

USER MANUAL

AC-CX100-RAMP

IP controllable 2 channel 25W Amplifier with microphone, line, HDMI and HDBaseT inputs, Full 18Gbps throughout (100M HDBaseT 10.2 Gbps) and On Screen Display



The newest addition to the ConferX lineup is the AC-CX100-RAMP. This multi-purpose device serves several functions in today's classroom, conference room and boardroom and includes an IP controllable 2 channel 25W Amplifier with microphone, line, HDMI and HDBaseT inputs, Full 18Gbps throughput (100M HDBaseT 10.2 Gbps). Outputs are scalable from 2K to 4K and 4K to 2K and there are additional audio outputs for recorders, additional amplifiers, audio matrices or other devices. Full EDID management makes setup a breeze and the on-screen display (OSD) provides critical information for the system operator and installer. The CX100-RAMP supports both ARC and eARC so all high bitrate audio codecs are supported. A built-in circuit for eARC automatically detects delay information from the display and corrects time delay up to 170 msec. All of these functions support collaboration for large and small groups!

Product Overview

Model Number:

- AC-CX100-RAMP ~ Controllable Class-D Amplifier with AV Functionality

▪ *Features:*

- HDMI 2.0 Input
- 4K 30 4:4:4, 4K60 4:2:0 HDMI Support
- HDR 4:2:2 12 Bit Support
- HDCP 2.2 & Earlier Supported
- HDBaseT input port: 100M (330ft) On 1080P, Up to 70m (230ft) on 4K (Cat6a)
- CEC Pass Through
- Stable Power input
- Rugged, long-life chassis
- EDID management
- Designed for the conference/classroom room so your customer can focus on their meetings, not their audio/video system.
- Microphone input and control
- Audio channel overlay
- Inputs: 4K HDMI, 4K HDBaseT (100M), Microphone, Line Audio
- Outputs: 2 4K HDMI ports 1 scalable and 1 eARC, amplified (25 watts per channel) 2-channel audio, line audio and digital line audio
- HDCP 2.2 & Earlier Supported
- Supports uncompressed PCM 2- Ch., 5.1, 7.1, Dolby Digital, DTS, Dolby TrueHD, DTS HD-Master Audio, Atmos.

▪ *Applications:*

- Single room solution for conference rooms and huddle spaces
- K-12 Classroom audio and video sharing
- Bring Audio to remote areas of your home
- Amplify any speaker

▪ *Whats In the Box*

- AC-CX100-RAMP
- IR Emitter
- IR Eye
- 24V/5A Power Supply
- Rack Ears & Phoenix Connectors

**NOTE: Optional 5PIN to STEREO Audio Cables available for purchase "AC-CABLE-5PIN-2CH"*

▪ *Compatible HDBaseT Transmitters*

- AC-CXWP-HDMO-T
- AC-CXWP-MDP-T
- AC-CXWP-VGA-T
- AC-EX100TT-UHD-T

VIDEO:	
VIDEO RESOLUTIONS	UP TO 4K 60HZ 4:2:0 & 4K30 4:4:4
VESA RESOLUTIONS	UP TO 2560X2048 (QSXGA)
HDR FORMATS/RESOLUTIONS	4K24 4:2:2 12 BIT, 4K24 4:2:0 10 BIT
COLOR SPACE	YUV (COMPONENT), RGB (CSC: REC. 601, REC. 709, BT2020, DCI, P3 D6500)
CHROMA SUBSAMPLING	4:4:4, 4:2:2, 4:2:0 SUPPORTED
DEEP COLOR	UP TO 16 BIT (1080), UP TO 12 BIT (4K)
AUDIO:	
AUDIO FORMATS SUPPORTED HDMI	PCM 2.0 CH, LPCM 5.1 & 7.1, DOLBY DIGITAL, DTS 5.1, DOLBY DIGITAL PLUS, DOLBY TRUEHD, DTS-HD MASTER AUDIO, DTS-X, DOLBY ATMOS
AUDIO FORMATS SUPPORTED EXTRACTED (TOSLINK)	PCM 2.0 CH, LPCM 6CH, LPCM 7CH, DOLBY DIGITAL, DOLBY DIGITAL PLUS, DTS MASTER AUDIO
AUDIO FORMATS SUPPORTED EXTRACTED (2CH)	PCM 2CH
DISTANCE:	
HDMI LEAD IN/OUT (4K60 4:4:4)	UP TO 50 FEET (USING BULLET TRAIN HDMI)
HDMI LEAD IN/OUT (W/ AOC CABLE) (4K60 4:4:4)	UP TO 2130 FEET (USING BULLET TRAIN AOC)
HDBASET (CAT) DISTANCE 1080P	100M (330 FEET) (WITH CAT 6A/7)
HDBASET (CAT) DISTANCE 4K & HDR	70M (230 FEET) (WITH CAT6A/7)
OTHER:	
BANDWIDTH (HDMI)	18 GBPS
BANDWIDTH (HDBT)	10.2 GBPS
CEC	YES
HDCP	HDCP 2.2 AND EARLIER
PORTS:	
HDMI (INPUT)	TYPE A
HDBASET (INPUT)	RJ45
AUDIO (EXTRACTED DIGITAL)	TOSLINK
AUDIO (EXTRACTED ANALOG)	BALANCED L/R AUDIO (5 PIN TERMINAL BLOCK)
IR	3.5MM IR IN/OUT AND IR WINDOW ON THE FRONT
RS232	3 PIN TERMINAL BLOCK
CONTROL:	
PORTS	LAN, RS232, IR WINDOW
LAN WEBS	YES
ENVIRONMENTAL:	
OPERATING TEMPRATURE	23 TO 125°F (-5 TO 51°C)
STORAGE TEMPERATURE	-4 TO 140°F (-20 TO 60°C)
HUMIDITY RANGE	5-90% RH (NO CONDENSATION)
POWER:	
POWER CONSUMPTION (TOTAL)	60 WATTS MAX
POWER SUPPLY	INPUT: AC 100-240V ~ 50/60HZ OUTPUT: DC 24V 5A
DIMENSIONS:	
DIMENSIONS (UNIT ONLY HEIGHT/DEPTH/WIDTH)	MM: 44.5 X 104 X 220.7 INCH: 1.75 X 4.1 X 8.69
DIMENSIONS (KIT PACKAGED HEIGHT/DEPTH/WIDTH)	MM: 79.5 X 184.2 X 316 INCH: 3.13 X 7.25 X 12.44
WEIGHT (KIT PACKAGED)	3.4 LBS (1.54 KG)
*SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. MASS & DIMENSIONS ARE APPROXIMATE	

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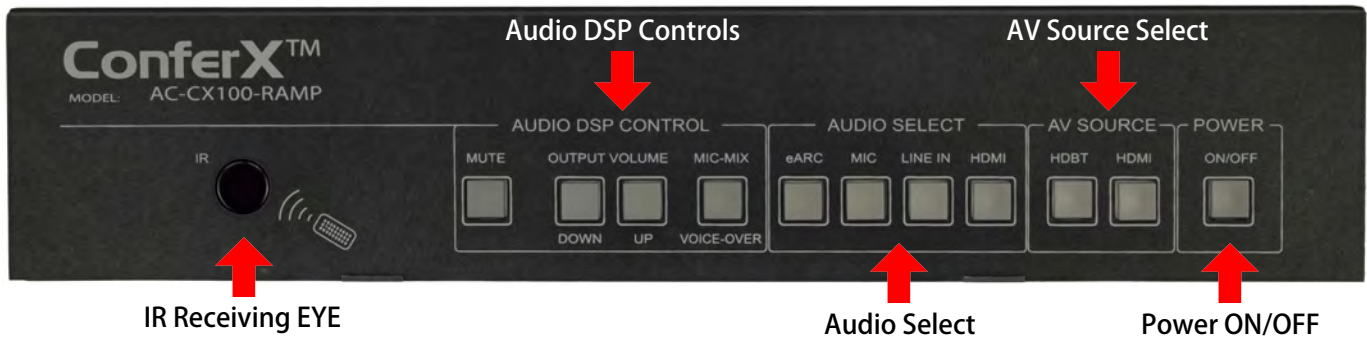
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▪ **Device Feature Overview:**

- **IPControlled25WattPerChannelAmplifier:** Use any control system or webOS to control the amplifier, very easy to integrate into existing rooms and new builds.
- **AudioDelayupto170msec:** This is used for correcting latency associated with eARC. eARC from sink (TV) tells how long video frames take to display in TV (maybe around 2-3 frames = 50msec) and feeds this info to CX100-RAMP
 - The CX100-RAMP delays by this amount automatically.
- **OSD(OnscreenDisplay):** A robust OSD allows operator and installer see real time data on audio and video signals.
- **FullSMARTEDIDManagement:** Smart EDID management starts with the unit's rotary switch. The rotary switch default position 0 is "AUTO SDR", position 1 is "AUTO HDR" and position 2 is "AUTO HDR 7.1". All RAMP I/O is automated with respect to one of these 3 positions. The input side is always given the max possible EDID capabilities. Both outputs always scan the sink and optimize the signal for the given display separately.
- **MicrophoneInput:** The microphone Input jack is meant for a dynamic microphone and simultaneously for a generic 3.5mm jack to connect an iPhone/Android/etc. for listening to music. The gain setting pot is next to the jack. There is no 48V phantom power for microphone on this product – The CX100-RAMP is designed for a direct jack connection for a dynamic/wireless mic.
- **AudioLineInput:** The audio line input is balanced or unbalanced depending on wiring the phoenix plug.
- **GainandVoiceover:** The voice over button mixes the microphone input on top of any currently active audio source. When the voice-over button is pressed you can talk in the microphone and the current audio (line input) will be ducked so the microphone can be heard better. Once you stop talking on the microphone, the active audio will return to full volume. The ducking depth is controlled by the pot next to the microphone jack.
- **Inputs:** One 4K HDMI, one 4K HDBaseT (100M), Microphone, Line Audio
- **Outputs:** Two 4K HDMI ports (one scalable and one eARC), amplified (25 watts per channel) 2-channel audio, line audio and digital line audio
- **RS-232andIR:** Bi-directional RS-232 and IR, with I-Pass for direct connection to a control processor
- **WebOS:** Web OS is provided for controlling all device functions
- **RemoteControl:** IR Inputs and an IR window on the front of the unit for controlling
- **ARC/eARCCompatible:**

▪ Front Panel



▪ IR:

- IR Window for control

▪ Audio DSP Controls:

- Mute: Toggle ON/OFF to mute extracted audio ports
- Output Volume DOWN/UP: Increases/decreases, one button press equals 2dB
- Mic-Mix: ON Microphone audio will be mixed with the current active audio source. While speaking into a microphone, the current audio (line input) will be ducked so the microphone can be heard. Once you stop talking on the microphone the active audio will return to full volume. This level is controlled by the VOICE-OVER adjustable pot on the back to the right of the MIC INPUT

▪ Audio Select:

- eARC: Extracted audio will come from the eARC channel on MAIN/eARC HDMI Port
- MIC: Extracted audio will come from the 3.5mm MIC INPUT
- LINE IN: Extracted audio will come from the Balanced L/R AUDIO INPUT
- HDMI: Extracted audio will come from the HDMI INPUT

▪ AV Source Select:

- HDMI: Output video will come from the HDMI INPUT
- HDBT: Output video will come from the HDBaseT INPUT

▪ Power:

- ON/OFF: When unit is powered on, all the front panel buttons will light up. After the power up sequence, only the selected options will be lit up (see examples below).

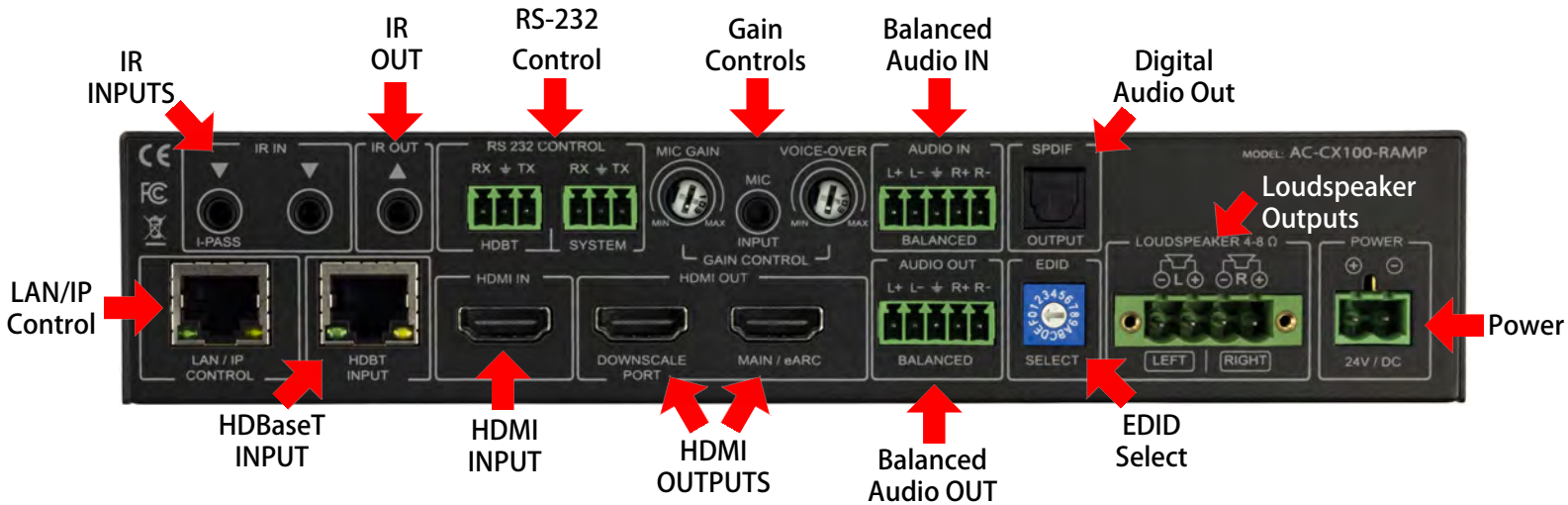


Powering Up



Powered Up

▪ **Rear Panel**



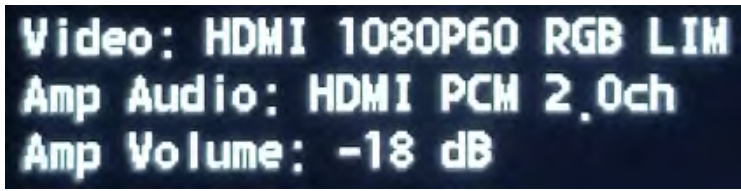
▪ **Video**

- HDMI IN:
 - Supports up to 18Gbps HDMI Signals
- HDBT INPUT:
 - This is a 10.2Gbps HDBT receiver, it will support up to a 4k60 4:2:0 / 4k30 4:4:4 signal
- HDMI OUT: Both outputs always scan the sink and optimize the signal for the given display separately.
 - Downscaled Port: This port will downscale a 4k signal automatically if the connected display is only 1080p capable
 - MAIN/eARC PORT: This port will automatically upscale a 1080p signal to 4k if the connected displays supports 4k

**Incoming Video/Audio and Video Out information is displayed on the STATUS section of the WebOS*

STATUS	
INCOMING VIDEO:	HDMI - 4K60 422 BT709 12b 594MHz
CURRENT AUDIO:	HDMI - PCM 96kHz 7.1ch 24bit
TX0 (MAIN):	4K60 420 BT709 8b 297MHz
TX1 (DOWNSCALED):	1080P60 444 BT709 8b 148MHz

**And also shown on the OSD (On Screen Display) under VIDEO:*



▪ **Audio**

- AUDIO IN: Balanced 2Ch Audio Input
- MIC INPUT: 3.5mm Audio Input, for use with a dynamic microphone or any 2Ch device connected with a 3.5mm audio cable
 - There are two adjustable POTS for adjusting the GAIN
 - MIC GAIN: Adjust MIC-GAIN level
 - VOICE-OVER: Adjust VOICE-OVER level
- AUDIO OUT: Balanced 2Ch Audio Output
- SPDIF OUTPUT: Digital TOSLINK Output
- LOUDSPEAKER: 25W per channel



▪ **Audio DSP Controls**

- In addition to the front panel buttons, there are additional audio adjustments that can be changed via IP/RS232 commands (see command list on Pg. ?), or the WebOS (see below)

AUDIO DSP CONTROL

MASTER VOLUME	-20dB	
SPEAKER VOLUME	0dB	
LINE OUT VOLUME	0dB	
HDMI VOLUME	0dB	
LINE VOLUME	0dB	
MIC VOLUME	0dB	
EARC VOLUME	0dB	

MUTE ALL

✓ UNMUTE

MICROPHONE SETUP

MIC ON:

OVERRIDE GAIN POT:

MIC GAIN (0-40dB):

ATTACK TIME (msec):

RELEASE TIME (0-8000 msec):

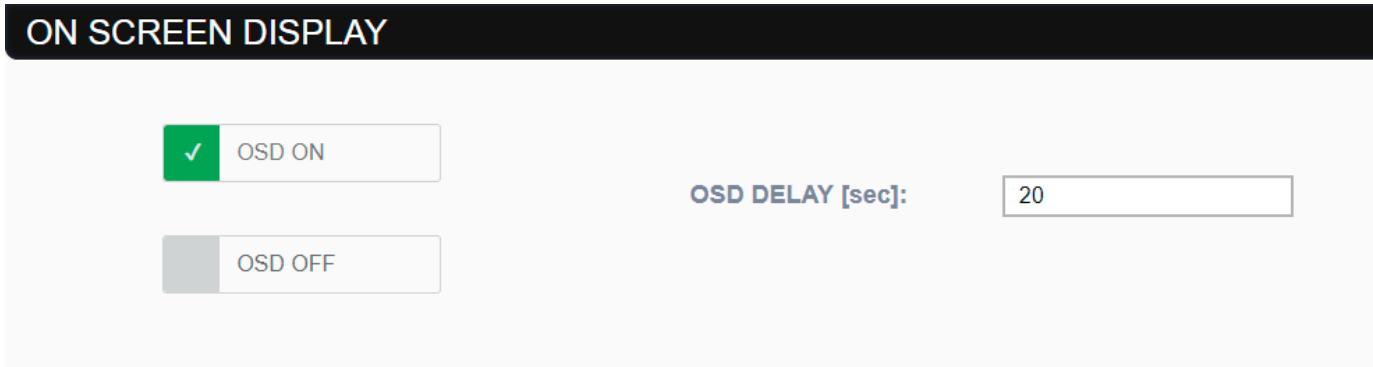
LEVEL (dB):

OVERRIDE DEPTH POT:

EFFECT DEPTH (0-50dB):

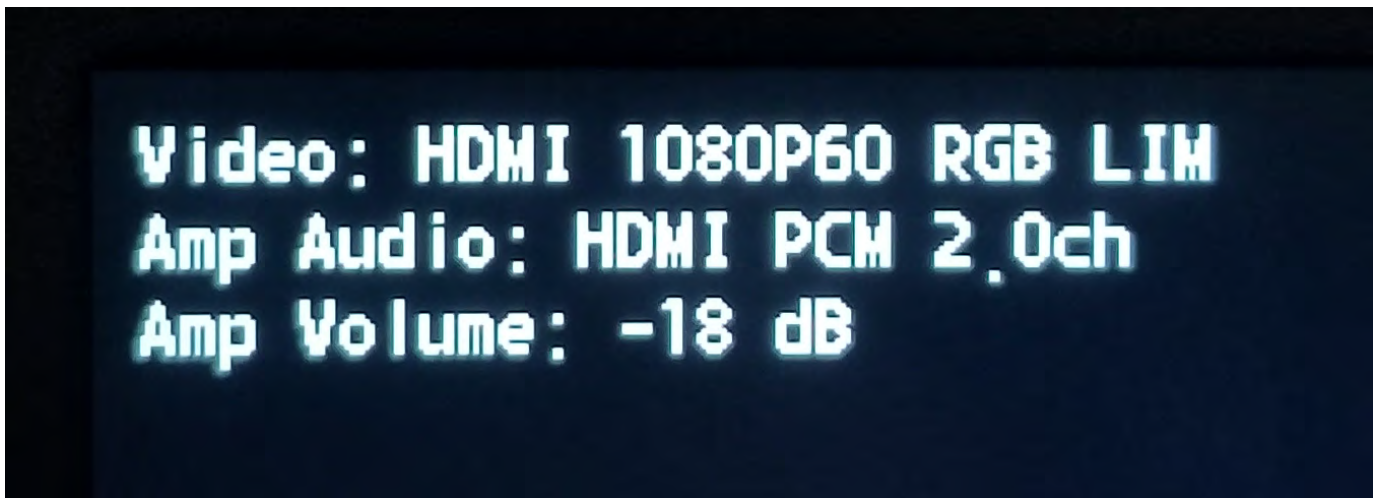
▪ *On Screen Display*

- From the Web Interface, you can turn the On Screen Display On, Off, and adjust the OSD DELAY (how long the On Screen Display is visible on the display).



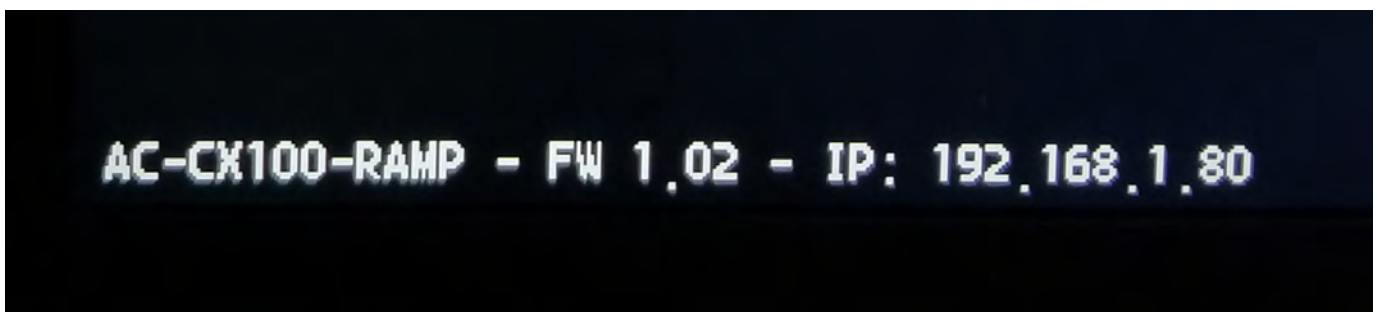
Top left of the OSD will show

- Video: Current INPUT selected along with Resolution and ColorSpace
- Amp Audio: Current AUDIO source selected, (eARC, Mic, Line In, and HDMI)
- Amp Volume: Current Volume Level (-100 to 10 dBs)



Bottom left of the OSD will show

- The Current Firmware Version
- The IP Address of the AC-CX100-RAMP



AUDIO RETURN CONTROL

Make sure to set EARC/ARC TV into PCM mode

EARC STATUS: OFF

EARC is automatically configured if the TX0(MAIN) connected display supports it and has activated it

LEGACY ARC STATUS: OFF

If EARC is not supported by the display, LEGACY ARC can be used

-When activated, CX100-RAMP will acquire the "SYSTEM AUDIO" -CEC logical address 05

-Make sure no other "SYSTEM AUDIO" devices are connected (AVR/sound bar/..)

EARC/ARC CHANNEL SWITCH:



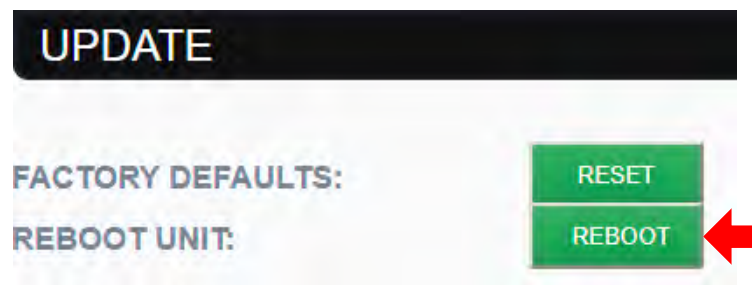
Automatically switch to EARC/ARC input after detection

ALLOW LEGACY ARC:



Any change in value of LEGACY ARC setting requires a reboot

- The AC-CX100-RAMP supports both ARC and eARC on TX0 (MAIN/eARC) HDMI port. There are two status indicators that will be either ON or OFF, depending on the connected displays capabilities
 - EARC STATUS:
 - ACTIVE
 - OFF
 - LEGACY ARC STATUS: If the connected display supports ARC and it is enabled this will show as ON
 - ACTIVE
 - OFF
 - **Note: ALLOW LEGACY ARC must be enabled (if this is changed the AC-CX100-RAMP must be rebooted)**



- EARC/ARC CHANNEL SWITCH: There are two options
 - ON (Green): The INPUT will automatically switch to HDMI INPUT if the connected display supports eARC/ARC
 - OFF (Greyed out): The INPUT will not switch automatically
- ALLOW LEGACY ARC: There are two options
 - ON (Green): The INPUT will automatically switch to HDMI INPUT if the connected display supports eARC/ARC
 - OFF (Greyed out): The INPUT will not switch automatically

SETUP AND CONTROL

FIRMWARE:	1.2	POWER:	<input checked="" type="checkbox"/>
SYSTEM ADDRESS:	01	SYSTEM ADDR:	<input type="text" value="01"/>
HOSTNAME mDNS:	http://AMP-01/	DHCP:	<input checked="" type="checkbox"/>
IP ADDRESS:	192.168.1.80	STATIC IP ADDRESS:	<input type="text" value="192.168.1.239"/>
IP MASK:	255.255.255.0	STATIC IP MASK:	<input type="text" value="255.255.255.0"/>
IP GATEWAY:	192.168.1.1	STATIC IP GW:	<input type="text" value="192.168.1.1"/>
TCP PORT:	2300	TCP PORT:	<input type="text" value="2300"/>
MAC ADDRESS:	F8:1D:78:A0:05:01		
UPTIME:	1 m		
		LOCAL BAUD RATE:	<input type="text" value="57600"/>

■ **SETUP AND CONTROL**

From the Web Interface, you can turn view and change system information

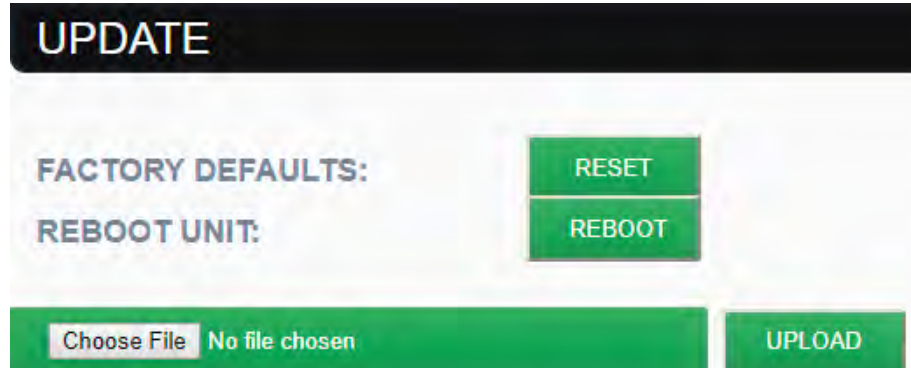
- POWER: Turn the AC-CX100-RAMP ON/OFF
- SYSTEM ADDR: If utilizing more than one AC-CX100-RAMP each must have it's own unique address (01, 02, 03, etc. default is 01)
- DHCP: Turn DHCP ON/OFF (default is off)
 - DHCP can be Enabled/Disabled by pressing and holding the HDMI and ARC buttons on the front panel under AUDIO SELECT at the same time for 3 seconds. The AUDIO SELECT lights will flash ONCE if DHCP is enabled and TWICE if it is disabled (Static IP Address).

***NOTE: The device will REBOOT automatically after this setting is changed.**

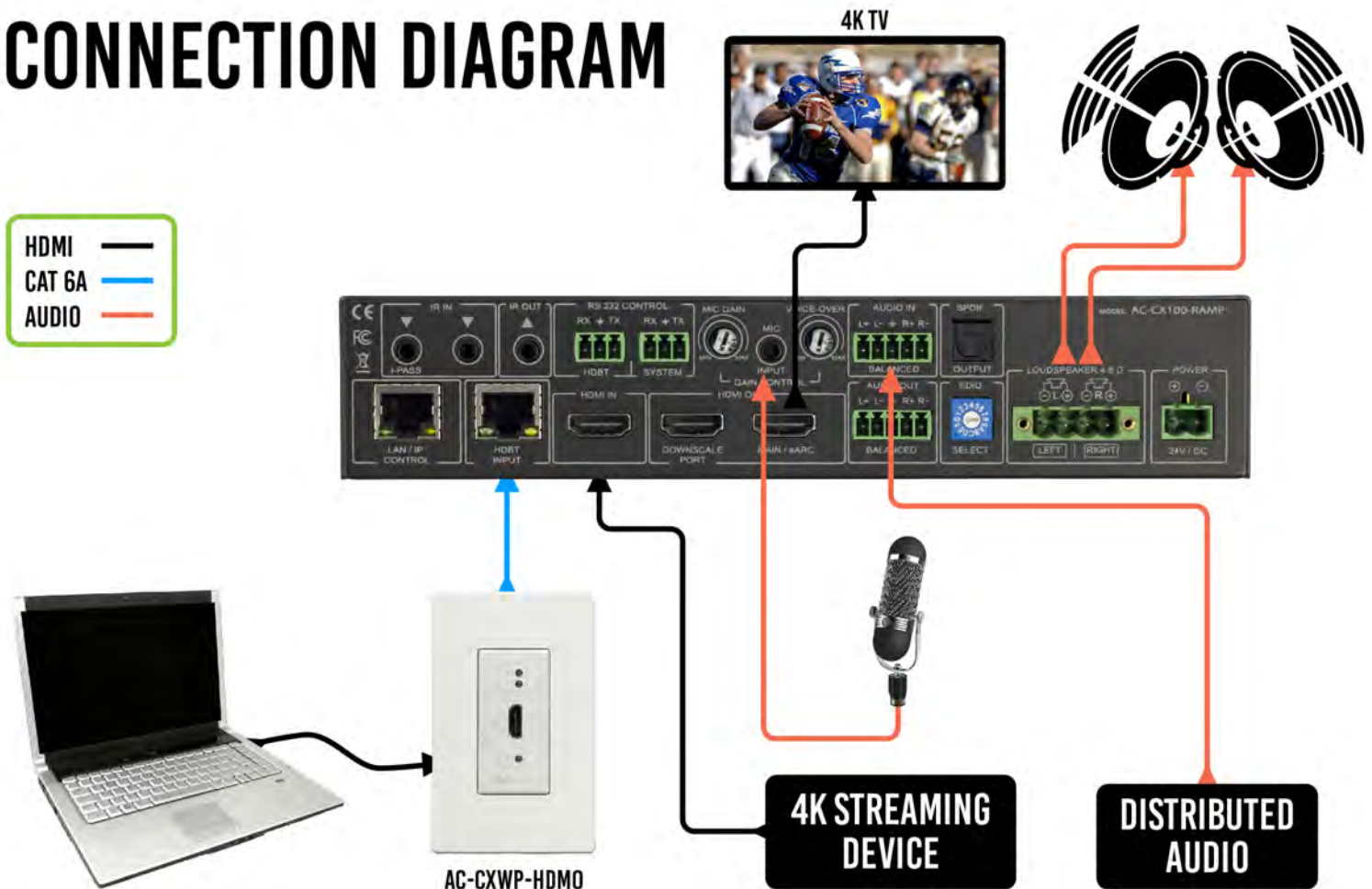


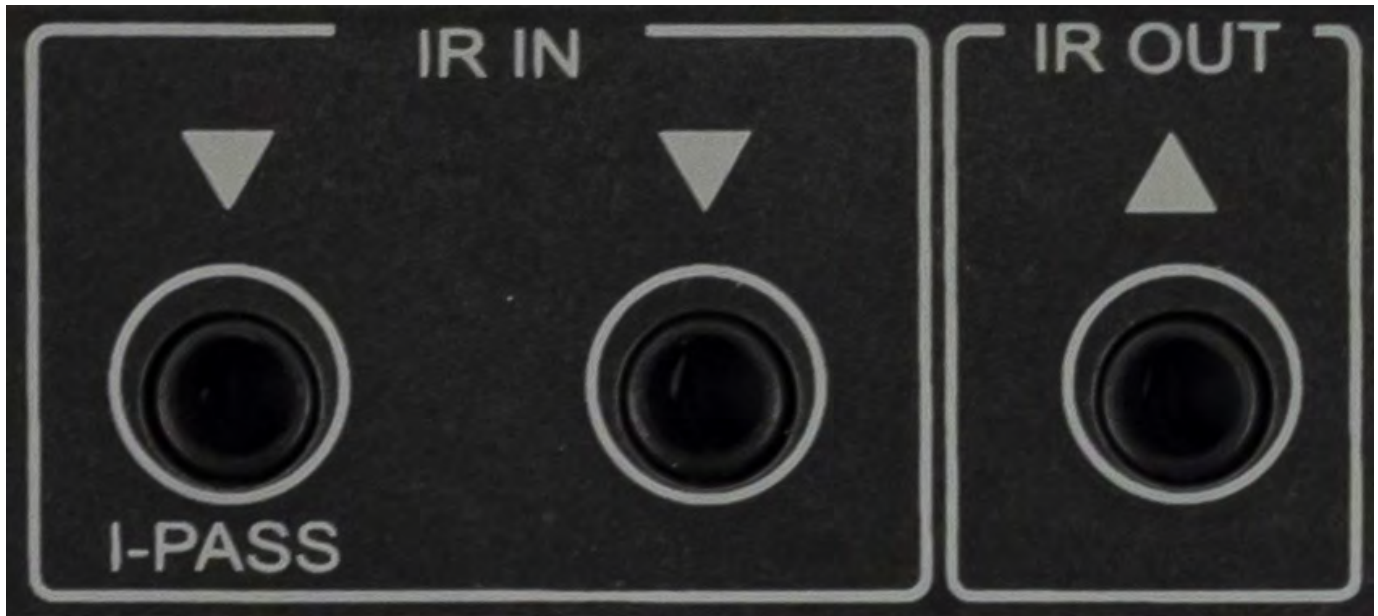
▪ UPDATE:

- FACTORY DEFAULTS will reset the AC-CX100-RAMP to it's factory settings
- REBOOT UNIT will reboot the AC-CX100-RAMP
- UPLOAD/Choose File is for updating the Firmware on the AC-CX100-RAMP



CONNECTION DIAGRAM





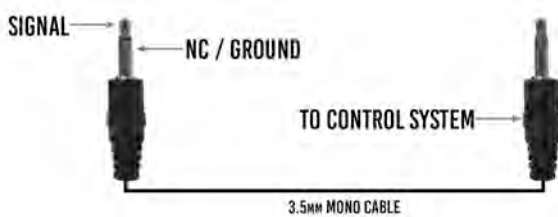
■ **IR Configuration**

IR can be used in three ways:

From Rack (Control System Direct): Plug a MONO 3.5mm cable into an emitter port of any control system directly into the "I-PASS" port on the AC-CX100-RAMP to pass IR signals directly to the remote end

From Rack (Using IR-EYE): Plug an IR-Receiver Eye into the "IR IN" of the AC-CX100-RAMP in order to pass infrared signals generated from a device or IR Remote to the remote end

From Remote End: Use an IR-Emitter on the AC-CX100-RAMP (IR OUT Port) in order to get IR signals BACK to the rack from the remote end

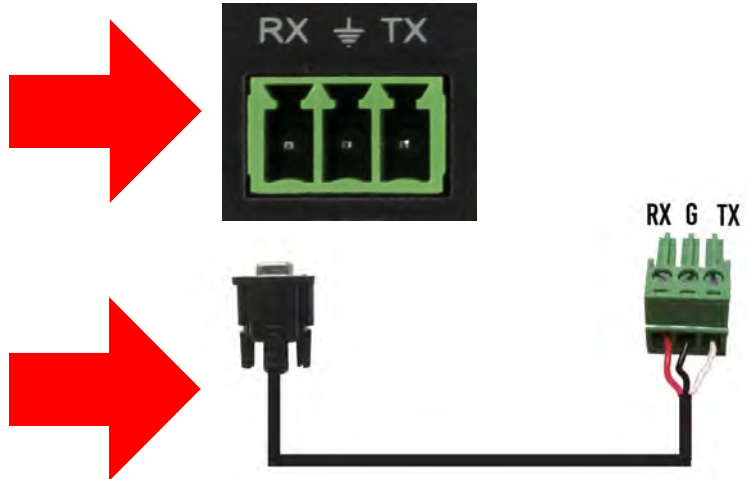


■ RS-232 Configuration

RS-232 can be used to pass control signals bi-directionally to & from any RS-232 compatible device. This is commonly

1. Control System --> Display/Projector (ie, Power On/Off)
2. Display/Projector --> Control System (ie, Display Status, Volume Status etc...)
3. When ultra long-range serial communication is needed (think concerts, live events). Use the extender.

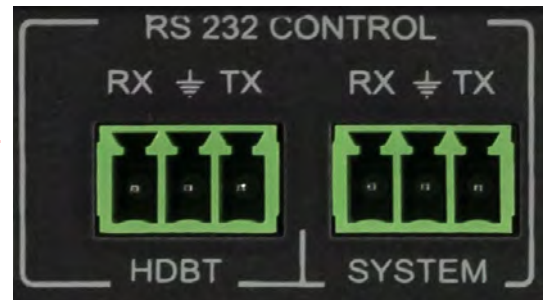
The unit comes with 3 pin connectors to allow for any wire an integrator would like. The pin out configuration Left=TX, Center=Ground, Right=RX and looks like this:



This is how the cable should look. If using the AC-CABLE-3.5-DB9F (Female) or AC-CABLE-3.5-DB9M (Male), the colors will be the same. With any other cable, please follow Tx, G, Rx as shown below. See RS-232 cable preparation diagram below

***NOTE:** There are two ports for RS-232 control

- **HDBT:** Use this port to send RS-232 to connected HDBaseT Transmitter
- **SYSTEM:** Use this port to send RS-232 to AC-CX100-RAMP



▪ *Troubleshooting*

- Verify Power - Pg. 6
- Verify Connections - Check that all cables are properly connected
- Not passing video on HDBaseT, this is a 10.2Gbps HDBT receiver, it will support up to a 4k60 4:2:0 / 4k30 4:4:4 signal
- IR Issues - Verify correct connections - P. 13
 - Visibly flashing Emitters may not function properly, try the IR Cables that come in the box if you are experiencing issues
- Extracted Audio Issues - Pg. 12-13
 - Verify Source is set to output 2ch if using the balanced 2ch port
+ NOTE: This unit does NOT DOWNMIX
- Still having issues, contact us
 - Support Direct - +1-605-977-3477
 - All inquiries - + 1-605-274-6055
 - Submit a support request ticket
 - <https://support.avproedge.com/hc/en-us/requests/new>

▪ ***Maintenance***

To ensure reliable operation of this product as well as protecting the safety of any person using or handling this device while powered, please observe the following instructions.

- Use the power supplies provided. If an alternate supply is required, check voltage, polarity and that it has sufficient power to supply the device it is connected to.
- Do not operate these products outside the specified temperature and humidity range given in the above specifications.
- Ensure there is adequate ventilation to allow this product to operate efficiently.
- Repair of the equipment should only be carried out by qualified professionals as these products contain sensitive components that may be damaged by any mistreatment.
- Only use this product in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with these products.
- Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.

▪ ***Damage Requiring Service***

The unit should be serviced by qualified service personnel if:

- The DC power supply cord or AC adaptor has been damaged
- Objects or liquids have gotten into the unit
- The unit has been exposed to rain
- The unit does not operate normally or exhibits a marked change in performance
- The unit has been dropped or the housing damaged

▪ ***Support***

Should you experience any problems while using this product, first, refer to the Troubleshooting section of this manual before contacting Technical Support. When calling, the following information should be provided:

- Product name and model number
- Product serial number
- Details of the issue and any conditions under which the issue is occurring

▪ ***Warranty***

If your product does not work properly because of a defect in materials or workmanship, AVProEdge (referred to as “the warrantor”) will, for the length of the period indicated as below, (Parts/Labor (10) Years), which starts with the date of original purchase (“Limited Warranty period”), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor. During the “Labor” Limited Warranty period there will be no charge for labor. During the “Parts” warranty period, there will be no charge for parts. You must mail-in your product during the warranty period. This Limited Warranty is extended only to the original purchaser and only covers product purchased as new. A purchase receipt or other proof of original purchase date is required for Limited Warranty service.

This warranty extends to products purchased directly from AVPro or an authorized dealer. AVPro is not liable to honor this warranty if the product has been used in any application other than that for which it was intended, has been subjected to misuse, accidental damage, modification or improper installation procedures, unauthorized repairs or is outside of the warranty period. Please direct any questions or issues you may have to your local dealer before contacting AVPro.

Thank you for choosing AVProEdge!

Please contact us with any questions, we are happily at your service!



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