



CH-A320RX

Audio over IP Receiver



Operation Manual

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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply. Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.
- Please completely disconnect the power when the unit is not in use to avoid wasting electricity.

VERSION HISTORY

REV.	DATE	SUMMARY OF CHANGE
RDV1	2020/08/20	Preliminary release



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1. INTRODUCTION

The inherent routing flexibility of Audio over IP (AoIP) provides great advantages over traditional audio cabling solutions while using highly cost effective Cat.5e cable. This greatly reduces the cost of wiring large systems and improves control convenience. This unit takes full advantage of the core benefits provided by AoIP and adds support for dual audio output formats, including both analog (balanced speaker output) and digital (optical S/PDIF). This product allows you to easily receive extended audio sources from compatible audio transmission devices located anywhere on the local network.

Standard control is provided by front panel controls, WebGUI, and Telnet. Advanced control and system integration is possible using the optional IP Master Controller.

2. APPLICATIONS

- Home Theaters
- Classrooms
- Lecture Halls

3. PACKAGE CONTENTS

- 1× Audio over IP Receiver
- 1× 5V/1.2A DC Power Adapter
- 1× 3-pin Terminal Block
- 1× 5-pin Terminal Block
- 1× Operation Manual

4. SYSTEM REQUIREMENTS

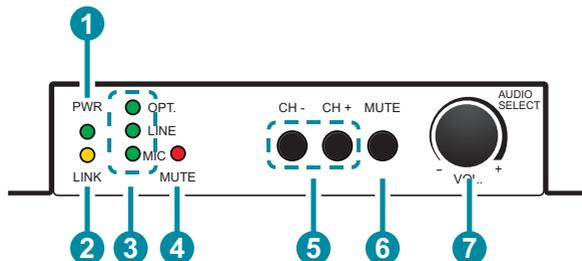
- Audio receiving equipment such as headphones, audio amplifiers or powered speakers.
- A Gigabit Ethernet switch with “IGMP snooping” enabled is required for multicast support.
- An active network connection from a switch or router that supports PoE (802.3af) to power the unit is highly recommended.

5. FEATURES

- Analog output: 1×Balanced stereo output
- Digital output: 1×Optical output
- Reception of extended audio and RS-232 over TCP/IP in unicast (point-to-point) or multicast (single-to-many) modes
- Reception of extended AoIP signals can be further extended (up to 100m per segment) by using gigabit network switches.
- Volume control for the analog audio output
- Compatible with the IP Master Controller to allow integration with existing compatible TCP/IP video matrix networks.
- Field-upgradable firmware
- May be powered directly by Power over Ethernet (PoE) when connected to a Gigabit Ethernet switch that provides PoE (802.3af)
- Standard control is provided by front panel controls, WebGUI, and Telnet. Advanced control and system integration is possible using the optional IP Master Controller.

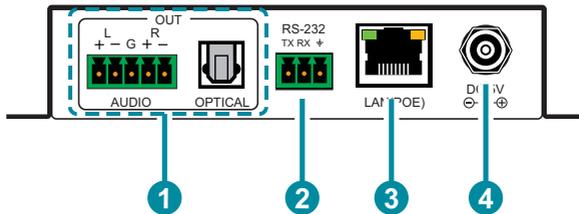
6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



- 1 PWR LED:** This LED will illuminate to indicate the unit is on and receiving power.
- 2 LINK LED:** While the receiver is attempting to establish a network connection the LINK LED will flash. When the receiver has established a stable connection the LINK LED will illuminate solidly.
- 3 OPT/LINE/MIC LEDs:** The illuminated LED indicates which source is currently selected on the linked transmitter.
Note: Only active when linked directly to a compatible dedicated audio transmitter.
- 4 MUTE LED:** This LED will illuminate when audio output is muted.
- 5 CH-/CH+ Buttons:** Press these buttons to increase or decrease the streaming channel used to receive audio from the local network.
Note: If only one channel is detected, the channel number will not change.
- 6 MUTE Button:** Press to toggle between muting and unmuting the audio output.
- 7 VOL +/- & AUDIO SELECT Knob:** Turn this knob to increase or decrease the audio volume level of the analog output. Press the knob in to sequentially switch through the available audio sources on the linked transmitter.
Note: Input selection is only available when linked directly to a compatible dedicated audio transmitter.

6.2 Rear Panel



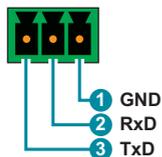
- 1 **AUDIO L/R OUT 5-pin Terminal Block:** Connect to powered speakers or an amplifier for analog stereo audio output.
- 2 **OPTICAL OUT Port:** Connect to powered speakers or an amplifier for digital audio output using an appropriate optical cable.
- 3 **RS-232 3-pin Terminal Block:** Connect to a serial controllable device with a 3-pin adapter cable for the reception of RS-232 signals from a compatible transmitter.
- 4 **LAN(POE) Port:** Connect via a Gigabit Ethernet switch to compatible receiver(s) to transmit data, and to a PC/laptop to control the unit via WebGUI.

Note: This unit can be powered directly by the connected Gigabit Ethernet switch if it provides PoE (802.3af).

- 5 **DC 5V Port:** Plug the 5V DC power adapter into the unit and connect it to an AC wall outlet for power. (Optional if powered by PoE)

6.3 RS-232 Pinout

3-pin Terminal Block



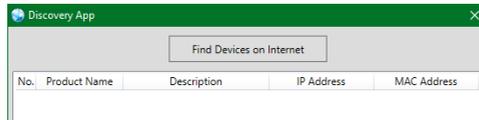
6.4 WebGUI Control

• Device Discovery

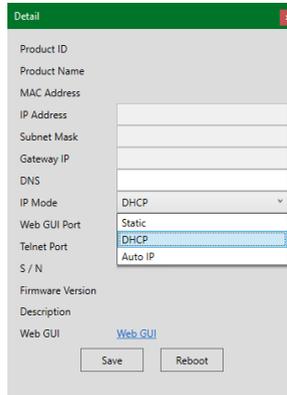
Please obtain the “Device Discovery” software from your authorized dealer and save it in a directory where you can easily find it.

Connect the unit and your PC/Laptop to the same active network and execute the “Device Discovery” software. Click on “Find Devices on Internet” and a list of devices connected to the local network will show up indicating their current IP address.

Note: This unit defaults to Auto IP mode. The current IP address can be verified using the Device Discovery software.



By clicking on one of the listed devices you will be presented with the network details of that particular device.



- 1) IP Mode:** If you choose, you can alter the static IP network settings for the device, or switch the unit into DHCP mode to automatically obtain proper network settings from a local DHCP server. To switch to DHCP mode, please select DHCP from the IP mode drop-down, then click “Save” followed by “Reboot”.
- 2) WebGUI Hotkey:** Once you are satisfied with the network settings, you may use them to connect via Telnet or WebGUI. The network information window provides a convenient link to launch the WebGUI directly.

• WebGUI Overview

All major functions of the unit, including status, streaming method, streaming channel selection, input selection, volume/mute control, Ethernet settings, and reset/firmware functions are controllable via multiple tabs in the WebGUI interface allowing for reasonably intuitive operation.

Each transmitter and receiver in the system is controlled by its own WebGUI interface which may be accessed by opening a standard web browser on a PC and typing in the IP address of the unit you wish to connect to. If you do not already know the IP addresses of the units in your system, you can discover the IP addresses by using the Device Discovery software.

Once you have connected to a unit's WebGUI, you will be presented with a screen containing multiple tabs for each functionality area of the unit. To view the contents of a tab, click on the appropriate button at the top of the window. The individual tabs and functions will be introduced in the following sections.



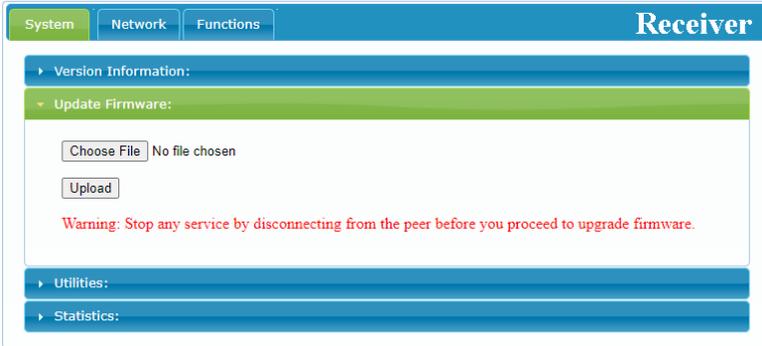
Note: A Gigabit Ethernet network switch with IGMP snooping is required when using multicast mode. A managed switch with VLAN support is strongly recommended.

6.4.1 System Tab

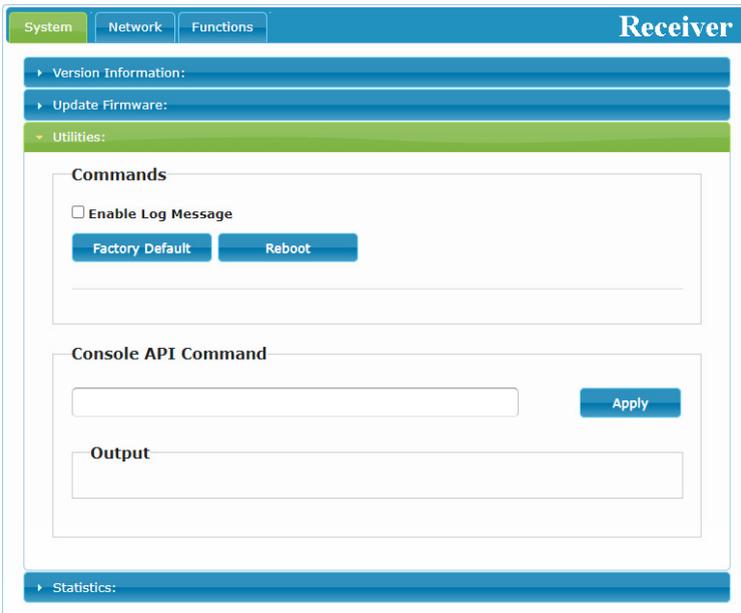
The System tab contains four windows that provide access to firmware version information, a firmware update interface, utilities for rebooting and resetting the unit, Telnet command entry, and a variety of statistics and information about the operational state of the unit.



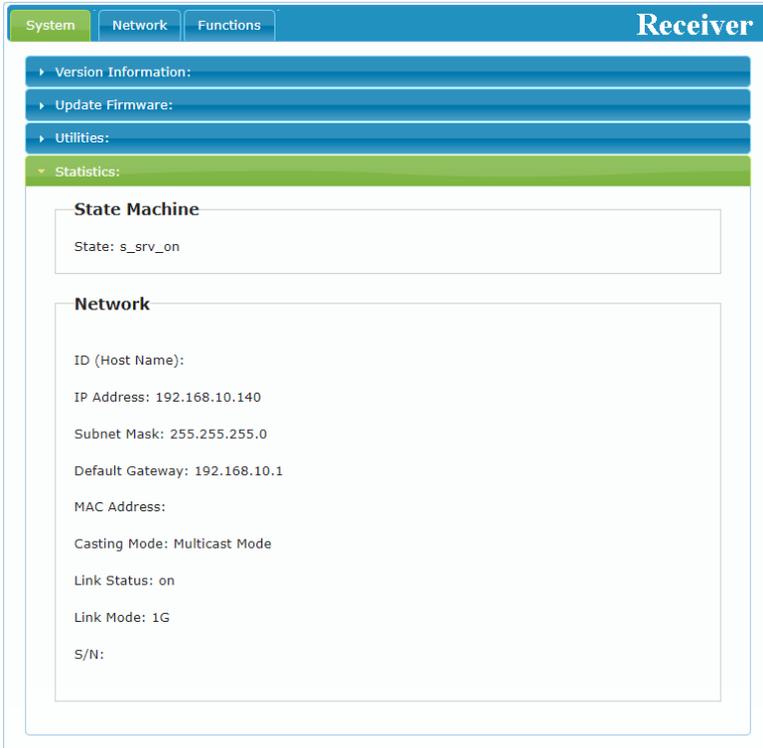
- 1) **Version Information:** This window displays detailed information about the current firmware version.



- 2) **Update Firmware:** Provides a way to update the transmitter's firmware. Click "Choose File" to select the firmware update file from the local PC (*.bin format). After selecting an appropriate file, click the "Upload" button to begin the update process.



- 3) **Utilities:** The Utilities window allows users to reset the unit back to the factory defaults by clicking "Factory Default". The unit may be rebooted (without resetting settings) by pressing the "Reboot" button. Finally, individual Telnet commands may be sent to the unit by using the "Console API Command" text entry field and pressing "Apply". Any responses from the unit will be displayed in the "Output" field.

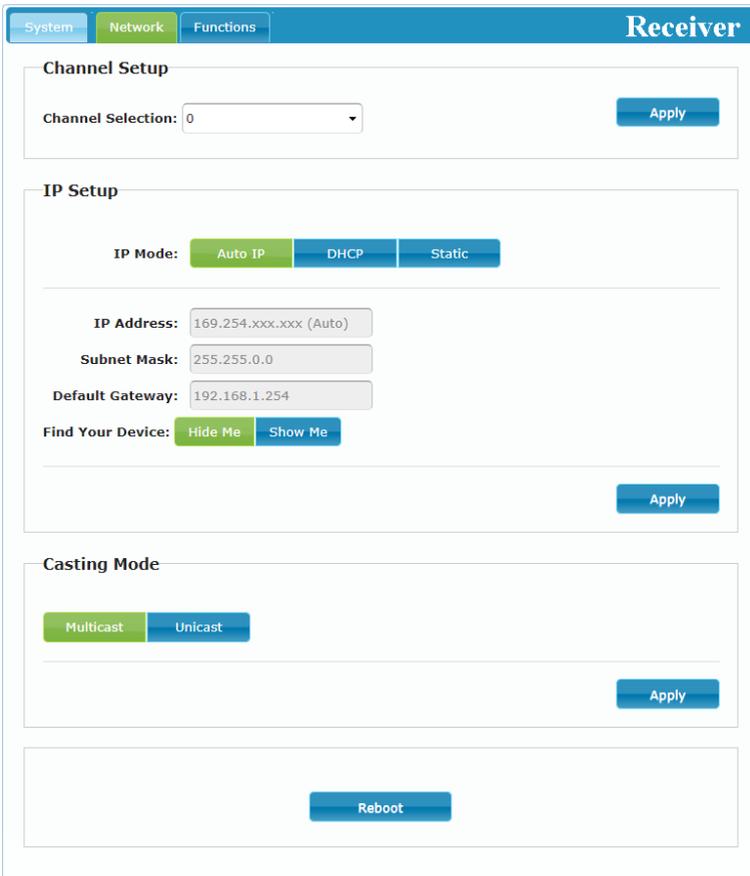


- 4) **Statistics:** The Statistics window shows all available information about the operational status of the unit, including current Host ID Name, Ethernet information, MAC address, unicast/multicast mode, link status and mode.

6.4.2 Network Tab

The Network tab provides controls over the receiver's broadcast reception channel, IP configuration, and network broadcast mode. Changes made to the network settings will require a reboot of the unit. After clicking on "Apply" please follow the reboot instructions in the WebGUI.

Note: If the IP address is changed then the IP address required for WebGUI access will also change accordingly. If the new address is assigned via "Auto IP" or "DHCP" it can be verified using the Device Discovery software.



The screenshot shows the 'Receiver' network configuration page. It has three tabs: 'System', 'Network' (selected), and 'Functions'. The page is divided into three main sections: 'Channel Setup', 'IP Setup', and 'Casting Mode'.
1. **Channel Setup:** A dropdown menu for 'Channel Selection' is set to '0'. An 'Apply' button is to the right.
2. **IP Setup:** 'IP Mode' has three buttons: 'Auto IP' (selected), 'DHCP', and 'Static'. Below are input fields for 'IP Address' (169.254.xxx.xxx (Auto)), 'Subnet Mask' (255.255.0.0), and 'Default Gateway' (192.168.1.254). At the bottom are 'Find Your Device' buttons: 'Hide Me' (selected) and 'Show Me'. An 'Apply' button is at the bottom right.
3. **Casting Mode:** Two buttons: 'Multicast' (selected) and 'Unicast'. An 'Apply' button is at the bottom right.
A 'Reboot' button is centered at the bottom of the page.

- 1) **Channel Setup:** Use the dropdown to select the broadcast reception channel for the receiver. The receiver will output the audio stream from the transmitter using the selected broadcast channel. The available channel range is from 0 to 255.

2) **IP Setup:** This section allows for configuration of the IP acquisition mode and Ethernet settings of the unit. It also provides an easy way to find the physical unit when installed with many other similar units.

- **IP Mode & Settings:** The IP mode may be switched between “Auto IP”, “DHCP” or “Static IP”. When the unit is set to Auto IP mode it will automatically assign itself an APIPA address from the 169.254.xxx.xxx range. When the unit is set to DHCP mode it will attempt to automatically obtain an IP address from a DHCP server. When the IP mode is set to static IP, you can manually set the IP address, netmask and gateway address. Click the “Apply” button to save changes made to the IP Mode or Configuration.

Note: The default network setting for this unit is “Auto IP”.

- **Find Your Device:** Selecting “Show Me” will cause the unit to immediately begin flashing the PWR and LINK LEDs on the front of the unit to make it easy to find. Selecting “Hide Me” returns the LEDs to their normal behavior. This setting is useful when troubleshooting an installation with a large number of units in a rack.

3) **Casting Mode:** Allows for the selection of the broadcasting mode used by the receiver. Click the “Apply” button to save changes made to the broadcasting mode.

Note: Receivers must be set to the same mode as the linked transmitter in order to receive audio.

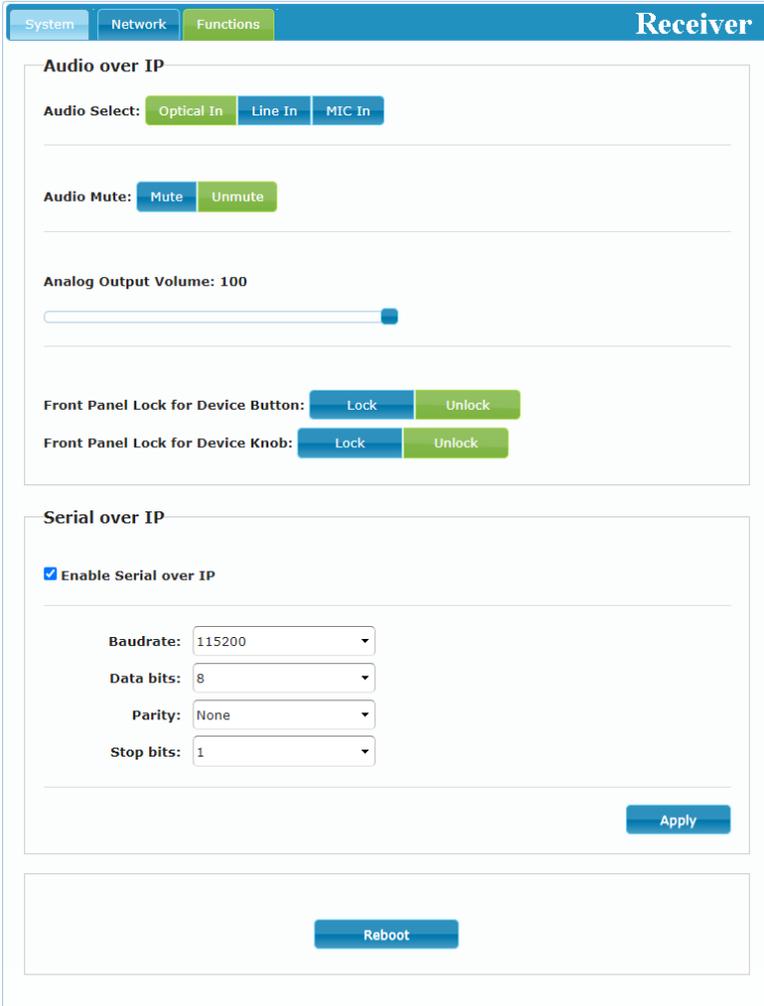
- **Multicast:** This mode sends a single audio stream that can be played simultaneously by multiple receivers without increasing bandwidth usage. This mode is ideal for matrixing scenarios.

Note: Multicast mode requires a network switch with IGMP snooping enabled.

- **Unicast:** This mode uses a discrete audio stream for every connected receiver and is ideal for simple, point-to-point, streaming setups. This mode uses considerably more bandwidth than Unicast mode when multiple receivers are being used, however it does not require a network switch that supports IGMP snooping.

6.4.3 Functions Tab

The Functions tab provides control over the receiver's audio source selection, audio output mute/unmute, analog audio volume, front panel locks and serial control extension configuration. Changes made to these settings typically require a reboot of the unit. After clicking on "Apply" please follow the reboot instructions in the WebGUI, if necessary.



Receiver

System Network **Functions**

Audio over IP

Audio Select: Optical In Line In MIC In

Audio Mute: Mute Unmute

Analog Output Volume: 100

Front Panel Lock for Device Button: Lock Unlock

Front Panel Lock for Device Knob: Lock Unlock

Serial over IP

Enable Serial over IP

Baudrate: 115200

Data bits: 8

Parity: None

Stop bits: 1

Apply

Reboot

- 1) **Audio over IP:** This section allows control over selection of the input source, enabling/disabling the audio mute, changing the microphone volume, and front panel locks.
 - **Audio Select:** Select between the optical, line or mic inputs on the transmitter.

Note: Input selection is only available when linked directly to a compatible dedicated audio transmitter.
 - **Audio Mute:** Enable or disable muting the audio output.
 - **Analog Output Volume:** Increase or decrease the audio volume of the analog audio output by dragging the slider.
 - **Front Panel Lock for Device Button and Knob:** Enable or disable either of these lock types for the front panel. When the locks are enabled, the user can only change settings using the WebGUI or Telnet commands.

- 2) **Serial over IP:** This section provides controls for the Serial over IP extension functionality, including enabling/disabling serial support and setting the RS-232 data configuration.
 - **Enable Serial over IP:** Unchecking this checkbox will completely disable support for sending RS-232 commands over this stream. This option should generally remain checked, but, if serial support is not required, disabling this feature can save a very small amount of bandwidth.
 - **Serial Settings:** Set the desired baud rate, data bits, parity, and stop bit for the RS-232 signal to extend.

Note: The transmitter and receiver must have the same serial settings.

6.5 Telnet Control

Before attempting to use Telnet control, please ensure that both the unit and the PC are connected to the same active networks.

Start your preferred Telnet/Console client, or use the built in client provided by most modern computer operating systems. After starting the client, connect by using the current IP address of the unit and port 23 (if the communication port number used by the unit has not been changed previously). This will connect us to the unit we wish to control and commands may now be entered directly.

Note 1: If the IP address of the unit is changed then the IP address required for Telnet access will also change accordingly.

Note 2: This unit defaults to Auto IP mode. The current IP address can be verified using the Device Discovery software. The default communication port is 23.

6.6 Serial and Telnet Commands

COMMAND
Description and Parameters
help ↵
Show the full command list.
help N1 ↵
Show details about the specified command. N1 = {Command}
get fw ver ↵
Show the unit's current firmware version.
get hw ver
Show the unit's current hardware version
get command ver ↵
Show the unit's current command version.
get mac addr ↵
Show the unit's MAC address.

COMMAND																	
Description and Parameters																	
get model name ↵	Show the unit's model name.																
get model type ↵	Show the unit's product type. Possible response values: <table border="0"> <tr><td>1</td><td>[Matrix]</td></tr> <tr><td>2</td><td>[Scaler]</td></tr> <tr><td>3</td><td>[Splitter]</td></tr> <tr><td>4</td><td>[Repeater]</td></tr> <tr><td>5</td><td>[Extender]</td></tr> <tr><td>6</td><td>[Transceiver]</td></tr> <tr><td>7</td><td>[Switch]</td></tr> <tr><td>8</td><td>[Controller]</td></tr> </table>	1	[Matrix]	2	[Scaler]	3	[Splitter]	4	[Repeater]	5	[Extender]	6	[Transceiver]	7	[Switch]	8	[Controller]
1	[Matrix]																
2	[Scaler]																
3	[Splitter]																
4	[Repeater]																
5	[Extender]																
6	[Transceiver]																
7	[Switch]																
8	[Controller]																
set factory default ↵	Reset the unit to the factory defaults.																
set factory ipconfig default ↵	Reset the unit's network settings to the factory defaults.																
set system reboot ↵	Reboot the unit.																
set keylock N1 ↵	Enable or disable the front panel button key lock feature. Available values for N1 : <table border="0"> <tr><td>ON</td><td>[Key lock enabled]</td></tr> <tr><td>OFF</td><td>[Key lock disabled]</td></tr> </table>	ON	[Key lock enabled]	OFF	[Key lock disabled]												
ON	[Key lock enabled]																
OFF	[Key lock disabled]																
get keylock ↵	Show the current front panel button key lock state.																
set audio volume knob lock N1 ↵	Enable or disable the front panel volume knob lock feature. Available values for N1 : <table border="0"> <tr><td>ON</td><td>[Knob lock enabled]</td></tr> <tr><td>OFF</td><td>[Knob lock disabled]</td></tr> </table>	ON	[Knob lock enabled]	OFF	[Knob lock disabled]												
ON	[Knob lock enabled]																
OFF	[Knob lock disabled]																

COMMAND																					
Description and Parameters																					
get audio volume knob lock ↵	Show the current lock state of the front panel volume knob.																				
set uart 1 reset ↵	Reset the unit's RS-232 settings to the factory defaults.																				
set uart 1 baudrate N1 ↵	Set the baud rate of the RS-232 port. Available values for N1 : <table data-bbox="194 539 700 826"> <tr><td>300</td><td>[300 baud]</td></tr> <tr><td>600</td><td>[600 baud]</td></tr> <tr><td>1200</td><td>[1200 baud]</td></tr> <tr><td>2400</td><td>[2400 baud]</td></tr> <tr><td>4800</td><td>[4800 baud]</td></tr> <tr><td>9600</td><td>[9600 baud]</td></tr> <tr><td>19200</td><td>[19200 baud]</td></tr> <tr><td>38400</td><td>[38400 baud]</td></tr> <tr><td>57600</td><td>[57600 baud]</td></tr> <tr><td>115200</td><td>[115200 baud]</td></tr> </table>	300	[300 baud]	600	[600 baud]	1200	[1200 baud]	2400	[2400 baud]	4800	[4800 baud]	9600	[9600 baud]	19200	[19200 baud]	38400	[38400 baud]	57600	[57600 baud]	115200	[115200 baud]
300	[300 baud]																				
600	[600 baud]																				
1200	[1200 baud]																				
2400	[2400 baud]																				
4800	[4800 baud]																				
9600	[9600 baud]																				
19200	[19200 baud]																				
38400	[38400 baud]																				
57600	[57600 baud]																				
115200	[115200 baud]																				
get uart 1 baudrate ↵	Show the current baud rate of the RS-232 port.																				
set uart 1 stop bit N2 ↵	Set the number of stop bits for the RS-232 port. Available values for N2 : <table data-bbox="194 1050 677 1106"> <tr><td>1</td><td>[1 Stop Bit]</td></tr> <tr><td>2</td><td>[2 Stop Bits]</td></tr> </table>	1	[1 Stop Bit]	2	[2 Stop Bits]																
1	[1 Stop Bit]																				
2	[2 Stop Bits]																				
get uart 1 stop bit ↵	Show the current number of stop bits of the RS-232 port.																				
set uart 1 data bit N2 ↵	Set the data bits for the RS-232 port. Available values for N1 : <table data-bbox="194 1329 677 1437"> <tr><td>5</td><td>[5 Data Bits]</td></tr> <tr><td>6</td><td>[6 Data Bits]</td></tr> <tr><td>7</td><td>[7 Data Bits]</td></tr> <tr><td>8</td><td>[8 Data Bits]</td></tr> </table>	5	[5 Data Bits]	6	[6 Data Bits]	7	[7 Data Bits]	8	[8 Data Bits]												
5	[5 Data Bits]																				
6	[6 Data Bits]																				
7	[7 Data Bits]																				
8	[8 Data Bits]																				

COMMAND	
Description and Parameters	
get uart 1 data bit ↵	Show the current number of data bits of the RS-232 port.
set uart 1 parity N1 ↵	Set the parity of the RS-232 port. Available values for N1 : 0 [None] 1 [Odd] 2 [Even]
get uart 1 parity ↵	Show the current parity setting of the RS-232 port.
set ip mode N1 ↵	Set the unit's IP address assignment mode. Available values for N1 : STATIC [Static IP mode] DHCP [DHCP mode] FORCE IP [Auto IP mode]
get ip mode ↵	Show the current IP address assignment mode.
get ipconfig ↵	Show the unit's current IP configuration information.
get ip addr ↵	Show the unit's current IP address.
get netmask ↵	Show the unit's current netmask.
get gateway ↵	Show the unit's current gateway address.
set static ipaddr N1 ↵	Set the unit's static IP address. N1 = X.X.X.X [X = 0~255, IP address]

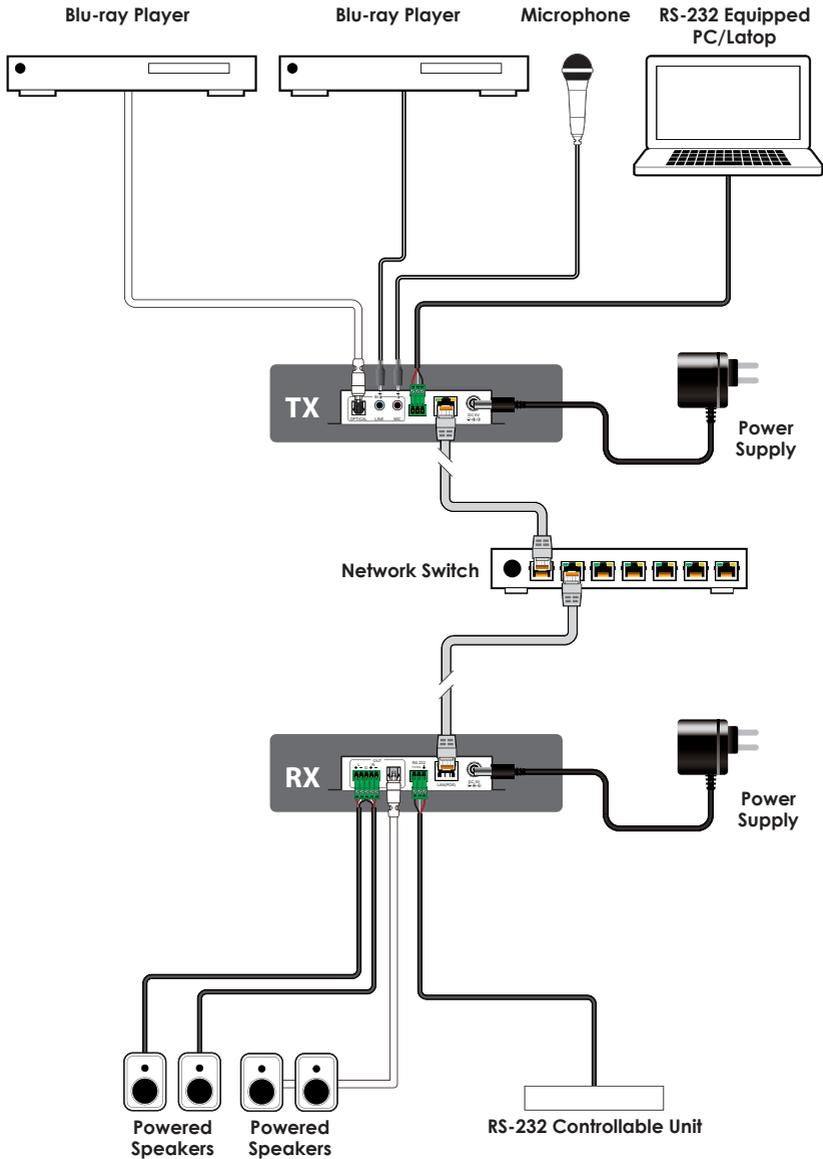
COMMAND	
Description and Parameters	
get static ipaddr ↵	Show the unit's current static IP address.
set static netmask N1 ↵	Set the unit's static netmask. N1 = X.X.X.X [X = 0~255, Netmask]
get static netmask ↵	Show the unit's current static netmask.
set static gateway N1 ↵	Set the unit's static gateway address. N1 = X.X.X.X [X = 0~255, Gateway address]
get static gateway ↵	Show the unit's current static gateway address.
set audio out A mute N1 ↵	Enable or disable muting all audio output. Available values for N1 : ON [Muted] OFF [Unmuted]
get audio out A mute ↵	Show the current mute state of the audio outputs.
set audio out A volume N1 ↵	Set the volume level of the analog audio output. N1 = 0~100 [Volume level]
get audio out A volume ↵	Show the current volume level of the analog audio output.
set audio out A volume up ↵	Increase the volume level of the analog audio output by 1 unit.
set audio output A volume down ↵	Decrease the volume level of the analog audio output by 1 unit.

COMMAND							
Description and Parameters							
set audio out A route N1 ←							
<p>Select the audio input for the currently linked transmitter to use as it's source.</p> <p>Available values for N1:</p> <table> <tr> <td>1</td> <td>[Optical input]</td> </tr> <tr> <td>2</td> <td>[Line input]</td> </tr> <tr> <td>3</td> <td>[Mic input]</td> </tr> </table> <p><i>Note: Input selection is only available when linked directly to a compatible dedicated audio transmitter.</i></p>		1	[Optical input]	2	[Line input]	3	[Mic input]
1	[Optical input]						
2	[Line input]						
3	[Mic input]						
get audio out A route ←							
<p>Show the linked transmitter's current audio input source.</p>							
set rx channel N1 ←							
<p>Set the Audio over IP (AoIP) channel to receive.</p> <p>N1 = 0~255 [Channel index value]</p>							
get rx channel ←							
<p>Show the current AoIP channel being received.</p>							
set showme N1 ←							
<p>Enable or disable the unit's LEDs blinking to more easily visually identify the unit.</p> <p>Available values for N1:</p> <table> <tr> <td>ON</td> <td>[Enabled]</td> </tr> <tr> <td>OFF</td> <td>[Disabled]</td> </tr> </table>		ON	[Enabled]	OFF	[Disabled]		
ON	[Enabled]						
OFF	[Disabled]						
get showme ←							
<p>Show the current state of the showme function.</p>							
set stream cast mode N1 ←							
<p>Set the AoIP transmitter's network broadcast mode.</p> <p>Available values for N1:</p> <table> <tr> <td>UNICAST</td> <td>[Unicast mode]</td> </tr> <tr> <td>MULTICAST</td> <td>[Multicast mode]</td> </tr> </table>		UNICAST	[Unicast mode]	MULTICAST	[Multicast mode]		
UNICAST	[Unicast mode]						
MULTICAST	[Multicast mode]						

COMMAND	
Description and Parameters	
get stream cast mode ↵	
Show the AoIP transmitter's current network broadcast mode.	
set tx 1 audio in 1 route rx N1 A ↵	
Route the specified transmitter's current audio input to this receiver's audio outputs.	
N1 = 0~255	[Channel index value]
get tx 1 audio in 1 route rx ↵	
Show the channel index number of the transmitter whose audio is currently routed to this receiver.	
set tx 1 uart route rx N1 ↵	
Route the specified transmitter's RS-232 input to this receiver's RS-232 output.	
N1 = 0~255	[Channel index value]
get tx 1 uart route rx ↵	
Show the channel index number of the transmitter whose RS-232 is currently routed to this receiver.	

Note: Commands will not be executed unless followed by a carriage return. Commands are not case-sensitive.

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

Input/Control Port	1×Ethernet (RJ-45)
Output Ports	1×Analog Stereo Out (5-pin Term. Block) 1×Optical Out (TOSLINK)
Pass-through Ports	1×RS-232 (3-pin Terminal Block)
Baud Rate	Up to 115200
Power Supply	5V/1.2A DC (US/EU standards, CE/FCC/UL certified) or PoE (802.3af)
ESD Protection (HBM)	±8kV (Air Discharge) ±4kV (Contact Discharge)
Dimensions (W×H×D)	108mm×25mm×108mm [Case Only] 108mm×25mm×116mm [All Inclusive]
Weight	367g
Chassis Material	Metal (Aluminum)
Chassis Color	Black
Operating Temperature	0°C – 40°C/32°F – 104°F
Storage Temperature	-20°C – 60°C/-4°F – 140°F
Relative Humidity	20 – 90% RH (Non-condensing)
Power Consumption	2.1W

8.2 Audio Specifications

8.2.1 Digital Audio

S/PDIF Output	
LPCM	
Max Channels	2 Channels
Sampling Rate (kHz)	32, 44.1, 48, 88.2, 96, 176.4, 192
Bitstream	
Supported Formats	Standard

8.2.2 Analog Audio

Analog Output	
Max Audio Level	4Vrms
THD+N	< -80dB@0dBFS 1kHz (A-wt)
SNR	> 98dB@0dBFS
Frequency Response	< ± 3 dB@20Hz~20kHz
Crosstalk	< -96dB@10kHz
Impedance	499 Ω
Type	Balanced

9. ACRONYMS

ACRONYM	COMPLETE TERM
ADC	Analog-to-Digital Converter
AoIP	Audio over IP
ASCII	American Standard Code for Information Interchange
AVoIP	Audio/Video over IP
Cat.5e	Enhanced Category 5 cable
Cat.6	Category 6 cable
Cat.6A	Augmented Category 6 cable
Cat.7	Category 7 cable
CLI	Command-Line Interface
DAC	Digital-to-Analog Converter
dB	Decibel
DHCP	Dynamic Host Configuration Protocol
GbE	Gigabit Ethernet
Gbps	Gigabits per second
GUI	Graphical User Interface
IGMP	Internet Group Management Protocol
IP	Internet Protocol
kHz	Kilohertz
LAN	Local Area Network
LED	Light-Emitting Diode
LPCM	Linear Pulse-Code Modulation
MAC	Media Access Control
MHz	Megahertz
OPT	Optical
PD	Powered Device
PoE	Power over Ethernet
S/PDIF	Sony/Philips Digital Interface Format
SNR	Signal-to-Noise Ratio

ACRONYM	COMPLETE TERM
TCP	Transmission Control Protocol
THD+N	Total Harmonic Distortion plus Noise
VLAN	Virtual LAN
Ω	Ohm



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