports 2ch PCM only)
- Embed analogue L/R 2ch audio input onto HDMI output
- Extract audio with or without an actual display connected (SM11EARC-8K acts as HDMI end-point)
- HDCP2.3 compliant, with advanced EDID management

## Front Panel



- ① USB Upgrade Port
- ② L/R Analogue Audio Input - 3.5mm stereo jack
- ③ HDMI Input Indicator LED - Lit when connected to a source
- ④ HDMI Input - Connect to a HDMI source
- ⑤ Power Indicator LED - Lit when unit is powered on
- ⑥ Power Port - Use supplied 5V 2A DC adaptor

## Rear Panel



- ① EDID DIP Switch (UP=0, DOWN=1) - See page 5 for further details
- ② Mode DIP Switch - See page 5 for further details
- ③ ARC/eARC HDMI ARC OUT - Connect to ARC/eARC port of an AVR or Soundbar for ARC/eARC audio transmission only (this connection does not output a video signal)
- ④ ARC/eARC Link Status LED - Lit when connected to an ARC/eARC HDMI display
- ⑤ HDMI Output - Connect to a HDMI display (unless using as an audio breakout only product)
- ⑥ HDMI Link Status LED - Lit when connected to a HDMI display
- ⑦ Optical S/PDIF - Connect to AVR or processor for optical audio return breakout
- ⑧ Left / Right Analogue Audio Output - De-embedded audio from the HDMI signal input. **Note:** source input must be PCM 2ch audio for analogue audio output to work. The SM11EARC-8K does not down-mix multi-channel audio signals.

# EDID Control

EDID (Extended Display Identification Data) is a data structure that is used between a display and a source. This data is used by the source to find out what audio and video resolutions are supported by the display, from this information the source will discover what the best audio and video resolutions need to be output.

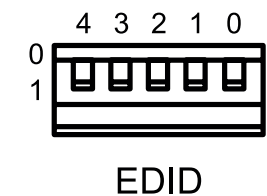
While the objective of EDID is to make connecting a digital display to a source a simple plug and play procedure, issues do arise when multiple displays or video matrix switching is introduced because of the increased number of variables.

By pre-determining the video resolution and audio format of the source and display device you can reduce the time needed for EDID hand shaking thus making switching quicker and more reliable.

Configuration of extender EDID settings can be achieved using the product dip-switches on the end panel of the SM11EARC-8K.

**Note:** You must power cycle the product after making EDID changes. For some sources it may be necessary to power cycle the source after EDID changes have been made for the source to update its video & audio output settings.

## Global EDID Settings



Dip-switch position '0' = Off

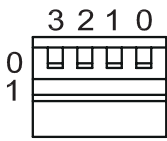
Dip-switch position '1' = On



DIP ON ▼/OFF▲ SWITCH POSITIONS					EDID TYPE
4	3	2	1	0	
OFF	OFF	OFF	OFF	OFF	1080p@60Hz, Audio 2ch PCM (default)
OFF	OFF	OFF	OFF	ON	1080p@60Hz, Audio 5.1ch PCM/DTS/DOLBY
OFF	OFF	OFF	ON	OFF	1080p@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD
OFF	OFF	OFF	ON	ON	4K@30Hz 4:4:4, Audio 2ch PCM
OFF	OFF	ON	OFF	OFF	4K@30Hz 4:4:4, Audio 5.1ch PCM/DTS/DOLBY
OFF	OFF	ON	OFF	ON	4K@30Hz 4:4:4, Audio 7.1ch PCM/DTS/DOLBY/HD
OFF	OFF	ON	ON	OFF	4K@60Hz 4:2:0+4K@30Hz 4:4:4, Audio 2ch PCM
OFF	OFF	ON	ON	ON	4K@60Hz 4:2:0+4K@30Hz 4:4:4, Audio 5.1ch PCM/DTS/DOLBY
OFF	ON	OFF	OFF	OFF	4K@60Hz 4:2:0+4K@30Hz 4:4:4, Audio 7.1ch PCM/DTS/DOLBY/HD
OFF	ON	OFF	OFF	ON	4K@60Hz 4:4:4, 10-bit HDR (Inc DV), Audio 2ch PCM
OFF	ON	OFF	ON	OFF	4K@60Hz 4:4:4, 10-bit HDR (Inc DV), Audio 5.1ch PCM/DTS/DOLBY
OFF	ON	OFF	ON	ON	4K@60Hz 4:4:4, 10-bit HDR (Inc DV), Audio 7.1ch PCM/DTS/DOLBY/HD
OFF	ON	ON	OFF	OFF	4K@60Hz 4:4:4, 12-bit HDR (Inc DV), Audio 2ch PCM
OFF	ON	ON	OFF	ON	4K@60Hz 4:4:4, 12-bit HDR (Inc DV), Audio 5.1ch PCM/DTS/DOLBY
OFF	ON	ON	ON	OFF	4K@60Hz 4:4:4, 12-bit HDR (Inc DV), Audio 7.1ch PCM/DTS/DOLBY/HD
OFF	ON	ON	ON	ON	4K@120Hz 4:4:4, 10-bit HDR, Audio 2ch PCM
ON	OFF	OFF	OFF	OFF	4K@120Hz 4:4:4, 10-bit HDR, Audio 5.1ch PCM/DTS/DOLBY
ON	OFF	OFF	OFF	ON	4K@120Hz 4:4:4, 10-bit HDR, Audio 7.1ch PCM/DTS/DOLBY/HD
ON	OFF	OFF	ON	OFF	8K@30Hz 4:4:4, 10-bit HDR, Audio 2ch PCM
ON	OFF	OFF	ON	ON	8K@30Hz 4:4:4, 10-bit HDR, Audio 5.1ch PCM/DTS/DOLBY
ON	OFF	ON	OFF	OFF	8K@30Hz 4:4:4, 10-bit HDR, Audio 7.1ch PCM/DTS/DOLBY/HD
ON	OFF	ON	OFF	ON	8K@60Hz 4:2:0+8K@30Hz 4:4:4, 10-bit HDR, Audio 2ch PCM
ON	OFF	ON	ON	OFF	8K@60Hz 4:2:0+8K@30Hz 4:4:4, 10-bit HDR, Audio 5.1ch PCM/DTS/DOLBY
ON	OFF	ON	ON	ON	8K@60Hz 4:2:0+8K@30Hz 4:4:4, 10-bit HDR, Audio 7.1ch PCM/DTS/DOLBY/HD
ON	ON	OFF	OFF	OFF	4K@120Hz 4:4:4, 12-bit HDR (Inc DV), Audio 2ch PCM
ON	ON	OFF	OFF	ON	4K@120Hz 4:4:4, 12-bit HDR (Inc DV), Audio 7.1ch PCM/DTS/DOLBY/HD
ON	ON	OFF	ON	OFF	8K@30Hz 4:4:4, 12-bit HDR (Inc DV), Audio 2ch PCM
ON	ON	OFF	ON	ON	8K@30Hz 4:4:4, 12-bit HDR (Inc DV), Audio 7.1ch PCM/DTS/DOLBY/HD
ON	ON	ON	OFF	OFF	8K@60Hz 4:2:0+8K@30Hz 4:4:4, 12-bit HDR (Inc DV), Audio 2ch PCM
ON	ON	ON	OFF	ON	8K@60Hz 4:2:0+8K@30Hz 4:4:4, 12-bit HDR (Inc DV), Audio 7.1ch PCM/DTS/DOLBY/HD
ON	ON	ON	ON	ON	EDID pass-through (copy from Sink)
ON	ON	ON	ON	OFF	Software Control EDID

**Note:** When EDID is set to 1080p 2ch/5.1ch/7.1ch the HDCP handshake with source will always be **HDCP 1.x** (not HDCP 2.2)

## Mode DIP Switch Settings



Mode

The SM11EARC-8K can be configured to perform various tasks using the Mode dip-switches. For details on each setting please see below:

**Note:** You must power cycle the product after making MODE changes.

### Dip-switch 3 - Hotplug Mode ON / OFF

When Hotplug mode is turned OFF the SM11EARC-8K will use the HPD of the connected display on the HDMI output.

When Hotplug mode is turned ON the SM11EARC-8K will complete the HPD back to the source connected to the HDMI input, no longer requiring a HPD from a connected display.

Turning on HPD in the SM11EARC-8K can be beneficial in 2 ways:-

- 1) Audio de-embedding is required but no display is available. The SM11EARC-8K will act as the HDMI end-point completing the necessary HDMI handshake, allowing the HDMI source to output a signal.
- 2) The SM11EARC-8K will act as the HDMI end-point completing the necessary HDMI handshake which can help resolve any handshake issues that may be associated with the display connected to the HDMI output of the SM11EARC-8K.

Position = 0 (up) - HPD (hot plug detect) off

Position = 1 (down) - HPD on

### Dip-switch 2 - HDCP Bypass or Conversion

The SM11EARC-8K can be used to help resolve HDCP issues.

Position = 0 (up) - HDCP management mode

Position = 1 (down) - HDCP bypass mode

**Please note:** the SM11EARC-8K does not remove HDCP from the HDMI signal path

### Dip-switch 1 - Audio embedding

The SM11EARC-8K can be used to embed audio onto the HDMI output signal.

Position = 0 (up) - HDMI input audio pass-through (no audio embedding)

Position = 1 (down) - Audio embedding (2ch L/R audio input added to the HDMI video out)

### Dip-switch 0 - Audio De-embedding

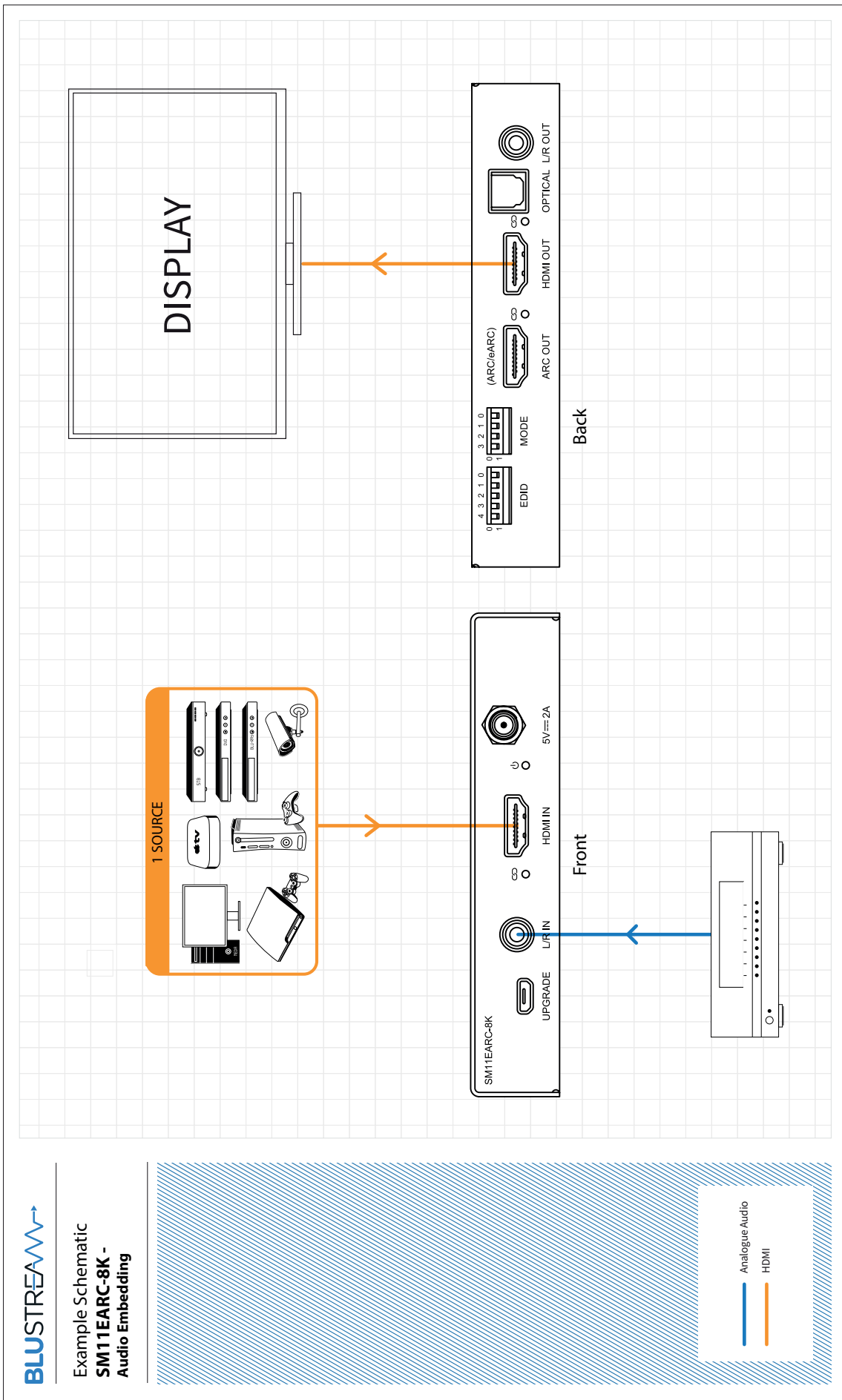
The SM11EARC-8K can be used to de-embed audio from either the the HDMI input signal or the ARC/eARC signal from the HDMI output.

Position = 0 (up) - Audio de-embedding from the HDMI input signal (HDMI source device)

Position = 1 (down) - Audio de-embedding from the ARC/eARC HDMI output signal (supported HDMI display)

**Note - Source input signal must be PCM 2ch audio for analogue audio outputs to work.**

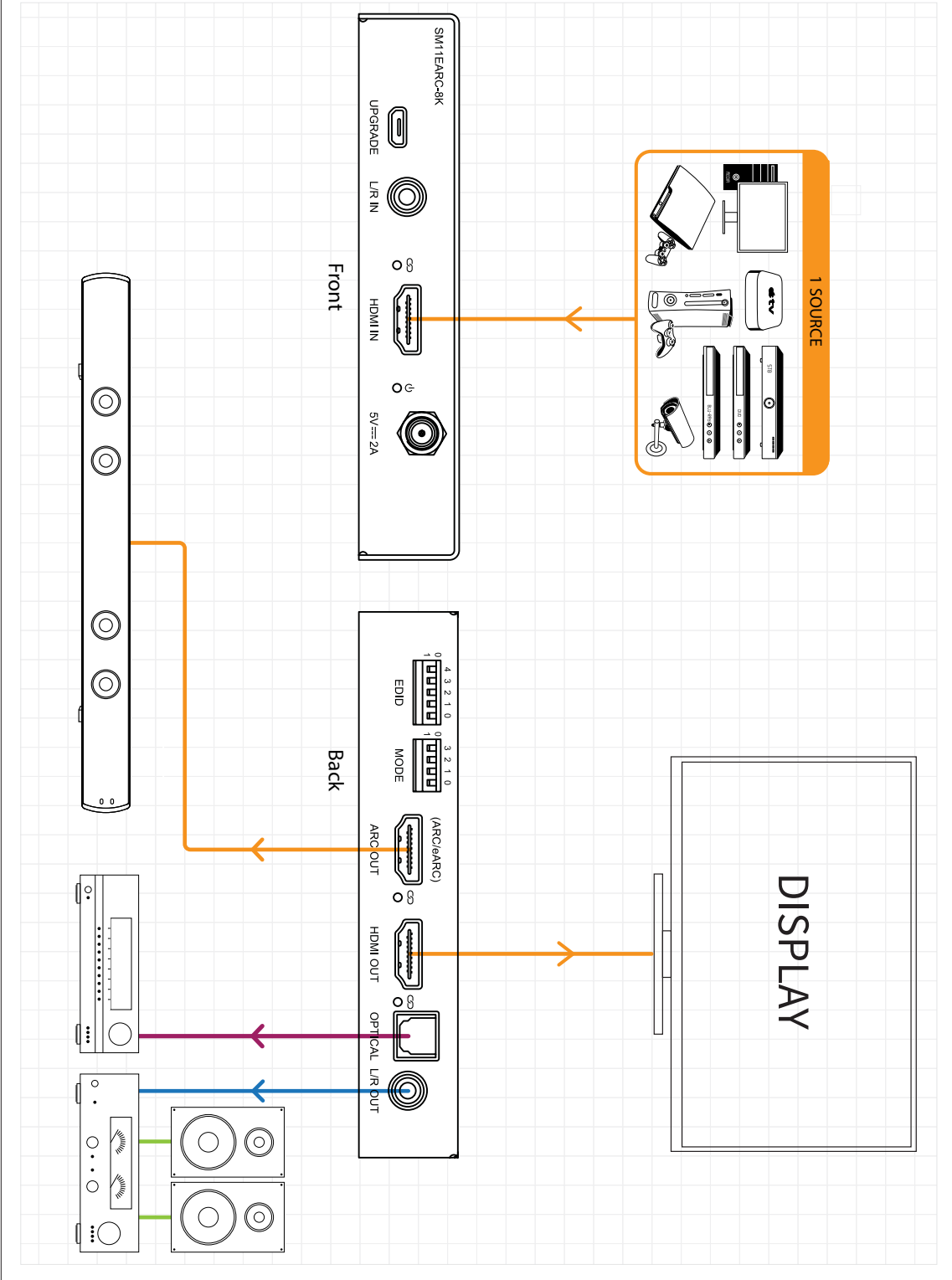
**The SM11EARC-8K does not downmix multi-channel audio signals.**



**BLUSTREAM**  
 Example Schematic  
**SM11EARC-8K -**  
 Audio Embedding

**BLUSTREAM**

Example Schematic  
**SM11EARC-8K -**  
 Audio De-embedding





## Specifications

- **Video Input Connector:** 1 x HDMI Type A, 19-pin, female
- **Video Output Connector:** 1 x HDMI Type A, 19-pin, female
- **ARC/eARC Output Connector:** 1 x HDMI Type A, 19-pin, female
- **Audio Input Connector:** 1 x Analogue left/right audio (3.5mm stereo jack)
- **Audio Output Connectors:** 1 x Optical Toslink (S/PDIF) & 1 x Analogue left right audio (3.5mm stereo jack)
- **Mounting Kit:** Included
- **Dimensions (W x D x H):** 105mm x 104mm x 22mm (without connections)
- **Dimensions (W x D x H):** 105mm x 115mm x 22mm (including connections)
- **Shipping Weight:** 0.5 kg
- **Power Supply:** 5V/2A DC, screw type connector
- **Operating Temperature:** 32°F to 104°F (0°C to 40°C)
- **Storage Temperature:** -4°F to 140°F (-20°C to 60°C)

## Package Contents

- 1 x SM11EARC-8K
- 1 x 5V/2A DC Power Supply
- 1 x Mounting Kit
- 1 x User Manual

## Maintenance

Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.

Components inside this unit are not user serviceable. Do not remove the protective cover from the unit. Removing any panel from this product will invalidate the manufacturers warranty.

## Certifications

### FCC NOTICE

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.

The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI Trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

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

### CANADA, INDUSTRY CANADA (IC) NOTICES

This Class B digital apparatus complies with Canadian ICES-003. 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.

### CORRECT DISPOSAL OF THIS PRODUCT

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmentally safe recycling.









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