

EMCEE200

PRESENTATION SWITCHER

USER'S MANUAL



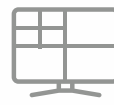
CAPTURE TO
STREAM IN 4K



RECORD TO
EXTERNAL
STORAGE DEVICE



DEDICATED
CONFIDENCE AND
PRESENTATION
MONITOR OUTPUT



CUSTOM
MULTIVIEW
LAYOUT



DUAL
MIC MIXER



SEAMLESS
SWITCHING



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Contacting Hall Technologies

Thank you for purchasing this product from Hall Technologies. We hope you like it. If you ever need to contact us with a sales, marketing, or technical support question or concern, we invite you to reach out to us via phone, e-mail, or online.

Sales and Customer Support Hours

Monday – Friday 7:00 A.M. – 4:00 P.M. (PST)
Toll Free: 800-959-6439 or US: 714-641-6607

Corporate Headquarters

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Coppell, TX 75019
<https://halltechav.com>

Sales: sales@halltechav.com
Support: support@halltechav.com
Online: <https://halltechav.com/Contact/>

Warranty and Repairs

Warranty: Product warranty and repair information can be found at <https://halltechav.com/warranty/>
If you determine that your product is malfunctioning, do not attempt to repair the unit. Contact Hall Technologies support by phone or online. Products to be returned must first receive a Return Authorization (RMA) number issued by our support department. To aid in this process, we will need you to provide the serial number of the affected product to determine warranty status, as well as a description of the problem, and any troubleshooting steps performed.

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Safety and Certification

1. Please read and follow all instructions prior to use.
2. Do not use this product near water. Do not expose to rain or moisture. Clean only with a dry cloth.
3. Do not block ventilation openings, or operate in extreme environments. Follow product specifications for storage and operation temperatures.
4. Do not open or modify this product. There are no user serviceable parts inside. Opening the product without written authorization from Hall Technologies will void the warranty.
5. Do not modify the power supply, or defeat the safety features of polarized “two-prong” or grounding-type “three-prong” plugs. Polarized plugs have two blades, one wider than the other. Grounding plugs have an additional third grounding prong. These features are provided for your safety. If your outlet is not compatible with the provided plug, please consult a licensed electrician to replace the outlet.
6. Do not use power cords, cables, or accessories that are visibly damaged, pinched, flattened, kinked, or frayed. Keep all cables and accessories free from walkways, doorways, or other areas that may cause damage or present a tripping hazard.
7. Use only power supplies and accessories specified by Hall Technologies. Refer all servicing to qualified service personnel.



FCC Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference even if it causes undesired operation.

This equipment has been designed 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 it is not installed and used in accordance with the instruction manual, it 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 their own expense. ©

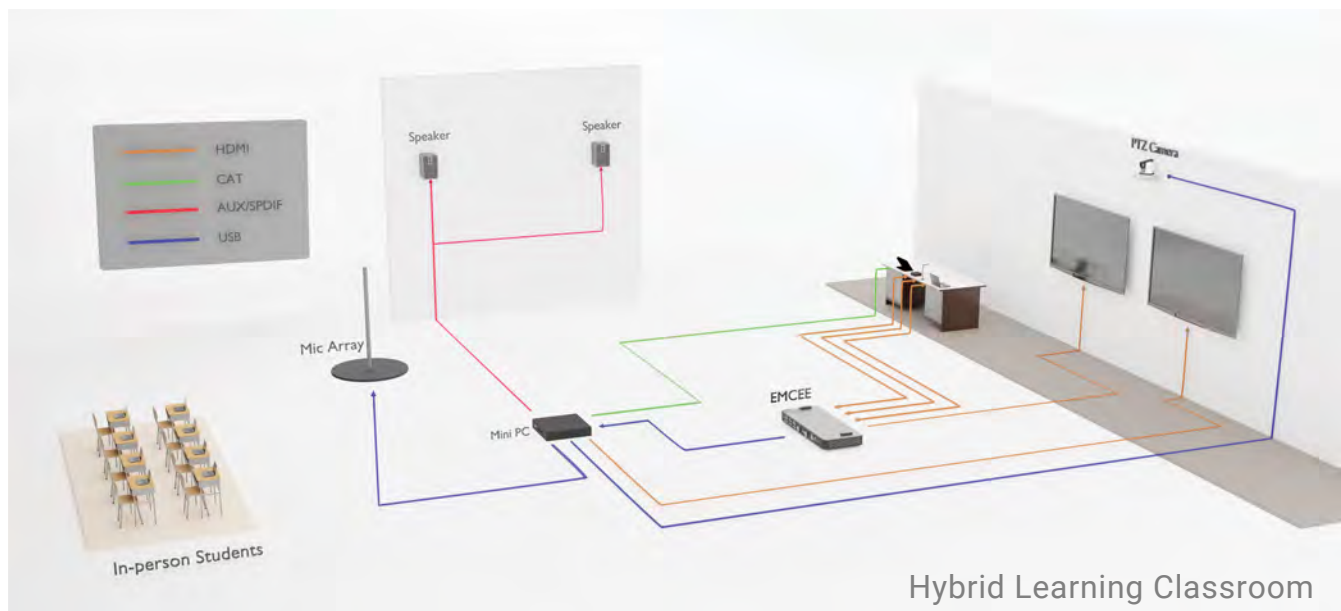


Revision History

<u>Version</u>	<u>Release Date</u>	<u>Notes</u>
1.0	07/16/2021	Initial Release

1.0 INTRODUCTION

EMCEE200 is a seamless multi-view presentation switcher and scaler with Picture-in-Picture (PIP) and Picture-Over-Picture (POP) capabilities. It can process up to four 4K@60hz video sources simultaneously and gives “CONFIDENCE” and “PRESENT” HDMI outputs in different window layouts. With a built-in dual MIC mixer and a wide range of Audio Embedding and De-Embedding options, EMCEE200 is a perfect companion for any type of presentation. EMCEE200 can not only record the presentation to an external storage device but also provides USB3.0 4K Capture for live streaming.



Applications

- Distance Learning and Hybrid Classrooms
- Conference rooms
- Lecture Recording
- Live Streaming

Features

- 18G multiview presentation switcher and scaler
- Customizable multiview layouts, including Picture-In-Picture (PIP) and Picture-Over-Picture (POP)
- 4K@60 4:4:4 on all Inputs and Outputs
- Record and save to an external storage device
- USB 3.0 capture to stream in 4K
- Dual MIC Mixer with Audio Embedding and De-Embedding
- Matrix Confidence and Present Outputs
- Control via Web GUI, IR, RS-232, TCP/IP, and Telnet
- Optional HDBaseT™ 3.0 and 40-watt Audio Amplifier plugin modules available

2.0 PACKAGE CONTENTS

Model EMCEE200

1x Model EMCEE200

1x Power Supply - 24V DC 5A with IEC AC cord

2x 3-pin Terminal Blocks

1x 5-pin Terminal Block

4x Rubber Protective Feet

2x 19" Rack / Surface Mount Brackets

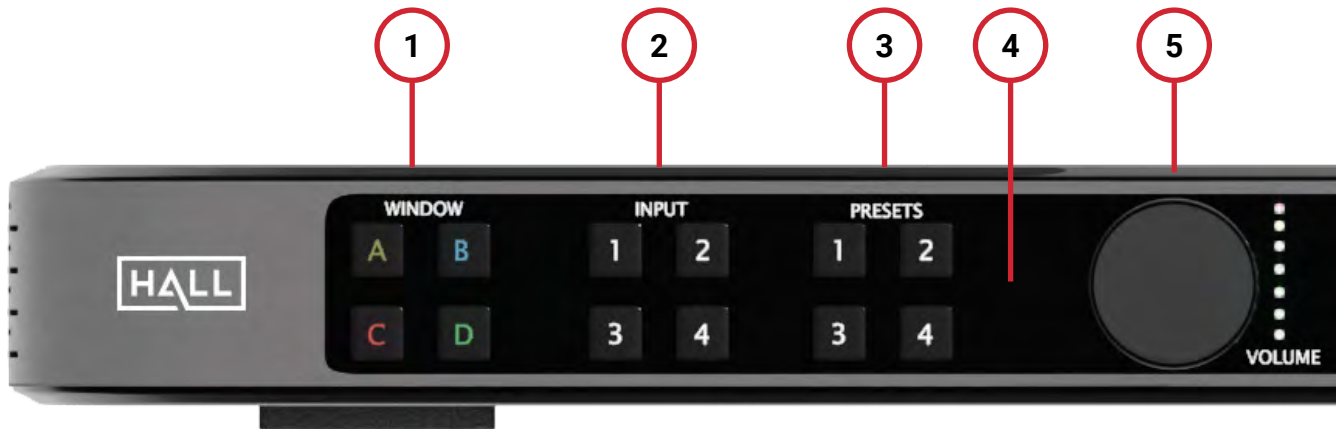
1x IR Remote Control

1x IR Receiver Extension Cable

1x Manual Instruction Card

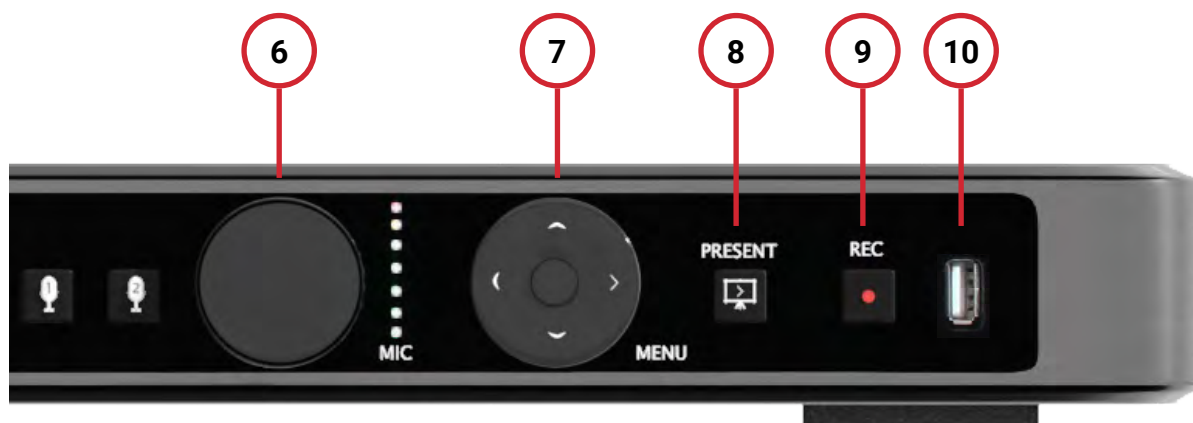
3.0 CONNECTOR AND INDICATOR FUNCTIONS

Front Panel



- 1) **WINDOW:** Up to four video windows can be processed and output to “CONFIDENCE” and “PRESENT” outputs. Configurations may be 1 x 1, 2 x 1, 1 x 2, 2 x 2, 3 x 1, 1 x 3, or a mirrored “quad view”. These window arrangements may be configured through the MENU, or via the Web GUI.
 - a. To change the video source for a window, select the corresponding WINDOW button.
 - b. There is a 5-second timeout to make a selection, during which the selected WINDOW button will be blinking.
 - c. The current INPUT source LED will be lit. Select the new desired input.
 - d. INPUT LED will blink once to confirm
- 2) **INPUT:** EMCEE200 supports up to four HDMI Inputs, at resolutions from 480p up to UHD 4K @ 60Hz, 4:4:4. Input selections are changed by first selecting the corresponding WINDOW, and then the new desired INPUT.
- 3) **PRESETS:** Up to four presets can be saved and recalled, to quickly switch between configurations without having to use the OSD MENU or Web GUI.
 - a. To SAVE a preset, press and hold the desired PRESET button for three seconds. The LED will blink once to confirm.
 - b. To RECALL a preset, press the desired PRESET button. The LED will blink once to confirm.
- 4) **IR WINDOW:** IR Receiver window. Ensure this area is not obstructed if using the IR remote.
- 5) **VOLUME:** Master volume control for both HDMI outputs and the optional amplified audio output. Rotate to adjust volume. Press the VOLUME knob to toggle mute/unmute.

Front Panel (continued)



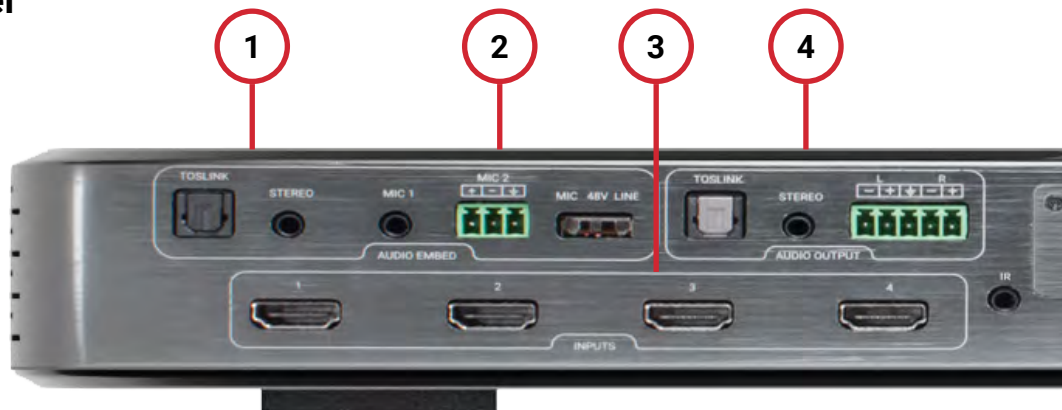
- 6) **MICROPHONE (MIC):** Adjust volume of MIC1 and MIC2.
 - a. Press MIC1 or MIC2 button to select microphone to adjust. Button LED indicates current selection.
 - b. Rotate to adjust volume. Press the MIC volume knob to toggle mute/unmute of selected microphone (MIC1 or MIC2)
- 7) **MENU:** Press MENU to open the OSD menu.
 - a. Use MENU to select the current menu item, or apply the new setting.
 - b. Use RIGHT to navigate into a menu item.
 - c. Use LEFT to navigate back from a menu item.
 - d. Use UP/DOWN to navigate up/down the menu items, or increase/decrease the current menu item parameter.
- 8) **PRESENT:** Press to enable/disable the PRESENT output. LED is ON while presenting.
- 9) **RECORD (REC):** Press to start/stop recording to an external USB drive. LED is ON when recording and OFF when not recording. LED will blink three times if an error is encountered.
 - a. After plugging into the USB drive, the REC LED will blink once when it is ready to record.
 - b. After recording is finished, the REC LED will blink continuously until it has finished writing the data to the USB drive.
- 10) **USB:** USB 2.0 port for connecting to an external Storage Device. The USB drive must be formatted as a FAT32 partition.
 - a. Recorded files are saved as .mp4.
 - b. File name is saved as record_(serial number).mp4. Resolution is fixed at 1080p@60Hz.
 - i. Serial number starts at 0, 1, 2...
 - ii. The name and serial number reset when power is cycled.
 - c. Approximately 6GB of storage is needed to record for one hour.
 - d. NO HDCP record support. See "HDCP NOTICE" in Section 6 of this manual.



HDCP Notice

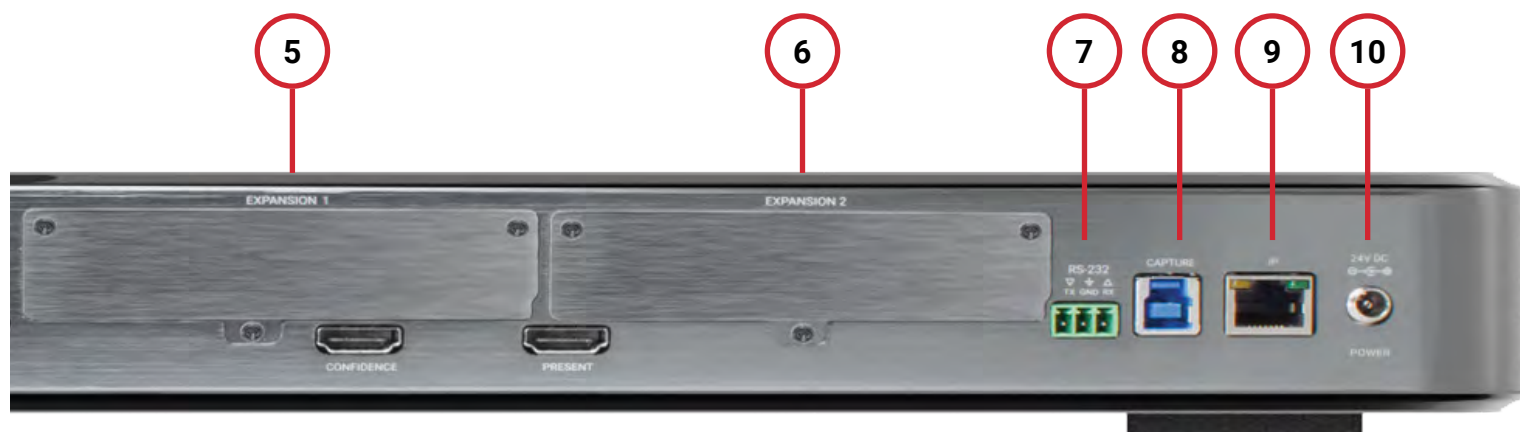
In order to comply with applicable laws, HDCP protected content will not be recorded. A message will be shown in the top left of the screen to indicate the presence of HDCP. Some computer manufacturers insert content protection when available, regardless of the content being displayed. In order to record non-HDCP video from these sources, the EMCEE200 will need to be told to turn off support for HDCP on that input. This does NOT strip HDCP from protected content, but allows non-HDCP video to be recorded, such as the computer desktop, applications, etc. The computer will be unable to play HDCP protected content until HDCP support is re-enabled. HDCP support can be enabled or disabled via the OSD MENU, Web, GUI, RS-232, or Telnet.

Rear Panel



- 1) **AUDIO EMBEDDING:** The EMCEE200 can embed audio from one of the HDMI Inputs, or from one of the external line-level audio inputs.
 - a. TOSLINK: Digital audio input via optical TOSLINK cable.
 - b. STEREO: Analog L/R audio input via 3.5mm cable.
- 2) **MIC EMBEDDING:** Two microphone inputs can be mixed and embedded into the HDMI output.
 - a. MIC 1: Mic-level input via 3.5mm cable.
 - b. MIC 2: Selectable between mic-level with 48V phantom power, or line-level. Input via 3-pin terminal block.
- 3) **HDMI INPUTS:** Up to four HDMI Inputs, at resolutions from 480p up to UHD 4K@60Hz, 4:4:4.
- 4) **AUDIO OUTPUT:** The selected audio source and embedded mic mix can be de-embedded for connection to an external audio system if needed.
 - a. TOSLINK: Digital audio output via optical TOSLINK cable.
 - b. STEREO: Analog L/R audio output via 3.5mm cable.
 - c. L/R Balanced: Analog L/R balanced audio output via 5-pin terminal block.

Rear Panel (continued)



- 5) **CONFIDENCE (EXPANSION 1):** HDMI Output. This output is primarily intended for the presenter's convenience.
 - a. Output is active when the "PRESENT" output is blanked.
 - b. An EMCEE Output Card plugged into "EXPANSION 1" will mirror the same audio and video as the "CONFIDENCE" output.
- 6) **PRESENT (EXPANSION 2):** HDMI Output. This output is primarily intended for the presenter's audience.
 - a. Output can be blanked by using the "PRESENT" button on the front panel.
 - b. An EMCEE200 Output Card plugged into "EXPANSION 2" will mirror the same audio and video as the "PRESENT" output.
- 7) **RS-232:** RS-232 port for 3rd party control via a 3-pin terminal block. See the CONTROL section of this manual for configuration and a list of available RS-232 control commands.
- 8) **CAPTURE:** USB 3.0 port for soft-code video and audio capture. Connect to a computer to stream the "PRESENT" output in real-time.
 - a. Supports resolutions up to 4K30.
 - b. No drivers needed - EMCEE200 identifies as a camera device.
 - c. NO HDCP capture support. See "HDCP NOTICE" above.
- 9) **IP:** RJ45 port for 3rd party control via connection to a LAN. See the CONTROL section of this manual for configuration and a list of available TELNET control commands.
- 10) **24V DC POWER:** Power input. Use only supplied power adapter that comes with the system.

4.0 SETUP

Installation Recommendations

- The EMCEE200 includes standard 19" rack mounting ears. Alternatively, these ears can be turned 90° and installed in the middle of the EMCEE200, to provide secure surface for under-table mounting options.
- Keep the EMCEE200 away from heat sources and ensure adequate ventilation. Do not block any ventilation holes.
- Do NOT add or remove Output Cards without first removing power from the EMCEE200.
- Connect the HDMI Inputs and Outputs using good quality cables.
- Hall Technologies carries a line of SnugFit™ HDMI cables that provide a secure and reliable connection: <https://halltechav.com/product/chd-sf/>
- The power supply uses a locking DC power connector to prevent accidental power loss. The connector should only be finger-tight; do not over tighten.
- The power supply must be connected to a properly grounded outlet.
- Test all accessories such as extension cables prior to installation in a wall or plenum space.
- If using the HDBaseT™ expansion card, use quality CAT6A cable or better. Shielded cable is recommended to improve performance in noisy environments.
- Route all cables away from high voltage sources such as lighting ballasts, transformers, motors, or AC lines. Where crossing is required, run cables perpendicular to one another to reduce signal inductance.
- Firmware updates may be available with future updates to add features or to improve performance. These updates will be available on the product page of the website: <https://halltechav.com/product/emcee200/>

EMCEE200 Output Cards

EMCEE output cards are separate plug-in modules that are designed for use with the EMCEE200 to provide additional functionality. The EMCEE200 has two available expansion outputs, which can provide additional video or audio output.

- **EXPANSION 1:** This port will mirror the same audio and video as the “CONFIDENCE” output.
- **EXPANSION 2:** This port will mirror the same audio and video as the “PRESENT” output.

HDBaseT™ Transmitter Output Card Installation (EXP-HDBT3-TRX100)

The EMCEE200 can be outfitted with an HDBaseT™ expansion card to extend HDMI up to 90m (295ft) at 4K@60Hz 4:4:4 over a single CAT6A cable to a compatible HDBT3 receiver. USB 2.0, RS-232, and bi-directional IR are also extended to the receiver.



ALWAYS remove power from the EMCEE200 before installing or removing expansion cards. Failure to do so may result in damage to the unit and presents a risk of electric shock.

- Remove the faceplate from EXPANSION 1 or EXPANSION 2.
- Ensure all expansion card DIP switches are turned OFF.
- Carefully slide the HDBaseT™ expansion card into the slot. Press firmly to engage with the ard-edge connector.
- Secure the expansion card by tightening the faceplate screws.

Two HDBaseT™ expansion cards may be installed in the EMCEE200 to extend both PRESENT and CONFIDENCE video to remote locations.



Audio Amplifier Output Card Installation (EXP-AMP-4860)

The EMCEE200 can be outfitted with a 40W stereo audio amplifier expansion card for local audio amplification. The audio amplifier supplies 20W per channel at 4 or 8 ohms, in either stereo or combined mono output.



ALWAYS remove power from the EMCEE200 before installing or removing expansion cards. Failure to do so may result in damage to the unit and presents a risk of electric shock.

- Remove the faceplate from EXPANSION 1 or EXPANSION 2.
- Carefully slide the audio amplifier expansion card into the slot. Press firmly to engage with the card-edge connector.
- Secure the expansion card by tightening the faceplate screws.

Only ONE audio amplifier expansion card may be installed in the EMCEE200. If more audio amplification is needed, an external audio amplifier will be required. Contact Hall Technologies for more information regarding available audio amplifier solutions.

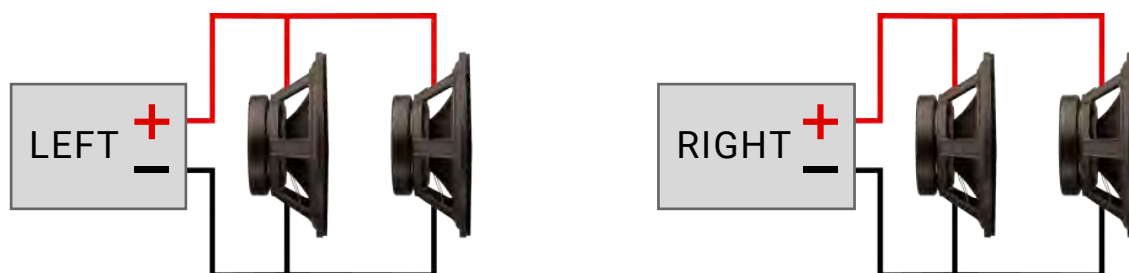


Connecting Multiple Speakers to the Audio Amp

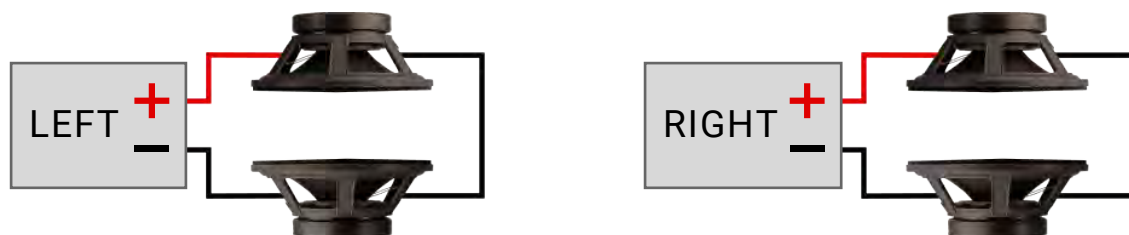
The EMCEE200 audio amplifier card is designed to drive either 4-ohm or 8-ohm speaker loads, depending on the setting indicated by the DIP switch. Connecting a larger load with less resistance than indicated can result in an over-current shutdown of the amplifier, and possible damage to the card itself. Using a smaller load such as 16 ohms is allowed but will result in less power delivery and a lower overall volume level.

For larger rooms, it may be desirable to have more than two speakers connected to the amplifier. Multiple speakers can be connected in series or parallel, provided the total load does not exceed the amplifier's capacity.

For example, when using the 4-ohm setting, each channel may have two 8-ohm speakers connected in parallel, or two 2-ohm speakers connected in series:



Parallel Wiring: 8 ohms + 8 ohms = 4 ohms load per channel



Series Wiring: 2 ohms + 2 ohms = 4 ohms load per channel

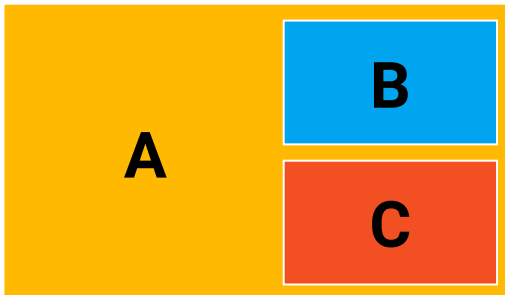
When using the 8-ohm setting, each channel may have two 16-ohm speakers connected in parallel, or two 4-ohm speakers connected in series.

5.0 CONFIGURATION AND OPERATION

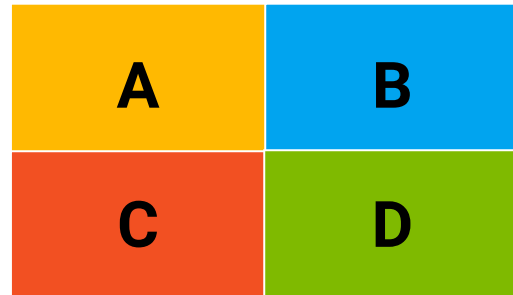
Introduction to Window-Based Switching

Unlike traditional video switchers that employ simple Input Output commands to change video routing, a multiview switcher can display several inputs on the same output.

The EMCEE200's HDMI inputs are displayed within four available windows, labeled A through D. These windows can be sized and positioned where needed to create custom window layouts. Up to four windows can be displayed simultaneously:



Picture-in-Picture (Window layout 13)



Quad View (Window layout 15)

By default, there is a colored border around each Window to aid in identifying its location on the screen. This can be turned off via the OSD or Web GUI. Additional Window and Input labels are also available if desired.

The video being routed to each Window can be independently changed to display from any Input. From the front panel, this is achieved by pressing one of the WINDOW buttons, followed by the desired INPUT.

To perform a quick swap of the Inputs between two Windows, Press the first WINDOW button, followed by the second WINDOW button.

Mirrored Window Layouts (Mode 1)

In Mirrored Mode, both CONFIDENCE and PRESENT outputs are identical – the same audio and video is shown on both displays. A total of 19 default Window Layouts (shown below) are provided as a starting point. In Mode 1, the sizes and positions of each window can be further customized and saved to a preset, using commands available in the OSD, Web GUI, or RS-232/Telnet commands.



WL1



WL2



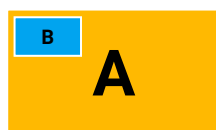
WL3



WL4



WL5



WL6



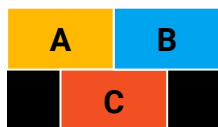
WL7



WL8



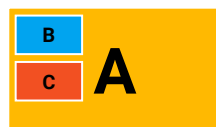
WL9



WL10



WL11



WL12



WL13



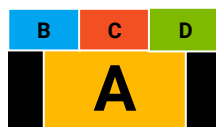
WL14



WL15



WL16



WL17



WL18



WL19

TRANSITION EFFECTS: Switching between the first four Window Layouts allows for the use of Window Transition Effects, such as Fade and Wipe. These transitions can be adjusted through the OSD or Web GUI. Please note that these effects are only available when transitions between full-screen window layouts by issuing a “WLn” command, where ‘n’ = 1-4.

Independent Window Layouts (Mode 2)

In Independent Mode, CONFIDENCE and PRESENT outputs are different. The EMCEE200 can process a maximum of four Windows in this mode, shared between the two outputs. In Mode 2, the sizes and positions of the Windows are fixed.

The Independent Mode can be accessed via Web GUI or RS-232/Telnet commands. Mode and input routing information is saved when a preset is created.

Mode 2 Window Layouts		
CMD \ OUT	CONFIDENCE	PRESENT
WL1		
WL2		
WL3		
WL4		
WL5		
WL6		
WL7		
WL8		
WL9		

Routing Audio – Input Tie or Window Tie

There are two different audio routing modes – Input Tie, or Window Tie. These can be changed to suit the desired operation. This audio routing information is saved when a preset is created.

INPUT TIE: In this mode, the audio is fixed to a specific input. By default, this is normally input 1, but can be switched to any of the four. In this mode, audio from input 1 will always be sent to the outputs, regardless of any changes to video routing. Changes to the audio output must be made manually.

WINDOW TIE: In this mode, the audio follows the video of specific window. By default, this is normally window A, but can be switched to any of the four. In this mode, the audio being sent to the outputs will change automatically if the video routing to window A is changed.

From the front panel, press and hold the desired INPUT button until the LED blinks to tie the audio to the input. Press and hold the desired WINDOW button until the LED blinks to tie the audio to the window. To tie the audio to one of the external audio inputs, please use the OSD, Web GUI, or RS-232/Telnet commands.

Creating and Recalling Presets

The EMCEE200 can store up to 18 different preset configurations to quickly change between layouts. The first four are available via the front panel PRESETS buttons. The remaining presets can be saved and recalled through the Web GUI or RS-232/Telnet commands.

From the front panel, press a PRESET button to recall that preset. Press and HOLD a PRESET button until the LED blinks to save the current layout to that preset.

The following information is saved as part of every preset:

- Window layout mode (1 or 2)
- Window layout sizes and positions
- Window input routing
- Audio source and routing mode

6.0 RECORDING AND LIVE CAPTURE



HDCP Notice

To comply with applicable laws, HDCP protected content cannot be recorded or captured by the EMCEE200. A message will be shown on the screen to indicate the presence of HDCP. Some computer manufacturers insert content protection when available, regardless of the content being displayed.

To record non-HDCP video from these sources, the EMCEE200 will need to be told to turn off support for HDCP on that input.

This does NOT strip HDCP from protected content, but allows non-HDCP video to be recorded, such as the computer desktop, applications, etc.

The computer will be unable to play HDCP protected content until HDCP support is re-enabled. HDCP support can be enabled or disabled via the OSD MENU, Web GUI, RS-232, or Telnet.

USB Recording to Storage Device

The USB-A port on the front of the EMCEE200 can be used to record the video and audio that is routed to the PRESENT output to an external storage device, such as a USB flash drive. A PC is not required for this functionality. When setting up a storage device, please observe the following:

1. The drive must be formatted FAT32.
2. Recorded files are saved as .mp4. Resolution is fixed at 1080p@60Hz.
3. File name is saved as record_(serial number).mp4
 - a. Serial number starts at 0, 1, 2...
 - b. The name and serial number reset when power is cycled.
4. Approximately 6GB of storage is needed to record for one hour.

It is recommended to make a sample recording prior to the presentation to ensure all the settings and levels are correct.

Once the storage device is ready, connect it to the USB port on the front of the EMCEE200.

1. After plugging into the USB drive, the REC LED will blink once when it is ready to record.
2. Press "REC" to start/stop recording to an external USB drive. LED is ON when recording and OFF when not recording. LED will blink three times if an error is encountered.
3. After recording is finished, the REC LED will blink continuously until it has finished writing the data to the USB drive.

Do NOT unplug the USB storage device until the EMCEE200 has finished writing, and the REC light is OFF.

USB Capture Streaming – Soft Codec

To record video in 4K, or live-stream video for a soft codec presentation, a PC with USB 3.0 is required. Installation and configuration are as follows:

1. Connect the computer to the USB 3.0 “CAPTURE” port on the back of the EMCEE200.
2. Wait for the computer to install the necessary drivers.
 - a. The EMCEE200 is recognized and installed as a 4K camera.
 - b. No extra drivers are required for modern operating systems.
3. Ensure EMCEE200 HDMI output is set to 4K @30Hz (The maximum supported.)
4. Ensure HDCP input and output modes are set to OFF. (See HDCP notice above.)

Live-Streaming Considerations

When using the EMCEE200 to stream video over web-based conference platforms, it is recommended to bring up the camera feed in a separate application such as OBS Studio and to share the application’s screen, rather than using the feed as a camera directly. There are two reasons for this:

1. Many web-based applications will perform a horizontal flip of the user’s camera, so that the user sees a mirrored image of themselves, while the other users see an unaltered image. This behavior is not ideal for the presenter, as all images and text will appear flipped and difficult to read.
2. To save on bandwidth, camera feeds sent through these conferencing platforms are highly compressed. When a user performs a screen share, more bandwidth is allocated to maximize the clarity of the shared content, such as diagrams and text.

7.0 CONTROL

RS-232 / Telnet / TCP Control

RS-232 Configuration

Baud	115200
Data	8
Parity	None
Stop Bit	1

Telnet / TCP Configuration

Telnet/TCP port	9999
Default Password	admin

Responses

<u>Response</u>	<u>Description</u>
INVALID_COMMAND	Invalid command or Command not found
OK	Command execution was successful
ERROR	Command execution failed or invalid Arguments

Description	Command	Response						
Set mode	<p>MDn</p> <p>Where: n = Mode #</p> <table border="1"> <thead> <tr> <th>n</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Mirror : CONFIDENCE monitor is a mirror of the PRESENT (Default)</td> </tr> <tr> <td>2</td> <td>Independent: CONFIDENCE and PRESENT can work independently</td> </tr> </tbody> </table>	n	Description	1	Mirror : CONFIDENCE monitor is a mirror of the PRESENT (Default)	2	Independent : CONFIDENCE and PRESENT can work independently	<p>Eg: >> MD2 OK</p>
n	Description							
1	Mirror : CONFIDENCE monitor is a mirror of the PRESENT (Default)							
2	Independent : CONFIDENCE and PRESENT can work independently							
Query mode	MD?	<p>Eg: >> MD? MD2</p>						
Select Input on a Window	<p>CVn,m</p> <p>Where: n = Window [A-D] m = Input [1-4]</p>	<p>Eg: Show Input 1 on Window A</p> <p>>> CVA,1 OK</p>						
Query Inputs on a Window	<p>CVn?</p> <p>Where: n = Window [A-D]</p>	<p>Eg: Input 1 is currently shown on Window A</p> <p>>> CVA? CVA,1</p>						
Set Audio Mode	<p>CAn</p> <p>Where:</p> <p>n= 0 to Mute n = [A-D] Tie to Window n = [1-4] for HDMI Input n = 5 for TOSLINK n = 6 for Stereo</p>	<p>Eg: >> CA1 OK</p>						
Query Audio Mode	CA?	<p>Eg: >> CA? CA1</p>						

<p>Set window size</p> <p>NOTE: Only valid in MD1</p>	<p>WSn=X,Y,W,H,P</p> <p>Where: n = Window [A-D] X,Y = Position of bottom left vertex of the window W = Width of the window H = Height of the window P = Z-index of the window NOTE: The value of X,Y,W,H depends on the output resolution.</p>	<p>Eg: Start Window A at (639,720). Size 2559x1440 pixels, index 1. >>WSA=639,720,2559,1440,1 OK</p>																																												
<p>Query window size</p>	<p>WSn?</p> <p>Where: n = Window [A-D]</p>	<p>Eg: >> WSA? WSA=639,720,2559,1440,1</p>																																												
<p>Set window Layout.</p>	<p>WLn</p> <p>Where: Mode 1:</p> <table border="1" data-bbox="613 953 1127 1218"> <thead> <tr> <th>n</th> <th>Layout</th> </tr> </thead> <tbody> <tr> <td>1-4</td> <td> </td> </tr> <tr> <td>5-9</td> <td> </td> </tr> <tr> <td>10-14</td> <td> </td> </tr> <tr> <td>15-19</td> <td> </td> </tr> </tbody> </table> <p>Mode 2:</p> <table border="1" data-bbox="613 1266 1127 1709"> <thead> <tr> <th>n</th> <th>Mode 2 Window Layouts</th> </tr> </thead> <tbody> <tr> <td>1-9</td> <td> <table border="1"> <thead> <tr> <th></th> <th>CONFIDENCE</th> <th>PRESENT</th> </tr> </thead> <tbody> <tr><td>WL1</td><td>A</td><td>B</td></tr> <tr><td>WL2</td><td>A</td><td>B</td></tr> <tr><td>WL3</td><td>A</td><td>B C</td></tr> <tr><td>WL4</td><td>A</td><td>B</td></tr> <tr><td>WL5</td><td>A B</td><td>C D</td></tr> <tr><td>WL6</td><td>A</td><td>C</td></tr> <tr><td>WL7</td><td>A</td><td>C</td></tr> <tr><td>WL8</td><td>A B</td><td>C</td></tr> <tr><td>WL9</td><td>A</td><td>D</td></tr> </tbody> </table> </td> </tr> </tbody> </table>	n	Layout	1-4		5-9		10-14		15-19		n	Mode 2 Window Layouts	1-9	<table border="1"> <thead> <tr> <th></th> <th>CONFIDENCE</th> <th>PRESENT</th> </tr> </thead> <tbody> <tr><td>WL1</td><td>A</td><td>B</td></tr> <tr><td>WL2</td><td>A</td><td>B</td></tr> <tr><td>WL3</td><td>A</td><td>B C</td></tr> <tr><td>WL4</td><td>A</td><td>B</td></tr> <tr><td>WL5</td><td>A B</td><td>C D</td></tr> <tr><td>WL6</td><td>A</td><td>C</td></tr> <tr><td>WL7</td><td>A</td><td>C</td></tr> <tr><td>WL8</td><td>A B</td><td>C</td></tr> <tr><td>WL9</td><td>A</td><td>D</td></tr> </tbody> </table>		CONFIDENCE	PRESENT	WL1	A	B	WL2	A	B	WL3	A	B C	WL4	A	B	WL5	A B	C D	WL6	A	C	WL7	A	C	WL8	A B	C	WL9	A	D	<p>Eg: >> WLn15 OK</p>
n	Layout																																													
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<p>Query window layout</p>	<p>WL?</p>	<p>Eg: >> WL? WL15</p>																																												

Set MIC volume	MICn,m Where: n = Mic# [1-2] m = Volume# [1-100] m= 0 to mute	Eg: >> MIC1,45 OK
Query MIC volume	MICn? Where: n = Mic# [1-2]	Eg: >> MIC1? MIC1,45
Set AV Volume NOTE: This will adjust all volume	VOLn Where: n = Volume Level [1-100]	Eg: >> VOL65 OK
Query AV Volume	VOL?	Eg: >> VOL? VOL65
Saving Preset NOTE: Preset configuration includes: Mode, Audio source, and Input source configuration on the Window and the Window Layout	PSn Where: n = Preset # [1-18]	Eg: >> PS12 OK
Recall Preset	PRn Where: n = Preset # [1-18]	Eg: >> PR12 OK
Query Preset	PR?	Eg: >> PR? PR12
Turn ON/OFF HDMI Video	VIDn,m Where: n=1 for HDMI1 (Confidence) n=2 for HDMI2 (Present) m = 0 is OFF m = 1 is ON	Eg: Turn Present OFF >> VID2,0 OK
Query HDMI Video	VIDn?	Eg. >> VID2? VID2,0

Set HDCP Input Mode	<p>HDCPI_{n,m}</p> <p>Where: n = Input[1-4] m = Mode</p> <table border="1" data-bbox="548 464 1114 848"> <thead> <tr> <th>m</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Support up to HDCP 2.2 (Default)</td> </tr> <tr> <td>1</td> <td>Support up to HDCP 1.4</td> </tr> <tr> <td>2</td> <td>HDCP not supported. NOTE: This setting does not 'strip' HDCP from the source. It tells the input to reject all HDCP negotiation.</td> </tr> </tbody> </table>	m	Description	0	Support up to HDCP 2.2 (Default)	1	Support up to HDCP 1.4	2	HDCP not supported. NOTE: This setting does not 'strip' HDCP from the source. It tells the input to reject all HDCP negotiation.	<p>Eg:</p> <p>Disable HDCP support on Input 3</p> <p>>> HDCPI3,2 OK</p>
m	Description									
0	Support up to HDCP 2.2 (Default)									
1	Support up to HDCP 1.4									
2	HDCP not supported. NOTE: This setting does not 'strip' HDCP from the source. It tells the input to reject all HDCP negotiation.									
Query HDCP Input Mode	<p>HDCPI_{n?}</p> <p>Where: n = Input[1-4]</p>	<p>Eg.</p> <p>>> HDCPI3? HDCPI3,2</p>								
Set HDCP Output Mode	<p>HDCPO_{n,m}</p> <p>Where: n = Output[1-2] m = Mode</p> <table border="1" data-bbox="548 1253 1102 1556"> <thead> <tr> <th>m</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Passthrough (Default) Enable HDCP on output when any source has HDCP content. Disable HDCP if no HDCP content is connected.</td> </tr> <tr> <td>1</td> <td>Always output HDCP 1.4</td> </tr> <tr> <td>2</td> <td>Always output HDCP 2.2</td> </tr> </tbody> </table>	m	Description	0	Passthrough (Default) Enable HDCP on output when any source has HDCP content. Disable HDCP if no HDCP content is connected.	1	Always output HDCP 1.4	2	Always output HDCP 2.2	<p>Eg:</p> <p>>> HDCPO1,2 OK</p>
m	Description									
0	Passthrough (Default) Enable HDCP on output when any source has HDCP content. Disable HDCP if no HDCP content is connected.									
1	Always output HDCP 1.4									
2	Always output HDCP 2.2									
Query HDCP Output Mode	<p>HDCPO_{n?}</p> <p>Where: n = Output[1-2]</p>	<p>Eg.</p> <p>>> HDCPO1? HDCPO1,2</p>								

Set Output Resolution	<p>VRn</p> <p>Where: n = Resolution Index#</p> <table border="1" data-bbox="548 464 1101 1157"> <thead> <tr> <th>n</th> <th>Resolution</th> </tr> </thead> <tbody> <tr> <td>0 (Default)</td> <td>Native</td> </tr> <tr><td>1</td><td>3840 x 2160 @ 59.99Hz</td></tr> <tr><td>2</td><td>3840 x 2160 @ 59.93Hz</td></tr> <tr><td>3</td><td>3840 x 2160 @ 49.99Hz</td></tr> <tr><td>4</td><td>3840 x 2160 @ 29.99Hz</td></tr> <tr><td>5</td><td>3840 x 2160 @ 29.96Hz</td></tr> <tr><td>6</td><td>3840 x 2160 @ 24.99Hz</td></tr> <tr><td>7</td><td>3840 x 2160 @ 23.99Hz</td></tr> <tr><td>8</td><td>1920 x 1080 @ 59.99Hz</td></tr> <tr><td>9</td><td>1920 x 1080 @ 59.93Hz</td></tr> <tr><td>10</td><td>1920 x 1080 @ 49.99Hz</td></tr> <tr><td>11</td><td>1920 x 1080 @ 30.00Hz</td></tr> <tr><td>12</td><td>1920 x 1080 @ 29.96Hz</td></tr> <tr><td>13</td><td>1920 x 1080 @ 25.00Hz</td></tr> <tr><td>14</td><td>1920 x 1080 @ 24.00Hz</td></tr> <tr><td>15</td><td>1280 x 720 @ 60.00Hz</td></tr> <tr><td>16</td><td>1280 x 720 @ 59.93Hz</td></tr> <tr><td>17</td><td>1280 x 720 @ 50.00Hz</td></tr> <tr><td>18</td><td>720 x 576 @ 50.00Hz</td></tr> <tr><td>19</td><td>720 x 480 @ 59.94Hz</td></tr> </tbody> </table>	n	Resolution	0 (Default)	Native	1	3840 x 2160 @ 59.99Hz	2	3840 x 2160 @ 59.93Hz	3	3840 x 2160 @ 49.99Hz	4	3840 x 2160 @ 29.99Hz	5	3840 x 2160 @ 29.96Hz	6	3840 x 2160 @ 24.99Hz	7	3840 x 2160 @ 23.99Hz	8	1920 x 1080 @ 59.99Hz	9	1920 x 1080 @ 59.93Hz	10	1920 x 1080 @ 49.99Hz	11	1920 x 1080 @ 30.00Hz	12	1920 x 1080 @ 29.96Hz	13	1920 x 1080 @ 25.00Hz	14	1920 x 1080 @ 24.00Hz	15	1280 x 720 @ 60.00Hz	16	1280 x 720 @ 59.93Hz	17	1280 x 720 @ 50.00Hz	18	720 x 576 @ 50.00Hz	19	720 x 480 @ 59.94Hz	<p>Eg. >> VR5 OK</p>
n	Resolution																																											
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Query Output Resolution	<p>VR?</p>	<p>Eg. >> VR? VR5</p>																																										
Set Output Color Space	<p>VCSn</p> <p>Where: n = Color space Index#</p> <table border="1" data-bbox="548 1388 1101 1524"> <thead> <tr> <th>n</th> <th>Resolution</th> </tr> </thead> <tbody> <tr><td>1</td><td>RGB 4:4:4</td></tr> <tr><td>2</td><td>YCbCr 4:4:4</td></tr> <tr><td>3</td><td>YCbCr 4:2:2</td></tr> </tbody> </table>	n	Resolution	1	RGB 4:4:4	2	YCbCr 4:4:4	3	YCbCr 4:2:2	<p>Eg. >> VCS1 OK</p>																																		
n	Resolution																																											
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Query Output Color Space	<p>VCS?</p>	<p>Eg. >> VCS? VCS1</p>																																										

Set EDID on Input	<p>ESn,m</p> <p>Where: n = Input [1-4] m = EDID Index #</p> <table border="1"> <thead> <tr> <th>m</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Output 1 Sink EDID</td> </tr> <tr> <td>2</td> <td>Output 2 Sink EDID</td> </tr> <tr> <td>3</td> <td>1080 @ 60Hz 2Ch</td> </tr> <tr> <td>4</td> <td>1080 @ 60Hz 7.1Ch</td> </tr> <tr> <td>5</td> <td>4K @ 60Hz 2Ch</td> </tr> <tr> <td>6</td> <td>4K @ 60Hz 7.1Ch (Default)</td> </tr> <tr> <td>7</td> <td>Custom (User Defined)</td> </tr> </tbody> </table>	m	Description	1	Output 1 Sink EDID	2	Output 2 Sink EDID	3	1080 @ 60Hz 2Ch	4	1080 @ 60Hz 7.1Ch	5	4K @ 60Hz 2Ch	6	4K @ 60Hz 7.1Ch (Default)	7	Custom (User Defined)	<p>Eg. >> ES1,5 OK</p>
m	Description																	
1	Output 1 Sink EDID																	
2	Output 2 Sink EDID																	
3	1080 @ 60Hz 2Ch																	
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6	4K @ 60Hz 7.1Ch (Default)																	
7	Custom (User Defined)																	
Query EDID served on Input	<p>ESn?</p> <p>Where: n = Input [1-4]</p>	<p>Eg. >> ES1? ES1,5</p>																
Learn EDID from Output and Save it as a Custom	<p>ELn</p> <p>Where: n = Output [1-2]</p> <p>NOTE: Set ESn = 7 to use this EDID.</p>	<p>Eg. >> EL1 OK</p>																
Set switching effect	<p>SEn</p> <p>Where: n = Effects</p> <table border="1"> <thead> <tr> <th>n</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Seamless (Default)</td> </tr> <tr> <td>1</td> <td>Fade</td> </tr> <tr> <td>2</td> <td>Dissolve</td> </tr> <tr> <td>3</td> <td>Wipe</td> </tr> </tbody> </table>	n	Description	0	Seamless (Default)	1	Fade	2	Dissolve	3	Wipe	<p>Eg. >> SE2 OK</p>						
n	Description																	
0	Seamless (Default)																	
1	Fade																	
2	Dissolve																	
3	Wipe																	
Query switching effect	<p>SE?</p>	<p>Eg: >> SE? SE2</p>																
Start/Stop Recording	<p>RCn</p> <p>Where: n = 0 is OFF n = 1 is ON</p>	<p>Eg: >> RC1 OK</p>																
Query Recording	<p>RC?</p>	<p>Eg: >> RC? RC1</p>																

Front Panel Lock	LKn Where: n = 0 is OFF n = 1 is ON	Eg: >> LK1 OK
Query Front Panel Lock	LK?	Eg: >> LK? LK1
Set DHCP	DHCPn Where: n = 0 is OFF n = 1 is ON	Eg: >> DHCP1 DHCP1
Query DHCP	DHCP?	Eg: >> DHCP? DHCP1
Set IP/Subnet/Gateway	IPxxx.xxx.xxx.xxx SBNxxx.xxx.xxx.xxx GWxxx.xxx.xxx.xxx	Eg: >> IP192.168.1.10 OK
Query IP/Subnet/Gateway	IP? SBN? GW?	Eg: >>IP? 192.168.1.10
Query MAC	MAC	Eg: >>MAC? FF:FF:FF:FF:FF:FF
Perform Factory Reset	FD	OK ERROR
Firmware Version	FW	Eg: >> FW VER 1.18.3
Reboot	RB	Eg: >> RB OK
Power Command	PWn Where: n = 0 is OFF n = 1 is ON	Eg: >> PW0 OK
Query Power	PW?	Eg: >> PW? PW0

Web GUI Control

EMCEE200 can be configured and controlled via its built-in Web GUI. For more information, please see the software guide, available on the product page of the website:

<https://halltechav.com/product/emcee200/>

Default Login

Username	Admin
Password	admin

IR Remote Control

EMCEE200 comes with an intuitive IR remote control to quickly change settings during a presentation. If the EMCEE200 is in a location that is difficult to reach with the IR remote, the included IR Receiver extension cable may be used to provide easier access.



BUTTON	FUNCTION
REC	Start or stop recording to an attached USB storage device.
PRES	Blank or un-blank the PRESENT HDMI output.
CONF	Blank or un-blank the CONFIDENCE HDMI output.
POWER	Turn EMCEE200 on or off.
PRESET	Switch between first four presets.
VOLUME	Adjust volume of AV or MIC inputs. Mute AV or last MIC adjusted.
SOURCE	Select a source to apply to a window.
WINDOW	Apply selected source to the selected window.
FULLSCREEN	Switch between full-screen window layouts for simple 4:1 switching.

8.0 TROUBLESHOOTING

If you are experiencing problems getting the EMCEE200 to work properly, please use the following troubleshooting suggestions. If none of the steps listed below are successful and you believe the unit may be malfunctioning, please contact Hall Technologies Support using the contact information at the beginning of this manual.



Do NOT attempt to make repairs yourself; there are no user-serviceable parts inside. Opening the unit presents a risk of electric shock and will void your warranty.

<u>Problem</u>	<u>Possible Cause</u>	<u>Solution</u>
No video output / black video	Output is Blanked	Use IR remote, GUI, or RS-232 to un-blank the affected output
	HDCP handshake failure	Ensure the display supports HDCP. Use OSD or GUI to change HDCP compatibility of input(s) or output(s)
	Resolution not supported	Change output resolution in OSD to a resolution supported by the display. Change output to "AUTO" to automatically select the display's preferred native resolution.
No audio / microphone output	Audio is Muted	Push the VOLUME or MIC knob to unmute the selected audio.
	Incorrect audio routing	Use OSD, GUI, or RS-232 to change audio routing. See Section 5 under "Routing Audio" for available options.
	MIC 2: switch in wrong position	MIC 2 input can be mic or line level. Ensure the slide switch is set to the correct position.
No USB Recording	Formatting issue	USB storage device must be formatted using a FAT32 file system.
	Drive Full	Free up space on USB storage device
	Source/display using HDCP	Sources with HDCP will not be recorded. Use OSD to turn off HDCP support of input(s) and output(s). Sources that cannot comply will not be recorded. See Section 6 HDCP notice for more information.
	Unable to record CONFIDENCE output	USB recording video is the same as PRESENT output.
No USB Streaming	Source/display using HDCP	If any input is using HDCP, streaming will be disabled. Use OSD to turn off HDCP support of input(s) and output(s). Sources that cannot comply will not be recorded. See Section 6 HDCP notice for more information.
	PC resolution mismatch	Check Output resolution of EMCEE200. On PC, set the streaming resolution to the same resolution or lower.
	Unable to record CONFIDENCE output	Streaming video is the same as PRESENT output.

USB Stream image flipped horizontally	PC is treating stream as a self-facing camera.	Soft codec programs treat camera inputs as self-facing cameras and will mirror the video shown to the presenter. Open USB stream in an external camera or OSB studio app.
No front panel control	Front Panel Lockout enabled	Use GUI or RS-232 to unlock the front panel.
No GUI or Telnet control	Incorrect settings	Use OSD or RS-232 to query IP, gateway, DHCP, and port settings. Reboot may be required to apply new settings.
Unknown/other		Use OSD, RS-232, or GUI to reset unit to factory defaults. Please allow time to complete, and do not remove power during this process.

Firmware Updates

From time to time, firmware updates may be made available to add features or to improve performance. These updates will be available on the product page of the website:

<https://halltechav.com/product/emcee200/>

The firmware update process is as follows:

1. Download the file or files from the website.
2. Transfer the file(s) to a USB flash drive, formatted FAT32. Place all the file(s) in the ROOT directory of the drive.
3. Remove power from the EMCEE200. Plug the flash drive into the USB-B port on the front of the EMCEE200, and then re-apply power.
4. Wait for the update process to take place. Depending on the number of firmware files being replaced, this may take several minutes. During this time, the LEDs on the front panel may flash.
5. The EMCEE200 will automatically reboot after the update is complete. After rebooting, the USB drive may be removed.
6. Firmware version can be checked via OSD, Web GUI, or RS-232/telnet.

9.0 SPECIFICATIONS

Video	Input	4x	HDMI 2.0a
	Output	2x	HDMI 2.0a
		2x	A/V expansion bays
		18 Gbps bandwidth Up to 4K2K@60Hz 4:4:4 8bits HDCP 1.4, 2.2	
	USB 3.0 Capture	USB 3.0 superspeed type-B female Capture up to 4K2K@30Hz 4:4:4 Compatible with Windows 7/8.1/10, Mac, and Linux OS	
USB Recording	USB 2.0 type-A female 1080p @60Hz recording		
Audio	HDMI	PCM2.0, PCM5.1, PCM7.1, 16/20/24 bits per sample up to 96kHz sampling rate	
	MIC Input	1x	3.5mm audio jack
		1x	3-Pin Phoenix connector 48V Phantom and line level audio support
	Embedding	1x	Digital TOSLINK
		1x	Stereo L/R 3.5mm audio jack
	De-embedding	1x	Digital TOSLINK
		1x	Stereo L/R 3.5mm audio jack
1x		Balanced stereo 5-Pin Phoenix connector	
Control	RS-232	115200 Baud rate 3-Pin Phoenix connector	
	IP	Embedded Web GUI TCP/IP, Telnet commands	
	IR Remote	38 kHz	
Power	Supply	24V 5A DC (US/EU standards/CE/FCC/UL certified)	
	Consumption	32W typical, 102W max (with expansion cards)	
Temperature	Operation	0~40°C [32~104°F]	
	Storage	-20~60°C [-4~140°F]	
	Relative Humidity	20~90% RH [non-condensing]	
Mechanical	Mount	Mounting brackets for 1RU rack or surface mount	
	Dimensions	17.30" (440 mm) W x 9.5" (241 mm) D x 1.75"(44 mm) H	
	Housing	Aluminum	
	ESD	Human body model - ±15kV [air-gap discharge] & ±8kV [contact discharge]	

Specifications are subject to change without notice



TECHNOLOGIES

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