



Thank you for purchasing this product.

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



Surge Protection Device Recommended

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

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Introduction

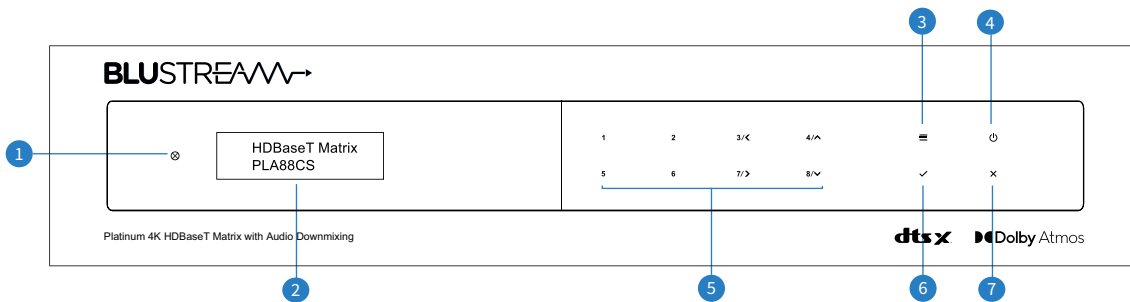
Our Platinum 8x8 HDBaseT™ CSC Matrix delivers a range of industry leading features. The PLA88CS is a 4K HDMI 2.0 8x8 Matrix, transmitting HDMI, ARC, LAN, Bi-directional IR and RS-232 and PoC up to lengths of 150m (1080p) over a single CAT cable. Advanced optional features include dual HDMI and HDBaseT™ outputs featuring CSC for support of all the latest 4K resolutions including 4K 60 Hz 4:4:4 colour space & HDR with independent down-scaling of 4K video to allow those displays only capable of supporting lower video resolutions to receive 4K video while still showing maximum original 4K UHD resolution on the higher-definition displays. The Matrix also provides advanced features including independent Dolby Audio® & DTS Audio down mixing on HDMI and audio outputs allowing a mixture of different audio output formats for use with different audio capable displays and AV amplifiers. The PLA88CS also includes independent audio routing, Audio Return Channel (ARC), audio delay for lip sync correction, bi-directional IR and RS-232 pass-through, and web-GUI for control and configuration.

FEATURES:

- Advanced HDBaseT™ technology offering distribution of video and audio over a single CAT cable
- Advanced Colour Space Conversion (CSC) supports HDMI2.0 18Gbps specification including HDR
- Simultaneous HDBaseT™ and HDMI outputs to allow connection to dual displays per zone
- Extends HDMI up to distance of 150m at 1080p, and 4K UHD video up to 100m (up to 4K 60Hz 4:4:4)
- Features 8x HDMI inputs which can be independently routed to 8x HDBaseT™ + HDMI outputs
- Independent video scaling on outputs
- Supporting Dolby Audio® Technology
- Up to 24x16 Audio Matrix independently controllable from video:
 - 8x independent analogue L/R audio inputs which can be routed to audio outputs or embedded onto HDBaseT™/HDMI outputs
 - HDMI audio breakout to coaxial digital and analogue L/R audio outputs with variable pre-amp line level control
 - Supports ARC (Audio Return Channel) via HDMI or optical digital inputs from compatible RX150CS Receivers
 - Supports Dolby Audio® and DTS Audio breakout and down mixing from HDMI inputs to 2ch audio
- Supports all industry standard video resolutions including VGA-WUXGA and 480i-4K
- Bi-directional IR & RS-232 from all input and output locations (with compatible Transmitters & Receivers)
- Integrated Ethernet (100Mbps) switch (LAN Serving) when used with Blustream RX150CS Receivers
- Web interface module for control and configuration of Matrix
- Control of Matrix via front panel , IR, RS-232 and TCP/IP
- Supports PoC (Power over Cable) to power compatible RX150CS Receivers
- 3rd party drivers available for all major control brands
- HDCP 2.2 compliant with advanced EDID management
- 2U Design for 19" rack mount integration - mounting kit included

® Dolby Audio is a registered trademark of Dolby Laboratories Licensing Corporation.

Front Panel Description



- ❶ IR Receiver Window
- ❷ LCD Display – Shows the status of input / output selection, EDID etc...
- ❸ Menu Button - Press to access Matrix menu system allowing you to configure EDID settings, PoC settings, network config and firmware information
- ❹ Power Button – Press and hold for 3 seconds to power on / off the Matrix
- ❺ Selection Buttons - Multi-use buttons

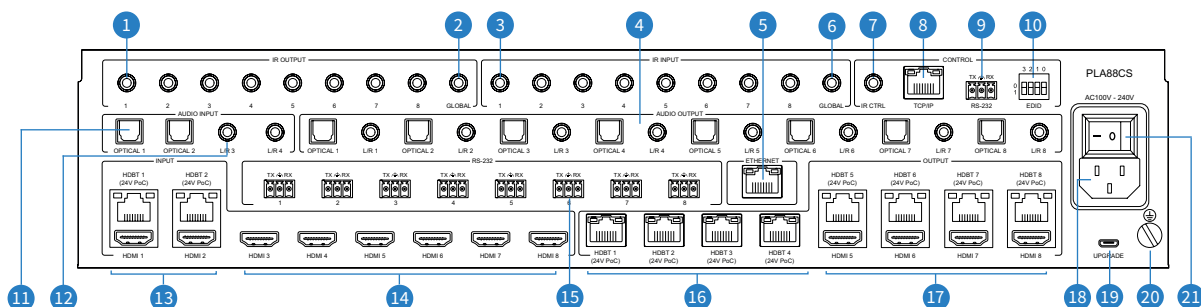
Primary Use:

First press = HDMI output selection - Press to select output/s from 1 to 8. Output(s) selected will be displayed on the Matrix display. Multiple outputs can be chosen. Then wait 3 seconds or press 'SELECT' to move to input selection.
Second Press = HDMI input selection - Press to select the input from 1 - 8. The Input selected will be displayed on the Matrix display. Press the Select button to confirm switch

Secondary Use:

When the MENU button has been pressed buttons 3, 4, 7 & 8 are used as cursors to navigate the MENU system
3 = Left
4 = Up
7 = Right
8 = Down
❻ Select Button – Press to confirm changes within the Matrix menu
❼ ESC - Press to exit MENU mode

Rear Panel Description



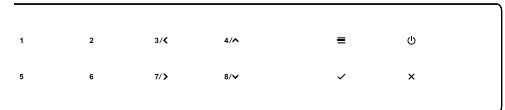
- ❶ IR Outputs - 3.5mm mono connector to connect to Blustream IR emitter. Used for local source control
- ❷ IR Global Output - 3.5mm mono connector to connect to Blustream IR emitter. Used for global local source control
- ❸ IR Inputs - 3.5mm stereo connector to connect to Blustream 5V IR receiver or Control Processor. Used to extend IR from Matrix to HDBaseT™ Outputs 1-8
- ❹ Optical and Analogue Audio Outputs - independent audio Matrix with 8 x dual outputs (Toslink + 3.5mm L/R line level stereo jack). For connection to 3rd party audio devices. NOTE: Analogue audio outputs support 2ch PCM only
- ❺ Ethernet - RJ45 connection to allow for LAN serving to all connected HDBT Receivers
- ❻ IR Global Input - 3.5mm stereo connector to connect to Blustream IR Receiver or Control Processor. Used for Global IR control from Matrix to all HDBaseT™ outputs
- ❼ IR Control Input - 3.5mm stereo connector to connect to Blustream IR receiver for IR control of the Matrix
- ❽ TCP/IP - RJ45 connector for TCP/IP and web-GUI control of the Matrix
- ❾ RS-232 - Phoenix connector for RS-232 control of the Matrix (cable included)
- ❿ EDID DIP switch – Used for global EDID settings
- ⓫ Optical (Toslink) Audio Inputs - Connect to source device for audio distribution within the PLA88CS independent audio Matrix
- ⓬ Analogue Audio Inputs - 3.5mm L/R stereo jack. Connect to source device for audio distribution within the PLA88CS independent audio Matrix
- ⓭ HDMI / HDBT Inputs - Connect to source devices. Note only one input type is available at a time
- ⓮ HDMI Inputs - Connect to source devices
- ⓯ Bi-directional RS-232 ports. Connect to third party control device to extend RS-232 commands to HDBaseT™ Receivers RS-232 port
- ⓰ HDBaseT™ Outputs - RJ45 HDBaseT™ port to connect to the HDBaseT™ input port of the compatible Blustream HDBaseT™ Receiver
- ⓱ HDMI / HDBaseT™ Outputs - Connect to display device either via HDMI or HDBaseT™ Receiver
- ⓲ IEC Power Socket - Use supplied IEC power cable
- ⓳ Micro USB update port
- ⓴ Matrix ground screw
- ⓵ Power Switch

EDID Management

EDID (Extended Display Identification Data) is a data structure that is used between a display and a source. This data is used by the source to find out what audio and video resolutions are supported by the display. By pre-determining the video resolution and audio format of the source and display device you can reduce the time needed for EDID hand shaking thus making switching quicker and more reliable.

Configuration of Matrix EDID settings can be achieved in one of four ways:

- 1 Using Matrix web browser interface (see section on web-GUI Control)
- 2 Using Matrix Front Panel (see below)
- 3 Using API commands via RS-232 or Telnet (see below)
- 4 Using Matrix EDID dip switches (see below)



To configure the EDID via Matrix Front Panel:

- a. Press the MENU button
- b. Scroll down to 'EDID Management'. Press the SELECT button to enter into EDID configuration mode
- c. Scroll through EDID management options and select 'Built-In EDID' or 'Copy Output xx'
- d. Select the input you wish to fix the EDID on (1-8) or select 'All'. Use UP/DOWN buttons to toggle the selection and press the SELECT button to move to EDID selection
- e. Select video resolution and audio format required (4K, 1080p, 3D, 2ch, 5.1 etc). Use UP/DOWN buttons to toggle the selection and press the SELECT button to apply. The SELECT button LED will flash orange when complete

Copy Output EDID:

- f. Select the HDBaseT™ output you wish to copy the EDID from. Use UP/DOWN buttons to toggle the selection and press the SELECT button to move to the input selection that you wish to copy the EDID to
- g. Select the HDMI input (1-8) or select 'All' to copy to all HDMI inputs. Press the SELECT button to apply

To configure the EDID via RS-232/Telnet API:

Configuration of the EDID settings for each input can be achieved using the following API commands to specify the required EDID.

Please see the section on RS-232 and Telnet API at the end of this manual for connectivity information:

EDID xx DF zz Set Input xx EDID To Default EDID zz

xx = Input On Product (00 Refers To ALL Inputs, 02 = Input 2 Etc)

zz = 00 : HDMI 1080p@60Hz, Audio 2CH PCM (Default)

01 : HDMI 1080p@60Hz, Audio 5.1CH DTS/DOLBY

02 : HDMI 1080p@60Hz, Audio 7.1CH DTS/DOLBY/HD

03 : HDMI 1080i@60Hz, Audio 2CH PCM

04 : HDMI 1080i@60Hz, Audio 5.1CH DTS/DOLBY

05 : HDMI 1080i@60Hz, Audio 7.1CH DTS/DOLBY/HD

06 : HDMI 1080p@60Hz/3D, Audio 2CH PCM

07 : HDMI 1080p@60Hz/3D, Audio 5.1CH DTS/DOLBY

08 : HDMI 1080p@60Hz/3D, Audio 7.1CH DTS/DOLBY/HD

09 : HDMI 4K@30Hz 4:4:4, Audio 2CH PCM

10 : HDMI 4K@30Hz 4:4:4, Audio 5.1CH DTS/DOLBY

11 : HDMI 4K@30Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD

12 : HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 2CH PCM

13 : HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 5.1CH DTS/DOLBY

14 : HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD

15 : HDMI 4K@60Hz 4:4:4, Audio 2CH PCM

16 : HDMI 4K@60Hz 4:4:4, Audio 5.1CH DTS/DOLBY

17 : HDMI 4K@60Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD

18 : DVI 1280x1024@60Hz, Audio None

19 : DVI 1920x1080@60Hz, Audio None

20 : DVI 1920x1200@60Hz, Audio None

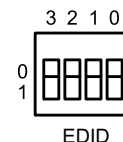
21 : HDMI 1920x1200@60Hz, Audio 2CH PCM/6CH PCM

22 : User EDID 1

23 : User EDID 2

To configure the EDID via DIP Switch:

To configure the global EDID for all inputs via the DIP switch, use the settings below. Note this will override and disallow any EDID settings configured via the web GUI.



3	2	1	0	EDID Type
Combination of DIP positions				
0	0	0	0	1080p 60Hz 2.0ch
0	0	0	1	1080p 60Hz 5.1ch
0	0	1	0	1080p 60Hz 7.1ch
0	0	1	1	1080i 60Hz 2.0ch
0	1	0	0	1080i 60Hz 5.1ch
0	1	0	1	1080i 60Hz 7.1ch
0	1	1	0	4K 60Hz 4:2:0 2.0ch
0	1	1	1	4K 60Hz 4:2:0 5.1ch
1	0	0	0	4K 60Hz 4:2:0 7.1ch
1	0	0	1	4K 60Hz 4:4:4 2.0ch
1	0	1	0	4K 60Hz 4:4:4 5.1ch
1	0	1	1	4K 60Hz 4:4:4 7.1ch
1	1	0	0	DVI 1280x1024@60Hz
1	1	0	1	DVI 1920x1080@60Hz
1	1	1	0	DVI 1920x1200@60Hz
1	1	1	1	Software EDID

Front Panel Menu System

1	2	3/◀	4/▲	≡
5	6	7/▶	8/▼	✓

The front panel of the Matrix features a menu system to provide quick configuration of key features of the Matrix. Press the menu button (≡) to bring up the menu system of the Matrix on the front panel display. While the menu system is active, the arrow keys (◀, ▶, ▲, ▼) to navigate through, and use Select (✓) or Cancel (x) buttons to change settings.

The menu system allows configuration of the following items:

- 1 EDID Settings
- 2 POC Settings
- 3 Network Configuration
- 4 F/W Version

HDBaseT™ Receiver Compatibility

This Matrix is compatible with all Blustream HDBaseT™ Receivers however support of specific features will vary. It is recommended to utilise Blustream RX150CS HDBaseT™ Receivers with this Matrix as this fully supports the following key features:

- CSC - Colour Space Conversion, the method utilised to support 18Gbps signals being transmitted over HDBaseT
- ARC - Audio Return Channel, to output the displays Audio Return Channel from the HDMI and optical outputs of the Matrix
- PoC - Power Over Cable, to power the HDBaseT™ Receiver from the Matrix over CAT cable without any additional power supplies required
- Ethernet Passthrough - Passes through Ethernet from the Matrix to the HDBaseT™ Receiver over CAT cable

Please note: the use of other Blustream HDBaseT™ Receivers will result in the above features not working. Please do check PoC capabilities before plugging in other Blustream Receivers to avoid damage to the Receivers.

Power over Cable

Please note PoC (Power over Cable) has been disabled on this product by default to reduce the risk of damaging incompatible HDBaseT™ Receiver products. Please check your HDBaseT™ Receiver supports 24V PoC before enabling PoC on this Matrix. The Blustream RX150CS HDBaseT™ Receiver is recommended for use with this Matrix as it supports all features of this Matrix.

There are 3 ways to enable/disable PoC on this Matrix:

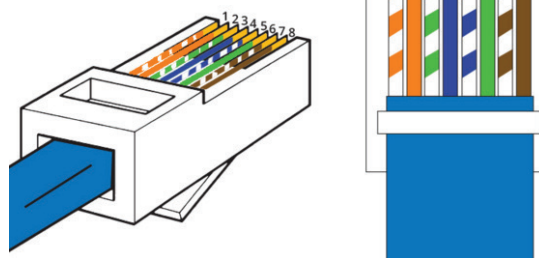
- 1 Using Matrix web browser interface (see section on web GUI operation)
- 2 Using Matrix Front Panel Menu System (see section above)
- 3 Using API commands via Telnet / RS-232 (see Telnet API section towards the rear of this manual)

Terminating CAT Cable for use with HDBaseT™

It is important that the interconnecting CAT cable between Blustream HDBaseT™ products is terminated using the correct RJ45 pin configuration. The link CAT cable MUST be a 'straight' (pin-to-pin) CAT cable, and it is advised that this is wired to the T568B wiring standard as this format is less prone to EMI (Electro-Magnetic Interference).

When installing CAT cables it is advised that you use the best possible CAT cable quality. HDMI distribution products will only work if used with CAT5e standard cable or above. Blustream recommends using a CAT6 cable (or better) for installations, especially when running longer distances, in areas of high EMI, for 4K signal distribution, or over extended distances. It is advised that using any method of patch panel, wall plate, or join within the CAT cable is avoided as these can add degradation to the signal. Blustream also recommends using RJ45 connectors that are recommended for use with the choice of CAT cable.

RJ45 Wiring -
T568B



Understanding the HDBaseT™ Status LED's

The Matrix includes status LED indicators on the HDBaseT™ RJ45 ports to show all connections are active, and to help diagnose potential connectivity issues.

Understanding the Matrix Status Lights:

- The orange HDBaseT™ status link light will be OFF when there is no PoC (Power over Cable) being sent via HDBaseT™ to the Blustream HDBaseT™ Receiver
- The orange HDBaseT™ status link light will be ON when there is PoC (Power over Cable) being sent via HDBaseT™ to the Blustream HDBaseT™ Receiver
- The green HDBaseT™ link light will be off when there is no CAT cable / active HDBaseT™ connection on the RJ45 HDBaseT™ output
- The green HDBaseT™ link light will blink if there is an unstable connection between the Transmitter and Receiver
- The green HDBaseT™ link light will be lit when a CAT cable is connected to the HDBaseT™ RJ45 output on the Transmitter and an active connection is achieved with the Receiver

The link lights will only serve as an indication to the connectivity between Matrix and each HDBaseT™ Receiver unit. The LED's will not indicate a termination, bandwidth, interference or cable length issues on a CAT cable run. Blustream always recommends qualifying / verifying / certifying a CAT cable run for suitability prior to the installation of HDBaseT™ equipment.

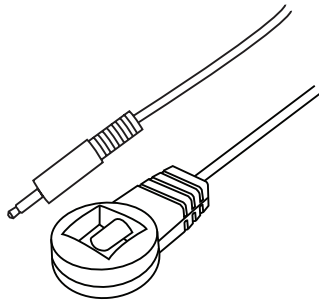
Infrared (IR) Control

The Blustream range of Matrix products include Matrix control via IR.

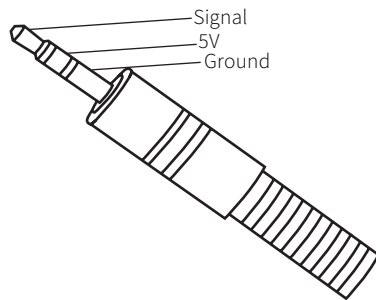
IMPORTANT: Blustream Infrared products are all 5V and NOT compatible with alternative manufacturers Infrared solutions. When using third party 12V IR control solutions please use the Blustream IRCAB cable for IR conversion.

IR Receiver - IRR

Blustream 5V IR receiver to receive an IR signal for control of the Matrix.



IR Receiver - Stereo 3.5mm

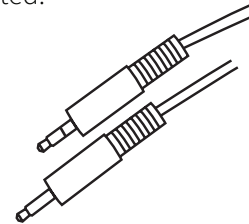


IR Control Cable - IRCAB

Blustream IR Control cable 3.5mm Mono to 3.5mm Stereo for linking third party control solutions to Blustream products.

Compatible with 12V IR 3 party products.

Please Note: cable is directional as indicated.



CEC Control

The Matrix features CEC control of source devices and displays via the products web-GUI and RS-232. It is possible to send CEC commands such as power on / off, input selection as well as volume up or down. Please see the web-GUI CEC Control page, or RS-232 command list in this document for more information and a full list of CEC commands.

Please note: CEC is subject to the support of standardised codes for the sources and displays connected to the Matrix.

Audio Return Channel

This Matrix allows audio from a supported displays Audio Return Channel (ARC) to be sent back to the Matrix via the RX150CS HDBaseT™ Receiver either via HDMI ARC or Optical Audio Return. This can be configured on the Audio page within the web-GUI of the Matrix. See page 9 for further details. **Please note:** this product does not support eARC.

Web-GUI Control

The following pages take outline the operation of this Matrix's web-GUI. Connect the TCP/IP RJ45 socket to the local network in order to access the products web-GUI.

By default the Matrix is set to DHCP, however if a DHCP server (eg: network router) is not installed, the Matrix IP address will revert to the below details:

Default IP Address: 192.168.0.200

Default Username: [blustream](#)

Default Password: [@Bls1234](#)

The web-GUI supports multiple users along with multiple user permissions as follows:

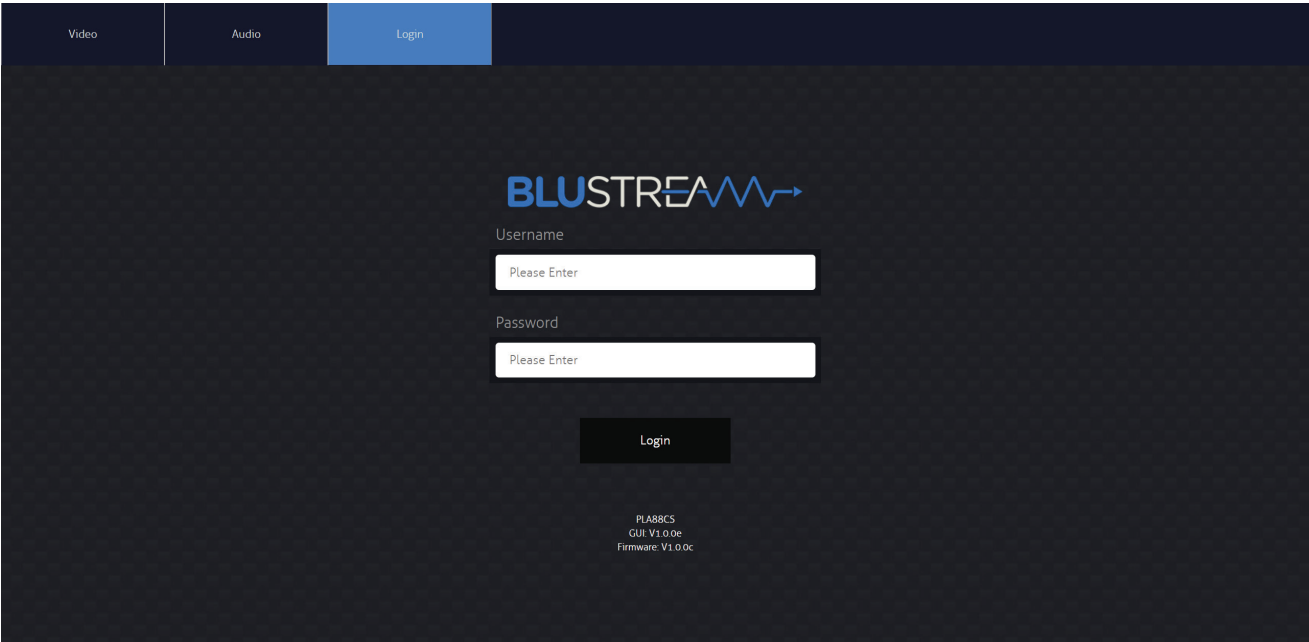
Guest Account - This account does not require a user to login. The Guest account can only change sources for each zone. Guest access can be changed by the Admin, limiting inputs or outputs as required. The Guest User can be deleted once other Users have been set up.

User Accounts - 7x User accounts can be utilised, each with individual login details. User accounts can be assigned permissions to specific areas and functions. A User must log in to make use of these functions.

Admin Account - This account allows full access to all functions of the Matrix as well as assigning users with permissions.

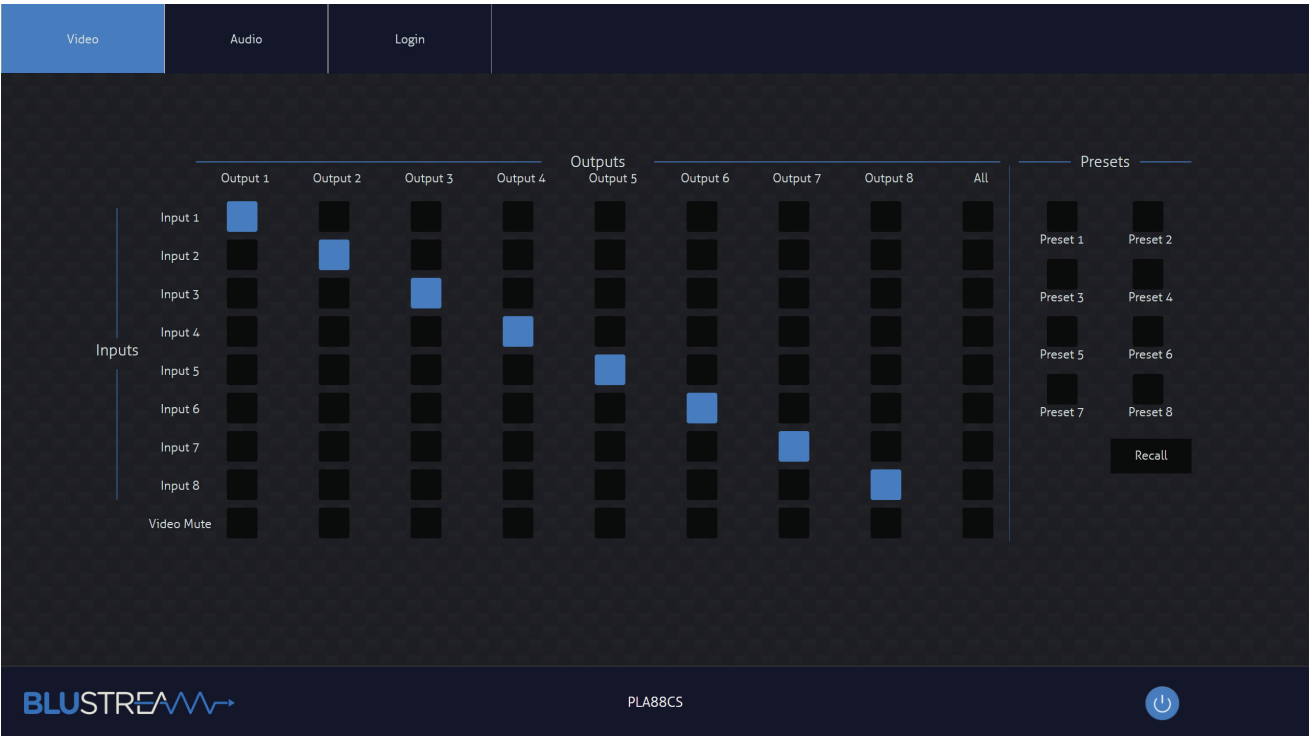
Login Page

The Login Page allows a User or Admin to login and access Matrix functionality. This page also shows the current firmware version of both the Matrix and the web-GUI.



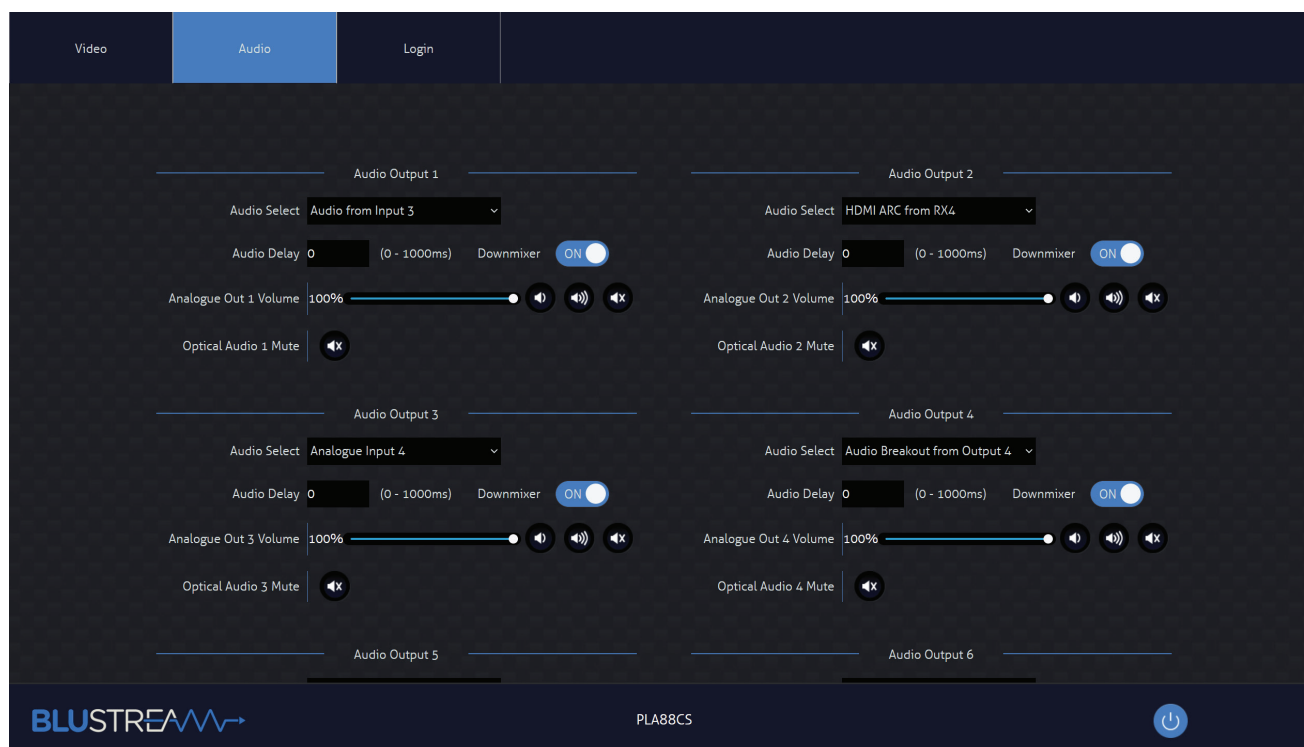
Guest Video Control Page

The Guest Video Control Page allows a Guest User to change inputs for each zone without needing to be logged into the Matrix. Simply select the square that corresponds with the input and zone to be changed. There is a Matrix power button on the lower right corner to turn the Matrix on or off.



Guest Audio Control Page

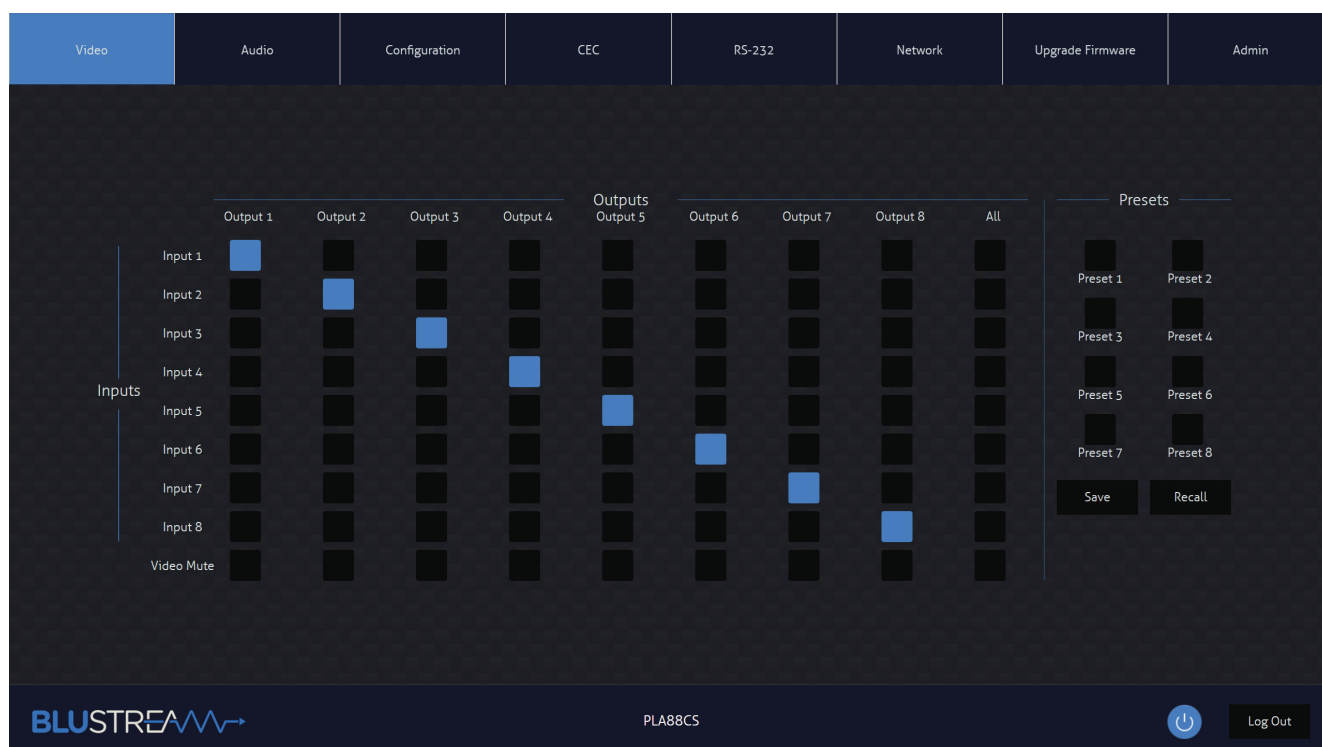
The Guest Audio Control Page allows the source audio of the Matrix per output to be changed, as well as adjust the line level volume output or enable/disable the muting of the analogue or digital outputs. The Audio Select drop down menu allows selection of Audio Return Channel either via HDMI or RX from compatible RX150CS HDBaseT™ Receiver.



User Video Control Page

A logged in User or Admin Video Control Page allows a user to change inputs and presets for each zone. To change inputs, simply select the square that corresponds with the input and zone output to be changed. On the right side a preset can be recalled, or save the current input/output configuration into a specified preset.

There is a power button on the lower right corner to turn the Matrix on or off.



User Audio Control Page

A logged in User or Admin Audio Control Page allows a user to change the source audio of the Matrix per output, as well as adjust the line level volume output or enable/disable the muting of the analogue or digital outputs. The Audio Select drop down menu allows selection of Audio Return Channel either via HDMI or RX from compatible RX150CS HDBaseT™ Receiver.

The User also has the ability to enable or disable the audio downmixing mode. When enabled, the audio output will be downmixed from multichannel Dolby Audio or DTS Audio to 2ch PCM audio.

To downmix audio via an HDBaseT™ output, select “DSP Analogue Audio x” corresponding to the specific HDBaseT™ output to downmix audio from.

The screenshot displays the 'Audio' configuration page for the PLA88CS device. The top navigation bar includes tabs for Video, Audio (selected), Configuration, CEC, RS-232, Network, Upgrade Firmware, and Admin. The main content area is divided into two columns, each containing settings for four audio outputs.

Audio Output 1: Audio Select: Audio from Input 1, Audio Delay: 0 (0 - 1000ms), Downmixer: ON, Analogue Out 1 Volume: 100%, Optical Audio 1 Mute: [Mute Icon]

Audio Output 2: Audio Select: HDMI ARC from RX4, Audio Delay: 0 (0 - 1000ms), Downmixer: ON, Analogue Out 2 Volume: 100%, Optical Audio 2 Mute: [Mute Icon]

Audio Output 3: Audio Select: Analogue Input 4, Audio Delay: 0 (0 - 1000ms), Downmixer: ON, Analogue Out 3 Volume: 100%, Optical Audio 3 Mute: [Mute Icon]

Audio Output 4: Audio Select: Audio Breakout from Output 4, Audio Delay: 0 (0 - 1000ms), Downmixer: ON, Analogue Out 4 Volume: 100%, Optical Audio 4 Mute: [Mute Icon]

Audio Output 5: Audio Select: Audio Breakout from Output 5, Audio Delay: 0 (0 - 1000ms), Downmixer: ON, Analogue Out 5 Volume: 100%, Optical Audio 5 Mute: [Mute Icon]

Audio Output 6: Audio Select: Audio Breakout from Output 6, Audio Delay: 0 (0 - 1000ms), Downmixer: ON, Analogue Out 6 Volume: 100%, Optical Audio 6 Mute: [Mute Icon]

Audio Output 7: Audio Select: Audio Breakout from Output 7, Audio Delay: 0 (0 - 1000ms), Downmixer: ON, Analogue Out 7 Volume: 100%, Optical Audio 7 Mute: [Mute Icon]

Audio Output 8: Audio Select: Audio Breakout from Output 8, Audio Delay: 0 (0 - 1000ms), Downmixer: ON, Analogue Out 8 Volume: 100%, Optical Audio 8 Mute: [Mute Icon]

HDBT Output 1: Audio Select: Follow Output

HDBT Output 3: Audio Select: HDMI ARC from RX4

HDBT Output 5: Audio Select: Follow Output

HDBT Output 7: Audio Select: Follow Output

HDBT Output 2: Audio Select: DSP Analogue Audio 2, Downmixer: ON

HDBT Output 4: Audio Select: Follow Output

HDBT Output 6: Audio Select: Follow Output

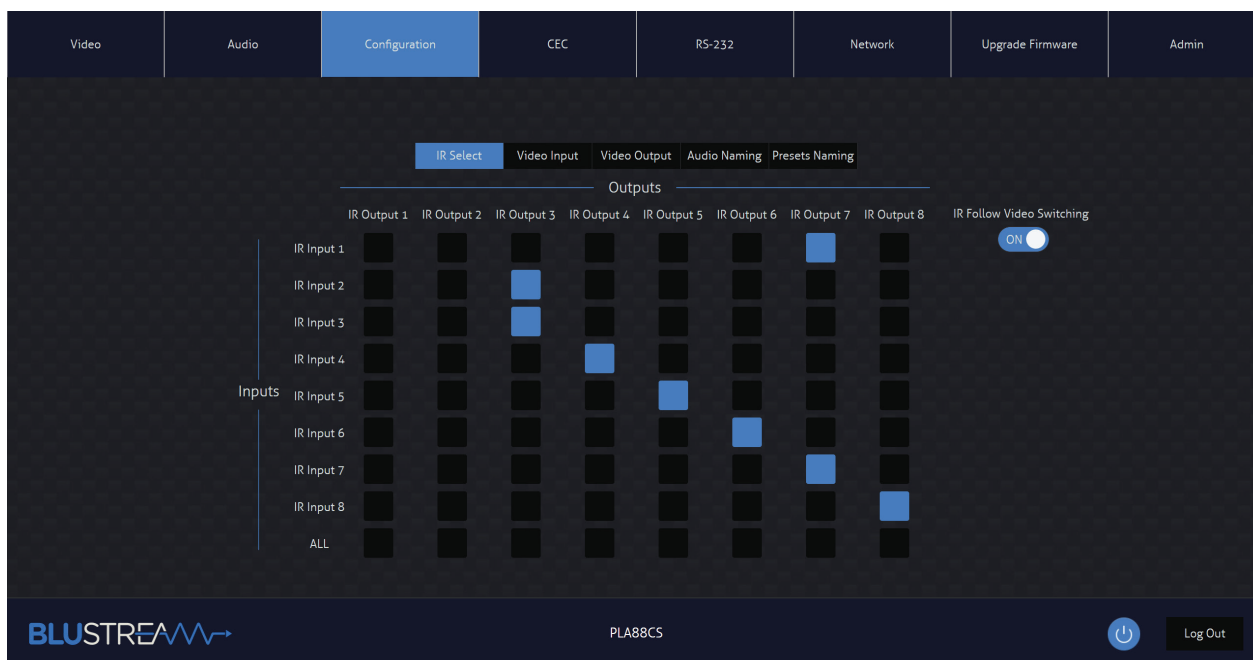
HDBT Output 8: Audio Select: Follow Output

The bottom of the page features the BLUSTREAM logo, the model number PLA88CS, a power icon, and a Log Out button.

Configuration IR Select Page

The Configuration IR Select Page allows the IR routing of the Matrix to be amended. Simply select the square that corresponds with the input and zone output to set up a bi-directional IR relationship with, to have IR route only between that input to output.

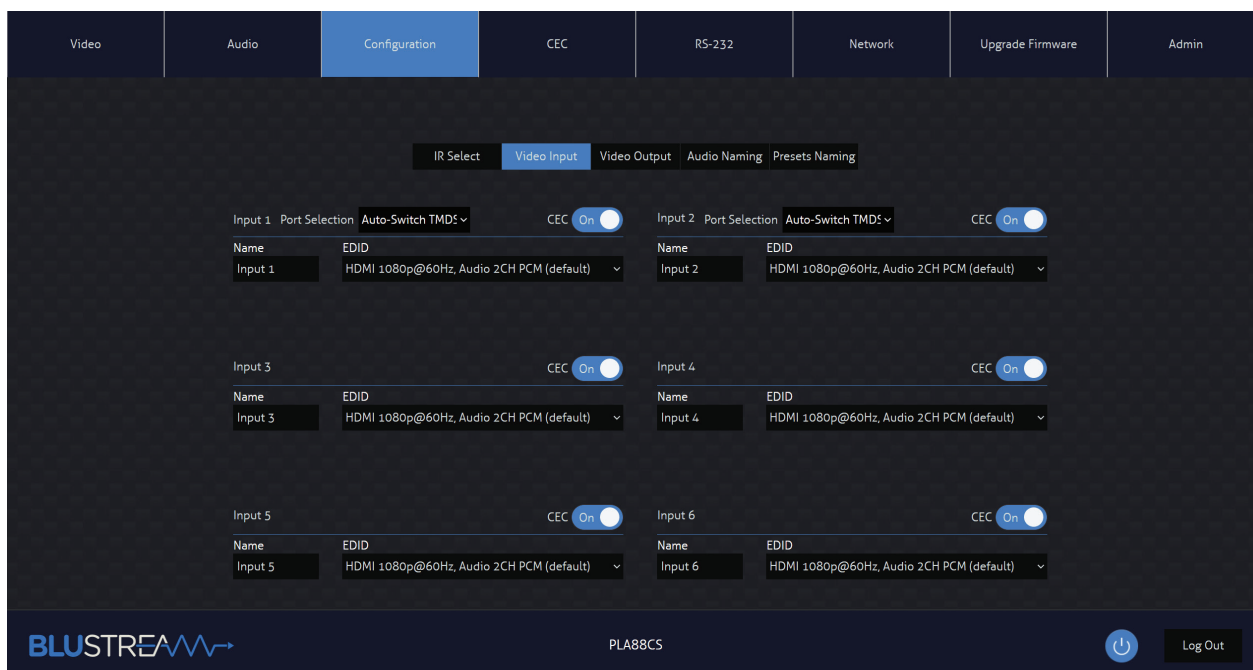
By enabling the 'IR Follow Video Switching' setting, IR will no longer have a fixed route. IR from zones will be transmitted to the input corresponding with whichever video input is selected. IR inputs will be transmitted to whatever outputs zones are currently viewing this input source.



Configuration Video Input Page

The Configuration Video Input Page allows Users to change settings specific to the inputs of the Matrix.

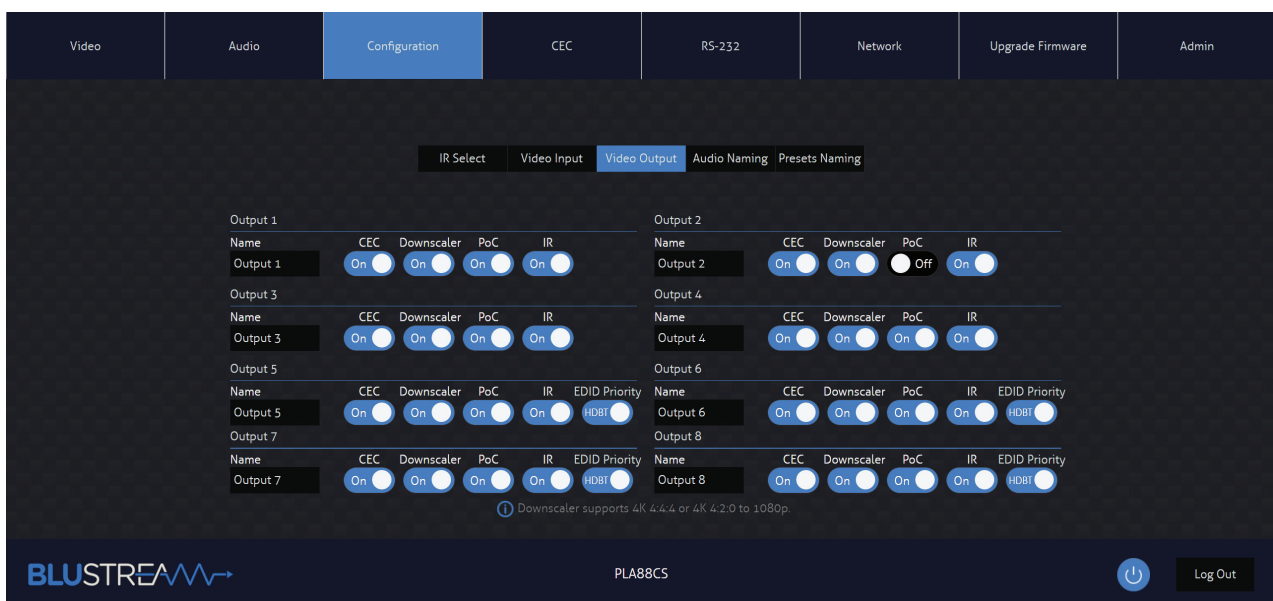
The name of each input can be amended, the EDID of each input can be set, as well as enable or disable CEC to the input. It is also possible to select the priority mode for dual inputs featuring both HDMI and HDBaseT™ connections between auto switch mode and fixed selection mode.



Configuration Video Output Page

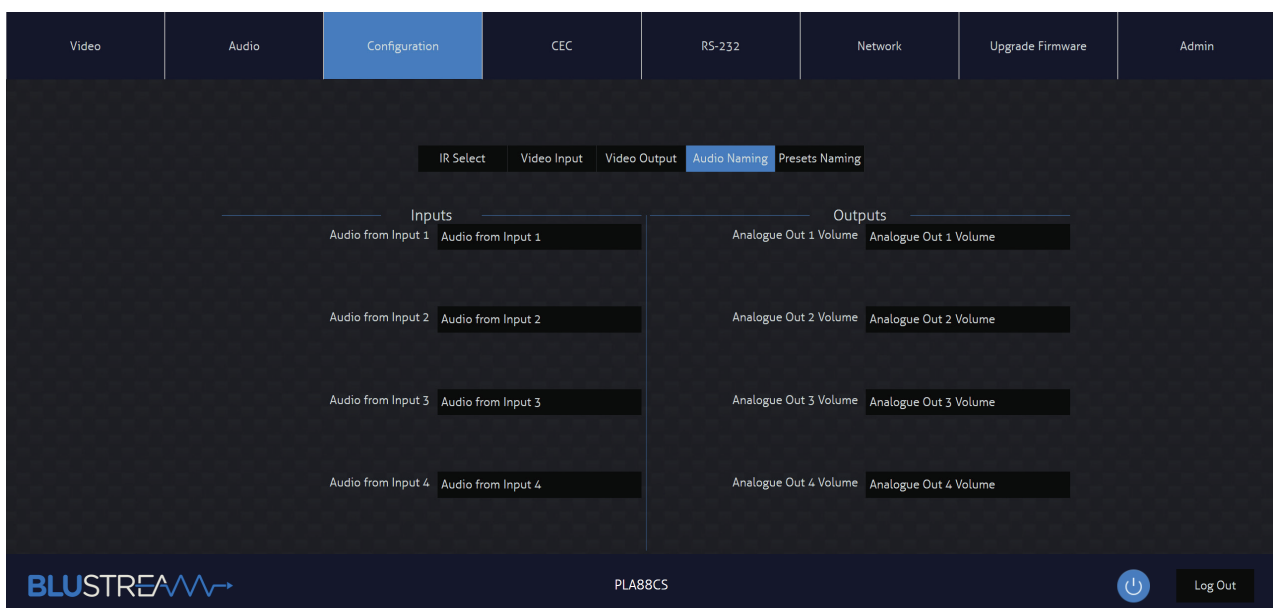
The Configuration Video Output Page allows the settings specific to the outputs of the Matrix to be changed as follows:

- The name of each output / zone
- Enable or disable CEC to the output
- Enable or disable HDMI Auto Downscale - this will enable/disable automatic conversion from 4K 60Hz 4:4:4 to 4K 60Hz 4:2:0 for displays that do not support 18Gbps HDMI signals, or down to 1080p. Downscaling will depend on resolutions supported by the display device. **Please note:** Auto Downscale is only available on the HDBaseT™ output ports.
- Enable or disable PoC (Power over Cable) to power the connected HDBaseT™ Receiver. It is recommended to use the Blustream RX150CS Receiver to support all features of this Matrix
- Enable or disable IR being transmitted out to a zone or from that zone output
- Set EDID Priority (output 1) to select whether the HDBaseT™ output or HDMI output should have priority for EDID management.



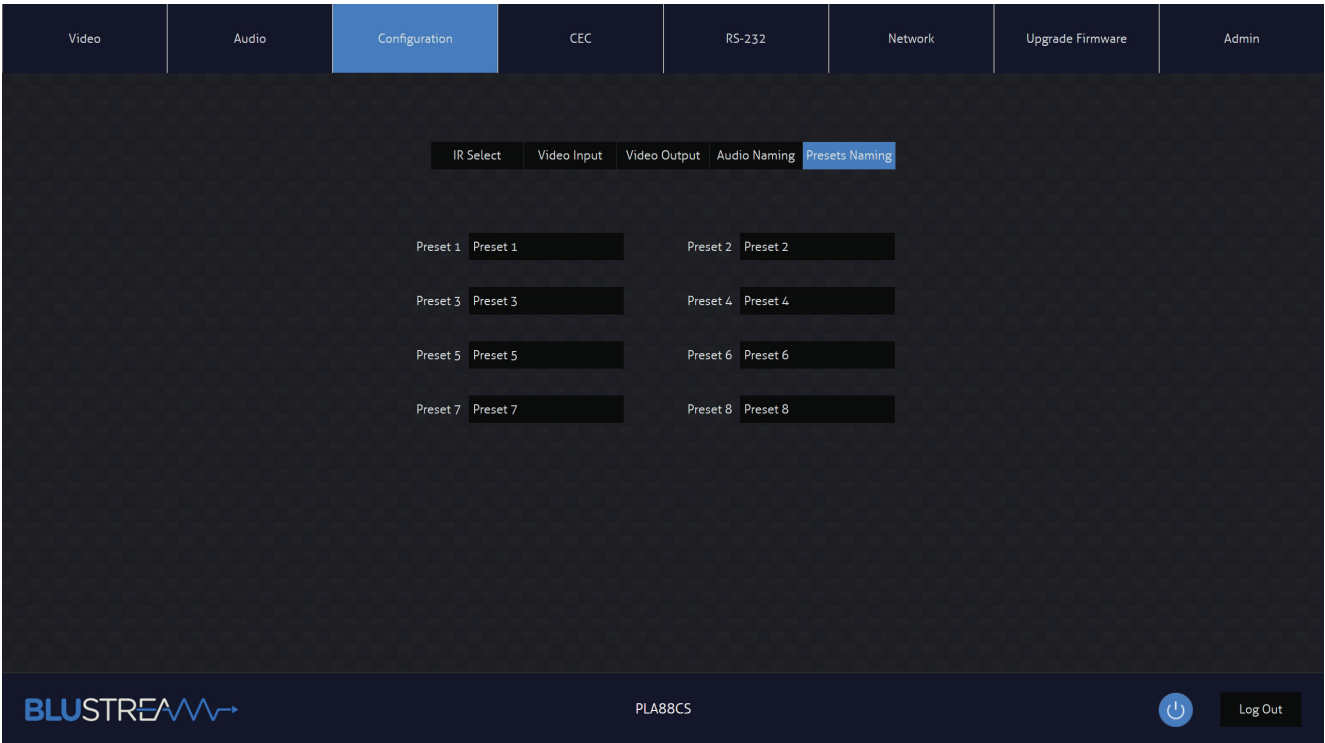
Configuration Audio Naming Page

The Configuration Audio Naming page allows for audio inputs and outputs to be adjusted to human readable names, such as the name of the source device, or the name of the zone output (eg: Kitchen, Bedroom, etc...)



Configuration Presets Naming Page

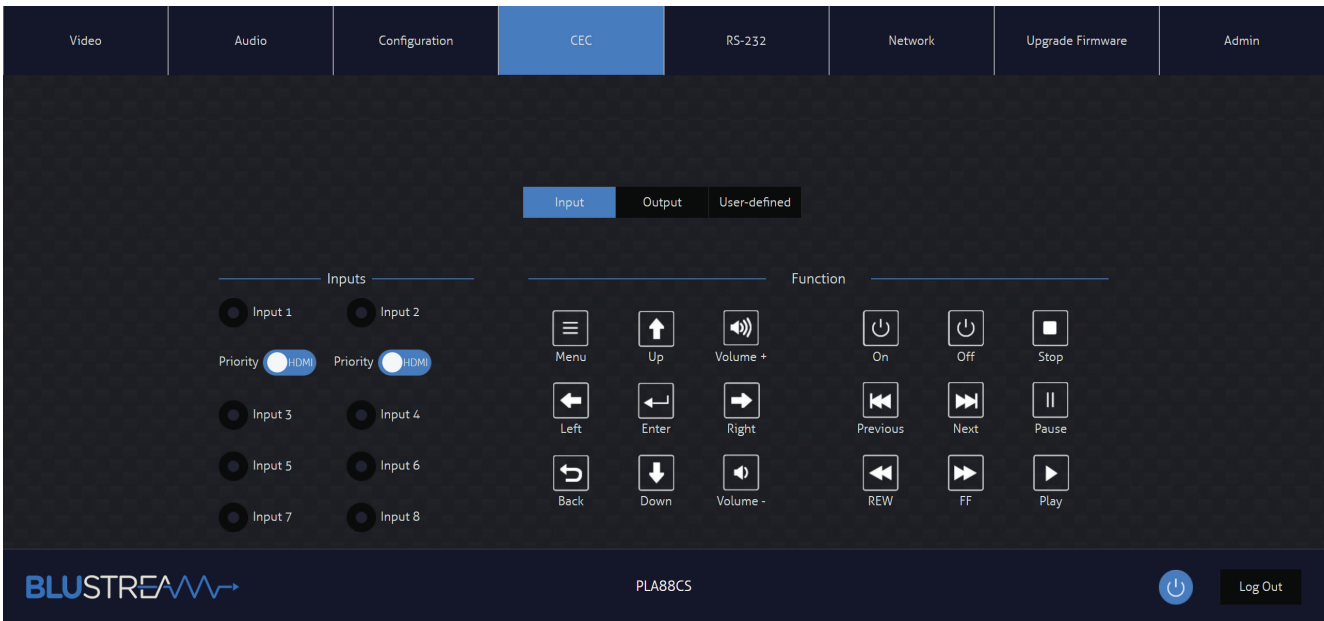
The Configuration Presets Naming page allows for renaming presets to human readable names, such as the name of the scene, or the name of a preconfigured setting (eg: All to Apple TV, etc...)



CEC Page - Input

The CEC Page allows for a pre-defined CEC command to be sent to individual Inputs or Outputs of the Matrix. Choose between Input, Output and User-defined sections at the top of the page. On the CEC Input Page, an input to send the CEC command to must be specified. Press the icon of the command to send and it will be transmitted to the source device connected to the specified input via the HDMI connection.

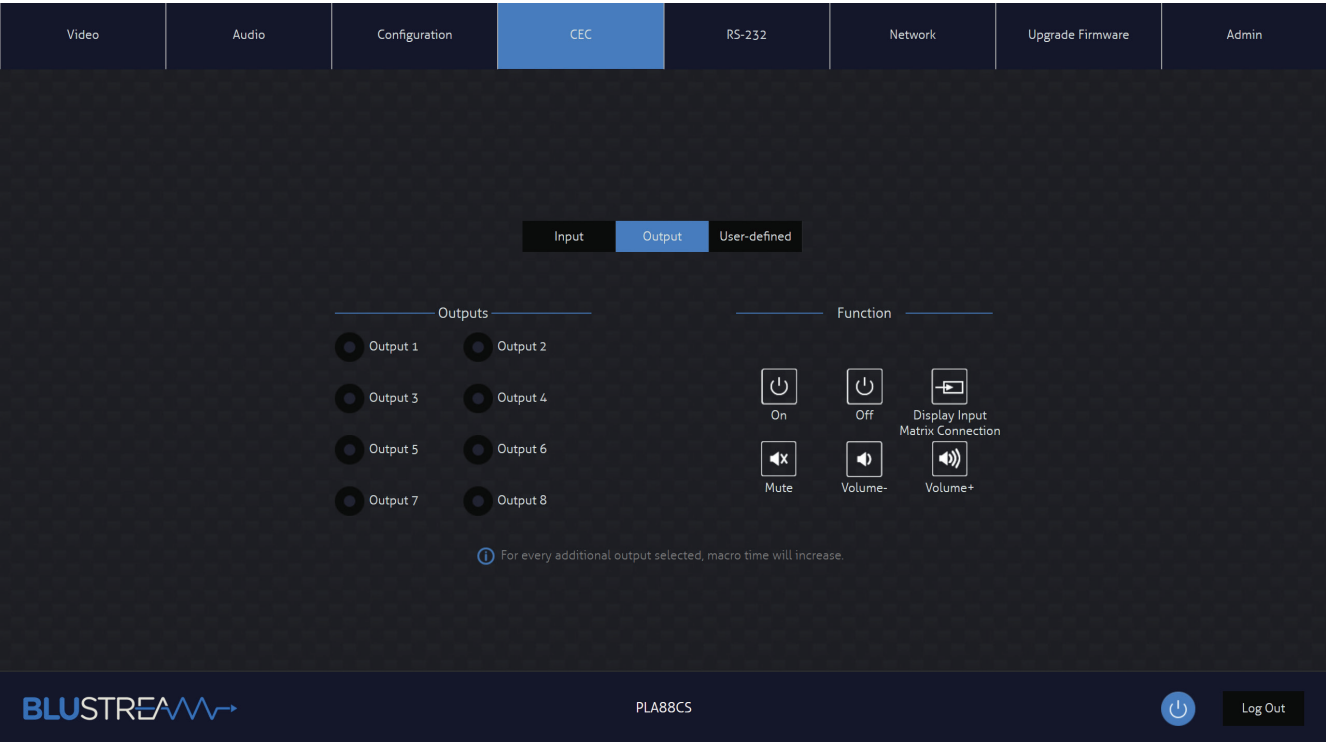
Please note: CEC is subject to the support of the sources and displays connected to the Matrix.



CEC Page - Output

On the CEC Output Page, a specific output to send the CEC command out of must be specified. Press the icon of the command to send and it will be transmitted to the display device connected to the specified output.

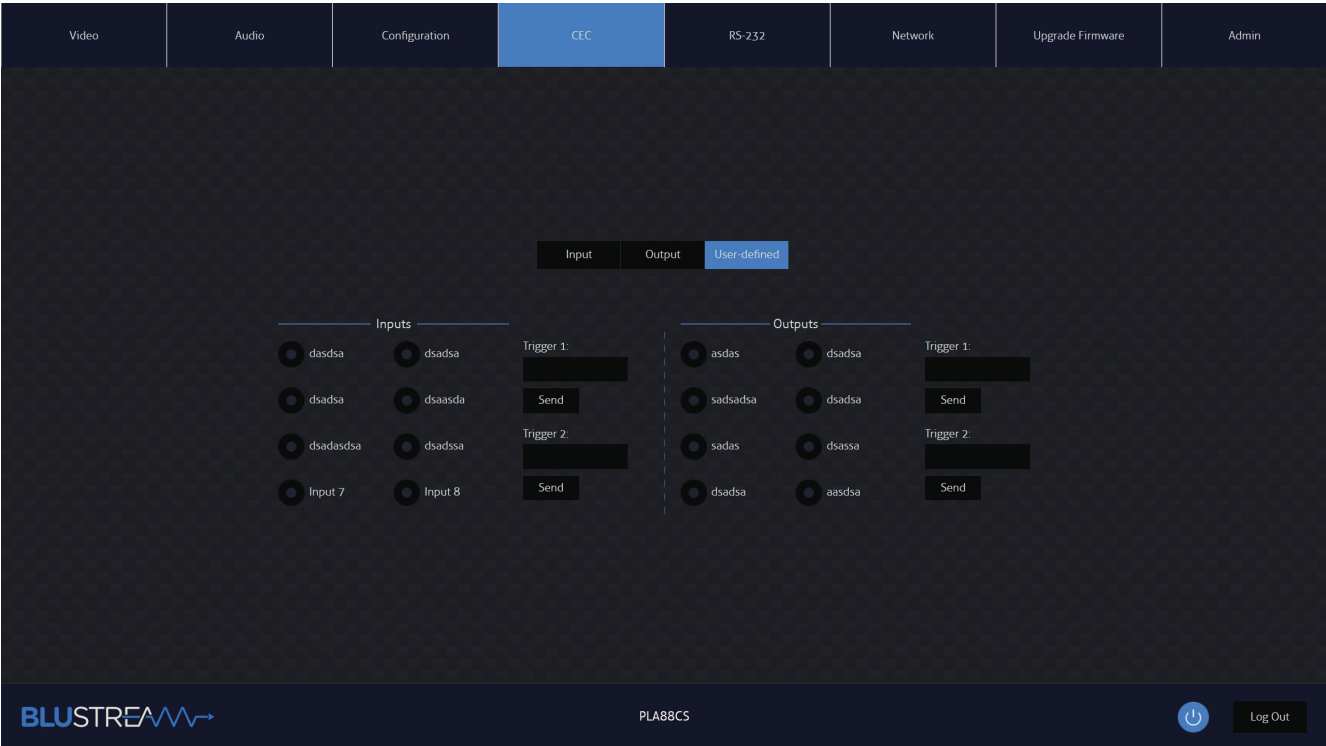
Please note: CEC is subject to the support of the sources and displays connected to the Matrix.



CEC Page - User-defined

The CEC User-defined Page allows for a custom CEC command to be sent to any Output of the Matrix. Select an output, then enter the custom CEC command to send the desired function to the output display.

Please note: CEC is subject to the support of the sources and displays connected to the Matrix.



RS-232 Page - Local

The RS-232 Page allows for commands to be sent from either the local RS-232 port on the Matrix itself, or via HDBaseT™ and out of the compatible HDBaseT™ Receiver connected to the display. If the Local radio box is selected, RS-232 commands will be sent out of the DB9 serial port at the rear of the Matrix to a connected device. Baud rate and terminator command as well as HEX or ASCII can be selected.

Sending an RS-232 command out via the Matrix can be useful in assisting with debugging and fault finding an RS-232 device connected to the Matrix.

The screenshot shows the 'RS-232' tab selected in the top navigation bar. Below the navigation bar, there are two radio buttons: 'Local' (selected) and 'HDBT'. Below these, there are two tabs: 'HEX' and 'ASCII' (selected). The 'Baud Rate' is set to '57600' and 'Command Ending' is set to 'NULL'. There is a 'Command' input field and 'Send' and 'Cancel' buttons. At the bottom, there is a footer with the BLUSTREAM logo, 'PLA88CS', a power icon, and a 'Log Out' button.

Local HDBT

HEX ASCII

Baud Rate: 57600

Command Ending: NULL

Command:

Send Cancel

ⓘ This page allows you to configure the RS232 port on the matrix and send out commands to a connected device.

BLUSTREAM PLA88CS Log Out

RS-232 Page - HDBT

The RS-232 HDBT Page allows for remotely control devices connected via DB9 serial to the remote HDBaseT™ Receiver to be controlled. It is then possible to automate the display on, input select, and display off process via RS-232 for each HDBaseT™ output, when the Matrix is turned on or off.

If RS-232 On is enabled, the User Commands 1, 2, 3, 4, and 5 are all sent out of the HDBaseT™ Receiver, when the Matrix is turned on. If RS-232 Off is enabled, the User Off Command will be sent out of the corresponding HDBaseT™ Receiver, when the Matrix is turned off.

You can also specify the Baud Rate and Command Ending (eg: new line, carriage return) to the match the RS-232 device connected to the HDBaseT™ Receiver.

The screenshot shows the 'RS-232' tab selected in the top navigation bar. Below the navigation bar, there are two radio buttons: 'Local' and 'HDBT' (selected). Below these, there is a 'Port' section with buttons for 'Input 1', 'Input 2', 'Output 1', 'Output 2', 'Output 3', 'Output 4', 'Output 5', 'Output 6', 'Output 7', and 'Output 8'. Below the 'Port' section, there are two sections: 'RS232 On' and 'RS232 Off'. Both sections have a 'Baud Rate' dropdown set to '57600' and a 'Command Ending' dropdown set to 'NULL'. The 'RS232 On' section has an 'Off' toggle. The 'RS232 Off' section has an 'Off' toggle. Below these, there are two columns of 'User Command' and 'User Off Command' fields, each with a 'Save' button. At the bottom, there is a footer with the BLUSTREAM logo, 'PLA88CS', a power icon, and a 'Log Out' button.

Local HDBT

Port

Input 1 Input 2 Output 1 Output 2 Output 3 Output 4 Output 5 Output 6 Output 7 Output 8

RS232 On: Off RS232 Off: Off

Baud Rate: 57600

Command Ending: NULL

Input Delay: s Save

Display On: NULL Save

Display Input Select: NULL Save

User Command 1: NULL Save

User Command 2: NULL Save

User Command 3: NULL Save

User Off Command 1: NULL Save

User Off Command 2: NULL Save

ⓘ This page allows you to configure the automatic output of RS232 command strings when the Matrix is powered on or off. These commands will be sent out of the RS232 port of the HDBT receiver unit connected to the corresponding output of the matrix.

BLUSTREAM PLA88CS Log Out

Guest Mode Page

The Guest Mode Page allows you to send IR commands or RS-232 control strings directly from the Web GUI of the matrix out of the HDBT inputs/outputs of the Matrix.

The screenshot displays the 'Guest Mode' configuration page. It features a top navigation bar with tabs: Video, Audio, Configuration, CEC, RS-232, Guest Mode (selected), Network, Upgrade Firmware, and Admin. The main content area is divided into two columns, each containing a table of inputs and outputs. Each row in these tables has fields for Name, Telnet Port, Status (On/Off), Baud Rate, Commands (ASCII/HEX), Direction (One-direction/Bi-direction), Delay (1-10s), and an RS-232 & IR Test Command field with a 'Send' button. A note at the bottom states: 'When sending IR command, it must be ProntoHex code. Delay time is the amount of time to wait in receiving a feedback response.'

Guest mode provides several settings per input/output as follows:

- **Telnet Port** - This is the Telnet port you will need to connect to in order to send commands and receive feedback from the remote device connected via RS-232
- **Status On/Off** - This enables or disabled the guest mode port for this output
- **Baud Rate** - Sets the communication baudrate for the guest mode port
- **Commands ASCII/HEX** - Sets the command format for RS-232 between ASCII text or HEX characters
- **Direction One-direction/Bi-direction** - Sets whether the RS-232 guest mode is configured in One-direction mode where it sends commands and ignores any feedback, or in Bi-direction mode where it sends commands and waits for the delay period to receive feedback
- **Delay Time (s)** - Sets the delay time in which the matrix waits for feedback from the RS-232 guest mode port after sending a Bidirectional command
- **RS-232 & IR Test Command** - This is where you enter your RS-232 string or IR HEX command you wish to transmit. The matrix automatically identifies if it is an RS-232 string or an IR command based on the command structure. Please note that you can enter multiple lines in this box. It may be necessary to use a blank line as a carriage return as a termination character for some 3rd party devices
- **Send Button** - Press this button to send out the command via the corresponding output port of the matrix

Sending RS-232 commands:

To send an RS-232 command simply enter your command in the RS-232 & IR Command box and press the Send button. If the command is sent successfully, it will return a success pop up message. In Bi-direction mode, the matrix will wait for feedback from the connected device before it provides a pop up message. If the delay period times out and the matrix does not receive feedback, it will pop up with an error message advising it did not receive feedback. Check that your command string is correct and verify that the 3rd party device is connected correctly and try and send the command again.

Sending IR commands:

To send an IR command simply enter the IR command in Pronto HEX format into the RS-232 & IR Command box and press the Send button. If the command is sent successfully, it will return a success pop up message. If there is an issue with the IR command, the pop up will provide an error message.

Network Page

The Network Page allows for the TCP/IP network port settings to be adjusted. Choose from Static IP or DHCP, as well as specify a fixed IP Address, Subnet Mask, and Gateway. It is also possible to change or disable the Telnet port.

The screenshot shows the 'Network' tab selected in the top navigation bar. The interface is divided into two main sections. The left section contains network configuration fields: 'MAC Address' (34-D0-B8-23-00-1D), a toggle for 'DHCP' (currently off) and 'Static IP' (currently on), 'IP Address' (192.168.0.200), 'Subnet Mask' (255.255.255.0), and 'Gateway' (192.168.0.1). A 'Save' button is located below these fields. The right section contains status and access controls: 'mDNS' (On), 'Port 8000' (On), 'Telnet Access' (On), 'Telnet Port' (23), and 'Device Name' (PLA88CS) with '.local' and 'Save' buttons. The bottom of the page features the BLUSTREAM logo, the device name 'PLA88CS', a power icon, and a 'Log Out' button.

Upgrade Firmware Page

The Upgrade Firmware Page will show the current firmware version of the Matrix, including the web-GUI version and the MCU firmware version. It allows for the upgrading of the firmware of both the Matrix MCU, as well as the HDBaseT™ Receiver units firmware connected to the Matrix. Simply select whether you are updating the Matrix MCU or a Receiver connected to the unit, browse for the firmware update file, and press Submit. If updating a Receiver, a pop up window will appear asking for a specific Receiver to be selected, or all Receivers to be updated.

The screenshot shows the 'Upgrade Firmware' tab selected in the top navigation bar. The page is divided into two main sections. The top section, titled 'Device Information', displays the device name 'PLA88CS', the GUI version 'V1.0.0e', and the Firmware version 'V1.0.0c'. The bottom section, titled 'Upgrade Firmware', features a selection of radio buttons for 'Matrix' (selected) and eight receivers labeled 'RX 1' through 'RX 8'. Below the selection is a 'Browse' button for selecting a firmware file. A 'Submit' button is located at the bottom of the section. The bottom of the page features the BLUSTREAM logo, the device name 'PLA88CS', a power icon, and a 'Log Out' button.

Admin Page

The Admin Page allows the Admin to configure up to 8 users (including the Guest user). Each User can adjust their password via this page as well.

Admin, or Users who have been given Admin permissions, are able to allocate permissions to other Users. These permissions include allowing or disabling access to each page within the web-GUI, as well as allowing or disabling access to each input or output of the Matrix.

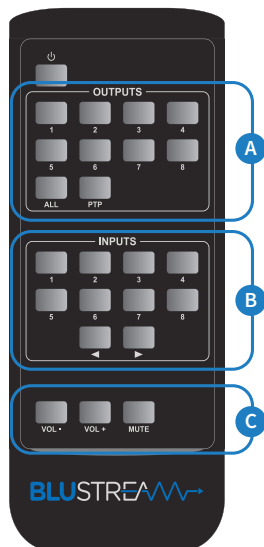
The Admin Page also allows for the Front Panel Buttons or Front Panel IR of the Matrix to be enabled or disabled as well as Factory Reset the Matrix (not recommended).

The screenshot displays the Admin Page of the BLUSTREAM PLA88CS web-GUI. The interface is organized into several sections:

- Navigation Bar:** Located at the top, it includes tabs for Video, Audio, Configuration, CEC, RS-232, Network, Upgrade Firmware, and Admin (which is currently selected).
- Admin Credentials:** This section contains fields for Name (pre-filled with 'blustream'), Current Password, New Password, and Confirm New Password.
- User Authorization:** Below the credentials, there are toggle switches for Guest (set to 'On') and Users 1 through 7 (all set to 'Off').
- User Selection:** A row of radio buttons allows selecting a user to configure, with 'Guest' currently selected.
- Volume Permission:** A grid of checkboxes for enabling or disabling volume control for Analogue Out 1-8 and Optical Audio 1-8.
- Downmixer Permission:** A grid of checkboxes for enabling or disabling downmixer functions 1 through 8.
- Input / Output Permissions:** Two grids of checkboxes for configuring permissions for 8 inputs and 8 outputs.
- Main Features:** This section includes toggle switches for 'Front Panel Lock' and 'Front Panel IR', both currently set to 'Off'. A red 'Reset' button is also present, accompanied by a warning icon and text: 'Reset all settings of the unit including network and general settings.'
- Footer:** The bottom of the page features the BLUSTREAM logo, the model number 'PLA88CS', a power button icon, and a 'Log Out' button.

A 'Save' button is located at the bottom center of the main configuration area.

Remote Control Description



OUTPUT AND INPUT SELECTION

- A** When in front of the Matrix - select the zone Output to change the source on first (Numbers 1-8 correspond to the zone outputs 1-8, or All corresponds selects all outputs).
Pressing the PTP button will mirror all inputs and outputs (Example - Input 1 to output 1, input 2 to output 2 etc).
- B** Select the source Input to switch the selected zone/s to (numbers 1-8 correspond to the source inputs 1-8m or All corresponds with all inputs)>
When in a room / zone, simply press the Input number required to be switched to
- C** The line level volume or mute can be adjusted for each of the outputs by pressing the desired output button first, and then pressing the Vol +, Vol - or Mute button.

IR Commands

NEC Customer Code = 1898

Advanced Matrix features are not available via IR commands

[illegible]

IR Commands

[illegible]

Specifications

- **Video Input Connectors:** 8 x HDMI Type A, 19-pin, female, 2 x HDBaseT™ RJ45 connectors
- **Video Output Connectors:** 1 x HDMI Type A, 19-pin, female, 8 x HDBaseT™ RJ45 connectors
- **Audio Input Connectors:** 2 x Analogue audio L/R (3.5mm stereo Jack), 2 x Optical (S/PDIF)
- **Audio Output Connectors:** 8 x Analogue audio L/R (3.5mm stereo Jack), 8 x Optical (S/PDIF)
- **RS-232 Serial Port:** 9 x 3-pin Phoenix connector
- **TCP/IP Control:** 1 x RJ45, female
- **Ethernet/Network:** 1 x RJ45, female
- **IR Input Ports:** 10 x 3.5mm stereo jack
- **IR Output Ports:** 9 x 3.5mm mono jack
- **Update Port:** 1 x Micro USB
- **Rack Mountable:** 2U rack height, rack ears included
- **Casing Dimensions (W x H x D):** 440mm x 87mm x 361mm (without feet)
- **Shipping Weight:** 8.8kg
- **Operating Temperature:** 32°F to 104°F (0°C to +40°C)
- **Storage Temperature:** -4°F to 140°F (-20°C to +60°C)
- **Power Supply:** Internal 100-240V AC

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

Package Contents

- 1 x PLA88CS
- 1 x Rack Mounting Kit
- 1 x Remote Control
- 8 x IR Emitters
- 9 x IR Receivers
- 1 x IR Control Cable - 3.5mm to 3.5mm
- 1 x Serial Cable - DB9 to 3-pin Phoenix Connector
- 8 x 3-Pin Phoenix Connector
- 1 x Quick Reference Guide
- IEC Power Cable(s)

Maintenance

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

RS-232 Configuration and Telnet Commands

The Blustream Matrix can be controlled via serial and TCP/IP.

The RS-232 port is used for configuration and control of the product, as well as pass through of RS-232 commands to a compatible Blustream HDBaseT™ Receiver.

The default RS-232 communication settings are:

Baud rate: 57600

Data bit: 8

Stop bit: 1

Parity bit: none

The following pages list all available serial commands.

Commonly used Serial Commands

There are several commands that are commonly used for control and testing:

STATUS	Status will give feedback on the Matrix such as zones on, type of connection etc...
PON	Power on
POFF	Power off
OUTxxON	(xx is the zone number you wish to turn on)
Example:-	OUT01ON (This would turn output one back on)
OUTxxFRyy	(xx is the zone out, yy is the input)
Example:-	OUT01FR04 (This would switch output 1 to source input 4)

Common Mistakes

- Carriage return – Some programs do not require the carriage return where as others will not work unless sent directly after the string. In the case of some Terminal software the token <CR> is used to execute a carriage return and <LF> is used to execute a line feed. Depending on the program you are using this token maybe different. Some other examples that other control systems deploy include \r or 0D (in hex)
- - Spaces – Blustream commands do not require space between commands unless specified. There may be some programs that require spacing in order to work.
 - How the string should look is as follows OUT01ON
 - How the string may look if spaces are required: OUT{Space}01{Space}ON
- Baud rate or other serial protocol settings not correct

RS-232 Configuration and Telnet Commands

COMMAND	ACTION	COMMAND	ACTION
?/HELP	Print Help Information	INxx SWMODE yy	Set HDBT/HDMI Input xx Switching Mode yy xx = 00 : All HDBT/HDMI Inputs xx = [01-02] : Input 1 - 2 yy = 00 : Force HDMI Mode(default) = 01 : Force HDBT Mode = 02 : (5v Detect Mode,Auto Switch HDMI Priority) = 03 : (5v Detect Mode,Auto Switch HDBT Priority) = 04 : (5v Detect Mode,Auto Switch No Priority) = 05 : (TMDS Detect Mode,Auto Switch HDMI Priority) = 06 : (TMDS Detect Mode,Auto Switch HDBT Priority) = 07 : (TMDS Detect Mode,Auto Switch No Priority)
STATUS	Print System Status And Port Status	AUDIOxx FR yy	Set Audio Output xx From Input yy xx = 00 : All Outputs xx = [01-08] : Output 1 - 8 yy = [01-08] : Audio From Input 1 - 8 yy = [09-16] : Audio From Output 1 - 8 yy = [17-24] : Audio From ARC 1 - 8 yy = [25-26] : Optical Input 1 - 2 yy = [33-34] : Analogue Input 1 - 2
INSTA	Print All Input Status	AUDIOxx DMIX yy	Set Audio Output xx Downmix Mode yy xx = 00 : All Outputs xx = [01-08] : Analogue Output 1 - 8 xx = [09-16] : Optical Output 1 - 8 yy = [ON]:Audio Downmix On yy = [OFF]:Audio Downmix Off
OUTSTA	Print All Output Status	AUDIOxx Delay yy	Set Audio Output xx Delay yy Ms xx = 00 : All Outputs xx = [01-08] : Output 1 - 8 yy = [0-1000]:Audio Delay yy Ms(Only Support On Downmix On Mode Or Input Audio is LPCM 20 When Downmix Off Mode)
CTRLSTA	Print All Control Status	OUTxx EMBED yy	Set HDMI/HDBT Output xx EMBED Audio From Input yy xx = 00 : All Outputs xx = [01-08] : Output 1 - 8 yy = 00 : No Audio Embed yy = [01-08] : Audio From Input 1 - 8 yy = [09-16] : Audio Follow Video (default) (pass through mode,not use embed audio) yy = [17-24] : Audio From ARC 1 - 8 yy = [25-26] : Optical Input 1 - 2 yy = [33-34] : Analogue Input 1 - 2 yy = [49-56] : Audio From DSP 1 - 8
HDBTSTA	Print All HDBT Status	MUTE mm TX xx	Turn Mute On/Off On Output xx mm = On mm = Off xx = 00: All Outputs xx = 01 - 08: Analogue Output 1 To 8 xx = 09 - 16: Optical Output 1 To 8
PRESETSTATUS	Print All Preset Configurations	AUDOUT xx mm	Turn Mute On/Off On Output xx mm = On mm = Off xx = 00: All Outputs xx = 01 - 08: Analogue Output 1 To 8 xx = 09 - 16: Optical Output 1 To 8
PON/OFF	Set System Power On Or Off	VOLxx TX yy	Set Volume Level xx On Output yy xx = [0...100]: Set Volume Level xx = +: Volume Level Increases xx = -: Volume Level Decreases yy = 00: Select All Output Ports yy = [01...08]: Select Single Output Port 01 To 08
KEY ON/OFF	Set System Key Control On Or Off	OUT xx ARC aa	Set RX150CS On Output xx To ARC Mode aa xx = 00 : All Outputs xx = [01-08] : Output 1 - 8 aa = 01 : ARC From Optical aa = 02 : ARC From HDMI
IR ON/OFF	Set System Front Panel IR Control On Or Off		
LCD ON/OFF	Set LCD Aways On Or Set LCD Off After No Operation 30 Seconds		
IROUTxx ON	Enable IR Remote-control Mode On HDBT Output xx		
IROUTxx OFF	Disable IR Remote-control Mode On HDBT Output xx		
IROUTxx SIMPLE ON	Enable IR Simple Remote-control Mode On HDBT Outputxx		
IROUTxx SIMPLE OFF	Disable IR Simple Remote-control Mode On HDBT Output xx xx = 00 : All Outputs xx = [01-08] : Output 1 - 8		
IRINxx ON	Enable IR Remote-control Mode On HDBT Output xx		
IRINxx OFF	Disable IR Remote-control Mode On HDBT Output xx		
IRINxx SIMPLE ON	Enable IR Simple Remote-control Mode On HDBT Input xx		
IRINxx SIMPLE OFF	Disable IR Simple Remote-control Mode On HDBT Input xx xx = 00 : All Inputs xx = [01-02] : Input 1 - 2		
RESET	Reset System To Default Setting (Type ""Yes"" To Confirm, Or Send Other Command To Discard)		
POCOUTxx ON	Set PoC On On Output xx		
POCOUTxx OFF	Set PoC Off On Output xx		
POCINxx ON	Set PoC On On Input xx		
POCINxx OFF	Set PoC Off On Input xx		
OUTxx ON	Set Output xx On		
OUTxx OFF	Set Output xx Off		
OUTxx FR yy	Set Output From Input yy xx = 00 : All Outputs xx = [01-08] : Output 1 - 8 yy = [01-08] : Input 1 - 8		
OUTxx EH	Priority Output for EDID Copy and CEC = HDMI		
OUTxx ET	Priority Output for EDID Copy and CEC = HDBT xx = 00 : All Outputs 5 - 8 xx = [05-08] : Output 5 - 8		
INxx EH	Priority Input for EDID Updata and CEC = HDMI		
INxx ET	Priority Input for EDID Updata and CEC = HDBT xx = 00 : All Inputs 1 - 2 xx = [01-02] : Input 1 - 2		

RS-232 Configuration and Telnet Commands

COMMAND	ACTION
OUT xx SCALING ON/OFF	Set Output xx Scaling ON/OFF
OUT xx LR ON/OFF	Set Output xx Long Reach ON/OFF xx = 00 : All Outputs xx = [01-08] : Output 1 - 8
IN xx LR ON/OFF	Set Input xx Long Reach ON/OFF xx = 00 : All Inputs xx = [01-02] : Input 1 - 2
MXRS232OUT xx FR yy	Set Remote Rx xx RS232 From Local Matrix RS232 yy xx = [01-08] : Remote Rx1 - Rx8 RS232 xx = 00 : All Remote Rx RS232 yy = [01-08] : Local Matrix RS232 1 - 8 yy = [09-10] : Remote Tx1 - Tx2 RS232
MXRS232IN xx FR yy	Set Remote Tx xx RS232 From Local Matrix RS232 yy xx = [01-02] : Remote Tx1 - Tx2 RS232 xx = 00 : All Remote Tx RS232 yy = [01-08] : Local Matrix RS232 1 - 8
MXIRRX xx FR yy	Set Remote Rx xx IR Out From Local Matrix IR In yy Or Tx yy IR In xx = 00 : All Remote Rx IR Out xx = [01-08] : Remote Rx1 - Rx8 IR Out yy = 00 : Remote Rx IR Out OFF yy = [01-08] : Local Matrix IR In 1 - 8 yy = [09-10] : Remote Tx1 - Tx2 IR In
MXIRTX xx FR yy	Set Remote Tx xx IR Out From Local Matrix IR In yy Or Rx yy IR In xx = 00 : All Remote Tx IR Out xx = [01-02] : Remote Tx1 - Tx2 IR Out yy = 00 : Local Matrix IR In OFF yy = [01-08] : Local Matrix IR In 1 - 8 yy = [09-16] : Remote Rx1 - Rx8 IR In
MXIR xx FR yy	Set Local Matrix IR Out xx From Remote Rx/Tx yy IR In xx = [01-08] : Local Matrix IR Out 1 - 8 yy = [01-08] : Remote Rx1 - Rx8 IR In yy = [09-10] : Remote Tx1 - Tx2 IR In yy = 00 : All Remote Rx/Tx IR In
IRFV ON/OFF	Local Matrix IR Out Follow Video Switching ON/OFF
EDID xx DF zz	Set Input xx EDID To Default EDID zz xx = Input On Product (00 Refers To ALL Inputs, 02 = Input 2 Etc) zz = 00: HDMI 1080p@60Hz, Audio 2CH PCM (Default) 01: HDMI 1080p@60Hz, Audio 5.1CH DTS/DOLBY 02: HDMI 1080p@60Hz, Audio 7.1CH DTS/DOLBY/HD 03: HDMI 1080i@60Hz, Audio 2CH PCM 04: HDMI 1080i@60Hz, Audio 5.1CH DTS/DOLBY 05: HDMI 1080i@60Hz, Audio 7.1CH DTS/DOLBY/HD 06: HDMI 1080p@60Hz/3D, Audio 2CH PCM 07: HDMI 1080p@60Hz/3D, Audio 5.1CH DTS/DOLBY 08: HDMI 1080p@60Hz/3D, Audio 7.1CH DTS/DOLBY/HD 09: HDMI 4K@30Hz 4:4:4, Audio 2CH PCM 10: HDMI 4K@30Hz 4:4:4, Audio 5.1CH DTS/DOLBY 11: HDMI 4K@30Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD 12: HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 2CH PCM 13: HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 5.1CH DTS/DOLBY 14: HDMI 4K@60Hz 4:2:0/4K@30Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD 15: HDMI 4K@60Hz 4:4:4, Audio 2CH PCM 16: HDMI 4K@60Hz 4:4:4, Audio 5.1CH DTS/DOLBY 17: HDMI 4K@60Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD 18: DVI 1280x1024@60Hz, Audio None 19: DVI 1920x1080@60Hz, Audio None 20: DVI 1920x1200@60Hz, Audio None 21: HDMI 1920x1200@60Hz, Audio 2CH PCM/6CH PCM 22: User EDID 1 23: User EDID 2

COMMAND	ACTION
EDID xx CP yy	Copy EDID From Output yy To Input xx xx = [00-08] : 00 : All Inputs, Input 1 - 8 yy = [01-08] : Output 1 - 8
EDID SAVE yy TO zz	Save External EDID yy Into Slot zz yy = [01-08]: EDID Copy Output 1 - 8 yy = 00: EDID Via RS232 Send To Matrix zz = 00: All User EDID zz = 01 or 22: User EDID 1 zz = 02 or 23: User EDID 2
PRESET pp SAVE	Save Current Output Connections To Preset pp Config
PRESET pp CLR	Delete Preset pp Config pp = [00-09] : 00 : All Presets, Preset 1 - 9
PRESET pp APPLY	Apply Preset pp Config To Output Connection pp = [01-09] : Presets 1 - 9
OUTxx CEC ENABLE	Enable CEC Control On Output xx
OUTxx CEC DISABLE	Disable CEC Control On Output xx
OUTxx CEC OK	Confirm Operation (Enter) On Output xx
OUTxx CEC UP	UP On Output xx
OUTxx CEC DOWN	DOWN On Output xx
OUTxx CEC LEFT	LEFT On Output xx
OUTxx CEC RIGHT	RIGHT On Output xx
OUTxx CEC RETURN	RETURN On Output xx
OUTxx CEC EXIT	EXIT On Output xx
OUTxx CEC VOLUP	VOLUME UP On Output xx
OUTxx CEC VOLDOWN	VOLUME DOWN On Output xx
OUTxx CEC MUTE	Toggle Audio MUTE Status On Output xx
OUTxx CEC PLAY	PLAY On Output xx
OUTxx CEC STOP	STOP On Output xx
OUTxx CEC PAUSE	PAUSE On Output xx
OUTxx CEC RECORD	RECORD On Output xx
OUTxx CEC INPUTyy	Input Channel yy Selection On Output xx, The Operation Needs To Wait For TV Communication To Succeed xx = 00: All Outputs Port xx = [01-08]: Output 1 - 8 yy = [01-04]: TV's HDMI Input 1 - 4 yy = 00: Current HDMI Input yy = []: (No Parameter) Will Show Input Select Menu If TV Support
OUTxx CEC POFF	POWER OFF On Output xx
OUTxx CEC PON	POWER ON On Output xx xx = 00: All Output Port xx = [01-08]: Output 1 - 8
INxx CEC ENABLE	Enable CEC Control On Input xx
INxx CEC DISABLE	Disable CEC Control On Input xx
INxx CEC OK	Confirm Operation (Enter) On Input xx
INxx CEC UP	UP On Input xx
INxx CEC DOWN	DOWN On Input xx
INxx CEC LEFT	LEFT On Input xx

RS-232 Configuration and Telnet Commands

COMMAND	ACTION	COMMAND	ACTION
INxx CEC RIGHT	RIGHT On Input xx	RS232INxx OFF	Disable RS232 Remote-control Mode On HDBT In xx xx = 00: All HDBT Input Port xx = [01-02]: HDBT Input 1 - 2
INxx CEC RETURN	RETURN On Input xx	RS232ONOUTxx y:z:a:b	Save y Type Of Command a Stored In Slot x Whose Baud Rate Is z On Input xx xx = 00: All Output Port xx = [01-08]: Output 1 - 8 y = 1 RS232 Display On y = 2 RS232 Display Input Select y = 3 RS232 User Command 1 y = 4 RS232 User Command 2 y = 5 RS232 User Command 3 z = a ASCII, h HEX a = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200 b = RS232 Command
INxx CEC EXIT	EXIT On Input xx		
INxx CEC VOLUP	VOLUME UP On Input xx		
INxx CEC VOLDOWN	VOLUME DOWN On Input xx		
INxx CEC PLAY	PLAY On Input xx	RS232ONINxx y:z:a:b	Save y Type Of Command a Stored In Slot x Whose Baud Rate Is z On Input xx xx = 00: All Output Port xx = [01-08]: Output 1 - 8 y = 1 RS232 Display On y = 2 RS232 Display Input Select y = 3 RS232 User Command 1 y = 4 RS232 User Command 2 y = 5 RS232 User Command 3 z = a ASCII, h HEX a = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200 b = RS232 Command
INxx CEC STOP	STOP On Input xx		
INxx CEC PAUSE	PAUSE On Input xx		
INxx CEC RECORD	RECORD On Input xx		
INxx CEC REWIND	REWIND On Input xx	RS232OFFOUTxx y:z:a:b	Save RS232 Off Command a Of y Type Whose Baud Rate Is z On Output xx y = 1 RS232 Display Off 1 y = 2 RS232 Display Off 2 z = a ASCII, h HEX a = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200 b = RS232 Command
INxx CEC FF	FAST FORWARD On Input xx		
INxx CEC FWD	FORWARD On Input xx		
INxx CEC BWD	BACKWARD On Input xx		
INxx CEC POFF	POWER OFF On Input xx	RS232OFFINxx y:z:a:b	Save RS232 Off Command a Of y Type Whose Baud Rate Is z On Output xx y = 1 RS232 Display Off 1 y = 2 RS232 Display Off 2 z = a ASCII, h HEX a = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200 b = RS232 Command
INxx CEC PON	POWER ON On Input xx xx = 00: All Input Port xx = [01-08]: Input 1 - 8		
CECUSERCMD <u8	DevID u8Addr u8Opcode pu8Operand[MAX]> u8DevID: 00 Select All CEC Input Port u8DevID: [01-08] Input 1 - 8 u8DevID: F0 Select All CEC Output Port u8DevID: [F1-F8] Output 1 - 8 pu8Operand[MAX]: MAX 0 - 14 Eg:CECUSERCMD <F0 40 44 41 > (ALL OUT CEC VOLUP) Eg:CECUSERCMD <F0 40 44 42 > (ALL OUT CEC VOLDOWN)		
RS232BAUD z	Set RS232 Baud Rate To xx z = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200		
RS232SEND xx:yy:z:a:b	Send b To RS232 Port xx And Wait yy Seconds For Feedback xx = 00: Local RS232 Port xx = [01-08]: Output 1 - 8 xx = [09-10]: Input 1 - 2 yy = [00-10]: Wait For The Feedback yy Seconds z = a ASCII, h HEX a = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200 b = RS232 command	RS232ONOUTxx	DISABLE Disable Auto RS232 Commands When Detecting A Signal On Output xx
RS232DLYOUTxx:tt	Set Send Output xx Interval Time In tt Seconds Between RS232 On And User Commands xx = 00: All Output Port xx = [01-08]: Output 1 - 8 tt = [0-180]: Delay tt Seconds	RS232OFFOUTxx	DISABLE Disable Auto RS232 Commands When Not Detecting A Signal On Output xx xx = 00: All Output Port xx = [01-08]: Output 1 - 8
RS232DLYINxx:tt	Set Send Input xx Interval Time In tt Seconds Between RS232 On And User Commands xx = 00: All Input Port xx = [01-02]: Input 1 - 2 tt = [0-180]: Delay tt Seconds	NET DHCP ON/OFF	Set Auto IP(DHCP) On Or Off
RS232OUTxx ON	Enable RS232 Remote-control Mode On HDBT Out xx	NET TN ON/OFF	Set Telnet Port On Or Off
RS232OUTxx OFF	Disable RS232 Remote-control Mode On HDBT Out xx xx = 00: All HDBT Output Port xx = [01-08]: HDBT Output 1 - 8	NET TN8000 ON/OFF	Set Telnet Port 8000 On Or Off
RS232INxx ON	Enable RS232 Remote-control Mode On HDBT In xx	NET IP xxx.xxx.xxx.xxx	Set IP Address
		NET GW xxxxxxxxxx	Set Gateway Address
		NET SM xxx.xxx.xxx.xxx	Set Subnet Mask Address
		NET RB	Set Network Reboot And Apply New Config!!!
		NET TN xxxx	Set Telnet Port

Web-GUI Firmware Update

The web-GUI of the Matrix is used to configure and control the product through a web portal. The Matrix can be accessed on any network connected device including: tablets, smart phones and laptops that are on the same network.

As the web-GUI is used to update the main Matrix firmware it is important to make sure that the web-GUI firmware is the latest version. Please check your firmware version against the version available to download from the Blustream website.

To update the web-GUI firmware:

1) Login to the web-GUI update menu:

Default IP Address is: 192.168.0.200:100

Default Username is: [blustream](#) Default Password is: [1234](#)

Please note: the IP address may differ if default network settings have been updated. If this is the case, please replace the following with the products current IP address:

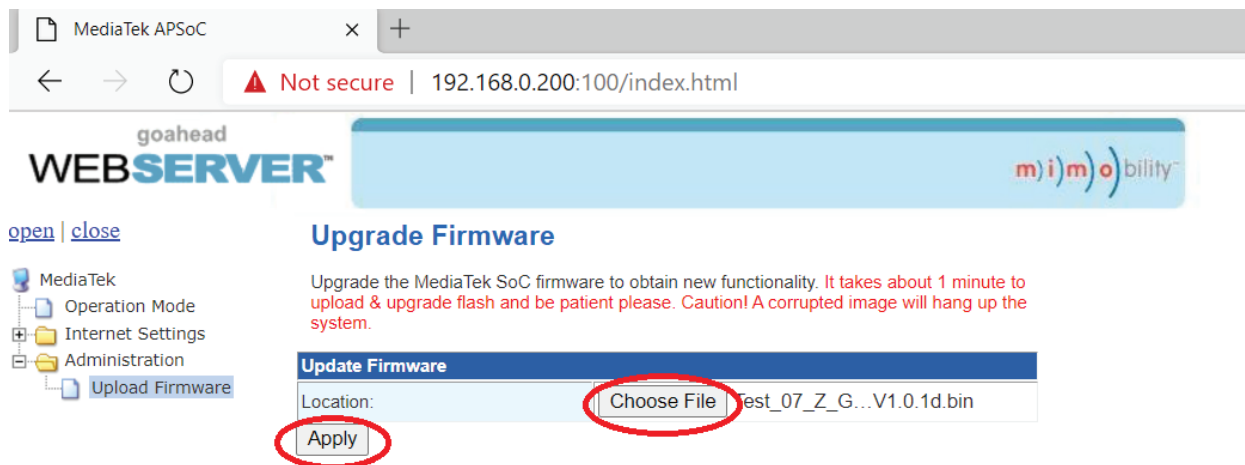
[XXX.XXX.XXX.XXX:100](#)

2) When the web-GUI menu interface has been accessed, expand the 'Administration' file in the menu tree by clicking the small '+' icon next to the file.

3) Select 'Upload Firmware':

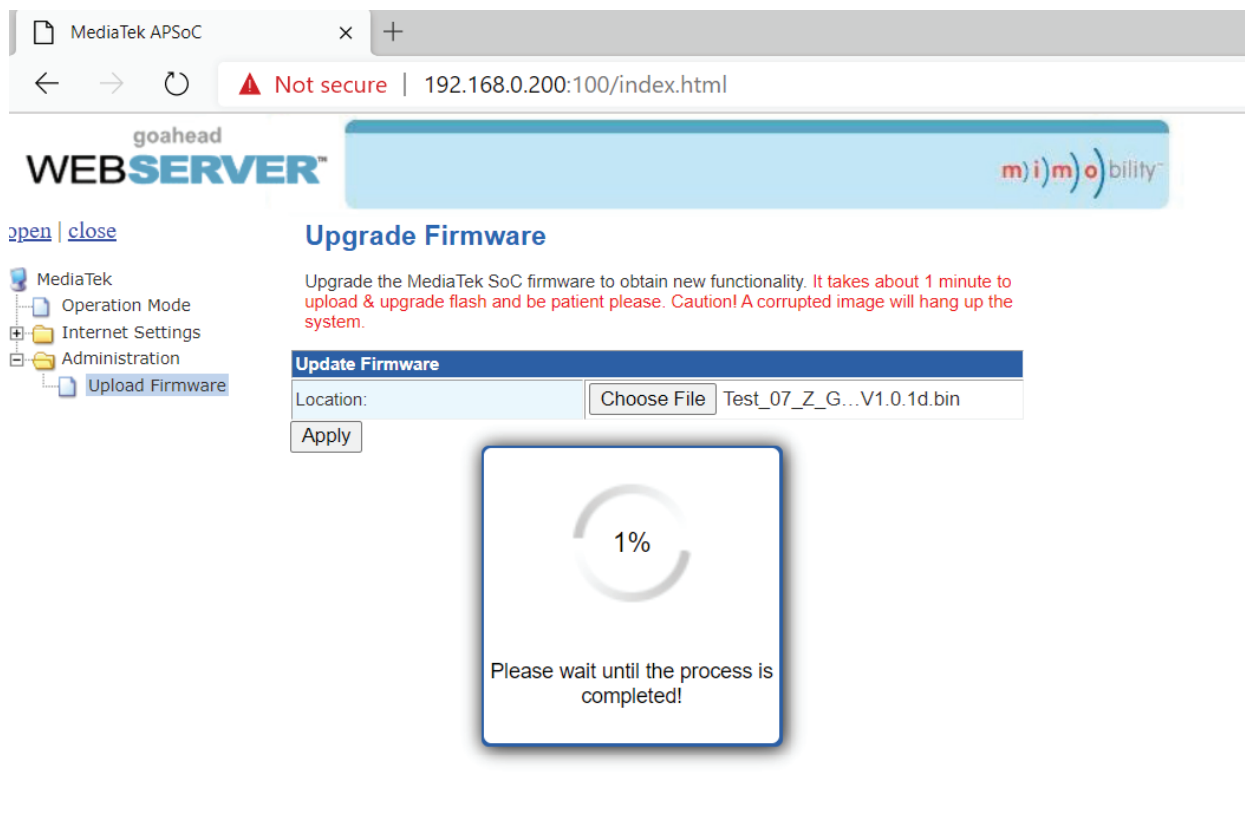


4) Click 'Choose File' and select the web-GUI/MediaTek firmware file downloaded from the Blustream website. This will be a .bin file:

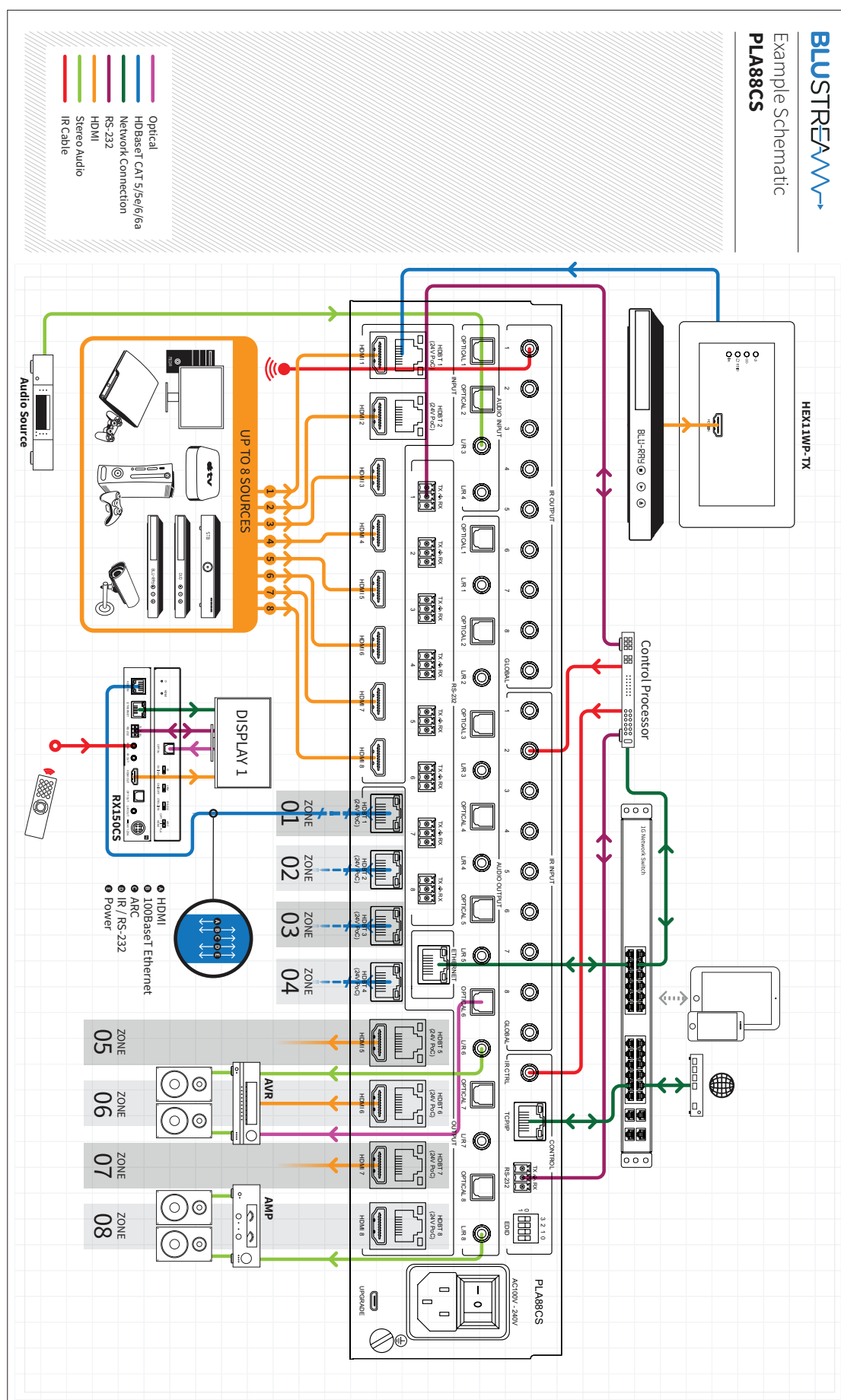


5) Press 'Apply' to begin the firmware update process.

The update process will take up to 1 minute to complete. Do not refresh or navigate away from this page until the update process has completed.



Schematic



Acknowledgements

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Certifications

FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

CANADA, INDUSTRY CANADA (IC) NOTICES

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

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

CANADA, AVIS D'INDUSTRY CANADA (IC)

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

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

CORRECT DISPOSAL OF THIS PRODUCT

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



Notes...



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