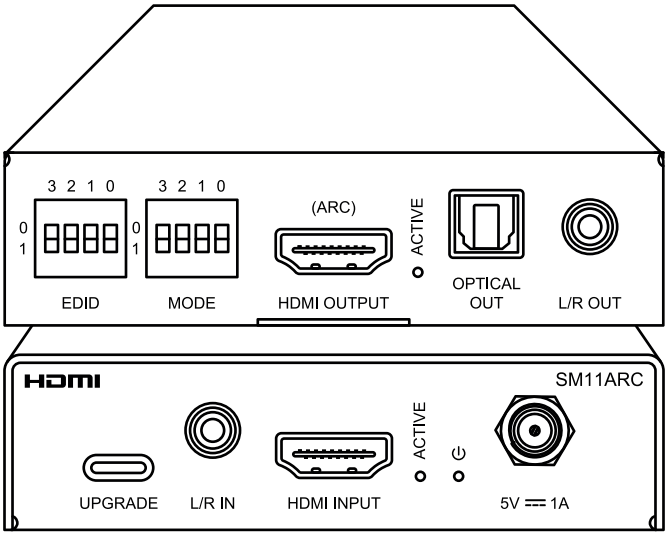


SM11ARC

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.

Eco Friendly Packaging

This product has been packaged with fully recyclable materials, including compostable bags. Please help us to help the environment.

Safety and performance notice

Do not substitute or use any other power supply other than approved Blustream power supplies.

Do not disassemble the CMX44CS-V2 for any reason. Doing so will void the manufacturer's warranty.

Contents

Introduction

The SM11ARC HDMI 2.0 Signal Manager is engineered to resolve common HDMI distribution issues such as compatibility conflicts, HDCP 2.2, handshaking, clock stretching, and general EDID problems, especially when working with 4K content.

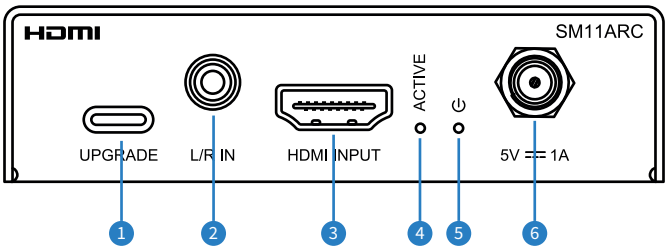
Fully compliant with HDMI 2.0 and HDCP 2.2 standards, the SM11ARC supports video resolutions up to 4K @ 60Hz 4:4:4, including formats with HDR.

Building on the functionality of its predecessor (the SM11), the SM11ARC adds advanced audio features. Allowing audio embedding onto the HDMI output, replacing the original HDMI audio where required. Audio can also be de-embedded from the HDMI signal via optical S/PDIF or a 3.5mm analogue output. Additionally, it supports audio extraction (up to 5.1 channels) from a HDMI ARC-capable display connected to the HDMI output, via the S/PDIF port.

FEATURES:

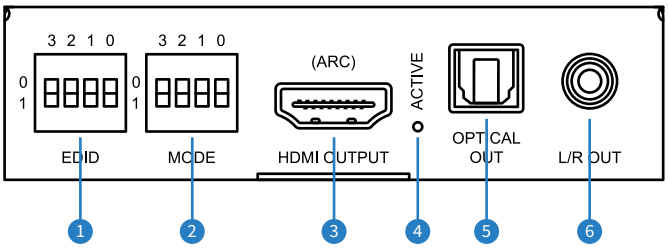
- Can help to solve most HDMI EDID, HDCP, compatibility and handshaking issues
- Supports full HDMI 2.0 specification 4K UHD video (4K @60Hz 4:4:4)
- HDCP 2.2 support
- Supports industry standard video resolutions including VGA-WUXGA and 480i-4K 60Hz
- Supports bitstream passthrough of multichannel surround sound including object-based audio formats in line with HDMI specifications
- Can be configured to work as either a HDMI audio de-embedder or an audio embedder
- HDMI audio de-embedded to both analogue L/R audio and optical digital outputs concurrently (analogue audio supports 2ch PCM only)
    - **Please note:** The SM11ARC does not down-mix multi-channel audio signals
- Embed analogue L/R 2ch audio input onto HDMI output
- Extract HDMI ARC audio via optical S/PDIF from a connected ARC capable display (5.1ch maximum)
- Extract audio with or without an actual display connected (SM11ARC acts as the HDMI end-point)
- Supports CEC bypass (Consumer Electronics Control)*
    - **Please note:** CEC passthrough active when ARC passthrough is enabled

Front Panel Description



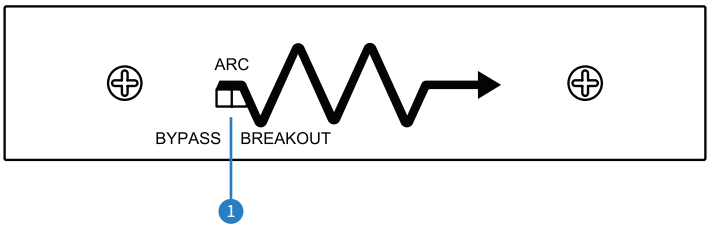
1. Upgrade USB-C port — upgrade firmware
2. 3.5mm analogue audio input — embed external audio
3. HDMI in port — connect to source
4. Active LED — lit when HDMI input is connected
5. Power LED — lit when SM11ARC is receiving power
6. Power supply input

Rear Panel Description



1. EDID dip switches — set global EDID settings
2. Mode dip switches — change various device settings
3. HDMI out port — connect to sink
4. Active LED — lit when HDMI output is connected
5. Optical audio out — breakout of HDMI or ARC audio
6. 3.5mm analogue audio out — breakout of HDMI or ARC audio

Side Panel Description



1. ARC switch — toggles how ARC audio is handled by the SM11ARC (see page 08)

EDID Control

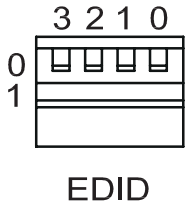
EDID (Extended Display Identification Data) is a data structure that is used between a display and a source. This data is used by the source to find out what audio and video resolutions are supported by the display, from this information the source will discover what the best audio and video resolutions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

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 SM11ARC.

Please 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.

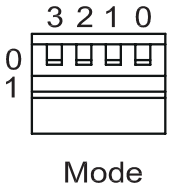


EDID

DIP switch position '0' = OFF
DIP switch position '1' = ON

DIP ON ▼/OFF▲ SWITCH POSITIONS				
3	2	1	0	EDID TYPE
OFF	OFF	OFF	OFF	1080p@60Hz, Audio 2ch PCM (default)
OFF	OFF	OFF	ON	1080p@60Hz, Audio 5.1ch PCM/DTS/DOLBY
OFF	OFF	ON	OFF	1080p@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD
OFF	OFF	ON	ON	4K@60Hz 4:2:0 / 4K@30Hz 4:4:4, Audio 2ch PCM
OFF	ON	OFF	OFF	4K@60Hz 4:2:0 / 4K@30Hz 4:4:4, Audio 5.1ch PCM/DTS/DOLBY
OFF	ON	OFF	ON	4K@60Hz 4:2:0 / 4K@30Hz 4:4:4, Audio 7.1ch PCM/DTS/DOLBY/HD
OFF	ON	ON	OFF	4K@60Hz 4:4:4, 8-bit, Audio 2ch PCM
OFF	ON	ON	ON	4K@60Hz 4:4:4, 8-bit, Audio 5.1ch PCM/DTS/DOLBY
ON	OFF	OFF	OFF	4K@60Hz 4:4:4, 8-bit, Audio 7.1ch PCM/DTS/DOLBY/HD
ON	OFF	OFF	ON	4K@60Hz 4:4:4, 10-bit HDR, Audio 2ch PCM
ON	OFF	ON	OFF	4K@60Hz 4:4:4, 10-bit HDR, Audio 5.1ch PCM/DTS/DOLBY
ON	OFF	ON	ON	4K@60Hz 4:4:4, 10-bit HDR, Audio 7.1ch PCM/DTS/DOLBY/HD
ON	ON	OFF	OFF	DVI 1920x1080@60Hz, Audio None
ON	ON	OFF	ON	DVI 1920x1200@60Hz, Audio None
ON	ON	ON	OFF	EDID pass-through
ON	ON	ON	ON	DVI 1280x1024@60Hz, Audio None

Mode DIP Switch Settings



The SM11ARC can be configured to perform various tasks using the Mode DIP switches. For details on each setting please see below:

Please note: You must power cycle the product after making Mode changes for the settings to take effect.

DIP Switch 3: Hot Plug Detect (HPD) Mode

Controls how the SM11ARC manages the Hot Plug Detect (HPD) signal between HDMI devices:

- **Position 0 (up):** HPD ON
- **Position 1 (down):** HPD OFF

When HPD Mode is OFF, the SM11ARC passes through the HPD signal received from the connected display on the HDMI output. The HDMI handshake is completed only when a display is present.

When HPD Mode is ON, the SM11ARC generates the HPD signal back to the HDMI input source. A connected display is not required for the HDMI handshake to complete, but the signal will still pass to a display connected to the HDMI output.

Enabling HPD Mode ON allows the SM11ARC to act as the HDMI endpoint, supporting scenarios such as:

- Audio de-embedding without a display: The SM11ARC completes the HDMI handshake, allowing the source device to output audio even when no display is connected.
- Handshake stabilization: The SM11ARC manages the HPD response instead of the display, which may help resolve HDMI handshake or compatibility issues.

DIP Switch 2: Audio Embedding

Controls whether analogue audio from the 3.5 mm input is embedded onto the HDMI output:

- **Position 0 (up):** Audio embedding disabled (HDMI audio passthrough)
- **Position 1 (down):** Audio embedding enabled (analogue audio embedded onto HDMI output)

When enabled, the SM11ARC embeds 2-channel analogue audio from the 3.5 mm input onto the HDMI output.

Please note: The analogue audio replaces the HDMI source audio; it is not mixed or overlaid.

DIP Switch 1: Audio De-embedding

Controls the audio source routed to the analogue and optical outputs:

- **Position 0 (up):** De-embed HDMI input audio
- **Position 1 (down):** De-embed ARC audio

Audio de-embedding depends on the ARC switch position:

ARC IN: Set DIP Switch 1 to Position 0 to route HDMI input audio to the analogue and optical outputs.

ARC OUT: Set DIP Switch 1 to Position 1 to route ARC audio to the analogue and optical outputs.

Please note: The HDMI source must output PCM 2-channel audio for analogue audio outputs to operate. The SM11ARC does not down-mix multi-channel audio formats.

DIP Switch 0: HDCP Management

Controls how the SM11ARC handles HDCP negotiation:

- **Position 0 (up):** HDCP management mode
- **Position 1 (down):** HDCP bypass

HDCP management mode can assist with resolving HDCP-related compatibility issues by converting the HDCP signal on the input to HDCP 1.4 on the output.

Please note: If there is no HDCP on the input, the SM11ARC will not output HDCP on the output whilst in HDCP management mode.

HDCP bypass mode will take whatever HDCP verison is on the ouput and copy it to the input, which replicates a normal HDMI handshake

ARC Modes

The SM11ARC is able to de-embed ARC audio from the HDMI output to the analogue and optical audio outputs.

- **ARC IN:** ARC audio passes from the HDMI output back through to the HDMI input (ARC passthrough)
- **ARC OUT:** ARC audio is routed from the HDMI output to the analogue and optical audio outputs (ARC breakout)

The ARC switch changes how specific mode DIP switches operate, enabling multiple configuration options for different installation requirements.

The examples below demonstrate expected behavior for all combinations of mode settings and ARC switch positions with different devices connected:

INPUT CONNECTED TO HDMI DEVICE (I.E. MEDIA PLAYER) & OUTPUT CONNECTED TO TV (ARC DISABLED)						
ARC DIP SWTICH	MODE DIP SWITCH					
	2	1	HDMI AUDIO OUTPUT	L/R & OPTICAL OUTPUTS	ARC ROUTING	CEC PASSTHROUGH
IN	OFF	OFF	HDMI Input Audio	HDMI Input Audio	N/A	Enabled
	OFF	ON	HDMI Input Audio	None [1]	N/A	Enabled
	ON	OFF	Embedded Analogue Audio	HDMI Input Audio	N/A	Enabled
	ON	ON	Embedded Analogue Audio	None [1]	N/A	Enabled
OUT	OFF	OFF	HDMI Audio	HDMI Audio	Terminates at SM11ARC	Blocked
	OFF	ON	HDMI Audio	HDMI Audio [2]	Terminates at SM11ARC	Blocked
	ON	OFF	Embedded Analogue	HDMI Audio	Terminates at SM11ARC	Blocked
	ON	ON	Embedded Analogue	HDMI Audio [2]	Terminates at SM11ARC	Blocked

[1] ARC must be set to OUT to de-embed ARC audio.

[2] If the display is configured to output ARC, the SM11ARC will send HDMI audio to the display and receive the same audio back through the ARC connection, allowing the ARC audio to be routed to the analogue and optical outputs

INPUT CONNECTED TO ARC DEVICE (I.E. RECEIVER, SOUNDBAR) & OUTPUT CONNECTED TO TV (ARC ENABLED)						
ARC DIP SWTICH	MODE DIP SWITCH					
	2	1	HDMI AUDIO OUTPUT	L/R & OPTICAL OUTPUTS	ARC ROUTING	CEC PASSTHROUGH
IN	OFF	OFF	None [2]	None	Passthrough	Enabled
	OFF	ON	None [2]	None [1]	Passthrough	Enabled
	ON	OFF	None [2]	None	Passthrough	Enabled
	ON	ON	None [2]	None [1]	Passthrough	Enabled
OUT	OFF	OFF	None [2]	None	Breakout	Blocked
	OFF	ON	None [2]	ARC	Breakout	Blocked
	ON	OFF	None [2]	None	Breakout	Blocked
	ON	ON	None [2]	ARC	Breakout	Blocked

[1] ARC must be set to OUT to allow ARC audio to be de-embedded.

[2] A valid HDMI signal is required for HDMI audio output. If the HDMI input is connected to an audio only ARC device (for example, a soundbar), no HDMI audio output will be produced.

Specifications

- **Video input connectors:** 1 x HDMI Type A, 19-pin, female
- **Video output connectors:** 1 x HDMI Type A, 19-pin, female, HDMI ARC capable
- **Audio input connectors:** 1 x analogue left/right audio (3.5mm stereo jack)
- **Audio output connectors:** 1 x Optical Toslink (S/PDIF) & 1x analogue left/right audio (3.5mm stereo jack)
- **Casing dimensions (W x H x D):** 105mm x 23mm x 87mm
- **Dimensions including connections (W x H x D):** 114mm x 23mm x 87mm
- **Shipping weight:** 0.5kg
- **Operating temperature:** 32°F to 104°F (0°C to 40°C)
- **Storage Temperature :** -4°F to 140°F (-20°C to 60°C)
- **Power Supply:** 5V/1A DC

NOTE: *Specifications are subject to change without notice. Weights and dimensions are approximate.*

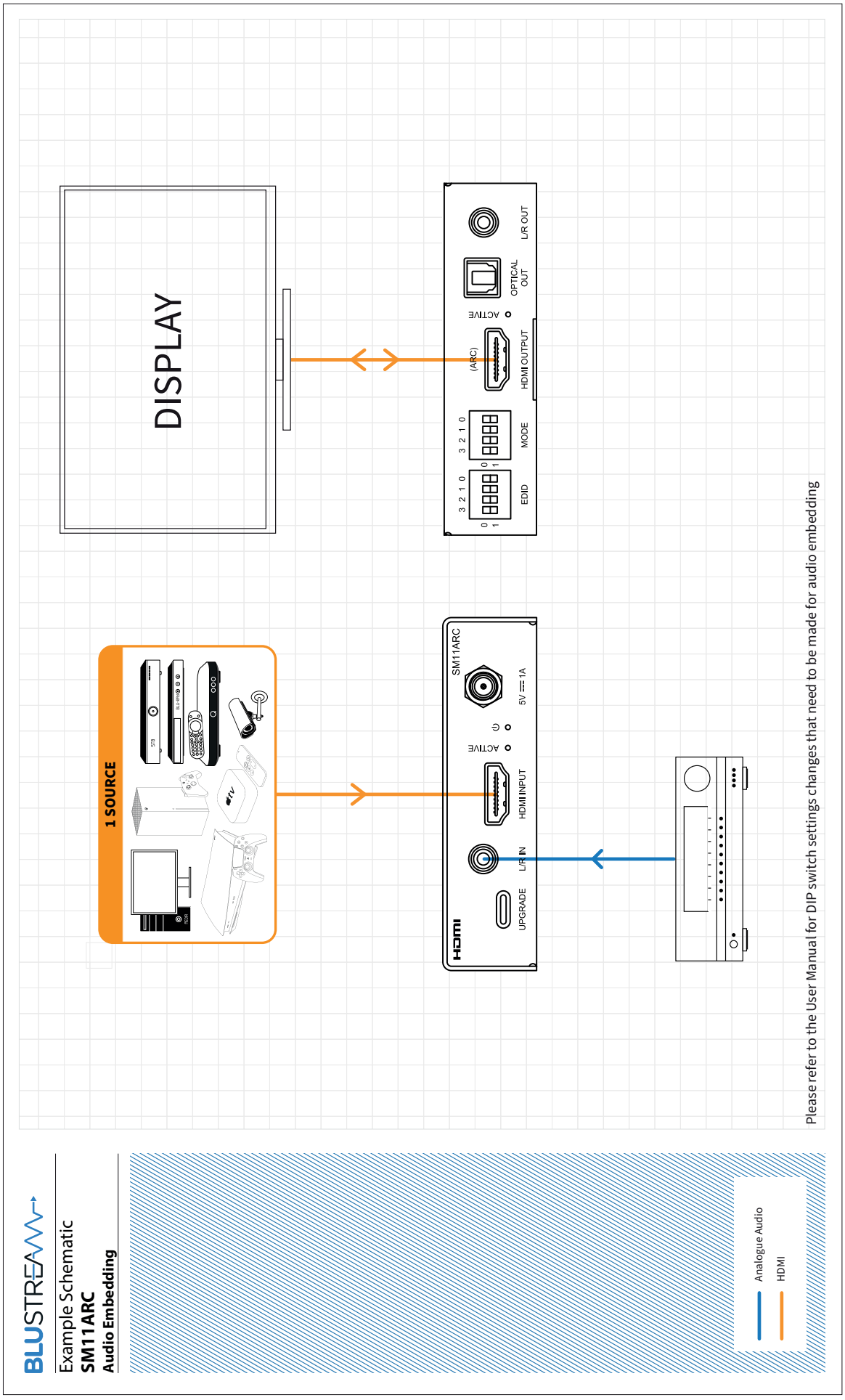
Package Contents

- 1 x SM11ARC
- 1 x 5V/1A DC power supply
- 1 x Mounting kit
- 1 x Quick Reference Card

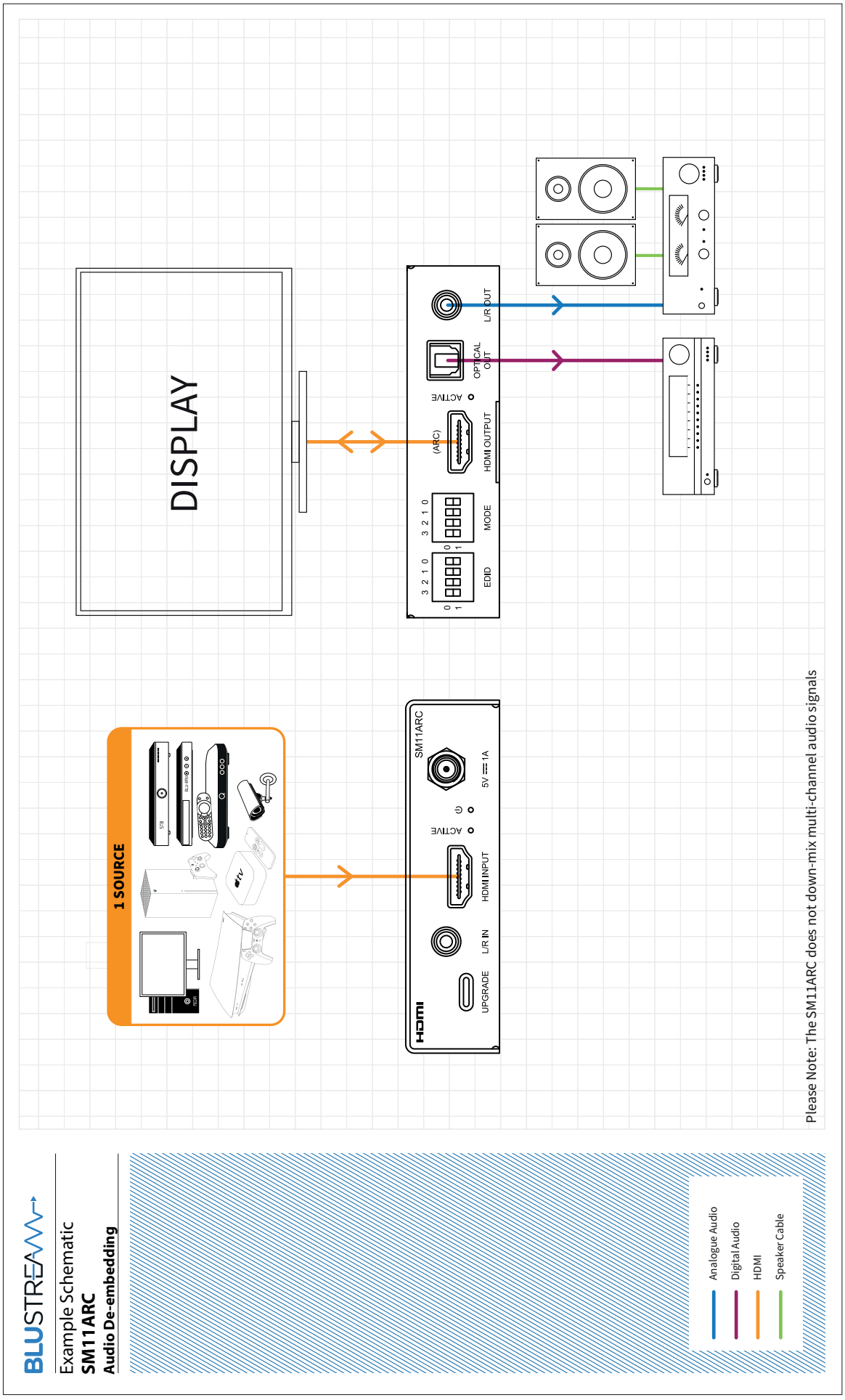
Maintenance

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

Connection Schematic



Connection Schematic (continued)



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.

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.

Canada, avis d'Industry Canada (IC)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003.

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

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.

www.blustream.com.au
www.blustream-us.com
www.blustream.co.uk